



California ISO

Congestion Revenue Rights Enhancements Initiative

Phase 2 Kickoff Hybrid Meeting

September 30, 2026

Engagement Best Practices



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



The facilitator will provide guidance for comments and questions to ensure a productive flow. Please keep remarks succinct and avoid revisiting points that have already been covered, allowing space for all voices.



Closed Captioning and the Transparency Viewer are available at the bottom of the Webex screen.



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Please remember to state your name and affiliation before making your comment. After unmuting, please pause for about two seconds before speaking to ensure your audio connects clearly.



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.



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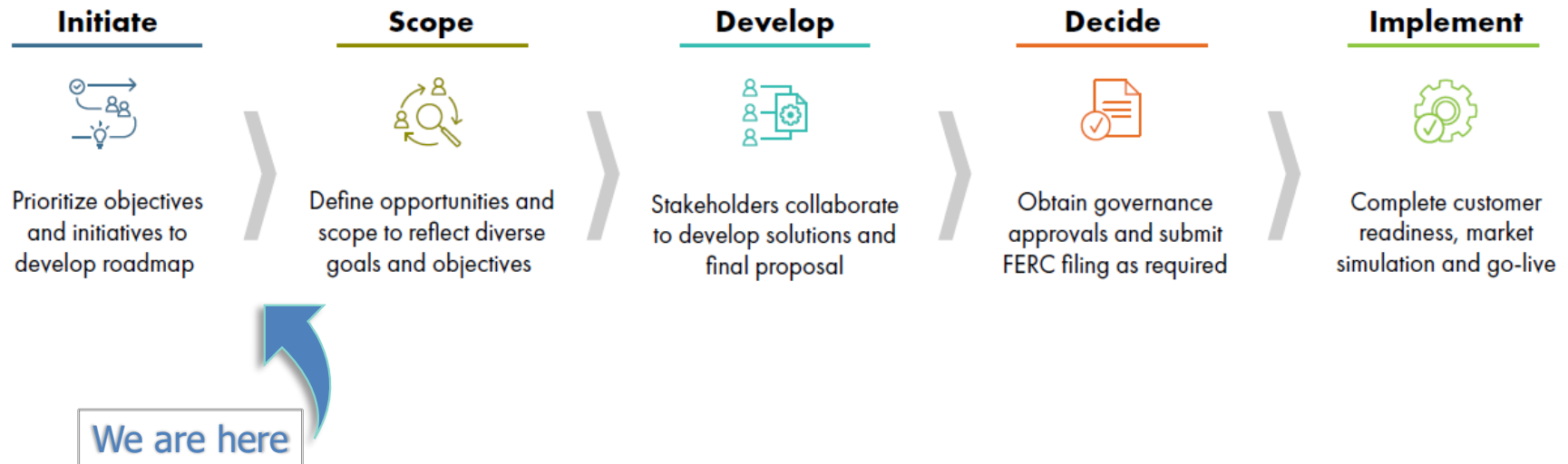
You may send questions via chat to all panelists.



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



CAISO Policy Initiative Stakeholder Process



[Learn more in the Stakeholder Process Guide.](#)

Agenda

Time	Topic	Presenters
9:00 – 9:05 am	Welcome + today's agenda	Brenda Marquez
9:05 – 9:20 am	Opening comments and review of initiative status	Partha Malvadkar, Hilary Staver
9:20 – 9:50 am	Auction Efficiency and Reform	Partha Malvadkar
9:50 – 10:30 am	Presentation on BAMx auction reform proposal	Doug Boccignone, Flynn Resource Consultants, Inc., for the Bay Area Municipal Transmission Group (BAMx)
10:30 – 10:40 am	Break	
10:40 – 11:20 am	Presentation on updated willing seller design	Roger Avalos, ISO Department of Market Monitoring
11:20 am – noon	New Scoping Area: Allocation Process Review	Hilary Staver
Noon – 1 pm	Lunch	
1:00 – 2:00 pm	Product Definition	Dinesh Das Gupta
2:00 – 3:00 pm	Revenue Adequacy and Modeling Enhancements	Hilary Staver
3:00 – 3:15 pm	Timeline and Coordination with Other Initiatives	Partha Malvadkar and Hilary Staver
3:15 – 3:45 pm	Open Discussion	
3:45 – 3:55 pm	Closing Comments	Partha Malvadkar and Hilary Staver
3:55 – 4:00 pm	Next Steps	Brenda Marquez

REVIEW OF INITIATIVE STATUS

The CRR Enhancements initiative is at the beginning of Phase 2 of policy development

- The scoping phase took place from November 2024 to December 2025
 - Identified key focus areas of:
 - Revenue adequacy
 - Auction efficiency
 - Product definition
- Policy development began in January 2026
- Phase 1 of policy development concluded in July 2026 with Board approval of the loop flow modeling item
- Phase 2 includes all areas identified in the scoping phase and not resolved in Phase 1

SCOPING AREA: AUCTION EFFICIENCY

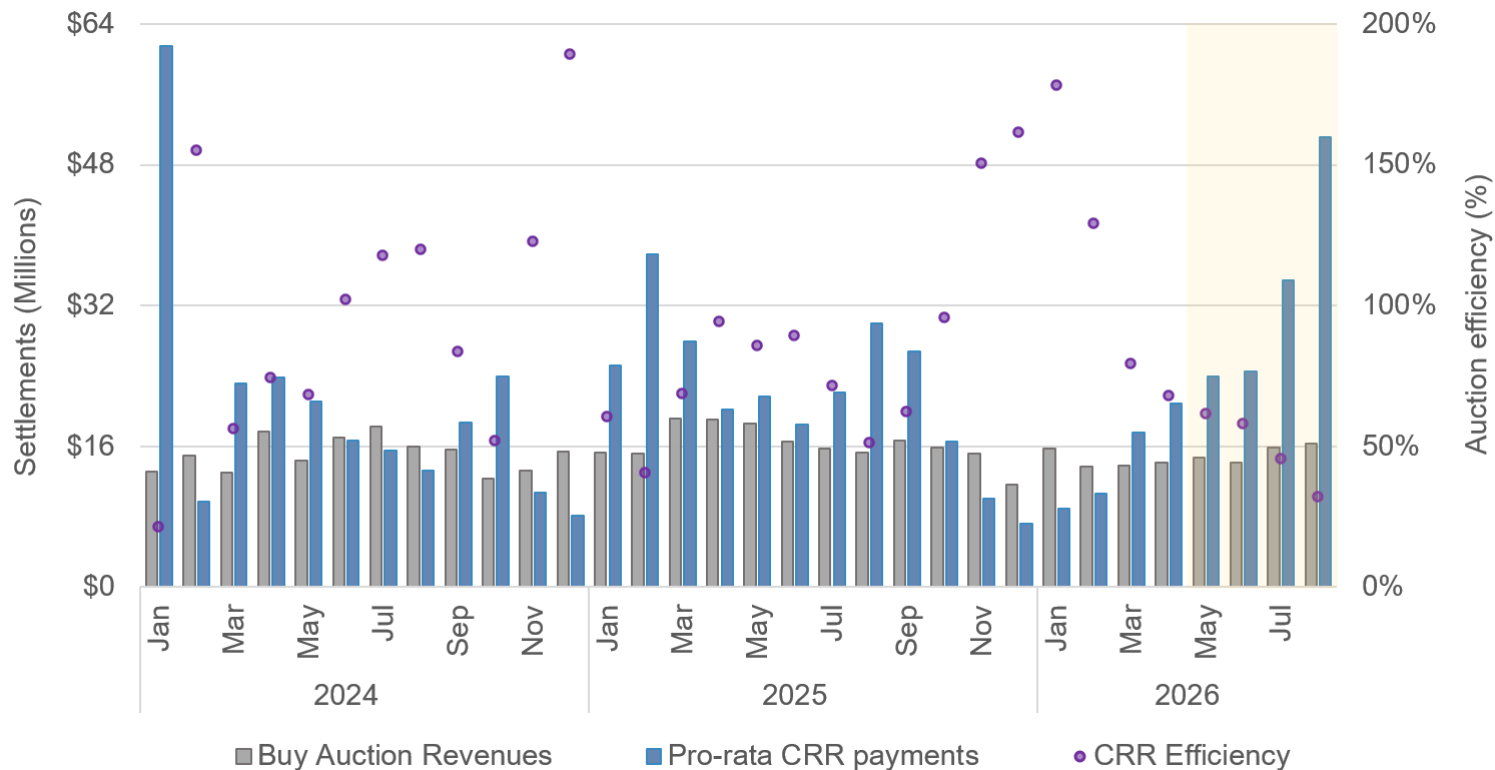
Auction Efficiency: Revisiting the Problem Statements

1. Since adoption of the 2019 policy changes, the ratio of auction revenue per dollar of CRR payout has improved from 50 cents to 68 cents. However, many load-serving entities have expressed that the benefits from the auction mechanism still do not fully justify the cost to them in foregone congestion rent allocation. Questions remain whether the auction mechanism justifies the cost to customers that pay the costs for the CAISO transmission grid in foregone congestion revenue.
2. Based on market results, it is unclear to what extent all CRR auction participants contribute to the fair allocation of transmission revenues. Particular focus of reforms should consider whether the congestion revenues received from different types of auction participants are commensurate with A. their funding of the transmission system B. their payments for auction CRRs and C. other hedging value received by physical market participants.
4. The method for allocating revenue shortfalls should strike the best balance practicable between allocating congestion revenue back to transmission customers and maintaining the hedging value of CRRs, while recognizing the evolving congestion revenue allocation on external constraints. Allocation of revenue shortfalls should be guided by cost causation principles.

Review of Phase 1 work on auction efficiency

- Wide range of stakeholder perspectives on the problem statement and preferred solutions
- Stakeholders considered whether a universal minimum bid and price floor in the auction could achieve incremental efficiency improvement while being implemented relatively quickly
- Stakeholder consensus was to remove this from the Phase 1 scope and consider it in Phase 2
- Stakeholders expressed a preference for considering all auction-related options in Phase 2 rather than starting from the universal floor concept considered in Phase 1

CRR auction efficiency continues to decline in recent months, reaching 31percent in August

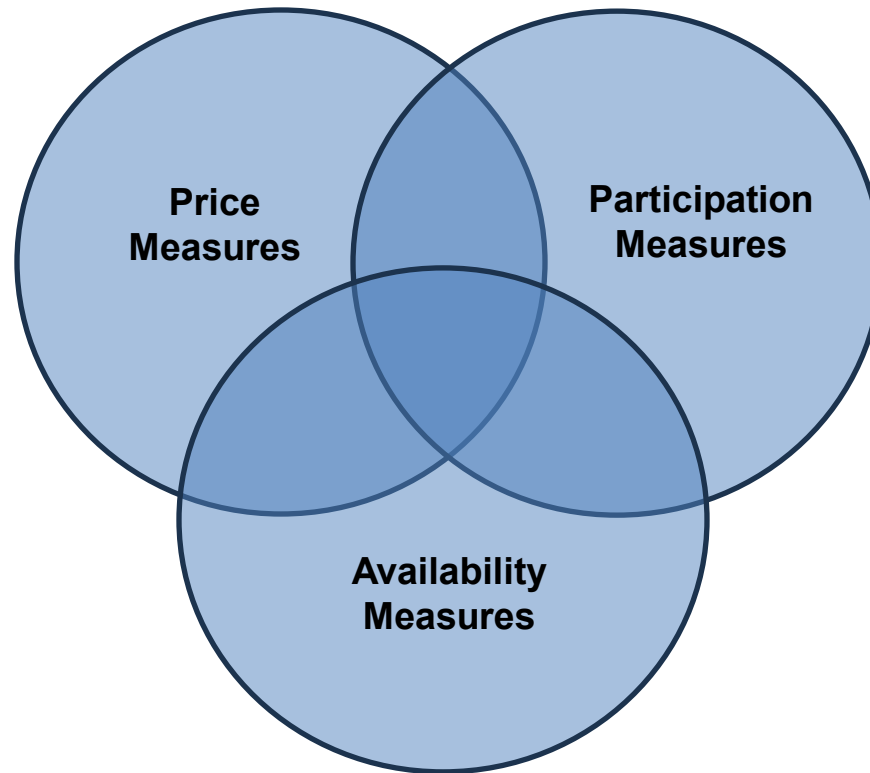


This outcome is mainly due to higher congestion rents while steady levels of auction revenues and not driven by EDAM implementation

Phase 2 Starting Point

- Multiple proposals on the record
- Diverse stakeholder perspectives on the need for and best means of improving auction efficiency
- Phase 2 timeline allows for comprehensive consideration of all options

Auction Efficiency Levers

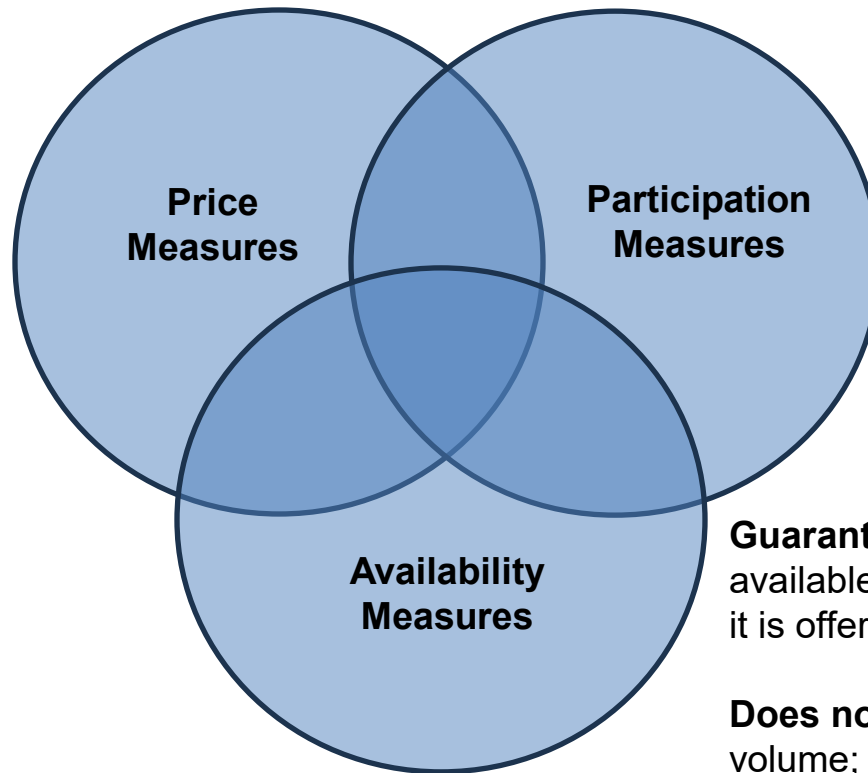


Auction Efficiency Levers

Guarantees: How much cleared CRRs sell for

Does not guarantee: Auction clearing volume; auction revenue and efficiency; where revenue goes;

Key design challenge: setting the right floor



Guarantees: Where congestion revenue does or does not go, by sector or other criteria

Does not guarantee: Clearing price; auction clearing volume; auction revenue and efficiency

Key design challenge: verifying eligibility

Guarantees: Amount of capacity available or the conditions under which it is offered (e.g. by a willing seller)

Does not guarantee: Auction clearing volume; clearing price; auction revenue and efficiency; where revenue goes

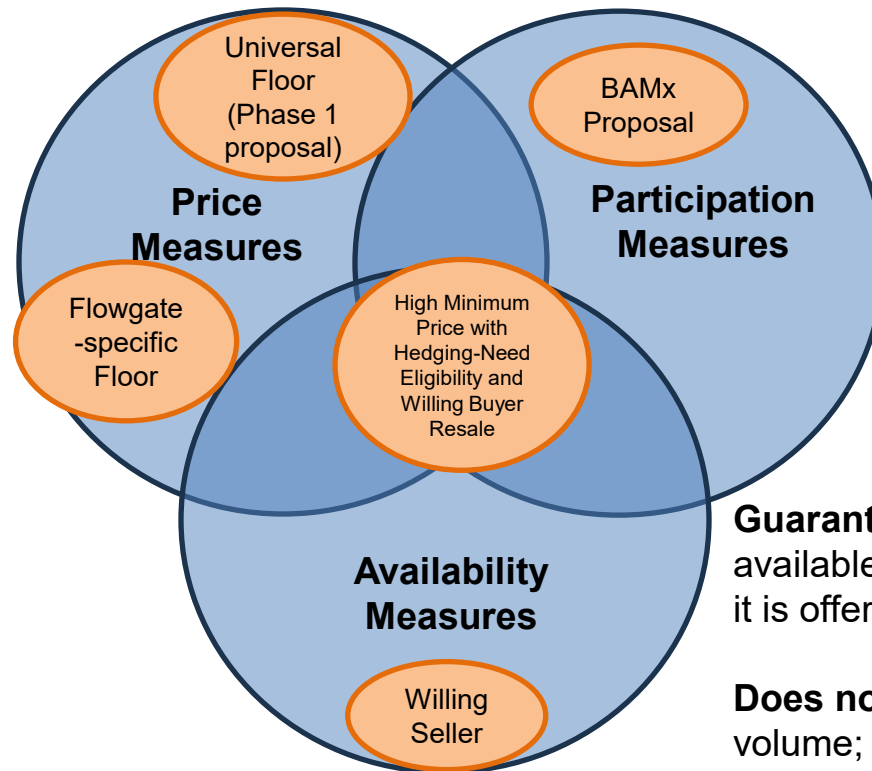
Key Design Challenge: Varies by approach

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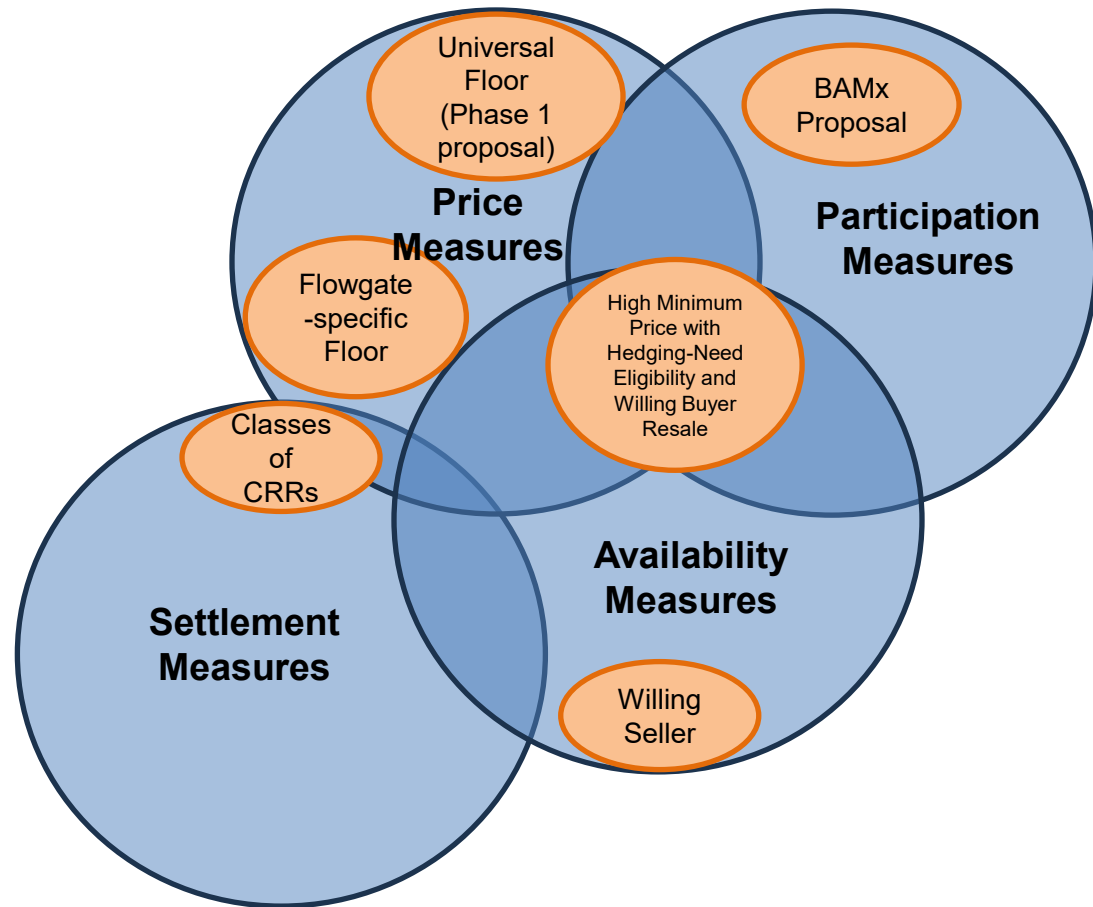
Key Design Challenge: Varies by approach

Auction Efficiency Levers

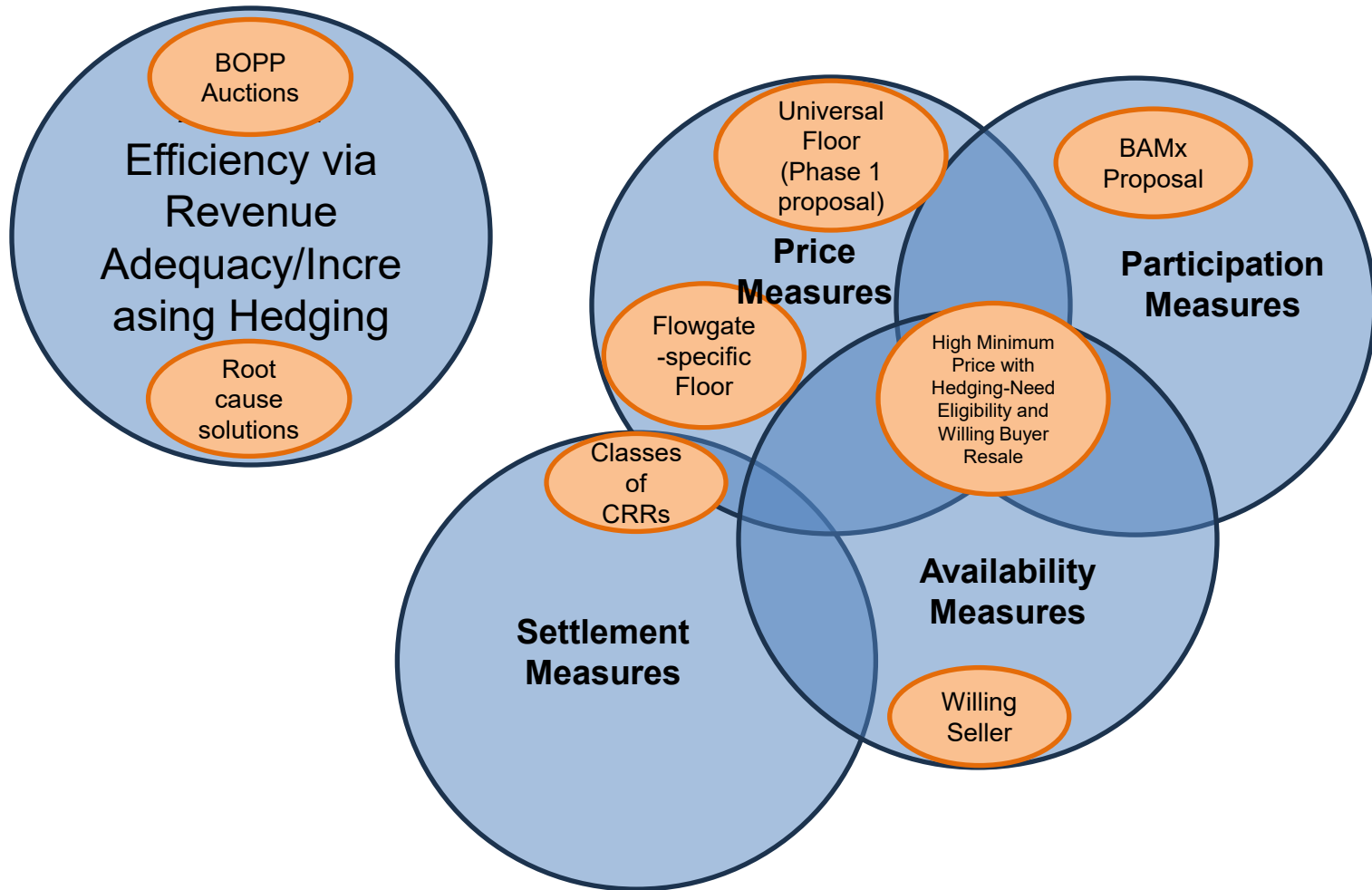
Guarantees: Relative risk of inadequacy between settlement tiers

Does not guarantee:
Auction clearing price or volume; auction revenue and efficiency

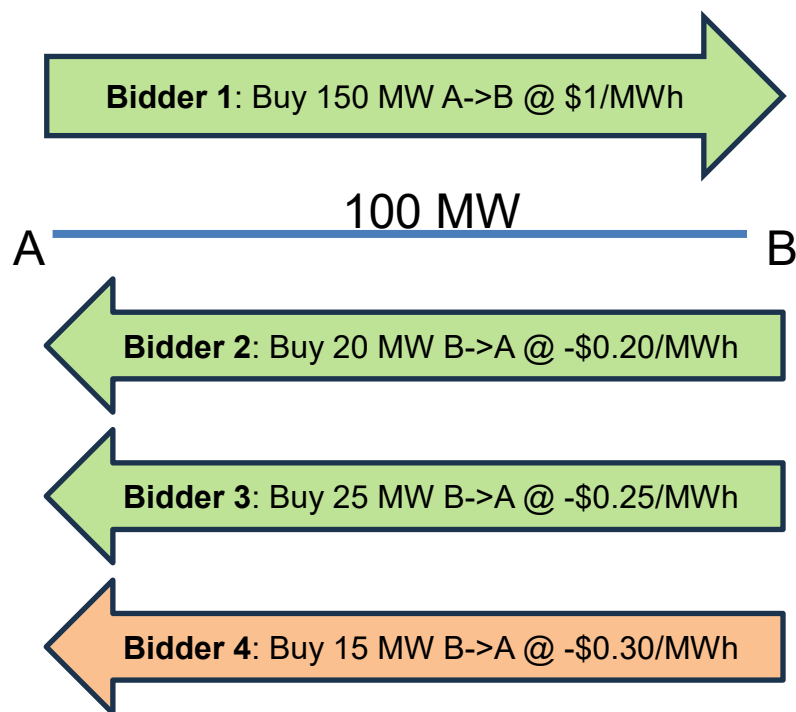
Key Design Challenge:
Establishing settlement rules



Auction Efficiency Levers



Scenarios Illustrating Minimum Bid Details



Results

Buy bids in the B->A direction enable additional capacity on the line to clear above 100 MW

Bidder 4 is the marginal bid and so determines the congestion shadow price of \$0.30/MWh

Auction Settlement

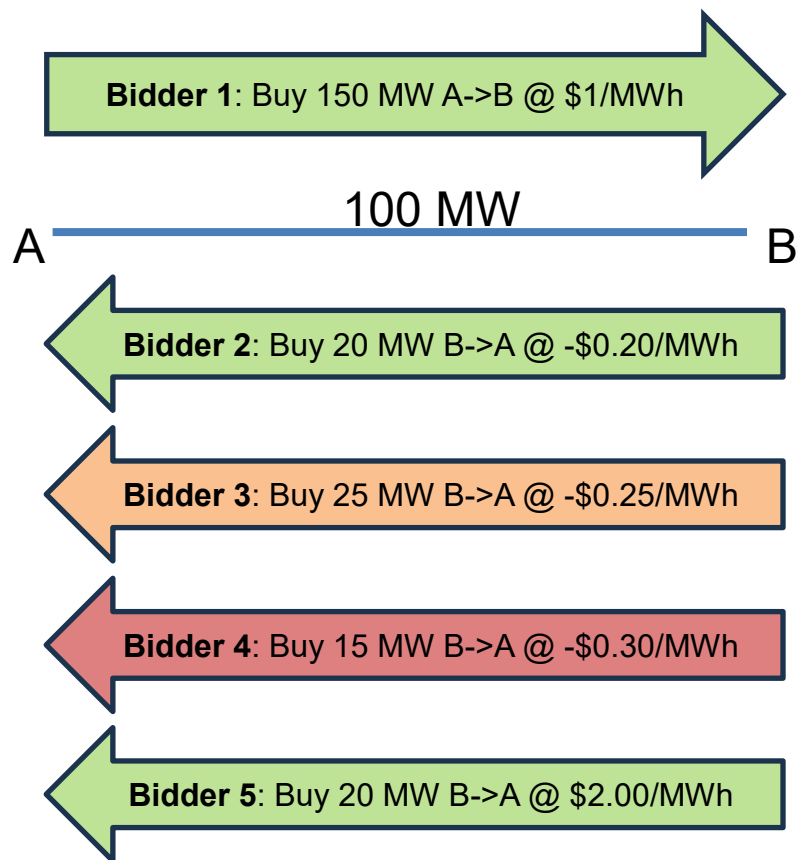
Bidder 1: Clears all 150 MW and pays \$1/MWh to hold the A->B CRR

Bidder 2: Clears all 20 MW and is paid \$0.30/MWh to hold the B->A CRR

Bidder 3: Clears all 25 MW and is paid \$0.30/MWh to hold the B->A CRR

Bidder 4: Clears only 5 MW and is paid \$0.30/MWh to hold the B->A CRR

Scenarios Illustrating Proposal Details



Results

Buy bids in the B->A direction enable additional capacity on the line to clear above 100 MW

Bidder 3 is the marginal bid and so determines the congestion shadow price of \$0.25/MWh

Auction Settlement

Bidder 1: Clears all 150 MW and pays \$1/MWh to hold the A->B CRR

Bidder 2: Clears all 20 MW and is paid \$0.25/MWh to hold the B->A CRR

Bidder 3: Clears 10 MW and is paid \$0.25/MWh to hold the B->A CRR

Bidder 4: Bid does not clear

Bidder 5: Clears all 20 MW and pays \$1/MWh to hold the B->A CRR (Could consider whether bidder 5 should instead be paid \$0.25, if the realized congestion is negative.)

STAKEHOLDER PRESENTATION: BAY AREA MUNICIPAL TRANSMISSION GROUP (BAMX)

FIVE MINUTE BREAK

STAKEHOLDER PRESENTATION: DEPARTMENT OF MARKET MONITORING

Discussion Questions for Beginning Phase 2 Work on Auction Efficiency

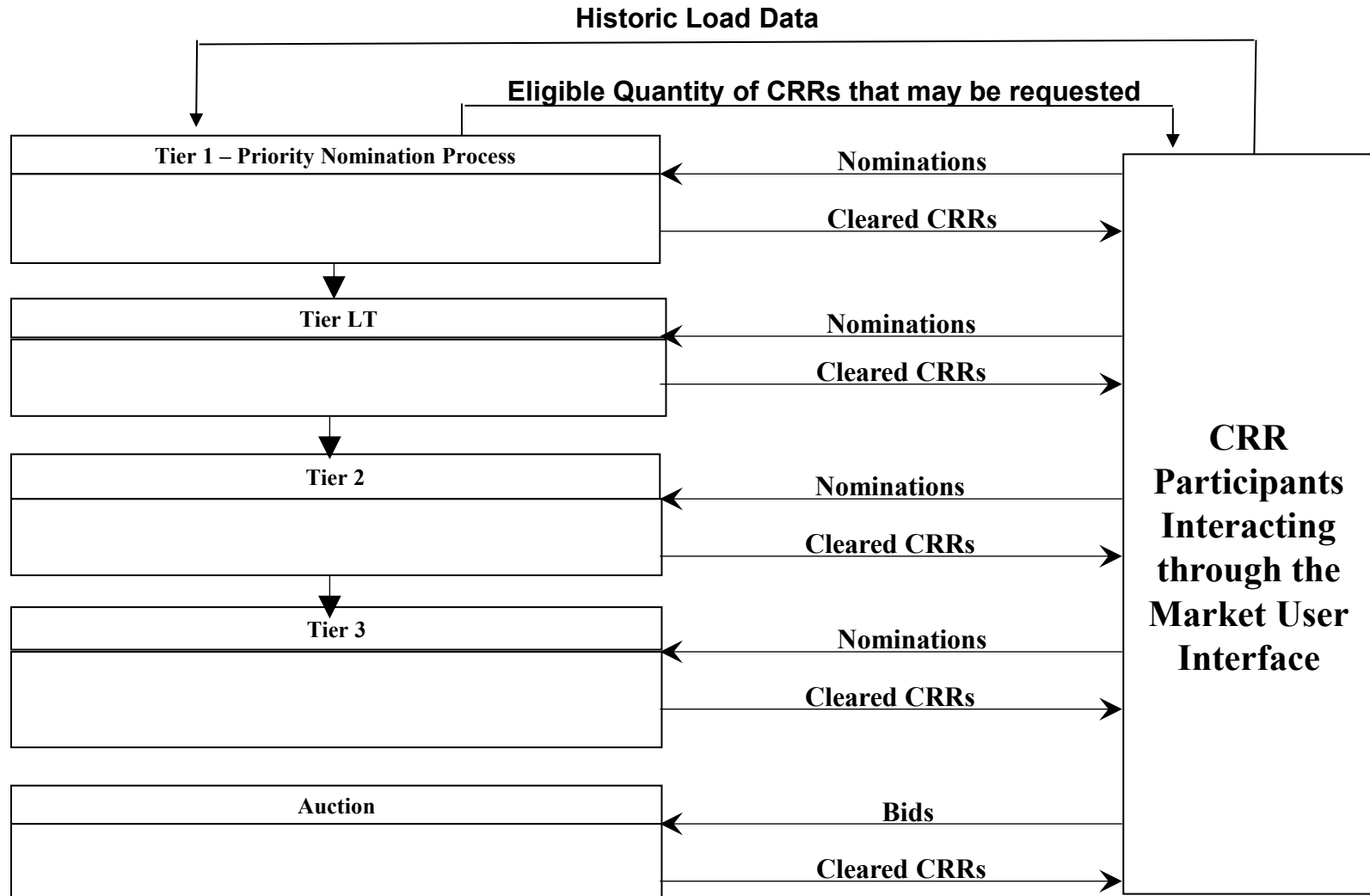
- Which of these lever areas do you prefer and why?
- Has your thinking on which of these levers is the most effective changed over the course of the initiative? How and why?
- Do you have a preferred auction reform proposal at this point in the initiative?
- Are there other potential solutions that have not been raised yet?

NEW SCOPING AREA: REVIEWING THE ALLOCATION PROCESS

Allocation Process: Review of Input

- Not an original area of focus during the scoping phase, but several sources have raised points related to it
- Stakeholders suggested in the 6/11 public MSC meeting that resale behavior in the auction is related in part to LSEs being unable to get the CRRs most aligned with their congestion exposure from the allocation process
- The MSC's July Board memorandum suggested reviewing the allocation process and the relative value different LSEs derive from it

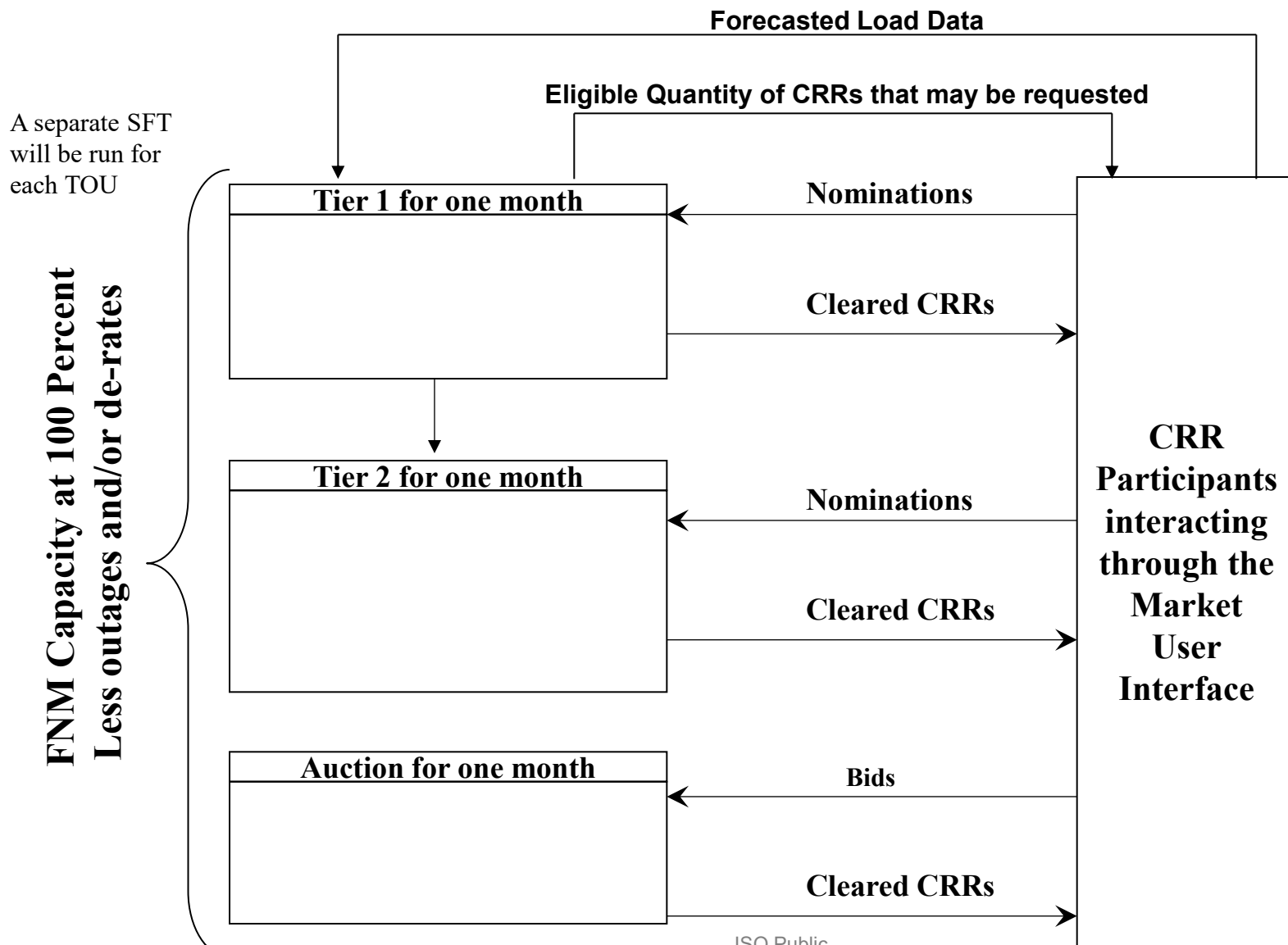
Annual CRR Allocation and Auction Process Review



Review of Annual Allocation Tiers and Requirements

Tier	LSEs/OBAALSEs may nominate up to:	Minus:	Stipulations
Priority Nomination Process (PNP), ie Tier 1	2/3 of Seasonal Eligible CRR Quantity, Or The total quantity of Seasonal CRRs allocated to that LSE/OBAALSE in the previous annual CRR Allocation; plus the net quantity of load migration CRRs associated with the immediately preceding Seasonal CRR Allocations for the corresponding season, time of use, and CRR sink location	-The quantity of Long Term CRRs for each season, time of use period and CRR Sink for that year; - The net MW amount of load migration CRRs valid for each season, time of use period and CRR sink for that year	Nominations must be for CRRs the LSE/OBAALSE was allocated in the immediately previous annual CRR Allocation process. Nominations MAY source from a trading hub; MAY NOT sink at a sub-LAP.
Long-Term Tier (Tier LT)	50% of Adjusted Load Metric (ALM)	The quantity of previously allocated Long Term CRRs that are valid for that year	The CRR source-sink pairs have to have been allocated in the immediately preceding PNP and cannot exceed the MW amounts allocated
Tier 2	2/3 of Seasonal CRR Eligible Quantity for each season, time of use and CRR sink,	- CRRs allocated to that LSE or OBAALSE in tier 1, - Long Term CRRs previously allocated that are valid for the CRR term currently being allocated, - The net MW amount of long-term Load Migrations CRRs assigned to the LSE that are valid for the term currently being allocated	Sub-LAPs are now eligible CRR sinks provided that the Sub-LAP is within the nominating entities Default LAP
Tier 3	100% of Seasonal CRR Eligible Quantity for each season, time of use and CRR sink	- Any Tier 1 and 2 allocated CRRs, - Long Term CRRs previously allocated that are valid for the CRR term currently being allocated, - The net MW amount of long-term Load Migration CRRs assigned to the LSE that are valid for the term currently being allocated	Sub-LAPs are now eligible CRR sinks provided that the Sub-LAP is within the nominating entities Default LAP

Monthly CRR Allocation and Auction Process Review



Review of Monthly Allocation Tiers and Requirements

Tier	LSEs/OBAALSEs may nominate up to:	Minus:	Stipulations
Tier 1	Up to 100% of the difference between the LSE/OBAALSE's Monthly CRR Eligible Quantity and the total of any Seasonal CRRs allocated in the annual CRR Allocation and any holdings of Long Term CRRs that are valid for the month and time of use of the CRRs being nominated	N/A	Trading Hubs are allowed as sources Sub-LAPs will be eligible CRR sinks provided that the Sub-LAP is within the nominating entities Default LAP
Tier 2	Up to 100% of the difference between the LSE/OBAALSE's Monthly CRR Eligible Quantity and the total of any Seasonal CRRs allocated in the annual CRR Allocation and any holdings of Long Term CRRS that are valid for the month and time of use of the CRRs being nominated	The quantity of Monthly CRRs allocated in Tier 1	Trading Hubs are allowed as sources Sub-LAPs will be eligible CRR Sinks provided the Sub-LAP is within the entities Default Lap

Discussion: Allocation Process Enhancements

- For LSEs and OBAALSEs participating in the allocation process:
 - Is the allocation process overall effective at providing CRRs relevant to your congestion risk profile?
 - Are there specific features of the current allocation process that are barriers to receiving the CRRs most relevant to your congestion risk profile?
 - Do you have any recommended changes to the allocation process?
- What are the most important connections or interdependencies between the allocation process and other scoping areas of the initiative?

LUNCH

PRODUCT DEFINITION

Product Definition: Revisiting the Problem Statement

- Hedging needs are evolving alongside the composition of the CAISO balancing authority area's generation fleet
- The products available in the CRR market and the processes by which they are distributed should be updated to match evolving hedging needs
- This could include revisiting the time of use periods, developing measures to facilitate hedging of congestion risk associated with storage charging load, and revisiting the auction schedule

Review of Issue Paper and Straw Proposal: Time-of-Use

- Split on-peak CRR product into two products
 - Peak: morning-peak, evening-peak
 - Hour ending (HE) 7 - HE 9; HE 18 - HE 22
 - Midday-Peak: high solar production hours
 - HE 10 - HE 17
- Maintain off-peak CRR product

Review of Stakeholder Feedback to Issue Paper and Straw Proposal

- 22 commenters provided feedback on the proposed time-of-use changes
 - 17 expressed general support for continued proposal consideration
 - 6 requested prioritizing discussion on revenue inadequacy caused by the auction
 - 1 requested modifications to the proposal
- Commenters requested additional consideration of 4 elements:
 - Modify time-of-use groupings
 - Standardize time-of-use periods across all days of the week
 - Seasonally-adjust time-of-use periods
 - Have 4 time-of-use periods instead of 3

Review of Issue Paper and Straw Proposal: Storage as a Sink:

- **Problem:** Storage cannot hedge charging-related congestion risk via CRRs
- **Goal:** Allow for storage charging hedging capability while inhibiting opportunistic arbitrage that does not improve market efficiency
- **Proposal:** Include stand-alone storage as an auction sink with limitations:
 - Storage cannot be a source/sink with other storage resources
 - Storage charging remains still ineligible for allocation
 - Allocated CRRs are for load-serving entities

Review of Stakeholder Feedback to Issue Paper and Straw Proposal

- 15 discussed the proposal's treatment of storage resources
- 13 supported including standalone storage as auction sinks:
 - 4 supported expanding auction sink eligibility to other storage resources
 - 1 believed eligibility of storage resources to be designated as sinks should be limited to circumstances where there is a demonstrated need to hedge congestion cost risks for charging energy
- 6 requested prioritizing discussion on revenue inadequacy caused by the auction

Review of Stakeholder Feedback to Issue Paper and Straw Proposal

- 6 commenters discussed including storage resources in the allocation
 - 2 supported inclusion
 - 4 supported additional discussion
 - 1 requested to treat all forms of storage consistently. The CAISO should allow LSEs to sink to nodes of any storage technology during the allocation process
 - 2 noted that making storage nodes eligible sinks in the allocation and counting pumping/charging load as eligible load for allocated CRR nominations are separate questions
 - DMM request: Clarify FERC Order 841 intent on pumped storage in CRR allocation

Phase 2 Product Definition Starting Point

- Foundational proposals and analysis
- Stakeholder alignment around general concepts and continued consideration
 - Requests for additional data analysis
- Phase 2 timeline (Q3 2027 decision) allows for comprehensive consideration of all options
 - Next Step: Revised straw proposal

REVENUE ADEQUACY AND MODELING ENHANCEMENTS

Review of Root Cause Analysis Findings

Based on assessment of specific constraints, there are three main root causes identified leading to revenue inadequacy:

1. Missing power flow contributions from locations with small shift factors that fall below the existing threshold
2. Power flow contributions from loop flows that consume capacity from transmission constraints
3. Model differences between the CRR and DA markets

Review of Phase 1 progress on revenue adequacy

- Continued modeling improvements within existing tariff authority
 - This began with the application of the Global Derate Factor to contingency constraints in the CRR model starting in March 2026
- Tariff changes to explicitly authorize loop flow modeling in the annual CRR process
 - Maximizes capacity for and flexibility around loop flow modeling in the future

Phase 2 Revenue Adequacy Scope

Phase 2 can consider all revenue adequacy enhancements raised during the scoping phase and not adopted in Phase 1.

Of the identified root causes:

Root Cause	Phase 1	Phase 2
Missing power flow contributions from locations with small shift factors that fall below the existing threshold	Not addressed	Can be considered
Power flow contributions from loop flows that consume capacity from transmission constraints	Partially addressed through loop flow modeling item	Consideration can continue as needed
Model differences between the CRR and DA markets	Improved through application of GDF to contingencies in CRR model	Consideration can continue as needed

Discussion Questions for Beginning Phase 2 Work on Revenue Adequacy

- Is there a specific revenue adequacy enhancement that you would prioritize for Phase 2 work and why?
- Has your thinking about revenue adequacy changed at all over the course of the initiative? If so, how and why?
- Are there any topics under revenue adequacy that you would like to see a deeper dive on in upcoming initiative meetings?

Modeling Enhancements: Bringing the CRR model closer to the day-ahead market

- CAISO adopted several modeling changes in Phase 1 that will improve the CRR model's convergence with the day-ahead market, improving the likelihood of CRR revenue adequacy
- Phase 2 can consider whether additional changes could further improve convergence

Potential modeling enhancements as next steps in minimizing revenue inadequacy

- 1) Allowing model changes between the allocation and auction
- 2) Applying the breakeven calculation in the monthly CRR process in addition to the annual process

Enhancement 1: Allowing CRR model changes between the allocation and auction

- Today, CAISO does not make any changes to the CRR model after posting it at the beginning of each annual and monthly process
- This approach provides consistency between the model participants use to develop their nomination/bid strategies and the model used to run the auction
- However, this can mean running the auction with an outdated model if new information about transmission availability has come in
- Allowing the auction model to use the latest capacity information would help the CRR model converge better with the day-ahead market, improving revenue adequacy

Enhancement 2: Allowing use of the breakeven calculation in the monthly CRR process

- The breakeven calculation helps avoid overallocation in the annual process by estimating the maximum constraint limits that could be used without producing revenue in adequacy based on historical information
- Expanding use of this process to the monthly CRR process would allow the CRR team additional flexibility to help avoid over-allocation and revenue inadequacy

Looking Ahead

CAISO's current tariff language governing what can be considered in the CRR model lists specific variables.

For example, in Section 36.4.1.2:

"The CAISO shall base the Monthly Available CRR Capacity on the DC FNM, taking into consideration:

- (i) any scheduled transmission Outages known at least thirty (30) days in advance of the start of that month as submitted for approval consistent with the criteria specified in Section 36.4.3;
- (ii) adjustments to compensate for the expected impact of Outages that are not required to be scheduled thirty (30) days in advance, including unplanned transmission Outages;
- (iii) adjustments to restore Outages or derates that were applied for use in calculating Seasonal Available CRR Capacity but are not applicable for the current month;
- (iv) any new transmission facilities added to the CAISO Controlled Grid that were not part of the DC FNM used to determine the prior Seasonal Available CRR Capacity and that have already been placed in-service and energized at the time the CAISO starts the applicable monthly process;
- (v) TTC adjusted for any scheduled derates or Outages for that month;
- (vi) a downward adjustment due to TOR or ETC as determined by the CAISO; and
- (vii) adjustments for possible unscheduled flow at the Interties."

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DISCUSSION

TIMELINE AND COORDINATION WITH OTHER INITIATIVES

Phase 2 Timeline

- CAISO is aiming to achieve a Board decision on all Phase 2 items by the end of Q3 2027
- Additional modeling enhancements in line with today's discussion could be ready for a Board decision in Q1 if there is sufficient stakeholder support

2027-2029 California ISO Market Policy Initiatives Roadmap										
		2026	2027				2028			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Congestion Revenue Rights Enhancements										
	Phase 1: Loop flow modeling	Implementation	Complete							
	Phase 2a: Modeling enhancements	Policy development	Policy development	Implementation						
			Decision							
	Phase 2b: Product definition and CRR auction & allocation process enhancements	Policy development			Decision	Implementation				

Coordination With Other Initiatives

Congestion Revenue Allocation (CRA)

- Focused on how congestion revenue is allocated between Balancing Authority Areas (BAAs) in the Extended Day Ahead Market (EDAM)
- The CRA initiative is currently discussing the idea of a joint SFT that would incorporate both CRRs and OATT rights
- CAISO staff will continue monitor the CRA initiative for developments relevant CRR Enhancements

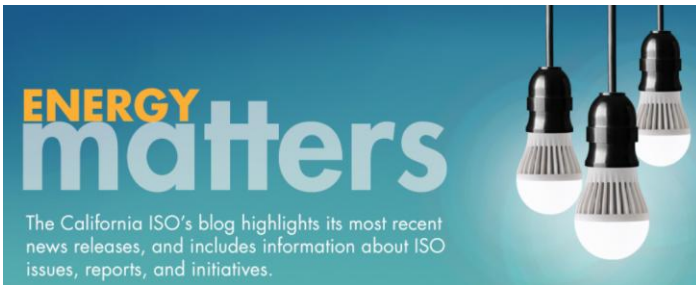
OPEN DISCUSSION

NEXT STEPS

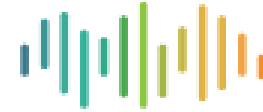
Next Steps and Key Dates

- **October 14th:** Comments due
- Contact us at Stakeholder Affairs at ISOStakeholderaffairs@caiso.com or bmarquez@caiso.com

Please note that the dates above are tentative until the CAISO publishes a notice formally confirming them



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New Resource Implementation (NRI) Forum 10/07/2026

Virtual and In-Person Attendance Registration Reminder:
If you plan to attend, please [register](#) by end of day Sept. 30, 2026.

What topics will be covered?

Overview and updates on current New Resource Implementation (NRI) processes

Guidance on upcoming changes and implementation requirements

Interactive discussion and optional office hours for project-specific questions with the NRI team

REGISTRATION CLOSES ON SEPT. 30

2026 STAKEHOLDER SYMPOSIUM

Welcome reception - Oct. 5 at Kimpton Sawyer Hotel, Sacramento, CA

Symposium program - Oct. 6 at SAFE Credit Union Convention Center, Sacramento, CA

7:30-9:00 a.m. Registration and networking breakfast

9:00-9:15 a.m. Welcome and opening remarks

9:15-9:45 a.m. Opening Keynote

9:45-10:30 a.m. The EDAM experience: Perspectives from the first movers

Break

11:00-11:45 a.m. The Road to ROWE: Navigating the 2027 transition

1:30-2:15 p.m.

2:15-3:00 p.m.

Break

3:30-4:30 p.m.

4:30-4:45 p.m.

5:00-7:00 p.m.

Power Shifts: Short talks on big change

Success through partnership: Building the future together

CAISO's strategy for the next 5 years

Closing remarks

Networking reception

