



California ISO

Price Formation Enhancements

Working Group Session #10

1/10/2023


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.
- Note: The ISO encourages any verbal or written agreements to comments made during this working group session.
- You may also send your question via chat to either Brenda Corona or to all panelists.

Recent changes to the Intellor platform, specifically around audio while joining meetings

- The “call me” feature is no longer being offered when joining Operator assisted meetings.
 - You must chose between Computer Audio option and a Dial-In audio options.
 - Dial In options (including your Attendee ID#) will be provided in the meeting details upon registration
 - This attendee ID is unique to your registration
 - When unmuted click microphone arrow and select the headset option.
- We are actively working with Intellor on alternatives options and appreciate your patience. I will provide and update at the beginning of the year.

Instructions for WebEx

- The “raise hand” icon is located in the lower tool bar. You will hear a beep tone when you are un-muted; at that time please state your name, and question. Attendees dialed in on the phone only press #2 will hear a notification when you are un-muted; at that time please state your name and question. 
- WebEx platform will **LOCK** and mute you if you mute yourself once you have finished your question. Do not mute yourself until you have completed your question or comment.

Today's Working Group Agenda

Time	Topic	Presenter
9:00 – 9:05 AM	Welcome, Today's Agenda, Stakeholder Process Overview	Brenda Corona
9:05 – 9:10 AM	Today's Goals / Next Sessions	Juan Buitrago
9:10 – 10:45 AM	Return to Scarcity Pricing Discussion	James Friedrich
10:15 – 10:45 AM	Stakeholder Discussion : Scarcity Pricing	Juan Buitrago
10:45 – 11:00 AM	Next Steps	Brenda Corona

Goals of Today's Working Group Session

The Working Group structure is meant to embrace flexibility to allow organic and robust conversation on the topics at hand – it is still key for us to drive towards solutions collaboratively

- **Return the Working Group conversation to Scarcity Pricing**
 - Briefly Review concepts around the Scarcity Reserve Demand Curve, root causes, and topics for discussion to refine issue identification
- **Stakeholder Discussion on Problem Statement**
 - Receive stakeholder feedback on issue identification and appropriate framing of issue identified
 - Receive feedback on potential solutions from Stakeholder community
 - Receive feedback on necessary considerations for solutioning

ISO Policy Initiative Stakeholder Process



Stakeholder meetings, working groups and workshops may occur throughout the stakeholder process.

We are here

- Working groups will inform the Phase 1 straw proposal
- The ISO will take notes and produce reports of each of our working group meetings.



Price Formation Enhancements

Working Group Session – Scarcity Pricing Sprint #1
Staff Presentation

January 10, 2024

Scarcity Pricing Review

- Generally, the market sets prices based on the marginal cost of production.
 - When demand increases, the market dispatches more expensive generators, which leads to higher prices.
- **Scarcity pricing** occurs when market prices **exceed** the offer price of the most expensive available resource.
 - This occurs when the supply offered into the market fails to meet the demand for a given market product.
 - Under these conditions, there is no “marginal cost of production”.

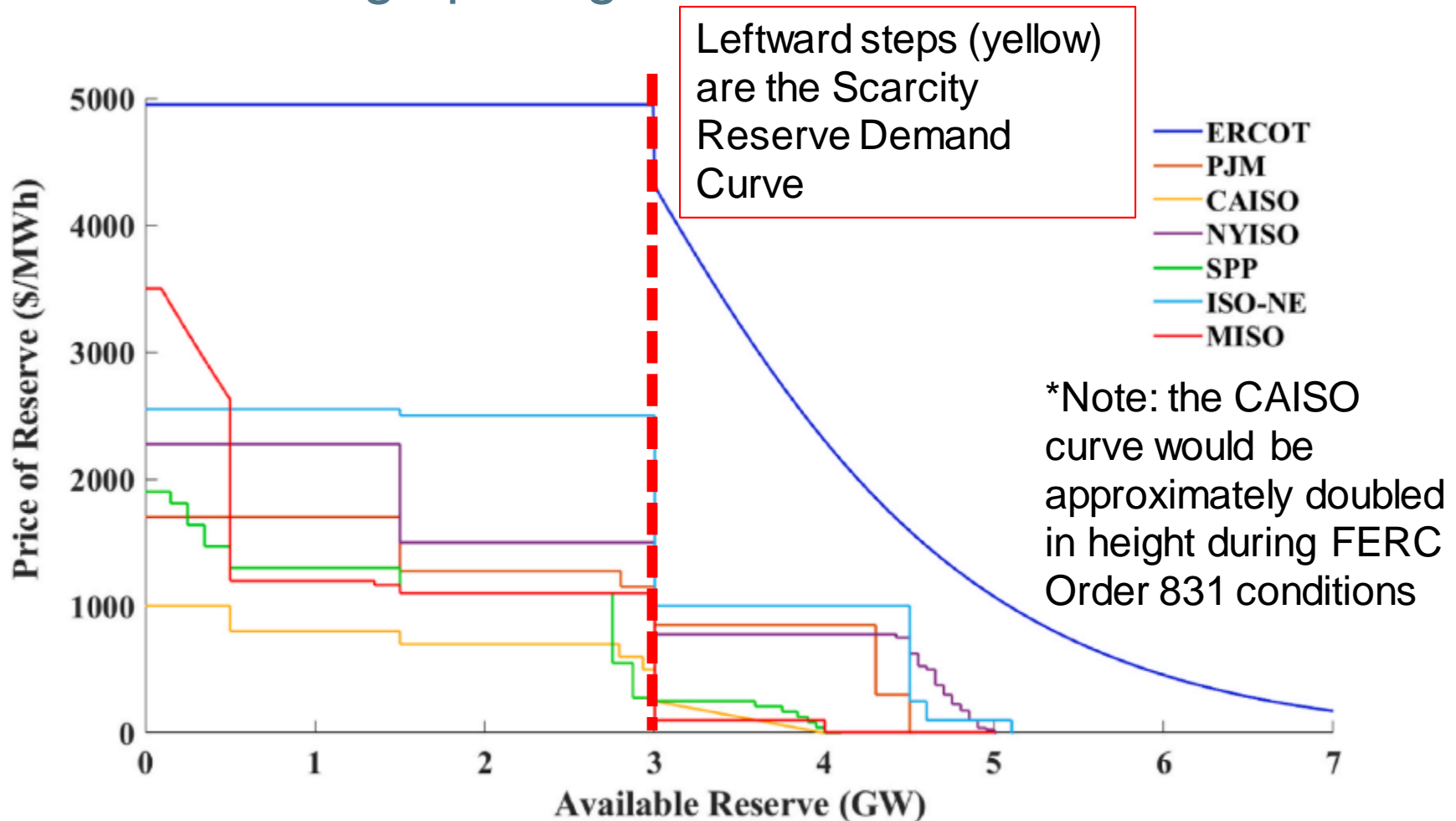
Scarcity Pricing Review

- Markets primarily enact scarcity pricing through reserve shortage pricing.
- CAISO uses a **Scarcity Reserve Demand Curve (SRDC)** during periods when supply cannot meet the minimum procurement requirements for ancillary services.
 - If supply fails to meet any of CAISO's ancillary service requirements within a region or sub-region, the Scarcity Reserve Demand Curve clears the ancillary services market at administratively determined prices.

Scarcity Pricing Review

- During periods when available ancillary services fall below the minimums NERC requires, the SRDC provides a price signal that serves two main purposes:
 - Encourage suppliers to produce or offer more power, increasing supply.
 - Encourage loads to consume less power, reducing demand.
- By providing these price signals, the SRDC helps to maintain grid reliability during times of peak demand.

Reserve shortage pricing in ISO/RTO markets



Mehrtash, Mahdi, Benjamin F. Hobbs, and Erik Ela. "Reserve and energy scarcity pricing in United States power markets: A comparative review of principles and practices." *Renewable and Sustainable Energy Reviews* (2023)

Problem Statement

CAISO's market design limits the opportunity for the Scarcity Reserve Demand Curve (SRDC) to activate during tight system conditions.

- The goal is not to make the market activate the SRDC more often, but to ensure the SRDC activates when system conditions justify it.

The Problem Statement poses several potential issues



Root Causes

- The day-ahead market procures all expected ancillary services, while the real-time market procures only **incremental** ancillary services.
 - The real-time market keeps the day-ahead ancillary service schedules fixed; however, it can procure incremental AS needed due to resource availability, changing requirements, and cascading ancillary service procurement.
- The real-time market only procures incremental ancillary services in RTPD, not in RTD.
 - Consequently, RTD will not incorporate the SRDC price signal.

Root Causes

- The current ancillary service procurement approach lacks a robust deliverability test.
 - Ancillary service awards might be located behind a transmission constraint within an AS zone.
- Operators conduct daily studies to identify day-ahead awards that are inaccessible and prevent these resources from receiving ancillary service awards.

Preliminary Options for Discussion

- This initiative could introduce a more robust deliverability test that ensures ancillary service awards are transmission feasible.
- This functionality would also facilitate the full re-optimization of ancillary services in the real-time market (RTPD and RTD), as operators will have confidence in the deliverability of ancillary service awards.
- Aligns with 2023 Policy Catalog Item 6.1.1



California ISO

Stakeholder Feedback

Next steps

PFE Working Group Sprint #2

- Wednesday January, 17th, 2023
- Feedback on today's problem statement/potential solution conversation
- Continue conversation on Scarcity Pricing Problem statements

Next steps

Upcoming PFE Working Group Sessions

- January 2024 – Scarcity Pricing
- Jan 17- Virtual 9-11am
- Jan 24 – Hybrid 9-2pm



Meeting
 Holiday Office Closed

Please note the working group session is tentative until confirmed through a notice in the ISO's Daily Briefing

Price Formation Enhancements Working Group Tentative Schedule

January						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- Jan 10, 2024 – Working Group – Scarcity Pricing
- Jan 15, 2024 - *Holiday Office Closed*
- Jan 17, 2024 – Working Group – Scarcity Pricing
- Jan 24, 2024 – Working Group – Scarcity Pricing

February						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

- Feb 12, 2024 – Working Group – Fast Start Pricing
- Feb 19, 2024 – *Holiday Office Closed*
- Feb 26, 2024 – Working Group – BAA Level Market Power Mitigation (MPM)

- <http://www.caiso.com/InitiativeDocuments/Price-Formation-Enhancements-Working-Group-Schedule-2024.pdf>

For reference

- Visit Price Formation Enhancements Working Group initiative webpage for more information:
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Price-formation-enhancements>
- Price Formation Working Group Schedule
<http://www.caiso.com/InitiativeDocuments/Price-Formation-Enhancements-Working-Group-Schedule-2024.pdf>
- If you have any questions, please contact Brenda Corona at bcorona@caiso.com or isostakeholderaffairs@caiso.com

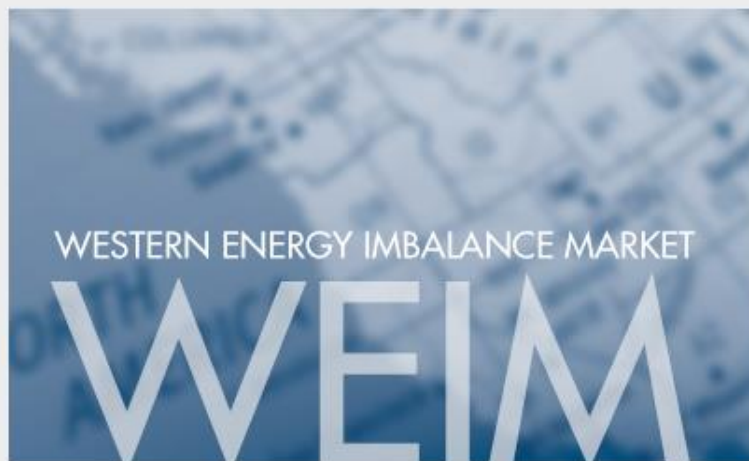
NEWS RELEASE: FERC accepts ISO tariff changes for a Western day-ahead electricity market

- New rules adopted for the Day-Ahead Market Enhancements (DAME) and the Extended Day-Ahead Market (EDAM).
- Stakeholders were deeply engaged in designing the market rules through a collaborative working group process, which included regional utilities, independent energy providers, state regulators, public interest organizations, and a variety of entities representing various interests and points of view throughout the Western Interconnection.
- Learn more about EDAM through this [link](#).
- Find out [What They're Saying](#), [News Release](#)



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

<http://www.caiso.com/about/Pages/Blog/default.aspx>.



December 18, 2023
Leadership, Western EIM

WEIM Governing Body has two positions to fill in 2024

By Nicole Hughes

In 2024, the Western Energy Imbalance Market (WEIM) Nominating Committee will reconvene and lead the stakeholder effort to recommend candidates to fill two positions on the WEIM Governing Body that are set to expire at the end of June. This time around, there is the added consideration of candidates' qualifications to meet the additional ...

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December 11, 2023
Leadership

California ISO 2023 Year in Review

Last year, following extensive engagement with our partners and stakeholders, the California ISO published its 2022-2026 Strategic ...

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