California ISO Readiness Notes

Title: Greenhouse Gas (GHG) Bidding and Pricing Updates for EDAM

Expected Production Date: May 1, 2026

Contact: Please reach out to CustomerReadiness@caiso.com for questions about the readiness note and/or submit a CIDI ticket for technical questions.

Project Associated: Extended Day-Ahead Market (EDAM)

Details:

GHG Bid Submission Components
There are some considerations when submitting GHG bids with the implementation of EDAM:

- When choosing to submit a bid with a GHG Capacity value and a GHG price, you must also provide a GHG area.
    - *It is important to note that currently, the only valid GHG area is CA.*
- The GHG Capacity value must **not** be zero, or null.

If the GHG regulation area and/or GHG Capacity price are not included in the bid, the bid will be rejected and you will see the following **SIBR Rule** displayed in SIBR, or your bidding tool:

21640	0	Bid is invalid - A Greenhouse Gas Bid Component in a Generating Resource must specify a Greenhouse Gas Capacity (MW) and a Greenhouse Gas Price ($/MWh).

Note: A bid that does not include a GHG Capacity or GHG price does not require a GHG area and will not trigger the GHG validation rule.

Submissions Via API or SIBR
If you are submitting through an Application Programming Interface (API), please visit our Developer Portal as soon as possible and review the v5 API Specification and XSD. Share these materials with your vendor so they can complete the necessary updates.

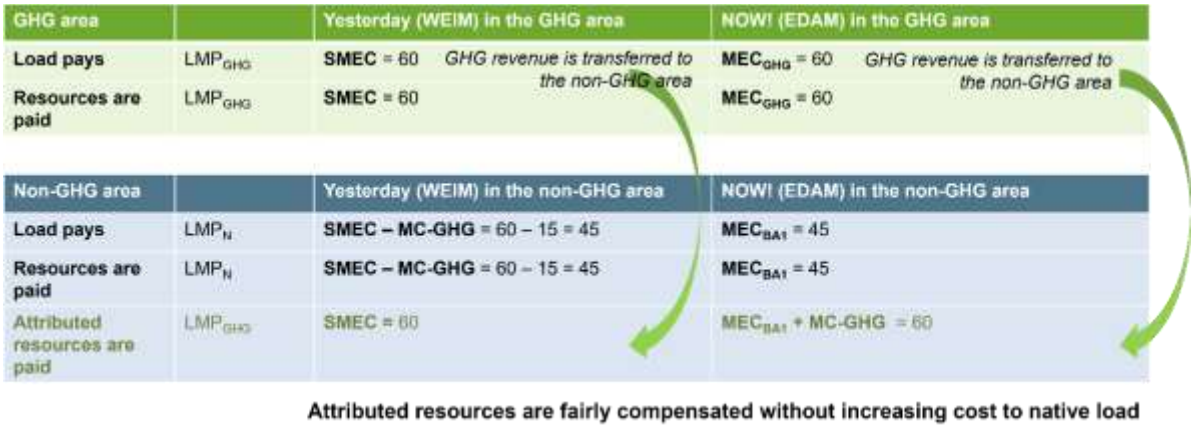
Until your vendor can provide an update, if you wish to represent a GHG capacity and price you will need to copy your bids forward in the SIBR UI, ensuring you supply the GHG area.

SIBR UI:

GHG Locational Marginal Price Report Updates
The Marginal Cost of Greenhouse Gas (MC-GHG) creates consistent price signals for resources within a regulated area and resources attributed to the regulated area. With the implementation of EDAM, we changed the way in which we report GHG price.

Prior to EDAM, CAISO calculated the System Marginal Energy Cost (SMEC) portion of the Locational Marginal Price (LMP) as a single, system-wide value that represented the marginal cost of serving the next megawatt-hour for the entire grid, regardless of location, with locational differences reflected only through congestion and losses. With the implementation of EDAM, this approach shifted to a locational Marginal Energy Cost (MEC), where the energy component of price is determined at each node or interface based on local supply, transmission constraints, and regional conditions. As a result, multiple marginal resources can set prices simultaneously across different locations, enabling more precise, transparent pricing that accurately reflects deliverability, interregional constraints, and multi-area optimization.

The chart below illustrates the differences in the SMEC component of LMPs in WEIM across areas, including how prices in non-GHG areas were historically derived from a single reference bus. It also shows how, under EDAM, this approach shifts such that each Balancing Authority has its own MEC, reflecting locational pricing. The chart highlights these changes for both GHG and non-GHG areas.



Attributed resources are fairly compensated without increasing cost to native load

In this example, assume no congestion or losses. The price separation between the GHG and non-GHG areas is entirely made up of GHG:

- BAAs located in the California GHG area:
  The LMP is $60/MWh, which includes the GHG cost component.
- BAAs located in a non-GHG area:
  The LMP is $45/MWh, which excludes the GHG cost. The GHG component is $15/MWh.
- GHG compensation for non-GHG BAAs:
  When BAAs in the non-GHG area receive a GHG award, they are compensated with the base LMP plus the GHG component to ensure accurate payment. In this example, that results in a total of $60/MWh ($45 base price + $15 GHG component).

With EDAM, we changed the way in which we report GHG price. Previously, OASIS displayed the SMEC and GHG components separately. This has changed so that OASIS now shows the difference.

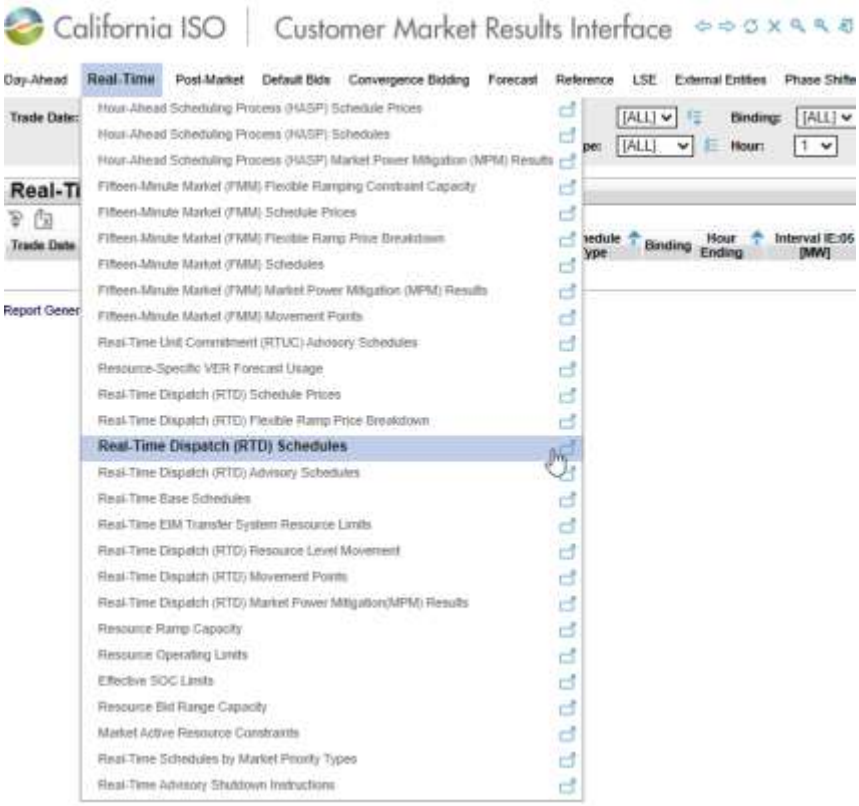
- Using the example above, BAAs in the non-GHG area would see a price of $45/MWh displayed in OASIS. ($60 total - $15 GHG component).

Participants will now want to leverage the following reports:

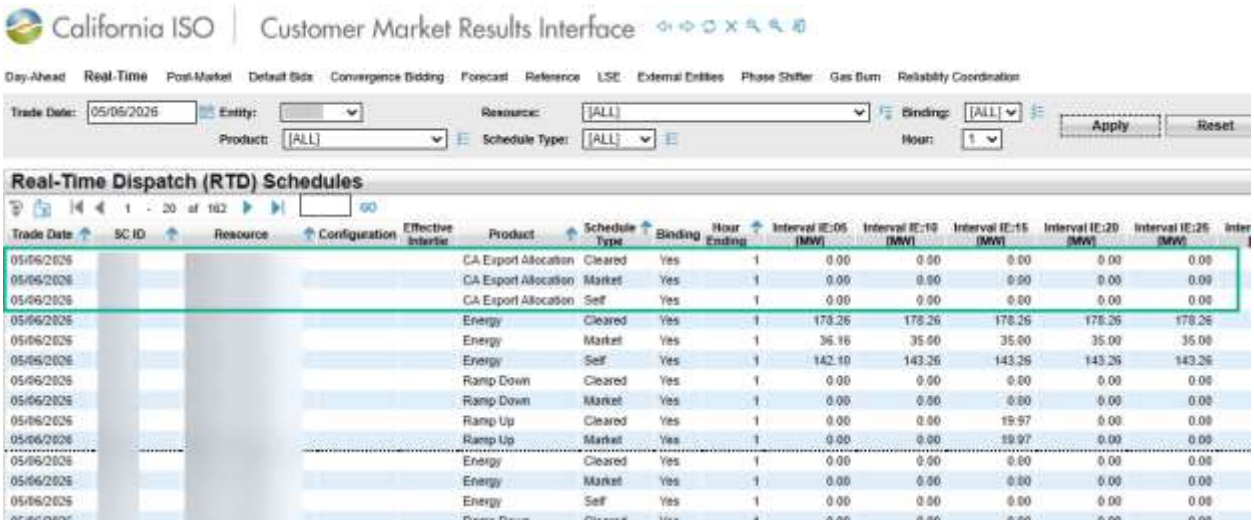
- **Real-Time Dispatch (RTD) Schedules** posted in CMRI (*CA Export Allocation Product*).
- **Green House Gas (GHG) Shadow Prices** posted in OASIS.

RTD Schedules in CMRI

In CMRI, navigate to Real-Time > Real-Time Dispatch (RTD) Schedules report.

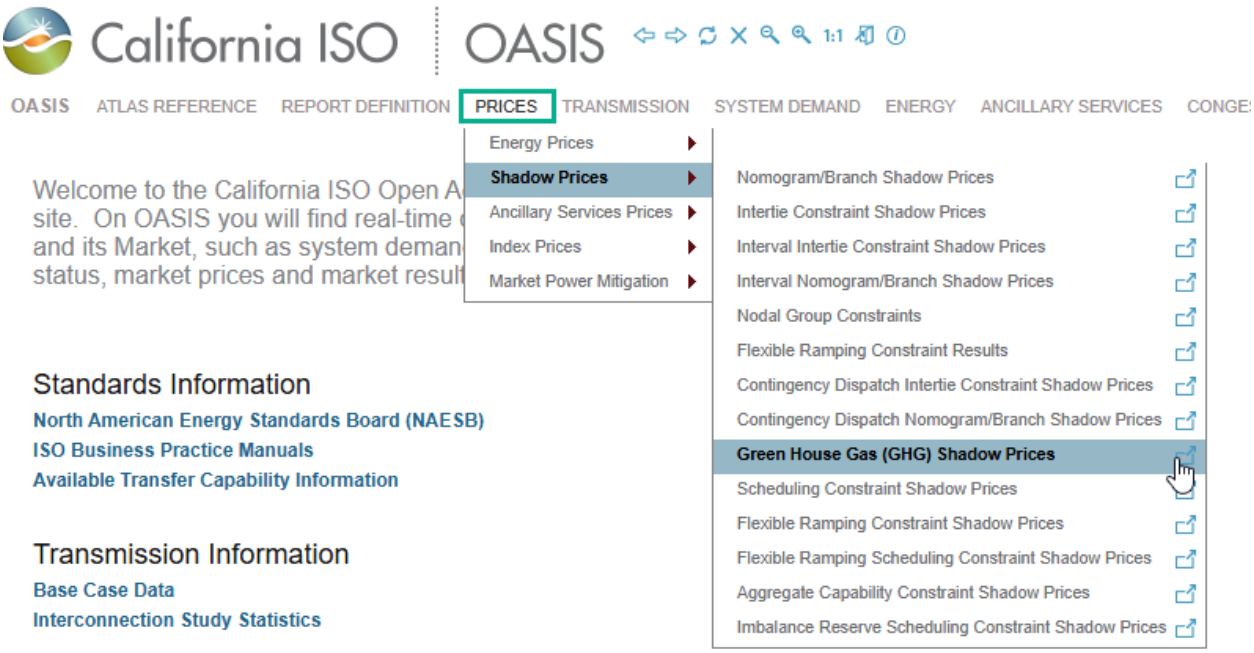


Once in the report, view the **Product column** and **CA Export Allocation** will provide the applicable values.

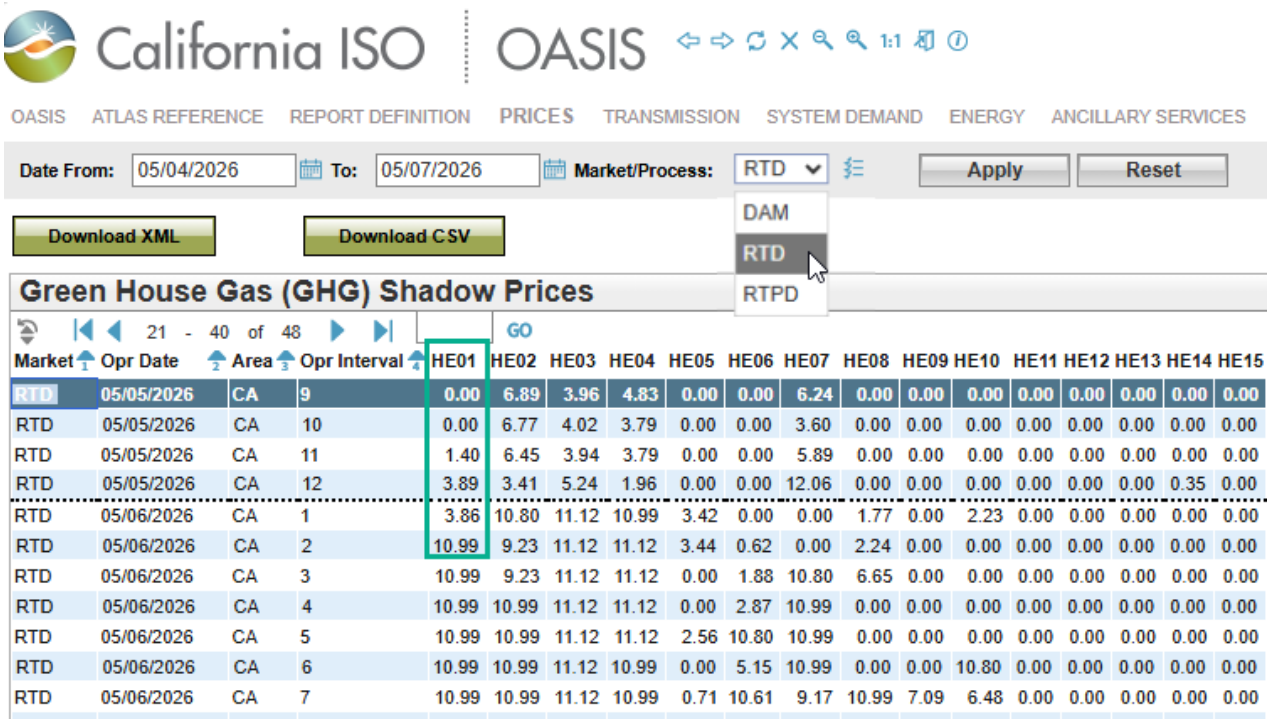


Green House Gas Shadow Prices in [OASIS]

To find the values, visit the Prices > Shadow Prices > **Green House Gas (GHG) Shadow Prices** report, shown in the screenshots below.



The GHG price is no longer reflected at the resource node, but as the difference between the Marginal Cost of Congestion (MCC) for the GHG area minus the GHG price for one value. This will either show a zero or positive value.



Market	Opr Date	Area	Opr Interval	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11	HE12	HE13	HE14	HE15
RTD	05/05/2026	CA	9	0.00	6.89	3.96	4.83	0.00	0.00	6.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/05/2026	CA	10	0.00	6.77	4.02	3.79	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/05/2026	CA	11	1.40	6.45	3.94	3.79	0.00	0.00	5.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/05/2026	CA	12	3.89	3.41	5.24	1.96	0.00	0.00	12.06	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00
RTD	05/06/2026	CA	1	3.86	10.80	11.12	10.99	3.42	0.00	0.00	1.77	0.00	2.23	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	2	10.99	9.23	11.12	11.12	3.44	0.62	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	3	10.99	9.23	11.12	11.12	0.00	1.88	10.80	6.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	4	10.99	10.99	11.12	11.12	0.00	2.87	10.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	5	10.99	10.99	11.12	11.12	2.56	10.80	10.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	6	10.99	10.99	11.12	10.99	0.00	5.15	10.99	0.00	0.00	10.80	0.00	0.00	0.00	0.00	0.00
RTD	05/06/2026	CA	7	10.99	10.99	11.12	10.99	0.71	10.61	9.17	10.99	7.09	6.48	0.00	0.00	0.00	0.00	0.00

Legal and Regulatory Language

The newly published Business Practice Manual (BPM) for Extended Day Ahead Market is available in the BPM Library on the California ISO website: https://bpmcm.caiso.com/Pages/BPMLibrary.aspx.

- **Section 23 Greenhouse Gas Accounting** of this new BPM addresses Greenhouse Gas concepts that were implemented or clarified through the EDAM implementation process.

- **Sections 23.2.2 Bid Adders and GHG Regulation Areas** through **Section 23.2.4 Default Treatment** provide additional details on information provided in this readiness note.

Where can you find more information about Greenhouse Gas?

- EDAM Greenhouse Gas Regulation Obligations Computer Based Training Course: https://caiso.bravais.com/s/379/Caiso_com

- EDAM Evergreen Training Chapters 1-4 Videos: https://www.youtube.com/playlist?list=PLpEmS_3q2cQ7eoRCVmD9ODUgmd3R8GOg1

- EDAM Evergreen Training Slide Deck (see slides 67-74, 134-139; additional price formation examples in slides 76-130): https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Greenhouse-Gas-Coordination-Working-Group-Price-Formation-Sep-19-2024.pdf

- May 29, 2024 GHG Working Group Presentation (slides 66-103): https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-GHGCoordination-May29-2024.pdf

- July 29, 2024 GHG Working Group Presentation (slides 18-27): https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Greenhouse-Gas-Coordination-Working-Group-Jul-29-2024.pdf