



California ISO

Real-Time Market Neutrality: Issue Paper and Straw Proposal

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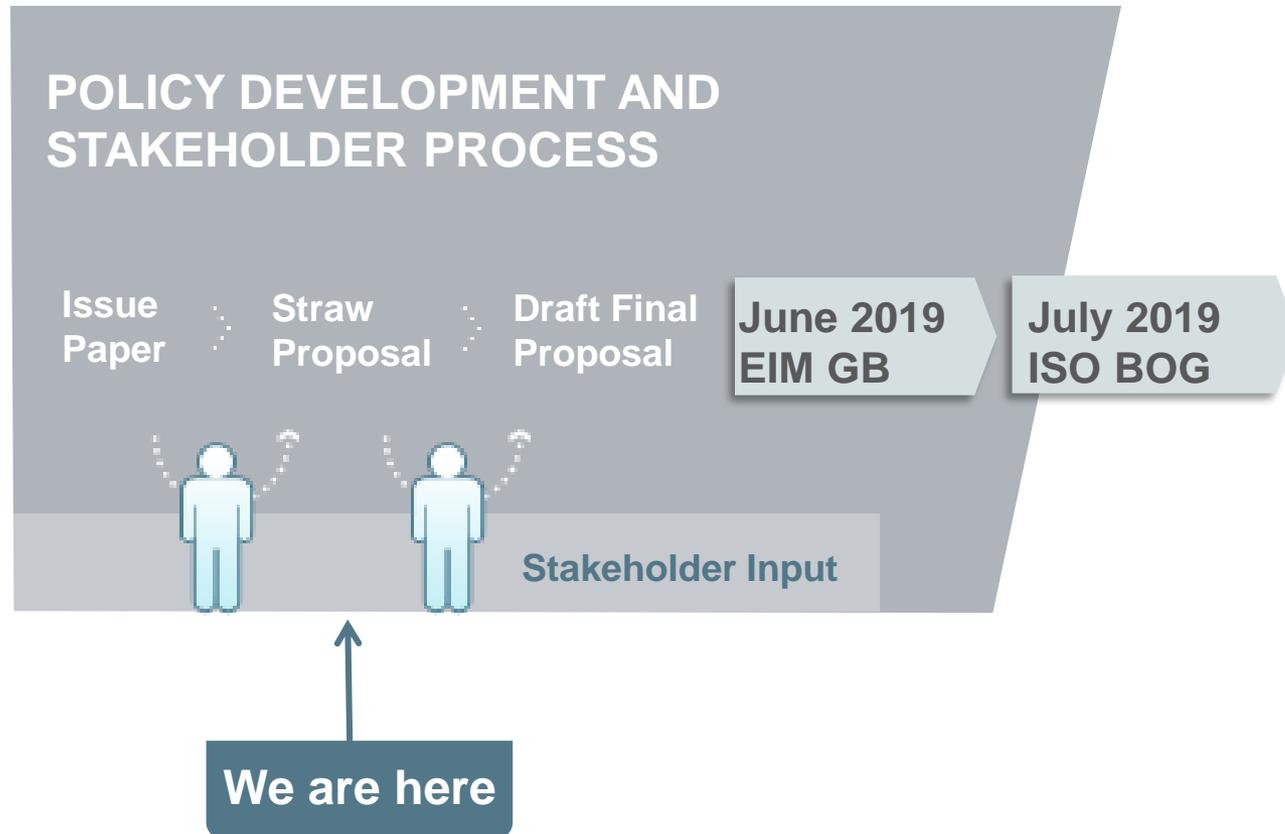
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ISO PUBLIC

Agenda

Time	Topic	Presenter
1:00 – 1:10	Welcome/Agenda	Jimmy Bishara
1:10 – 2:50	Issue and Proposal	Don Tretheway
2:50 – 3:00	Next Steps	Jimmy Bishara

ISO Policy Initiative Stakeholder Process



Summary of proposed policy changes

- No longer perform real-time imbalance energy offset (RTIEO) adjustment
- EIM transfer financial value uses...
 - System marginal energy cost (SMEC) with California BAAs
 - SMEC – GHG with non-California EIM BAAs
- EIM entity updates EIM transfer system resource (ETSR) with 5 minute transfer value with CAISO

Real-time market neutrality occurs because energy settlement does not net to zero for ...

- Instructed imbalance energy
- Uninstructed imbalance energy
- Unaccounted for energy
- GHG awards

In order for market operator to be revenue neutral, offsets are calculated for components of the LMP

- Real-time marginal loss offset
 - Currently calculated for each BAA
- Real-time market congestion offset
 - Currently calculated for each BAA
- Real-time imbalance energy offset
 - Adjusted for EIM transfers out

If meters equaled the actual market dispatch there would be no neutrality

Table 1

	BAA1	BAA2	Total
Load	\$ 300.00	\$ 200.00	\$ 500.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
			\$ -
Neutrality			\$ -

Assume no losses, congestion or GHG tracking

LMP = \$10, so BAA1 load settlement is $\$10 * 30 \text{ MWh}$

Assume that load meters are not equal to forecast used to clear market and all generation follows dispatch

Table 2

	BAA1	BAA2	Total
Load	\$ 305.00	\$ 190.00	\$ 495.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
			\$ -
Neutrality			\$ (5.00)

Over combined footprint, market operator paid generation \$5 more than load charged

What is the neutrality of each BAA only considering load and generation within that BAA?

Table 3

	BAA1	BAA2	Total
Load	\$ 305.00	\$ 190.00	\$ 495.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
			\$ -
Neutrality	\$ (95.00)	\$ 90.00	\$ (5.00)

But, BAA1 load was only \$5.00 higher than market forecast and BAA2 was only \$10 lower

By accounting for the financial value of the EIM transfers, the BAA neutrality is equal to the load difference from market forecast

Table 4

	BAA1	BAA2	Total
Load	\$ 305.00	\$ 190.00	\$ 495.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
Transfer	\$ 100.00	\$(100.00)	\$ -
Neutrality	\$ 5.00	\$ (10.00)	\$ (5.00)

Real-time offset is used to ensure market operator (MO) is revenue neutral

Table 5

	BAA1	BAA2	Total
Load	\$ 305.00	\$ 190.00	\$ 495.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
Transfer	\$ 100.00	\$(100.00)	\$ -
Neutrality	\$ 5.00	\$ (10.00)	\$ (5.00)
Offset	\$ (5.00)	\$ 10.00	\$ 5.00
MO	\$ -	\$ -	\$ -

Assumed that allocation of real-time imbalance energy offset should mirror existing CAISO allocation

- CAISO allocates RTIEO to measured demand (metered load + exports)
- If generation dispatched in one BAA to serve load in another BAA and deviated for dispatch, then wanted to shift offset to receiving BAA
- But, a large contributor is load whose actual meter does not equal market forecast
- And, the EIM transfer isn't a contributor because it is deemed delivered at the market clearing transfer amount

Issue – Adjustment to real-time imbalance energy offset based on EIM transfer out

Table 6

	BAA1	BAA2	Total
Load	\$ 305.00	\$ 190.00	\$ 495.00
Gen	\$(400.00)	\$(100.00)	\$(500.00)
Transfer	\$ 100.00	\$(100.00)	\$ -
Adjust	\$ (4.76)	\$ 4.76	\$ -
Neutrality	\$ 0.24	\$ (5.24)	\$ (5.00)

BAA1 has an EIM transfer out to BAA2
Current rule allocated neutrality to EIM transfer out

Proposal: Eliminate this step. Financial value of transfer alone provides correct BAA neutrality.

Example showing how GHG awards attributed to EIM transfers does not cause neutrality (1 of 2)

Table 7

	BAA1	BAA2	Total
Load	\$ 180.00	\$ 200.00	\$ 380.00
Gen	\$(240.00)	\$(100.00)	\$(340.00)
GHG	\$ (40.00)	\$ -	\$ (40.00)
Transfer	\$ 100.00	\$(100.00)	\$ -
Neutrality	\$ -	\$ -	\$ -

Assume BAA2 is California and the marginal GHG cost is \$4.00
Thus, BAA1 LMP = \$6.00 and BAA2 LMP = \$10.00

Example showing how GHG awards attributed to EIM transfers does not cause neutrality (2 of 2)

Table 8

	BAA1	BAA2	Total
Load	\$ 183.00	\$ 200.00	\$ 383.00
Gen	\$(240.00)	\$(100.00)	\$(340.00)
GHG	\$ (40.00)	\$ -	\$ (40.00)
Transfer	\$ 100.00	\$(100.00)	\$ -
Neutrality	\$ 3.00	\$ -	\$ 3.00
Offset	\$ (3.00)	\$ -	\$ (3.00)
MO	\$ -	\$ -	\$ -

Neutrality is caused when load or generation deviates from market.
This is why GHG awards are appropriate in the RTIEO

But, financial value of EIM transfers between non-California BAAs should not include GHG cost (1 of 2)

Table 9

	BAA1	BAA2	BAA3	Total
Load	\$ 180.00	\$ 200.00	\$ 100.00	\$ 480.00
Gen	\$(300.00)	\$(100.00)	\$ (40.00)	\$(440.00)
GHG	\$ (40.00)	\$ -	\$ -	\$ (40.00)
Transfer	\$ 200.00	\$(100.00)	\$(100.00)	\$ -
Neutrality	\$ 40.00	\$ -	\$ (40.00)	\$ -

Assume BAA2 is California and the marginal GHG cost is \$4.00

Thus, BAA1 LMP = \$6.00, BAA2 LMP = \$10.00 and BAA 3 LMP = \$6.00

Calculating the EIM transfer value at the SMEC causes neutrality

Financial value of EIM transfers between non-California BAAs should not include GHG cost (2 of 2)

Table 10

	BAA1	BAA2	BAA3	Total
Load	\$ 180.00	\$ 200.00	\$ 100.00	\$ 480.00
Gen	\$(300.00)	\$(100.00)	\$ (40.00)	\$(440.00)
GHG	\$ (40.00)	\$ -	\$ -	\$ (40.00)
Transfer	\$ 160.00	\$(100.00)	\$ (60.00)	\$ -
Neutrality	\$ -	\$ -	\$ -	\$ -

10 MW transfer between BAA1 and BAA2 (CA) is priced at \$10.00

10 MW transfer between BAA1 and BAA3 (Non-CA) is priced at \$6.00

No neutrality from market clearing

CAISO also proposes a change in the business process for submitting ETSR value for CAISO

- CAISO uses the hourly integrated value of dynamic schedule supporting transfer
 - Results in all 5 minute interval being equal
- Propose EIM entity to update tag and use actual 5-minute ETSR value
 - Same as is done between EIM Entities today
- This is a BPM change

Summary of proposed policy changes

- No longer perform RTIEO adjustment
- EIM transfer financial value uses...
 - SMEC with California BAAs
 - SMEC – GHG with non-California EIM BAAs
- EIM entity updates ETSR with 5 minute transfer value with CAISO

Proposed EIM Governing Body Classification

- The real-time imbalance energy offset impacts the real-time market
- 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.”
- The CAISO proposes the EIM Governing Body has a **primary** role for this initiative

Proposed Initiative Schedule

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 & Tariff	May 21, 2019
Stakeholder Conference Call	May 28, 2019
Stakeholder Comments Due	June 6, 2019
EIM Governing Body Decision	June 28, 2019
Board of Governors Consent Agenda	July 24-25, 2019

Submit comments to initiativecomments@caiso.com.