BIP$_{ix}$ = BEEP Interval Ex Post Price

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

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 ***charges or*** 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 ***the sum of*** :

(a) The quantity of undelivered Instructed Imbalance Energy, multiplied by the Effective Price, and

(b) The quantity of deviation from the final Hour-Ahead Schedule multiplied by the Hourly Ex Post Price.

Imbalance Energy charge will be calculated as follows:

IECharge = DevC + ASSEDevC

where:

$$DevC = \sum_i GenDevC_i + \sum_i LoadDevC_i + \sum_q ImpDevC_q + \sum_q ExpDevC_q + UFEC$$

$$ASSEDevC = \sum_{i} ASSEGenDevC_i + \sum_{i} ASSELoadDevC_i + \sum_{q} ASSEImpDevC_q$$

and

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

$$GenDev_i = G_s * GMM_f - \left[\left(G_a - G_{adj}\right) * GMM_{ah} - G_{a/s} - G_{s/e}\right] - UnavailAncServMW_{ixt}$$

UnavialAncServMW$_{ixt}$ =Max[-(G$_{i,\ oblig}$-G$_{a/s}$), Min(0,Pmax- Ga-(G$_{i,\ oblig}$-G$_{a/s}$))]

GenDevC$_i$= GenDev$_i$ * P in case of (b) above, and

If G$_{a/s}$ + G$_{s/e}$ > 0 and P < P$_{eff}$ then:

ASSEGenDevC$_i$=Max[0,[G$_{a/s}$ -Max[0,(G$_a$ -G$_{adj}$-G$_s$)]]]* (P$_{eff\text{-}I}$ -P) in case of (a) above, or

If G$_{a/s}$ + G$_{s/e}$ < 0 and P > P$_{eff}$ then:

ASSEGenDevC$_i$=Min[0,[G$_{a/s}$ -Min[0,(G$_a$ -G$_{adj}$-G$_s$)]]]* (P$_{eff\text{-}I}$ -P) in case of (a) above

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

$$LoadDev_i = L_s - \left[\left(L_a - L_{adj}\right) + L_{a/s} + L_{s/e}\right] - UnavailDispLoadMW_{ixt}$$

Where:

UnavailDispLoadMW$_{ixt}$= Max[0, (L$_{i,\ oblig}$-L$_{a/s}$)-L$_a$

LoadDevC$_i$=LoadDev$_i$ * P in case of (b) above, and

If L$_{a/s}$ + L$_{s/e}$ > 0 and P < P$_{eff}$ then:

ASSELoadDevC$_i$=Max[0,[L$_{a/s}$ -Max[0,(L$_a$ -L$_{adj}$-L$_s$)]]]* (P$_{eff\text{-}I}$ -P) in case of (a) above, or

If L$_{a/s}$ + L$_{s/e}$ < 0 and P > P$_{eff}$ then:

ASSELoadDevC$_i$=Min[0,[L$_{a/s}$ -Min[0,(L$_a$ -L$_{adj}$-L$_s$)]]]* (P$_{eff\text{-}I}$ -P) in case of (a) above

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:

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

ImpDevC$_i$= ImpDev$_i$ * P in case of (b) above, and

If $I_{a/s}$ > 0 and P < P_{eff} then

$ASSEImpDevC_i$=Max[0,[$L_{a/s}$ -Max[0,(L_a -L_{adj}-L_s)]]]* (P_{eff-q} -P) in case of (a) above, or

If $I_{a/s}$ < 0 and P > P_{eff} then:

$ASSEImpDevC_i$=Min[0,[$L_{a/s}$ -Min[0,(L_a -L_{adj}-L_s)]]]* (P_{eff-q} -P) in case of (a) above

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:

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

$ExpDevC_q$= $ExpDev_q$ * P

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

$G_{s/e}$ = Energy generated from 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

$L_{s/e}$ = Demand reduction from Supplemental Energy 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)

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

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

I_{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 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***

P_{eff} = Effective Price for Instructed Imbalance Energy for the relevant Settlement Period

$G_{i, oblig}$ = the amount of Spinning Reserve, the amount of Non-Spinning Reserve, and the amount of Replacement Reserve that Generating Unit or System

Resource i has been selected to supply to the ISO, as reflected in final Ancillary Services schedules.

$PMax_j$ = the maximum capability (in MW) at which Energy and Ancillary Services may be scheduled from the Generating Unit or System Resource i.

$L_{i, oblig}$ = the amount of Non-Spinning Reserve and Replacement Reserve that dispatchable Load i has been selected to supply to the ISO, as reflected in final Ancillary Services schedules for Settlement Period t.

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:

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 Energy 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