Congestion Revenue Rights Enhancements

Scoping Discussion

Working Group Meeting

November 14, 2024

9 am – 12 pm

Reminders

- 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 keep comments professional and respectful.
- Please try to be brief and refrain from repeating what has already been said so that we can manage this time efficiently.

Instructions for raising your hand to ask a question

- Open the Participant and Chat panels from the bottom right.
- 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**: *3 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 either **Brenda Marquez** or to all panelists.
- If you need technical assistance during the meeting, please send a chat to the event producer.

Agenda

Time	Topic	Presenter
9:00 – 9:05	Welcome and today's agenda	Brenda Marquez
9:05 – 9:15	Introduction and timeline	Partha Malvadkar
9:15 – 9:30	Conceptual Foundations for CRRs	
9:30 – 10:00	ISO current CRR program	Hilary Staver
10:00 – 10:30	Summary of existing analysis and identifying future analysis needs	Dinesh Das Gupta
10:30 – 10:40	Break	
10:40 – 11:10	Roadmap items	
11:10 – 11:30	Problem Statements: a starting point	Hilary Staver
11:30 – 11:55	Open discussion	Hilary Staver
11:55 – 12:00	Next Steps	Brenda Marquez

CAISO Policy Initiative Stakeholder Process

We are here

Introduction

Overall Working Group Objectives

1. **Foundation**
   Level-set what CRRs are, why we have them, and how the current allocation and auction processes work
2. **Use and Impact**
   Understand each other's perspectives. Work together to resolve questions brought up during discussion
3. **Analyze**
   Evaluate CRR allocation and auction outcomes.
4. **Problem Statements**
   Define goals and problems with the current CRR structure for the policy initiative to address

Tentative Working Group Schedule – Seeking Feedback

Nov. 14, 2024		**Working Group Scoping Discussion**
January, 2025		**Foundations** Introduction to CRRs; the ISO CRR System; comparison to other ISO/RTO programs; 2018-2019 issues highlighted and reforms; policy roadmap proposals
February, 2025		**Analysis** CRR program outcomes since the 2019 reforms; trends to address in upcoming policy initiative
March, 2025 If needed: second meeting April, 2025		**Policy Scope and Problem Statements** Discussion of proposed problem statements and scope for upcoming initiative
May/June, 2025		**Issue Paper** Final document from working group: problem statements, stakeholder viewpoints, analysis

Conceptual Foundations for CRRs

- Provide open access transmission
- Allocate fairly transmission revenues to customers paying the imbedded costs of the transmission system
- Allow hedging of congestion costs in the context of a Day-Ahead energy

California ISO

- Distribute congestion rents created from congestion pricing in the LMP market
- Support equitable allocation of costs and benefits of using transmission system
- Facilitate long-term contracting by LSEs and generators

CRR Allocation and Auction

What is congestion in an electricity market?

- Congestion arises in the CAISO's markets when transmission limits prevent the lowest cost supply to freely move to meet demand

- Due to congestion and resultant locational prices, supply and demand are paid and charged at different prices depending on their location

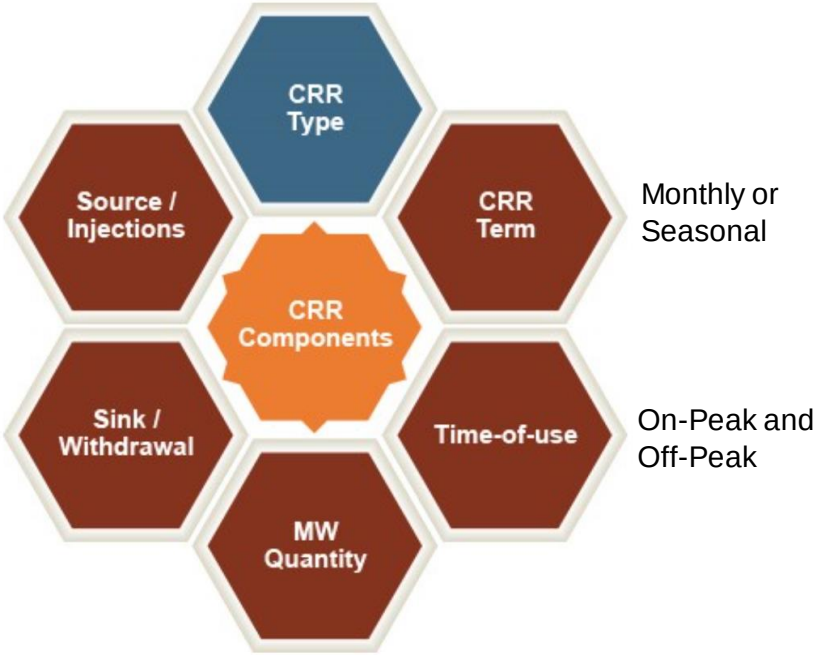
- As a result, the money collected from demand will be greater than the money paid to supply; the surplus is known as **congestion rents**

- The holders of congestion revenue rights allocated day-ahead congestion rents in CAISO markets

What are congestion revenue rights?

- **Congestion Revenue Rights (CRRs)** are financial instruments that enable holders of such rights to hedge congestion risks from the day-ahead market
- Day-ahead congestion rents are used to fund congestion revenue right payouts

In other ISOs they are known as financial transmission rights



Principles of congestion revenue rights in CAISO's market

- CRRs provide hedges for the cost of congestion arising out of differences in locational marginal price between locations on the transmission system
  - Provide transmission customers with a financial product equivalent to firm physical transmission service in the energy markets
  - Create incentives to use transmission to access least cost resources
  - Allocated to transmission customers/load serving entities that pay for the embedded cost of grid through the transmission access charge based on their eligible load and supply locations
- CRR auctions originally designed as efficient mechanisms to facilitate long-term contracting by load-serving entities and suppliers by permitting them to hedge congestion costs beyond prescribed rights
- Non-LSEs allowed to participate to enable greater liquidity and access to hedges for marketers of other energy products

How does CAISO determine what rights are allocated or awarded?

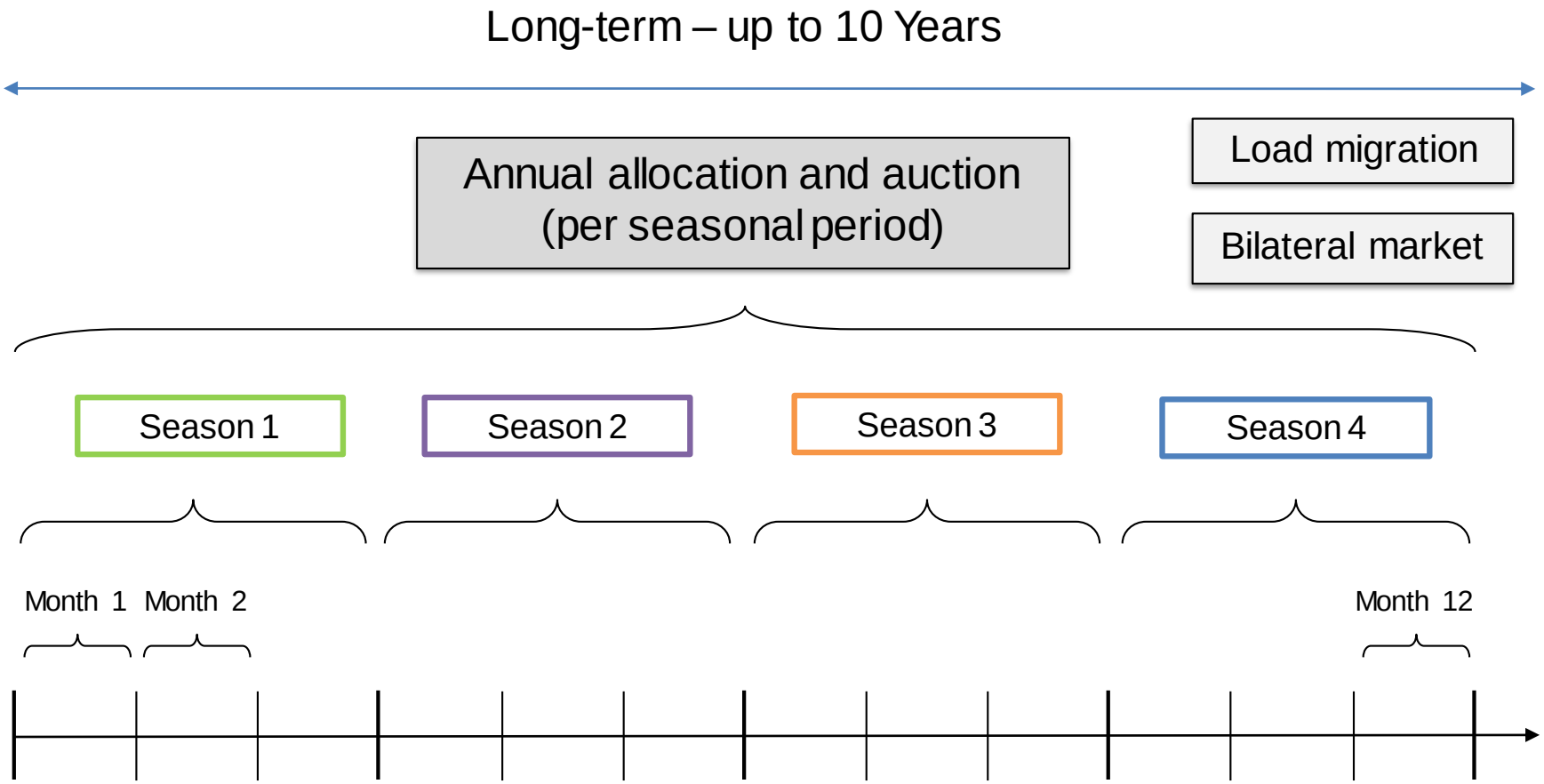
- CAISO runs a power flow, known as **feasibility test**, similar to the day-ahead market to:
  - Ensure CRR that are released are supported by expected available transmission capacity within CAISO
  - Determine the prices of congestion revenue rights

- The CAISO transmission system is modelled in the allocation and auction processes taking into account
  - Configuration (topology) of the transmission system
  - Transmission parameters and limits
  - Reported planned outages and de-rates at time of CRR process

How can these rights be acquired in the CAISO market?

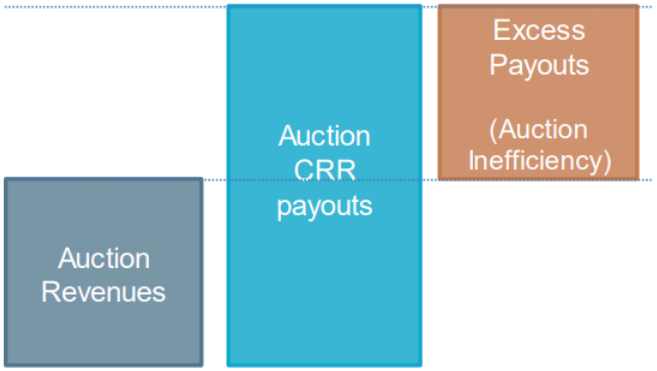
- CRRs released in **allocations** are **free** of cost
  - Only **load serving entities, including out of balancing areas load serving entities,** can participate in **allocations**
  - Rights from load migration are directly allocated to load serving entities
- CRRs awarded in **auctions** based on **bids** and charged clearing price
  - Any qualified entity (load, gen, marketer, trader) can participate in auctions
  - Anybody holding a right can sell it in auctions or transact it in secondary trades

CRR allocation and auction design

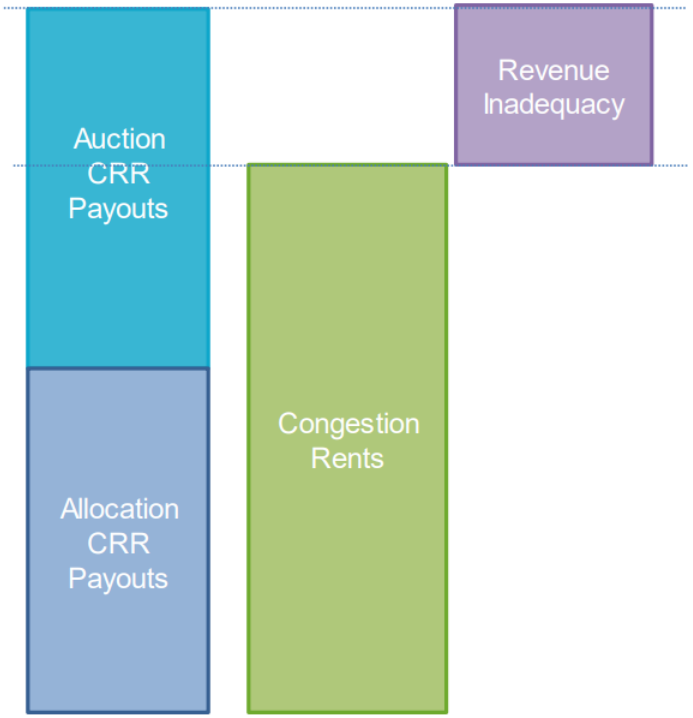


Summary of existing analysis and identifying future analysis needs

Auction Efficiency ≠ Revenue Adequacy

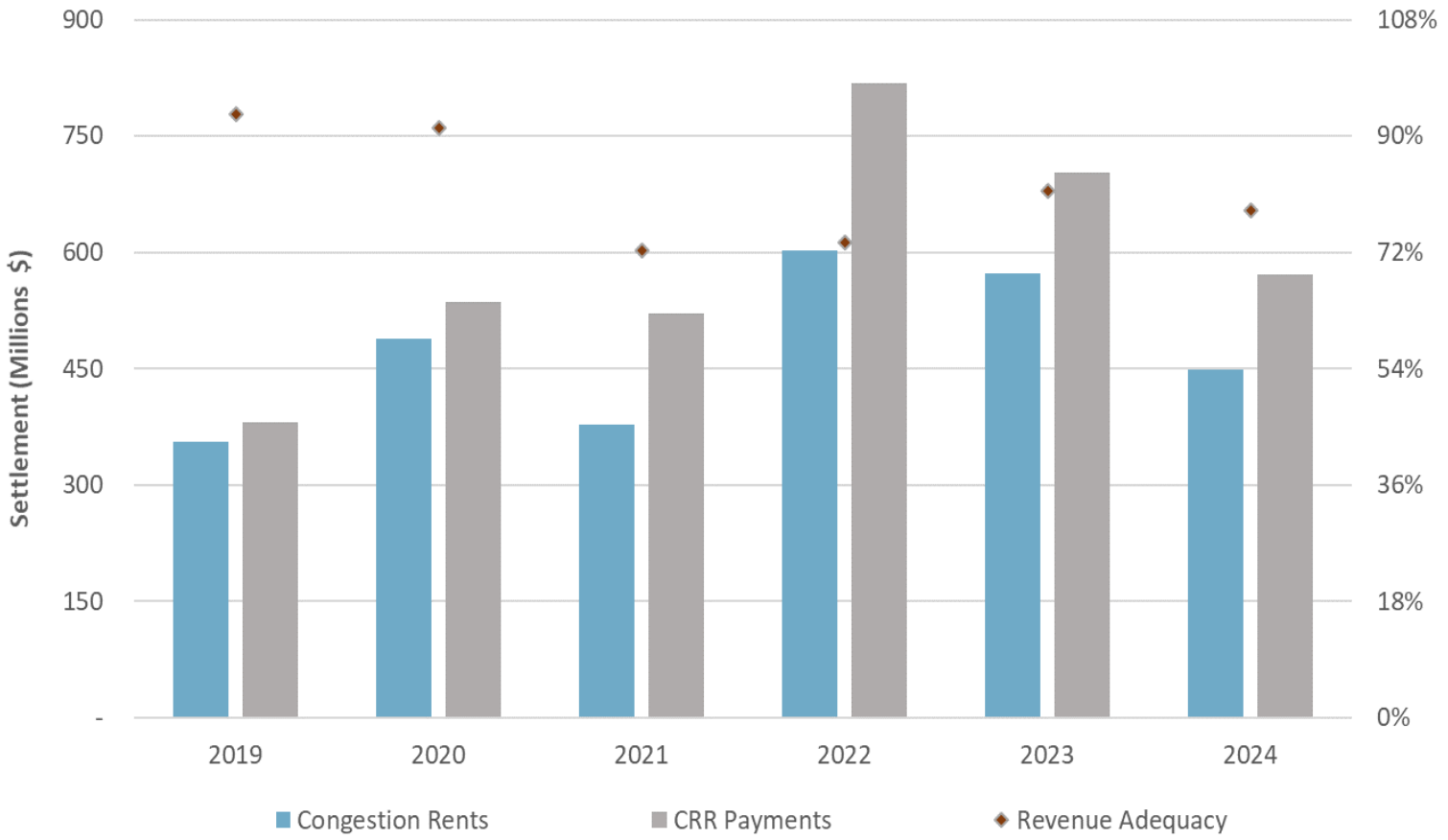


Auction efficiency is about how well CRR auctions price discover DA congestion

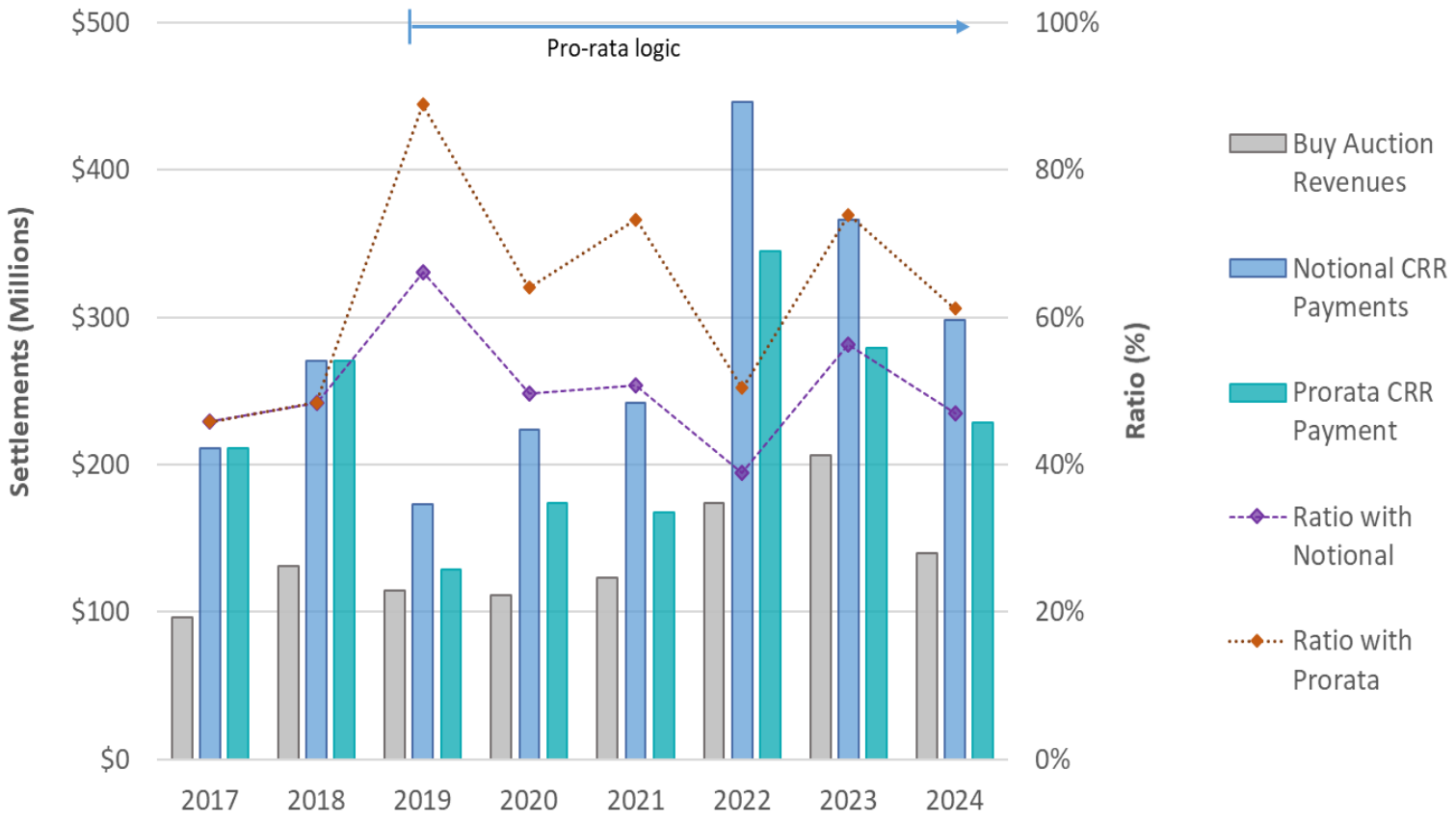


Revenue Adequacy is about how well CRR processes converge to DA market

From 2019-2024, system-level revenue inadequacy was 81% with a total shortfall of $684 million



Pro-rata adjustments reduced payouts to congestion revenue rights, improving the auction efficiency from 50 percent to 65 percent



Break

Policy Roadmap CRR items

CAISO Department of Market Monitoring

Scope	• Stop offering CRR positions on behalf of transmission ratepayers at $0 offer prices. • Alter CRR auction design so that trades only take place between willing sellers bidding into market for financial contracts.
Description	• Since the ISO implemented CRR reforms in 2019 aimed at reducing the losses paid by transmission ratepayers, ratepayers have lost $312 million and have received 67 cents in auction revenues per dollar paid out. • Under the current CRR market design, the ISO uses a transmission model that creates large amounts of price-taking CRR supply which transmission ratepayers are obligated to back. • The ISO should stop offering CRR positions on behalf of transmission ratepayers at $0 offer prices and enable trades to only take place between willing sellers bidding into a market for these financial contracts.

Willing seller market design for congestion revenue rights

Roger Avalos
Department of Market Monitoring

Congestion Revenue Rights Working Group
November 14, 2024

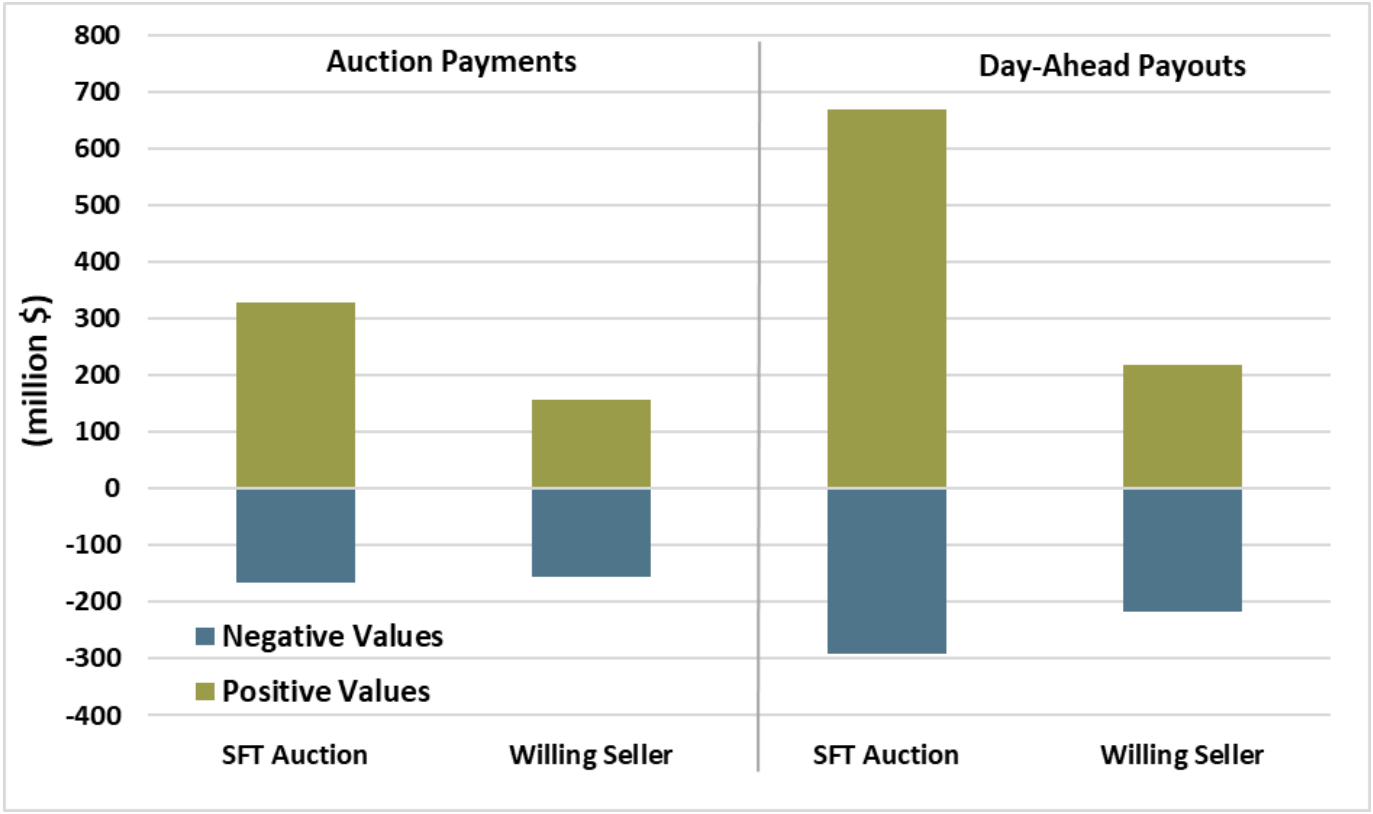
DMM has long recommended replacing the currently flawed CRR auction design with a willing seller auction design

- Removes the core auction design flaws
- ISO does not intervene to sell CRRs backed by transmission ratepayers with $0 offer prices
- All transactions are price swaps between willing counterparties
- Contracts are firm and fully funded
    - no need for deficit offset charges
    - or subsidizing payments from rights not purchased (pre-offset paradigm)
- CAISO, MSC and many stakeholders assumed a market of willing counterparties would not clear many, if any, contracts without the ISO also intervening to sell CRRs through a transmission model

Proposed new CRR financial network market design

- Treat CRRs like standard financial derivatives
  - Transactions between willing counterparties with full financial exposure to contract outcomes
- Transmission model replaced with financial model
  - Supply and demand balanced at each node
- CRR allocation to LSEs can remain unchanged
  - LSEs can continue to offer allocated CRRs for sale in voluntary CRR market
- ISO serves as standard central counterparty clearing house
  - Manages counterparty credit risk
  - No direct financial exposure to the spot market

Running the willing seller design with the actual bids from 2017-2018 shows a significant amount of CRRs could clear



LSEs and non-LSEs offered bids for significant volume of negatively priced (or counterflow) CRRs that could clear under willing seller design

DMM continues to recommend replacing the current flawed auction with a willing seller auction design

- A detailed description and analysis of the willing seller design is available on the ISO website:

  https://www.caiso.com/documents/willing-counterparty-whitepaper-oct-23-2024.pdf

- DMM looks forward to more detailed presentation of willing seller design and analysis at future stakeholder meeting.

- For questions please contact: Roger Avalos (ravalos@caiso.com)

Western Power Trading Forum

Scope	• Address issues leading to inefficient CRR outcomes or hinders the ability for CRRs to be an effective risk mitigation tool
Description	• Investigate root causes of current revenue inadequacy, and which are causation-based and which are unrelated to the CRR market. • Investigate if market participants are able to use CRRs as congestion hedges given high levels of underfunding. • Consider reforming constraint-based allocation to help preserve function of CRRs and ensure allocation is still aligned with cost causation.

California Department of Water Resources (1/3)

Scope	• Split on-peak TOU into super-peak (HE 17-HE21) and on-peak (HE07-HE16, and HE22).
Description	• The current CAISO CRR market design defines two time periods for the Time of Use (TOU): on-peak and off-peak. On-peak covers HE07 to HE22, with off-peak covering the remainder. • With the addition of more renewable generation, the CAISO load demand curve now has two peaks rather than one. The value of the current on-peak CRR has diminished considerably due to the large fluctuations in the CAISO load demand curve that results in large fluctuations in LMP (MCC) pricing. • As a result, from HE07 to HE16, LMP (MCC) prices are very low. Starting at HE17 when solar generation starts diminishing and CAISO load demand starts increasing, CAISO LMP (MCC) prices become high. • Splitting the on-peak TOU would bring continuity and equilibrium to the CRR market by making CRR revenues more predictable and transparent.

California Department of Water Resources (2/3)

Scope	• Study how much the GDF has helped improve CRR auction efficiency. • If improvement provided by GDF is minimal in comparison with the improvement provided by the features implemented from the CAISO Track 1B proposal, then the GDF should be removed from the monthly CRR allocation process
Description	• The use of the GDF reduces LSEs' ability to adequately hedge its congestion rents by reducing the amount of CRRs LSEs could request in the monthly CRR allocation process. • This is exacerbated for LSEs that rely on hydro or resources with variable output power forecasts. For these LSEs, participation in the annual CRR process is limited by forecast difficulty, so they request most of their CRR in the monthly CRR allocation processes when they can more accurately estimate their congestion rents. • Eliminating GDF would enable these LSEs to be better able to hedge their DA congestion rents with CRRs.

California Department of Water Resources (3/3)

Scope	• Explore ways to revise the counter-flow CRR methodology used for allocating CRRs sourced at the trading hubs.
Description	• The counter-flow methodology was implemented to maximize the number of direct flow CRRs allocated from the trading hubs (THs) to the sink nodes when market participants to the CRR allocation processes request such CRRs. • There were many cases when CDWR had requested direct flow CRRs from the THs to CDWR sink nodes and received an excessive amount of CF-CRRs. • This excessive amount of direct flow CRR and CF-CRR could impact CRR auction efficiency since when settled, the CF-CRR might not be the same value with the direct flow CRR due to changes in the CAISO grid that occurred when the CRR market is settled. • The current method contributes to the revenue imbalance of the CRR balancing account.

Draft Problem Statements: A Starting Point

Auction Efficiency	• The ISO CRR auction has been yielding only roughly 65 cents per dollar of congestion revenue • As such, auction prices are not reflecting market participants' congestion price exposure in the day-ahead market
Limited Allocation	• The ISO's application of a Global Derate Factor reduces LSEs' ability to adequately hedge congestion
Revenue Inadequacy	• Pro-ration of CRRs hinders the ability for CRRs to be an effective risk mitigation tool • Pro-rated funding may result in settlements reversal adding to the participant risk
Product Definition	• The ISO's current counter-flow CRR allocation process and On/Off Peak definitions adversely impact hedging of congestion risks.

Open Discussion

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Next Steps

Next Steps

- Please submit comments on Discussion Paper and meeting discussion using the commenting tool linked on the initiative webpage
  - Comments are due by end of day December 12, 2024

- Visit initiative webpage for more information:
- https://stakeholdercenter.caiso.com/StakeholderInitiatives/Congestion-revenue-rights-enhancements
- If you have any questions, please contact isostakeholderaffairs@caiso.com

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