Real Time Market Neutrality Settlement

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Course Objectives

At the end of this course, participants will be able to identify

- Modifications of the Real-Time Market Neutrality Settlement formula found in charge codes:
  - CC6477 Real-Time Imbalance Energy Offset
  - CC64770 Real-Time Imbalance Energy Offset Energy Imbalance Market (EIM)

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Background

- Real-time market neutrality occurs when there are deviations between market results and actual metered energy

- Real-time imbalance energy offset results from the imbalance energy settlement of the system marginal energy cost and greenhouse gas marginal cost

The RTM Neutrality Settlement initiative modifies the calculation of the real-time imbalance energy offset to improve the accuracy of the offset by balancing authority area.

Scope of Change

Tariff Changes

- No longer perform real-time imbalance energy offset (RTIEO) transfer adjustment

- Change EIM transfer financial values calculation:
  - California BAAs: EIM transfer financial value to use System marginal energy cost (SMEC)
  - Non-California BAAs: SMEC + financial value credit for greenhouse gas (GHG)

Business Practice Manual Change

- Standardization of EIM entity updates to EIM transfer system resource (ETSR) with 5 minute transfer value

Proposed changes filed with FERC July 30, 2019

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Real-time Imbalance Energy Offset Transfer Adjustment

RTIEO

Each BAA will receive the following output data for FMM and RTD for Settlement Rules changes for RTIEO CC64770

- the EIM transfer GHG credit MWh
- the GHG financial value credit
- EIM transfer financial value at SMEC
- Total Financial value of EIM transfer as EIM transfer financial value at SMEC **plus** GHG financial value credit

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Current formula for determining real-time market neutrality

instructed imbalance energy (IIE)

uninstructed imbalance energy (UIE)

unaccounted for energy (UFE)

greenhouse gas (GHG) awards

Real-time market neutrality is currently calculated as the sum of instructed imbalance energy, uninstructed imbalance energy, unaccounted for energy, and greenhouse gas (GHG) awards. To allocate the real-time market neutrality, an offset is calculated for components of the locational marginal price.

Real-time market neutrality

To allocate the real-time market neutrality, an **offset** is calculated for components of the locational marginal price.
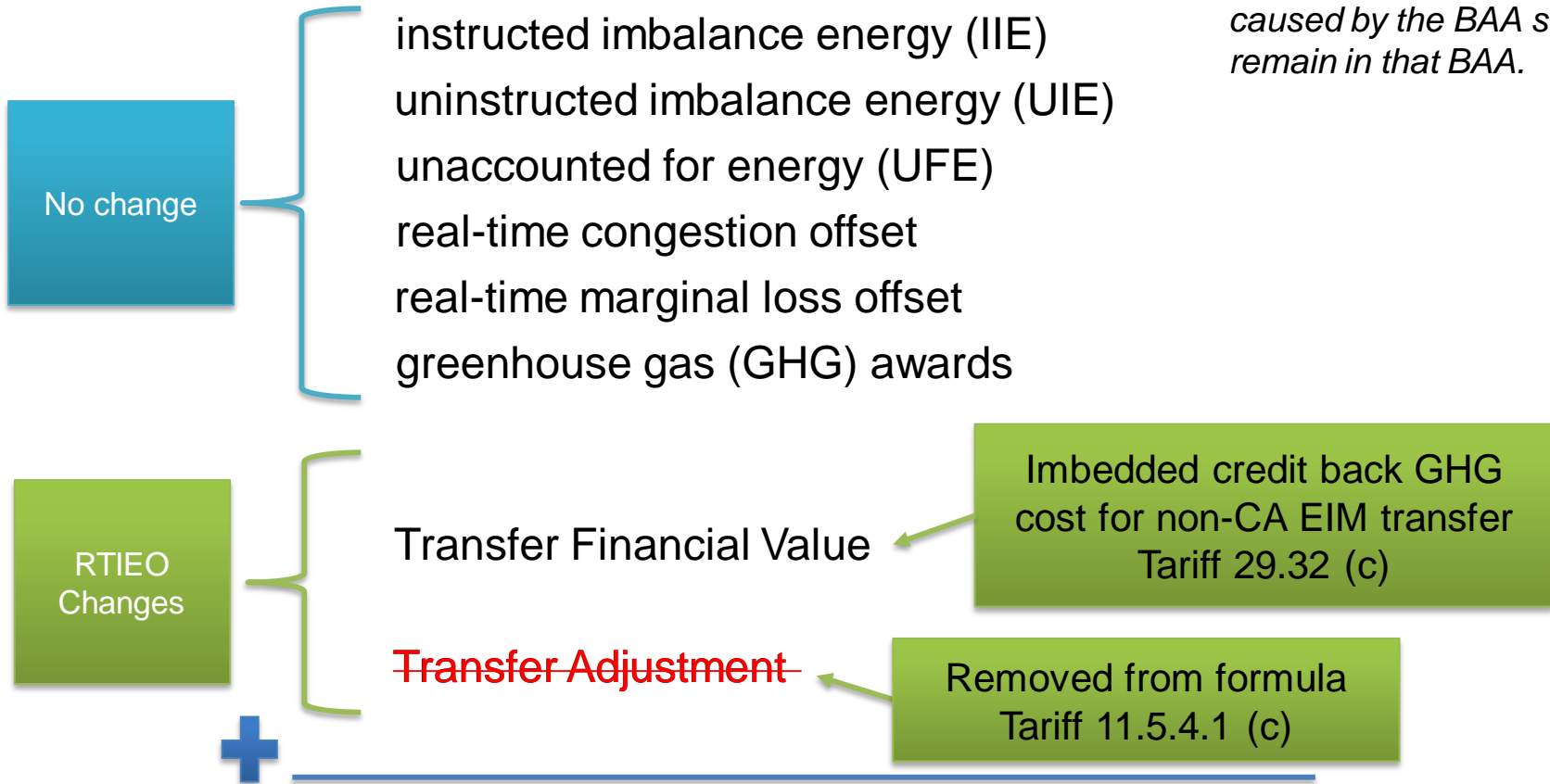
(1) real-time marginal loss offset

(2) real-time congestion offset

(3) real-time imbalance energy offset

3 Offsets

Modification to the Real Time Imbalance Energy Offset

Adjusting formula to provide that any neutrality offset caused by the BAA should remain in that BAA.

No change

- instructed imbalance energy (IIE)
- uninstructed imbalance energy (UIE)
- unaccounted for energy (UFE)
- real-time congestion offset
- real-time marginal loss offset
- greenhouse gas (GHG) awards

RTIEO Changes

Transfer Financial Value

Imbedded credit back GHG cost for non-CA EIM transfer Tariff 29.32 (c)

~~Transfer Adjustment~~

Removed from formula Tariff 11.5.4.1 (c)

+

Real-time imbalance energy offset (RTIEO)

Total Financial Value Transfer calculation in the RTIEO

The CAISO Total Financial Value Transfer is calculated as the product of:

EIM transfer quantity

X

System Marginal Energy Cost (SMEC) for FMM and RTD

CAISO EIM transfers have GHG compliance obligation therefore the GHG financial credit is zero.

Because CA only has SMEC, it carries the GHG for CA

To correctly account for the financial value of EIM transfers:

- Step 1: Financial value energy on EIM transfers at SMEC

- Step 2: Financial value credit for GHG on EIM transfers between non-California BAAs
  - No GHG cost credit for any California BAA
  - Non-California BAA GHG credit in the net EIM transfer minus GHG awards to resources in the BAA

RTIEO Calculation

- Transfer financial value – initial calculation of the financial value will be the same as we do today

- ETSRs not settled at the LMP – ISO will calculate initial financial value at the SMEC and also determine which of the ETSRs are flowing from EIM to EIM and calculate GHG credit. ISO will then add it to the financial value to get the true financial value of the ETSRs

RTIEO shall calculate the total EIM transfers GHG credit MWh for each EIM BAA for FMM and RTD

Calculation of EIM transfer GHG credit MWh quantity

Import (-) plus Export(+) less GHG obligation(+)

equivalent to

net EIM transfer less GHG obligation

EIM transfer GHG credit can be positive or negative
- FMM – ETSR Base Schedule
- RTD – ETSR FMM Schedules

EIM transfers GHG credit MWh: the portion of the EIM Transfers that do not correspond to a greenhouse gas compliance obligation under the regulations administered by the California Air Resources Board

# How will Operational Adjustments of an ETSR be handled?

Deviations will be calculated as the difference between the real-time schedule and the tag value which EIM entity has checked out.

Proposal:

GHG credit to be applied to EIM-to-EIM transfers from base FMM to RTD, but after RTD and OA we will *also* apply GHG credits to the entire EIM area because we believe the GHG obligation is no longer being applied at the point.
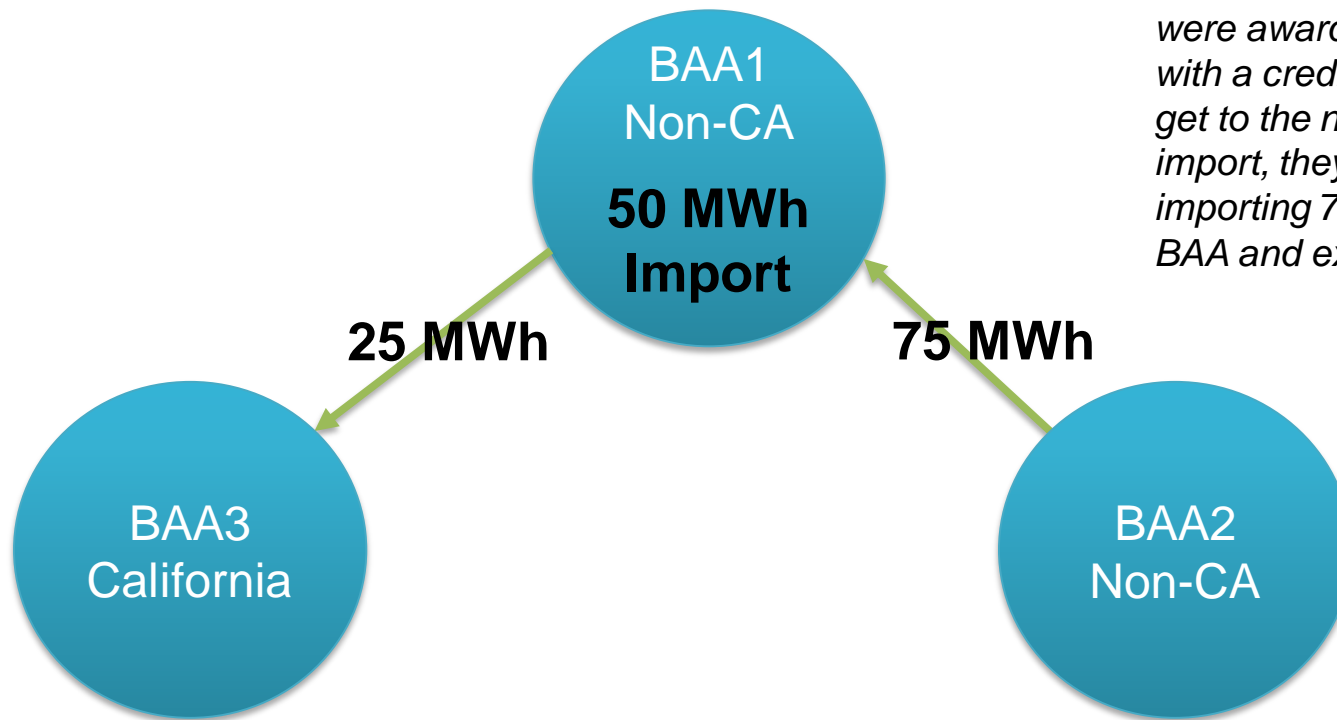
Please review this proposal in the BPM update process under PRR#1185 and provide comments

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Non-California BAA GHG Credit – Example 1
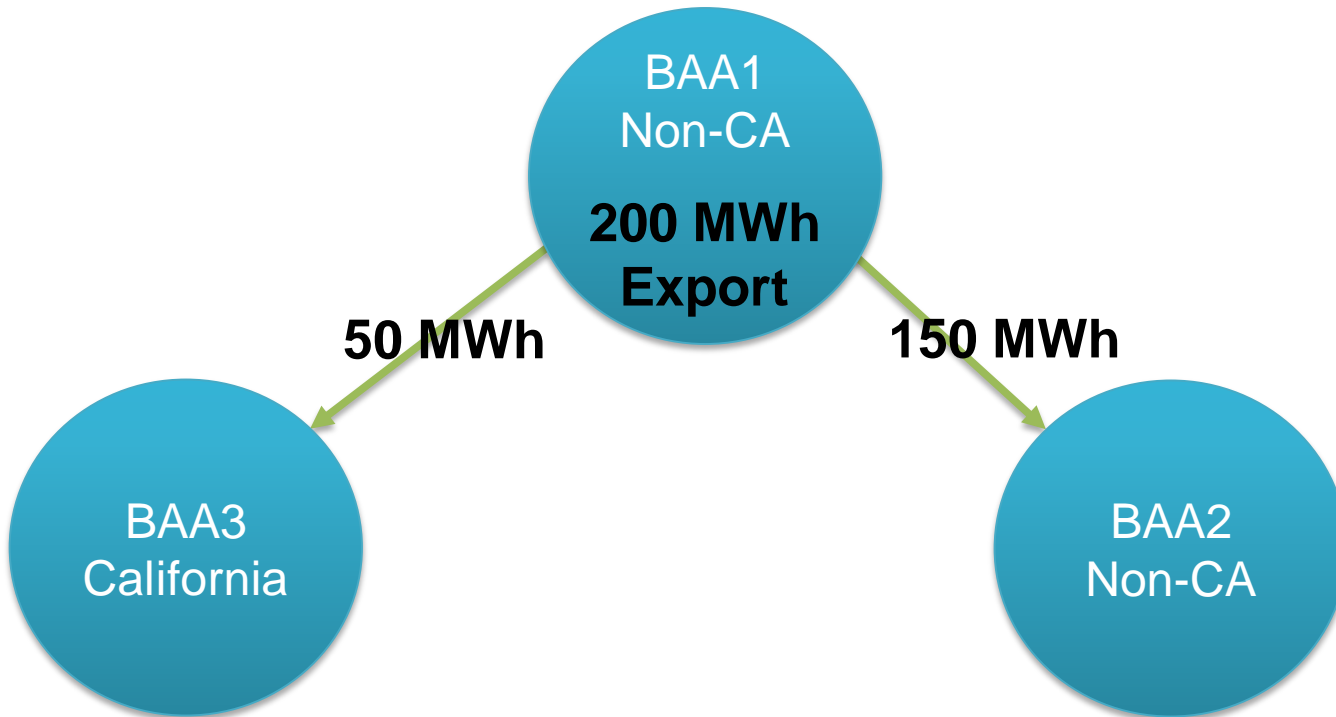
200MWh SMEC + (-50MWh GHG Award) = 150MWh charge

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Non-California BAA GHG Credit – Example 2
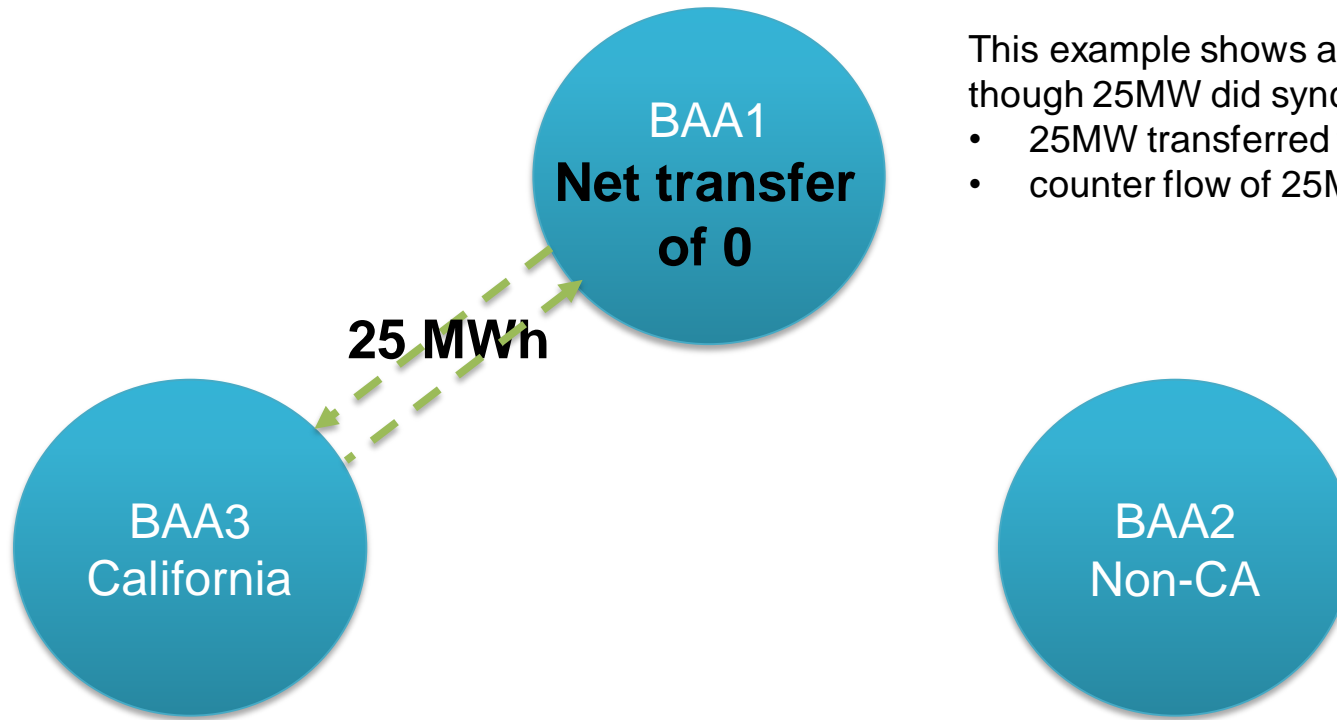

BAA1
Non-CA

**50 MWh
Import**

25 MWh

75 MWh

BAA3
California

BAA2
Non-CA

BAA1 is importing 50MW, and were awarded 25MWh of GHG with a credit of 75MWh. In order to get to the net transfer of 50MW import, they would need to be importing 75mw from the non-CA BAA and exporting 25 mw to CA.

(-50MWh SMEC) + (-25MWh GHG Award) = 75MWh credit

Non-California BAA GHG Credit – Example 3

BAA1
Net transfer of 0

25 MWh

BAA3
California

BAA2
Non-CA

This example shows a net transfer of zero though 25MW did sync, which could be from:
- 25MW transferred from BAA1 to BAA3, *or*
- counter flow of 25MW from BAA3 to BAA1

0MWh SMEC + (-25MWh GHG Award) = 25MWh credit

ETSR Settlement Clarification

ETSRs Electing to be Settled

- Negotiated between both BAAs

- Locational marginal pricing (LMP) used to calculate operational adjustments (deviations)

- Agreements are listed in the Master File and require the submission of an Intertie Resource Data Template (IRDT) for any changes

- Differences between Base and FMM settled at the FMM LMP per CC64600

- Differences between FMM and RTD and after the fact (ATF) will be settled using the RTD LMP per CC64700

- Base ETSRs elected to settle at LMP will NOT be included in GHG financial credit since GHG is already a component of the LMP calculation when energy was deemed delivered to serve CA load

ETSRs Electing NOT to be Settled

- SMEC will be used to calculate the value on ETSRs as follows:
    - Difference between FMM & Base
    - Difference between FMM & RTD
    - Difference between RTD & ATF

- Operational adjustments (OA) apply to all ETSRs that have NOT elected to settle, regardless of whether or not they sync to the ISO

- GHG credit used to calculate adjustments for energy deemed delivered to CA

GHG

- Adjustments up to GHG obligation for a BAA outside of CA that provides energy to serve CA load are only done up until RTD.

- There are no additional GHG obligations after RTD.

- CC491 will be used for select units based on bid that offers to energy go to serve CA load – GHG obligation

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Business Practice Manual Update

ETSR WITH A 5-MINUTE TRANSFER VALUE

Use ATF EIM Deemed Delivered MWs for ETSR

- Shape the submitted ETSR ATF tag to reflect RTD ETSR dispatches in 5 minute interval:
  - Settlement shall use CAISO check out hourly integrated tag for ETSR between CAISO and EIM BAA
  - Settlement shall use EIM submitted ATF check out integrated tag for ETSR between EIM BAAs.
  - System shall shape the submitted ETSR ATF values to reflect RTD ETSR dispatches in 5 minute interval

Important Note: We are ONLY shaping dynamics

Both entities can see ETSR ATF tag

System shall allow both EIM entities of ETSR, that transfer energy through ETSR in EIM market, access the ETSR ATF tag values that submitted by the EIM entity with tagging responsibility
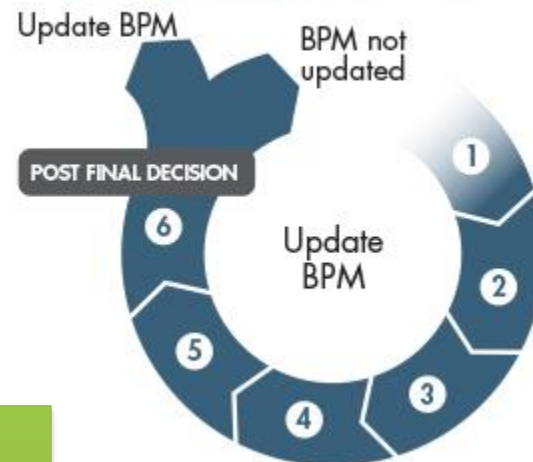
Note:

- System can map the Tag value to the mirror resource for the counterpart ETSR SC.

BPM Update Process

- Proposed Revision Request (PRR) # 1185 [Link to Market Notice](#)

BPM change management process

Update BPM

BPM not updated

POST FINAL DECISION

Update BPM

1. **SUBMIT PRR**
   Proposed Revision Request (PRR) submitted to the ISO

2. **COMMENTS PERIOD**
   Upon ISO acceptance, PRR becomes public and 10-business day comment period starts

3. **STAKEHOLDER MEETING**
   PRR details and comments reviewed and discussed

4. **RECOMMENDATION**
   ISO recommendation issued on PRR

5. **COMMENTS ON RECOMMENDATION**
   10-business day comment period open on recommendation

6. **STAKEHOLDER MEETING ON RECOMMENDATION**
   PRR recommendation and comments reviewed

Please actively participate in the PRR process by reviewing and commenting on proposed BPM changes

[BPM Change Management Page](#)

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Where can you find more information?

- [Settlements and Billing Business Practice Manual](#)
- [BPM Configuration Guide Charge Code 6470](#)
- [BPM Configuration Guide Charge Code 64770](#)
- Settlements & Billing Configuration Guide: Real Time Energy Quantity Pre-Calculation version 5.19
- [Business Requirements Specification - RTM Neutrality](#)
- [July 30 Tariff Amendment (ER-2497)](#)

- CAISO Website Pages:
  - [Release Planning Page](#)
  - [RTM Neutrality Settlement Stakeholder Process Page](#)
  - [Learning Center](#) for today's training materials and recorded presentation

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