



California ISO

Market Issues Bulletin: Incorrect Inclusion of Base Energy Transfers in Greenhouse Gas Attributions

Prepared by
Market Analysis

February 13, 2023
Revised: July 24, 2023

Table of Contents

Executive Summary 3
Background 4
Market Issue 4
Impact Assessment..... 5
Proposed Action 6
Addendum: Responses to Comments Received 8

Executive Summary

The CAISO has identified an issue with the real time transfers serving California demand that spanned from April 2021 to January 2022 as part of the Western Energy Imbalance Market (WEIM). In particular, the real-time market incorrectly attributed WEIM import transfers to WEIM participating resources serving demand in California. The issue arose because the base energy transfers – transfers between WEIM balancing authority areas not optimized through the WEIM – were incorrectly included in the total WEIM transfers eligible for greenhouse gas (GHG) attribution. The issue was identified after a market participant reported unusually high uplift amounts.

The issue impacted reporting of the volume of imported electricity under the California Air Resources Board's cap-and-trade program and mandatory reporting regulations. It also impacted real-time market GHG prices and financial settlements, resulting in a settlement neutrality imbalance, which the CAISO allocated to WEIM balancing authority areas. The CAISO fixed the issue shortly after it was identified in January 2022.

This market issues bulletin provides a more detailed description and an estimated settlement impact assessment for the inaccurate GHG attribution for the period from April 2021 to January 2022.

[The revised version of this document now includes an addendum explaining questions and comments received after the publishing of the original document and CAISO's response to those questions and comments. In summary, the CAISO does not intend to resettle GHG payments or restate GHG obligations for the applicable period.](#)

Background

The CAISO operates the Western Energy Imbalance Market (WEIM), a wholesale real-time energy market which helps efficiently balance supply, transfers between balancing authority areas (BAAs), and load across the Western Interconnection. The WEIM market calculates optimal energy transfers into BAAs located within the state of California, such as the CAISO BAA, the Balancing Area of Northern California, and the BAA of the Los Angeles Department of Water and Power (LADWP).

In cases where the WEIM optimization results in a net WEIM import transfer into California, the WEIM's real-time market attributes the transferred MWh to individual WEIM participating resources based on voluntarily submitted greenhouse gas (GHG) bids. If a WEIM participating resource receives a GHG attribution in the real-time market, it is considered to have served demand in California. When resources receive a GHG attribution in either the Real-Time Dispatch (RTD) market or in the fifteen-minute market (FMM), WEIM participating resources also receive a settlement payment based on the MWh attributed and the marginal GHG bid price. This settlement payment is paid by the load of California BAAs.

Net WEIM import transfers into California occur as a result of the WEIM optimization. Transfers between WEIM BAAs can also occur as base schedules, also known as "base energy transfers". Base energy transfers represent a WEIM BAA's hourly block imports/exports that are not optimized through the WEIM. Base energy transfers typically are scheduled in the day-ahead timeframe and are considered fixed schedules between WEIM BAAs. If the base energy transfer is an import into a California WEIM BAA, it should not be considered in the calculation of the total MW eligible for GHG attribution through the WEIM. Instead, these quantities are separately identified as electricity imports through eTags.

From time to time, the CAISO prepares Market Issues Bulletins to report out errors or defects in its market that may be of particular interest to CAISO stakeholders. The guidelines for the publishing of such bulletins are described in Attachment G of the Business Practice Manual for Market Operations. This bulletin will follow that three-part structure: in-depth analysis, impact on the market, and the proposed action the CAISO intends to take.

Market Issue

In Q1 2022, after a market participant observed high uplift amounts, the CAISO identified an issue with WEIM results that affected the accuracy of the net WEIM import transfers into California used for the calculation of the total GHG attributions. From April 1, 2021 until January 27, 2022, the real-time market – both the fifteen- and five-minute markets – incorrectly included base energy transfers associated with LADWP's BAA in the total MW eligible for GHG attribution. The impact of this error for ineligible GHG attribution was 1,097,129 MWh for the time period from April 2021 to January 2022, due to import transfers into California through the WEIM. The incorrect quantity of GHG attributions resulted in overall higher GHG attributions allocated to WEIM participating resources.

This outcome also affected the settlement payments made to these resources and market prices. As discussed above, WEIM participating resources received a settlement payment for the GHG attribution deemed to serve California demand. This payment reflected the GHG marginal price established by the higher GHG attributions. As settlement payments are also a function of price, having an incorrect GHG marginal price resulted in inaccurate payments to the WEIM participating resources that received a GHG attribution.

The CAISO uncovered this error after investigating a market participant's inquiry in December 2021 about an increase in a CAISO real-time uplift account. On January 27, 2022, the CAISO corrected the defect so that the real-time market excludes the base energy transfers in the total MW eligible for GHG attribution. Prior to LADWP joining the WEIM, this issue did not arise because other California balancing authorities participating in the WEIM did not have base transfers.

Impact Assessment

The CAISO has identified the following settlement implications from this issue:

- Marginal GHG clearing prices and LMPs driven by higher GHG attributions.
- Energy settlement and GHG obligation settlement driven by incorrectly higher GHG attributions.
- Approximately \$11 million neutrality issue in the System Real Time Imbalance Energy Offset account due to the discrepancy between the GHG obligation quantities from the market and the GHG obligation quantities calculated in settlements based on imbalance transfers in real-time. As part of CAISO's normal settlement processes, the CAISO allocated amounts in the offset account to all WEIM BAAs (including the CAISO) based on their BAA-specific Measured Demand (which is comprised of load plus exports) and based on each BAA's pro rata share of total Measured Demand. Because of this methodology, the impacts of this issue are widely distributed across many different entities.

<u>BAA Name¹</u>	<u>Estimated impact of allocation of offset account (\$)</u>
WEIM 1	47,161
WEIM 2	160,806
WEIM 3	189,500
WEIM 4	283,304
WEIM 5	302,842
WEIM 6	340,367
WEIM 7	398,042
WEIM 8	456,525
WEIM 9	485,621

¹ Actual BAA names obscured for confidentiality reasons

WEIM 10	565,102
WEIM 11	641,719
WEIM 12	714,304
WEIM 13	780,410
WEIM 14	847,723
WEIM 15	1,125,012
WEIM 16	3,478,232
Total	10,816,670

The CAISO first introduced this issue to the Market Participants in the Market Performance and Planning Forum on June 16, 2022.

Proposed Action

The CAISO considered several remedial actions to correct this issue. Ultimately, the CAISO has determined to maintain the status quo by doing nothing beyond fixing the software defect that caused the issue to arise. The CAISO considered the following options:

1. Status Quo (Do nothing) – This approach would not resettle GHG payments nor correct any GHG obligation for the applicable time period. This approach would not resettle neutrality amounts allocated to WEIM Entities with balancing authority areas located outside of California.
2. Market Rerun – This approach would involve rerunning the real-time market (FMM and RTD) for every interval for the applicable time period. This approach would have created the most accurate and correct settlement across the entire market. The CAISO would have settled energy for all resources at the accurate LMP and GHG marginal price. This approach would have addressed neutrality issues caused by inaccurate accounting of GHG obligation quantities.

Unfortunately, this approach would have required a prohibitive administrative burden to support the market system reruns. Also, the CAISO has released different versions of its market software since April 1, 2021, so reverting back to that version of market optimization is not possible. Furthermore, if the CAISO were to rerun the market optimization, it would create new dispatch for generators creating a discrepancy between meter data from the market dispatch and the new dispatch signals from the market reruns. Such a situation would create changes to payments and charges that market participants may not be able to validate. The CAISO has never rerun the market production systems in this manner.

3. Revise GHG Bid-Stack to find appropriate GHG attribution and marginal price – This approach would stack up GHG bids for each FMM and RTD interval based on the correct total MW eligible for GHG attribution and check where the market would clear. The CAISO would then use that GHG bid price as the marginal GHG LMP component.

This approach would achieve a measure of financial fairness by restating GHG attribution quantities, effecting an accurate GHG obligation settlement and resolving the neutrality issues that has caused significant cost shifting (~\$11M). It would not resettle LMPs for WEIM participating resources that were determined to serve load outside of California. This approach would also require significant manual work and presents implementation challenges. For example, there may be intervals in which GHG attributions increase and decrease. This could result in resources no longer receiving a GHG attribution or resources receiving a new GHG attribution. In addition, there may be intervals in which California BAAs flip from receiving a net WEIM import transfer to providing net WEIM export transfer and vice versa. Importantly, the tariff requires the CAISO to settle and report GHG attributions based on the output of the market. This approach would require additional regulatory authorizations because it is not consistent with the CAISO's current tariff rules.

4. Pro-rata GHG reduction - This approach would not modify the GHG marginal price but instead apply a pro-rata reduction of transfers attributed to WEIM participating resources based the LADWP base transfers. The CAISO would apply this approach only to those real-time intervals in which California BAAs were receiving net WEIM import transfers. If the transfer direction changed, the CAISO would ignore that interval. This approach is relatively easy to implement once the CAISO establishes the parameters of the pro-rata reduction. This approach would achieve a measure of financial fairness by restating GHG attribution quantities (albeit less accurately than the bid-stack approach), effecting a more accurate GHG obligation settlement and partially resolving the neutrality issues that has caused significant cost shifting (~\$11M). This approach would not resettle LMPs for WEIM participating resources that were determined to serve load outside of California. Again, this approach would require additional regulatory authorizations because it is not consistent with the CAISO's current tariff rules.

The CAISO proposes to maintain the status quo based on several factors. In historical cases where the CAISO has actively performed a remediation, the impacts were concentrated with a few entities. As shown in the table above, the impacts were widely distributed across multiple entities, making remediation more challenging. Also, as explained in the paragraphs above, the other options explored involve administrative complexity or inconsistency with the tariff.

Addendum: Responses to Comments Received

Update: July 2023

The CAISO received comments and questions regarding this market issues bulletin from two market participants. One market participant asked whether CAISO's position is to pursue the status quo approach and another one requested that the CAISO recalculate the market results caused by this market issue under either approach # 3 or approach # 4 described in this market issues bulletin.

The CAISO does not intend to resettle GHG payments or restate GHG obligations for the applicable period. Various factors inform the decision to take this approach (the *status quo* alternative).

First, the CAISO does not have authority to restate market results and apply administrative values for GHG attributions and/or marginal GHG marginal costs in order to resettle market outcomes under either approach # 3 or approach # 4. Second, these approaches may seem equitable to some stakeholders but will also create inequities for other stakeholders. For example, by restating GHG attributions and/or marginal GHG costs, the CAISO would resettle GHG payments to WEIM participating resource scheduling coordinators who have already relied on market results and these GHG payments to effect compliance with California's cap and trade program. During the stakeholder call regarding the market issues bulletin, one stakeholder asked whether the CAISO could rely on tariff section 11.18.5 to credit or debit the account of a Scheduling Coordinator for any over- or under-assessment of Emissions Cost charges that the CAISO determines occurred due to the error, omission, or miscalculation by the CAISO or the Scheduling Coordinator. This tariff section does not apply to the GHG quantities or GHG marginal prices calculated by the market under the CAISO tariff. Instead, this section applies Emission Costs, which the CAISO tariff defines to mean "the mitigation fees, excluding capital costs, assessed against a Generating Unit by a state or federal agency, including air quality districts, for exceeding applicable NOx emission limitations."

As referenced in the market issue bulletin, approach # 3 and #4 present other challenges. In any particular fifteen-minute market or five-minute real-time market, the data error described in this market issues bulletin may have increased the marginal GHG cost or decreased the marginal GHG cost. The data error may also have caused the real-time market to attribute imbalance transfers into California balancing authority areas when they otherwise would not have occurred. In other intervals, the data error may have caused real-time imbalance transfers out of California balancing authority areas when they otherwise would not have occurred. Absent an interval-by-interval assessment, the CAISO cannot isolate the impact of the data input error on the GHG attribution quantities or the marginal GHG cost. In theory, the CAISO could use its market software for an interval-by-interval analysis but, as explained in the market issues bulletin, the CAISO has changed its market software several times since April 2021. Recreating an environment for the market software to run without the data error will not recreate a market solution that would have otherwise

| occurred but instead an alternative market solution based on the configuration of today's market software.