Real-Time Market Neutrality Settlement

Issue Paper/Straw Proposal

Updated April 25, 2019

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1. Purpose

The purpose of this initiative is to review proposed changes to the settlement of real-time market neutrality. Currently, real-time market neutrality is calculated as the sum of instructed imbalance energy, uninstructed imbalance energy, unaccounted for energy, and greenhouse gas (GHG) awards for both generation and load. To allocate the real-time market neutrality, an offset is calculated for components of the locational marginal price. There are currently three offsets: (1) real-time marginal loss offset, (2) real-time congestion offset, and (3) real-time imbalance energy offset. These offsets ensure that the market operator, who is settling the market, is revenue neutral.

This paper has been updated from the original April 24posting. The CAISO has determined that no change is needed to the accounting of GHG payments in neutrality accounts. This is because the financial value of EIM transfers includes the price difference when there is an EIM transfer into a California balancing authority area. This offsets the payment to EIM participating resources that receive a GHG payment.

2. Background & Issue

Idaho Power and PacifiCorp provided comments in the mid-year update to the market initiatives catalog requesting the ISO review the real-time imbalance energy offset. In response to these comments, the CAISO commenced an internal review of the issue identified in their comments. The CAISO believes the issues point to changes needed to address real-time market neutrality, not specifically the real-time imbalance energy offset.

When the original EIM design was developed, the stakeholder process sought to address neutrality and uplift costs in a manner similar to the existing CAISO real-time market. These settlement accounts included the real-time congestion offset, the real-time marginal loss offset, real-time imbalance energy offset and the bid cost recovery allocation.

In order to incentivize base schedules to not have unresolved congestion, it was decided to calculate the real-time congestion offset by balancing authority area and allocate all charges/payments to that balancing authority area. Since the modeled losses vary based upon the transmission system of the balancing authority area, it was also decided to calculate the real-time marginal loss offset by balancing authority area and allocate all charges/payments to that balancing authority area.

During the original EIM stakeholder process, it was determined that the real-time imbalance energy offset and the bid cost recovery cost allocation should have an additional step that moves a portion of these charges/revenues between balancing authority areas because these revenues/charges are the result of serving demand. Demand was defined as metered load within the balancing authority area, exports from the balancing authority area and EIM transfers out of the balancing authority area. For the bid cost recovery allocation, cost causation due to EIM transfers was considered to be more direct than the real-time imbalance energy offset. If in order to support an EIM transfer out of the balancing authority area it was economic to incur commitment costs then to the extent the resource committed

does not fully recover its costs, those EIM transfers out should be allocated a portion of the bid cost recovery payment to the resource. The cost causation is direct because this is an uplift cost, which is directly attributable to producing energy that happens to not be recovered through the locational marginal price.

On the other hand, neutrality amounts are different than an uplift as they do not simply represent costs not recovered through the locational marginal price. Neutrality amounts occur when payments and charges to scheduling coordinators do not net to zero in a settlement interval for various reasons that are described below. The real-time imbalance energy offset is one such neutrality charge. It results from the imbalance energy settlement of the system marginal energy cost. Therefore, the cost causation for allocating the real-time imbalance energy offset to demand is indirect.

Real-time market neutrality occurs when there are deviations between the market results and actual metered energy. It has numerous causes that are based predominantly on decisions and practices of the individual balancing authority area. For example:

1. Differences between the OATT loss rate and market loss rate results in unaccounted for energy,
2. Precision by which deviations from dispatch are balanced by resources on automatic generation control,
3. Metering granularity for load.

These causes of real-time market neutrality are not caused by EIM transfers[1] between balancing authority areas in the EIM. Therefore, any neutrality offset (charge or credit) caused by the balancing authority should remain in that balancing authority area. This is currently the case for the real-time marginal loss offset and the real-time congestion offset. This is not the case for the real-time imbalance energy offset.

Since EIM transfers are not explicitly settled as an import and export between balancing authority areas in EIM, the financial value is calculated and included in the initial calculation of the real-time imbalance energy offset calculation. The financial value of the EIM transfer is calculated by multiplying the system marginal energy cost by the MW quantity of the EIM transfers in and out. The sum of the financial value across the EIM footprint is zero because all EIM transfers out have a corresponding EIM transfer in. The financial value replicates the effect if the EIM transfers were settled in order to have imbalance supply and demand equal for each balancing authority area.

The current settlement design is that after the real-time energy imbalance offset is initially calculated, a share of the offset is transferred between balancing authority areas in the EIM based upon the EIM transfer out as a proportion of the sum of the EIM transfer out, uninstructed imbalance energy, and unaccounted for energy of the source balancing authority area. This procedure results in the real-time market neutrality being inappropriately moved to another balancing authority area. The financial value

[1] EIM transfers are the energy flows between balancing authority areas in the EIM that result from the market dispatch. The tagged energy does not deviate from the market dispatch and therefore no real-time market neutrality is created.

of the EIM transfers has already accounted for the imbalance settlement from transfers between balancing authority areas, thus the second movement of offset charges is duplicative.

Based on the CAISO's review of the settlement of real-time market neutrality it proposes the following changes:

1. No longer transfer a portion of the real-time imbalance energy offset between balancing authority areas in the EIM
2. Change in the business process for submitting EIM transfers system resource (ETSR) E-tags with the CAISO. The EIM entity will submit the E-tag with 5-minute energy values for ETSRs with the CAISO. Currently, the CAISO uses the integrated hourly value for the dynamic schedules. This business process change will improve the accuracy of the CAISO EIM transfer financial value.

3. Proposal

The following section walks through the proposed changes. The tables use actual data from a 5-minute real-time dispatch interval to illustrate the proposed changes. The data shown is in dollars. Negative values are a payment and positive values are a charge to the balancing authority area.

3.1 Current Real-Time Market Neutrality Allocation[2]

Table 1 - Current Real-Time Market Neutrality Allocation

Row Labels	IMBALANCE_ENERGY_SETTLEMENT	GHG_PAYMENT	FINANCIAL_VALUE	RTCO	RTMLO	TRANSFER_ADJ	RTIEO
AZPS	$ (193.43)	$ -	$ (56.40)	$ (1.58)	$ 13.86	$ 20.33	$ 217.21
BCHA	$ 1,371.33	$ -	$ (143.51)	$ 41.10	$ 31.73	$ 33.65	$(1,334.30)
CISO	$ 1,953.77		$ (2,473.45)	$ 93.14	$ 3.92	$ 525.03	$ (102.39)
IPCO	$ 340.07	$ (119.99)	$ 149.72	$ 0.19	$ 21.92	$ (109.42)	$ (282.49)
NEVP	$ 103.29	$ -	$ 770.24	$ (1.28)	$ (1.48)	$ (328.60)	$ (542.17)
PACE	$ (781.49)	$ (155.40)	$ 833.70	$ (0.96)	$ (113.12)	$ 108.22	$ 109.04
PACW	$ (220.19)	$ (12.78)	$ 514.28	$ (11.81)	$ (54.01)	$ (100.79)	$ (114.71)
PGE	$ 128.64	$ (69.29)	$ 153.77	$ 0.50	$ (0.22)	$ (72.16)	$ (141.25)
PSEI	$ 73.08	$ (14.22)	$ 251.64	$ 3.63	$ 0.56	$ (76.26)	$ (238.42)
Grand Total	**$ 2,775.07**	**$ (371.68)**	**$ (0.01)**	**$ 122.93**	**$ (96.84)**	**$ (0.00)**	**$(2,429.48)**

Real-time market neutrality is the sum of the imbalance energy settlement and the GHG payment.

The imbalance energy settlement is the sum of instructed imbalance energy, uninstructed imbalance energy, and unaccounted for energy. Each imbalance energy type is a settlement charge code.

The GHG payment is the compensation provided to EIM participating resources if they receive a GHG award because the resource has been attributed to support the EIM transfer into the combined CAISO and BANC/SMUD balancing authority areas. This is a settlement charge code.

[2] Detailed information on the currently calculation of the real-time imbalance energy offset is available in the following settlement configuration guides: BPM - CG CC 6477 Real Time Imbalance Energy Offset v 5.9
BPM - CG CC 64770 Real Time Imbalance Offset EIM 5.1a

The ETSR financial value is the sum of EIM transfers for each balancing authority area in the EIM. This is needed to account for the EIM transfers which leads to supply and demand balance for instructed imbalance energy in each balancing authority area. Since any EIM transfer in for one area has a corresponding EIM transfer out for another area, the sum of the ETSR financial value of the EIM footprint is zero. This is not a settlement charge code.

The real-time marginal loss offset (RTMLO) is a settlement charge code and is calculated as follows:

1. Sum the marginal loss component of the LMP multiplied by metered energy for each balancing authority area
2. Multiply by -1
3. For the CAISO RTMLO, the CAISO allocates to measured demand (metered load + exports[3]). EIM Entity allocates according to its OATT.

The real-time congestion offset is a settlement charge code and is calculated as follows:

1. Marginal cost of congestion for each node is decomposed into marginal congestion cost for each balancing authority area in the EIM
2. Sum the BAA marginal cost of congestion multiplied by metered energy
3. Multiply by -1
4. For the CAISO RTCO, the CAISO allocates to measured demand. EIM entity allocates according to its OATT.

The initial real-time imbalance energy offset is not a settlement charge code and is calculated as follows:

1. Real-time market neutrality
2. Adjust for the ETSR financial value
3. Plus the real-time marginal loss offset
4. Plus the real-time congestion offset
5. Multiply by -1

The transfer adjustment is the portion of the initial real-time imbalance energy offset the moves from the exporting balancing authority area to the importing balancing authority area. The transfer adjustment is not a settlement charge code.

The final real-time imbalance energy offset is a settlement charge code and is calculated as follows

1. Initial real-time imbalance energy offset
2. Plus the transfer adjustment
3. CAISO allocates to measured demand. EIM entity allocates according to its OATT.

3.2 Real-Time Market Neutrality Allocation without EIM Transfer Adjustment

The following table eliminates the initial real-time imbalance energy offset calculation and the transfer adjustment. This is the first proposed change to the settlement of real-time neutrality.

[3] EIM transfers out of a balancing authority area are not consider exports for cost allocation purposes.

Table 2- Real-Time Market Neutrality with EIM Transfer Adjustment

Row Labels	IMBALANCE_ENERGY_SETTLEMENT	GHG_PAYMENT	FINANCIAL_VALUE	RTCO	RTMLO	RTIEO
AZPS	$ (193.43)	$ -	$ (56.40)	$ (1.58)	$ 13.86	$ 237.55
BCHA	$ 1,371.33	$ -	$ (143.51)	$ 41.10	$ 31.73	$ (1,300.65)
CISO	$ 1,953.77		$ (2,473.45)	$ 93.14	$ 3.92	$ 422.62
IPCO	$ 340.07	$ (119.99)	$ 149.72	$ 0.19	$ 21.92	$ (391.91)
NEVP	$ 103.29	$ -	$ 770.24	$ (1.28)	$ (1.48)	$ (870.77)
PACE	$ (781.49)	$ (155.40)	$ 833.70	$ (0.96)	$ (113.12)	$ 217.27
PACW	$ (220.19)	$ (12.78)	$ 514.28	$ (11.81)	$ (54.01)	$ (215.49)
PGE	$ 128.64	$ (69.29)	$ 153.77	$ 0.50	$ (0.22)	$ (213.40)
PSEI	$ 73.08	$ (14.22)	$ 251.64	$ 3.63	$ 0.56	$ (314.69)
Grand Total	**$ 2,775.07**	**$ (371.68)**	**$ (0.01)**	**$ 122.93**	**$ (96.84)**	**$ (2,429.47)**

4. Stakeholder Engagement and Next Steps

Stakeholder input is critical for developing market design policy. The schedule proposed below allows several opportunities for stakeholder's involvement and feedback.

4.1 Schedule

Table 5 lists the planned schedule for the *Real-Time Market Neutrality Settlement* stakeholder process. The ISO proposes to present its proposal to EIM Governing Body at the June meeting and the ISO Board of Governors at the July meeting.

Table 3- Proposed schedule for the Real-Time Market Neutrality Settlement stakeholder process

Milestone	Date
Post Issue Paper/Straw Proposal	April 24, 2019
Stakeholder Conference Call	May 1, 2019
Stakeholder Comments Due	May 13, 2019
Post Draft Final Proposal and Tariff Language	May 21, 2019
Stakeholder Conference Call	May 28, 2019
Stakeholder Comments Due	June 6, 2019
EIM Governing Body Meeting	June 28, 2019
Board of Governors Meeting	July 24-25, 2019

The ISO will discuss this paper during a stakeholder conference call on May 1. The ISO requests that stakeholders submit written comments by May 13, 2019 to InitiativeComments@caiso.com.

4.2 EIM Governing Body Role

At a high level, this initiative proposes to change a rule concerning the allocation of neutrality charges for the real-time market. It would change the rule about allocation of the offset for real-time imbalance energy so that this offset is not shifted between EIM transfer in and EIM transfer out balancing authority areas. Staff proposes that the EIM Governing Body would have primary authority over both of these proposed changes.

Following revisions to the Charter for EIM Governance and the Guidance Document that were adopted in March 2019, a proposed change to the rules of the real-time market will fall within the primary authority of the EIM Governing Body if either of two criteria is satisfied.

The first test if whether the proposed rule is EIM-specific in the sense that it applies uniquely or differently in the balancing authority areas of EIM Entities, as opposed to a generally applicable rule. The proposed changes do not satisfy this test. The proposed rule about allocation of the real-time energy imbalance offset would apply uniformly throughout the real-time market, in the same way to all balancing authority areas. Accordingly, the proposed change does not pass the first test.

If the first test is not satisfied because the proposed market rule is generally applicable, a second, alternative test applies. It gives the EIM Governing Body primary authority "if an issue that is specific to the EIM balancing authority areas is the primary driver for the proposed change." This test is satisfied here because the primary driver for the change is an issue specific to the EIM balancing authority areas, in particular a concern of EIM Entities that they are receiving an inaccurate offset. Accordingly, the EIM Governing Body should have primary authority over the proposed changes to the allocation of the offset for real-time imbalance.

This EIM classification is temporary and may change at any time during the stakeholder process. If any stakeholder disagrees with the ISO's initial classification, please include in your written comments a justification of which classification is more appropriate.