Congestion Revenue Rights enhancements discussion

Hilary Staver
Lead Policy Developer

Market Surveillance Committee Meeting
General Session
June 11, 2026

CAISO Policy Initiative Stakeholder Process

Initiate

Prioritize objectives and initiatives to develop roadmap

Scope

Define opportunities and scope to reflect diverse goals and objectives

Develop

Stakeholders collaborate to develop solutions and final proposal

Decide

Obtain governance approvals and submit FERC filing as required

Implement

Complete customer readiness, market simulation and go-live

We are here

Learn more in the Stakeholder Process Guide

A PHASED APPROACH TO POLICY DEVELOPMENT

The working group conversations thus far have provided several perspectives on timeline

1) Improvements should be implemented as soon as possible

2) Some potential enhancements are more complex than others

3) Development of structural changes should consider their full potential risks and benefits

Proposal: A Phased Approach to Policy Development

- Phase 1:
  - Focused on solutions that could potentially be implemented for the 2027 annual CRR process
  - CRR annual auction begins at the end of October

- Phase 2:
  - Focused on consideration of more complex structural changes
  - Policy development would continue into CY 2027

Stakeholder feedback on phase approach in comments on 4/22 working group meeting

- Most stakeholders support or do not oppose a phase approach

- Varying priorities for what should be covered in Phase 1:
  - Product definition
  - Auction efficiency
  - Revenue adequacy
  - Further analysis

Proposal: A Phased Approach to Policy Development

- Phase 1:
  - Auction Efficiency: Auction price and bid floor
  - Revenue Adequacy: Enhanced loop flow modeling authority and modeling improvements within existing tariff

- Phase 2:
  - Product Definition
  - More complex solutions around auction efficiency and revenue adequacy

PHASE 1 STRAW PROPOSAL: AUCTION PRICE AND BID FLOOR

The basis for an auction floor in Phase 1

- Auction efficiency measure raised in both past MSC opinions and current stakeholder comments
- Has the potential to be implemented in time for the 2027 annual CRR process, avoiding the need to wait another year for improvements
- Can be adjusted over time and built on in Phase 2

Questions to consider during auction floor design

Counterflow:

- How do flows and counterflows caps interact in price setting, particularly if different bid caps exist?
- Are there opportunities to use counterflow bids to drive down the prices on other positive value bids, including on different paths?

Liquidity:

- How will liquidity be impacted, particularly on lower-impacted paths?
- How does the reduction in volume impact overall pricing?
- Do the locations just shift to higher priced paths with similar hedges?

Clearing Price Effects:

- If the bid floor reduces demand volume, could it have the counterintuitive effect of lowering prices on these paths (albeit with lower volumes)?
- If so, is this really a net benefit (even to load)?

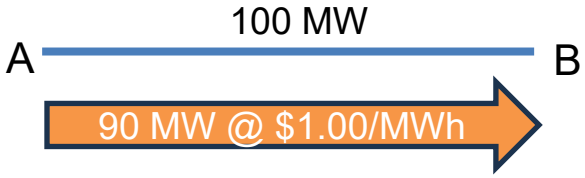
Resale Function:

- How will CRR resale work for participants wanting to sell/exchange positions?
- Would a minimum bid drive participants to the bilateral market for lower-value source-sink pairs?

Structure of the floor design discussion

- Minimum bid, minimum price, or both?
- What characteristics should a floor have, i.e. how do we set the appropriate floor values?
- How do we treat negatively priced CRRs?

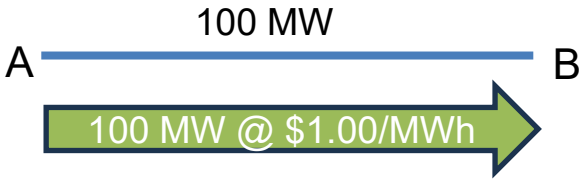
A minimum bid does not guarantee a minimum price:



Constraint does not bind

Auction clears:
90 MW @ $0.00/MWh

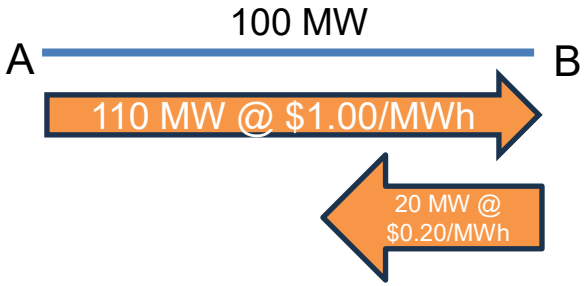
Clearing price < minimum bid because constraint does not bind



Constraint binds @ $1.00/MWh

Auction clears:
100 MW @ $1.00/MWh

Clearing price = minimum bid

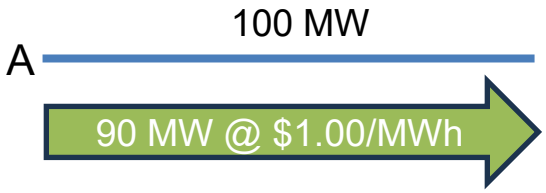


Constraint binds @ $0.20/MWh

Auction clears:
- 110 MW from A to B @ $0.20/MWh
- 10 MW from B to A @ $-0.20/MWh

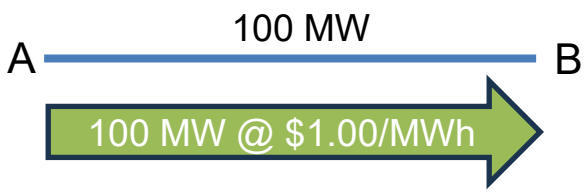
Clearing price < minimum bid because of counterflow effects

A minimum bid and minimum price together create a clearing price floor without charging any participant more than they bid



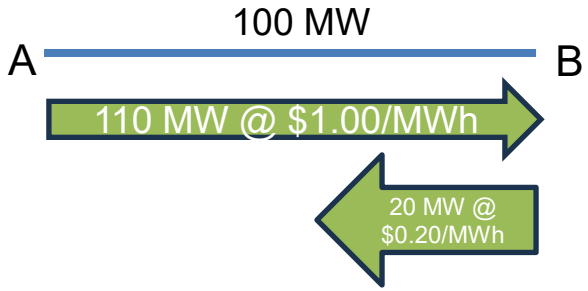
Constraint does not bind

Auction clears:
90 MW @ $1.00/MWh



Constraint binds @ $1.00/MWh

Auction clears:
100 MW @ $1.00/MWh



Constraint binds @ $0.20/MWh

Auction clears:
- 110 MW from A to B @ $1.00/MWh
- 10 MW from B to A @ $-0.20/MWh

Straw Proposal: Phase 1 Auction Efficiency Enhancements

- A matching price and bid floor, set separately for prices above and below zero

If pursuing a price + bid floor, what characteristics should a floor have?

- Applicable to all paths; setting constraint-specific floors is not feasible
- Improves auction efficiency while preserving hedging access and resale ability
- Reasonable in the context of relevant historical datasets:
  - CRR notional value
  - CRR auction clearing prices

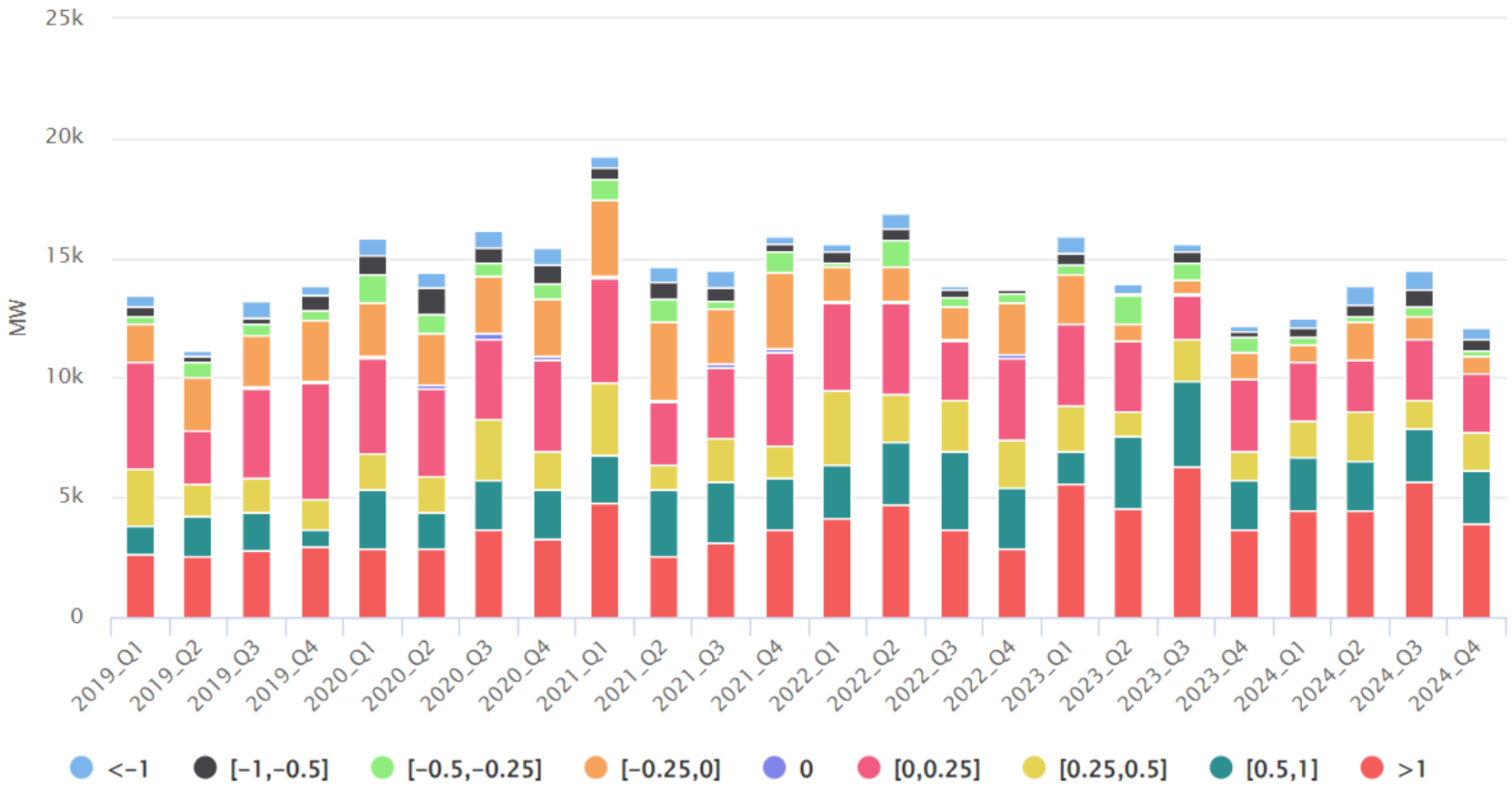
The ISO seeks stakeholder feedback on what level of floor will best balance the goals of improving auction efficiency while preserving auction functions

Notional value distribution of 1,000 most-traded paths by frequency, January 2023 – March 2026, in $/MWh

	Season 1 off-peak	Season 1 on-peak	Season 2 off-peak	Season 2 on-peak	Season 3 off-peak	Season 3 on-peak	Season 4 off-peak	Season 4 on-peak
n	1000	1000	1000	1000	1000	1000	1000	1000
min	(2.66)	(10.56)	(2.13)	(9.77)	(0.86)	(5.28)	(2.84)	(8.75)
p5	(0.06)	(0.15)	(0.26)	(0.66)	(0.16)	(0.37)	(0.16)	(0.06)
p10	0.00	0.08	(0.03)	0.03	(0.02)	0.04	0.01	0.16
p15	0.03	0.16	0.02	0.22	0.01	0.13	0.05	0.32
p20	0.05	0.35	0.06	0.39	0.03	0.39	0.07	0.46
p25	0.08	0.60	0.06	0.53	0.07	0.62	0.09	0.61
p30	0.14	0.92	0.08	0.69	0.08	0.76	0.11	0.74
p35	0.17	1.21	0.09	0.86	0.10	0.80	0.14	1.00
p40	0.27	1.45	0.11	1.03	0.13	0.83	0.17	1.10
p45	0.36	1.59	0.15	1.14	0.15	0.96	0.21	1.39
p50	0.39	2.07	0.16	1.29	0.17	1.08	0.25	1.60
p55	0.44	2.27	0.20	1.38	0.22	1.23	0.29	1.76
p60	0.48	2.53	0.27	1.53	0.29	1.76	0.32	1.92
p65	0.57	2.90	0.37	1.86	0.30	2.04	0.38	2.15
p70	0.79	3.44	0.54	2.21	0.38	2.37	0.44	2.43
p75	0.96	4.71	0.72	2.82	0.82	3.14	0.50	2.68
p80	1.06	6.93	1.12	3.41	1.19	4.28	0.64	3.00
p85	1.21	7.85	1.58	4.67	1.80	6.07	0.93	3.46
p90	1.52	8.65	2.56	7.87	2.60	8.44	1.93	5.10
p95	2.06	9.52	3.50	14.30	5.10	11.58	2.72	10.09
max	28.14	36.90	34.00	41.66	35.28	55.00	28.58	30.61

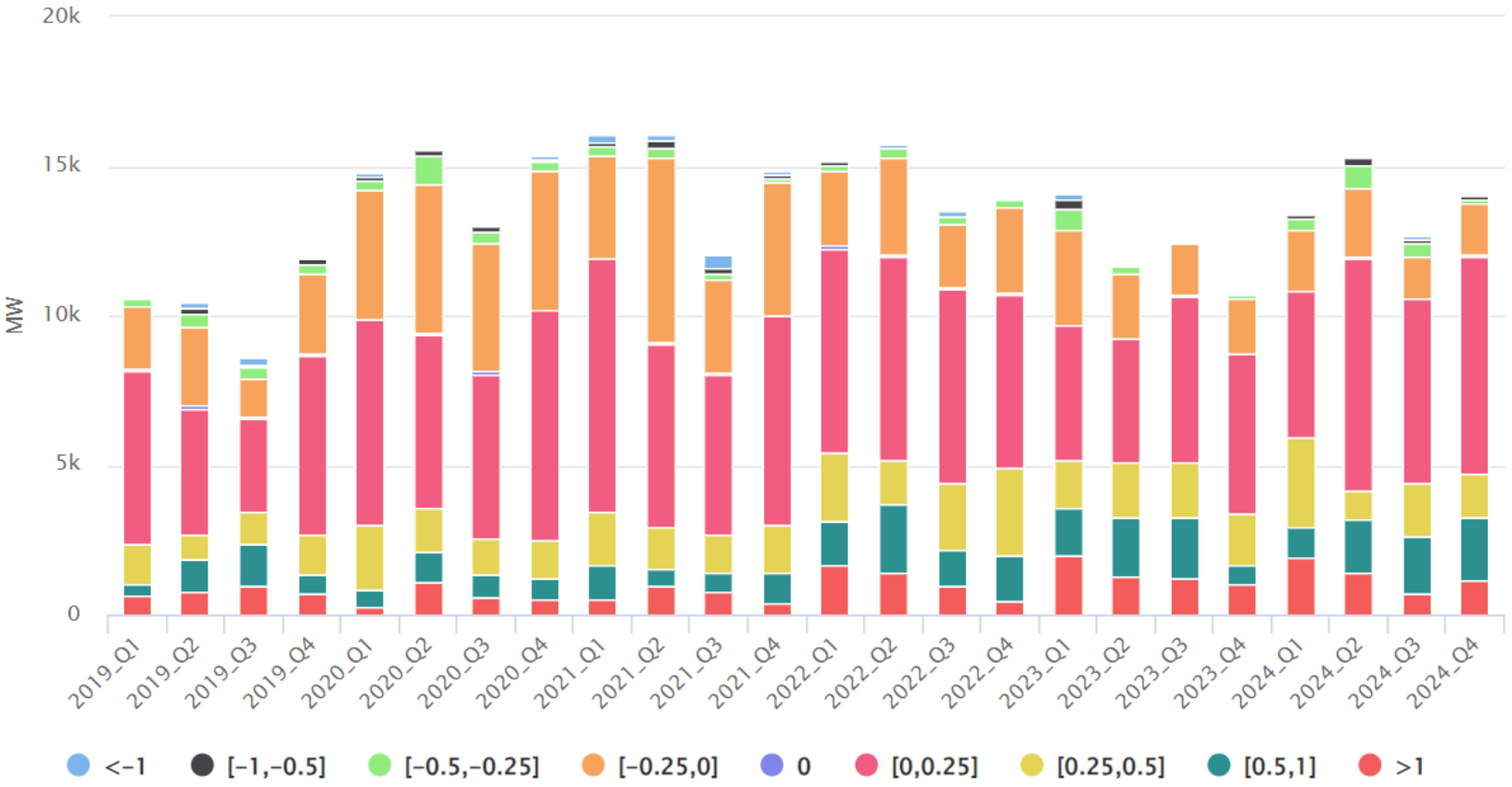
- Outlier events create a long-tailed distribution of notional value
- The ISO recommends differentiating the floor by time-of-use period

Annual auction price distribution for the on peak period



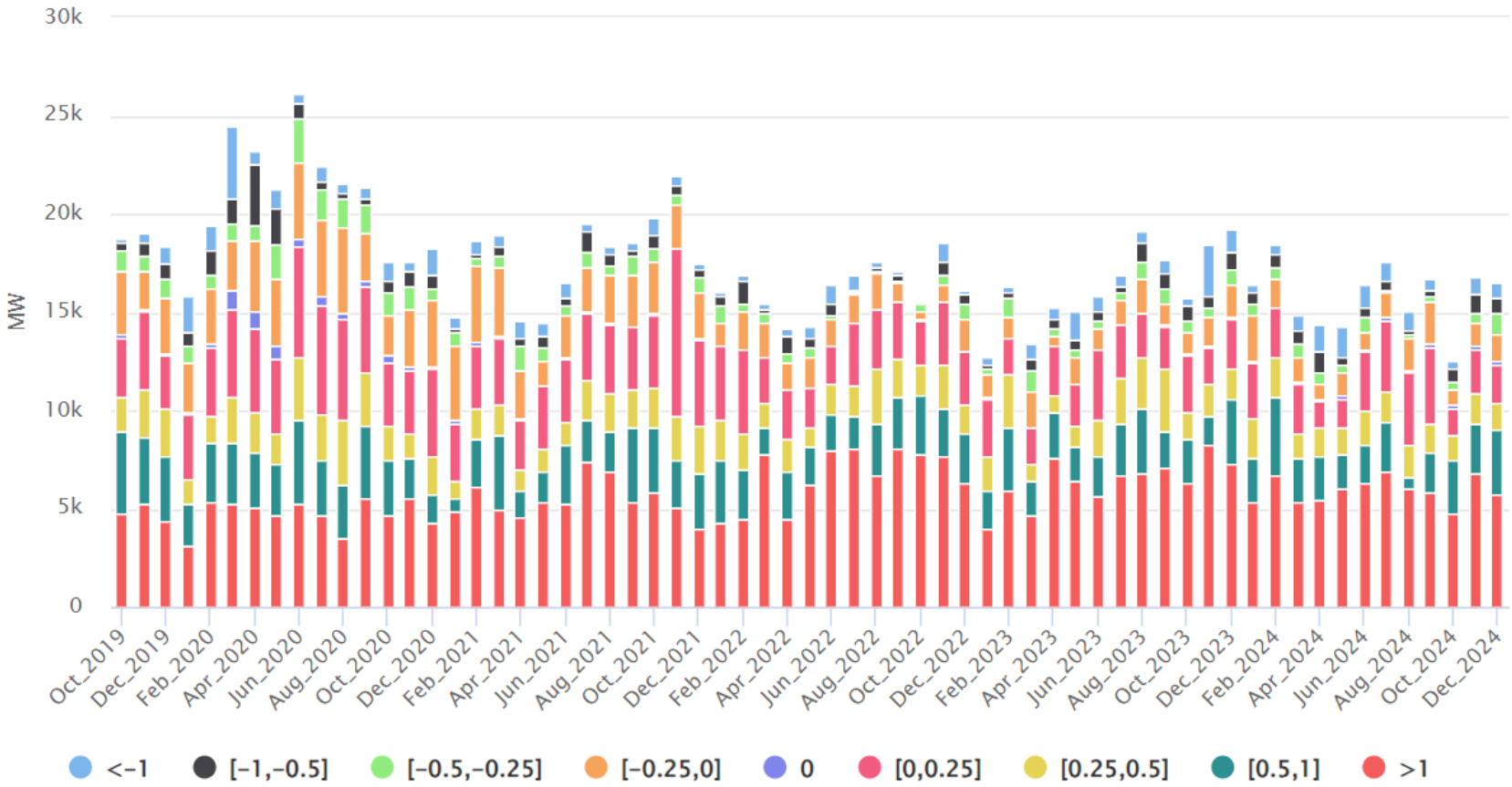
$/MWh

Annual auction price distribution for the off peak period



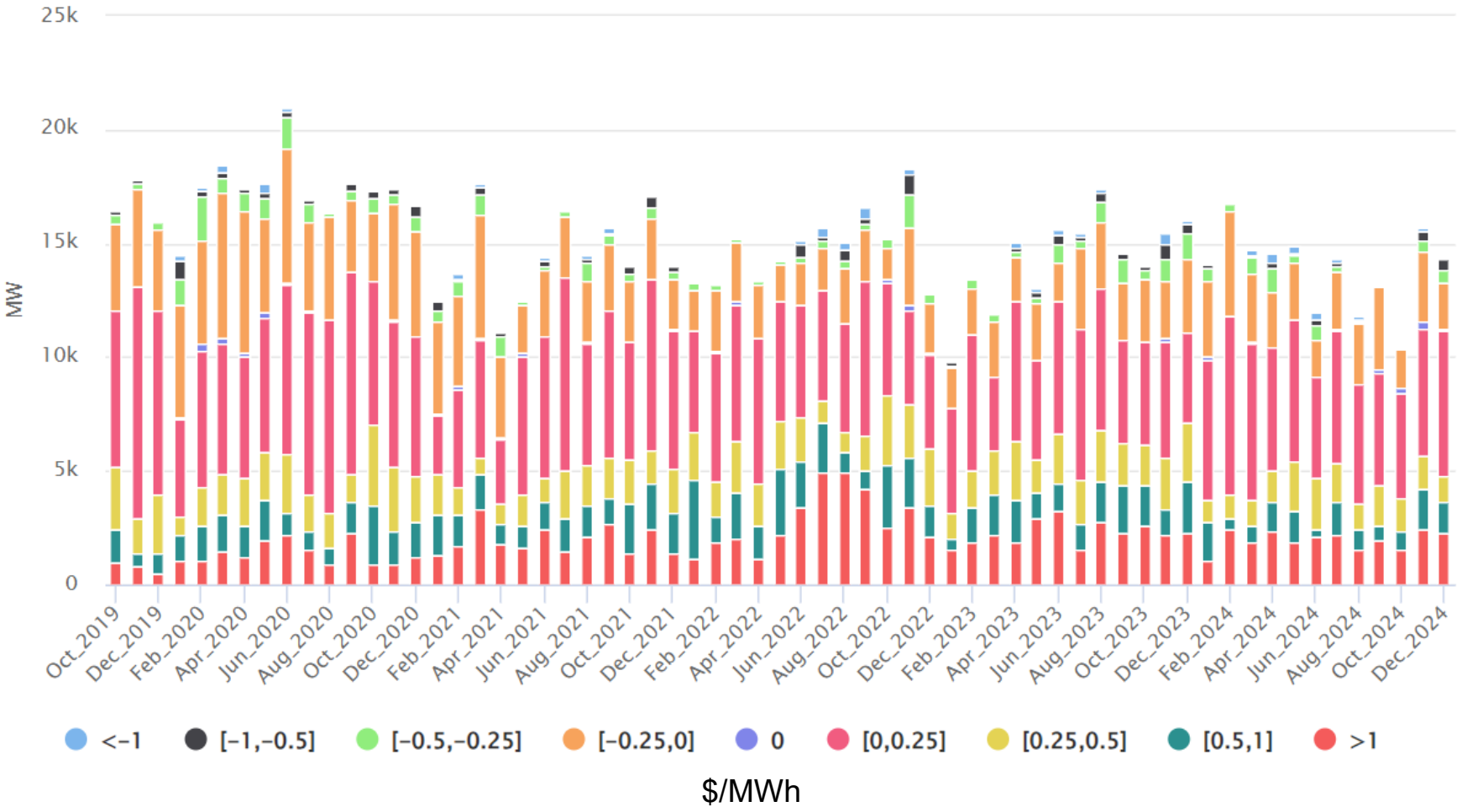
$/MWh

Monthly auction price distribution for the on peak period

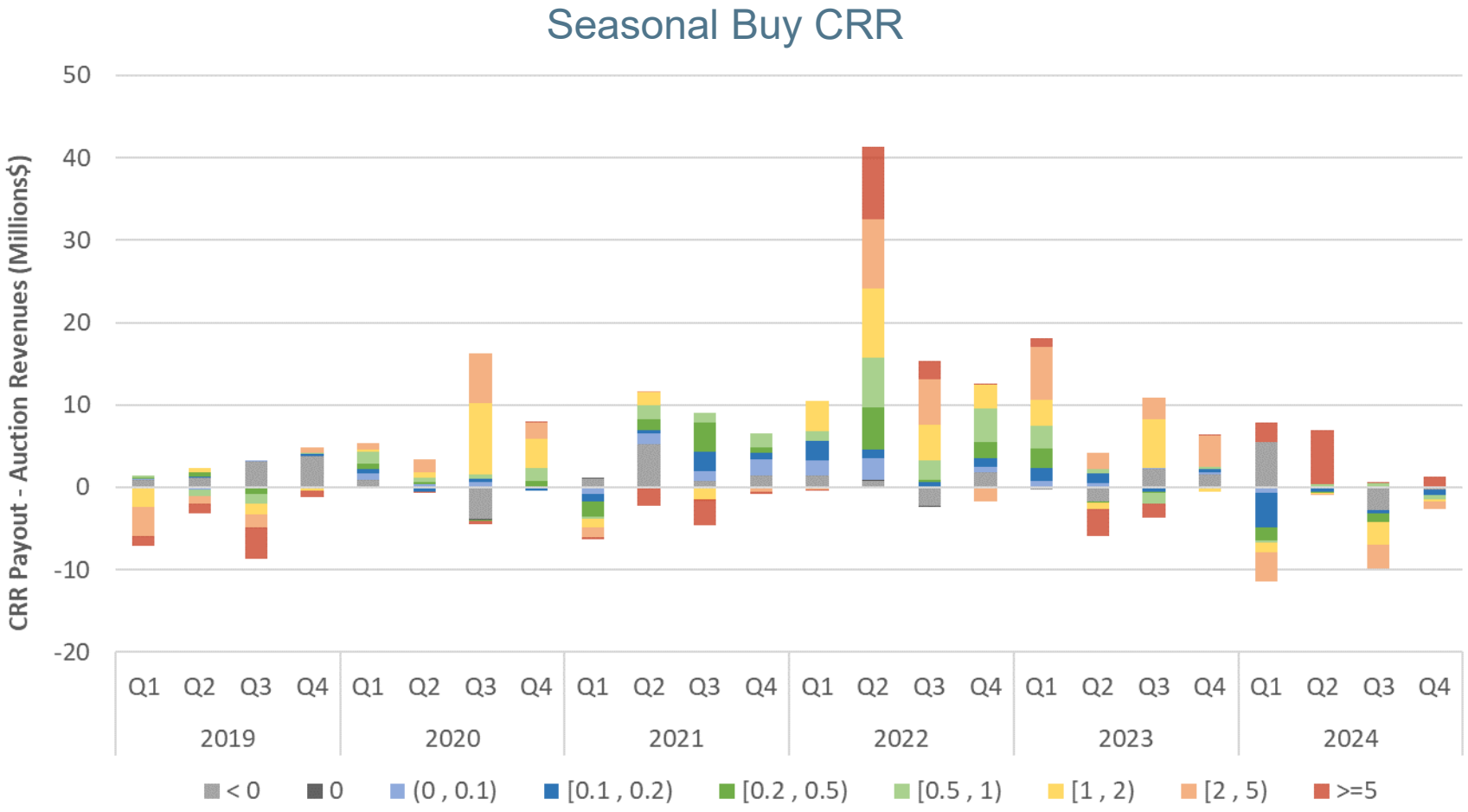


$/MWh

Monthly auction price distribution for the off peak period

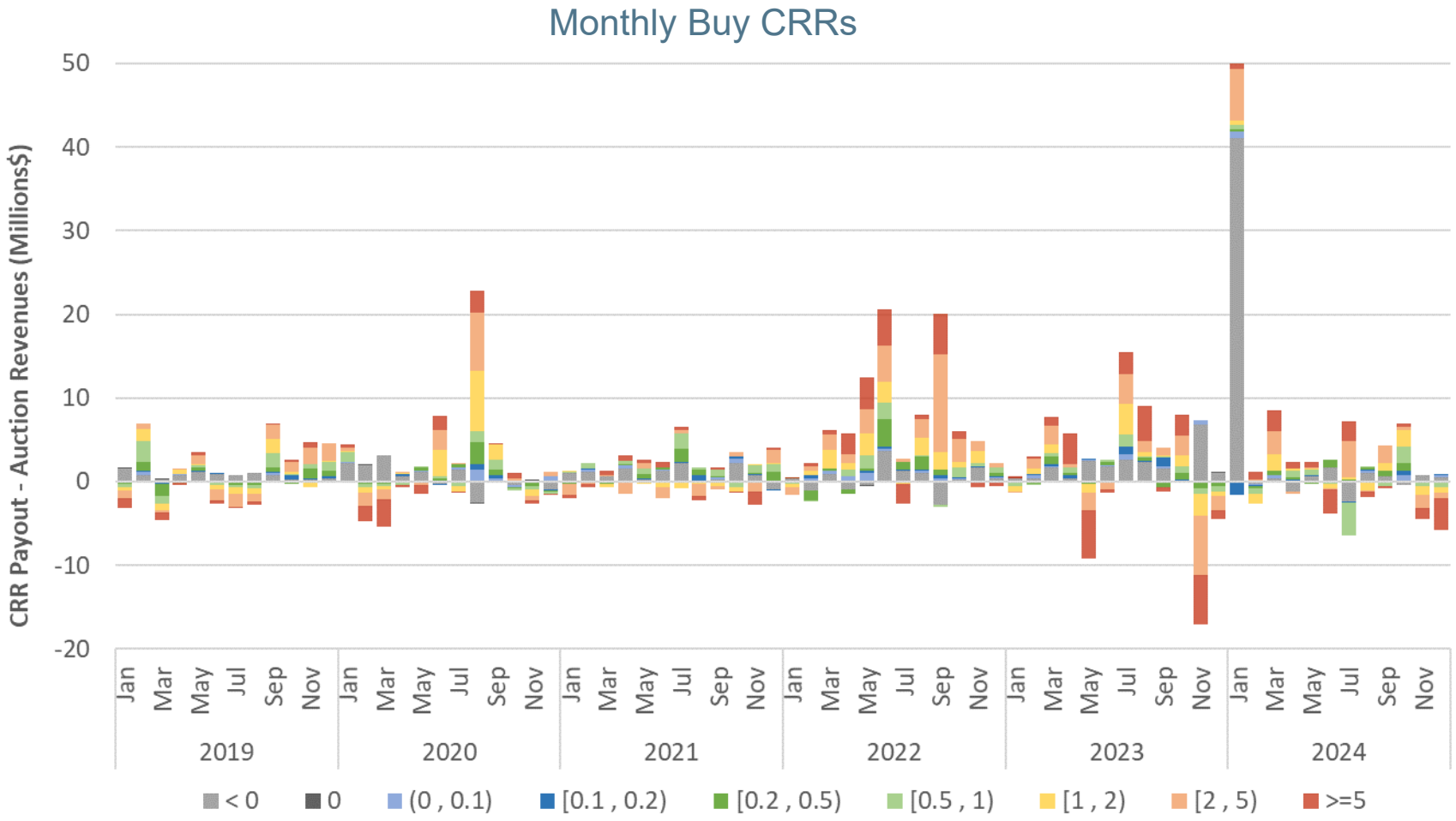


Excess payouts for seasonal CRRs are not concentrated in a specific price range



Auction revenues and CRR payouts are normalized to $/MWh

Excess payouts for monthly CRRs are not concentrated in a specific price range



Auction revenues and CRR payouts are normalized to $/MWh

What is the best starting option for a price and bid floor for positively priced CRRs?

- The ISO seeks feedback on which of the following options is the best starting point for improving auction efficiency while preserving auction functions for positively priced CRRs

On-Peak ($/MWH)	Off-Peak ($/MWh)
$0.25	$0.05
$0.50	$0.10
$1.00	$0.25

The ISO proposes a floor closer to zero for negatively priced CRRs

- The ability to price CRRs negatively is important for the auction's CRR resale functionality.
- The historical distribution of negative CRR clearing prices is clustered closer to zero than the distribution of positive prices.
- The ISO seeks feedback on the idea of a $0.10/MWh "ceiling" for negatively priced CRRs, designed primarily to prevent clearing at a price of zero.

In summary

- The ISO proposes a matching price and bid floor in the CRR auction and seeks feedback on which of the following options achieves the best balance of improving efficiency without making hedging uneconomic:

On-Peak ($/MWH)	Off-Peak ($/MWh)
$0.25	$0.05
$0.50	$0.10
$1.00	$0.25

- The ISO proposes to set a ceiling/maximum price and bid of -$0.10/MWh for negatively priced CRRs to prevent counterflow CRRs from clearing at zero.

PHASE 1 STRAW PROPOSAL: REVENUE ADEQUACY ENHANCEMENTS

Phase 1 Straw Proposal: Revenue Adequacy Enhancements

- Continued modeling improvements within existing tariff authority
  - This has already begun 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

Phase 2 will continue exploring more complex structural reforms, including product definition

- Time of use and storage eligibility updates
- Auction structure reforms, including updates to the price and bid floors
- Other options introduced at the April 22, 2026, stakeholder meeting and covered in stakeholder comments
- Additional revenue adequacy enhancements tied to the root cause analysis findings