Greenhouse Gas Coordination

Working Group 12

September 19, 2024

Housekeeping reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- These collaborative working groups are intended to stimulate open dialogue and engage different perspectives.
- Please keep comments professional and respectful.

Instructions for raising your hand to ask a question

- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon  located on the bottom of your screen.
  Note: #2 only works if you dialed into the meeting.
  - Please remember to state your name and affiliation before making your comment.

- You may also send your question via chat to all panelists.

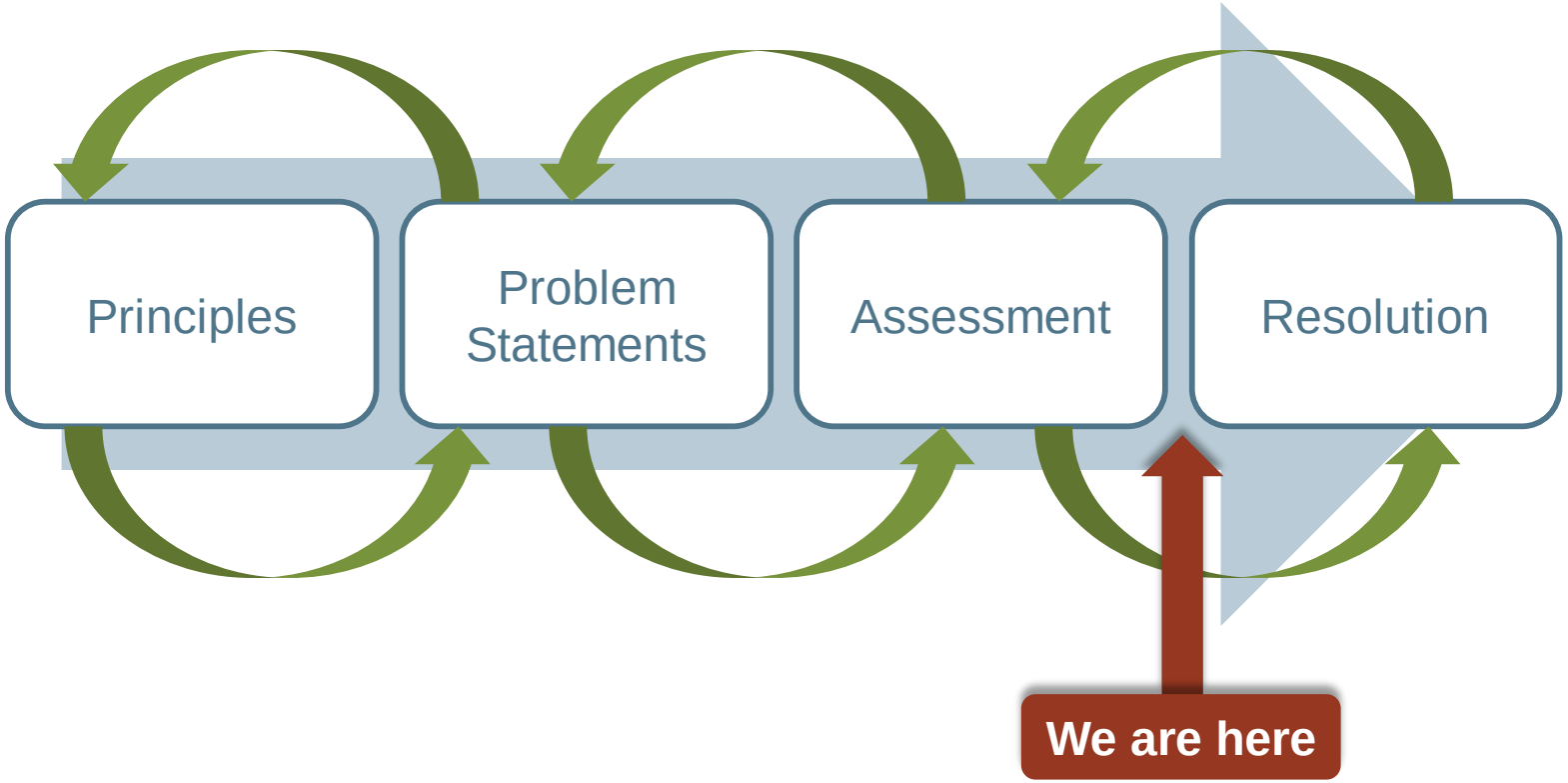
Notice to Participants

***Please be reminded**, Commissioners and advisors from state public utility commissions may be in attendance.*

Agenda

Time	Topic	Presenter(s)
1:00 – 1:10	Welcome and Goals	Isabella Nicosia
1:10 – 1:30	Summary of Stakeholder Feedback	Isabella Nicosia
1:30 – 2:20	Designing the GHG Accounting and Reporting Approach	Anja Gilbert
2:20 – 3:00	GHG Price Formation Evergreen Training Update and Discussion	Sylvie Spewak
3:00 – 3:35	GHG Design Rollover from EDAM to WEIM	Anja Gilbert
3:35 – 3:40	Go-Live Metrics	Anja Gilbert
3:40 – 4:00	Next steps	Isabella Nicosia

Working group progress to date



STAKEHOLDER FEEDBACK ON WORKING GROUP 11

Stakeholder Feedback: GHG Metrics Requests & EDAM GHG Go-Live Monitoring

Entity	Comment	Stakeholder-Proposed Path Forward
CRS	Requests three data types (generation, attributed generation, and unallocated generation) with the objective of these reports being useful 1) to states with load-based GHG programs and consumers making retail claims, and 2) for preventing double counting of generation and associated GHG emissions at the retail level.	1) Generation data (resource mix and average emissions from participating generators) is currently provided or will be provided through planned updates to current GHG metrics published by the ISO. 2) Attributed generation data and unallocated generation data (residual mix) can largely be satisfied through a GHG Accounting and Reporting approach.
LADWP	Requests greater specificity from the ISO regarding metrics and analyses.	Propose the ISO provide: 1) Complete list of metrics with detailed formulas and implementation dates. 2) Comprehensive list of analyses, methodologies, and anticipated execution and publication dates.
LADWP	Request two metrics: 1) GHG revenue distribution, and 2) GHG attribution metrics for imports into GHG regulation areas, with the objective of enhancing transparency and providing a more comprehensive view of GHG-related market dynamics.	GHG revenue distribution metrics and GHG attribution metrics for imports into GHG regulation areas should be considered for inclusion in future reporting and monitoring efforts.
PacifiCorp	Support 1) ISO monitoring of secondary dispatch and GHG net export constraints at EDAM go-live, and 2) continuing to evolve average and marginal emissions rate reporting, including breaking down the average emission rate by fuel type.	1) Monitor secondary dispatch and GHG net export constraints at EDAM go-live. 2) Include bilateral imports and exports out of the market as fuel types in the AER report.

Stakeholder Feedback: GHG Metrics Requests & EDAM GHG Go-Live Monitoring (continued)

Entity	Comment	Stakeholder-Proposed Path Forward
PGE	Supports the development of the AER report and a marginal emissions rate, and expresses that these metrics facilitate their market participation and compliance with Oregon regulatory policy.	Propose the marginal emissions rate be 1) aggregated at the LSE level by participating resource type, or 2) an aggregate of the WEIM and CAISO residual market supply by resource type level on an hourly basis.
SRP	Support 1) The ISO's proposed accounting and reporting metrics, EDAM go-live monitoring metrics, and planned updates to the AER, and 2) WPTF's proposed framework for developing a more accurate residual emissions rate.	Request the ISO provide more clarity surrounding stakeholder engagement opportunities related to the development of the EDAM go-live monitoring metrics.
DMM	Support the development of metrics to measure secondary dispatch	The ISO should include its proposed metric for measuring secondary dispatch in the EDAM go-live monitoring metrics.

Stakeholder Feedback: State GHG Survey Presentation

Entity	Comment
CRS	Suggest that state approaches to RECs and null power may not be as inconsistent as presented when the policies are grouped by type (load-based and source-based).
SRP	Interested in analysis to identify the timing of the need for an emissions-constrained dispatch solution.
SRP	Supports consideration of an approach that treats battery and pumped storage as additional load during charging intervals, and recommends aligning the approach with CARB's treatment of battery storage.

Stakeholder Feedback: Non-priced GHG approach

Entity	Comment
All commenters	Support moving Accounting and Reporting approach to policy development
CRS	Recommends that the following be considered or included within the Accounting and Reporting framework: 1) Null power adjusted residual mix metric 2) Attribute ownership for allocation of specified generation to LSEs 3) Coordination with WREGIS for any attribution in the market or post-dispatch allocation of WREGIS registered generation to avoid double counting
LADWP	Recommends the Accounting and Reporting framework be available to all entities in GHG areas
PacifiCorp	Supports evaluation of in-market solutions as a longer-term initiative

Stakeholder Feedback: Suggested policy workshop topics for the Accounting and Reporting approach

Entity	Comment
PGE	Propose the following topics for future discussion: 1) How an LSE or regulator could estimate annual GHG emissions under the WPTF method for market imports 2) The impact on residual market supply from allocating non-emitting energy to priced zones 3) How to address risks of incongruent accounting and disproportionate GHG benefits for priced states 4) Impacts of future changes to GHG policies on the accounting and reporting framework
SRP	Propose the following topics for future discussion: 1) Treatment of null power 2) Treatment of batteries and pumped storage 3) Granularity of the report 4) Timeframes for publishing data 5) Mechanisms for attributing generation to load versus excess generation 6) Breakdown of energy deemed to pricing zones. 7) Treatment of bilateral contracts and/or unspecified energy

Stakeholder Feedback: Other Topics

Entity	Comment
DMM	Using base schedules as a counterfactual to determine leakage is problematic because they are not optimized, and do not account for optimal transfers between non-GHG areas.

DESIGNING THE ACCOUNTING AND REPORTING APPROACH

Objectives of the Accounting and Reporting Approach

- Provide data to support entities subject to climate policies not based on a price of carbon
  - Allow entities to after the fact, outside of the market, account for the emissions they are responsible for
  - Recognize the data supports both compliance and voluntary purposes

- Not impact market dispatch as an out of market approach
  - Not impact emissions or costs in other states

Summary of the WTPF Proposed Accounting and Reporting Approach

On a 5 minute basis for a state, LSE or energy user, calculate:

	Dispatched Owned Resources
+	Dispatched Contracts for Purchase
	Total for owned/contracted
-	Attributed owned/contracted
	Total for owned/contracted - attributed
If Total > load	
-	*Energy @ LSE emissions rate*
If Total < load	
	Energy @ residual emissions rate
+	*(considerations for null power)*
	FINAL TOTAL

Tradeoffs: Metric vs. Raw Data

Bookend approaches to the report to consider as we review design elements:

- **Raw Data Approach:** The ISO could publish the data to allow entities to formulate their report based on their state, voluntary, and or/corporate mandates. This will also require discussions on inputs and assumptions and potential IT solutions.
- **Metric Approach:** The ISO could produce one metric which will require discussions on data sources, intake mechanisms, policy discussions, and new IT solutions to accommodate the entity's approach.
  - Example: Some elements of the report will have permutations based on state, voluntary, and/or corporate mandates. For example, some states may not want zero emitting resources in the residual rate to ensure there is not double counting. Other states may take a different approach to zero emitting resources in the residual rate.

Elements of Design

Design Theme	Design Element	WPTF Original Design	Menu of Options / Considerations to Discuss
Applicability	Who is this report developed for?	States and/or individual market participants (LSEs & energy users)	✓ States ✓ EDAM participants ✓ WEIM participants ✓ LSEs ✓ Energy users
Pre-Dispatch	Owned Supply	CAISO assigns all resources owned by LSEs in footprint to those LSEs	✓ Requires applicability discussion first ✓ Obtaining information on owned resources
	Contracted Supply	LSE or Energy User tells CAISO what their contracts are	✓ Requires applicability discussion first ✓ Time frame of contracts (i.e., master file time frame vs. daily) ✓ Obtaining information on contracts
	Validation	"Handshake" via interface	✓ Requires applicability discussion first ✓ Time frame of contracts
	Verification	After the fact by regulator	✓ Requires applicability discussion first ✓ Which regulators approve what? ✓ When does this need to occur?
	Emission factors	Determined by states, market protocol (EPA data/heat rates)	✓ Determined by Regulators ✓ Voluntarily updated in the Masterfile ✓ EIA ✓ eGRID ✓ Imputed heat rate

Tradeoffs: Cost vs. Reporting Entity Granularity:

- **BAA vs. LSE:** As the ISO's unit of measure is the BAA, to collect contractual information at the LSE level that is later validated will require the development of new IT systems.
  - Survey question:
    - How many EDAM or WEIM entities have embedded LSEs for which there is a desire to produce this report?

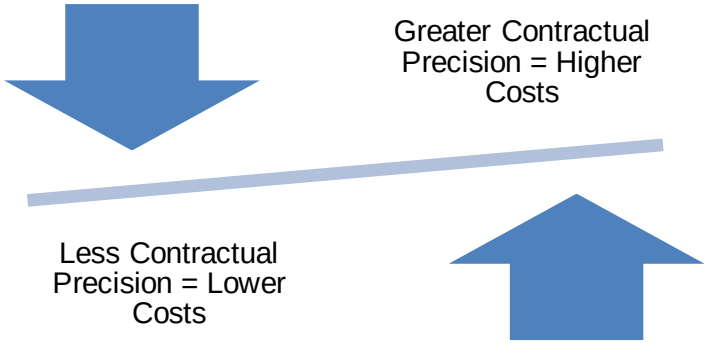
- **BAA: EDAM vs. WEIM:**
  - Producing this report for an EDAM entity would provide a full view of emissions
  - Producing this report for a WEIM entity would provide partial information, unless the ISO also incorporates base schedule emissions information

Tradeoffs: Cost vs. Contractual Precision

To collect contractual information at the LSE level at a time interval faster than the Master File updates (10 business days) could require the development of new IT systems.

Survey question:

- What volume of contracts are short term, less than 10 days?
- Would there be a material difference in emissions if contracts less than 10 business days were a part of the residual mix instead of the LSE rate?



Elements of Design Continued

Design Theme	Design Element	WPTF Original Design	Menu of Options / Considerations to Discuss
Assignment of Energy	Dispatched	Total = Dispatched Owned Resources + Dispatched Contracts for Purchase - Attributed	✓ Are stakeholders aligned that this should include the 5 minute dispatch of owned and contracted minus any attribution to a GHG pricing area? ✓ Treatment of bilateral resources
	Load	*N/A* *If Total > load; then energy @ LSE emissions rate* *If Total < load; then energy @ residual emissions rate*	✓ Data: Forecast (i.e., year-ahead, month-ahead, day-ahead), actuals (metered) ✓ Who calculates? (*i.e.,* CAISO vs. entity)
	Residual supply	(∑ GHG associated with dispatch of non-designated resources + ∑ of emissions associated with excess LSE assigned energy) / (∑ MWh of non-designated resources + ∑ MWh of excess LSE assigned energy)	✓ Who calculates? (ISO vs. entity) ✓ If calculated by entity, what data does the ISO publish? All data by fuel type to allow states to account for various approaches to null power? ✓ If calculated by the ISO, how should each resource type be treated (*e.g.,* batteries, etc.)?
	LSE supply	LSE's system average emission rate	✓ Methodology for calculation (average, merit order, other?) ✓ Is it calculated by the ISO or is it up to the entity to calculate and determine their methodology? (Data available today for entity to calculate)

Elements of Design Continued

Design Theme	Design Element	WPTF Original Design	Menu of Options / Considerations to Discuss
Data	Granularity of data collected	5 min	✓ Are stakeholders aligned that data should be based on 5 minute data? ✓ Does using both actual and forecast data at a 5 minute granularity create a precise report that may not be accurate?
Reporting	Publication / data release	Monthly, quarterly, annually	✓ Requires discussion
	Data visibility	• All LSEs within market footprint • For LSEs in non-GHG Area, energy is attributed on entity specific basis to enable accurate and comprehensive emission accounting • Energy Users that elect to account • Each GHG Regulation Area • Non-GHG Area in Aggregate • Residual Market Supply • Market Footprint as a whole	✓ Requires discussion
	Data coordination	• Interface w/WREGIS	✓ What would an interface or coordination with WREGIS look like?
	Considerations for multijurisdictional utilities	• An additional consideration	✓ Requires discussion

GHG PRICE FORMATION

Update: Evergreen Training on GHG Price Formation

- Recordings are available under the “GHG Coordination Evergreen Trainings” playlist on the California ISO’s YouTube channel.

- The PDF of this full presentation can be found on the “Greenhouse gas coordination working group” stakeholder initiative page on the ISO website.

- We welcome your feedback! Please send any questions, comments, or feedback on this training to ISOStakeholderAffairs@caiso.com with “GHG Price Formation” in the subject line
  - The ISO will collect the questions and post responses in the form of an FAQ to the initiative webpage
-

Evergreen Training: What to expect

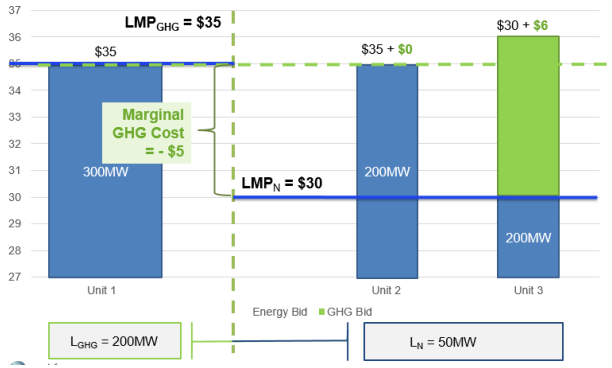
- The role of GHG price formation in market GHG policy today

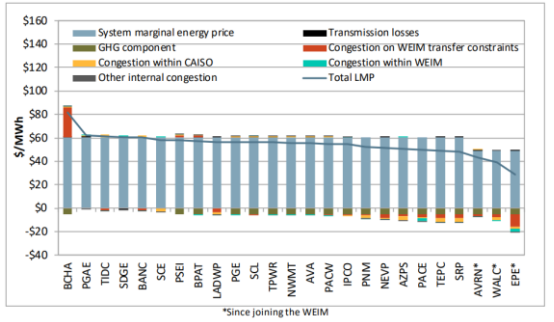
- The basic mechanics of price formation with GHG, including:
  - How GHG is reflected in the market
  - How the market determines what resources to attribute to a GHG regulation area
  - How prices are determined, what those prices mean, and how costs associated with GHG are allocated to market participants

- The relationship between GHG and price formation principles, the market design, and the data that comes out of the market

EIM Green House Gas (GHG) Shadow Prices

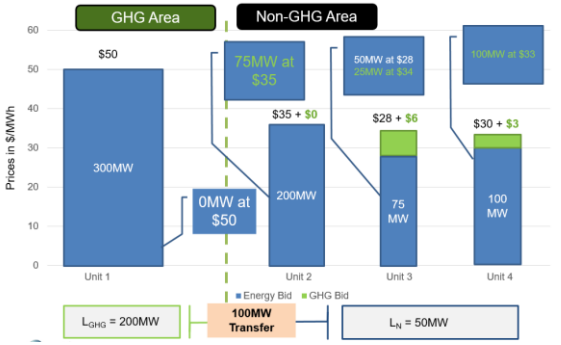
Market	Opr Date	Opr Interval	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11	HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21	HE22	HE23	HE24	HE25
RTD	06/05/2024	1	-15.26	-15.26	-13.80	-14.91	-13.00	-13.00	-16.84	-15.46	-4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.06	-0.03	0.00	0.00	0.00	-0.58	-4.22	0.00	-0.37	
RTD	06/05/2024	2	-16.20	-15.97	-13.46	-15.12	-13.80	-13.00	-16.88	-15.46	-6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-5.21	-3.24	-8.73	0.00	0.00	-8.15	0.00	0.00	
RTD	06/05/2024	3	-16.26	-15.97	-13.80	-14.74	-14.41	-13.85	-17.09	-15.46	-2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-4.38	-0.08	-6.87	0.00	0.00	-12.67	0.00	-1.31	
RTD	06/05/2024	4	-16.69	-15.97	-13.69	-15.26	-14.87	-13.80	-17.56	-10.74	-1.27	0.00	0.00	0.00	0.00	0.00	0.00	-2.25	-1.43	0.00	-3.84	0.00	0.00	-14.96	0.00	-0.99	
RTD	06/05/2024	5	-16.88	-15.80	-13.80	-15.36	-15.46	-14.25	-17.56	-10.32	-0.95	0.00	0.00	0.00	0.00	0.00	0.00	-3.49	-1.18	-2.52	-5.97	0.00	0.00	-15.09	0.00	-7.31	
RTD	06/05/2024	6	-16.88	-15.46	-13.80	-15.57	-15.26	-13.80	-17.09	-9.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-7.46	-0.90	-3.56	-6.71	0.00	0.00	-12.89	0.00	-11.63	
RTD	06/05/2024	7	-17.01	-15.97	-15.26	-15.97	-15.46	-15.01	-16.88	-7.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.10	-0.52	-4.35	-11.12	0.00	0.00	-12.75	0.00	-12.13	
RTD	06/05/2024	8	-16.88	-15.97	-14.99	-15.90	-15.41	-13.92	-16.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-6.42	-4.86	0.00	-0.76	-10.50	0.00	-0.58	-15.45	0.00	-15.20	
RTD	06/05/2024	9	-16.88	-15.46	-14.38	-15.37	-15.46	-13.33	-16.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-3.78	0.00	-1.91	-10.36	0.00	-2.04	-15.77	-2.74	-16.28	
RTD	06/05/2024	10	-16.88	-15.26	-15.07	-15.22	-15.43	-13.62	-16.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-3.43	0.00	-4.48	-9.13	-5.00	-9.23	-16.51	-1.66	-16.20	
RTD	06/05/2024	11	-16.88	-15.16	-15.62	-15.26	-15.09	-13.80	-15.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	0.00	-2.76	-3.55	-5.72	-9.49	-15.52	-1.07	-16.85	
RTD	06/05/2024	12	-16.88	-14.31	-15.26	-15.34	-15.46	-16.16	-15.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-5.98	0.00	-0.58	-6.94	-6.64	-1.07	-16.82	





Energy Bid (+ Compliance) ($)	LMP_GHG ($/MWh)	LMP_N ($/MWh) + MC-GHG
50	35	-
35	-	35
34	-	35
33		35

Example 4: How should we dispatch 250MW?



Unit	Dispatch (MW)	GHG Export Allocation (MW)	MC-GHG ($/MW)	GHG Payment ($)	GHG Adder ($/MWh)	GHG Compliance Cost ($)	Payment in excess of compliance ($)
1	-	-	-	-	-	-	
2	75	75	6	450	0	0	450
3	75	25	6	150	6	150	0
4	100	100	6	600	3	300	300
Total	250	**200**					

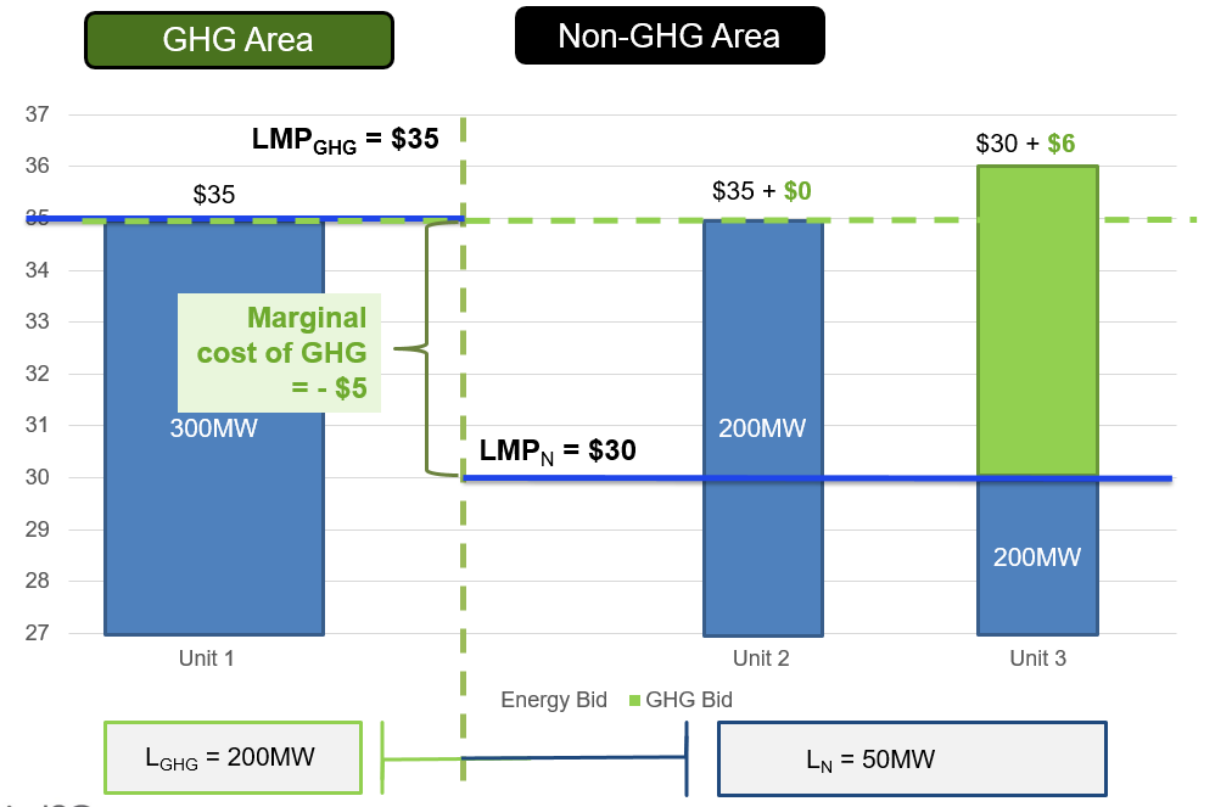
Evergreen Training: Contents

- The material in this training is presented in 4 chapters intended to be a durable representation of the fundamentals of GHG price formation in ISO markets:
  1. Fundamentals of GHG design related to price formation
  2. Optimization basics
  3. Optimizing with GHG bid adders
  4. Explanation of GHG examples in the BPMs

- This training does not cover:
  - The GHG counterfactual (WEIM) and GHG reference pass (EDAM)
  - Net export constraint (EDAM)
  - Bidding with more than one GHG regulation area (EDAM)

Frequently asked question: LMP decomposition convention

- In the Evergreen training, the MC-GHG is printed as a negative value
  - LMP_{GHG} = SMEC = $35
  - $LMP_{non\text{-}GHG}$ = $35 - $5 = $30
- In the ISO's Extended Day Ahead Market (EDAM), the MC-GHG will be reflected as a positive component in the GHG area.
  - $LMP_{GHG} = MEC_{GHG}$ = $35
  - $LMP_{non\text{-}GHG} = MEC_{non\text{-}GHG}$ = $30
- Stakeholders have asked for more clarity around what this means for price formation.



Changing the sign on LMP components in EDAM

- Resources are settled at their LMP which is made up of energy and component parts.

- Moving from a single SMEC to BA-specific MECs
  - Removes the CAISO as the reference bus
  - Facilitates settlement for transfers between BAs

- The marginal cost of GHG (MC-GHG) component of the LMP goes from a negative to a positive component for attribution.

- The sign change would not change the solution found in these examples, and will not have an effect on market outcomes.

Resources in the non-GHG area that are not attributed to the GHG area respond to the price without GHG

In this example, assume no congestion or losses. The price separation between the GHG and non-GHG areas is entirely made up of GHG. There is one GHG area, so MC-GHG is a single value that applies to the whole market.

	Today in the GHG area	Tomorrow in the GHG area
LMP_{GHG}	**SMEC** = 20	**MEC_{GHG}** = 20

LMP for resources in the non-GHG area is $15/MWh:

	Today in the non-GHG area	Tomorrow in the non-GHG area
LMP_{BA1}	**SMEC – MC-GHG** = 20 – 5 = 15	**MEC_{BA1}** = 15
LMP_{BA2}	**SMEC – MC-GHG** = 20 – 5 = 15	**MEC_{BA2}** = 15

Resources dispatched to serve the non-GHG area are paid the LMP in their area ($15). The total cost is funded by load in that area ($15/MWh).

Resources in the non-GHG area that are attributed to the GHG area respond to a price signal that includes GHG

In this example, assume no congestion or losses. The price separation between the GHG and non-GHG areas is entirely made up of GHG. There is one GHG area, so MC-GHG is a single value that applies to the whole market.

	Today in the GHG area	Tomorrow in the GHG area
LMP_{GHG}	**SMEC** = 20	**MEC_{GHG}** = 20

LMP for attributed resources in the non-GHG area is $20/MWh:

	Today in the non-GHG area	Tomorrow in the non-GHG area
BA1 LMP_{GHG}	**SMEC** = 20	**MEC_{BA1} + MC-GHG** = 15 + 5 = 20
BA2 LMP_{GHG}	**SMEC** = 20	**MEC_{BA2} + MC-GHG** = 15 + 5 = 20

Attributed resources are paid the non-GHG area LMP ($15) + MC-GHG ($5/MWh). The total cost is funded by GHG area load which pays the GHG area LMP ($20/MWh).

Resources in the non-GHG area that are not attributed to the GHG area respond to the price without GHG

Assume no internal congestion and no losses– each BA has a single LMP. Price separation between the GHG BA and BA1 is due to both GHG and congestion.

	Today in the GHG area	Tomorrow in the GHG area
LMP_{GHG}	**SMEC** = 20	**MEC_{GHG}** = 20

LMPs for resources in the non-GHG area are separate due to congestion between each BA and the GHG area BA:

	Today in the non-GHG area	Tomorrow in the non-GHG area
LMP_{BA1}	**SMEC – MC-GHG – $Congestion_{BA1}$** = 20 – 5 – 2 = 13	**MEC_{BA1}** = 13
LMP_{BA2}	**SMEC – MC-GHG – $Congestion_{BA2}$** = 20 – 5 – 0 = 15	**MEC_{BA2}** = 15

While GHG creates price separation between the GHG and non-GHG areas, congestion creates price separation between BAs.

Resources in the non-GHG area that are attributed to the GHG area respond to a price signal that includes GHG

Assume no internal congestion and no losses– each BA has a single LMP. Price separation between the GHG BA and BA1 is due to both GHG and congestion.

	Today in the GHG area	Tomorrow in the GHG area
LMP_{GHG}	**SMEC** = 20	**MEC_{GHG}** = 20

GHG BA load funds $2/MWh congestion for transfers from BA1

LMPs for attributed resources in the non-GHG area:

	Today in the non-GHG area	Tomorrow in the non-GHG area
BA1 LMP_{GHG}	**SMEC – $Congestion_{BA1}$** = 20 – 2 = 18	**MEC_{BA1} + MC-GHG** = 13 + 5 = 18
BA2 LMP_{GHG}	**SMEC – $Congestion_{BA2}$** = 20 –0 = 20	**MEC_{BA2} + MC-GHG** = 15 + 5 = 20

Even though the MC-GHG is consistent across all non-GHG area BAs, resources in each BA receive different clearing prices for transfers due to congestion. Transfers between BA1 and the GHG area BA generate congestion revenue ($2/MWh) in addition to the MEC + MC-GHG ($18/MWh).

GHG DESIGN ROLLOVER FROM EDAM TO WEIM

GHG: Day Ahead to Real Time

- The purpose of this section is to review how GHG design moves from day ahead (DA) to real time (RT)

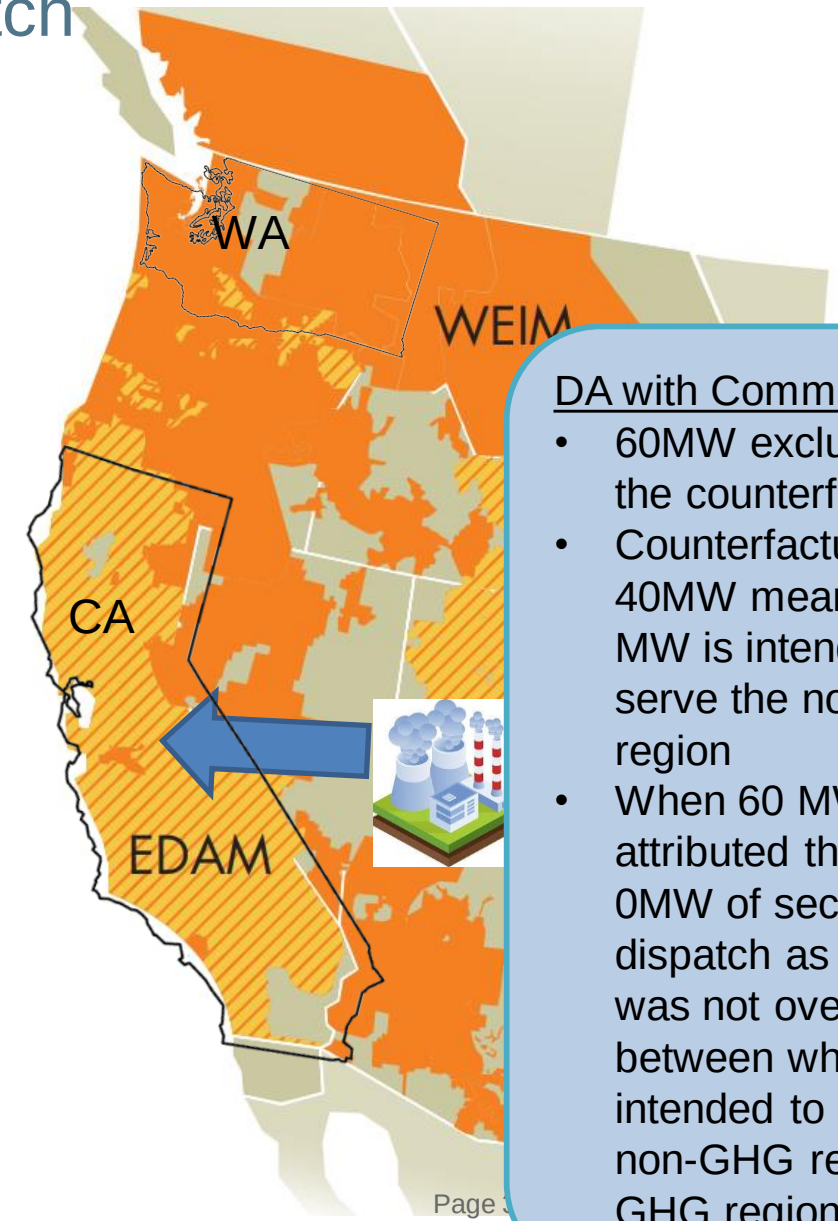
- After this discussion, we hope you take away that some design elements:
  - **Are Different:** The counterfactual used in DA differs from RT
  - **Transition**: Committed capacity to be excluded from the counterfactual, reflected in the Masterfile, carries over from DA to RT
  - **Remain Static**: Some design elements do not change:
    - GHG net export constraint: hourly, thus it is the same for DA and RT
    - Geographic boundary
    - Constraints to limit attribution in bids

Measures to Reduce Secondary Dispatch for WEIM and EDAM Entities

	WEIM Only Entities	EDAM Entities
Counterfactual	Base Schedules are the self-assessment of scheduled generation and transfers	An Optimized Reference Pass reduces the delta between the assumptions made in base scheduling vs. optimal dispatch, thus reducing secondary dispatch
Bidding Constraints	Limiting the GHG attribution to the volume of difference between upper economic limit and counterfactual reduces the potential for secondary dispatch	
Net Export Constraint	N/A	The net export constraint limits attribution by not allowing attribution from a net importing BAA, except in cases of committed capacity

Counterfactual in EDAM & Secondary Dispatch Day Ahead w/Committed Capacity

EDAM Entity DA	MW
Energy Bid	100
GHG Bid	100
UEL	100
Committed Capacity	60
Counterfactual	40
Eligible for Attribution	100-40=60
Energy Award	100
GHG Award / Attribution	60
Secondary Dispatch	0

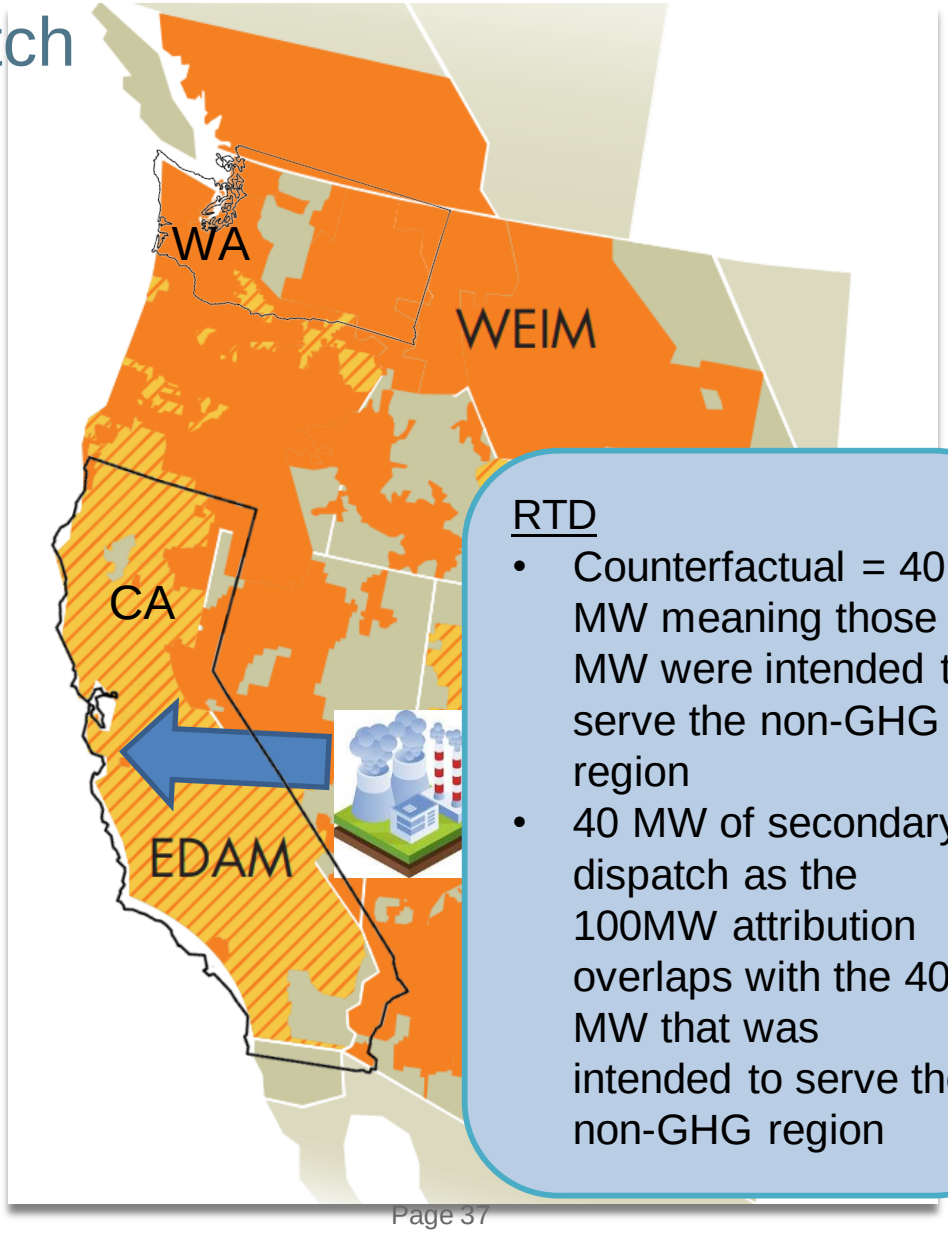


DA with Comm. Cap

- 60MW excluded from the counterfactual
- Counterfactual = 40MW meaning 40 MW is intended to serve the non-GHG region
- When 60 MW is attributed there is 0MW of secondary dispatch as there was not overlap between what was intended to serve the non-GHG region and GHG region

Counterfactual in EDAM & Secondary Dispatch Real Time

EDAM Entity RTD	MW
Energy Bid	100
GHG Bid	100
UEL	100
Counterfactual	40
Eligible for Attribution	100-40= 60
Energy Award	100
GHG Award / Attribution	100
Secondary Dispatch	40



RTD

- Counterfactual = 40 MW meaning those MW were intended to serve the non-GHG region
- 40 MW of secondary dispatch as the 100MW attribution overlaps with the 40 MW that was intended to serve the non-GHG region

Reference: counterfactual design in WEIM and EDAM

Attribute	WEIM-only Entities Today and with EDAM Go-Live	EDAM Entities
Counterfactual	Base Schedules	Day Ahead= GHG Reference Pass Real Time= DAM Energy Award – DAM GHG Award
Committed Capacity	WEIM entities may include contracts in base transfers	Removed from GHG Reference Pass in DA so that it can be attributed
Attribution Constraints	The GHG attribution is limited to the lower of: (1) the GHG bid capacity, (2) the positive difference between the upper economic limit and the counterfactual (3) the optimal energy schedule.	
Eligible for Attribution	Upper Economic Limit (UEL) – Counterfactual	
Secondary Dispatch	Secondary Dispatch = (0, GHG award - max(0, energy award - counterfactual))	

GO-LIVE MONITORING

Suggested Metrics for EDAM GHG Go-Live Monitoring

Topic	Metric
Secondary Dispatch	The percentage of transfers serving CA and WA load that could be potential secondary dispatch
GHG Net Export Constraint	The number of intervals the GHG net export constraint binds, which limits the ability to attribute
	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
	The percentage of intervals when there was a GHG bid lower than what was attributed when the net export constraint was active

- *Stakeholders have supported the ISO suggested metrics for EDAM GHG Go-Live Monitoring.*
- *The metrics are subject to change, but the report out of these metrics will occur either monthly in the Market Performance Report or quarterly in the Market Performance and Planning Forum.*

NEXT STEPS

Next steps

- Comments due by end of day October 3.
  - Submit using the template provided on the working group webpage
- Next working group in November 2024
- Issue Paper on Accounting and Reporting approach in Q4 2024
- Submit requests to present to ISOStakeholderAffairs@caiso.com
- Relevant information: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Greenhouse-gas-coordination-working-group

Energy Matters blog provides timely insights into ISO grid and market operations as well as other industry-related news.

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Policy Initiatives Timeline

The California ISO has launched the Policy Initiatives Timeline to offer stakeholders a concise overview of ongoing policy initiatives. At a glance, it offers a snapshot view of key details such as the status of each initiative, projected timelines, and the current phase of the stakeholder engagement process. Updates to this timeline will be made weekly and posted on the policy initiatives landing page. For more information, stakeholders are encouraged to reach out to ISOStakeholderAffairs@caiso.com.

REGISTRATION IS OPEN

2024 STAKEHOLDER SYMPOSIUM

Welcome reception - Oct. 29
at Kimpton Sawyer Hotel, Sacramento, CA

Symposium program - Oct. 30
SAFE Credit Union Convention Center
Sacramento, CA

Visit the event website: www.reg.eventmobi.com/2024stakeholdersymposium

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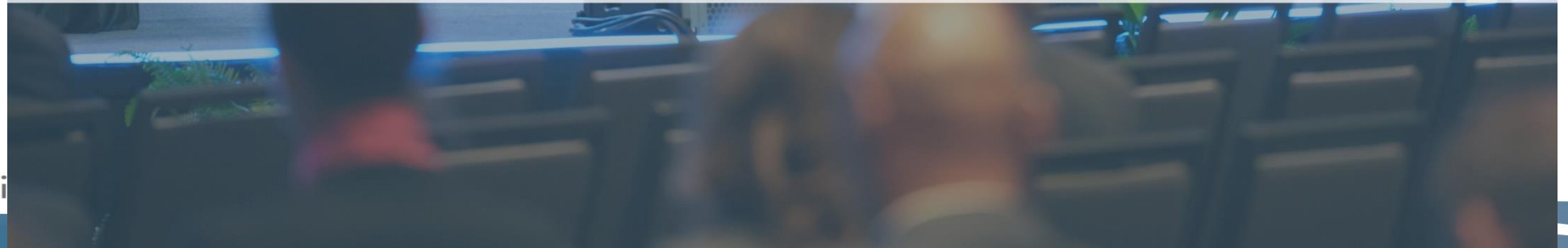

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UAAs Action Required

The ISO would like all UAAs to actively begin replacing your users and business certificates that are still Verizon certificates to Entrust Certificates. Emails to UAAs began in March for this effort.

Due Date

Completed before the end of October, 2024.

Instructions

Please see the "Replacing a Verizon Certificate with an Entrust Certificate" section of the AIM Certificate Process Job Aid section for step-by-step instructions.

Questions

Email uaarequests@caiso.com or create a CIDI ticket with the subject line "Verizon to Entrust Cutover."