



California ISO

Resource Adequacy Modeling & Program Design (RAMPD) Track 2: RAIM & Outage Substitution Straw Proposal

Stakeholder meeting

May 15, 2026

9:00 am – 12:00 pm

Housekeeping



This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.



The meeting is structured to stimulate dialogue and engage different perspectives.



Please engage in a respectful and professional manner. Introduce yourself and your organization when speaking. Follow the facilitator's guidance for speaking or asking questions.



Please keep comments brief and avoid repeating points already made to ensure everyone has an opportunity to participate in a robust discussion.



You can access Closed Captioning and the Transparency Viewer using the controls located at the bottom of the Webex screen.

Instructions for Raising Your Hand to Ask a Question



Please remember to state your name and affiliation before making your comment.



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. Start speaking a couple of seconds after you're unmuted.



If you are connected on the phone line only and not the Webex dial *3 to be added to the queue.



You may also send questions via chat to all panelists.



If you need technical assistance during the meeting, please send a chat to the event producer, Intellor Events.

Objectives and Agenda

Objectives:

1. Review May 2026 RAMPD Track 2 Straw Proposal
2. Hear feedback and answer questions from stakeholders

Agenda

Topic	Presenter	Time
I. Introduction	Partha Malvadkar	9:00-9:10 AM
II. Proposal: RAAIM Reform	Ansel Lundberg	9:10-10:15 AM
Break: 10:15 – 10:30 AM		
III. Next Steps: Bidding Requirements	Ansel Lundberg	10:30-11:00 AM
IV. Next Steps: Outage Substitution	Ansel Lundberg	11:00-11:20 AM
V. Proposal: Outage Definitions	Ansel Lundberg	11:20-11:50 AM
VI. Next steps	Christina Guimera	11:50-noon

Track 2: RAIM & Outage Substitution
Straw Proposal

I. INTRODUCTION

Introduction: RAMPD Track 2 Straw Proposal

- RAMPD Track 2 Goals
 - Improve ISO’s existing resource adequacy (RA) tools & processes based on stakeholder feedback
 - Provide local regulatory authorities (LRAs) with information to reliably and efficiently perform planning functions
- Focused on reforms to ISO RA processes in two areas
 - Resource adequacy availability incentives
 - Outage processes for RA resources

RAMPD Track 2 stakeholder meetings

December 2024

March 2025

August 2025

March 2026

Today

substitution
straw proposal

Track 2: RAIM & Outage Substitution
Straw Proposal

II. PROPOSAL: RAIM REFORM

II. Proposal: RAAIM Reform

1. History of the RA Availability Incentive Mechanism (RAAIM)
2. Problem Statements & Objectives
3. Stakeholder Feedback
4. Proposal
 - Overview
 - Resource Availability and Exemptions
 - Assessment Period
 - Charges and Payments
 - Related Topics (Flex RA, performance assessment, RAAIM and QC methodology)

Proposal: RAIM Reform – History of RAIM

- Replaced the Standard Capacity Product framework
- Current RAIM design overview
 - Goals
 - Current design limitations

Proposal: RAAIM Reform – Problem Statements & Objectives

RAMPD Working Group Problem statements

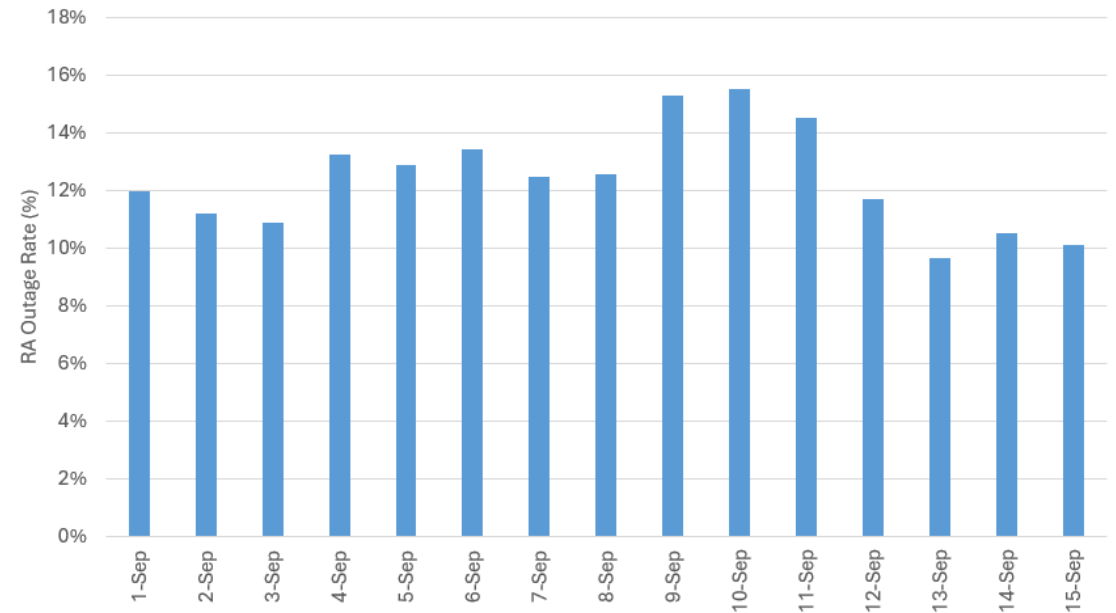
1. RAAIM is not effective at providing an incentive for RA resources to offer capacity
2. RAAIM should be assessed to see if it is meeting its objectives and if a new mechanism is needed to provide an availability incentive
 - Assess in context of changing LRA QC methodologies

Proposal: RAAIM Reform – Problem Statements & Objectives

QC methodologies, operational tools (i.e., RAAIM), and energy market price signals, together, should:

- Reduce forced outage rates from all resource types particularly during stressed grid conditions
- Align shown RA values with the expected ability of those shown resources to bid and perform
- Encourage resources to offer into the energy market day in, day out in accordance with their must-offer obligations; particularly during critical hours

September 1-15, 2022 Daily RA Resource Outage Rates
(maintenance and forced)



Proposal: RAIM Reform – Stakeholder Feedback

Feedback on RAIM reform

Ensure coordination with UCAP

EDAM RSE surcharge cost allocation approach would require more development

MOO should be tied to % of installed capacity, not Pmax directly

Availability penalties should apply during critical conditions at calibrated levels

Performance incentive should be considered in addition to availability

Resource exemptions: stakeholders expressed support for removing or retaining various RAIM exemptions

Proposal: RAAIM Reform - overview

Design Element	Today's RAAIM	Proposed RAAIM Reform
Criterion	Status quo: assess availability by comparing a resource's shown RA to its day-ahead (and in some cases, real-time) energy offers and outage status	
Assessment period	AAH (5 consecutive clock hours on each weekday – hours determined for each season based on CAISO annual study)	Two assessment triggers: Tier 1 – Elevated Reliability Risk Condition Tier 2 – Critical Capacity Insufficiency Condition (CAISO BAA EDAM RSE failure)
Price	\$4.40/kW-month (set to 60% of CAISO's CPM soft offer cap)	Tiered pricing: Tier 1 – day ahead LMP Tier 2 - \$2,000/MWh
Assessment frequency	Netted across each calendar month – resources that are bidding between 94.5% and 98.5% of intervals are not paid or penalized	“Per event” – assess energy offers in each day-ahead hourly or real-time interval individually
Exemptions	Numerous (resource-based; contract-based; outage-based; MOO-based; and flex-only capacity)	Alter categorical exemptions of several resource type and outage type exemptions. Instead, allow management of RAAIM exposure via exempt outage natures of work to ensure resources meeting their MOO are not subject to RAAIM. Eliminate exemption for <1 MW resources.
Allocation of charges	Charges collected from unavailable resources is allocated back to resources that demonstrate a reasonable level of availability and to load	

Proposal: RAIM Reform – Resource Availability & Exemptions

- To determine if a resource is subject to RAIM non-availability charges, its availability should be assessed based on its expected capability
- In general, **shown** RA provides strong and meaningful incentive for resource availability during reliability-critical periods, and maintains transparent and implementable framework across resource types
- Reduce or eliminate categorical exemptions:
 - Several resource types & outage types
 - <1 MW resources
 - Acquired resources

Proposal: RAAIM Reform – Assessment Period

Tier 1 – Elevated Reliability Risk Condition

Tier 1 Goals

Maintain units to be available in all hours

Forward procurement and replacement of resources on outage

Provide some lead time (2-8 days) to give an incentive to return from outage quickly enough to be operational during critical periods

Trigger additional incentive *before* scarcity becomes operationally binding

Tier 2 – Critical Capacity Insufficiency Condition

Tier 2 Goals

Incentive for RA resources to be available with sufficient capacity to pass the CAISO BAA RSE

Stronger incentives to maintain committed RA resources

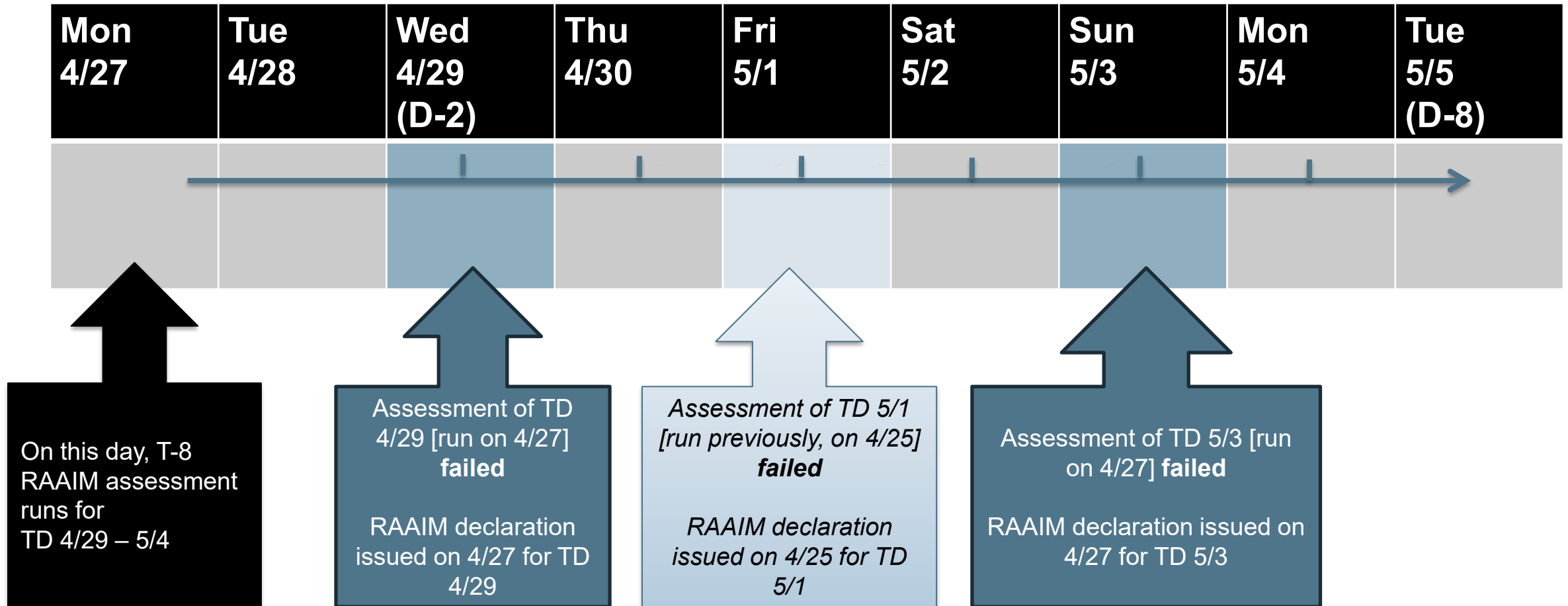
Avoiding outages during stressed periods

Proposal: RAAIM Reform – Assessment Period

Tier 1 – Elevated Reliability Risk Condition

- Why? Identify periods with any significant level of risk of resource inadequacy **several days before** scarcity occurs
- **Trigger:** operational assessment occurring daily on a rolling look-ahead basis (T-8 through operating day) looking at each day. Once triggered on a given day, cannot be un-triggered
- Variables in this assessment could include:
 1. Forced and urgent outage levels
 2. Load forecast vs operational/shown RA
 3. A buffer representing uncertainty including renewable production, outage status, and load changes between the time the study is performed and the trade date
- Penalty would compare each resource's must-offer obligation against its bids and outage status for the given trade date when RAAIM Tier 1 has been triggered
- **Penalty price:** linked to Day-Ahead prices for trade date when Tier 1 is triggered

Tier 1 example: assessment is run daily, for each day, looking 8 days out (D minus 2-8)



Proposal: RAAIM Reform – Assessment Period

Tier 2 – Critical Capacity Insufficiency Condition

- **Trigger:** during EDAM RSE failure under the EDAM balancing authority sufficiency test, where the CAISO BAA does not demonstrate sufficient capacity to meet its obligation
- Penalty would compare each resource's must-offer obligation against its bids for the given trade date when RAAIM Tier 2 has been triggered
- **Penalty price:** \$2,000/MWh. Fixed value provides certainty

Proposal: RAAIM Reform – Charges & Payments

- Maintain self-funding element of today's RAAIM
- Allocate non-availability charges to resources that meet availability obligations
- Remove monthly 94.5%-98.5% availability standard bandwidth. Instead, allocate collected charges on per-event basis to:
 - Resources that met availability requirements
 - Load

Proposal: RAIM Reform – Related Topics

- Flex RA
- Performance assessment
- RAIM and QC methodology

Track 2: RAAIM & Outage Substitution
Straw Proposal

III. NEXT STEPS: BIDDING REQUIREMENTS

Next steps: bidding requirements

Must-offer obligation/bidding requirements for resources providing system RA

- Goal: Retain the effective status quo regarding MOO/bidding requirements for dispatchable RA capacity resources, regardless of QC methodology
 - Today, these resources are required to offer all available capacity contracted and shown as RA to the ISO
 - The MOO for system RA resources should be set to reflect operational capacity, or in other words, whatever capacity is available
- Goal: coordination with CPUC and other LRAs regarding QC methodologies and impact on values sent to CAISO for NQC list development
- Focus: Partially shown resources and PCDS resources

Next steps - Bidding Requirements

Partially shown resources and PCDS resources



Next steps - Bidding Requirements

Partially shown resources and PCDS resources



$$\text{must-offer obligation (MW)} = \text{shown RA (MW)} \times \frac{\text{Pmax (MW)}}{\text{NQC (MW)}}$$

Next steps - Bidding Requirements

Partially shown resources and PCDS resources

Resource	NQC (MW)	Pmax (MW)	Shown RA (MW)	MOO (MW)
Plant 1	100	100	100	100
Plant 2	80	100	80	100
UCAP QC reduction				
Plant 3	80	100	40	50
Partially shown				

$$\text{must-offer obligation (MW)} = \text{shown RA (MW)} \times \frac{\text{Pmax (MW)}}{\text{NQC (MW)}}$$

Track 2: RAIM & Outage Substitution
Straw Proposal

IV. NEXT STEPS: OUTAGE SUBSTITUTION ENHANCEMENTS

Next Steps: Outage Substitution Enhancements – stakeholder feedback

Position	Stakeholder
Proposed substitution pool does not meaningfully improve existing tools, but more detail is needed	ACP-CA, Cal Advocates, DMM, MRP, PG&E
Move forward with developing enhanced substitution procurement tool (shopping cart)	SCE, Six Cities, REV Renewables, CDWR
Alternative approach: Match, optimize, clear, and settle a substitute capacity auction	CESA, MRP, Peninsula Clean Energy, WPTF, DMM

Next Steps: Outage Substitution Enhancements

Continue with ISO recommended approach

Matching tool /
Enhanced bulletin
board

Matching functionality for SCs to offer and purchase substitute capacity “shopping cart style.” No ISO settlement or price formation.

Alternative, optimized approaches

(explained but not recommended in 2025 straw proposal)

Prioritize highest bid /
reverse second price
auction

Procurement based on a daily price whereby the ISO would procure on behalf of SCs and allocate the costs of substitution

Prioritize matching
largest outages

Maximize
MW of
substitution

Goals of policy initiative:

1. Overcome SC procurement challenges
2. Prevent SCs holding back capacity

Next Steps: Outage Substitution Enhancements

- Weekly product is an option. Daily granularity is a challenge
- Optimized solutions not recommended in August 2025 straw proposal
 - Could provide reliability and efficiency improvements
 - May add value in context of RAMPD Track 3B CPM reform discussions
- ISO appreciates stakeholder feedback on the options and is reviewing the recommended design option in the August 2025 straw proposal in order to develop meaningful enhancements to substitution processes

Track 2: RAIM & Outage Substitution
Straw Proposal

V. PROPOSAL: OUTAGE DEFINITIONS

Proposal: Outage Definitions

To address stakeholder feedback on outage definitions, CAISO has proposed revisions that better align outage classifications with both operational conditions and the timing of submittal

Key changes include:

- **Adding “Urgent Outage”** as a new outage type
 - Establishes a clear distinction between planned and forced outages.
 - Impact: Urgent outages will receive a UCAP derate under default rules and will be subject to RAAIM, as they are treated as forced at approval and do not require replacement capacity.
- **Maintaining off-peak opportunity outages** (subset of planned) as an outage type
 - Preserves flexibility for maintenance during low-risk hours
- **Removing short-notice opportunity outages** as an outage type
 - Redundant with urgent outages
 - Potential for mis-use: challenges in study window and RAAIM exemption

Proposal: Outage Definitions

Outage	Proposed Definition	Timing for submittal	Req Sub Capacity?
Planned	Include a reference to the planned study window timelines and submission deadlines in the RC West outage coordination procedure. The new definition would also include a specific requirement that the purpose of the outage is to carry out routine planned maintenance or undertake new construction work.	Planned outages should be submitted in alignment with the planned study windows, with enough advance notice to at least meet the short-range study window submittal deadline and requirements.	Yes
Off-Peak Opportunity Outage	Subset of planned outages that provides a route for RA resources to take a planned outage without needing to provide replacement capacity.	Maintenance outages that can occur during designated low-risk hours without requiring substitute RA capacity	No
Forced	A plant needs to be removed from service in real time with very limited or no notice	Should be submitted as soon as the SC becomes aware that the unit is or will about to be offline	No
Urgent	Plant is known to be operable, yet carries an increased risk of a forced outage occurring. Facility/equipment remains in service until personnel, equipment and/or system conditions allow the outage to occur.	As soon as an SC is aware of an anticipated outage that needs to occur in the immediate future, it should be submitted as an urgent outage. If an SC is aware of any imminent need to take a plant offline, they would submit an urgent outage.	No
Short-Notice Opportunity Outage -	An outage (maintenance, inspection, testing, or minor work) that cannot wait until normal planned window but is non-emergency; it becomes feasible because system conditions (e.g. surplus capacity) permit a short window for removal without undue reliability risk.	Submit ≤ 7 days prior to the outage start date	

Track 2: RAIM & Outage Substitution
Straw Proposal

NEXT STEPS

Next steps

- Thursday, June 4: comments due
- To present at the next stakeholder meeting, contact ISO staff
- Summer: revised straw proposal
- Late 2026: decision

2026-2028 CAISO Policy Initiatives Roadmap		2026			
		Q1	Q2	Q3	Q4
Resource Adequacy Modeling and Program Design					
	Track 2: Outage & substitution and availability and incentive mechanisms	Policy development		Decision	

This Week at the ISO – 4/27/26

Stakeholder Meetings

All public stakeholder meetings are also listed on the [CAISO Calendar](#)

- Monday, April 27th – Market Performance and Planning Forum Q2
 - 9:00am – 12:00pm PT ([link](#))
- Monday, April 27th – Intertie Schedule Modeling Evolution on CAISO Interties - Virtual Workshop
 - 1:00pm – 4:00pm PT ([link](#))
- Tuesday, April 28th – BPM Change Management Proposed Revision Request Review
 - 9:00am – 12:00pm PT ([Registration Link](#))
- Tuesday, April 28th - WEM Governing Body General Session
 - 1:00pm – 3:45am PT ([link](#))
- Tuesday, April 28th - Interconnection Customer User Group
 - 1:00pm - 2:00pm PT([Registration link](#))
- Wednesday, April 29th - Joint ISO Board of Governors and WEM Governing Body General Session
 - 2:30pm - 5:30pm PT([link](#))
- Thursday, April 30th - ISO Board of Governors General Session
 - 10:00am - 12:00pm PT([link](#))
- Thursday, April 30th - Market Update
 - 10:00am - 10:30am PT([link](#))

Comment Submission Deadlines

- Wednesday, April 29th - 2025-2026 Transmission planning process
- Thursday, April 30th- Day-Ahead Market Enhancements (DAME) Configurable Parameters

This Week at the ISO continued

EDAM & Parallel Operations Activities

The Release Activation Review for DAME and EDAM occurred on 4/23/26. The meeting included important information for our EDAM, DAME, and WEIM users. Please see the links to review the [presentation](#) and [recording](#).

The [Parallel Operations Plan](#) allows participants to test systems and procedures ahead of market implementation, serving as a market “dress rehearsal” to support a smooth production launch. The items and resources below are intended to help guide you through this process.

EDAM FAQ & Training:

- [EDAM FAQ Guide](#) - Designed to address general EDAM related questions
- [EDAM Training Resources](#) - A comprehensive set of EDAM training materials is available, offered in both instructor-led and computer-based training (CBT) formats. These resources include courses covering:
 - Bids and Base Schedule
 - EDAM Bidding Basic Concepts
 - Scheduling Infrastructure Business Rules (SIBR)
 - EDAM Scheduling Coordinator responsibilities
 - Intertie Scheduling
- [EDAM Business Requirements Specifications](#) - Describes EDAM’s business processes and the associated business requirements.
- [DAME Business Requirements Specifications](#) - Describes DAME’s business processes and the associated business requirements.
- [EDAM Scheduling Coordinator Decision Matrix](#)

Settlements:

- o [Settlements BPM Walkthrough](#)
- [Parallel DAME-EDAM Settlements Calendar](#)
-

This Week at the ISO continued

Market Simulations

Please refer to our [Release Schedule](#) for the most recent updates of initiatives scheduled for MAP- and Production- stage market sims

- Monday, April 27th – [Parallel Operations - DAME, EDAM, EDAM CAISO Balancing Authority Area Participation Rules Market Simulation and Parallel Ops Meeting](#)
- 9:00am – 10:00am PT ([link](#))
- Thursday, April 30th – [Parallel Operations - DAME, EDAM, EDAM CAISO Balancing Authority Area Participation Rules Market Simulation and Parallel Ops Meeting](#)
- 1:00pm – 2:00pm PT ([link](#))

Presentations and recordings of the Parallel Operations Meeting are posted [here](#).

To participate in the DAME and EDAM Implementation pre-Market Simulation meeting series, please follow these steps:

Submit a CIDI Request:

- Log in to the CAISO Customer Inquiry, Dispute, and Information (CIDI) system.
- Create a new request with the 'Functional Environment' set to "Market Simulation."
- In the request, specify your intent to participate in the DAME & EDAM Market Simulation.
- Include the following information:
 - Market Simulation initiative(s) you will participate in.
 - Any specific resources or systems you plan to test.
 - Contact names and email addresses for coordination.

Email Option:

- If you do not have access to CIDI, you may send an email to marketsim@caiso.com with the subject line "DAME & EDAM Market Simulation Registration."

Business Practice Manual (BPM) Updates

- The status of all PRRs and updated BPMs in the [BPM Library](#) are published on the [BPM Change Management Website](#). *The Business Practice Manual Proposed Revision Request Review monthly meeting on Tuesday, April 28, has been extended to three hours, from 9:00 a.m. to 12:00 p.m. This additional time reflects our commitment to meaningful stakeholder engagement and ensuring there is sufficient opportunity to discuss the open PRRs, primarily related to DAME and EDAM changes, and address questions and feedback. We look forward to active participation in the discussion.*



ENERGY
matters

The California ISO's blog highlights its most recent news releases, and includes information about ISO issues, reports, and initiatives.

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

<https://www.caiso.com/about/news/energy-matters-blog>



Story | Leadership, Inside the California ISO

Stakeholder Symposium Registration and Sponsorship Opportunities Opening in May

By Joanne Serina

04/15/2026



Story | Inside the California ISO, Markets

Frequency Band, a new podcast keeping the beat at 60 Hertz

By ISO Staff

03/30/2026



Story | Summer conditions, Markets

Summer readiness activities are well underway

03/17/2026

[Subscribe](#) to the Energy Matters blog monthly summary