



California ISO

**Greenhouse Gas Coordination
Discussion Paper: Stakeholder Recommendations for
Policy Development**

September 16, 2024

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Executive Summary

The Greenhouse Gas (GHG) Coordination stakeholder working group is designed to develop durable electricity market solutions for climate policies across the West. The working group launched in August 2023 to follow up on the ISO's commitment to continue working collaboratively with stakeholders and regulatory agencies to explore how GHG accounting functionality could evolve after the ISO implements and gains experience with the Extended Day-Ahead Market (EDAM).

This discussion paper summarizes the stakeholder recommendations for policy development emerging from the working group process. Stakeholders identified problem statements, provided recommendations for policy development, and in some cases suggested potential solutions associated with three important areas:

- (1) Enhancing the current approach to GHG pricing programs in the Western Energy Imbalance Market (WEIM) and Extended Day Ahead Market (EDAM)
- (2) Addressing non-pricing and clean energy policies, and voluntary goals
- (3) Development of additional GHG-related metrics

The ISO proposes to move stakeholder recommendations into the iterative policy proposal development stage for items related to *Topic 2: Addressing non-pricing and clean energy policies, and voluntary goals*, and continue working group discussions on issues within *Topic 1: Addressing non-pricing and clean energy policies, and voluntary goals*, and *Topic 3: Development of additional GHG-related metrics*.

Background

In the ISO's EDAM initiative process, stakeholders focused on developing a market model that could accommodate the price-based GHG emissions policies of multiple states. In addition, stakeholders questioned how participation in ISO's market could support the objectives of non-price-based climate related policies like renewable portfolio standards (RPS) and GHG emission reduction goals. The ISO committed to continue working collaboratively with stakeholders and regulatory agencies to explore how the ISO market's GHG accounting functionality could evolve after it implements the EDAM and gains operational experience.

To date, GHG market design has reflected price-based emissions policies, like those adopted by California and Washington. These policies increase the marginal cost of electricity from fossil-fueled resources. An objective of the market design in the WEIM, and now in the EDAM, is to account for GHG costs associated with day ahead and real time transfers consistent with state policy. However, there are climate policies in place and developing that will not price carbon. The GHG Coordination working group effort offers a forum for: 1) stakeholders new to the conversation an opportunity to gain a better understanding of current ISO market design and processes, 2) discuss if and how the ISO's market should also account for non-price based policies, and 3) introduce new scope items for consideration.

Stakeholder Recommendations for Policy Development

The discussion paper is intended to reflect the outcome of stakeholder perspectives during the working group process. The recommendations in the document are informed by stakeholder input and feedback on priorities, solutions, and analysis.

A full record of the stakeholder discussion that informed the final recommendations can be found in prior iterations of the GHG Coordination working group discussion papers posted on the initiative webpage.¹

Three topics of discussion will facilitate focused work streams during the policy development process: 1) enhancing the current approach to GHG pricing programs in the WEIM and EDAM, 2) addressing non-pricing and clean energy policies, and voluntary goals, and 3) development of additional GHG-related metrics.

Problem statements (PS) have been grouped into topics and numbered for ease of reference. Problem statement numbers reflect an iterative process that

¹ Greenhouse Gas (GHG) Coordination working group web page - <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Greenhouse-gas-coordination-working-group>

identified, consolidated and refined issues brought forth by the working group participants, but may not reflect the order in which issues are addressed or prioritized.

The problem statements and recommendations or policy development outlined below were introduced by stakeholders and discussed during the working group process. Proposed solutions will be further considered and vetted in future working group discussions and during the policy development process through iterative initiative proposals.

Topic 1: Enhancing the current approach to GHG pricing programs in the WEIM

Problem Statements 1-3) The potential limitations affecting the optimization may include whether the optimization is: 1) correctly identifying available surplus on resources that may be attributed to a GHG zone, 2) accurately pricing the GHG value for purposes of determining optimal dispatch between internal and external resources, and 3) taking the explicit cost of secondary dispatch into account, and therefore not balancing optimized attribution with constraints to limit secondary dispatch. The potential limitations described above may lead to persistent results that inefficiently displace internal GHG resources in a way that leads to secondary dispatch.

Problem Statement 4) The current price formation does not provide full transparency into the total marginal GHG cost, leading to inaccurate price signals and reduced price transparency.

Problem Statement 6e) Backfilled dispatch is defined as potentially higher-emitting resources backfilling to serve load in non-GHG areas because clean resources that would otherwise be serving those areas are instead attributed to GHG areas. There is no current metric that accurately assesses whether the ISO's GHG attribution process leads to resource backfilling and/or secondary dispatch. Using base schedules to estimate backfilled and/or secondary dispatch may be inaccurate and misleading, because resources' base schedules are not optimized and are not reflective of optimized transfers between non-GHG areas. As a result, stakeholders are unable to assess the relative benefit of reducing secondary dispatch via the optimized counterfactual compared to using base schedules as the baseline.

Stakeholder Recommendations for Policy Development:

Stakeholders recommend continued discussion and collaboration with the ISO through working groups on GHG price formation and counterfactual issues. On GHG price formation, there are questions from LADWP and WPTF about the intent of the marginal cost of GHG and have recommended the GHG bid adder

be separated from the energy bid in the GHG regulation area. On the counterfactual, there is a recommendation from Vistra, PG&E and WPTF that the appropriate counterfactual region should be at a BAA/grouping of BAAs rather than the non-GHG regulation area. Stakeholders also request further consideration of market design in scenarios with multiple GHG areas or linkage.

Proposed Path Forward:

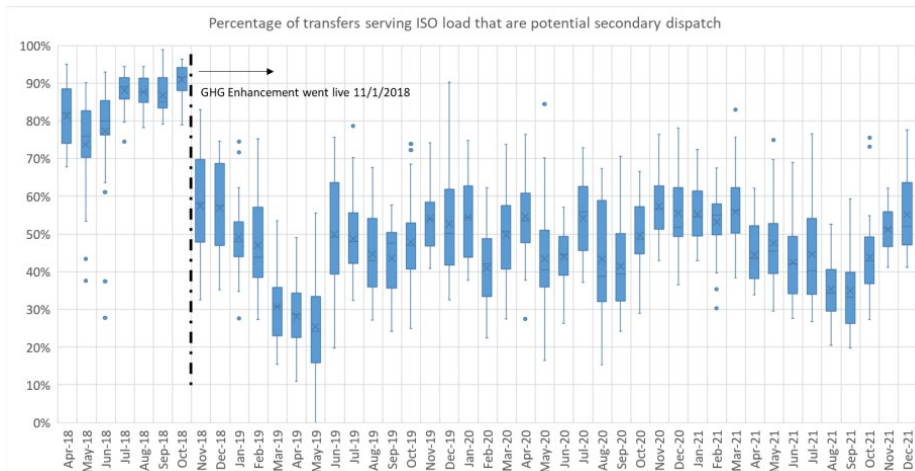
The ISO will respond to stakeholder proposals and working group discussions on GHG price formation and counterfactual design.

The ISO proposes to continue working group discussions related to monitoring and assessing the existing GHG design, specifically focusing on metrics that may be beneficial for monitoring EDAM go-live.

Stakeholders have requested the development of metrics related to the GHG net export constraint, and a metric that could identify how frequently secondary dispatch occurs. In response, the ISO proposed metrics for EDAM go-live monitoring. Once EDAM goes live, these metrics would be shared in either the Market Performance and Planning Forum on a quarterly basis or in the Market Performance Report on a monthly basis. In relation to GHG net export constraint metrics, stakeholders have supported the ISO's suggestions for EDAM go-live monitoring of the following: 1) The number of intervals the GHG net export constraint binds, which limits the ability to attribute; 2) The number of hours the net export constraint is turned off due to an RSE failure for a BAA that overlaps with a GHG regulation area; and 3) The percentage of intervals when there was a GHG bid lower than what was attributed when the net export constraint was active. These metrics indicate how useful the GHG net export constraint may be, and how frequently it is used. It indicates if there are lower cost bids stuck behind the net export constraint, which is a first step in understanding if further analysis is needed. This could support PG&E's request for a cost-benefit analysis on constraints to limit secondary dispatch.

To measure the frequency and volume of secondary dispatch, stakeholders support the ISO-suggested metric of providing the percentage of transfers serving California and Washington State load that could be potential secondary dispatch. The ISO has previously provided the same information regarding the WEIM. For example, the following information on the frequency of secondary dispatch was provided during the EDAM GHG design discussions:

Figure 1: Percentage of Transfers Serving ISO Load that are potential secondary dispatch, August 2018-December 2021



In the July 29, 2024 GHG Coordination working group meeting², the ISO presented an update on current GHG metrics that are publicly available, including GHG Allowance Index Price³, EIM GHG Shadow Prices⁴, and other emissions and attribution related metrics.

Topic 2: Addressing non-pricing and clean energy policies, and voluntary goals

Problem Statement 7) The market lacks a mechanism that enables Load-Serving Entities and energy users to accurately account for energy and associated emissions used to serve load under regulatory and voluntary GHG reduction and clean energy goals.

- a. There is not a market mechanism in states with a declining cap on emissions for utilities to ensure load is served by generation and wholesale market transfers that meet those emission reduction targets
- b. There is currently not a way to optimize a portfolio of resources at the EDAM Entity/ WEIM Entity/BAWLSE level annually from a pre-market, in-market, or post-market perspective over the course of the year to adhere to state emission targets.
- c. There is not a market mechanism in states with a declining cap on emissions to reflect both the declining cap and a price on carbon in the market for states that have both requirements.

Stakeholder Recommendation for Policy Development:

² Presentation – Greenhouse Gas Coordination Working Group– Jul 29, 2024 (slides 19-27): <https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Greenhouse-Gas-Coordination-Working-Group-Jul-29-2024.pdf>

³ Greenhouse Gas Allowance Index Prices: <http://oasis.caiso.com/mrioasis/logon.do> (OASIS > Prices > Index Prices > Greenhouse Gas Allowance Index Prices)

⁴ EIM Greenhouse Gas Shadow Prices: <http://oasis.caiso.com/mrioasis/logon.do> (OASIS > Prices > Index Prices > EIM Greenhouse Gas Shadow Prices)

Stakeholders recommend moving issues related to non-priced based GHG policy into policy development.

Throughout working group discussions, the ISO and stakeholders discussed two potential frameworks that could enable LSEs and Energy Users to account for energy and associated emissions used to serve load under regulatory and voluntary GHG reduction and clean energy goals: 1) an “in-market” Emission Constrained Dispatch approach; and 2) an “out-of-market” Accounting and Reporting Approach.

1) Emission Constrained Dispatch

The Emission Constrained Dispatch approach would give states without a carbon price control of the maximum emissions associated with generation serving load in the state to ensure emissions do not exceed state emissions reduction targets. The approach proposes to do this by reflecting policy in the Hourly and Real Time markets. Proponents of this approach believe that it could promote consistency with regional carbon pricing policies.

Stakeholders expressed concern around potential price impacts and impacts to market efficiency, and requested further analysis to better understand how this approach would affect market outcomes.

2) Accounting and Reporting Approach

The Accounting and Reporting approach aims to enable LSEs and/or energy users to more accurately account for energy and associated emissions used to serve load under both regulatory and voluntary GHG reduction and clean energy goals. This approach would allow entities to account for energy owned and purchased bilaterally, and energy transfers through the market when dispatch of committed energy is less than the load. This approach could be used to generate a market residual emissions rate to more accurately account for the emissions from market transfers.

This “out-of-market” approach would not be available where there are already state GHG reporting frameworks, unless requested by that state. The Accounting and Reporting Approach is intended for states with climate policies not based on price, and to support voluntary and corporate reporting programs.

Proposed Path Forward:

The consensus of the working group is to move the Accounting and Reporting approach to policy development as a near-term solution. The ISO will publish an issue paper and straw proposal this Fall for the Accounting and Reporting Approach to begin policy development for PS7. Within policy development discussions, the ISO and stakeholders would work to address issues including:

1) confirmation of the reporting structure; 2) flexibility of changing attributes per state or reporting entity, the approach for publication of an LSE emissions residual rate, and the approach or accounting for null power; and 3) establishing a framework for LSEs subject to state regulation. Future policy workshop discussions would also address implementation related issues, including potential changes needed to ISO systems and any confidentiality concerns associated with data access.

The Emission Constrained Dispatch approach has been requested by Oregon by 2030. As a result, a policy initiative will not be needed at this time. In the interim, the ISO and stakeholders may begin to assess the potential pricing impacts of an Emission Constrained Dispatch design. Both the Accounting and Reporting approach and Emissions Constrained Dispatch approach are compatible with each other.

Topic 3: Development of additional GHG-related metrics

Problem Statement 5) When there are multiple unlinked GHG regulation areas or different reporting requirements by different states, market participation may result in double counting, undercounting, or inconsistent counting of emissions. Variations of this issue include:

- a. Using both total WEIM transfer data and cost based accounting
- b. Using both total WEIM attribution and systems to allocate generation and associated emissions to retail load (i.e., RECs)
- c. Between unlinked jurisdictions if one area uses generation based accounting and another area uses load based accounting

Problem Statement 6a) Entities with annual reporting obligations or corporate goals associated with emissions reduction targets require data provided by the ISO to fulfill voluntary or non-voluntary reporting obligations with state policy, such as market imports to serve load or total emissions to serve load.

Problem Statement 6b) There is no requirement that the generation/tag data reported to WREGIS and the data arising from the ISO's GHG attribution be consistent with each other. This leads to the potential for double-counting of the same MWh of energy when jurisdictions deem GHG attribution as a claim on MW attributes. This might have negative implications for state energy programs.

Problem Statement 6c) Entities with jurisdictional compliance obligations or corporate emissions goals fulfilled through retail claims may not cover 100% of their real-time load obligation with owned or contracted power. In areas where LSEs are responsible for both owned/contracted power and real-time imbalance transfers, entities may experience challenges meeting jurisdictional requirements or corporate goals when they do not have sufficient information to report on the emissions intensity of net transfers.

Problem Statement 6d) There is a lack of transparency into the emissions intensity of the marginal resource. Publication of a marginal emissions rate for the GHG area and EDAM footprint may provide insight on the cost of emitting resources, which can be used to help shape how organizations bid resources into the market.

Problem statement 6f) There is currently not a metric to quantify the financial and emissions impacts of the ISO’s GHG design.

Stakeholder Recommendations for Policy Development:

Stakeholders recommend further consideration of metrics to facilitate market participation for stakeholders looking to comply with, develop and evolve state/corporate/voluntary GHG policies.

Proposed Path Forward:

The ISO proposes to explore updates to currently provided GHG metrics, including updates to the average emissions rate (AER) report and the addition of a marginal emissions rate metric. Potential updates to the AER report include breaking down and reporting the AER by fuel type. The ISO is exploring a methodology and implications related to providing a marginal emissions rate report and will provide an update to stakeholders on its assessment during a future working group meeting.

In the interim, during the July 29, 2024 GHG Coordination working group meeting, the ISO provided stakeholders with a list of current GHG emissions and attribution metrics that are available publicly or through the Customer Market Results Interface (CMRI) application. These metrics are outlined in the table below.

Metric	Description	Public/Non-public
Average Emissions Rate Report ⁵	A monthly report of the average emissions rate for generation in the WEIM and for generation attributed to California, provided at an hourly granularity.	Public
Today’s Outlook (emissions) ⁶	Reports the emissions associated with energy serving load in the CAISO BAA using metered energy	Public

⁵ Average Emissions Rate Report: <https://www.caiso.com/library/average-emissions-rate-reports>

⁶ Today’s Outlook(emissions): <https://www.caiso.com/todays-outlook/emissions>

GHG Emission Tracking Report ⁷	Reports the emissions associated with energy serving load in the CAISO BAA using 5-minute market awards	Public
GHG Attributions by Fuel Type ⁸	Reports only the percentage of MWh transfers of GHG attributions into California BAAs, grouped by fuel type	Public
WEIM GHG attributions through CMRI	Reports the resource-specific GHG attributions for the 15-minute and 5-minute market	Non-public

Next Steps

This discussion paper represents the proposed path forward for stakeholder-recommended topics for consideration and potential solution in the policy development phase of the ISO’s stakeholder process. As a next step, the ISO will continue working group discussions on elements within *Topic 1: Enhancing the current approach to GHG pricing programs in the WEIM*, and *Topic 3: Development of additional GHG-related metrics*. The ISO will also publish an issue paper and straw proposal on the Accounting and Reporting Approach. The issue paper will discuss design attributes and tradeoffs to support more detailed and focused design discussions with stakeholders.

Key near term milestones:

- September 12, 2024 – publication of working group discussion paper
- September 19, 2024 – working group meeting
- October 3, 2024 – stakeholder comments on discussion paper and working group meeting
- Q4 2024 – publication of GHG Coordination policy issue paper

⁷ GHG Emission Tracking Report: <https://www.caiso.com/library/greenhouse-gas-emissions-tracking-reports>

⁸ GHG Attributions by Fuel Type: <https://www.caiso.com/library/monthly-market-performance-reports>

Appendix A: Discussion paper issue areas

Through facilitated working group discussions, stakeholders developed and refined problem statements that supported discussion topics to further understand the identified issues and consider potential solutions to these. The identified problem statements, their refinements, and working group discussions were documented in working group discussion papers.⁹ The problem statement topic areas are summarized below:

1. Emissions Tracking and Accounting

This topic reflects stakeholder interest in considering issues related to how emissions are tracked and monitored, accounted for, and reported to various entities. Stakeholders expressed concern over leakage, resource shuffling, and secondary dispatch. Stakeholders also expressed a need to illustrate and verify these impacts with data prior to the consideration of enhancements or alternative approaches.

2. Review of ISO Market Operations and GHG Design

This topic reflects stakeholder feedback expressing the importance of a common understanding of ISO market operations and GHG design. Stakeholders requested more transparency and comprehension of the current and planned GHG design to prepare for EDAM go-live, to inform ongoing state rulemaking processes, and to facilitate deeper engagement with future proposal development. Stakeholders expressed concern that conflicting processes and concurrent opportunities would put a strain on resources and limit participation in ISO discussions.

3. State Coordination

This topic reflects stakeholder feedback related to state agency decisions, rules, and processes. Stakeholders expressed a need for greater consistency and coordination across state GHG program administrators. Stakeholders requested more ISO leadership in ensuring program rules align with market processes and functionality.

4. Beyond GHG Pricing Policies

This topic reflects stakeholder interest in considering concepts related to policy frameworks other than GHG policies that assign an explicit cost to carbon (i.e., Cap-and-Trade or cap-and-invest). Stakeholders with obligations under these

⁹ Prior iterations of the GHG Coordination working group discussion papers can be found on the initiative webpage - <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Greenhouse-gas-coordination-working-group>.

non-priced programs expressed concern that participation in ISO's markets would put them at a disadvantage or prevent compliance. Stakeholders also requested consideration of metrics, monitoring and reporting methods to accommodate a broad range of GHG policies.

5. Data Requests

This topic area reflects stakeholder-requested metrics that would both inform and aid in the assessment of problem statements and potential solutions.