23. Temporary Changes to the Real-Time Market for Imbalance Energy

23.1   Application

Notwithstanding any other provision of the ISO Tariff, the amendments to the ISO Tariff set forth

in Sections 23.2 through 23.5 shall continue in effect until such time as:

(a)   the ISO has applied to the FERC for new, long-term, changes to the ISO Tariff in regard

           to the Real-Time Market for Imbalance Energy, in connection with implementing a sub-

           hour Settlement Period; and

(b)   the FERC has approved new, long-term, changes to the ISO Tariff in regard to the Real

           Time Market for Imbalance Energy.

23.2   ISO Tariff Amendments

23.2.1   Amendments to the Body of the ISO Tariff

            2.5.22.4.1   Timing of Supplemental Energy Bids.

            Supplemental Energy bids must be submitted to the ISO no later than ***forty-five
            (45)*** ~~*30*~~ minutes prior to the operating hour. Bids may ~~*also*~~ be submitted at any
            time after the Day-Ahead Market closes. These Supplemental Energy bids
            cannot be withdrawn after ***forty-five (45)*** ~~*thirty (30)*~~ minutes prior to the
            Settlement Period. The ISO may dispatch the associated resource at any time
            during the Settlement Period.

            2.5.22.10   Dispatch instructions. Dispatch instructions shall include the
            following information:

            (a)   name of the Generating Unit, Load or System Resource being
                       dispatched;

            (b)   specific MW value to which the Generating Unit, Load or System
                       Resource is being dispatched;

            (c)   operating level and price point to which the Generating Unit,
                       Load or System Resource is being dispatched;

            (d)   time the Generating Unit, Load or System Resource is required
                       to achieve the dispatch instruction;

            (e)   time of the dispatch instruction; and

            (f)   any other information which the ISO considers relevant.

All Dispatch instructions except those for the Dispatch of Regulation (which will be communicated by direct digital control signals) will be communicated by telephone. Except in the case of deteriorating system conditions or emergency, and except for instructions for the Dispatch of Regulation, the ISO will send all Dispatch instructions to the Scheduling Coordinator for the Generating Unit, Load or System Resource which it wishes to Dispatch. The recipient Scheduling Coordinator shall ensure that the Dispatch instruction is communicated immediately to the operator of the Generating Unit or Load concerned. ***The ISO may, with the prior permission of the Scheduling Coordinator concerned, communicate with and give Dispatch instructions to the operators of Generating Units and Loads directly without having to communicate through their appointed Scheduling Coordinator.*** The recipient ~~*Scheduling Coordinator*~~ of a Dispatch instruction shall confirm the Dispatch instruction by repeating the Dispatch instruction to the ISO. The ISO shall record on tape all voice conversations which occur on the dispatch instruction communication equipment. These recordings may be used to audit the dispatch instructions, and to verify the response of Generating Units, Loads and System Resources to dispatch instructions.

The ~~*dispatch*~~ ***Dispatch*** instruction and all information associated with it shall be logged and recorded by the ISO as soon as practical after issuing each instruction. The ISO will develop detailed operational protocols governing the content, issue, receipt, confirmation and recording of ~~*dispatch*~~ ***Dispatch*** instructions.

2.5.23.1 General Principles. Imbalance Energy shall be priced ~~***in two time intervals***~~ using the ***BEEP Interval*** ~~***Five Minute***~~ Ex Post Price***s for Instructed Imbalance Energy per resource*** and the Hourly Ex Post Price ***for Uninstructed Imbalance Energy***. The ~~***Five Minute***~~ Ex Post Price***s*** shall be based on the bid of the marginal Generating Units, Loads and System Resources dispatched by the ISO to reduce Demand or to increase or decrease Energy output in each ***BEEP Interval*** ~~*five minute period*~~ (including resources that provide Imbalance Energy and Ancillary Services resources that increase or decrease Energy output or reduce Demand).

The marginal Generating Unit, Load or System Resource dispatched in ***each BEEP Interval*** ~~*the five minute period*~~ is

(a)   if ~~***generation***~~ ***Generation*** output is increased, or Demand reduced, the Generating Unit, Load or System Resource with the highest bid that is accepted by the ISO***'s BEEP Software*** for incremental Generation, or Demand reduction; or

(b)   if ~~***generation***~~ ***Generation*** output is decreased, the Generating Unit or System Resource with the lowest bid that is accepted by the ISO***'s BEEP Software*** for decremental Generation.

Where a Scheduling Coordinator has identified specific Generating Units, Loads or System Resources as the providers of the additional Operating Reserve required to cover any Interruptible Imports and on-demand obligations which it has scheduled, the Proxy Energy Bid prices of those resources for the incremental Energy, or decremental Demand, dispatched by the ISO from the Operating Reserve provided by those resources, shall not be taken into account in the determination of the Hourly Ex Post Price.

When an Inter-Zonal Interface is operated at the capacity of the interface (whether due to scheduled uses of the interface, or decreases in the capacity of the interface), the marginal incremental or decremental bid prices in some Zones may differ from one another. In such cases, the ISO will determine separate ~~*Hourly*~~ Ex Post Prices for the Zones.

The ISO will respond to the Dispatch instructions issued by the BEEP Software to the extent practical in the time available and acting in accordance with Good Utility Practice. The ISO will record the reasons for any variation from the Dispatch instructions issued by the BEEP Software.

2.5.23.2 Determining ~~*Five Minute Ex Post Price and Hourly*~~ Ex Post Price*s*

2.5.23.2.1   BEEP Interval Ex Post Prices. For each ~~*five minute period*~~*BEEP Interval*, the ISO will compute an updated dispatch price curve, using the Generating Units, Loads and System Resources dispatched *according to the ISO's BEEP Software* during that time period to meet Imbalance Energy requirements. *For each BEEP Interval of the Settlement Period, BEEP will compute an incremental Ex Post Price and a decremental Ex Post Price. The incremental Ex Post Price will equal the highest price bid selected in the BEEP Interval. The decremental Ex Post Price will equal the lowest price bid selected in the BEEP Interval.* The ~~*Five Minute*~~ Ex Post Price*s* for each *five minute period**BEEP Interval* will equal the marginal bid of the marginal Generating Unit, Load, or System Resource as described in Section 2.5.23.1.

~~If the net quanitty of Imbalance Energy in the five minute period t is positive then~~The BEEP Interval incremental Ex Post Price will be computed for each BEEP Interval i as

~~*P5Min$_i$=Max(EnBid$_t$)$_i$*~~

PI$_i$=Max(EnBid$_r$)$_i$

The BEEP Interval decremental Ex Post Price will be computed for each BEEP Interval i as

PD$_i$=Min(EnBid$_r$)$_i$

~~*Where*~~*where*

$EnBid_{r\,t}$ = Energy bid price~~s~~ of the ~~*Generating Units, Loads and System*~~

~~*Resources*~~*resources* providing Ancillary ~~*Services*~~*Service Energy~~, and the~~ or*

Supplemental Energy ~~*bids of other Generating Units, Loads and System*~~

~~*Resources dispatched by the ISO during the five minute period*~~.

~~*If the net quantity of Imbalance Energy in the five minute period t is negative then*~~

~~*P5Min₁=Miin(Enbid₁)₁*~~

In the event of Inter-Zonal Congestion, the ISO will develop a dispatch price curve, and ***BEEP Interval Ex Post Prices***~~*an Ex Post Five Minute Price P5Min_{xt}*~~for each Zone where congestion exists.

2.5.23.2.2   *Hourly Ex Post Price Applicable to Uninstructed Deviations.*
The Hourly Ex Post Price *applicable to uninstructed deviations in Settlement Period t* in each zone will equal the Energy weighted average of the ***BEEP Interval ~~12 Five Minute~~ Ex Post ~~Prices~~Charges*** in each Zone, calculated as follows:

$$\text{~~PHourExPost~~}_x = \frac{\sum_{t=1}^{12}(P5Min_{xt} * SysDev)_t}{\sum_{t=1}^{12} SysDev_t}$$

$$PHourExPostx = \frac{\sum_{ji}\left|IIEC_{jix}\right|}{\sum_{ji}\left|IMWH_{jix}\right|}$$

where:

$PHourExPost_x$ = Hourly Ex Post Price in Zone x

HBI = the number of BEEP intervals in the Settlement Period

j = the number of Scheduling Coordinators with instructed deviations

IIEC_{jix} = the Instructed Imbalance Energy Charges for Scheduling Coordinator j for the BEEP interval i in Zone x

$\underline{IMWH_{jix}}$ = **the Instructed Imbalance Energy for Scheduling Coordinator j for the BEEP interval i in Zone x**

~~$P5Min_{xt}$= *Five minute Ex Post Price in Zone x in period t*~~

~~$SysDev_t$ = *the absolute difference (whether positive or negative) between (the deviation between scheduled and metered Demand) and (the deviation between scheduled and metered Generation) in five minute period t in Zone x.*~~

If the ISO declares a System Emergency, e.g. during times of supply scarcity, and involuntary load shedding occurs during the real time ~~dispatch~~ Dispatch, the ISO shall set the Hourly Ex Post Price at the Administrative Price.

11.2.4.1 Net Settlements for _Uninstructed_ Imbalance Energy.

Uninstructed Imbalance Energy attributable to each Scheduling Coordinator in each Settlement Period in the relevant Zone shall be deemed to be sold or purchased, as the case may be, by the ISO and payments for _Uninstructed_ Imbalance Energy shall be settled by debiting or crediting, as the case may be, the Scheduling Coordinator with an amount for each Settlement Period equal to:

IE Charge =

$$\left(\sum_i GenDev_i - \sum_i LoadDev_i\right) * P + \left(\sum_q ImpDev_q\right) * P - \left(\sum_q ExpDev_q\right) * P + UFEC$$

where:

The deviation between scheduled and actual Energy Generation for Generator i represented by the Scheduling Coordinator for the Settlement Period is calculated as follows:

$$GenDev_i = G_s * GMM_f - \left\lfloor (G_a - G_{adj}) * GMM_{ah} - G_{a/s} \right\rfloor$$

The deviation between scheduled and actual Load consumption for Load i represented by the Scheduling Coordinator for the Settlement Period is calculated as follows:

$$LoadDev_i = L_s - \left\lfloor (L_a - L_{adj}) + L_{a/s} \right\rfloor$$

The deviation between forward, scheduled and Real Time adjustments to Energy imports, adjusted for losses, for Scheduling Point q represented by the Scheduling Coordinator for the Settlement Period is calculated as follows:

$$ImpDev_q = I_s * GMM_{fq} - \left[\left(I_a - I_{adj} \right) * GMM_{ahq} \right] + I_{a/s}$$

The deviation between forward, scheduled and Real Time adjustments to Energy exports for Scheduling Point q represented by the Scheduling Coordinator for the Settlement Period is calculated as follows:

$$ExpDev_q = E_s - E_a - E_{adj}$$

and where:

G_s =   sum of effective schedules for Day-Ahead and Hour-Ahead

GMM_f =   estimated GMM for Day-Ahead

G_a =   actual metered Generation

G_{adj} =   deviations in real time ordered by the ISO for purposes such as Congestion Management

GMM_{ah}=   hour-ahead GMM (proxy for ex-post GMM)

$G_{a/s}$ =   Energy generated from Ancillary Service resource or Supplemental Energy resource due to ISO dispatch instruction

L_s =   sum of Demand scheduled for Day-Ahead and Hour-Ahead

L_a =   actual metered Demand

L_{adj} =   Demand deviation in real time ordered by ISO for purposes such as Congestion Management

$L_{a/s}$ =   Demand reduction from Ancillary Service resource due to ISO dispatch instruction

GMM_{fq} =   estimated GMM for an Energy import at Scheduling Point q for Day-Ahead

GMM_{ahq} =   estimated GMM for an Energy import at Scheduling Point q for Hour-Ahead (proxy for ex-post GMM)

l_s =   sum of Scheduled Energy import scheduled through Scheduling Point q for Day-Ahead and Hour-Ahead

l_a =   sum of actual Energy import scheduled through Scheduling Point q.

l_{adj} =   deviation in real time import ordered by ISO for purposes such as Congestion Management, and import curtailment.

$I_{a/s}$ =   Energy generated from Ancillary Service System Resources ***pursuant to Existing Contracts*** or Supplemental Energy from interties due to dispatch instruction

E_s =   sum of scheduled Energy export scheduled through Scheduled Point q for Day-Ahead and Hour-Ahead

E_a =   sum of actual Energy export scheduled through Scheduling Point q for Day-Ahead and Hour-Ahead

E_{adj} =   deviation in real time export ordered by ISO for purposes such as Congestion Management, and export curtailment

P   =   Hourly Ex Post Price for ***Uninstructed*** Imbalance Energy for the relevant hour***, as defined in Section 2.5.23.2.2***

UFEC   =   the Unaccounted for Energy Charge for the Scheduling Coordinator calculated as follows:

Unaccounted for Energy Charge

The hourly Unaccounted for Energy Charge on Scheduling Coordinator j for Settlement Period t for each relevant Zone is calculated in the following manner:

The UFE for each utility service territory *k* is calculated as follows,

$$E_{UFE\_UDC\_k} = \left(I_k - E_k + G_k - \left(RTM_k + LPM_k\right) - TL_k\right)$$

The Transmission Loss calculation per Settlement Period t per relevant Zone for each utility service territory k is calculated as follows,

$$TL_k = \sum\left[G_a * \left(1 - GMM_{ah}\right)\right] + \sum\left[I_a\left(1 - GMM_{ahq}\right)\right]$$

Each metered demand point, either ISO grid connected or connected through a UDC, is allocated a portion of the UFE as follows:

$$E_{UFE\_z} = \frac{D_z}{\sum_Z D_z} E_{UFE\_UDC\_k}$$

The UFE charge for Scheduling Coordinator j per Settlement Period per relevant Zone is then,

$$UFEC_j = \left(\sum_z E_{UFE\_z} \right) * P_{xt}$$

Where the terms used in the equations have the following meaning:

E$_{UFE\_UDC\_k}$ -- MWh

The Unaccounted for Energy (UFE) for utility service territory k.

E$_{UFE\_z}$ -- MWh

The portion of Unaccounted for Energy (UFE) allocated to metering point z.

I$_k$ -- MWh

The total metered imports into utility service territory k in Settlement Period t.

E$_k$ -- MWh

The total metered exports from utility service territory k in Settlement Period t.

G$_k$ -- MWh

The total metered Generation in Settlement Period t in utility service territory k.

RTM$_k$ -- MWh

The Settlement Period t total of the real-time metering in utility service territory k in Settlement Period t.

LPM$_k$ -- MWh

The calculated total of the Load Profile metering in utility service territory k per Settlement Period t.

TL$_k$ -- MWh

The Transmission Losses per Settlement Period t in utility service territory k.

D_Z -- MWh

The Demand including Exports in Settlement Period t at metered point z.

Replacement Reserve Dispatch Charge

For each Scheduling Coordinator whose Generators falls below its Schedule, or whose Demand exceeds its Schedule, such that the net Schedule is unbalanced, the following additional charge will apply:

$RepResDispChrg_{jt} = D_{jt}*RRDispCost_i$

where:

$$D_{jt} = \frac{Max\left(0, \left\{\sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk}\right\}\right)}{\sum Max\left(0, \left\{\sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk}\right\}\right)}$$

$$D_{jt} = \frac{Max\left(0, \left\{\sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk}\right\}\right)* ReplObligRatio_{jxt}}{\sum\left(Max\left(0, \left\{\sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk}\right\}\right)* ReplObligRatio_{jxt}\right)}$$

where:

$$ReplObligRatio_{jxt} = \frac{ReplOblig_{jxt}}{\sum_{\overline{j}} ReplOblig_{jxt}}$$

$ReplOblig_{jxt}$ is the replacement reserve capacity obligation as defined in Section 2.5.28.4; and

~~*where:*~~

$RRDispCost$ is defined in Section 2.5.28.4 of this ISO Tariff.

If there is Congestion in the Day-Ahead Market the ISO will allocate the Replacement Reserve Dispatch Charges on a Zonal basis. If there is no

Congestion in the Day-Ahead Market the ISO will allocate the Replacement Reserve Dispatch Charges on a ISO Control Area-wide basis (irrespective of whether there is Congestion in the Hour-Ahead Markets or not).

This additional charge *(RepResDispChrg)* allocates the cost of dispatched Replacement Reserve to Scheduling Coordinators in proportion to their contribution to the need for the dispatch of that Replacement Reserve, as measured by the magnitude of the Energy insufficiency served through the Imbalance Energy market. The ISO shall develop protocols and procedures for the monitoring of persistent intentional excessive imbalances by Scheduling Coordinators and for the imposition of ap0propriate sanctions and/or penalties to deter such behavior. The net balance of the charges attributable to all Scheduling Coordinators represents the Transmission Losses imbalance total for each hourly Settlement Period.

11.2.4.1.1 Settlement for Instructed Imbalance Energy

Instructed Imbalance Energy attributable to each Scheduling Coordinator J in each Settlement Period t in the relevant Zone shall be deemed to be sold or purchased, as the case may be, by the ISO and payments for Instructed Imbalance Energy shall be settled by debiting or crediting, as the case may be, the Scheduling Coordinator with an amount for each Settlement Period t equal to:

$$IIEC_j = IGDC_j + ILDC_j + IIDC_j$$

where:

Instructed Generation Deviation Payment/Charge is calculated as follows:

$$IGDC = \sum_{gi} \frac{G_{gi} * P_i}{HBI}$$

Instructed Load Deviation Payment/Charge is calculated as follows:

$$ILDC = \sum_{Li} \frac{L_{Li} * P_i}{HBI}$$

Instructed Import Deviation Payment/Charge is calculated as follows:

$$IIDC = \sum_{Ii} \frac{I_{Ii} * P_i}{HBI}$$

and where:

$IGDC_j$=total of instructed Generation deviation payments/charges for the Settlement Period t

$ILDC_j$=total of instructed Demand deviation payments/charges for the Settlement Period t

$IIDC_j$=total of instructed import deviation payments/charges for the Settlement Period t

G_{gi}=instructed Energy (in MW) for Generating Unit g during BEEP Interval i

L_{Li}=instructed Energy (in MW) for Load L during BEEP Interval i

I_{Ii}=instructed Energy (in MW) for import I during BEEP Interval i

P_i = the BEEP incremental Ex Post Price for BEEP Interval i if the net instructed Energy for resources is positive. Or, the BEEP decremental Ex Post Price for BEEP Interval i if the net instructed Energy for resources is negative

HBI= the Number (2-12) of BEEP Intervals in the Settlement Period: the maximum number of intervals in the Settlement Period that BEEP can instruct a resource for incremental/decremental Energy.

23.2.2 Amendments to the Master Definitions in the ISO Tariff

BEEP Interval

The time period, which may range between five (5) and thirty (30) minutes, over which the ISO's BEEP Software measures deviations in Generation and Demand, and selects Ancillary Service and Supplemental Energy resources to provide balancing Energy in response to such deviations. As of the ISO Operations Date, the BEEP Interval shall be ten (10) minutes. The ISO may, by seven (7) days' notice published on the ISO's Home Page, at http://www.caiso.com (or such other internet address as the ISO may publish from time to time), increase or decrease the BEEP Interval within the range of five (5) to thirty (30) minutes.

__BEEP Interval Ex Post Prices__   *__The prices charged to or paid by Scheduling Coordinators for Instructed Imbalance Energy in each Zone in each BEEP Interval. The prices will vary between Zones if Congestion is present. The BEEP Interval Ex Post Price is equal to the bid price of the marginal resource accepted by the ISO for Dispatch and deemed eligible by the ISO to set the price during the BEEP Interval. For each BEEP Interval: the BEEP Interval Ex Post Price for incremental Energy will equal the highest price bid selected by the BEEP software; and the BEEP Interval Ex Post Price for decremental Energy will equal the lowest price bid selected by the BEEP software.__*

__BEEP Software__   *__The balancing energy and ex post pricing software which is used by the ISO to determine which Ancillary Service and Supplemental Energy resources to Dispatch and to calculate the Ex Post Prices.__*

__Ex Post Price__   *__The Hourly Ex Post Price or the BEEP Interval Ex Post Prices.__*

__Uninstructed Imbalance Energy__   *__The real time change in Generation or Demand other than that instructed by the ISO or which the ISO Tariff provides will be paid at such price.__*

__Five Minute Ex Post Price__   *__The price charged or paid to Scheduling Coordinators responsible for Participating Generators, System Resources or Participating Buyers for Imbalance Energy in each Zone. The price will vary between Zones if Congestion is present. This five minute price is equal to__*

the bid price of the marginal resource accepted by the ISO for dispatch and deemed eligible under the ISO Tariff to set the price during a five minute period.

Hourly Ex Post Price   The price charged or paid to Scheduling Coordinators responsible for Participating Generators and Participating Buyers for Imbalance Energy in each Zone. The price will vary between Zones if Congestion is present. The Hourly Ex Post Price is the Energy weighted average of the ***BEEP Interval*** *12 Five Minute* Ex Post Prices in each Zone during each Settlement Period.

Instructed **Imbalance Energy**   The real time change in Generation output or Demand (from dispatchable Generating Units or Loads) which is instructed by the ISO to ensure that reliability of the ISO Control Area is maintained in accordance with Applicable Reliability Criteria. Sources of Imbalance Energy include Regulation, Spinning and Non-spinning Reserves, Replacement Reserve, and Energy from other Generating Units that are able to respond to the ISO's request for more or less Energy.

23.3   Amendments to the Dispatch Protocol

DP 3.2   Supplemental Energy

In addition to the Final Schedules, Supplemental Energy bids will be available to the ISO real time dispatchers, as described in the SBP, by ***forty-five (45)*** *30* minutes prior to the start of the Settlement Period to which such Supplemental Energy bids apply.

DP 3.4.3   Verbal Communication with Generators

Normal verbal communication of Dispatch Instructions between the ISO and Generators will be via the relevant SC. Each SC must immediately pass on to the Generator concerned any verbal communication for the Generator which it receives from the ISO. If the ISO considers that there has been a failure at a particular point in time or inadequate response over a particular period of time

by the Generating Units to the Dispatch Instruction, the ISO will notify the relevant SC. ***The ISO may, with the prior permission of the Scheduling Coordinator concerned, communicate with and give Dispatch instructions to the operators of Generating Units and Loads directly without having to communicate through their appointed Scheduling Coordinator.*** In situations of deteriorating system conditions or emergency, the ISO reserves the right to communicate directly with the Generator(s) as required to ensure System Reliability.

23.4   Amendments to the Schedules and Bids Protocol

SBP 4.1 Content of Adjustment Bids

Adjustment Bids are contained in Preferred Schedules and Revised Schedules submitted by SCs for particular Generating Units ***(including Physical Scheduling Plants)***, Dispatchable Loads and external imports/exports. Adjustment Bids cannot be submitted with respect to Inter-Scheduling Coordinator Trades.

Each SC is required to submit a preferred operating point for each Generating Unit, Dispatchable Load and external import/export (these quantities are presented in the SC's submitted Schedule as "Hourly MWh"). The SC's preferred operating point for each Generating Unit, Dispatchable Load and external import/export must be within the range of any Adjustment Bids to be used by the ISO. The minimum MW output level, which may be zero MW (or negative for pumped storage resources), and the maximum MW output level must be physically achievable.

SBP 5.1 Content of Ancillary Services Schedules and Bids

Ancillary Services in the Day-Ahead Market and the Hour-Ahead Market are comprised of the following: Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve. Each Generating Unit ***(including Physical Scheduling Plants)***, System Unit, Curtailable Demand or external import/export for which a SC wishes to submit Ancillary Services schedules and bids must meet the requirements set forth in the Ancillary Services Requirements Protocol (ASRP). For each Ancillary Service offered to the ISO auction or self-provided, SCs must include a bid price for Energy in the form of a staircase function composed of up to eleven (11) ordered pairs (i.e., ten (10) steps or price bands) of quantity/price information. These staircase functions must be either monotonically non-decreasing (Generating Units, System Units, and external imports) or monotonically non-increasing (Curtailable Demands and external exports). The same resource capacity may be offered into more than one ISO Ancillary Service auction at the same time (the sequential evaluation of such multiple offers between Ancillary Services markets to eliminate double counting of capacity is described in the SP). In each category of Ancillary Service, the reference to "Revised" types of Schedules indicates a submittal which is part of a

Revised Day-Ahead Schedule as described in the SP. Each of the following data sections can be submitted up to seven (7) days in advance. There is no provision for external imports/exports with regard to Ancillary Services bids, only self-provided Ancillary Service schedules under Existing Contracts. The functionality necessary to accept such bids does not exist in the ISO scheduling software.

SBP 6.1.1   Generation Section of Supplemental Energy Bid Data

Each SC offering Supplemental Energy to the ISO will submit the following information for each Generating Unit for each Settlement Period:

(a)   SC's ID code;

(b)   name of Generating Unit;

(c)   Generating Unit operating limits (high and low MW);

(d)   Generating Unit ramp rate in MW/minute; and

(e)   the MW and $/MWh values for each Generating Unit for which a Supplemental Energy bid is being submitted consistent with this SBP 6.

__A Physical Scheduling Plant shall be treated as a single Generating Unit for Supplemental Energy bid purposes.__

23.5   Amendments to the Settlement and Billing Protocol

C 2.1.3   Real-Time Market

Each Scheduling Coordinator will be paid for the real time instructed Energy output from Dispatched Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve[1] resources which it represents at the real time Hourly Ex Post Price, in accordance Appendix D, section D 2.1.2. Each Scheduling Coordinator will also be paid for Supplemental Energy Dispatched from resources which it represents at the same Hourly Ex Post Price. This payment for Scheduling Coordinator j for providing Energy output from a resource i in Zone x for Trading Interval t is calculated as follows:

$$EnQPay_{ijxt} = EnQ_{ijxt} * P_{xt}$$

The total payment to each Scheduling Coordinator for real time Energy output from all resources which it represents for a given Trading Interval in a given Zone is calculated by summing all the payments for the resources of the Scheduling Coordinator in the Zone for the Trading Interval. This payment

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[1]   For Regulation, differences between instructed and metered Energy shall be settled as Uninstructed Imbalance Energy in accordance with Appendix G2.1.

for Scheduling Coordinator j in Zone x for Trading Interval t is calculated as follows:

$$EnQPayTotal_{ijxt} = \sum_i EnQPay_{ijxt}$$

C 3.18   EnQ$_{ijx}$ – MWh

The Dispatched and supplemental Energy output in the Real Time Market from resource i by Scheduling Coordinator j in Zone x for.

C 3.20   P$_{xt}$ - $/MWh

The Hourly Ex Post Price of Imbalance Energy in the Real Time Market in Zone x for Trading Interval t.

~~D 2.1~~D 2.1.1 *Uninstructed* Imbalance Energy Charges on Scheduling Coordinators

The Imbalance Energy charge for ~~*Trading Interval t*~~ *Settlement Period t* for Scheduling Coordinator j for Zone x is calculated using the following formula:

$$IEC_j = \left(\sum_i GenDev_i - \sum_i LoadDev_i \right) * P_{xt} + \left(\sum_q ImpDev_q \right) * P_{xt} - \left(\sum_q ExpDev_q \right) * P_{xt} + UFEC_j$$

The deviation between scheduled and actual Energy Generation for Generator i represented by Scheduling Coordinator j in Zone x during ~~*Trading Interval t*~~ *Settlement Period t* is calculated as follows:

$$GenDev_i = G_s * GMM_f - [(G_a - G_{adj}) * GMM_{ah} - G_{a/s}]$$

The deviation between scheduled and actual Load consumption for Load i represented by Scheduling Coordinator j in Zone x during Trading Interval t is calculated as follows:

$$LoadDev_i = L_s - [(L_a - L_{adj}) + L_{a/s}]$$

The deviation between forward scheduled and Real Time adjustments to Energy imports[1], adjusted for losses, for Scheduling Point q represented by Scheduling

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[1]   Note that this deviation is a difference between a forward Market value and a Real Time value. It is not inadvertent energy.

[2]   Note that this deviation is a difference between a forward Market value and a Real Time value. It is not inadvertent energy.

Coordinator j into zone x during ~~*Trading Interval t*~~ *Settlement Period t* is calculated as follows:

$$ImpDev_q = I_s * GMM_{fq} - [(I_a - I_{adj}) * GMM_{ahq}] + I_{a/s}$$

The deviation between forward scheduled and Real Time adjustments to Energy exports[2] for Scheduling Point q represented by Scheduling Coordinator j from Zone x during ~~*Trading Interval t*~~ *Settlement Period t* is calculated as follows:

$$ExpDev_q = E_s - Ea - E_{adj}$$

The Hourly Ex Post Price applicable to uninstructed deviations in Settlement Period t in each zone will equal the Energy weighted average of the BEEP Interval charges in each zone, calculated as follows:

$$P_{xt} = \frac{\sum_{ji} \left| IIEC_{jix} \right|}{\sum_{ji} \left| IMWH_{jix} \right|}$$

Where:

P_{xt} = the Hourly Ex Post Price in Zone x

$IIEC_{jix}$ = the Instructed Imbalance Energy Charges for Scheduling Coordinator j for BEEP Interval i in Zone x

$IMWH_{jix}$ = the Instructed Imbalance Energy for Scheduling Coordinator j for the BEEP Interval i in Zone x

D 2.1.2 Instructed Imbalance Energy Charges on Scheduling Coordinators

The Instructed Imbalance Energy charge for Settlement Period t for Scheduling Coordinator j for Zone x is calculated using the following formula:

$IIEC_j = IGDC_j + ILDC_j + IIDC_j$

The instructed Generation deviation payment/charge is calculated as follows:

$$IGDCj = \sum_{gi} \frac{G_{gi}*P_i}{HBI}$$

The instructed Load deviation payment/charge is calculated as follows:

$$ILDCj = \sum_{Li} \frac{L_{Li}*P_i}{HBI}$$

The instructed import deviation payment/charge is calculated as follows:

$$IIDCj = \sum_{Ii} \frac{I_{Ii}*P_i}{HBI}$$

D2.3   Replacement Reserve Capacity Dispatch Charge

The Replacement Reserve Capacity Dispatch Charge (RRDC) for Scheduling Coordinator j in Trading Interval t is calculated using the following formula:

$$RRDC_j = \left[\frac{Max\left(0, \left\{ \sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk} \right\}\right)}{\sum_j Max\left(0, \left\{ \sum_j GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk} \right\}\right)} \right] * RRC$$

$$RRDC_j = \left[\frac{Max\left(0, \left\{ \sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk} \right\}\right) * ReplObligRatio_{jxt}}{\sum \left(Max\left(0, \left\{ \sum_i GenDev_i - \sum_i LoadDev_i + \sum_q ImpDev_q + \sum_q ExpDev_q + E_{UFE\_jk} \right\}\right) * ReplObligRatio_{jxt} \right)} \right] * RRC$$

If there is Congestion in the ~~Day~~ Day-Ahead Market the ISO will allocate the Replacement Reserve Capacity Dispatch Charges on a Zonal basis. If there is no Congestion in the ~~Day~~ Day-Ahead Market the ISO will allocate the Replacement Reserve Capacity Dispatch Charges on a ISO Control Area-wide basis (irrespective of whether there is Congestion in the ~~Hour~~ Hour-Ahead Markets or not).

D 3.38 $IGDC_j$ - $

The total of instructed Generation deviation payments/charges for Scheduling Coordinator j in Settlement Period t.

D 3.39 $ILDC_j$ - $

The total of instructed Load deviation payments/charges for Scheduling Coordinator j in Settlement Period t.

D 3.40 $IIDC_j$ - $

The total of instructed import deviation payments/charges for Scheduling Coordinator j in Settlement Period t.

D 3.41 G_{gi} - MW

Instructed Energy for Generating Unit g during BEEP Interval i.

D 3.42 L_{Li} - MW

Instructed Energy for Load L during BEEP Interval i.

D 3.43 I_i – MW

Instructed Energy for import I during BEEP Interval i

D 3.44 P_i -- $/MWh

The BEEP Incremental Ex Post Price for BEEP Interval i if the net instructed Energy for resources is positive, or the BEEP decremental EX Post Price for BEEP Interval i if the net instructed Energy for resources is negative.

D 3.45 HBI – Number

The number (2-12) of BEEP Intervals in Settlement Period t.

D 3.46 $ReplObligRatio_{jxt}$ – fraction

$$ReplObligRatio_{jxt} = \frac{ReplOblig_{jxt}}{\sum_j ReplOblig_{jxt}}$$

where:

$ReplOblig_{jxt}$ is the replacement reserve capacity obligation as defined in Appendix C section C3.67.

24.   TEMPORARY CHANGES RESPECTING PHYSICAL CONSTRAINTS ON SCHEDULES

24.1   Application and Termination

The temporary change, respecting physical constraints on Schedules, set out in Section 24.2 shall

continue in effect until such time as the Chief Executive Officer of the ISO issues a Notice of Full-

Scale Operations, posted on the ISO Internet "Home Page", at http://www.caiso.com, or such

other Internet address as the ISO may publish from time to time, specifying the date on which this

Section 24 shall cease to apply, which date shall be not less than seven (7) days after the Notice of

Full-Scale Operations is issued.

24.2   Amendment to Schedules and Bids Protocol

> ***SBP 2.3 The Generation section of a Balanced Schedule, and any associated Adjustment Bids, must accurately reflect the physical capability of each Generating Unit identified in the Schedule (including each Generating Unit's ability to ramp from one hour to the next). For example, a 500 MW Generating Unit specified with a ramp rate of 2 MW/min and an operating point of 100 MWh for the current operating hour is not physically capable of generating 300 MWh in the next operating hour. Likewise, Adjustment bids submitted for a Generating Unit, applicable to a particular operating hour, should be physically achievable within the applicable operating hour.***

25. [NOT USED]

26. TEMPORARY CHANGES TO ANCILLARY SERVICES PENALTIES

26.1   Application and Termination

The temporary change, respecting Ancillary Services penalties, set out in Section 26.2 shall

continue in effect until such time as the Chief Executive Officer of the ISO issues a Notice of Full-

Scale Operations, posted on the ISO Internet "Home Page", at http://www.caiso.com, or such

other Internet address as the ISO may publish from time to time, specifying the date on which this

Section 26 shall cease to apply, which date shall be not less than seven (7) days after the Notice of

Full-Scale Operations is issued.

26.2   For so long as this Section 26.2 remains in effect, Scheduling Coordinators shall not be

liable for the penalties specified in Section 2.5.26 of the ISO Tariff.

27.   TEMPORARY RULE LIMITING ADJUSTMENT BIDS APPLICABLE TO DISPATCHABLE LOADS AND EXPORTS

27.1   Application and Termination

The temporary change limiting Adjustment Bids for Dispatchable Loads and exports set out in

Section 27.2 shall continue in effect until such time as the Chief Executive Officer of the ISO

posts a notice ("Notice of Full-Scale Operations"), on the ISO Home Page specifying the date on

which this Section 27 shall cease to apply, which date shall not be less than seven (7) days after

the Notice of Full-Scale Operations is posted.

27.2   For so long as this Section 27.2 remains in effect, Scheduling Coordinators shall

continue to be allowed to specify Adjustment Bids for Dispatchable Loads and exports,

conditioned on the rule that the last segment of the Adjustment Bid (i.e., the maximum MW

value) must equal the preferred MW operating point specified for the Dispatchable Load or

export.

28. TEMPORARY RULE DISQUALIFYING CERTAIN ENERGY BIDS

28.1   Application and Termination

The temporary change disqualifying certain Energy bids set out in Section 28.2 shall continue in

effect until such time as the Chief Executive Officer of the ISO posts a notice ("Notice of Full-

Scale Operations"), on the ISO Home Page specifying the date on which this Section 28 shall

cease to apply, which date shall be not less than seven (7) days after the Notice of Full-Scale

Operations is posted.

28.2   Amendment to Section 2.5.22.6

Section 2.5.22.6 shall be amended by the addition of a new paragraph (c) as follows:

> (c) the ISO may at any time between the issue of the Final Day-Ahead Schedule
> for a Trading Day and the issue of the Final Hour-Ahead Schedule for the first
> Settlement Period in that Trading Day, publish, either through WEnet or on the
> ISO Home Page, a price level above which Energy bids in respect of any
> Settlement Period during the Trading Day will be rejected. If the ISO does not
> publish a price level for a Trading Day, the price level applicable on the
> previous Trading Day shall apply.