



California ISO

# Market Performance and Planning Forum

September 29, 2022

CAISO PUBLIC

## Reminders:

- This Quarterly forum that engages stakeholders in review of market performance issues and in high level dialogue on release planning, implementation and new market enhancements. This is intended to foster open dialogue and sharing of ideas and perspectives
- Please raise your hand if you have a question or comment at any time during the meeting and the facilitator will call on you
  - Please start by stating your name and affiliation
- Meetings are recorded and video files posted on **User groups and recurring meetings > Market performance and planning forum > 2022**

## Objective: Enable dialogue on implementation planning and market performance issues

- Review key market performance topics
- Share updates to 2022 release plans, resulting from stakeholders inputs
- Provide information on specific initiatives
  - to support Market Participants in budget and resource planning
- Focus on implementation planning
  - Clarify timelines
  - Discuss external impacts
  - Policy discussions should occur in the initiative stakeholder process



California ISO

# Market Performance and Planning Forum

Agenda – September 29, 2021

1p.m. – 4 p.m.

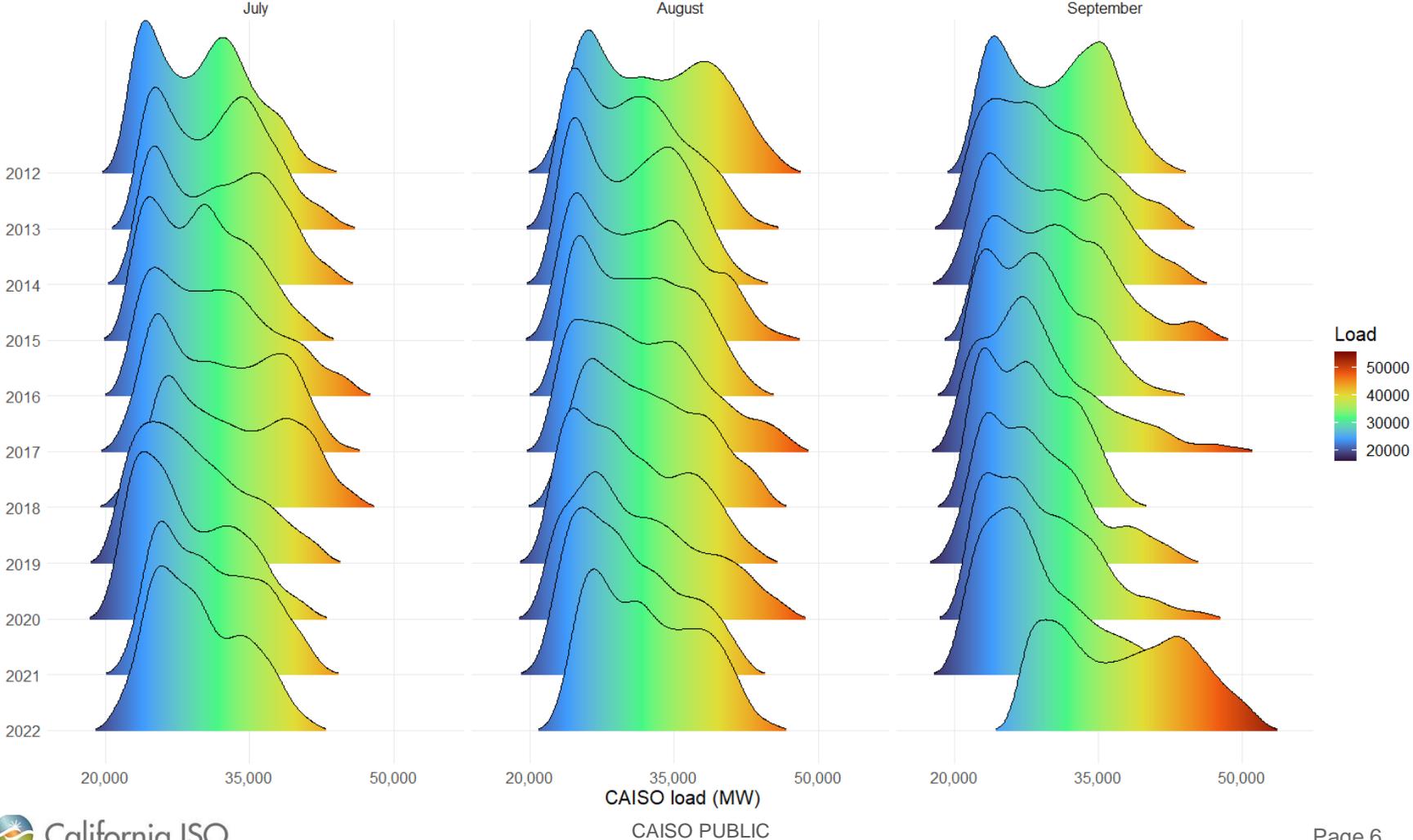
Time:	Topic:	Presenter:
1:00 – 1:05	Introduction, Agenda	Brenda Corona
1:05 – 2:15	Market Performance Update	Market Analysis and Forecasting
2:15 – 3:00	Release Update	Trang Vo
3:00 – 4:45	Policy Update	Brad Cooper Gillian Biedler

# Market Update

Market Analysis and Forecasting Department

# CAISO system had a record peak load at 52,061 MW on September 6

Historical Loads for CAISO area.



# CAISO is currently analyzing the September heatwave events

- An analysis report will be posted in the second half of October
- A public call will be held a week after the posting of the report
- The report maintains the regular structure of the summer reports
- There will be a dedicated section to further analyze the events of September 5 through 8

# August 2022 Summer Readiness Performance

# Summary of summer enhancements in place for summer 2022 - August 2022

Summer enhancement	Date Implemented	Trigger	Dates Triggered
EIM resource sufficiency test	1-Jun-2022	Permanent feature	All the time
Import market incentives during tight supply conditions	15-Jun-2021	Warning or Emergency	August 31, Hours 18 - 20
Intertie schedules information on OASIS	26-Jul-2021	Permanent feature	All the time
Enhanced real-time pricing signals during tight supply conditions	15-Jun-2021	Warning or Emergency	August 31
Management of storage resources during tight system conditions	30-Jun-2021	RUC undersupply	Not triggered
Reliability demand response dispatch and real-time price impacts	4-Aug-2021	Activation of RDRR	Not triggered
Load, export and wheeling priorities	4-Aug-2021	Permanent feature <sup>6</sup>	All the time
CAISO's public communication protocols	29-May-2021	System Event driven	Not triggered
Today's Outlook displays	Aug 18-2021	Permanent feature	All the time
Resource sufficiency test	Jun 1, 2022	Permanent feature	All time
Enhancements to supporting resources for exports	June, 2022	Permanent feature	All time
Further visibility for supporting resources	June, 2022	Permanent feature	All time
Additional transparency for load conformance	June, 2022	Permanent feature	All time

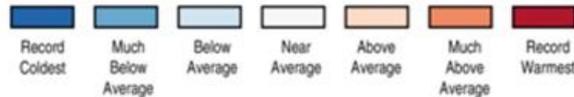
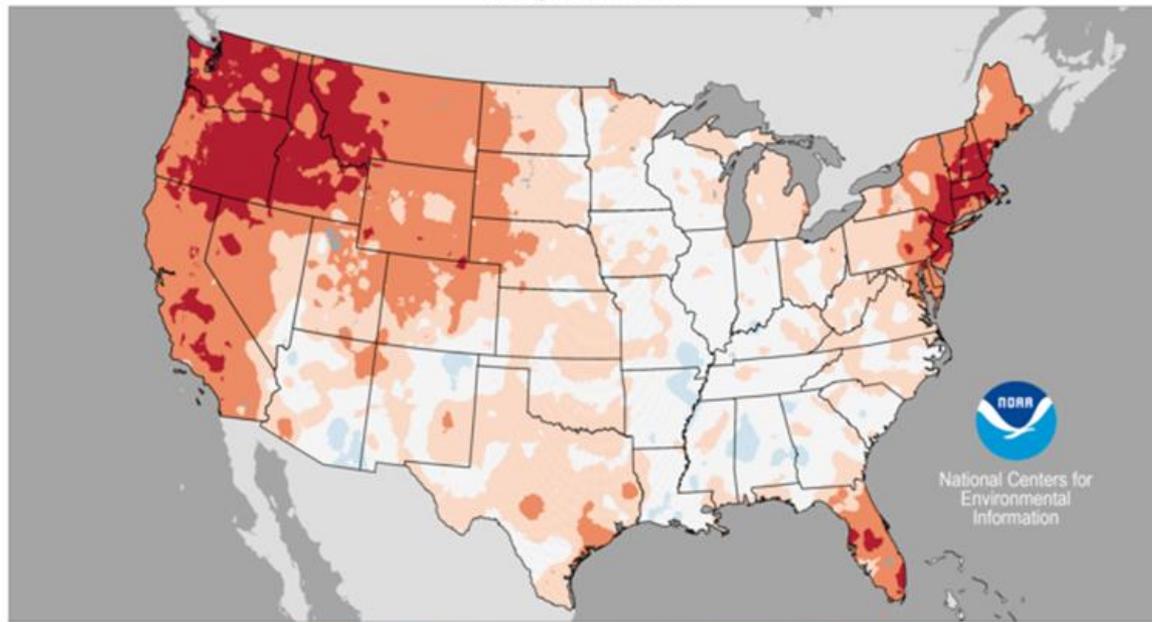
\* The wheeling through priorities the CAISO placed into effect are interim with an original sunset date of May 31, 2022. CAISO filed at FERC to extend these provision from June 1, 2022 through May 31, 2023 while it develops a long term policy for Forward Scheduling.

# Above Average, much above average, and record warmest temperatures were observed throughout the Southern Western United States

## Mean Temperature Percentiles

August 2022

Ranking Period: 1895-2022



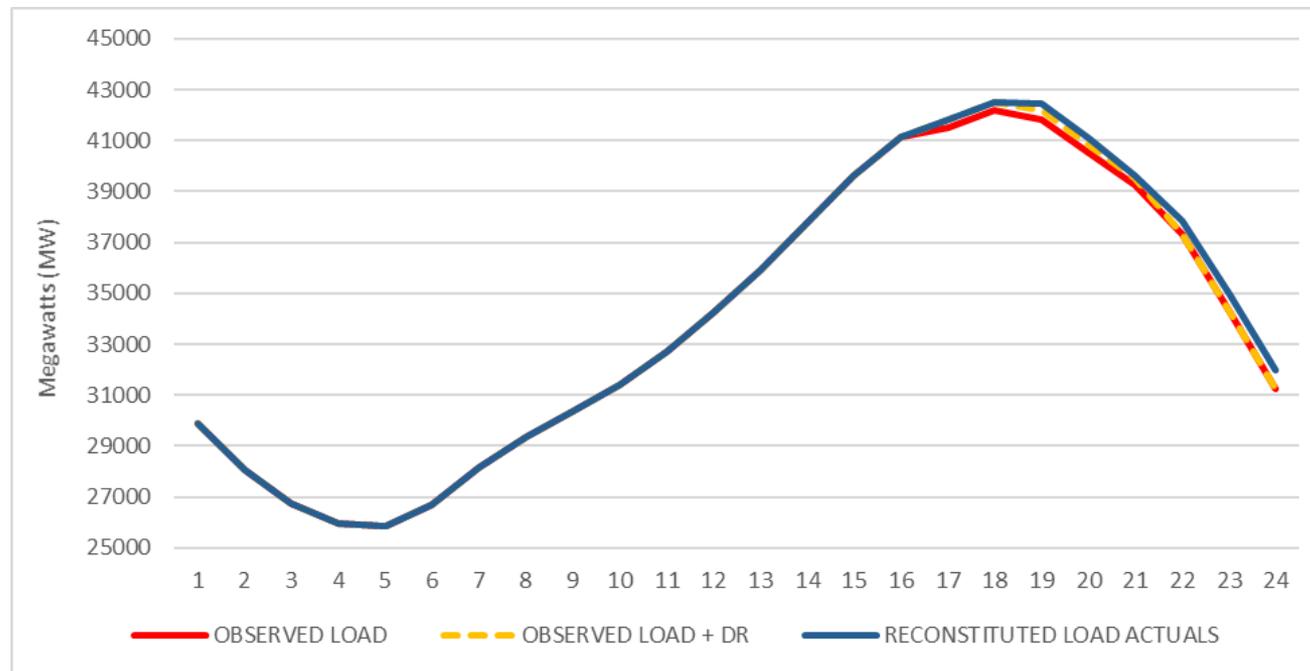
Created: Wed Sep 07 2022

Data Source: nClimGrid

# Energy conservation contributed to about 275 MW

Date	Conservation
August 16, 2022	None Observed
August 17, 2022	110-275 MW
August 31, 2022	None Observed

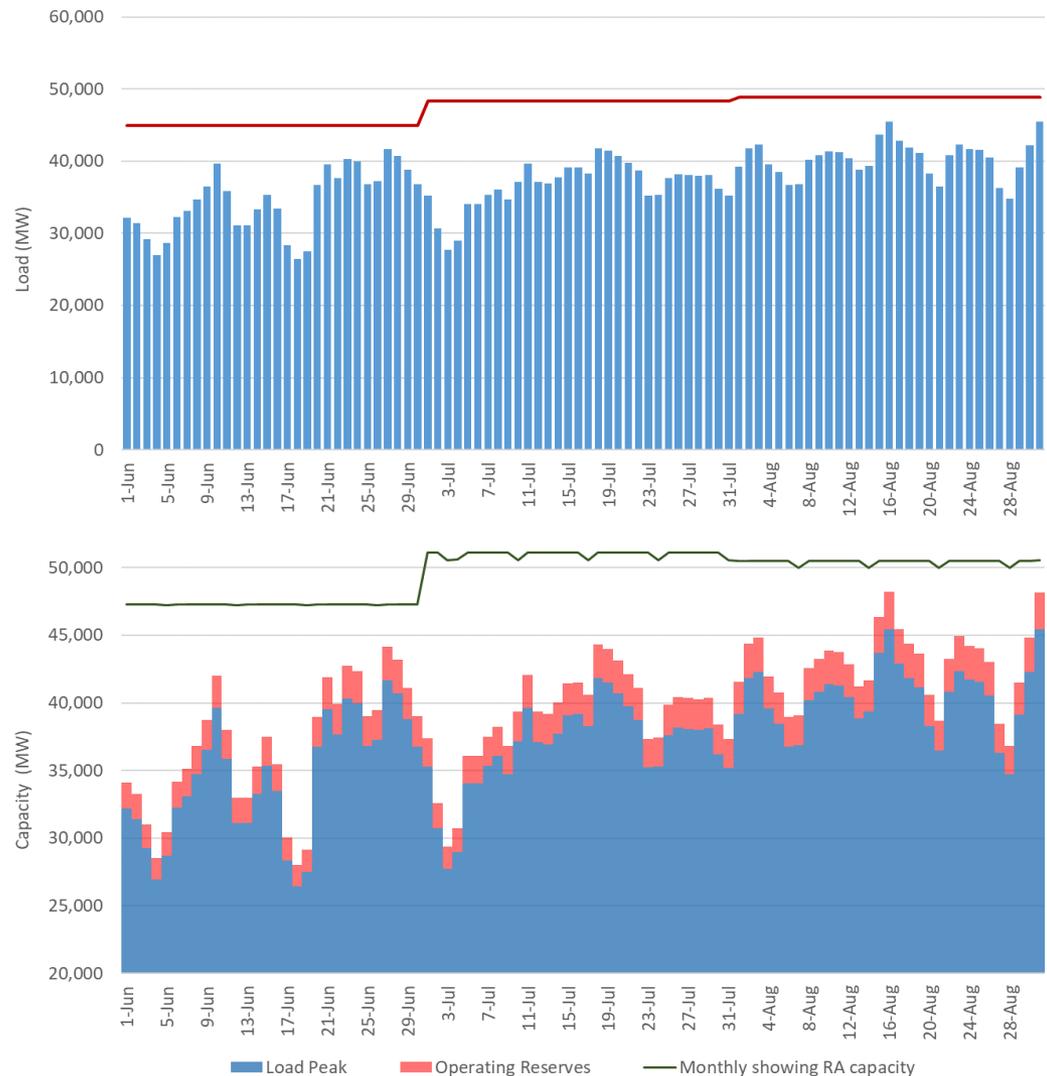
Flex Alert impact for August 17, 2022



# CAISO's load in August was higher than July

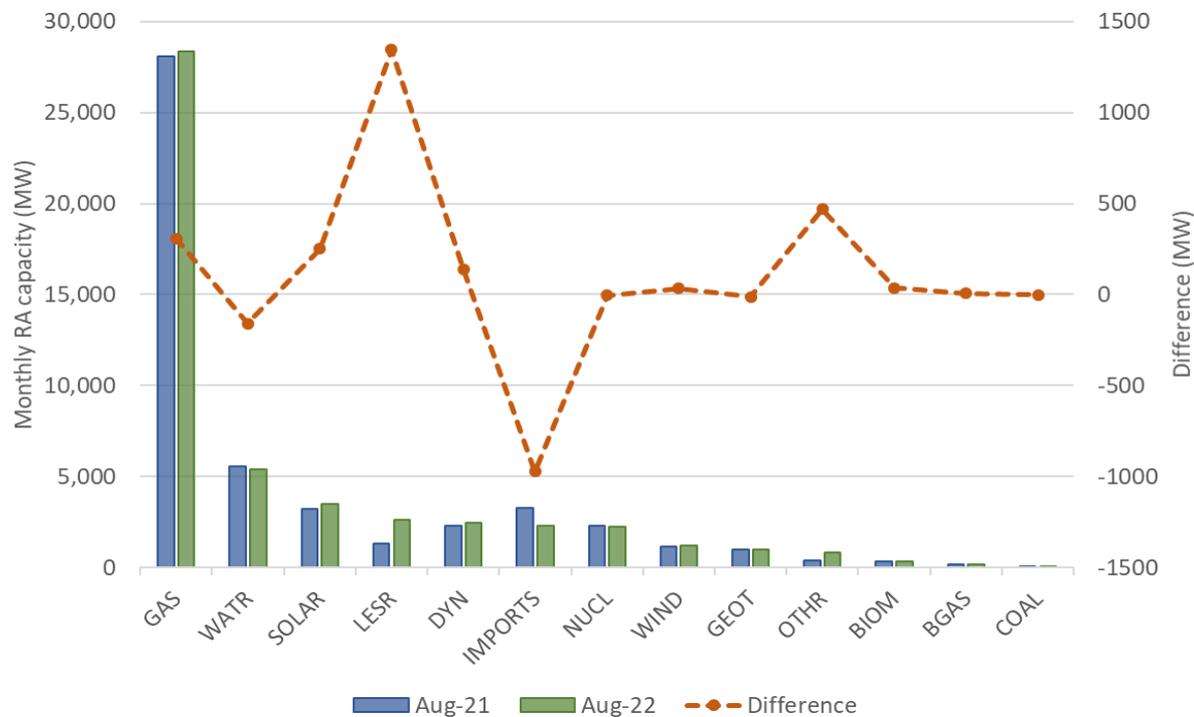
The CAISO's load peak for the month happened on August 16 at about 45,520 MW, below the CEC forecast of 48,914 MW

CAISO's load did not exceed the monthly CEC forecast, and monthly RA showings were above CAISO's load plus operating reserves



# Monthly RA showings for August 2022 RA was higher than August 2021 values

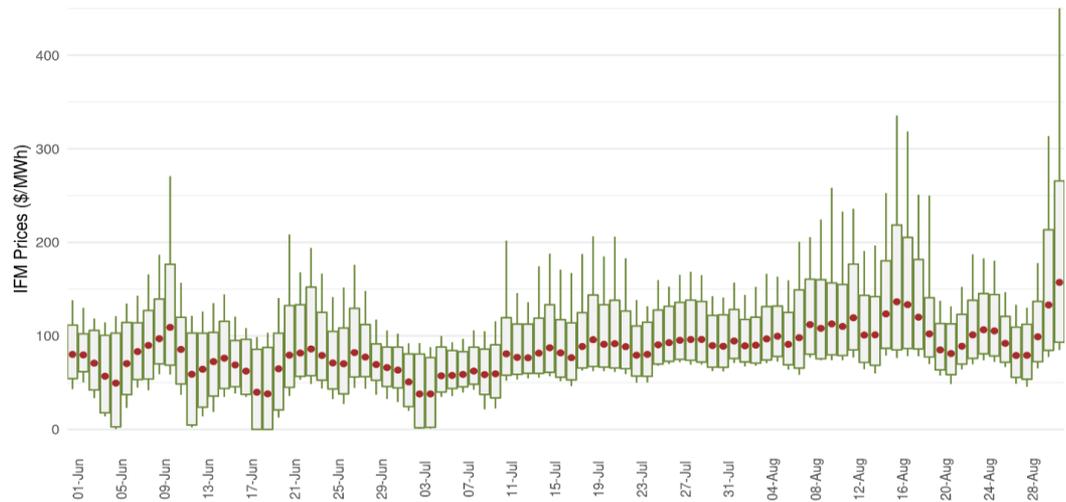
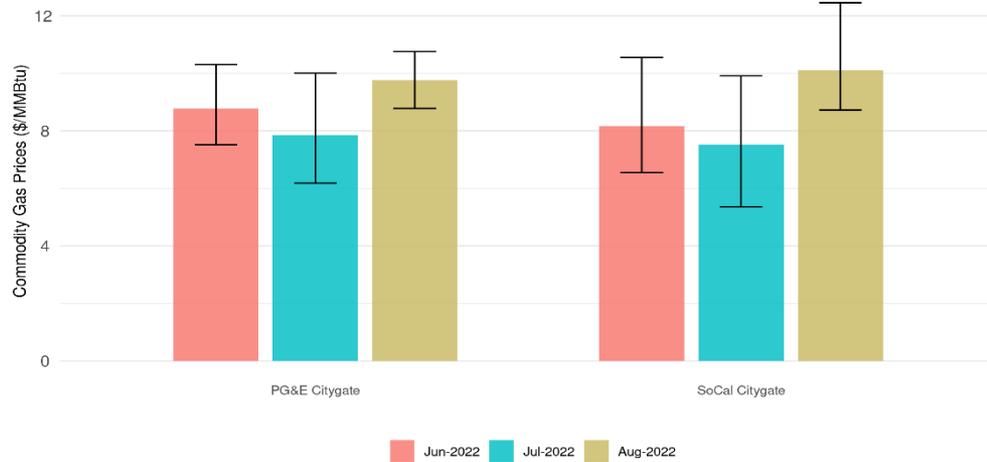
Gas: +308 MW  
 Hydro: -158 MW  
 Storage: +1345 MW  
 Imports: -973 MW



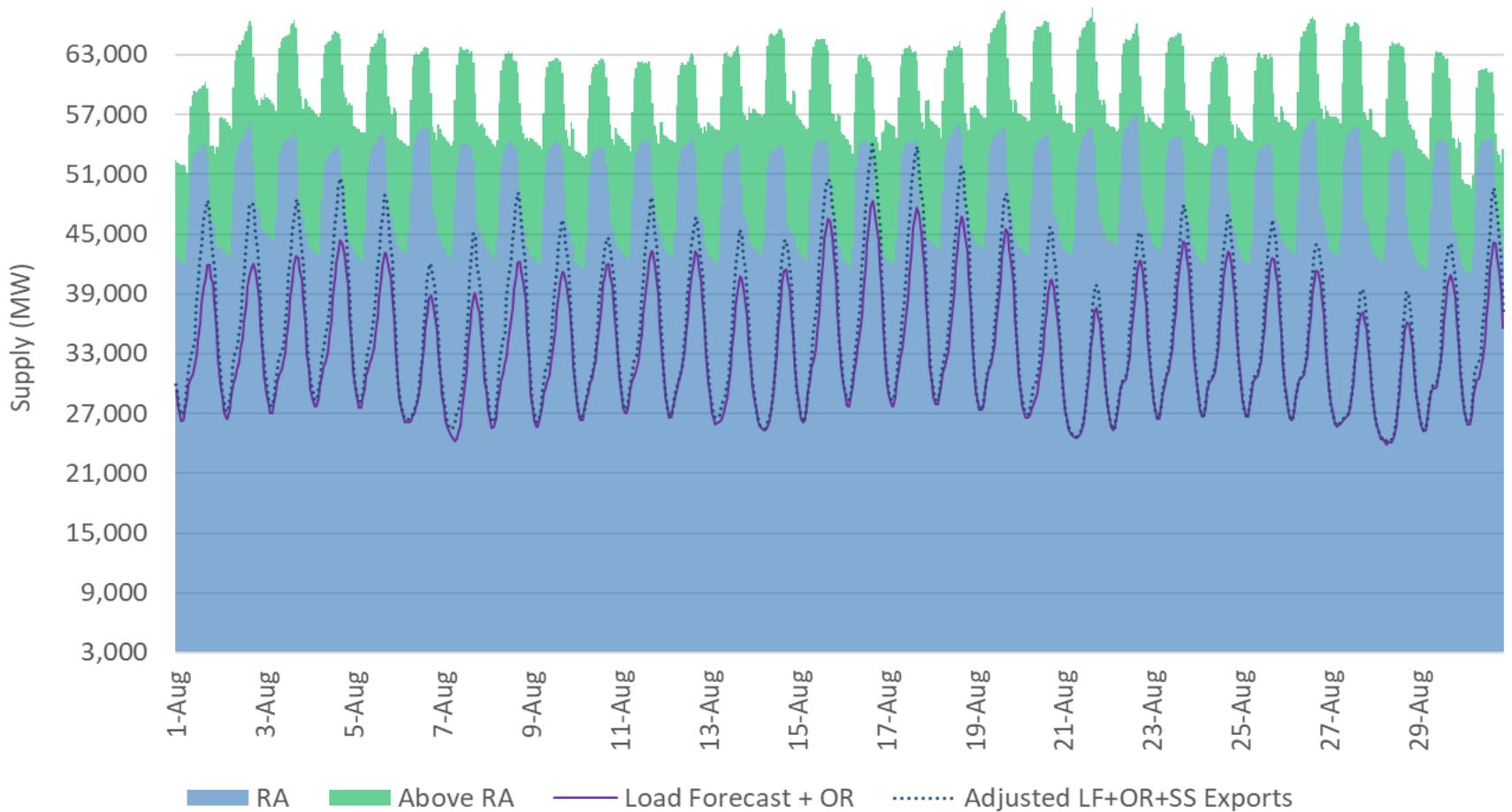
RA August 2021: 49,004 MW

RA August 2022: 50,445 MW

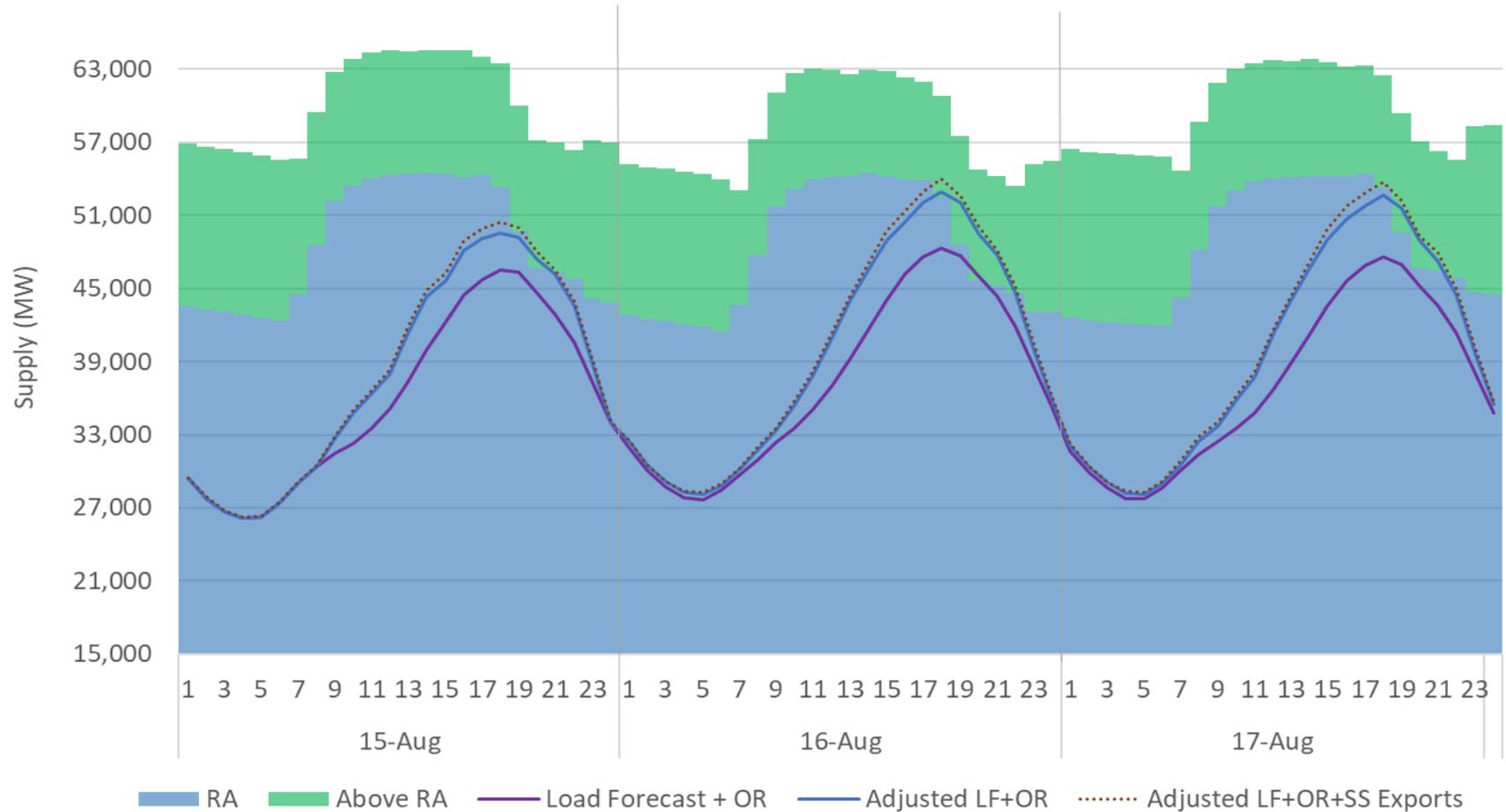
# Prices across CAISO's markets for the month of August relatively stable with relative high gas prices



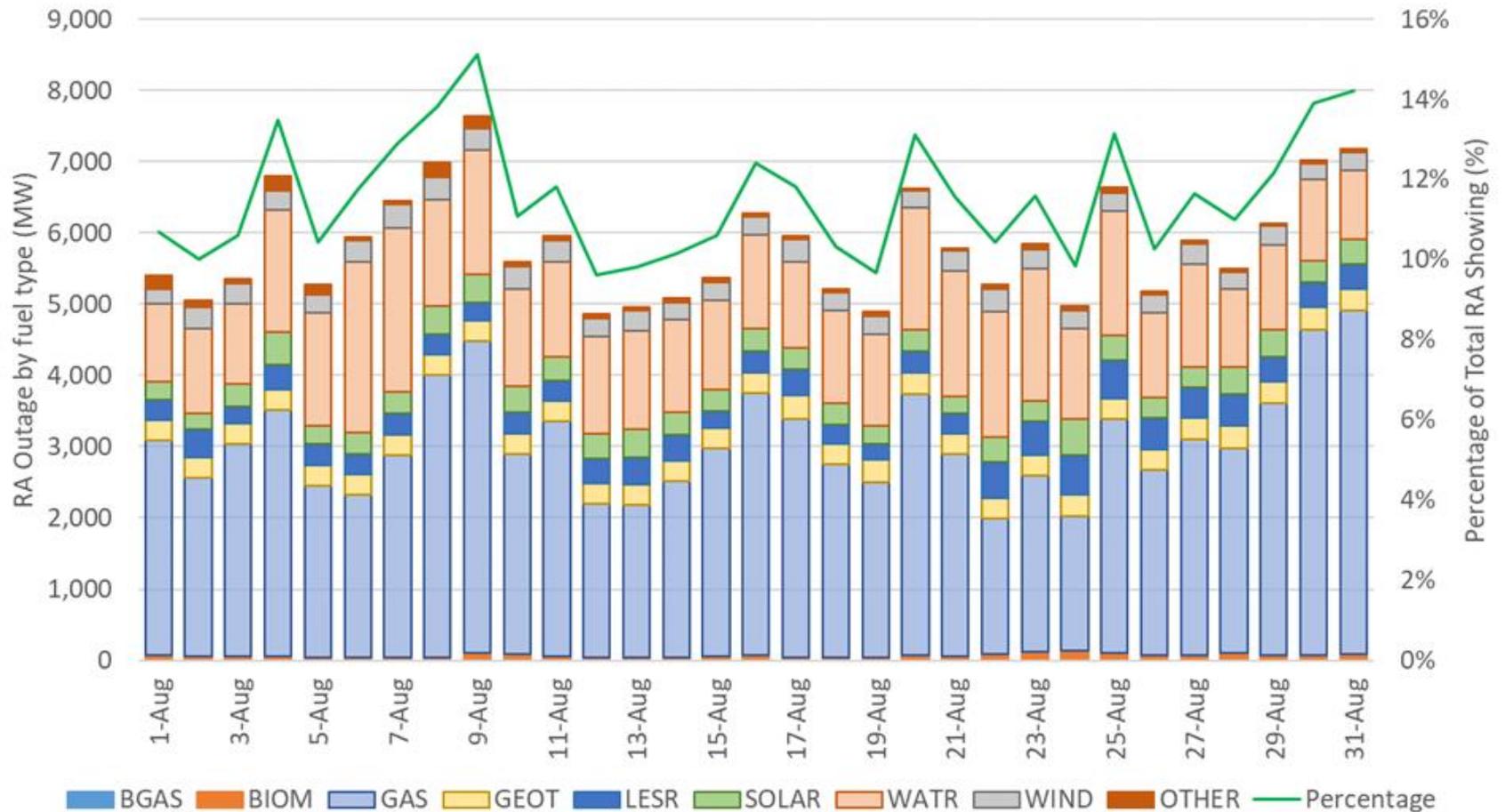
# RA capacity was generally sufficient for most days in August to meet load needs



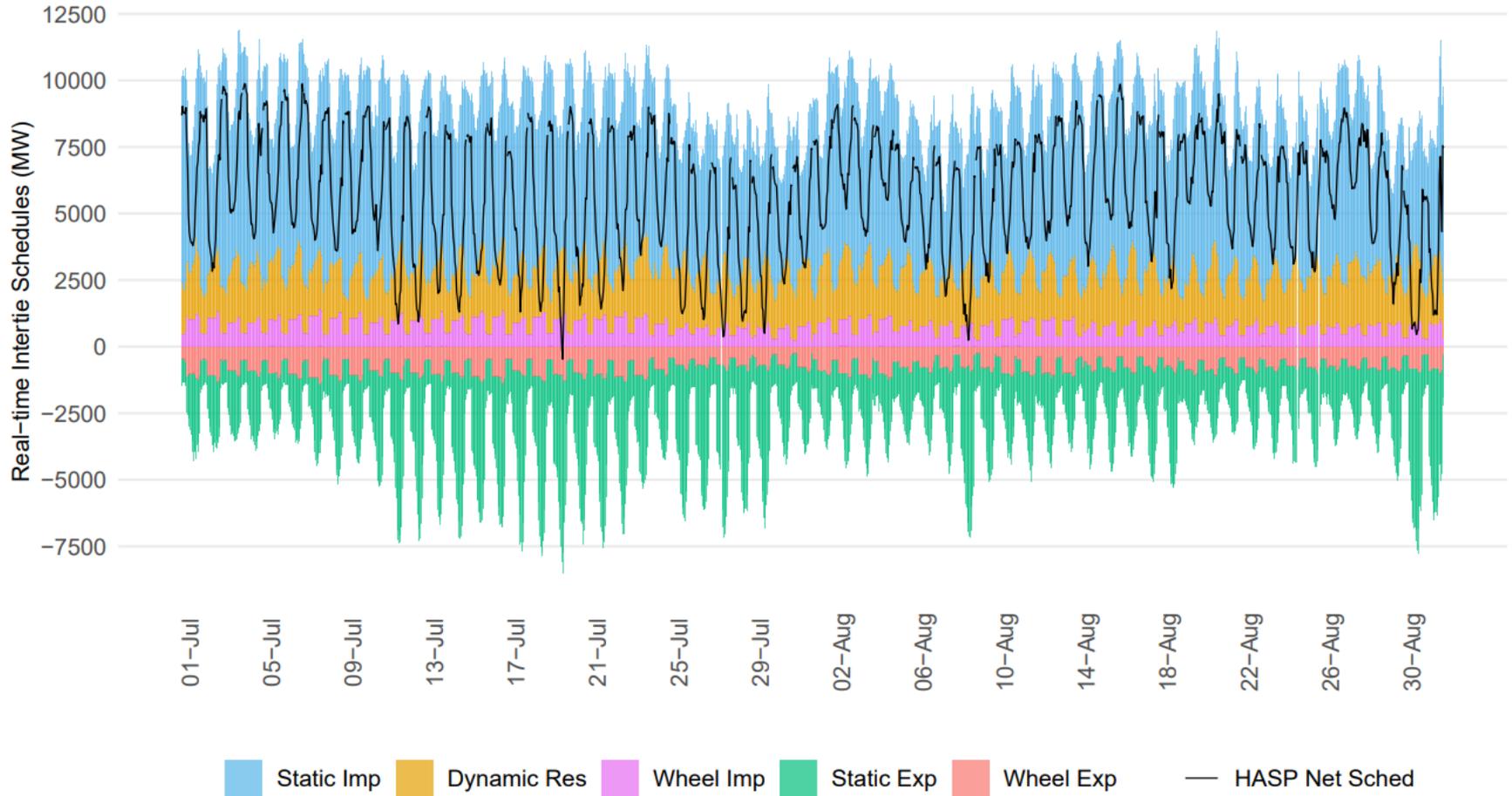
# Supply capacity during the mid-August heat wave



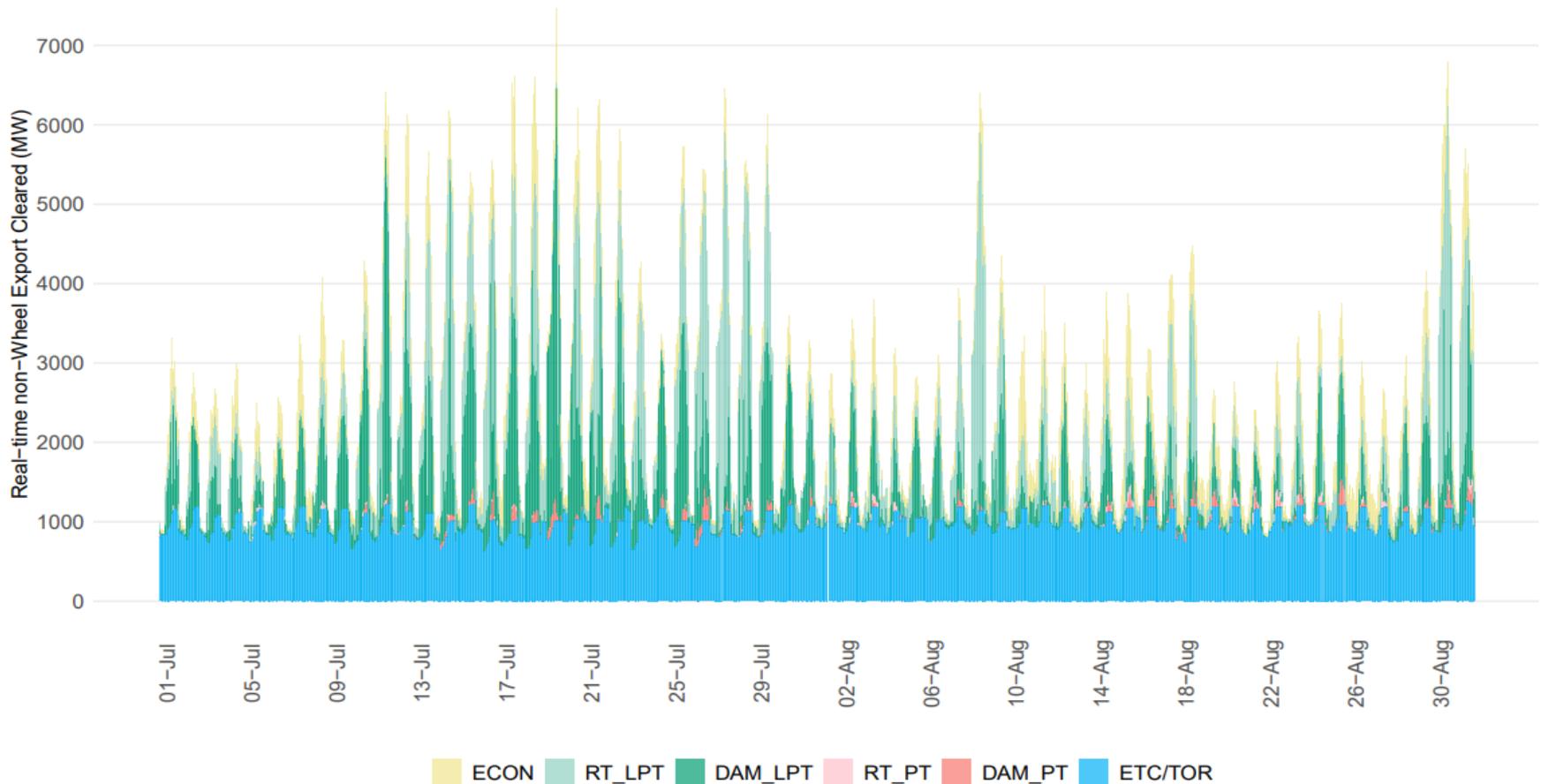
# Majority of unavailable RA capacity is from the gas – fired resources



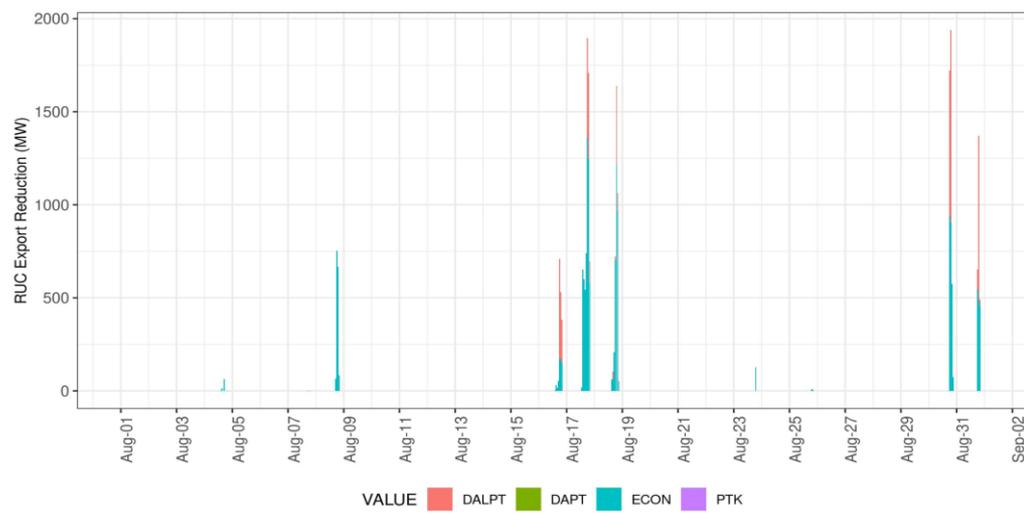
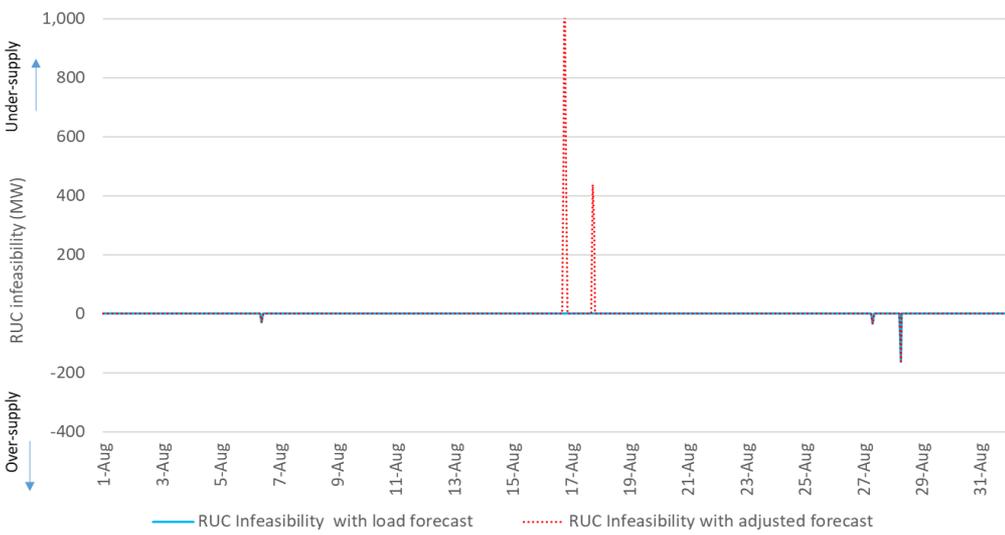
# Average net intertie schedules for peak hours was about 4370 MW for August



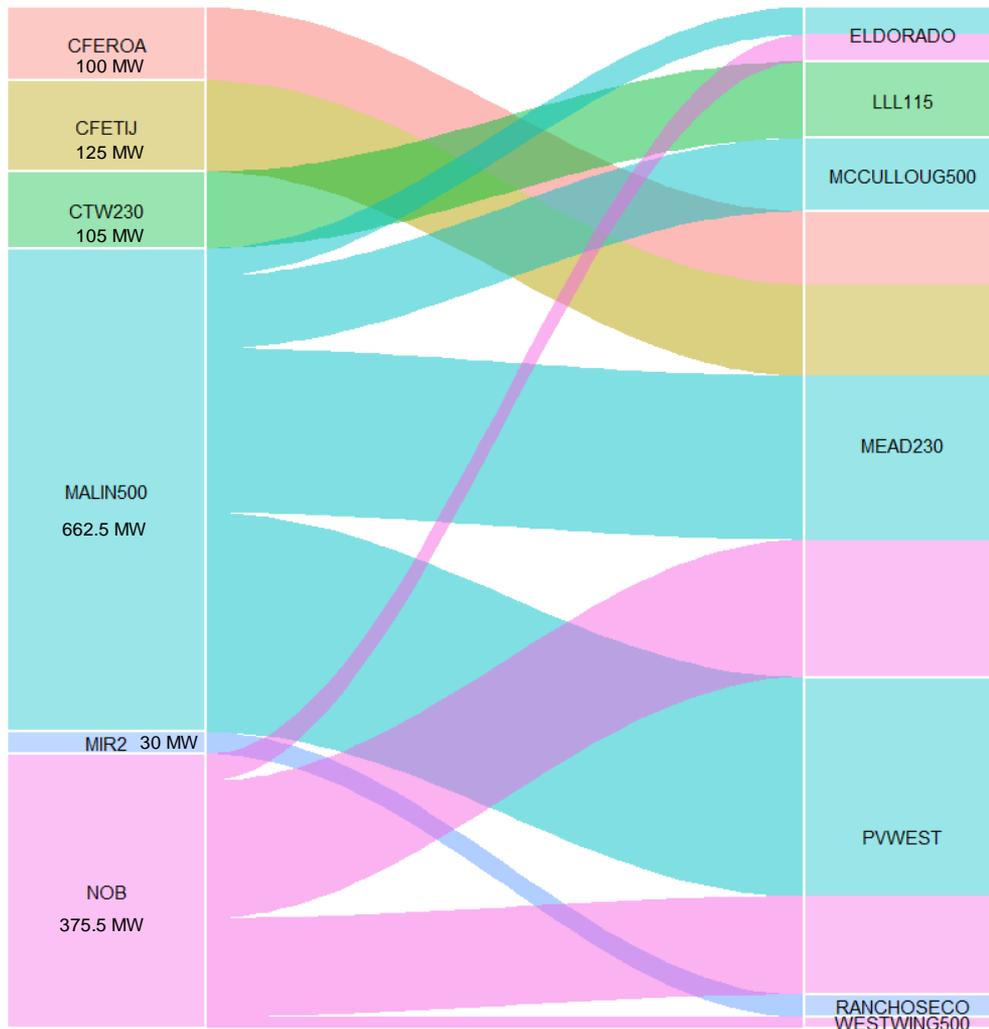
# Volume of exports in CAISO's market reflects overall supply conditions in August



# There was RUC undersupply infeasibilities on August 16-17, with RUC export reductions seen for several days

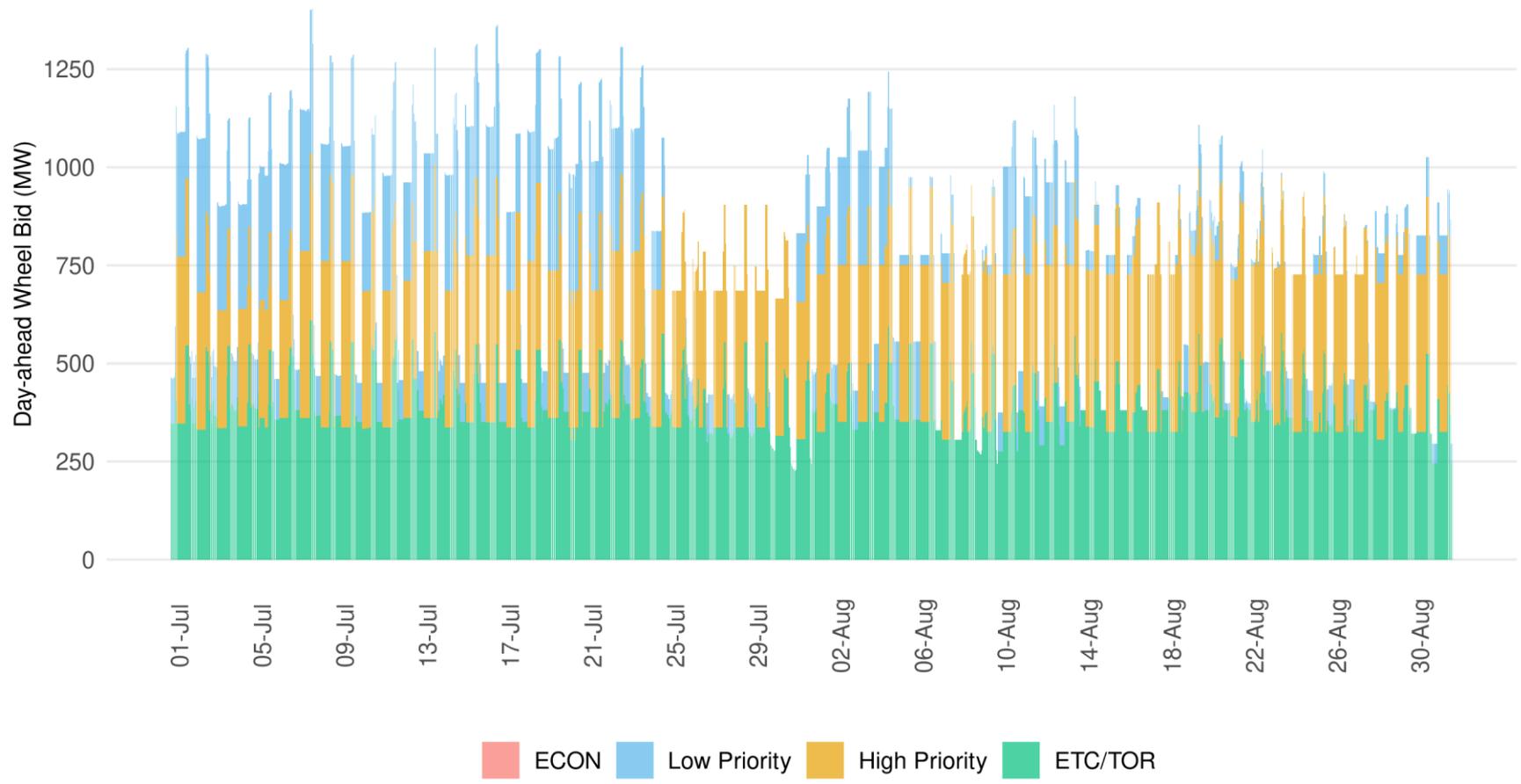


# About 426 MW of 1,398 MW registered wheels were bid in the day-ahead market; this is about 30 percent utilization

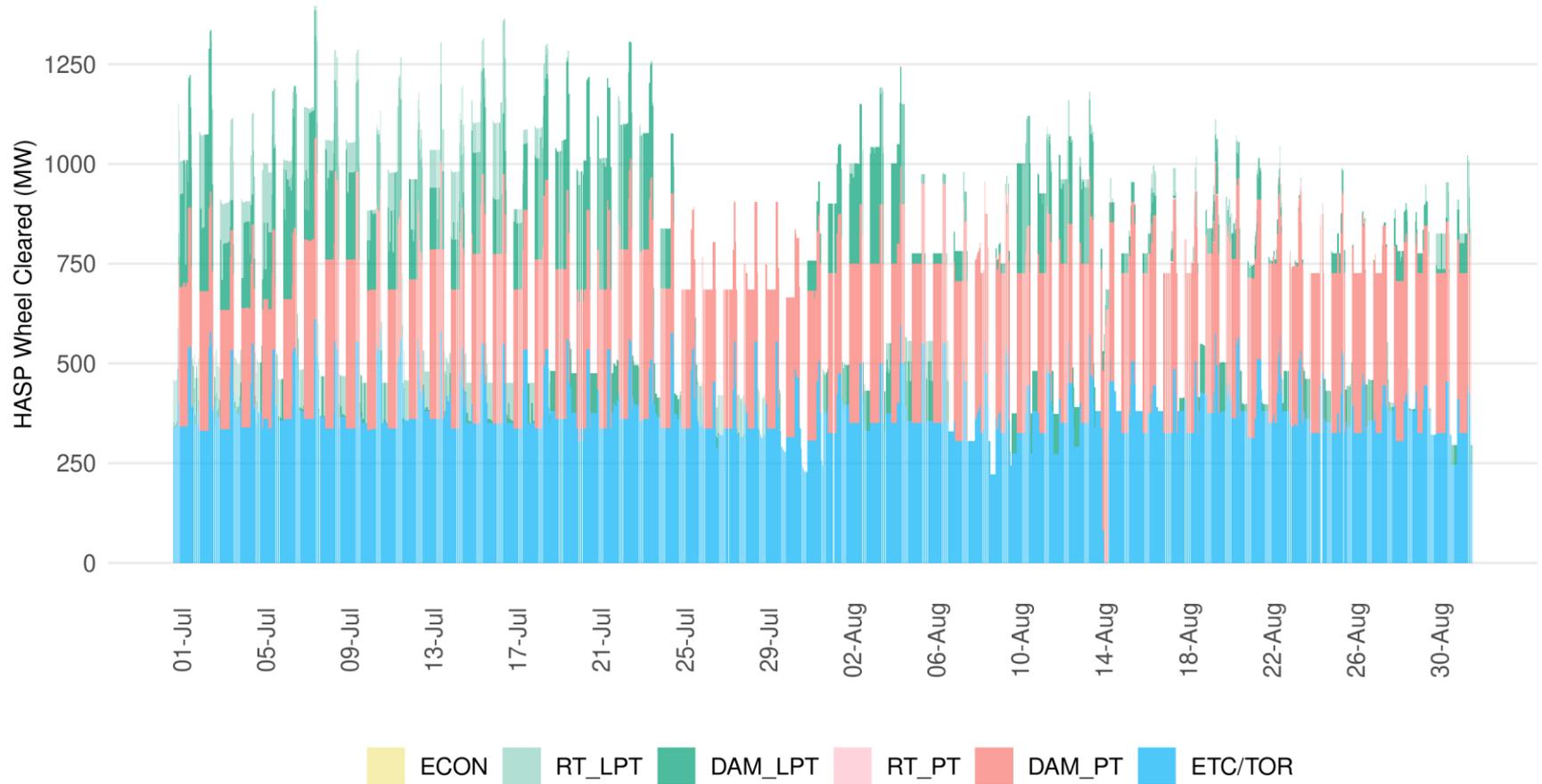


No wheel-through transactions were curtailed in August

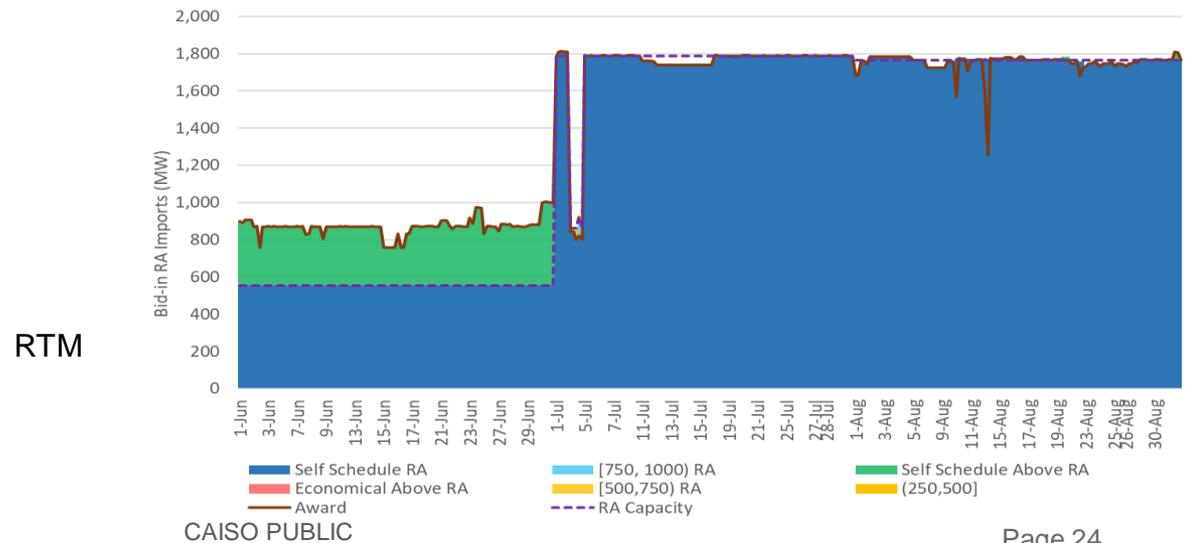
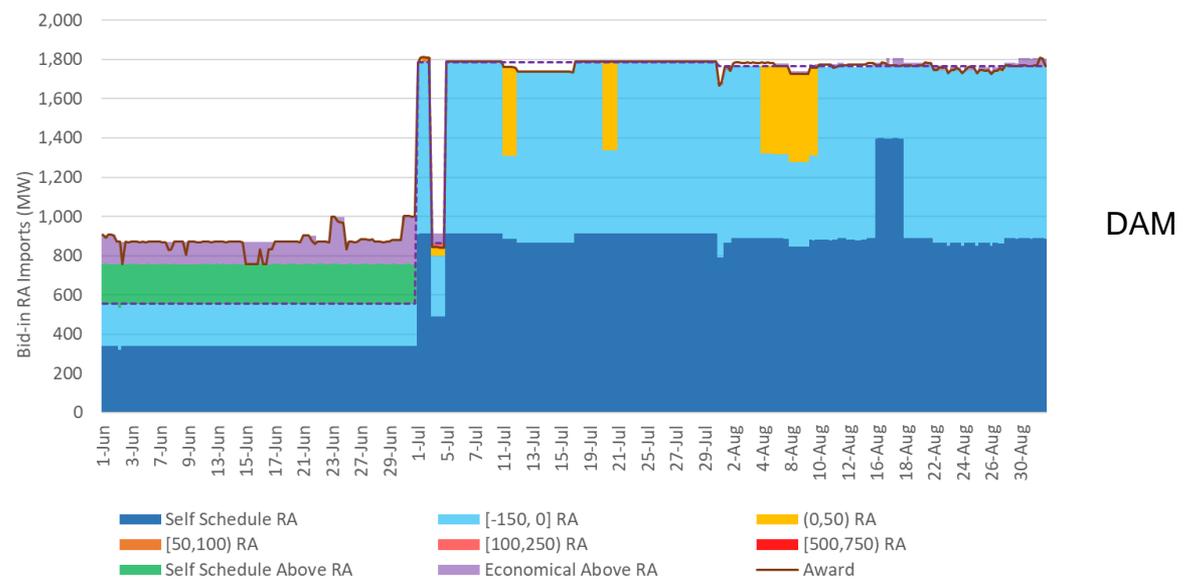
# Volumes of DAM cleared wheels was lower than July



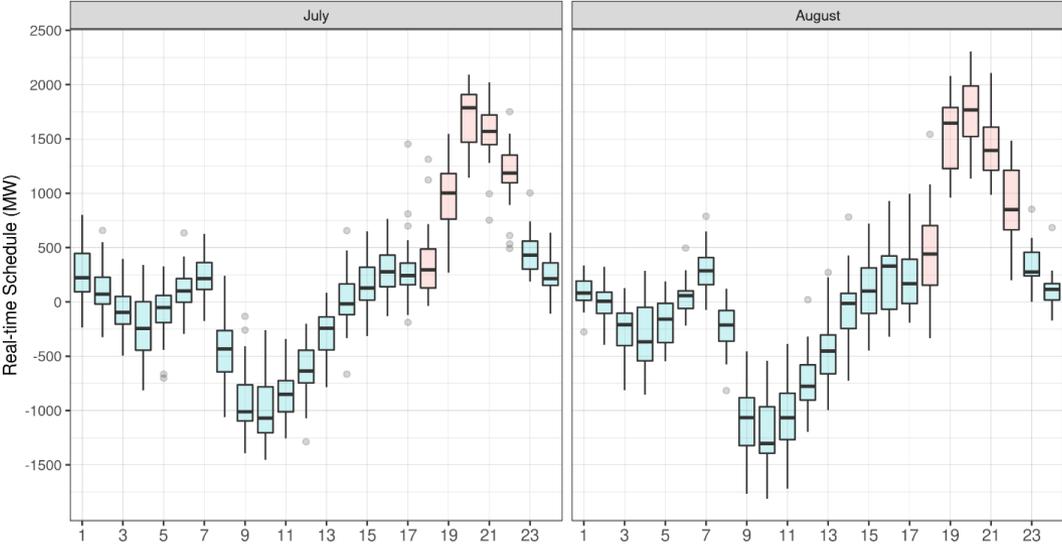
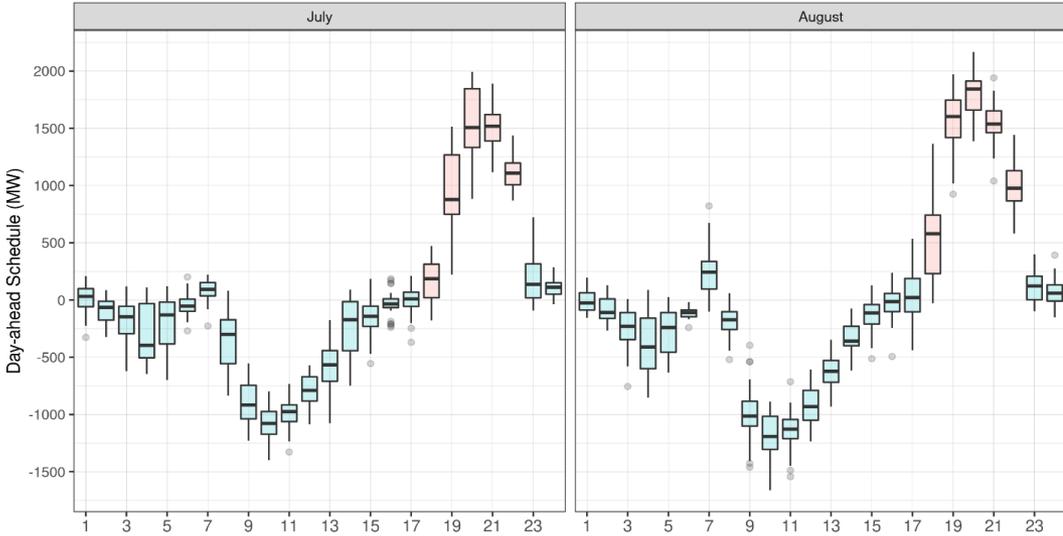
# Wheels cleared in real time market were mostly from the day-ahead market



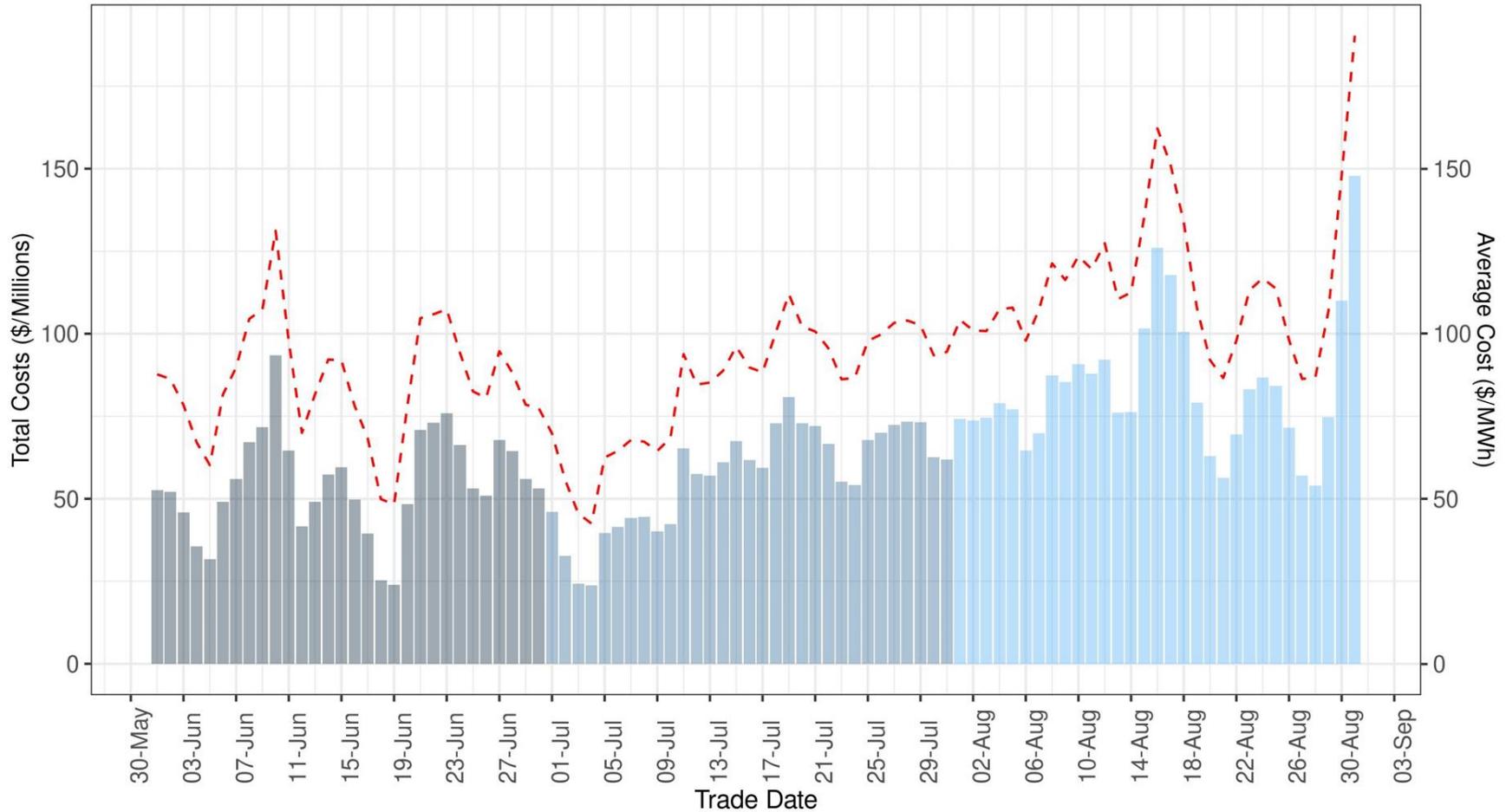
# About 97 percent of RA imports bid in at or below \$0/MWh in August



# Storage resources exceeded 2,000MW of energy dispatches

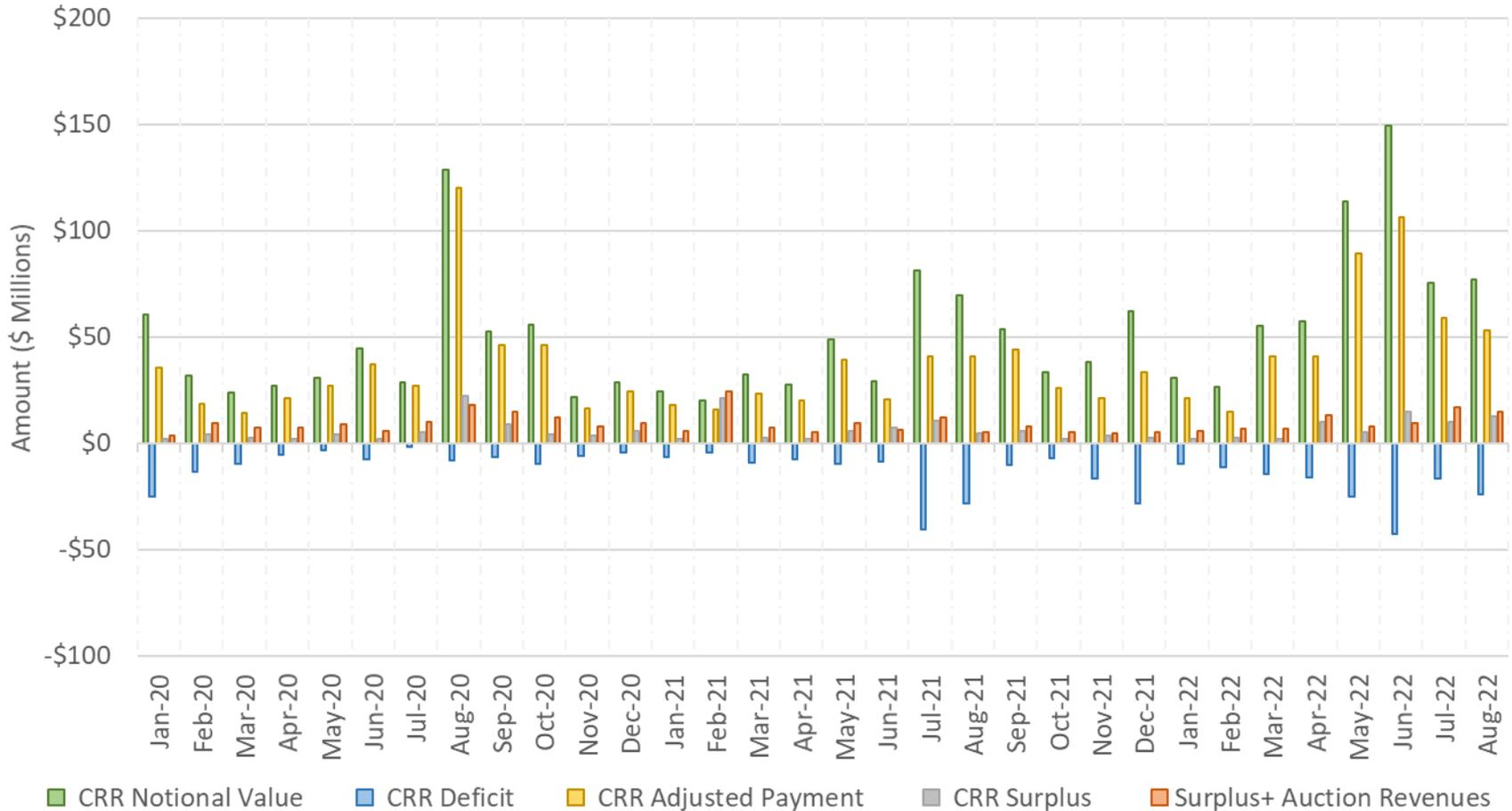


# Average daily wholesale cost in July was about \$83.6 million

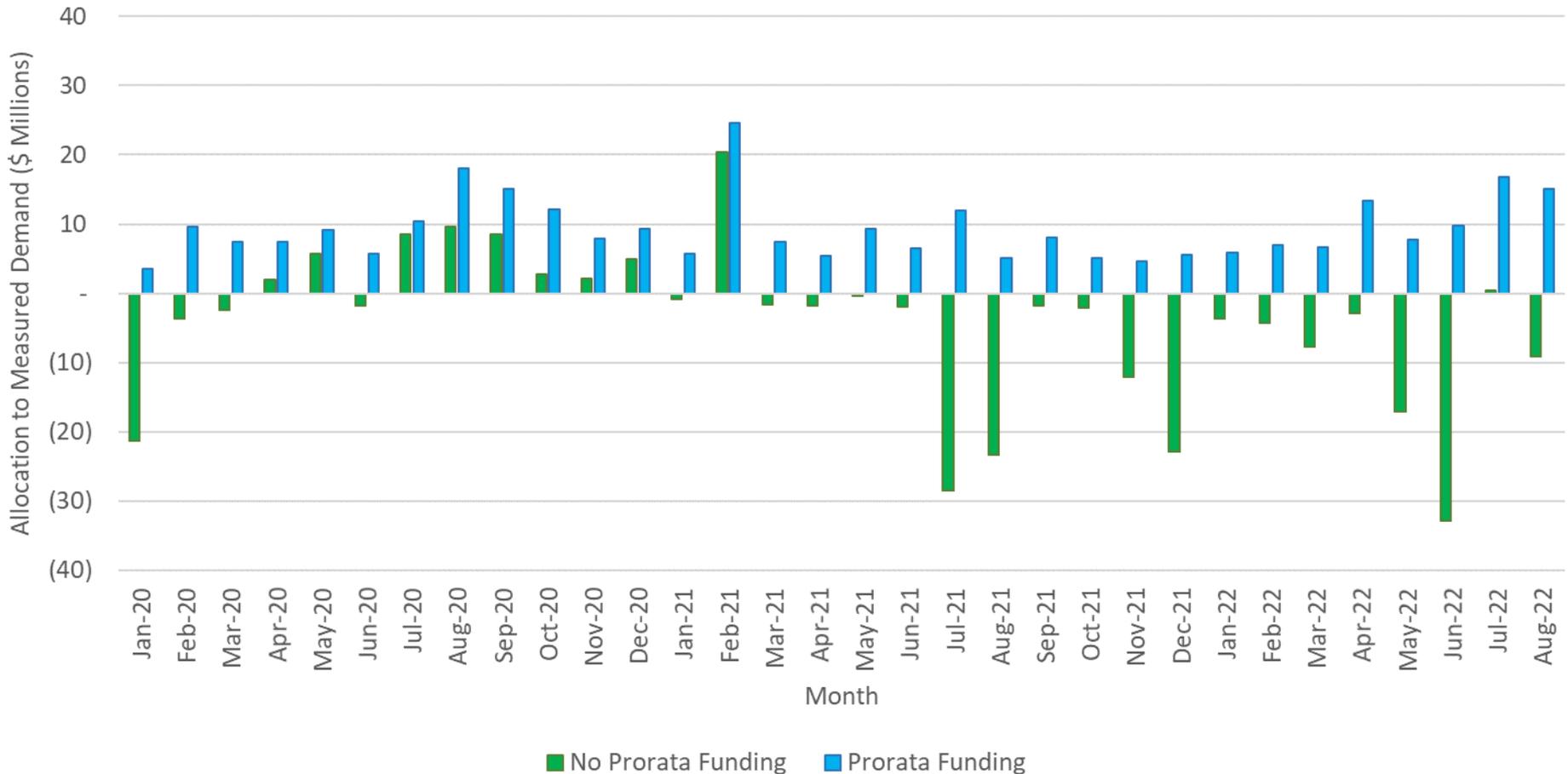


# Congestion Revenue Rights

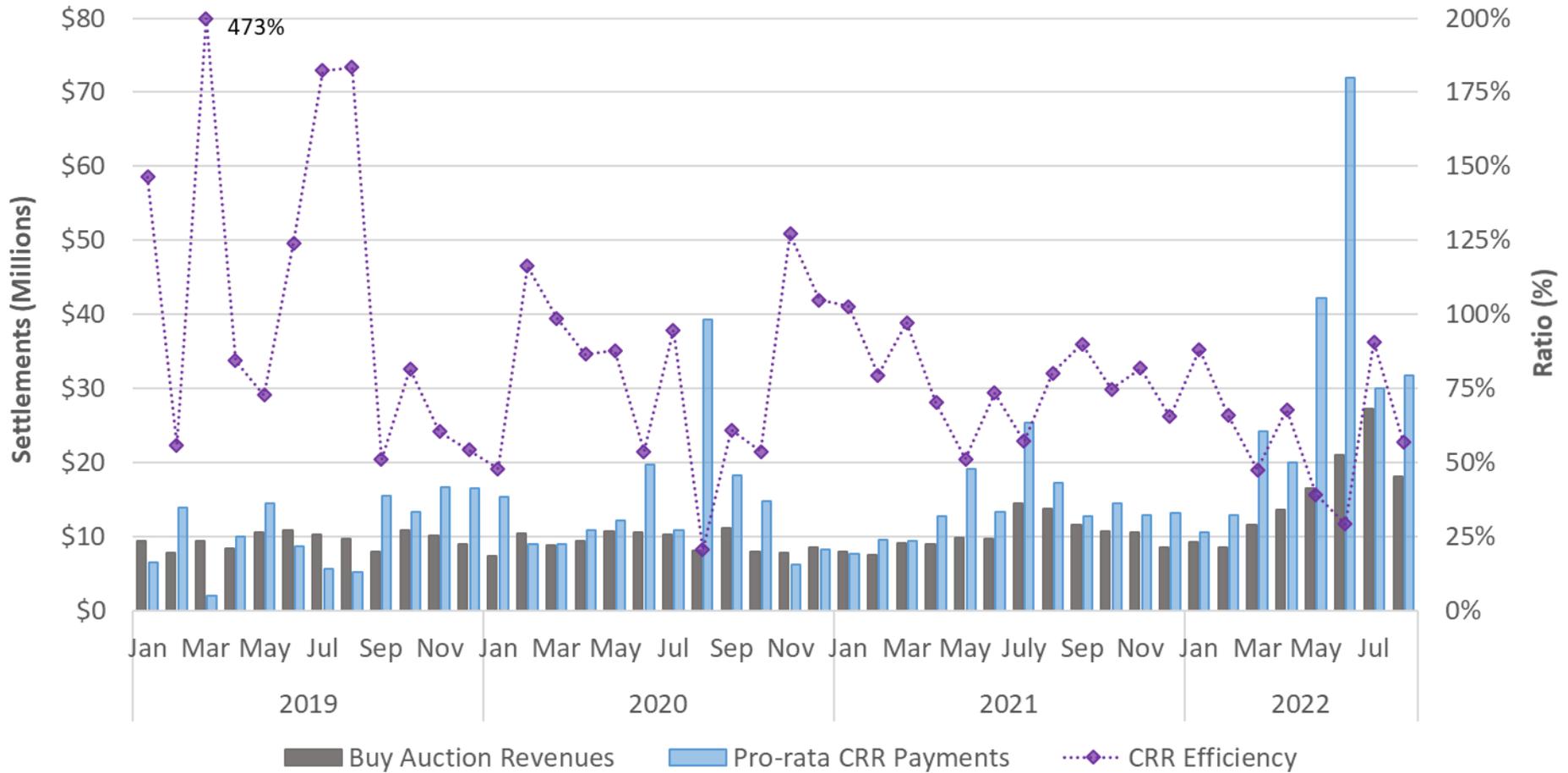
# The magnitude of the overall CRR settlements has decreased after summer



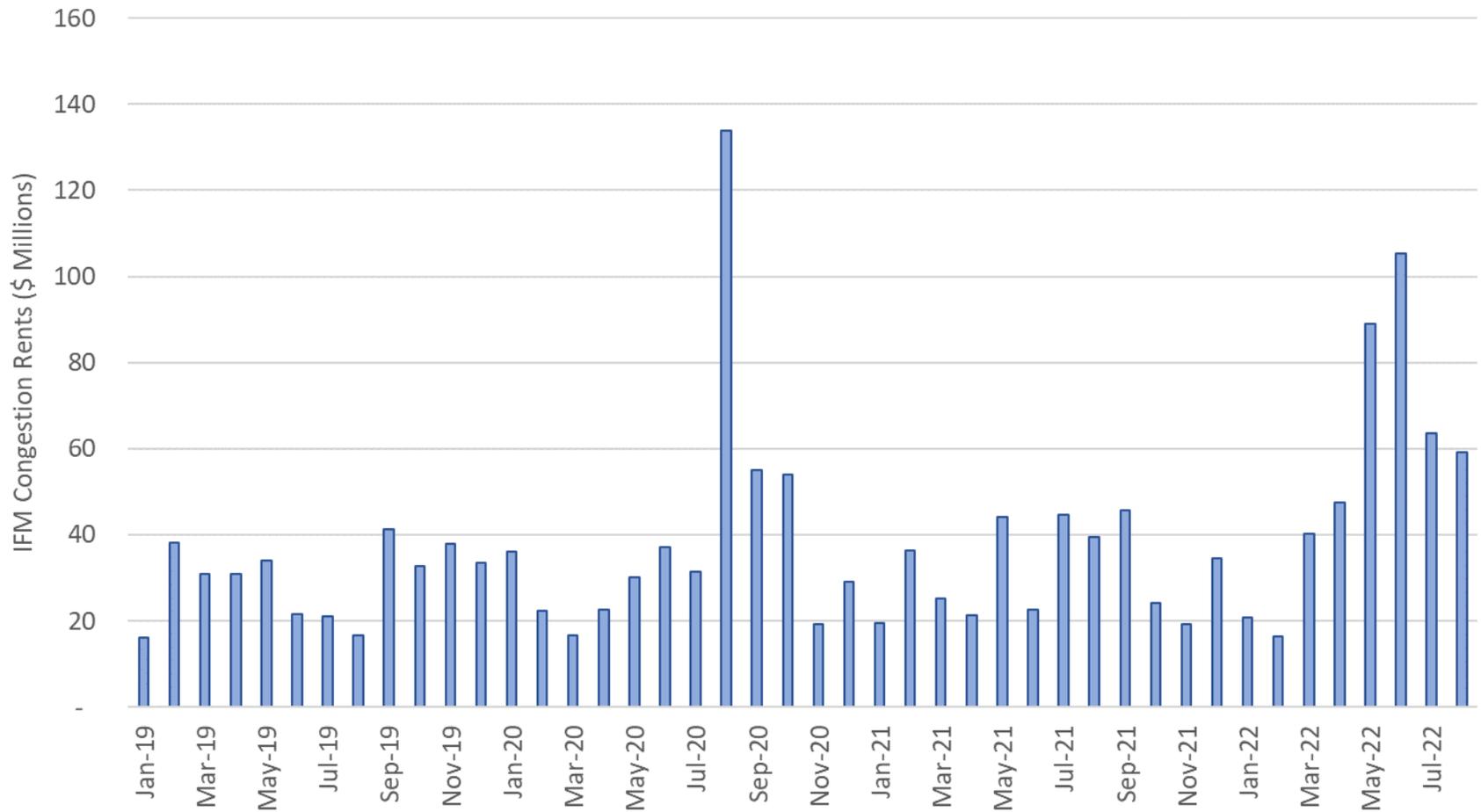
# Implementation of pro-rata funding continues to improve revenue adequacy in 2022



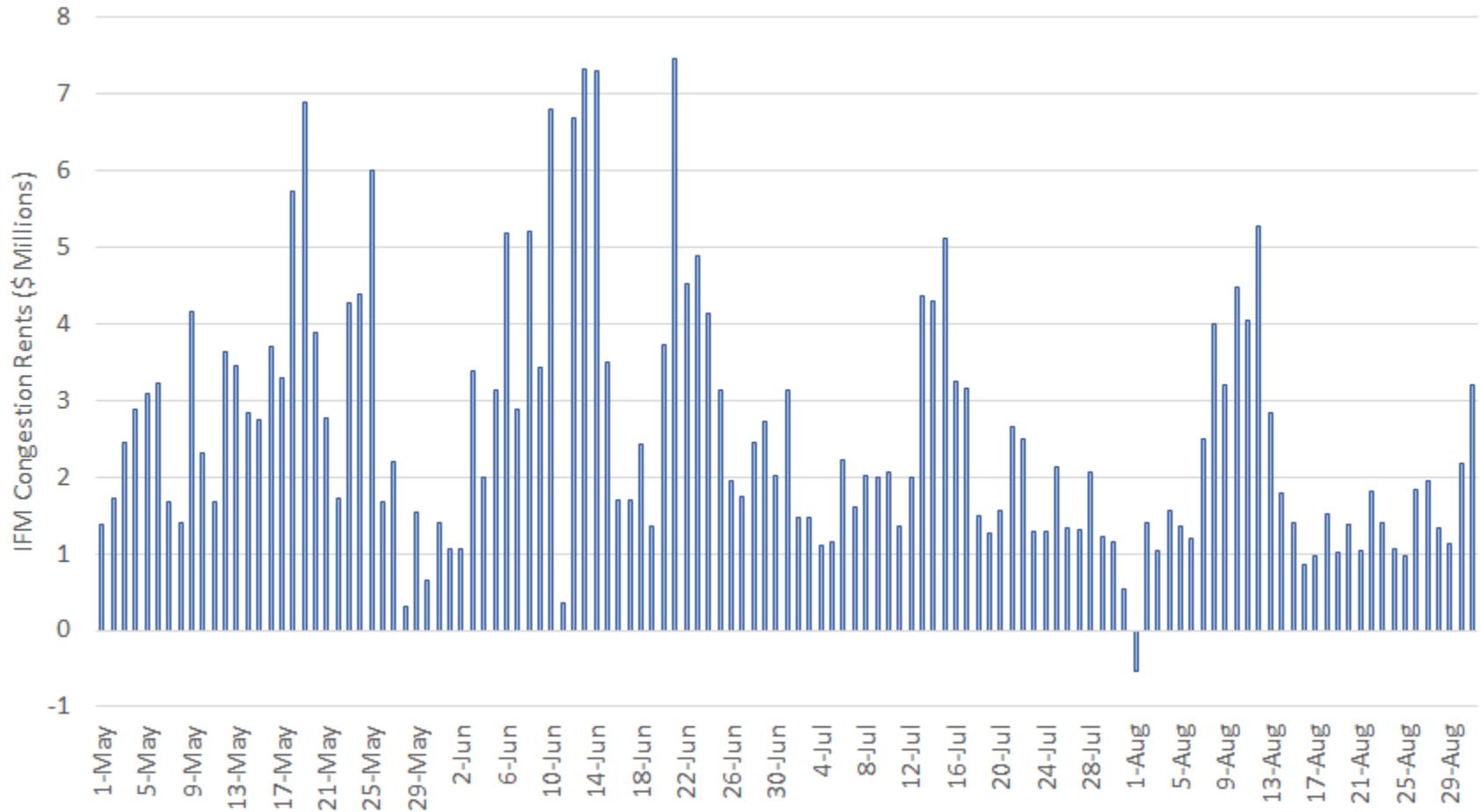
# Auction efficiency performance within typical range



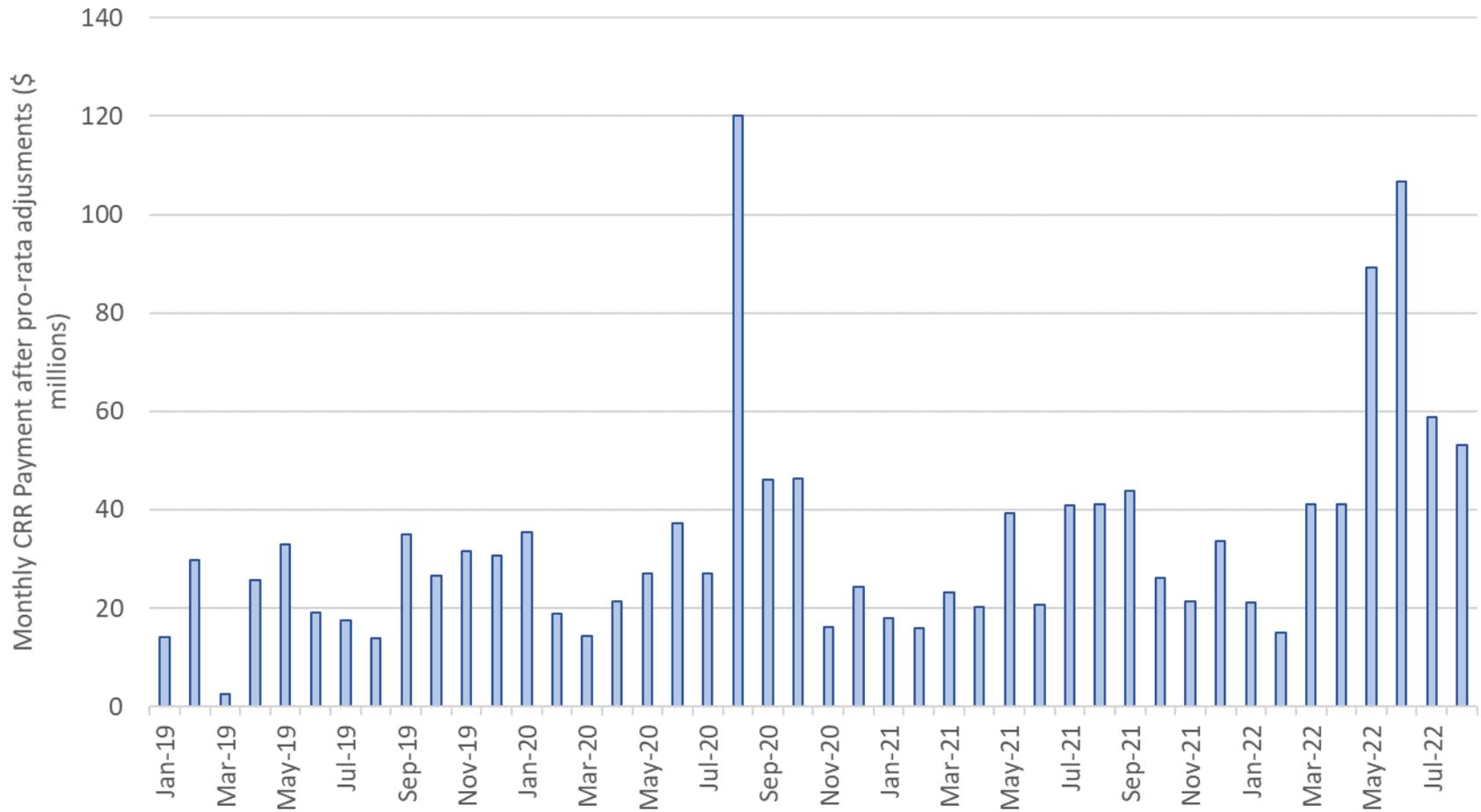
# IFM Congestion Rents by Month since January 2019 – rents accrued during the summer months has been high



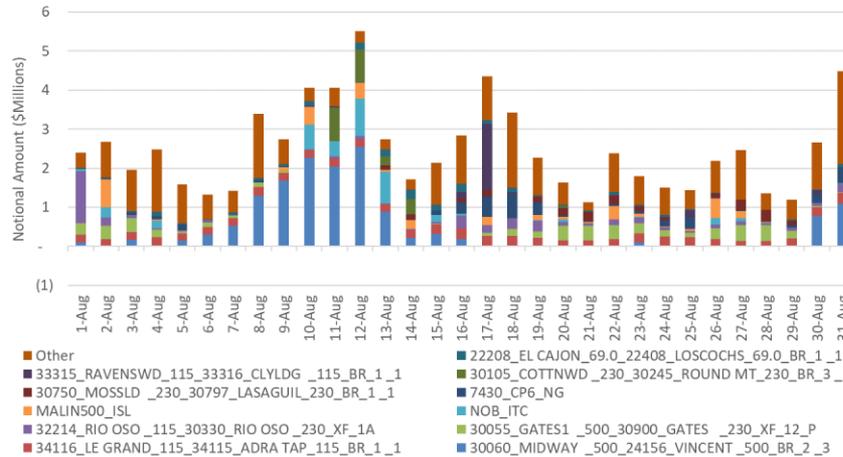
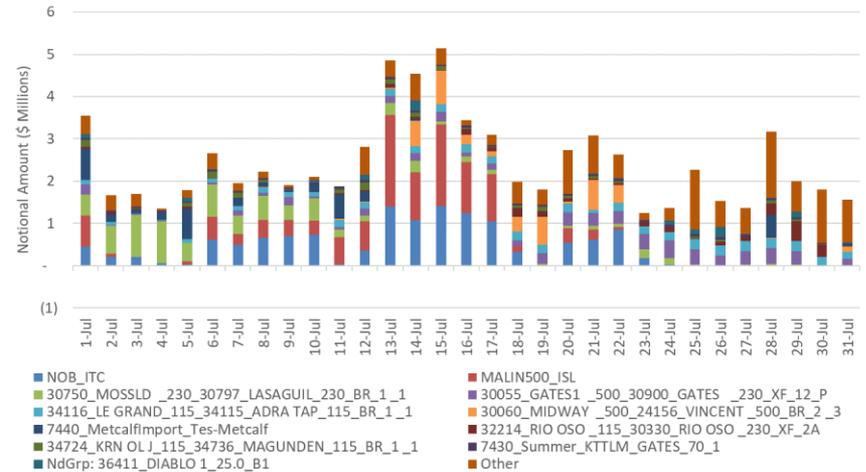
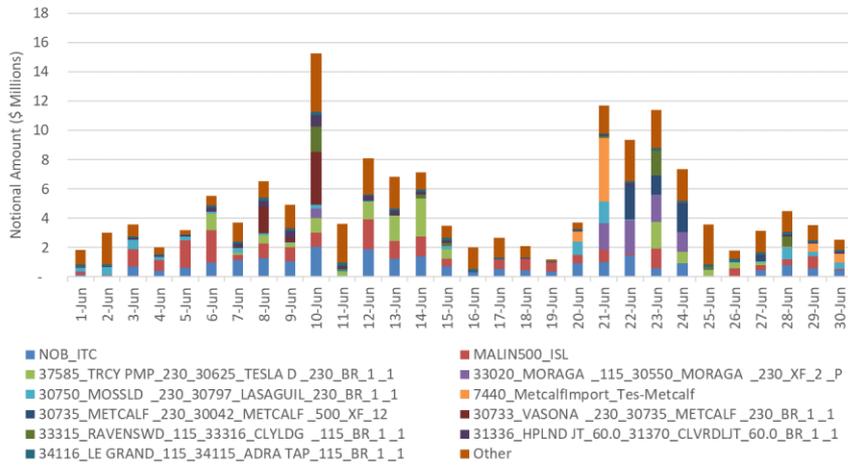
# IFM congestion rents since may 2022 have increased



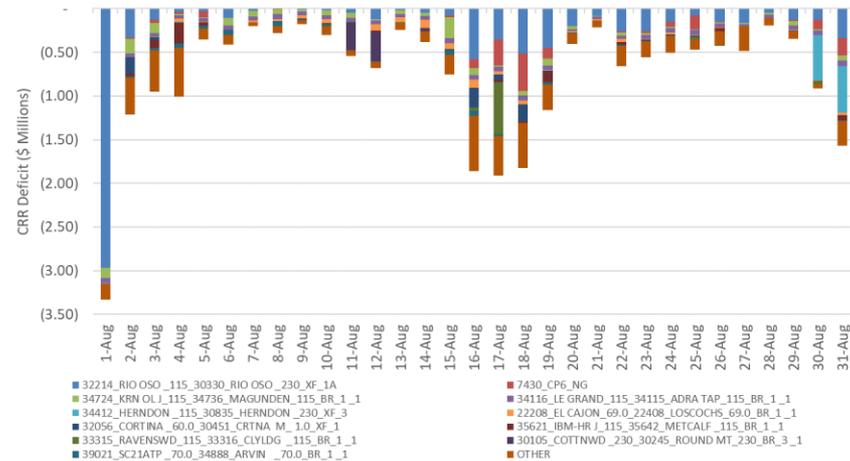
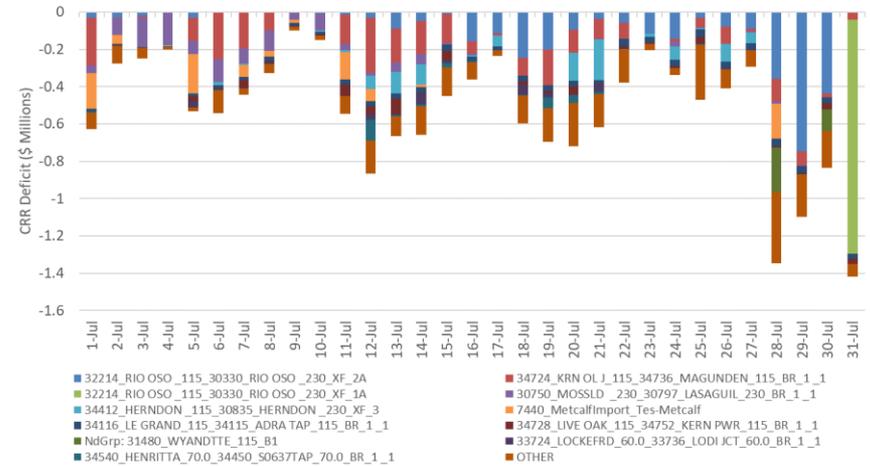
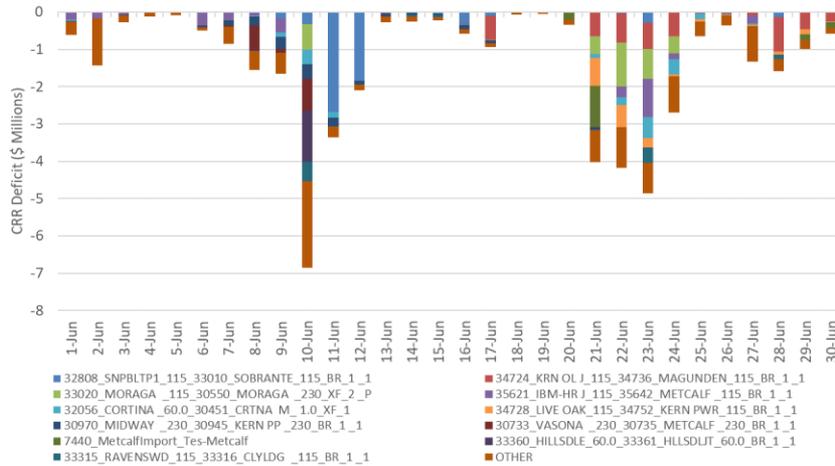
# Monthly CRR payment after pro-rata adjustment – saw an increase during the summer months



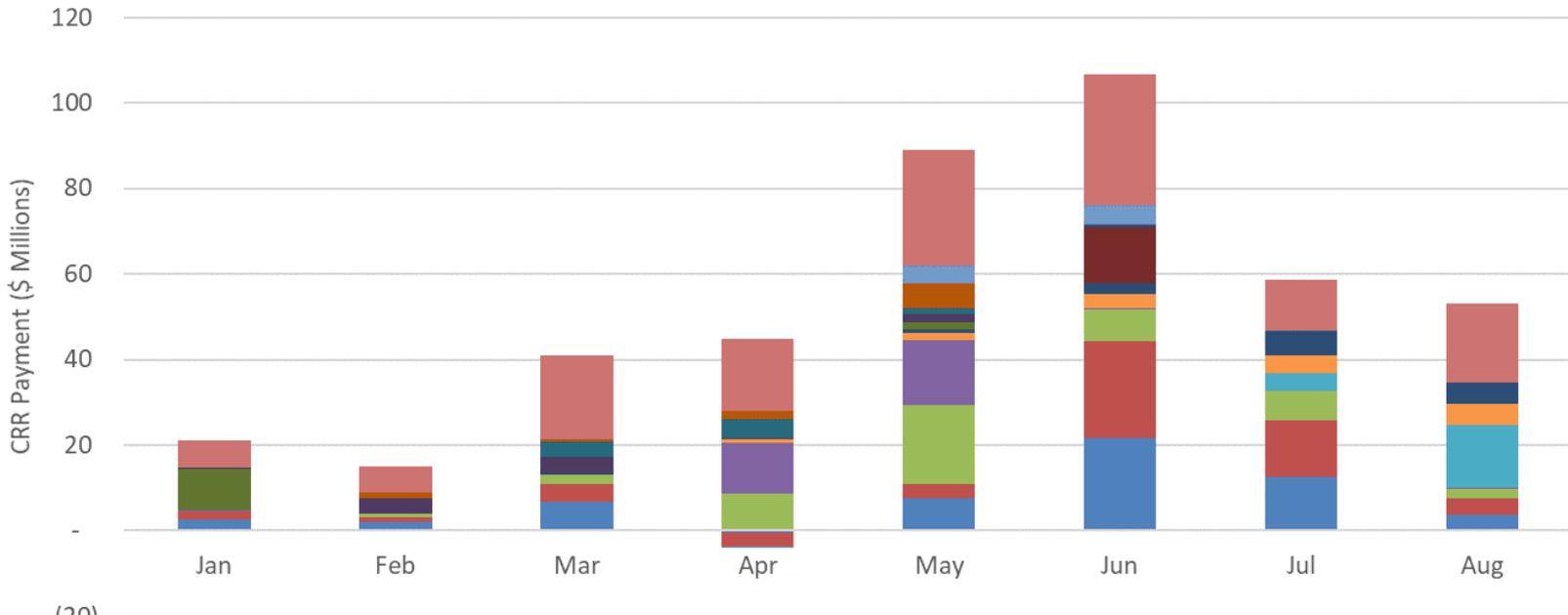
# Notional Amount by constraint for June – August



# CRR Deficit for the last 3 months (June – August 2022) accrue on many different constraints



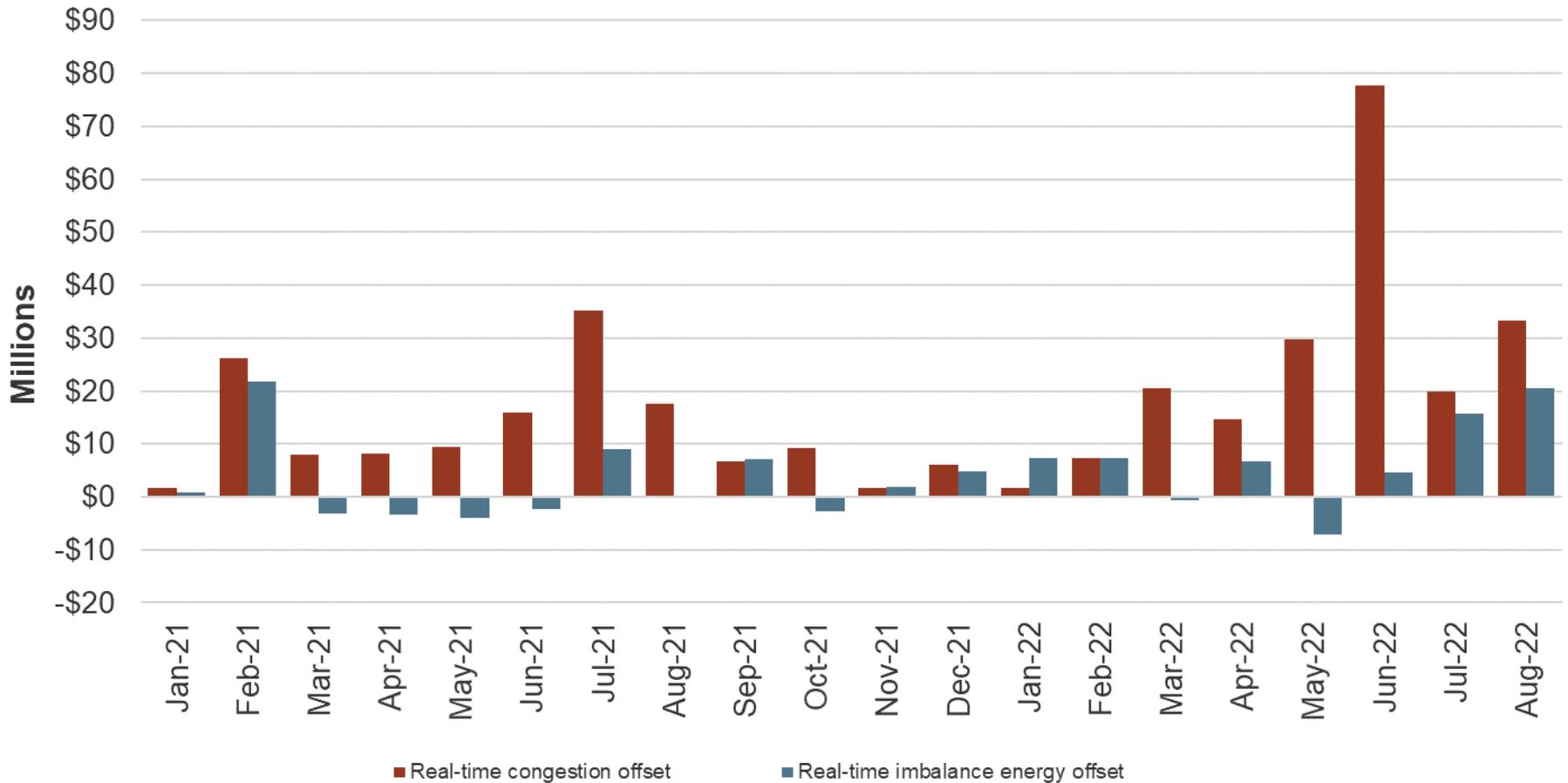
# Malin and NOB intertie were the major transmission constraint contributing to higher CRR payments for June and July



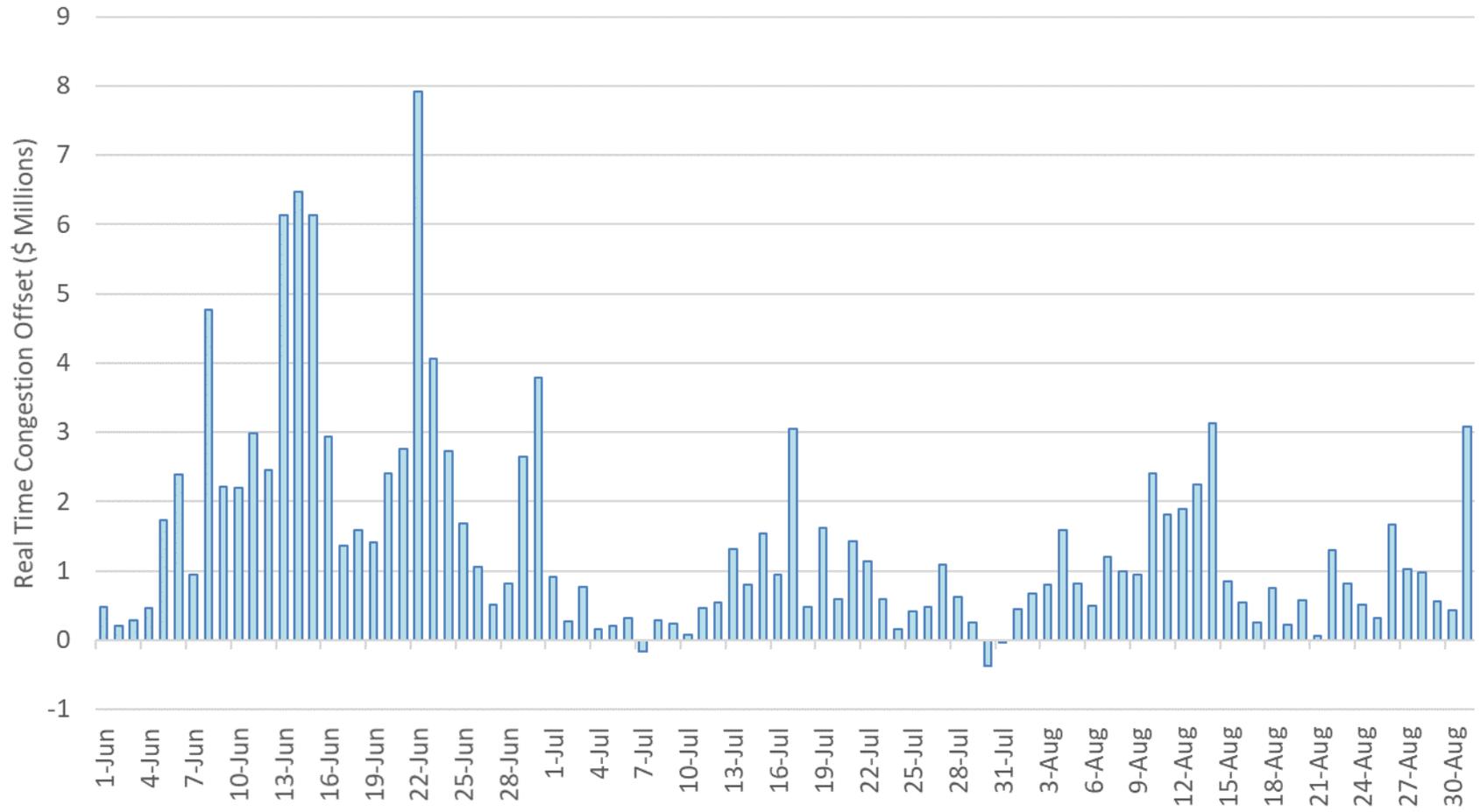
- MALIN500\_ISL
- 30750\_MOSSLID\_230\_30797\_LASAGUIL\_230\_BR\_1\_1
- 30060\_MIDWAY\_500\_24156\_VINCENT\_500\_BR\_2\_3
- 30055\_GATES1\_500\_30900\_GATES\_230\_XF\_12\_P
- PALOVRDE\_ITC
- 22192\_DOUBLTTP\_138\_22300\_FRIARS\_138\_BR\_1\_1
- 33020\_MORAGA\_115\_30550\_MORAGA\_230\_XF\_2\_P
- NOB\_ITC
- 30763\_Q0577SS\_230\_30765\_LOSBANOS\_230\_BR\_1\_1
- 34116\_LE GRAND\_115\_34115\_ADRA TAP\_115\_BR\_1\_1
- 37585\_TRCY PMP\_230\_30625\_TESLA D\_230\_BR\_1\_1
- 30790\_PANOCHÉ\_230\_30900\_GATES\_230\_BR\_2\_1
- 24016\_BARRE\_230\_25201\_LEWIS\_230\_BR\_1\_1
- Other

# Real Time Congestion Offset

# Real Time Congestion Offset was significantly high in the month of June



# Daily real time congestion offset from June to August 2022



# CAISO Real Time Offset Costs

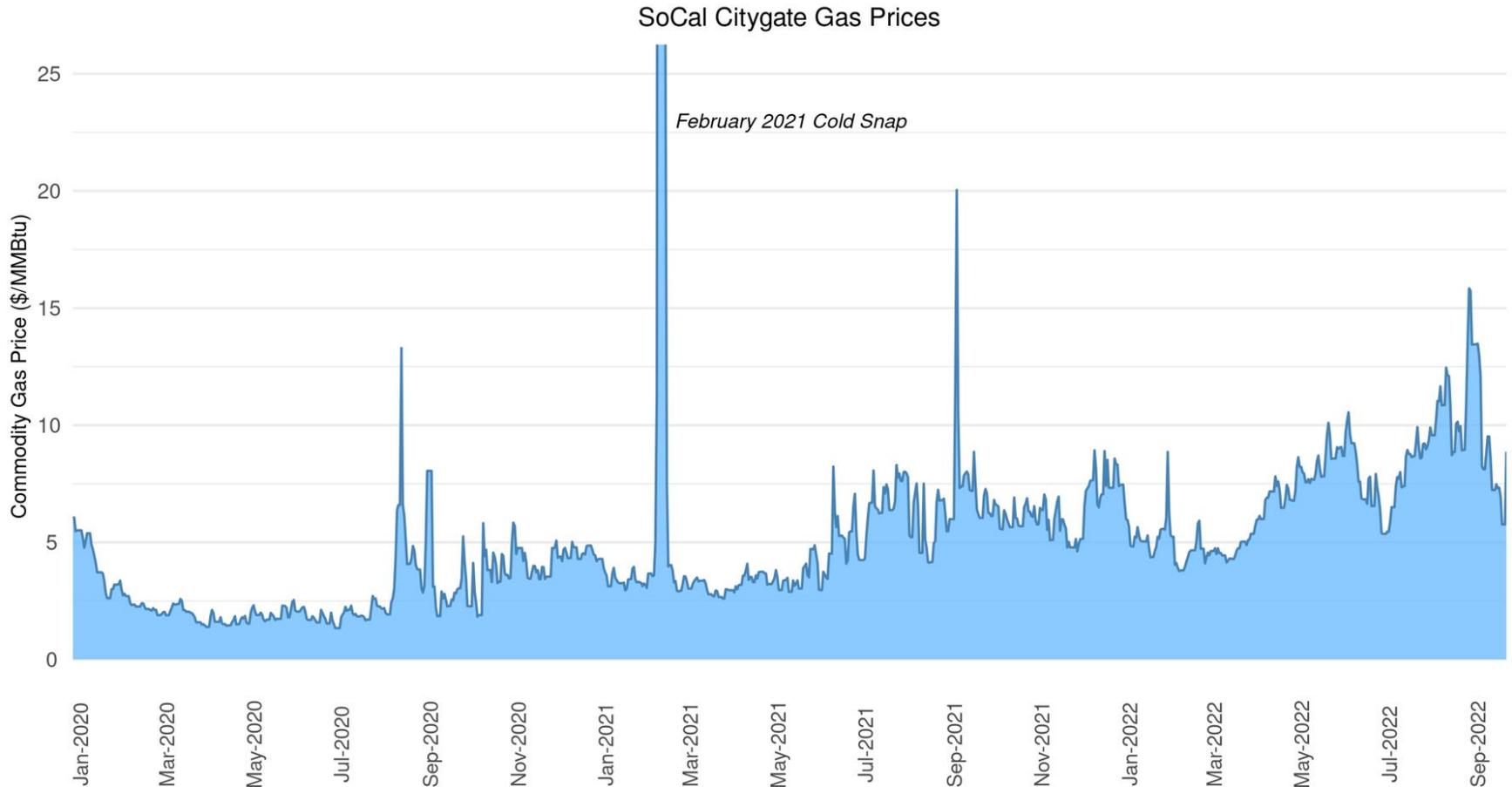
- Real Time imbalance energy offset (RTIEO) – charge allocated to load serving entities to account for real-time neutrality costs other than congestion costs
  - Any revenue imbalances from the energy and loss components of the 15-min and 5-min market real time energy settlement prices is collected through RTIEO
- Real Time congestion offset (RTCOC) – any unrecovered congestion costs that occur in real time market.
  - Due to changes in congestion in real-time vs day – ahead market
  - RTCOC arises when the transmission capacity in real time is less than transmission capacity in day-ahead
  - Allocated to measured demand

## Constraints that have potential impact on RTCO

- 37585\_TRCY PMP\_230\_30625\_TESLA D \_230\_BR\_1 \_1 - constraint binding in the FMM/RTD market due to an outage on Tesla-Tracy 500 kV Line and Tesla – Tracy # 2 230 kV line. This constraint was binding for several contingencies.
- 6110\_SOL10\_NG – nomogram used in the FMM market.
- 6110\_COI\_N-S – nomogram used only in real-time dispatch market to help handle unscheduled flows.
- 30060\_MIDWAY \_500\_24156\_VINCENT \_500\_BR\_2 \_3 – constraint for a contingency due to an outage on the North 500 kV bus

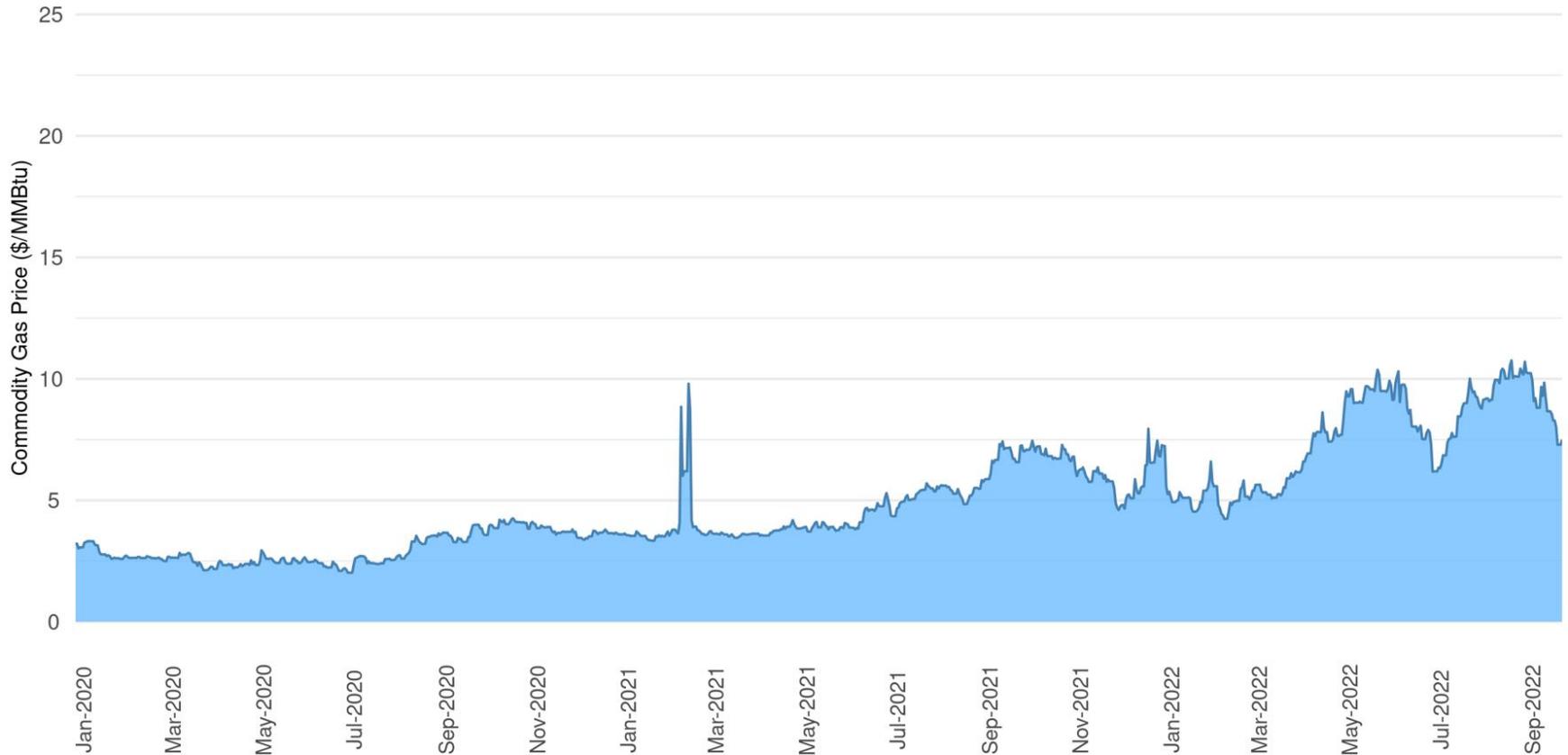
# CAISO's Market Prices and Costs

# Gas prices continue to be in the high range

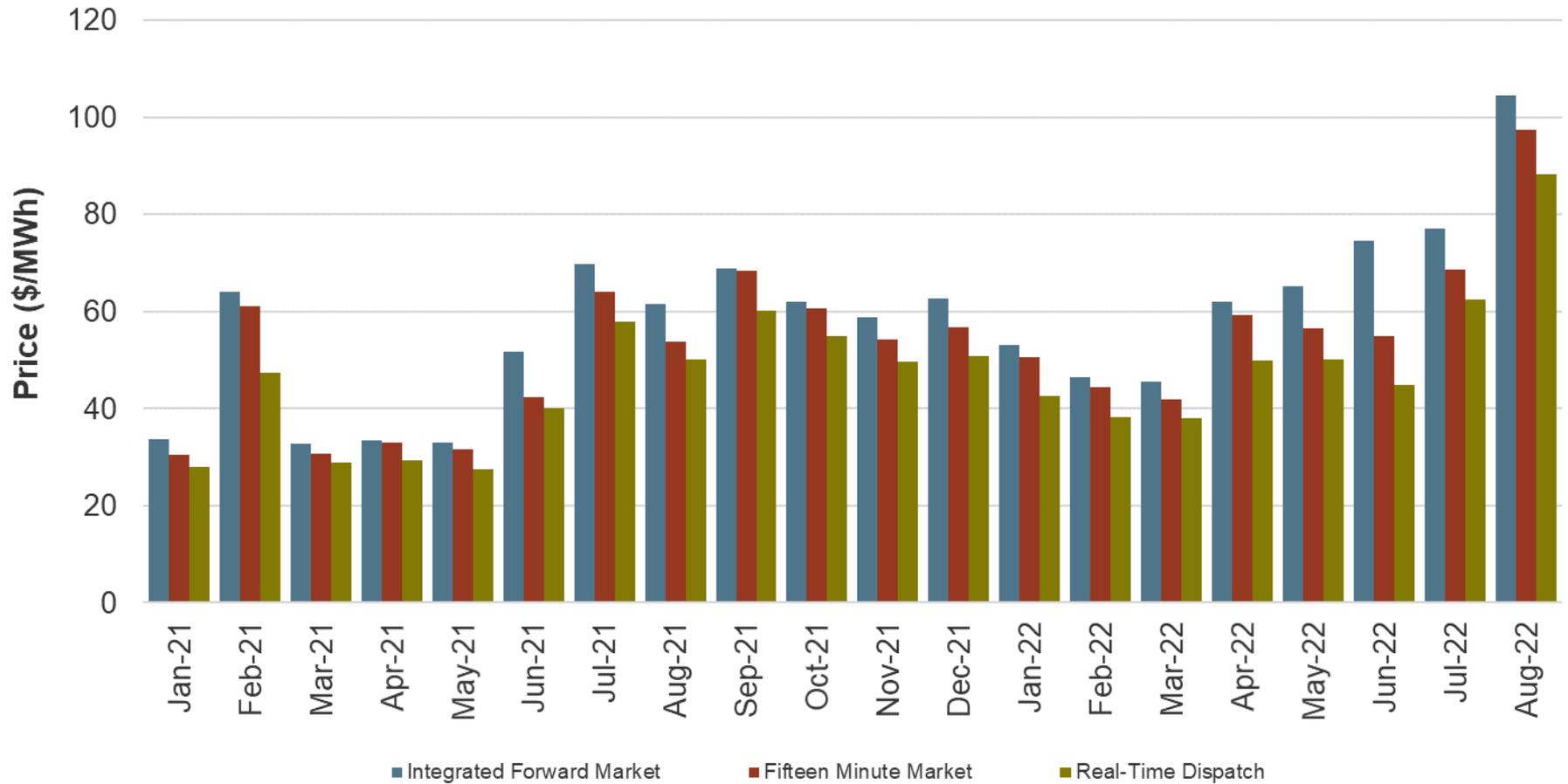


# Gas prices continue to be in the high range

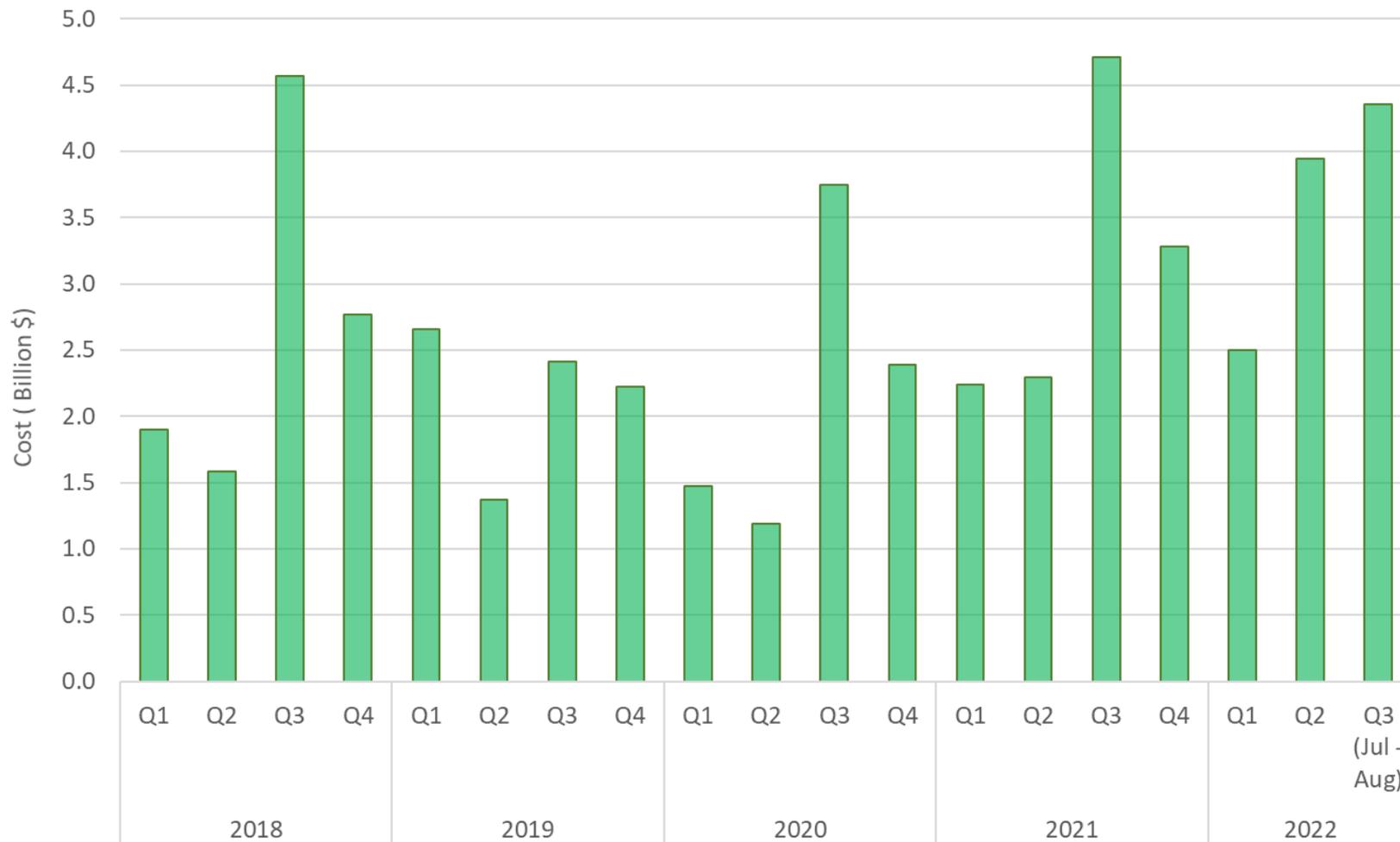
PG&E Citygate Gas Prices



# CAISO's electric prices have correspondingly been high



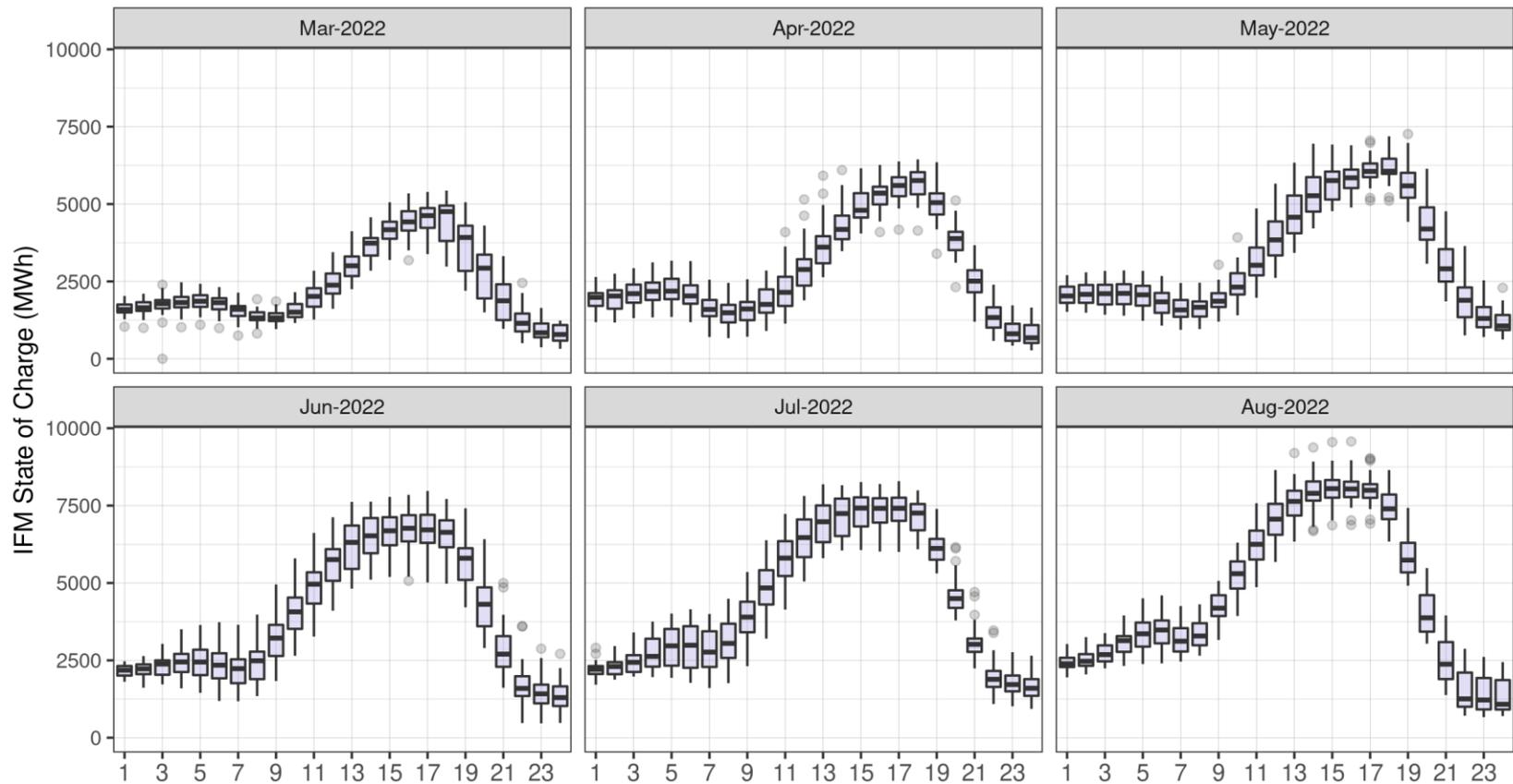
# Wholesale market costs in 2022 are trending higher so far in 2022



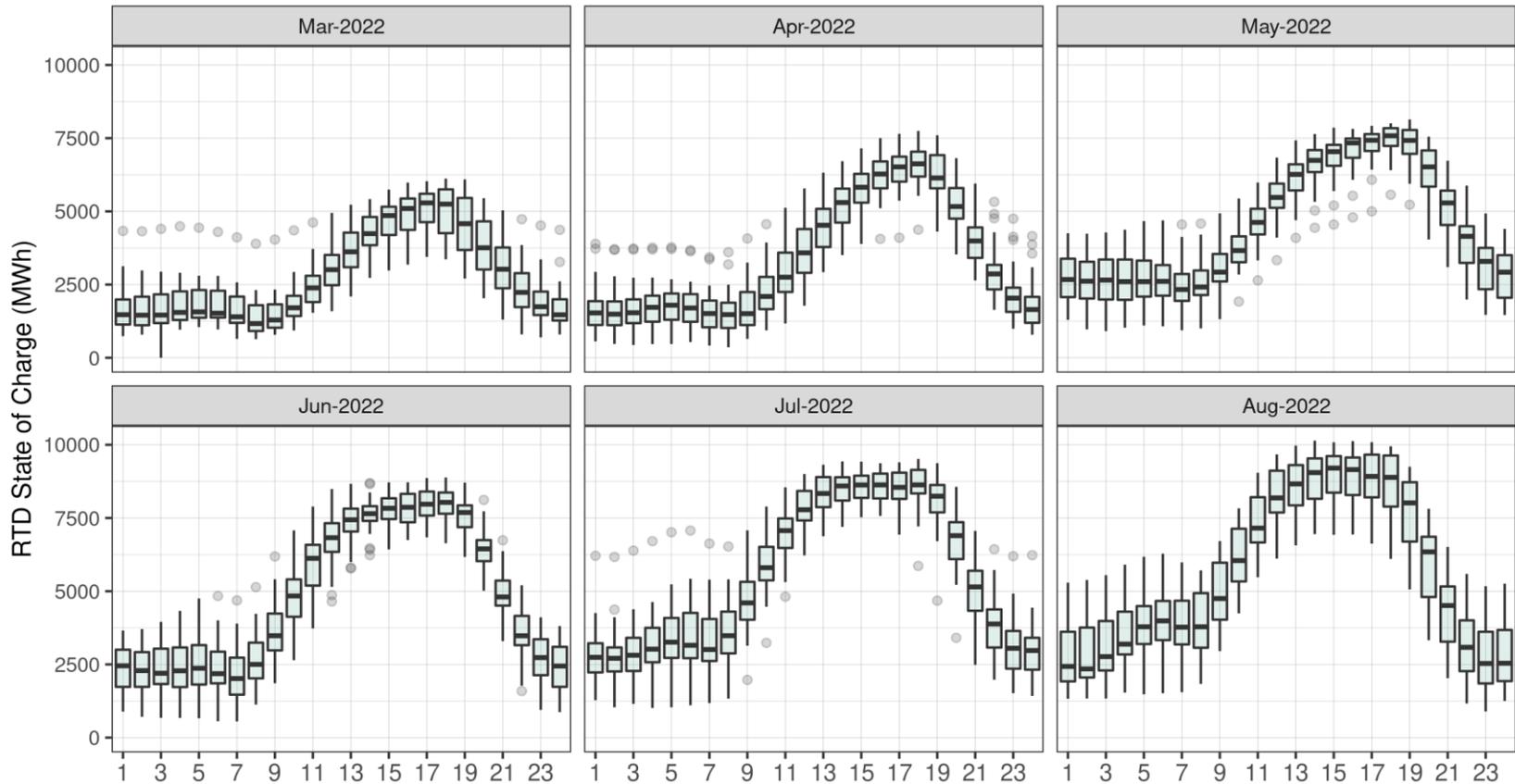
Settlements data is preliminary and subject to changes  
CAISO PUBLIC

# Batteries

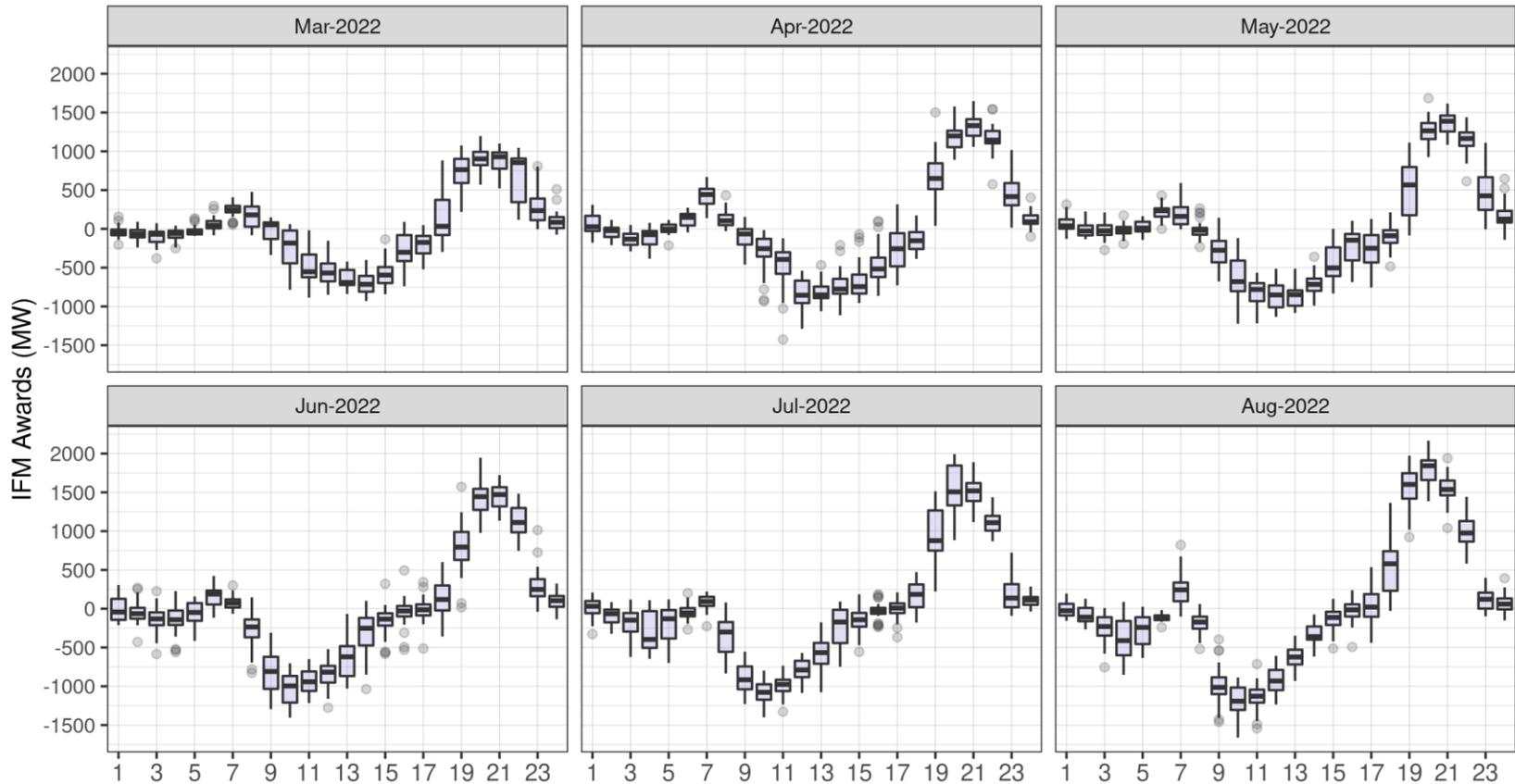
# Day-Ahead state of charge for storage resources was the highest in hour ending 14 through 17



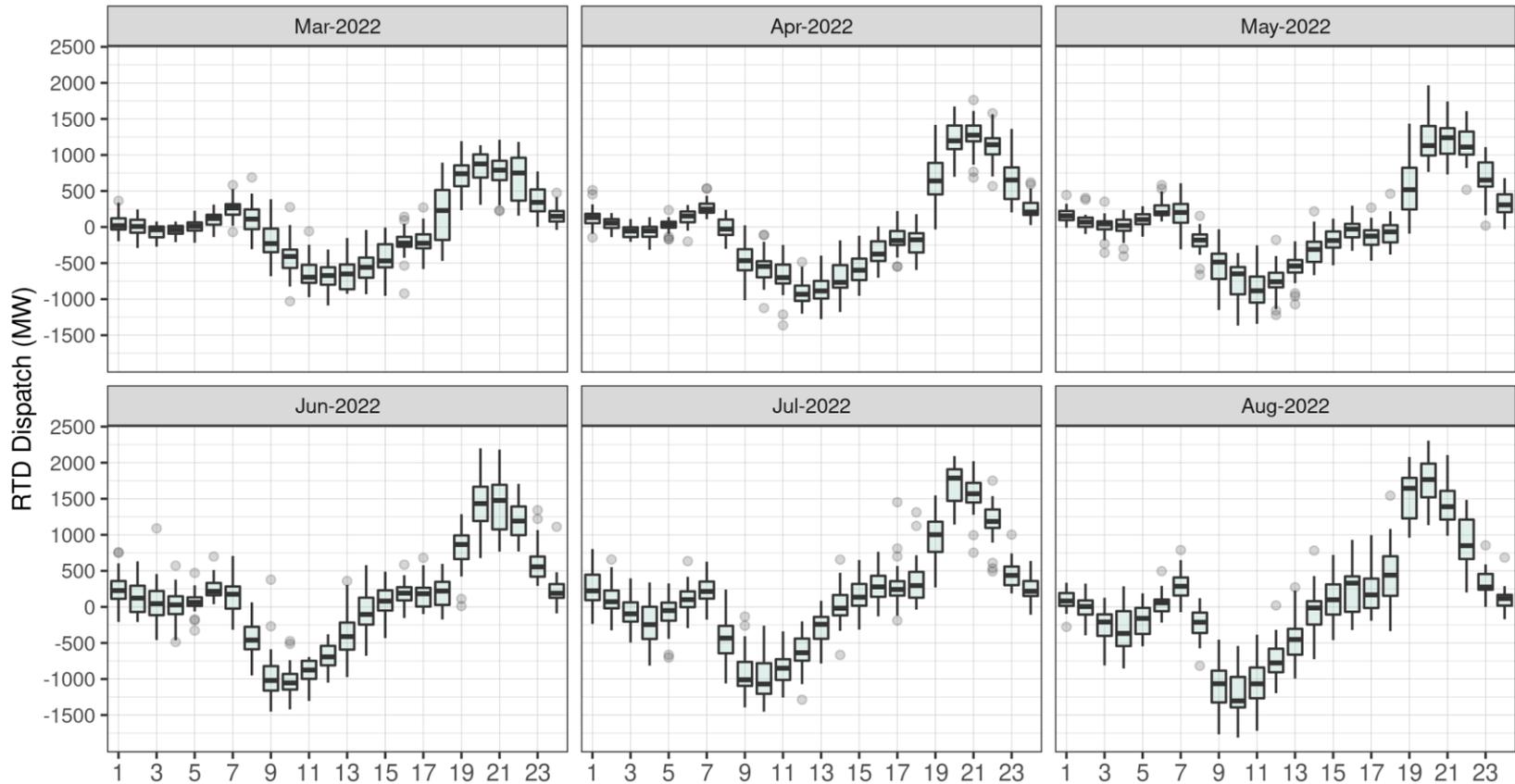
# Real-Time State of charge for storage resources was in line with the day-ahead state of charge



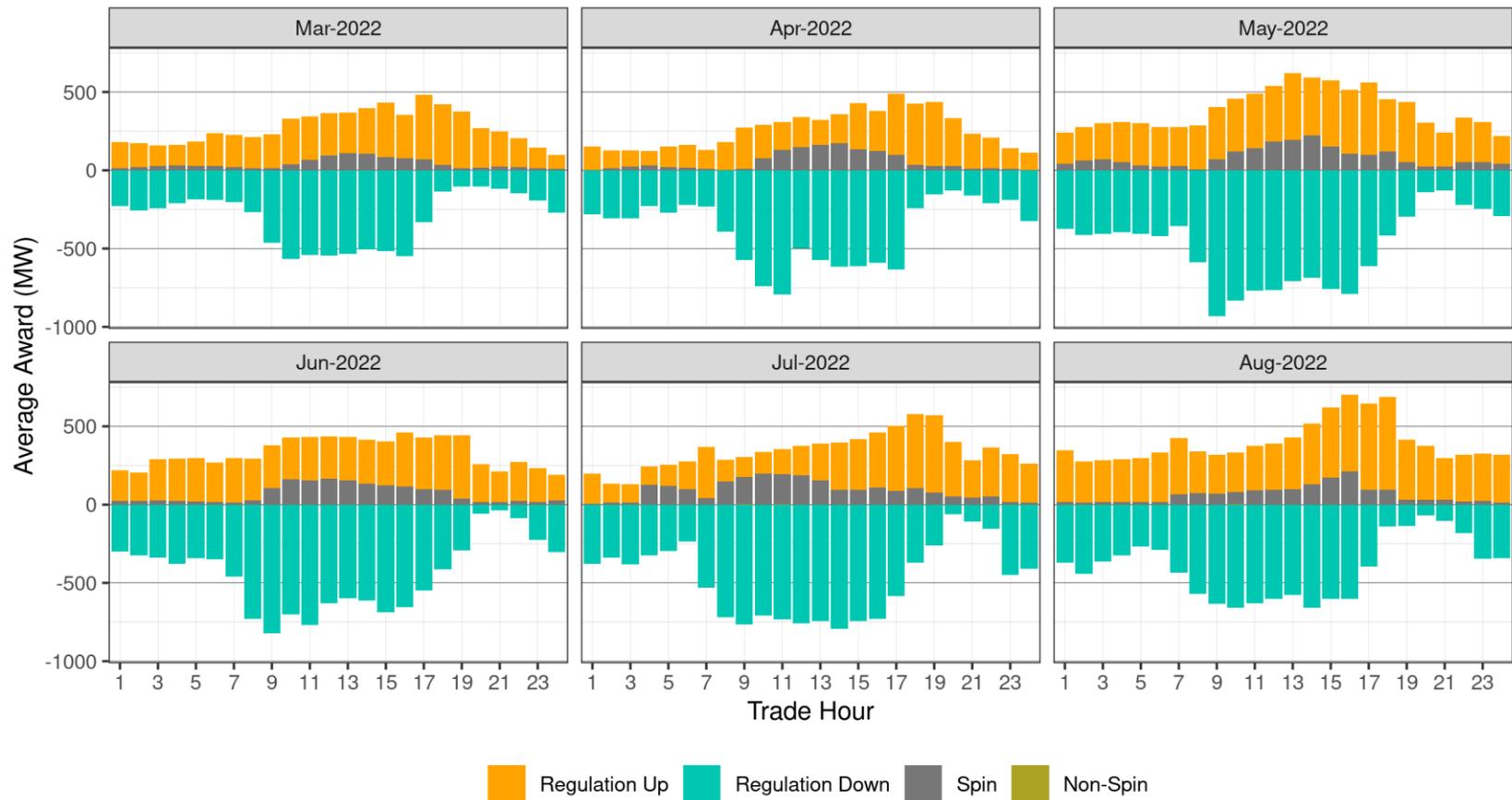
# Storage resources were consistently charging during solar hours and discharging during net load peaks



# Storage resources were consistently charging during solar hours and discharging during net load peaks



# Batteries continue to provide both Regulation up and Regulation down



# Transparency about Market Issues

# Hybrid resource mitigation

- With the introduction of the tariff language for the Hybrid Resource Phase 2a initiative that became effective on December 15, 2021, hybrid resources became exempt from having their bids mitigated
- In April 2022, it was identified that the bids for several resources classified as hybrid were being mitigated
- Upon discovery, these resources were updated to exempt them from having their bids mitigated
- The CAISO does not plan on re-settling these markets to unwind the effects of bid mitigation

## Hybrid resource mitigation (cont.)

- From 12/15/2021 through 4/28/2022, the issue impacted approximately 20 resources
- These resources were mitigated in approximately 2.5% of market intervals (e.g. in the 96 FMM intervals per day, the resources were mitigated in ~3 of these, on average)
- The CAISO implemented a business process to identify new hybrid resources joining the market and exempt them from bid mitigation
- A more permanent fix will be implemented later this year as part of Hybrid Resources Phase 2b

# Flex Ramp Eligibility

- The ISO Tariff states that all resources that have Economic Bids in the Real-Time Market that can be dispatched on a five-minute basis by Real-Time Dispatch are eligible for receiving Uncertainty (Flex Ramp) Awards.
- From 11/1/2016 to 5/8/2021, flags in the Master File were incorrect set for Variable Energy Resources (VERs), Proxy Demand Resources (PDRs), Reliability Demand Response Resources (RDRRs), Tie-gen, and Storage resources and these resources were ineligible for Flex Ramp Awards.

## Flex Ramp Eligibility (cont.)

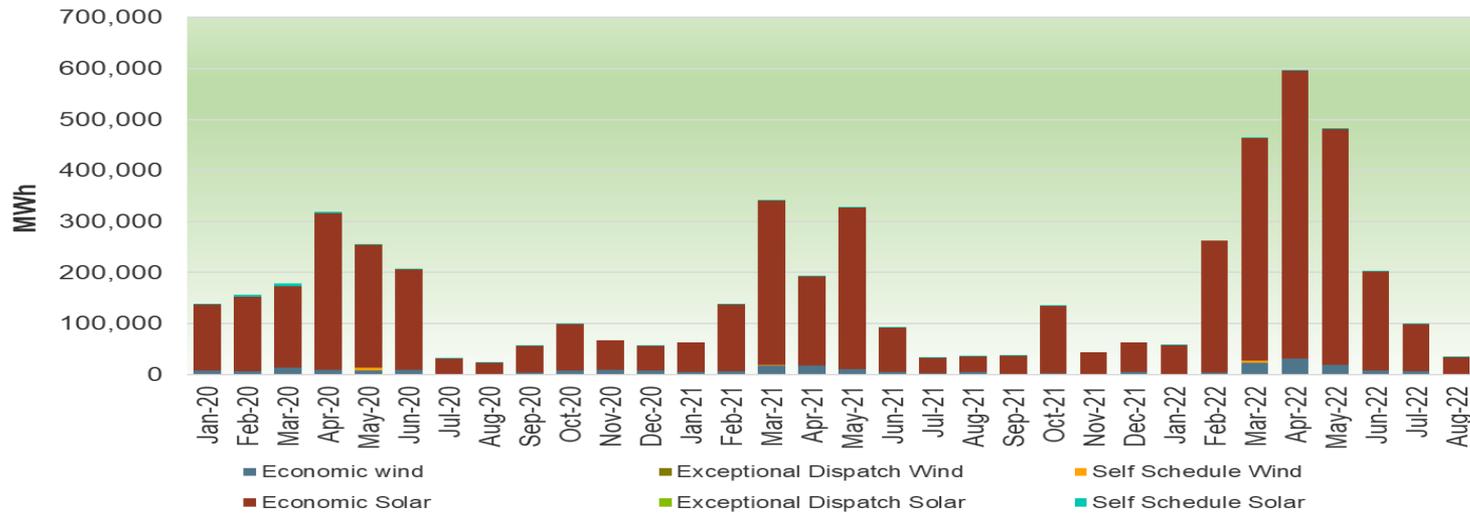
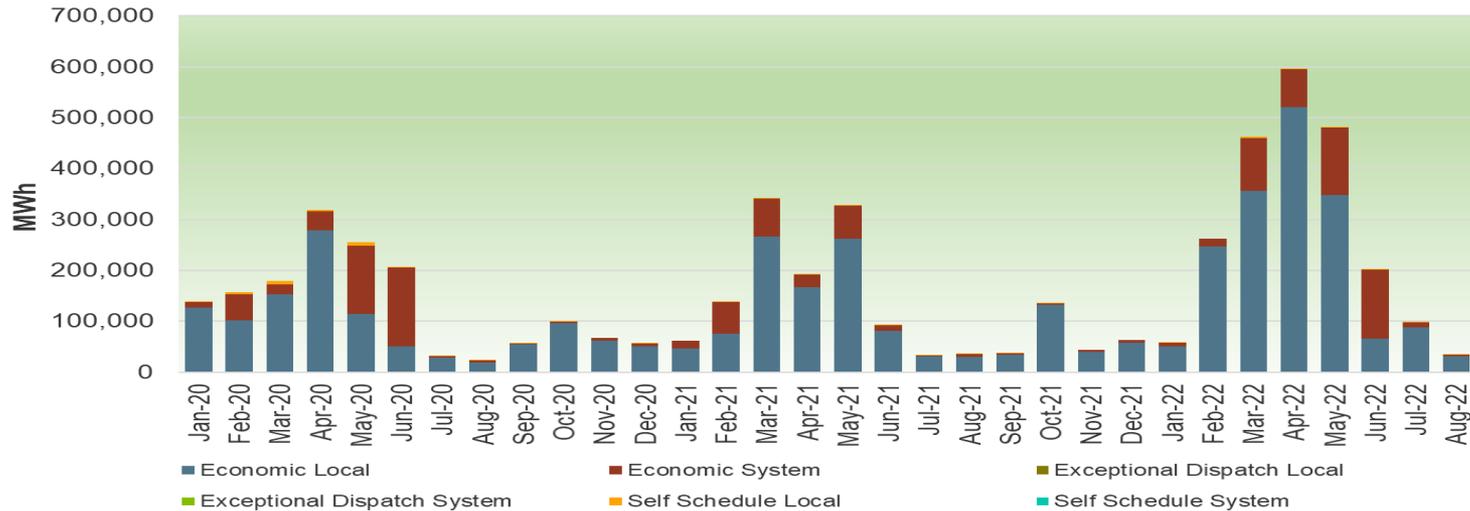
- The financial impact of this issue is estimated to be close to zero since the Flex Ramp price is often \$0.
- The ISO has Self-Reported this issue to FERC.

# Change to Marginal Loss Sensitivity Calculation

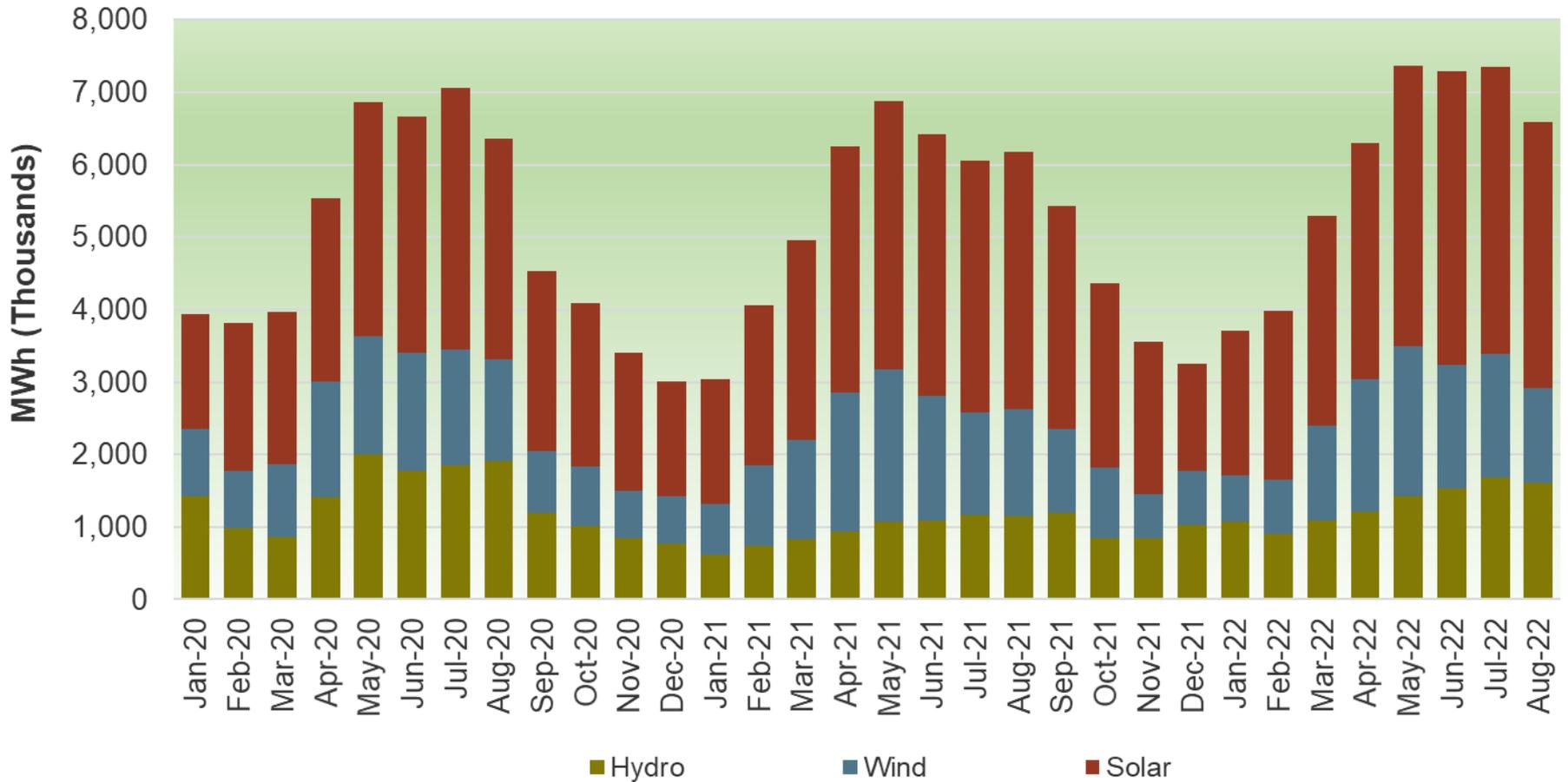
- Loss sensitivity calculation is to determine the incremental change in losses due to an incremental injection at a specific location that is balanced by an appropriate adjustment at the incremental slack location
  - Current Approach uses a single slack bus for the incremental slack location to for loss sensitivities then converts to a distributed load slack basis.
  - New Approach maintains Net Scheduled Interchange (NSI) as a fixed variable for each Balancing Area
- New approach was implemented on August 22, 2022

# Market Performance Metrics

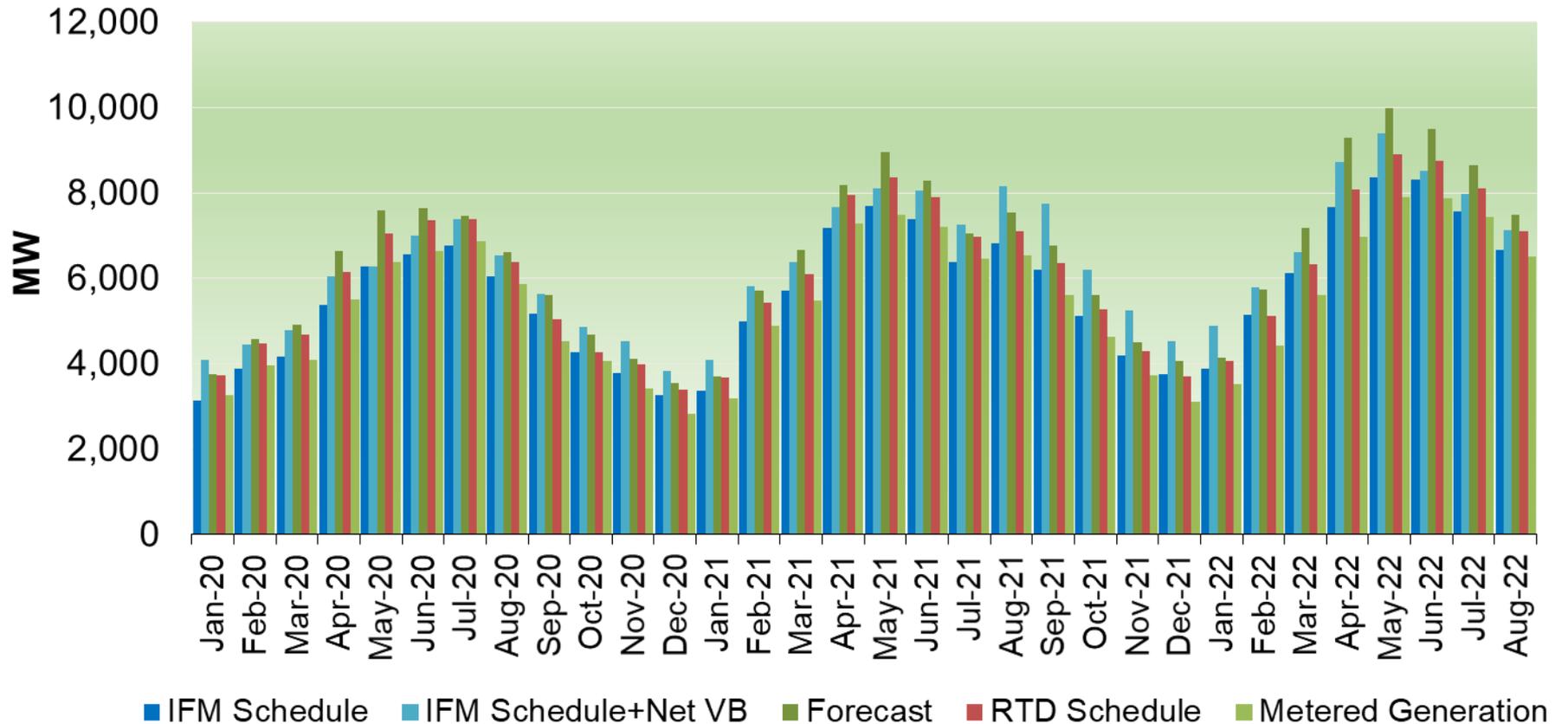
# RTD renewable (VERs) curtailment decreased since May



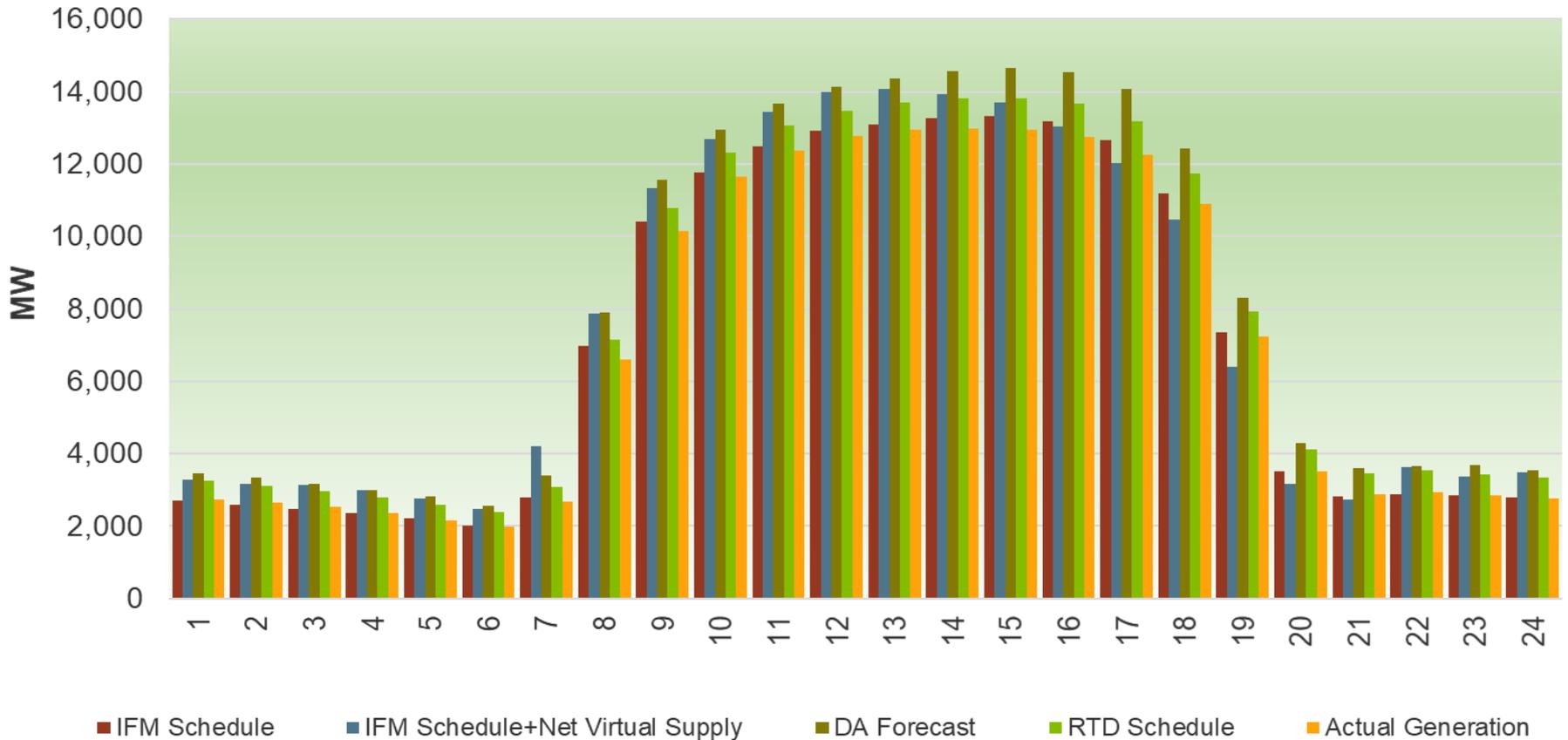
# Hydro production relatively low, similar to previous year



# ISO total monthly VERS schedules and forecasts compared to actuals

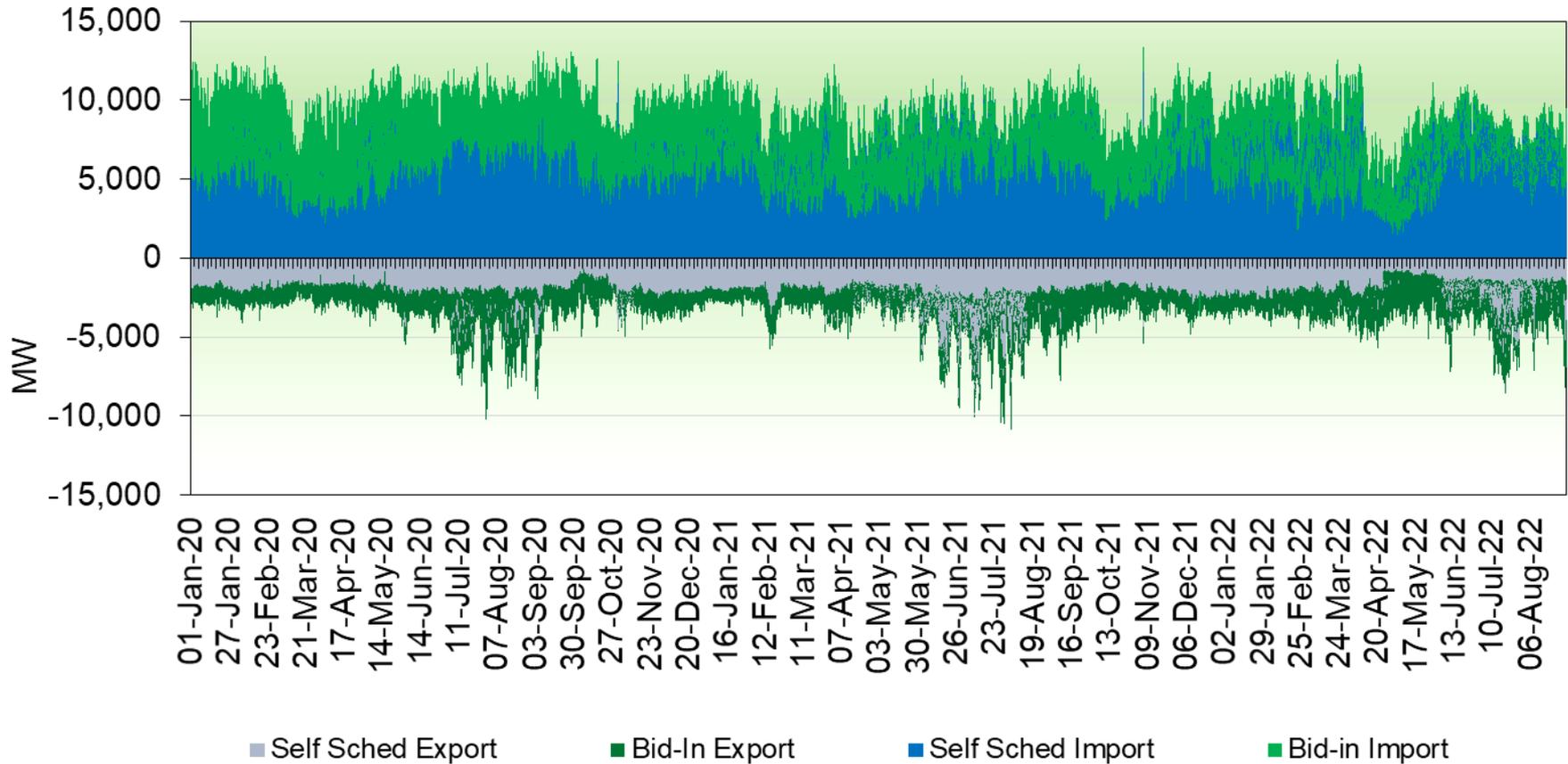


# Renewable (VERS) schedules including net virtual supply aligns with VER forecast in July and August

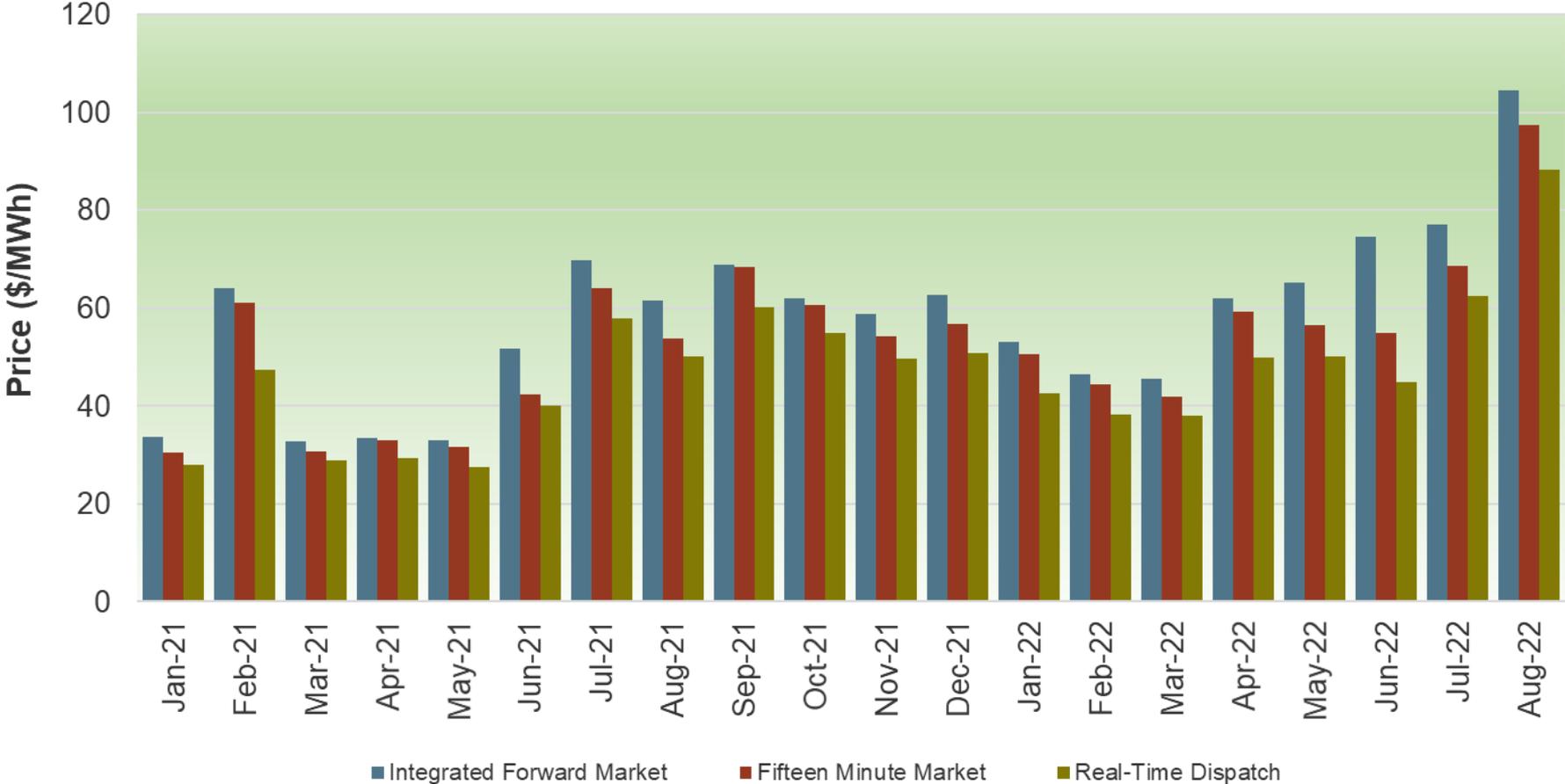


<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=EFF75C2E-F28E-4087-B88B-8DFFAED828F8>

# Self scheduled exports relatively low in June – August compared with last year

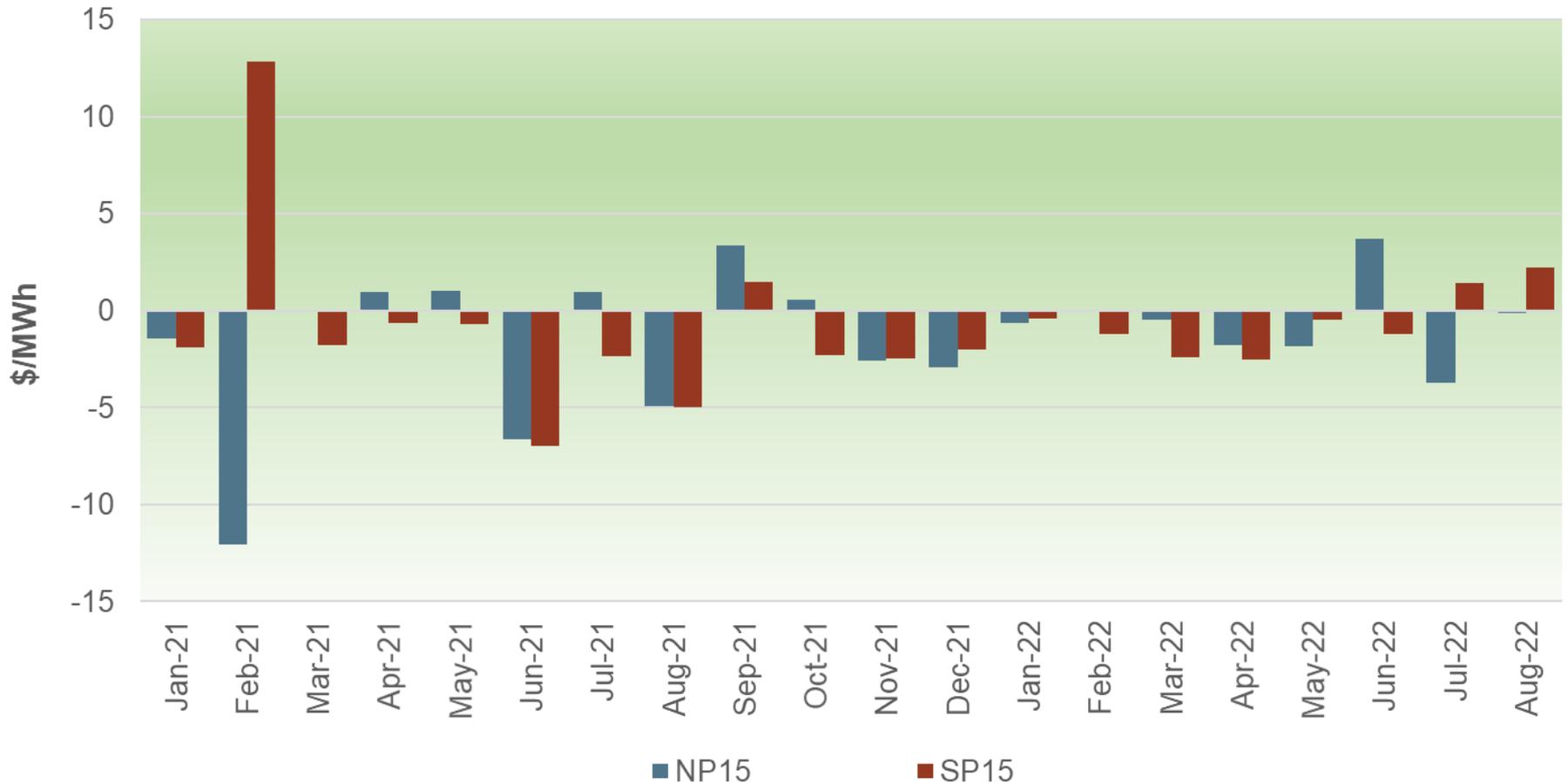


# Lower average real-time prices

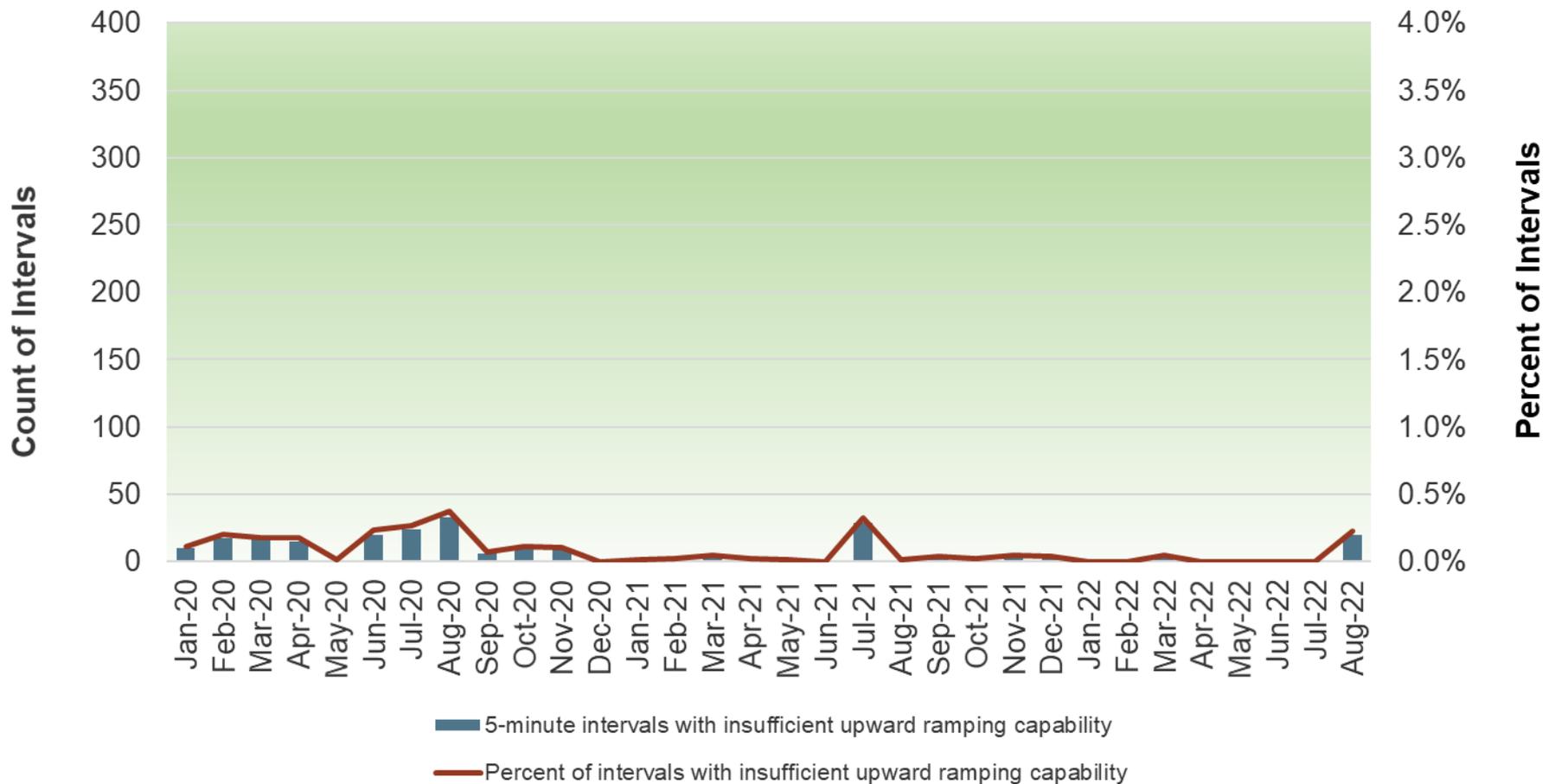


Note: Metric Based on System Marginal Energy Component (SMEC)

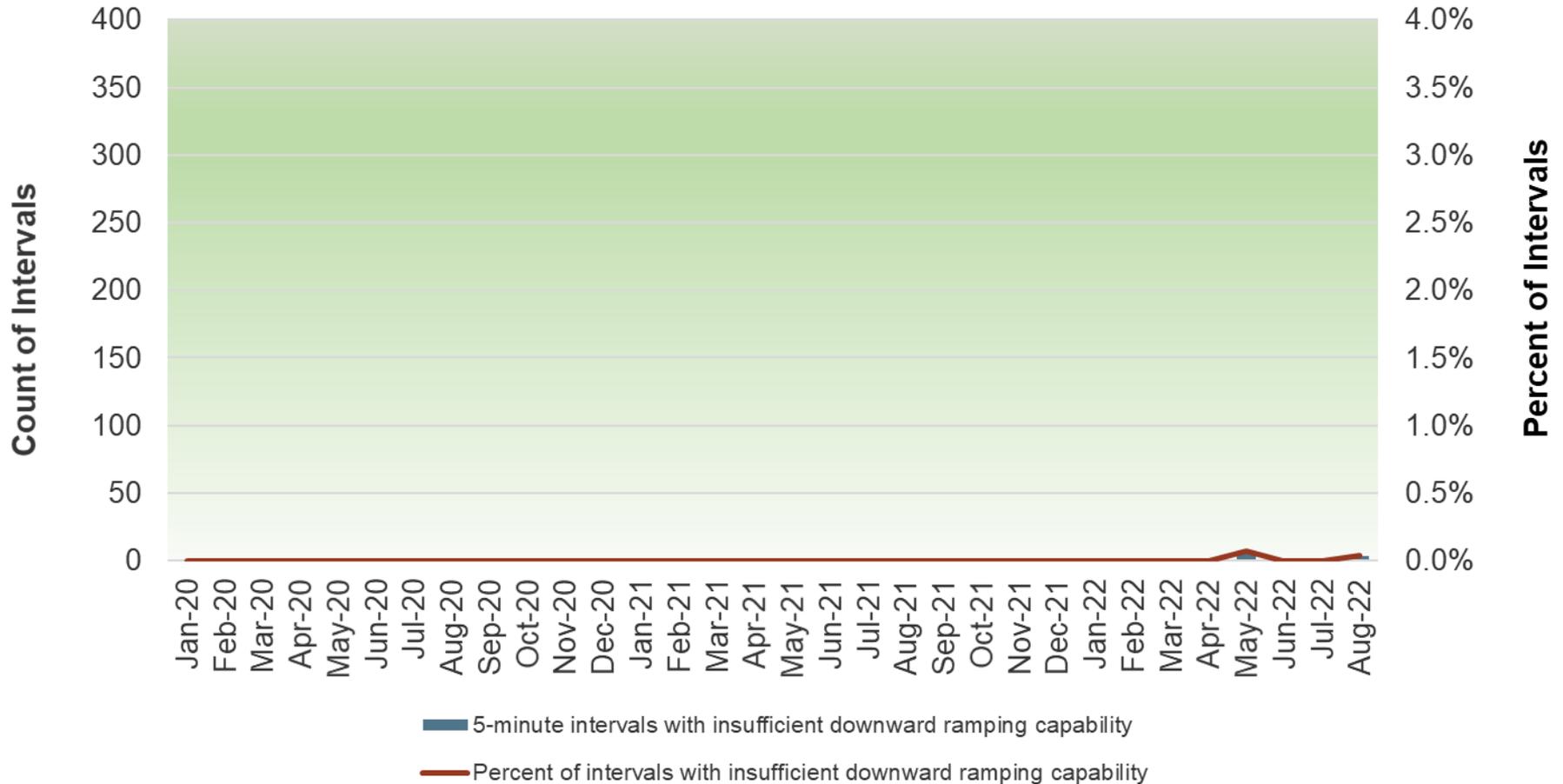
# Real-time prices higher than day-ahead prices for SP15 in July and August



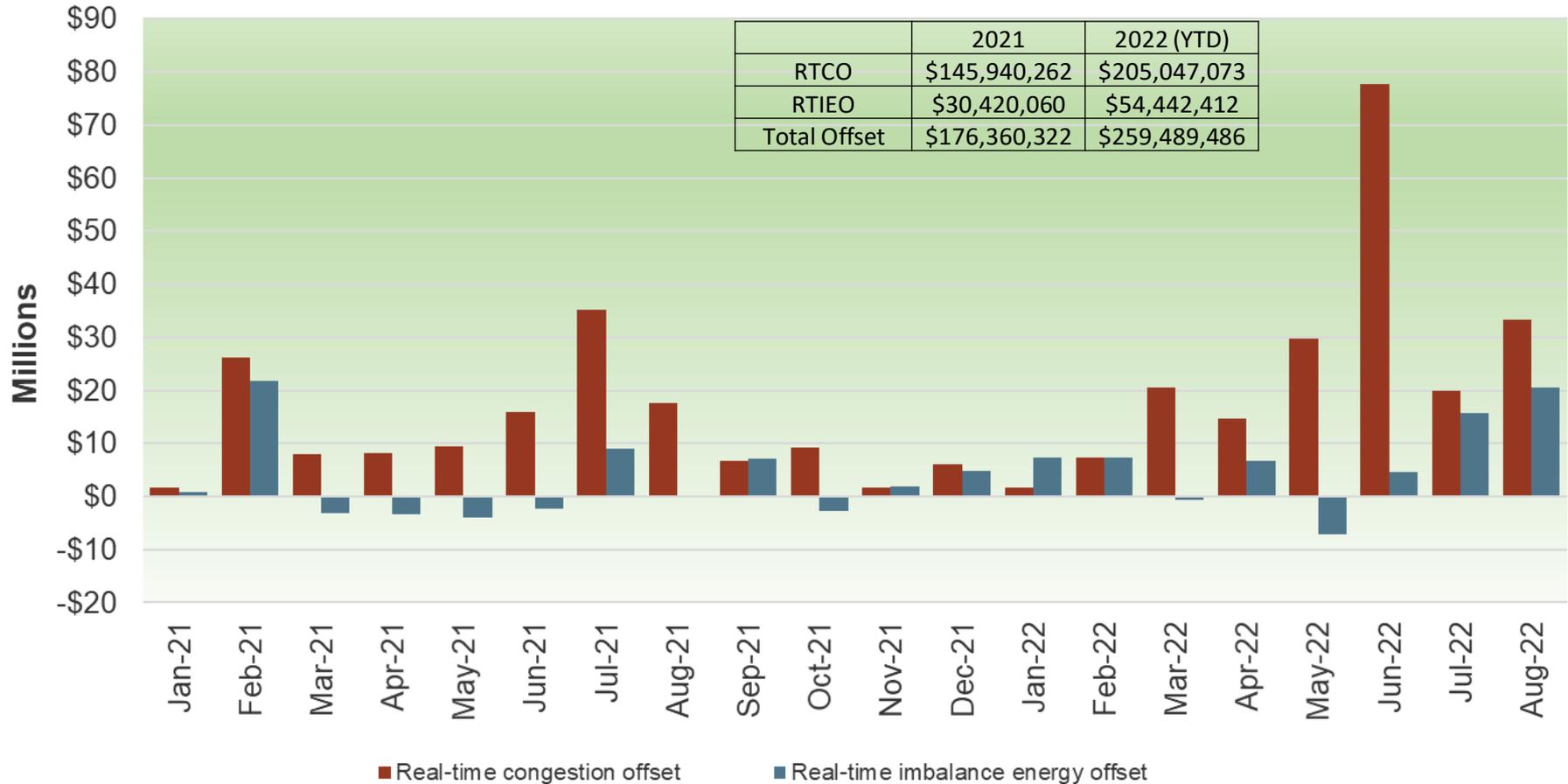
# Insufficient upward ramping capacity in ISO real-time continued to be low



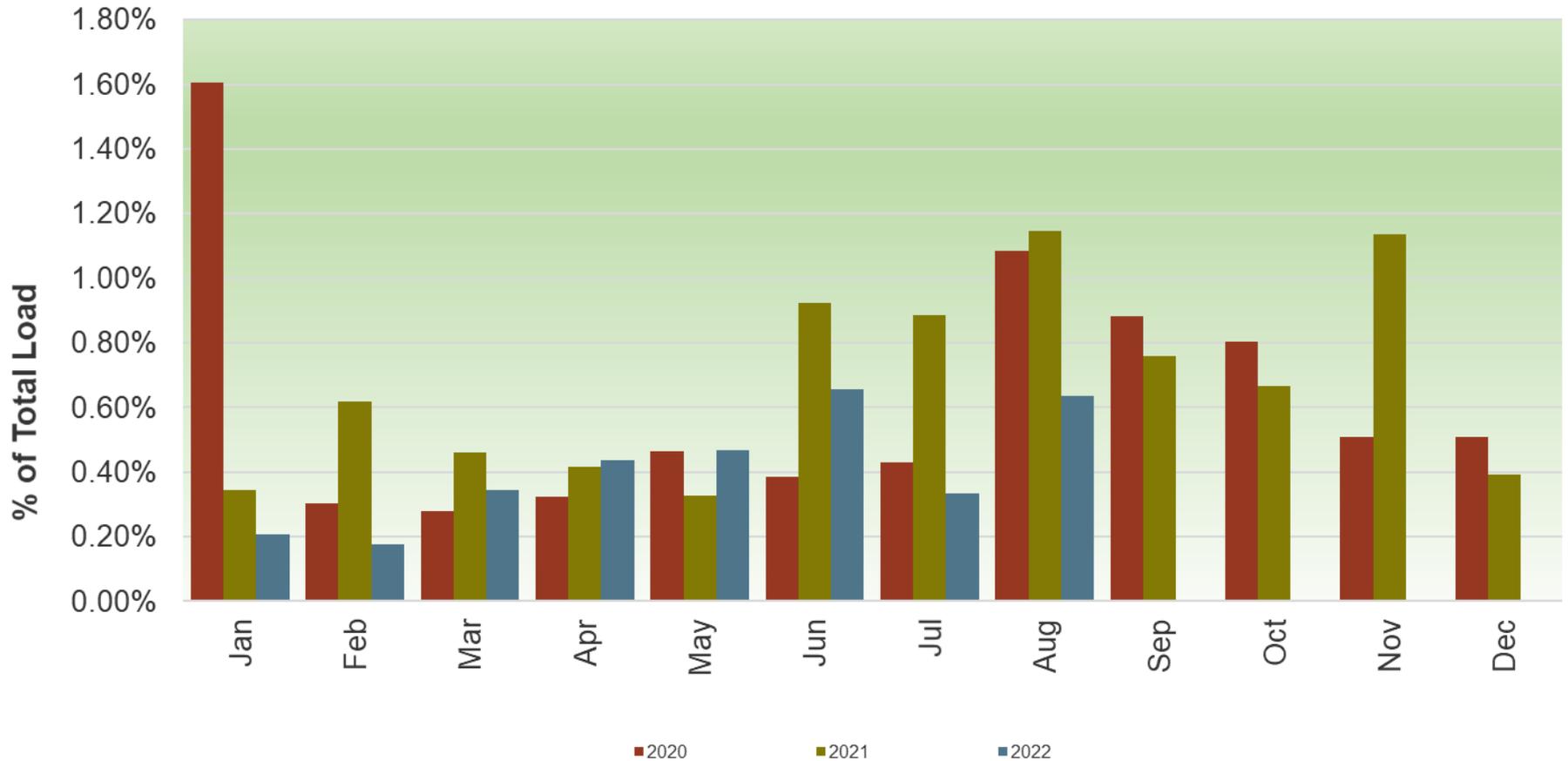
# Insufficient downward ramping capacity in real-time stayed low



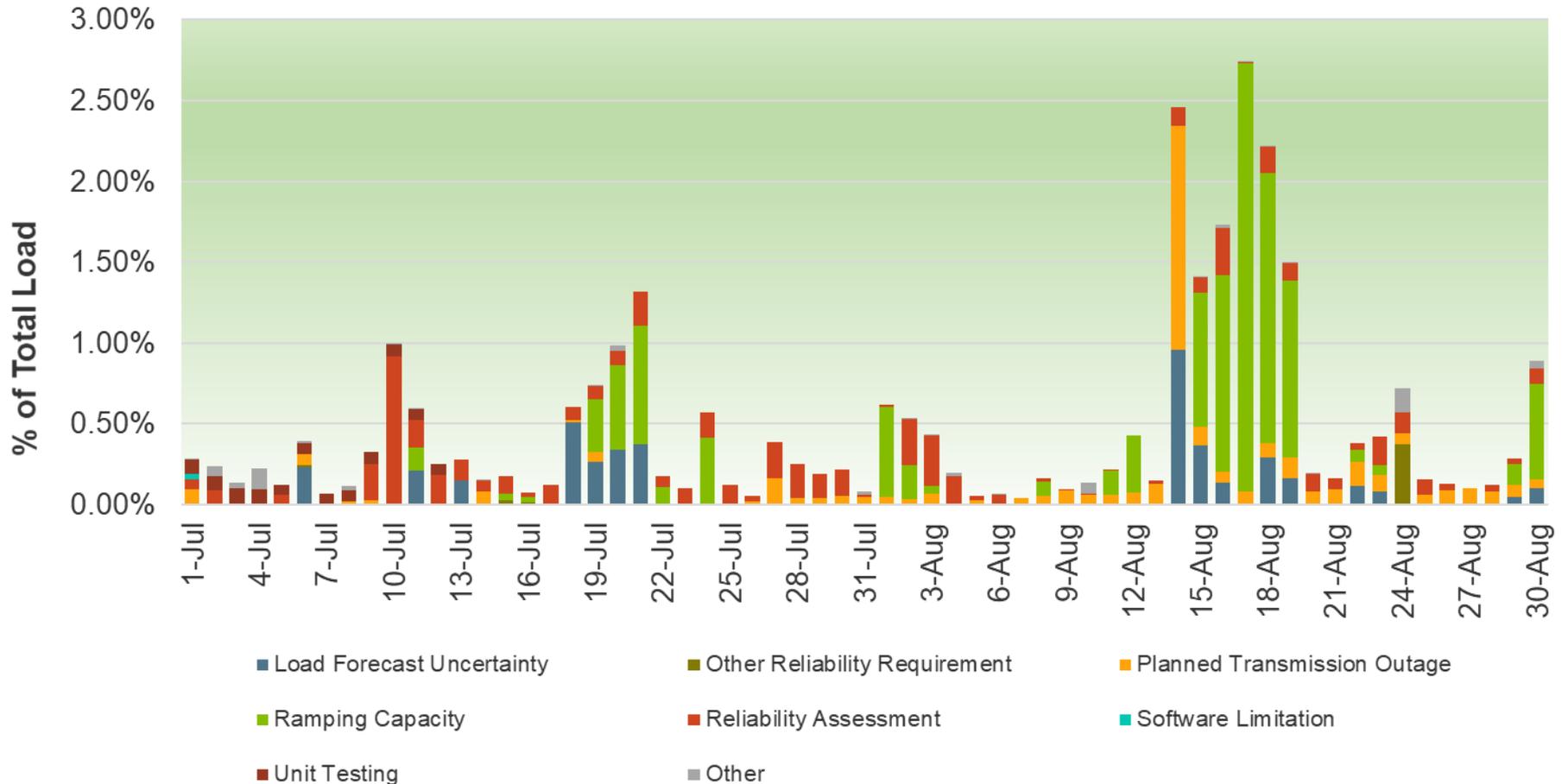
# ISO area real-time imbalance offset increased in June and then fell in July and August



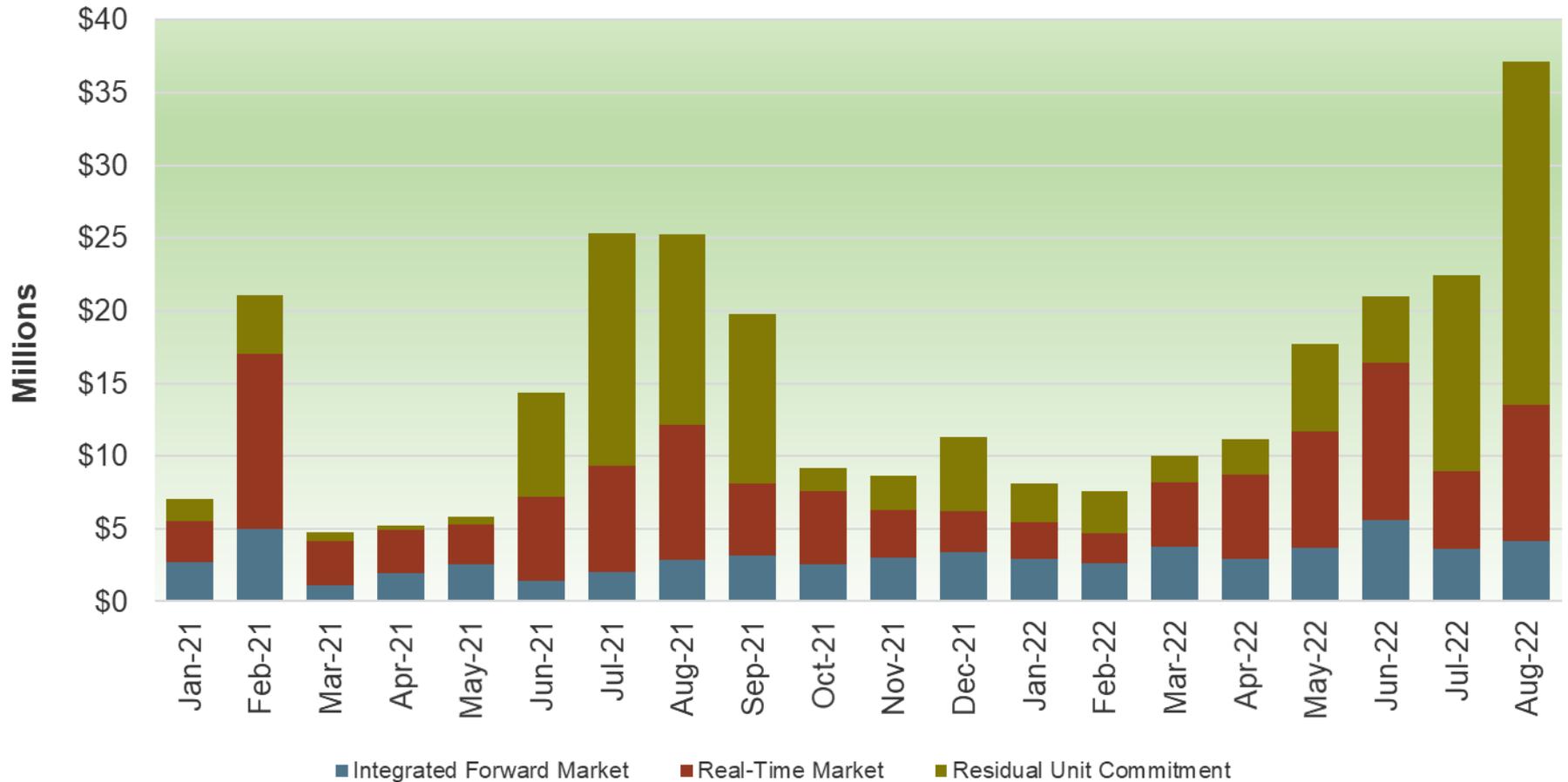
# Exceptional dispatch volume in the ISO area are at low levels



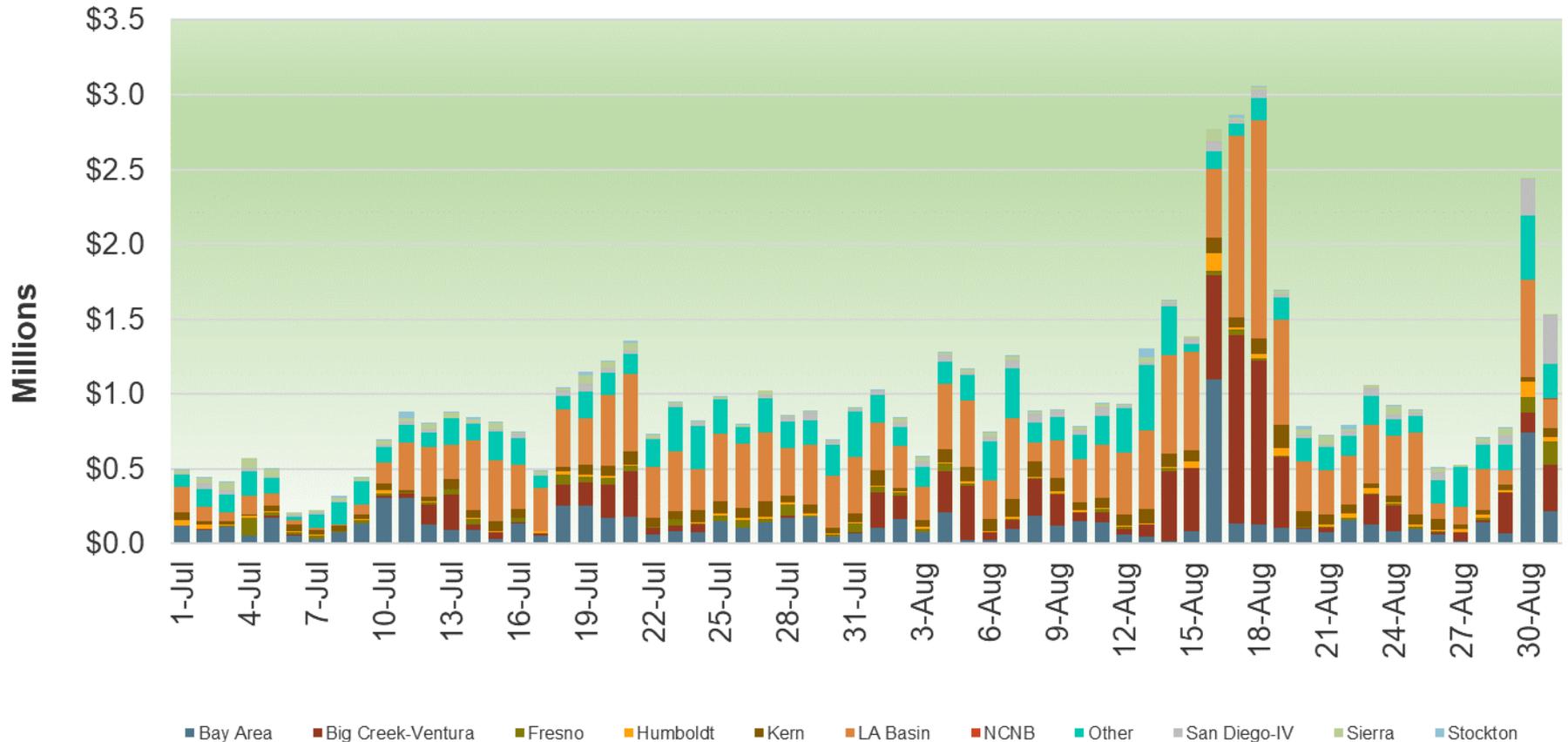
# Exceptional dispatches volume driven by a variety of reasons in July and August



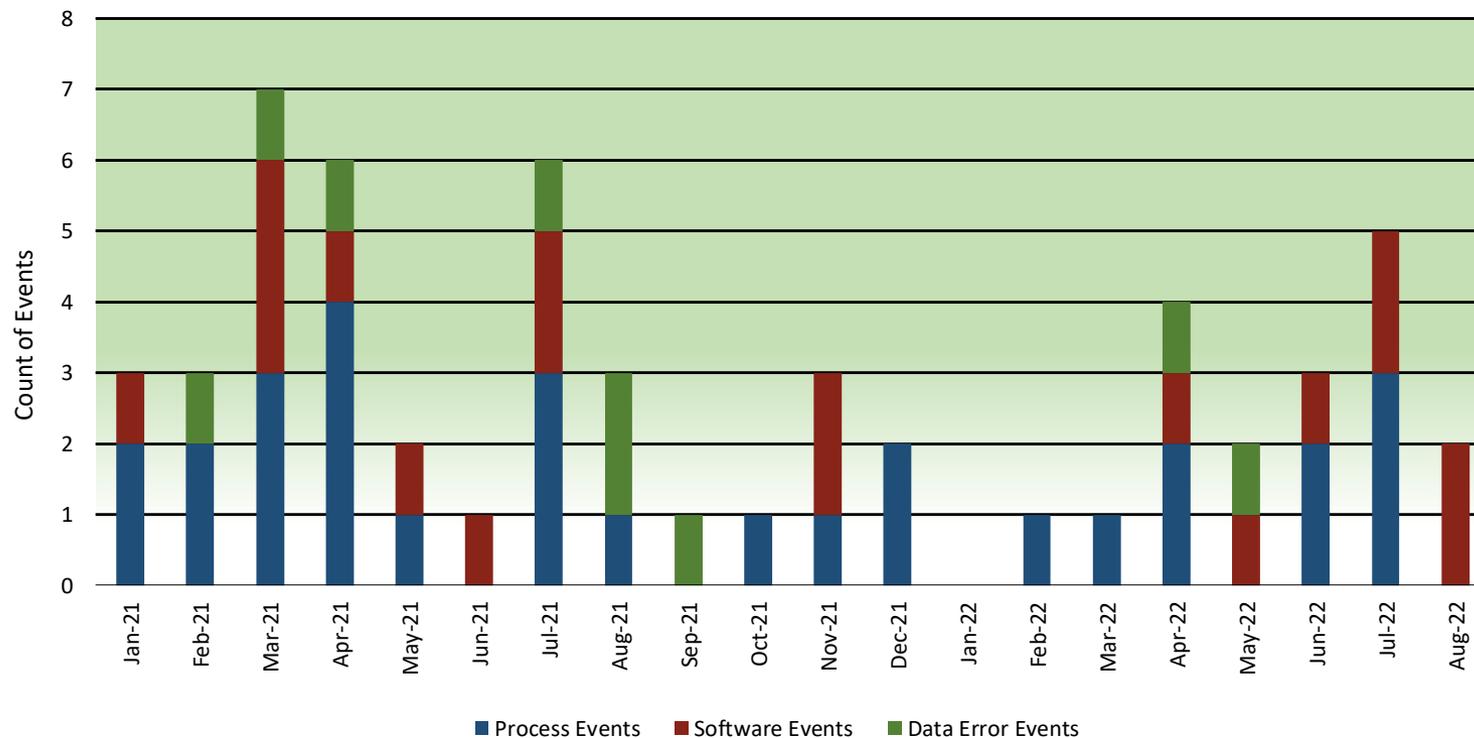
# Bid cost recovery trended upward since February



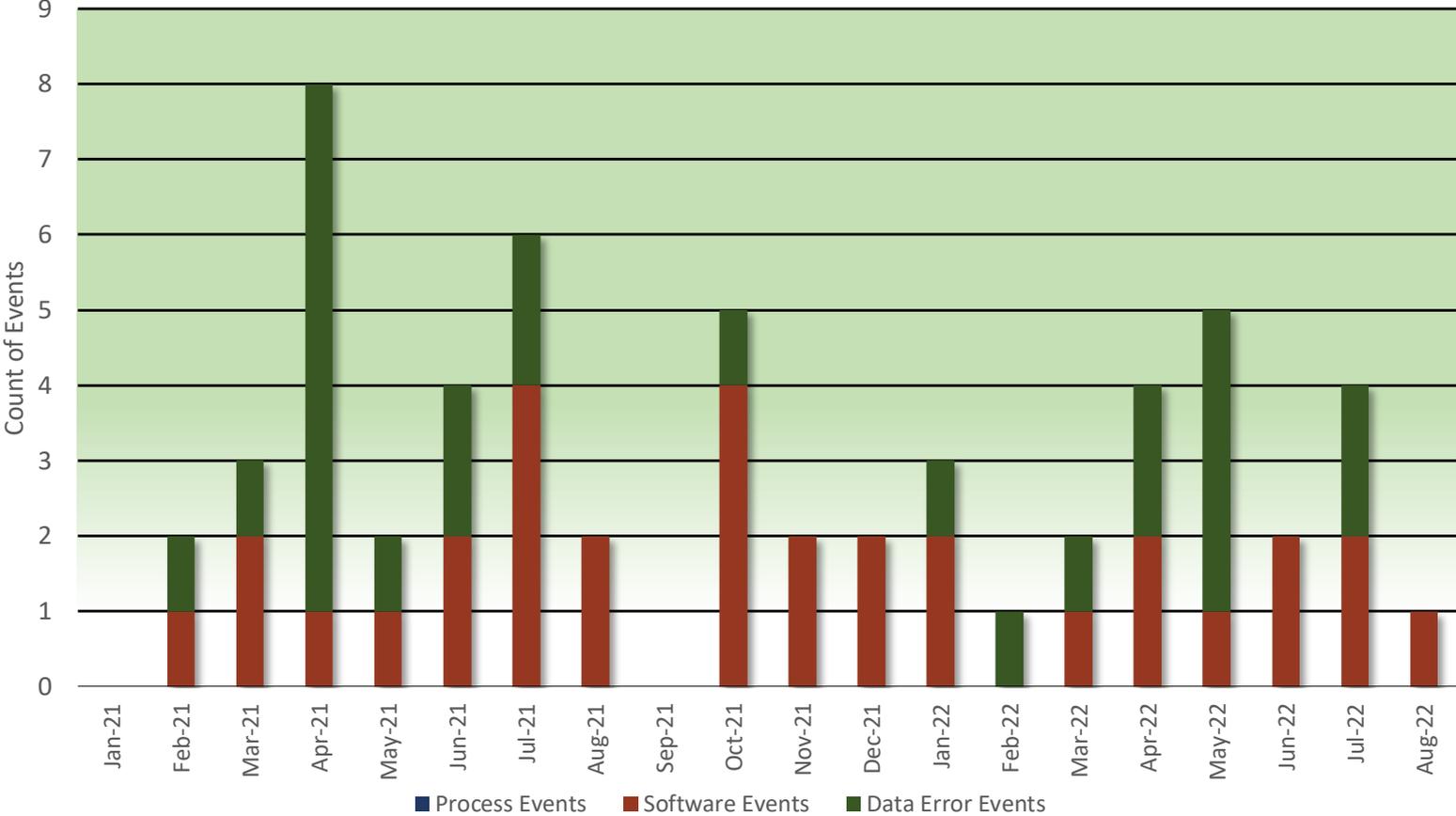
# Bid cost recovery (BCR) by Local Capacity Requirement area



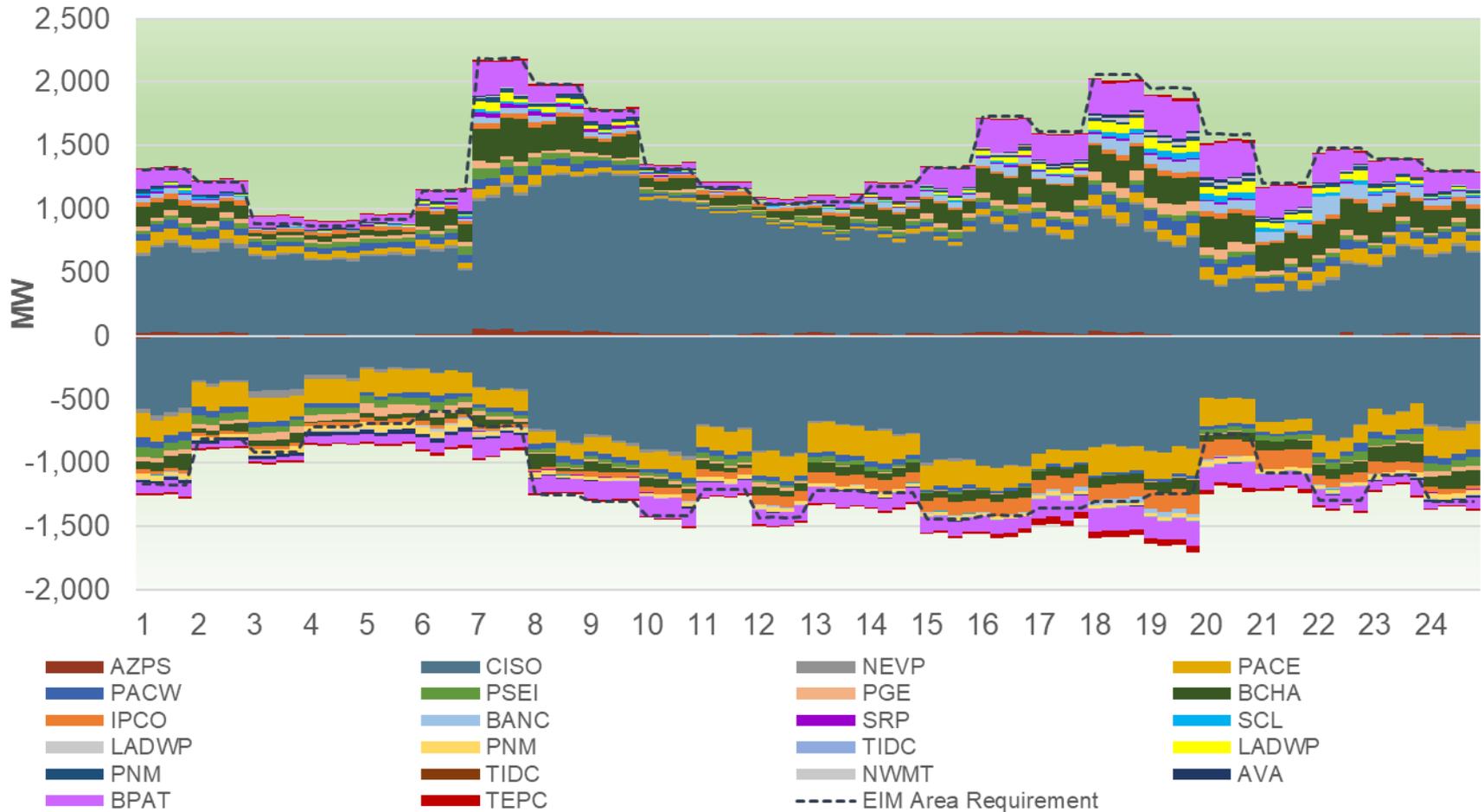
# CAISO price correction events increased in June and July



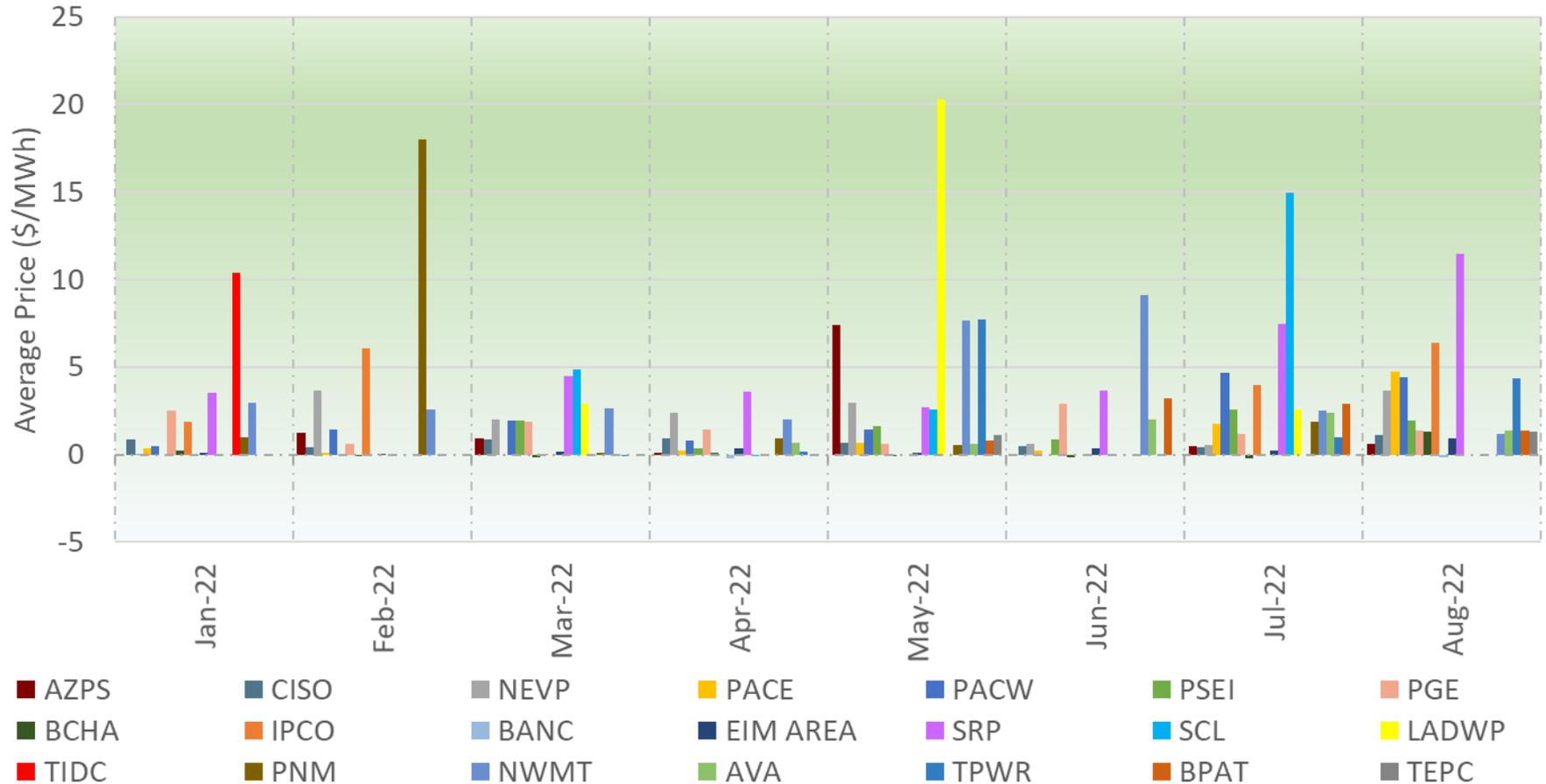
# EIM-related price corrections increased in July



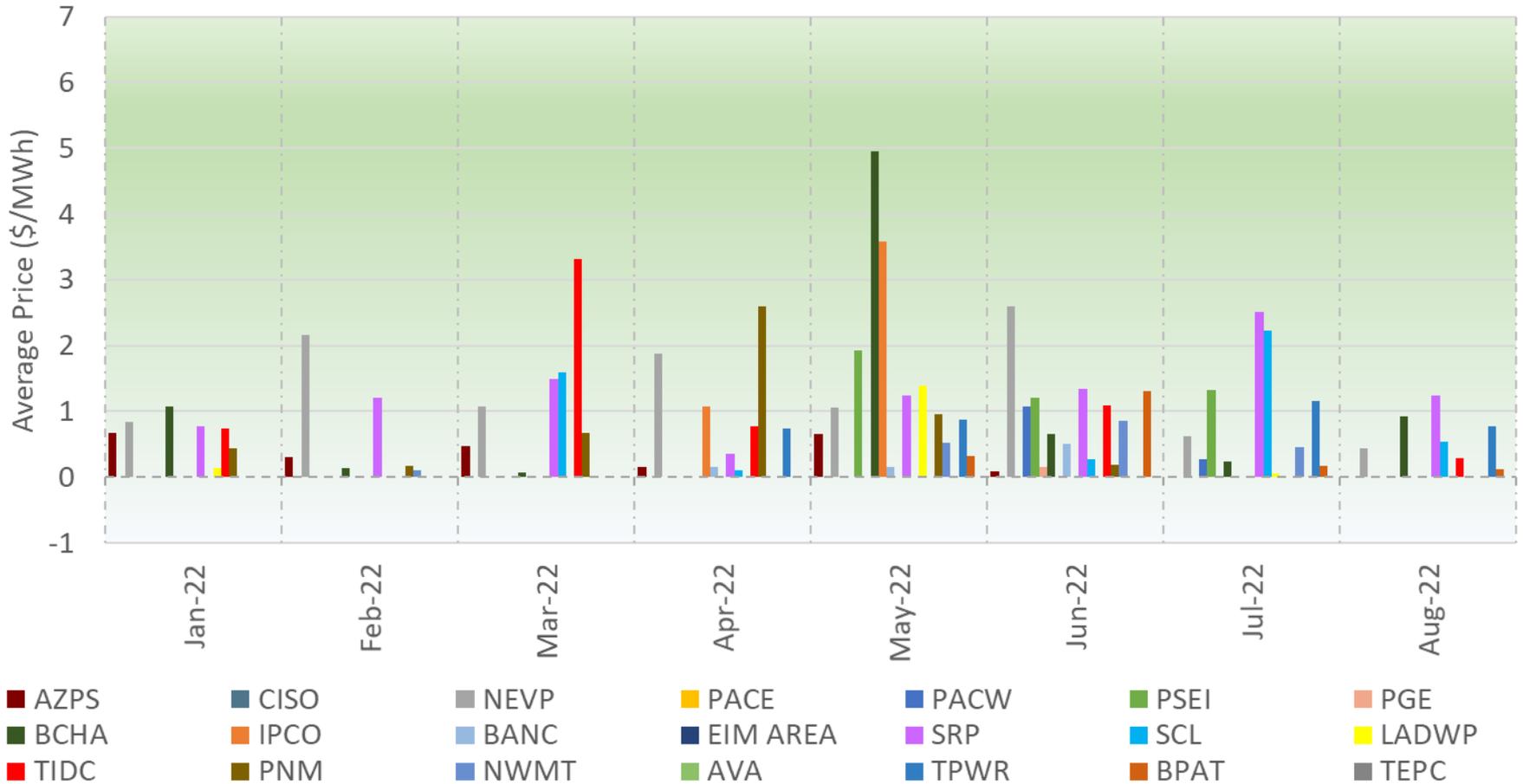
# Average flexible ramp product cleared awards for each area with EIM area requirement - June 2022 to Aug 2022



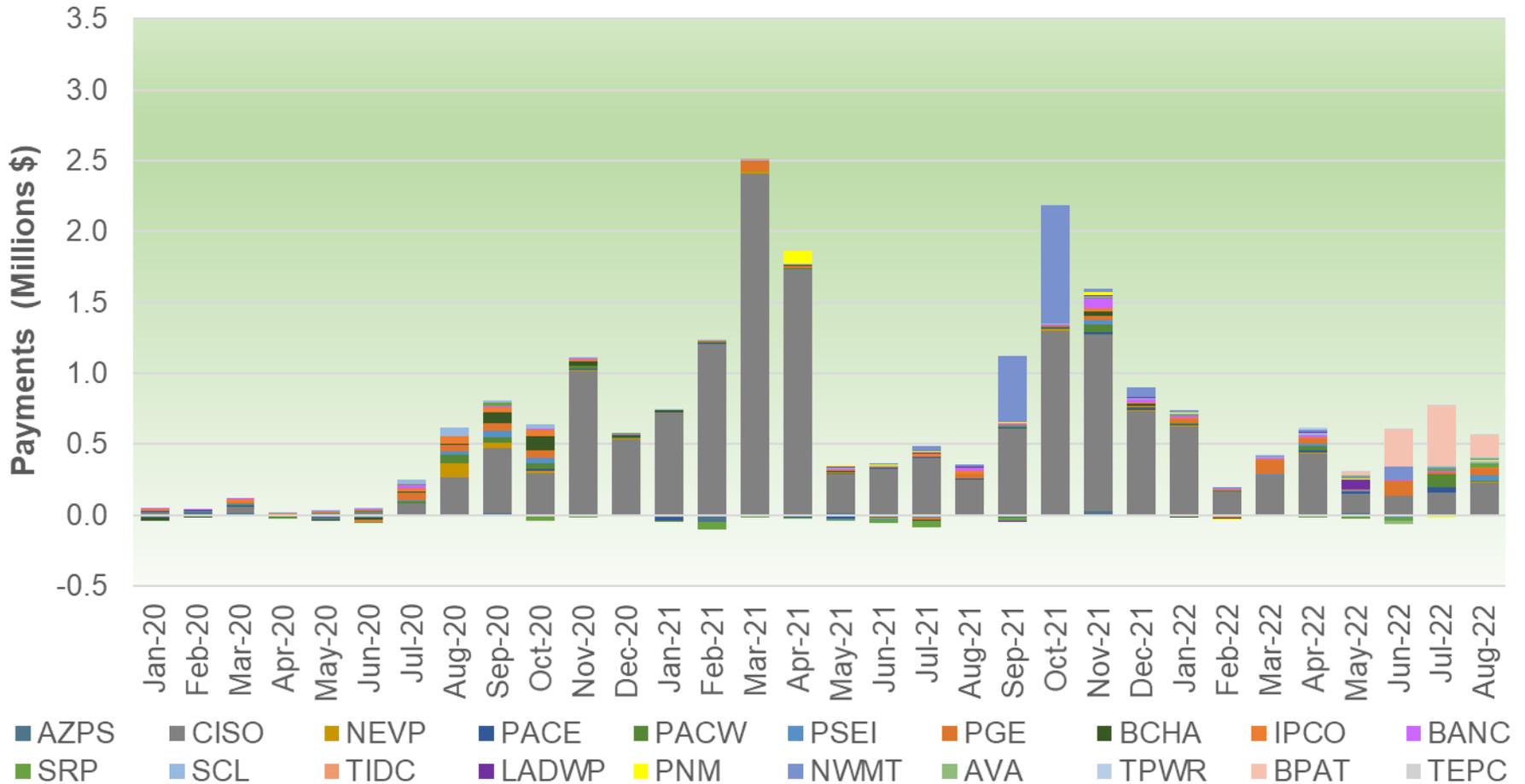
# Average flexible ramp up price (\$/MWh)



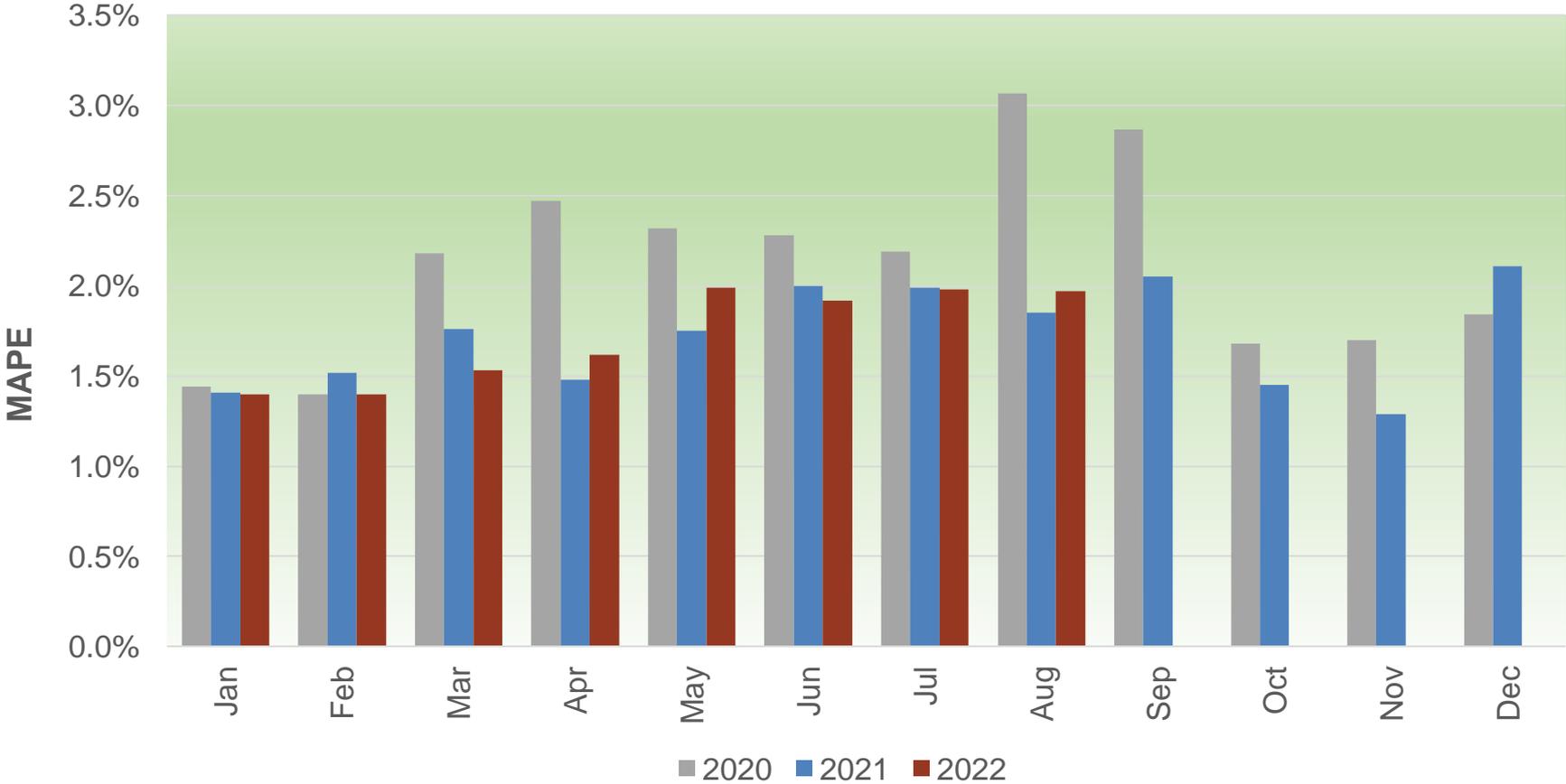
# Average flexible ramp down price (\$/MWh)



# Uncertainty Up Settlement Amount

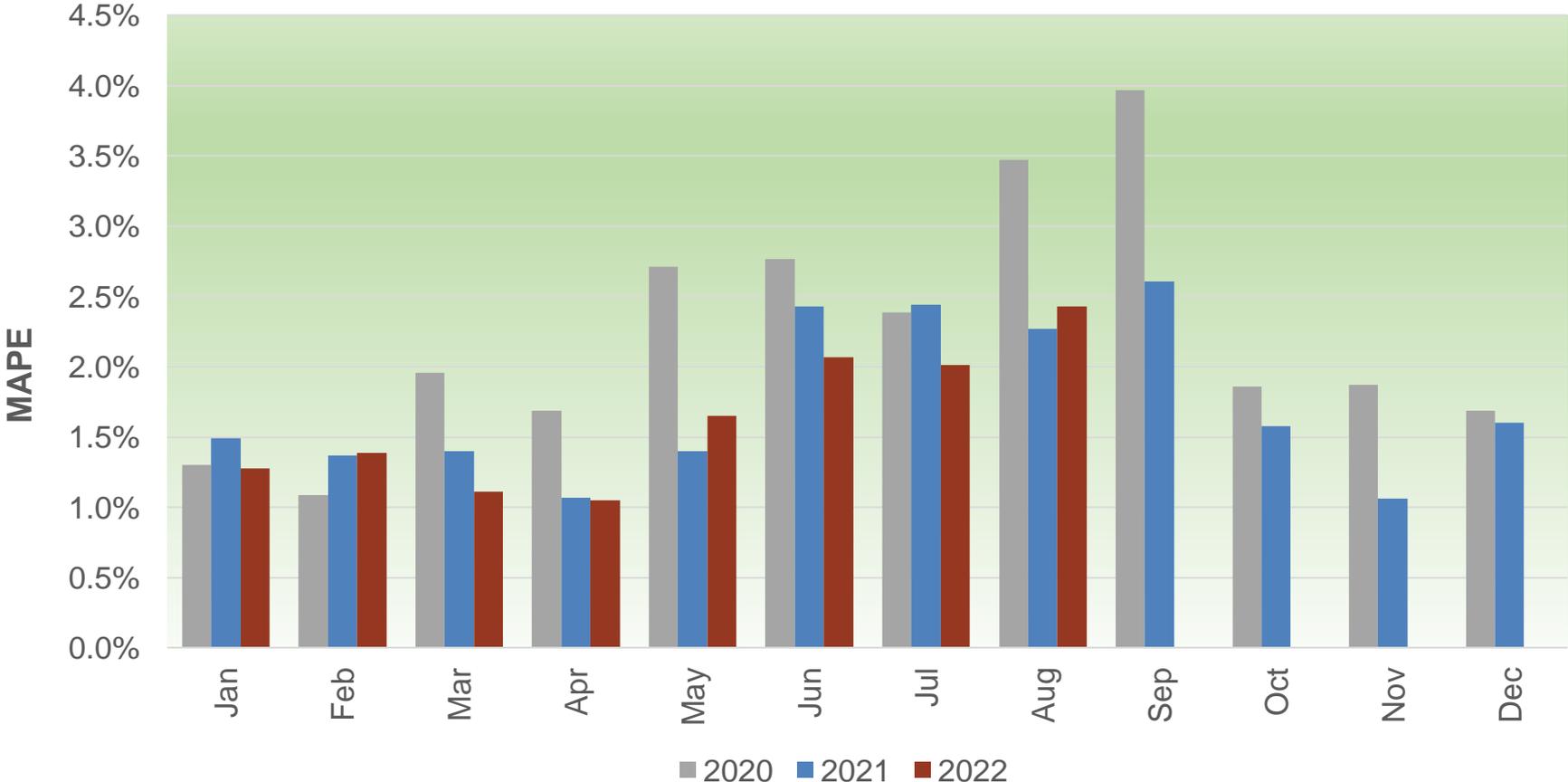


# Day-ahead load forecast



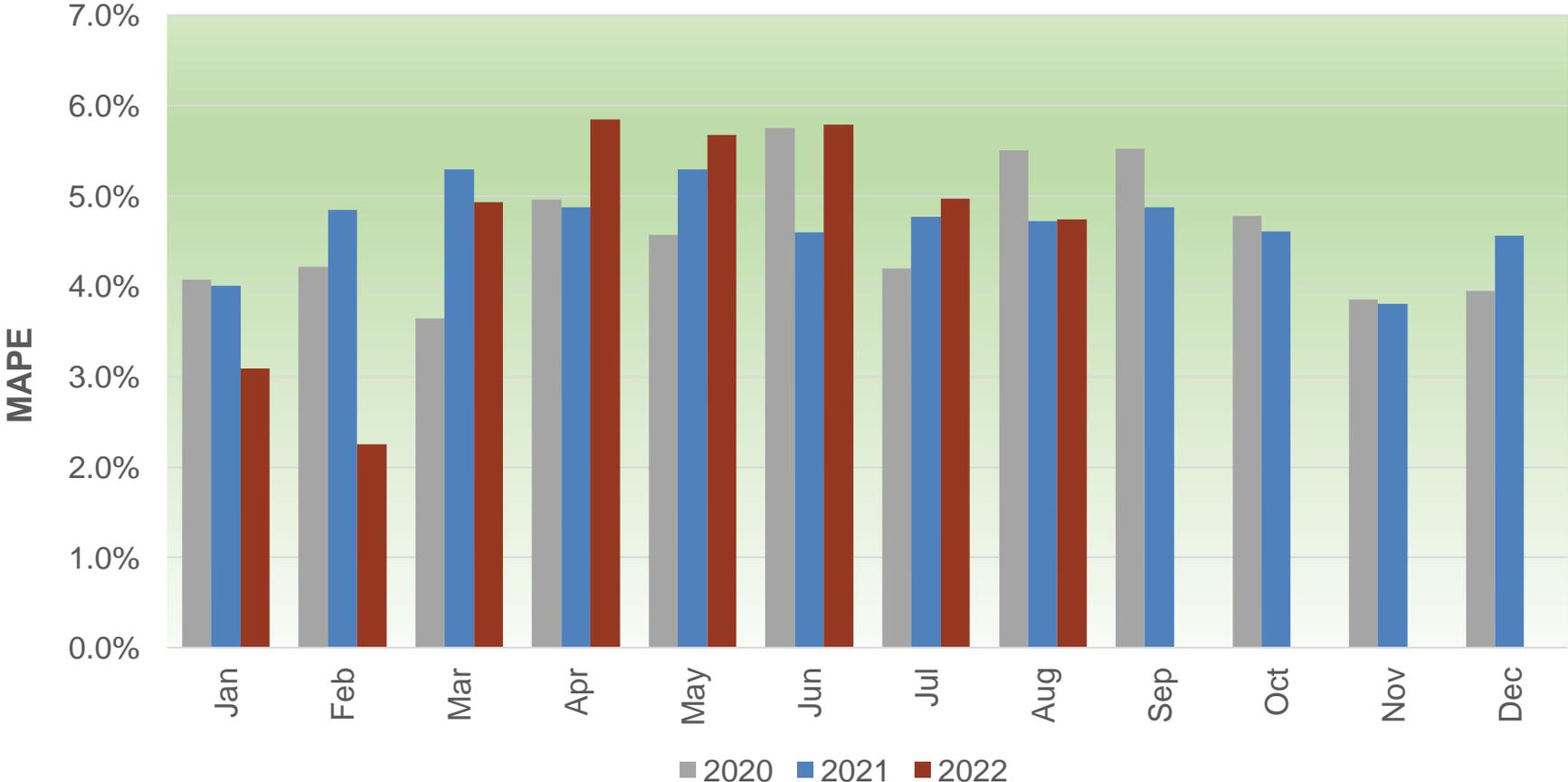
\*\*MAPE = abs(Forecast - Actual)/Actual

# Day-ahead peak forecast



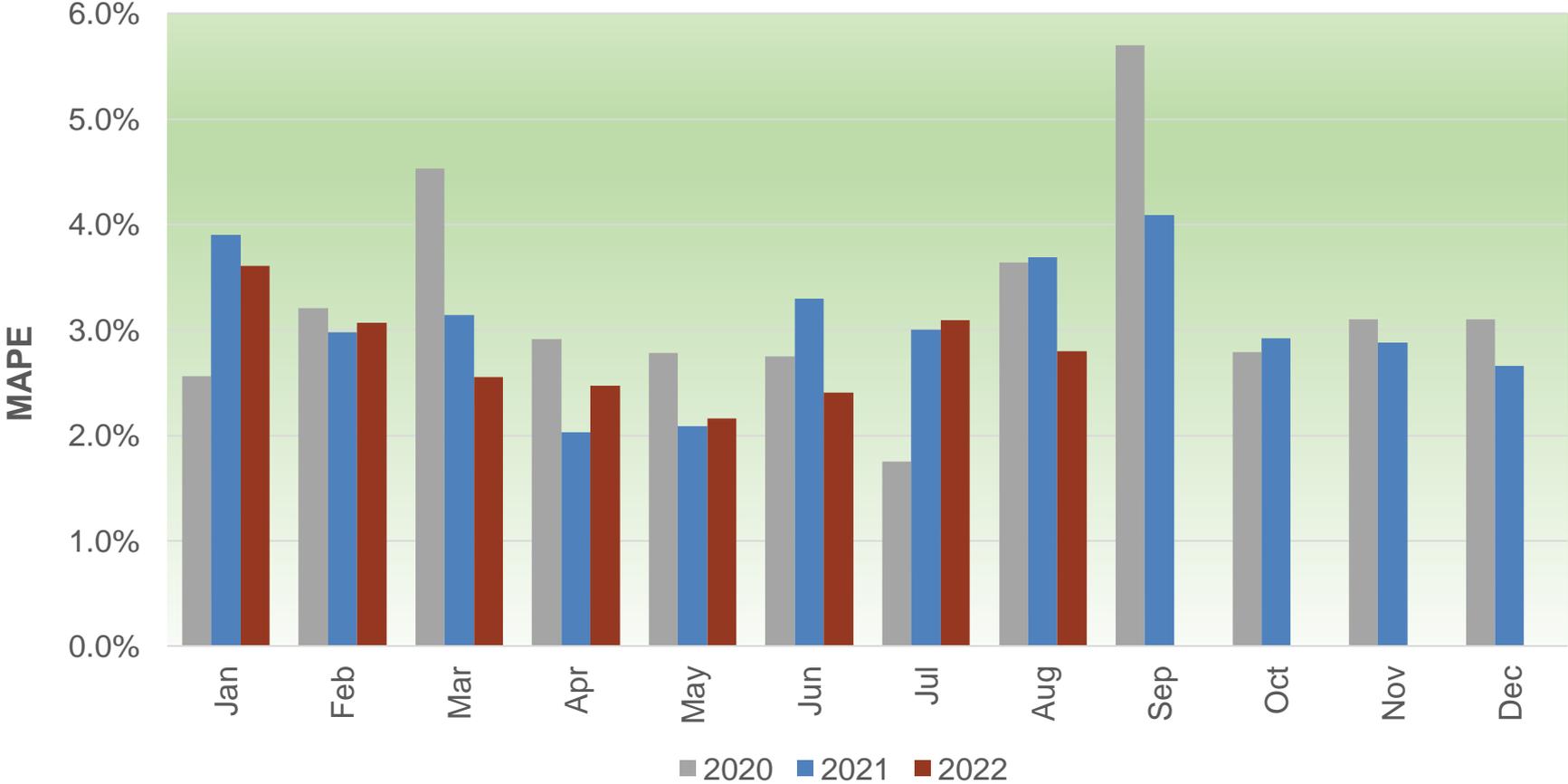
\*\*MAPE = abs(Forecast - Actual)/Actual

# Day-ahead wind forecast



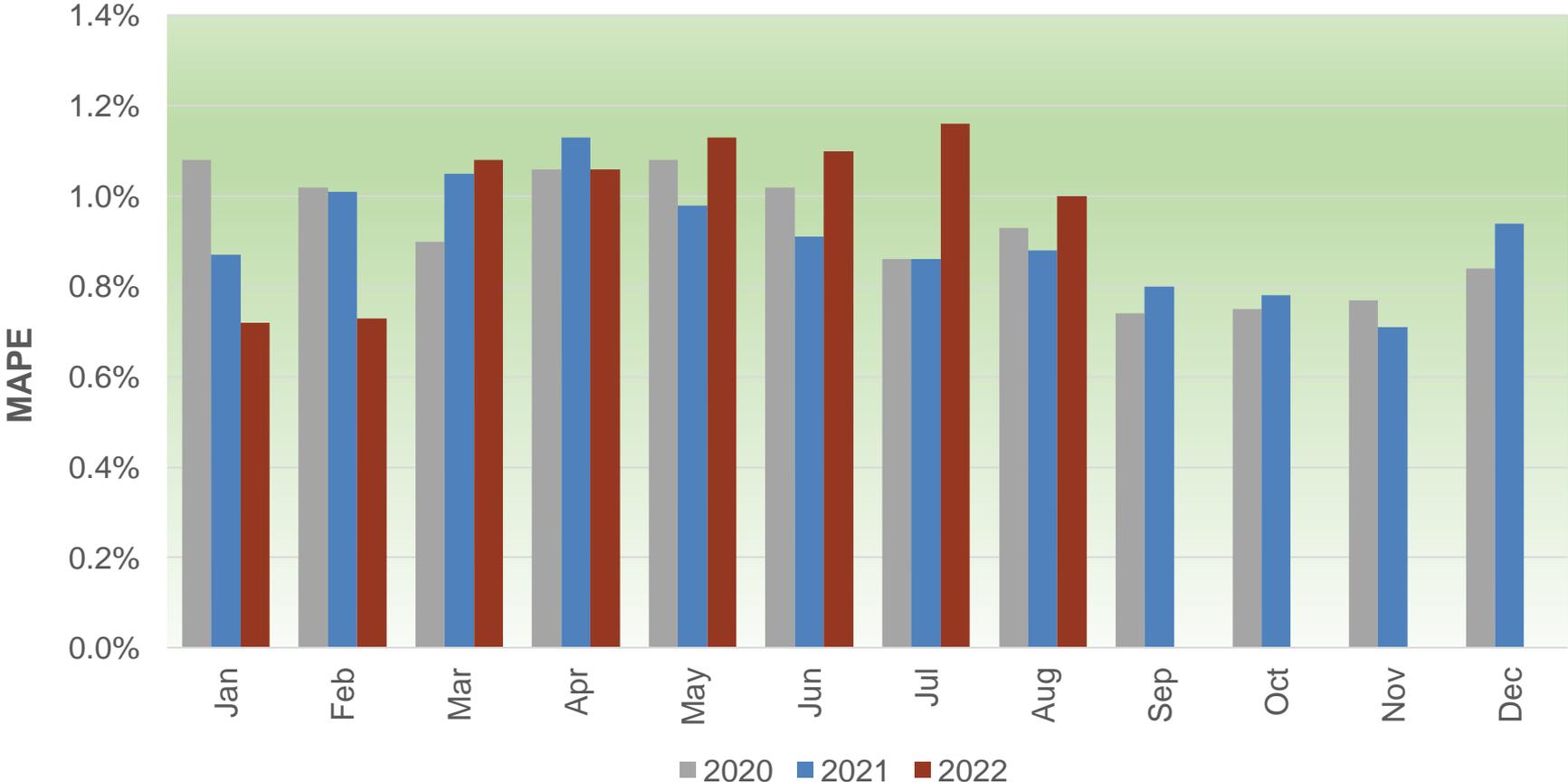
\*\*MAPE = abs(Forecast - Actual)/Capacity

# Day-ahead solar forecast



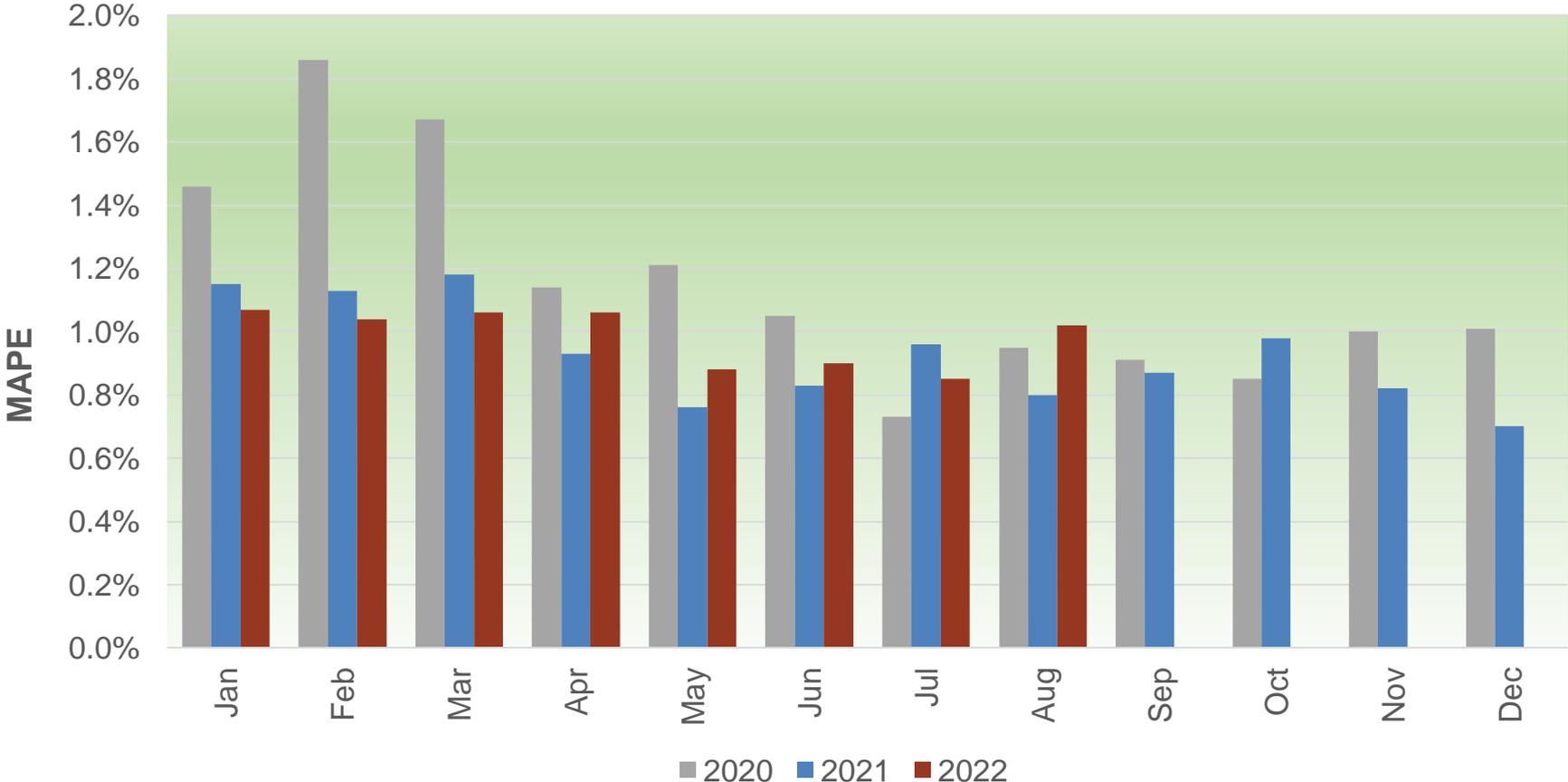
\*\*MAPE = abs(Forecast - Actual)/Capacity

# Real-time wind forecast



\*\*MAPE = abs(Forecast - Actual)/Capacity

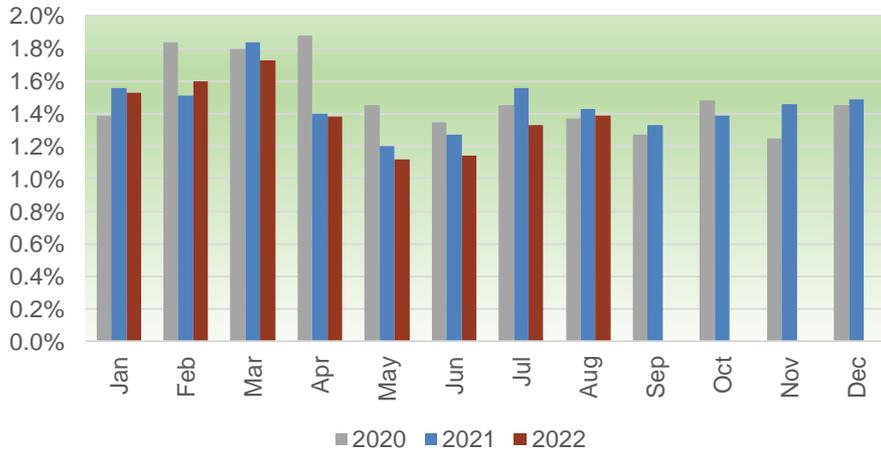
# Real-time solar forecast



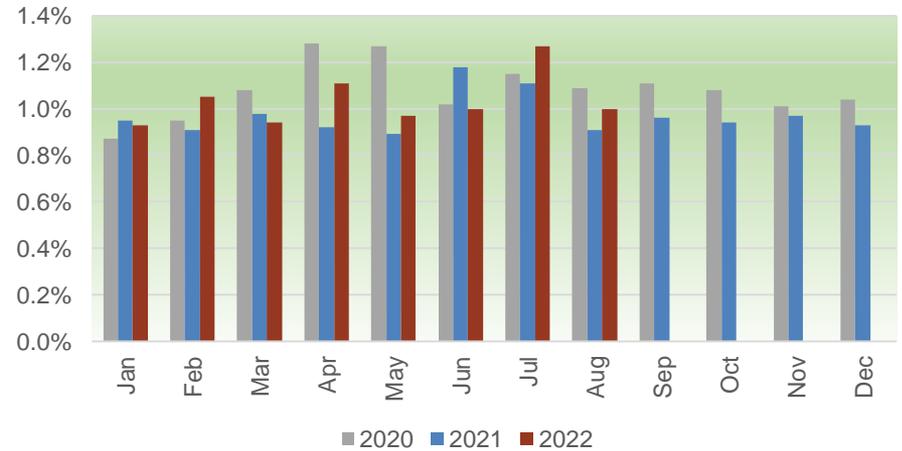
\*\*MAPE = abs(Forecast - Actual)/Capacity

# EIM T-60 forecast

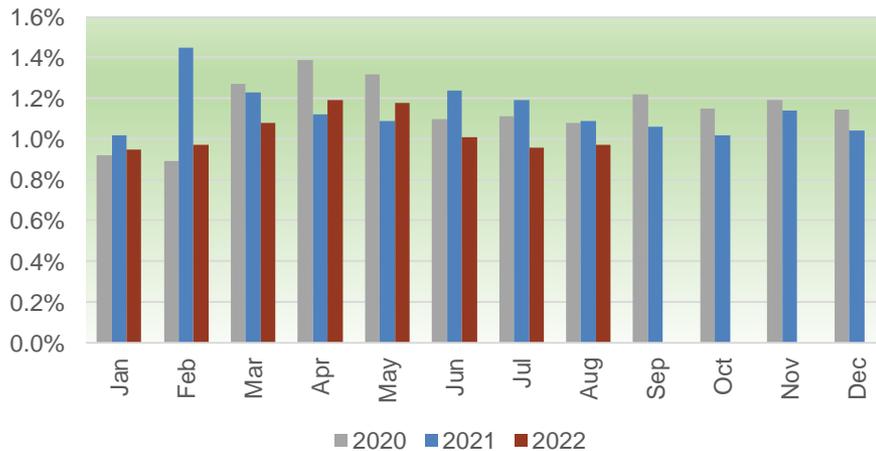
## AZPS T-60 Forecast



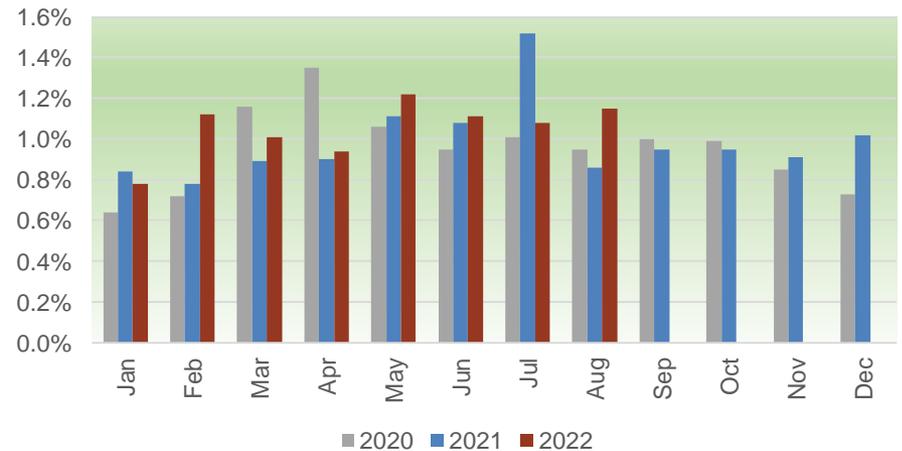
## IPCO T-60 Forecast



## PGE T-60 Forecast

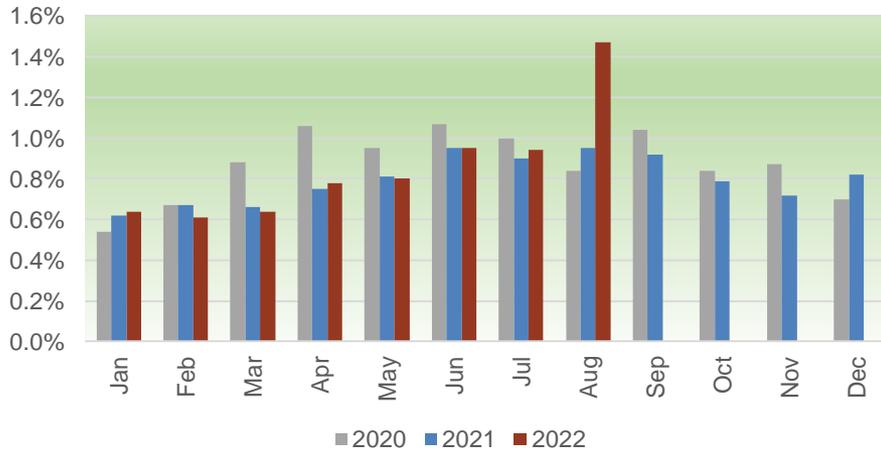


## NVE T-60 Forecast

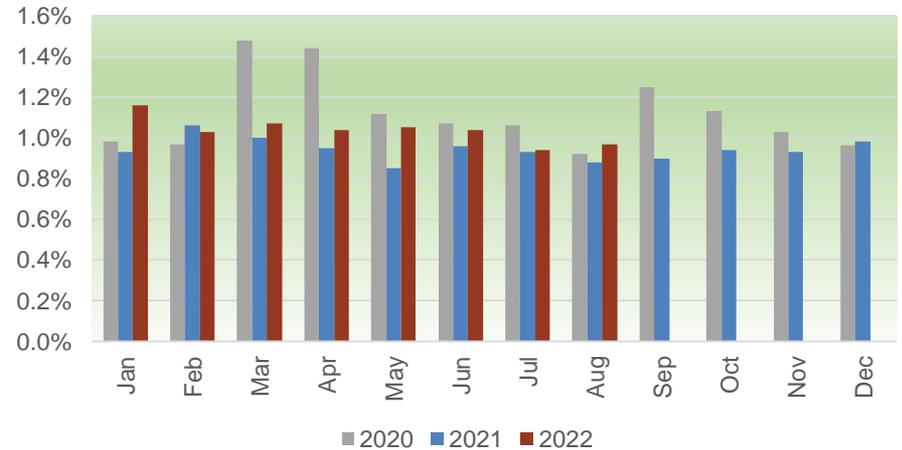


# EIM T-60 forecast

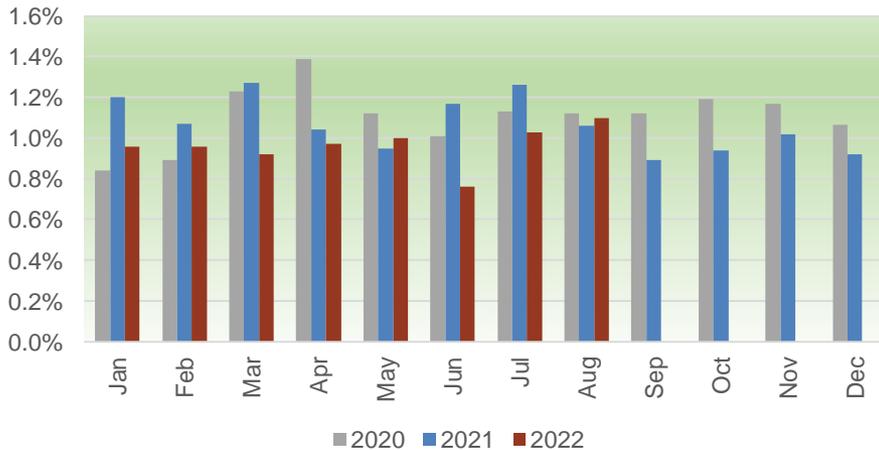
## PACE T-60 Forecast



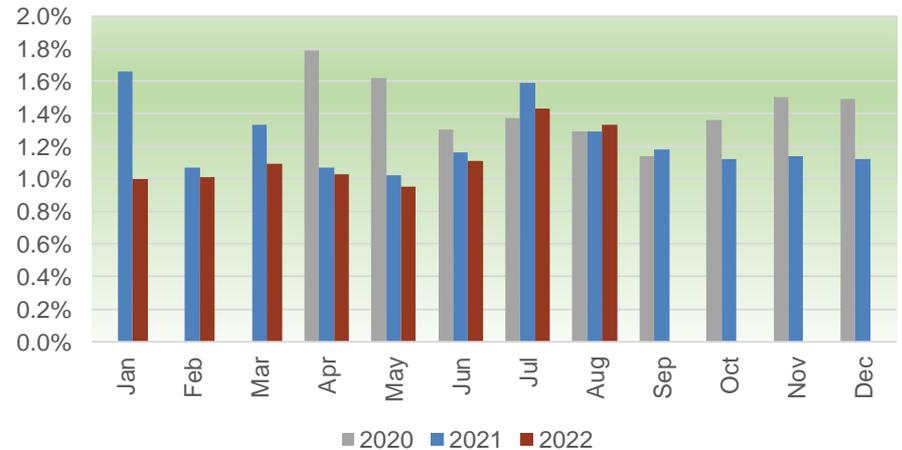
## PACW T-60 Forecast



## PSE T-60 Forecast

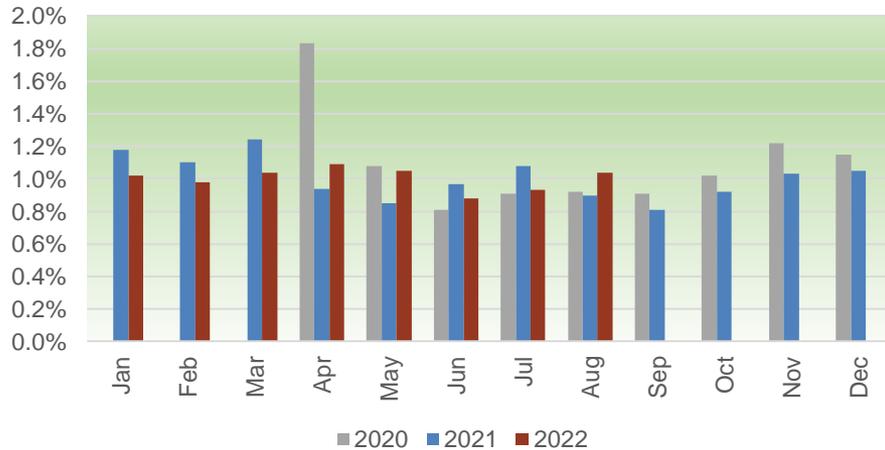


## SRP T-60 Forecast

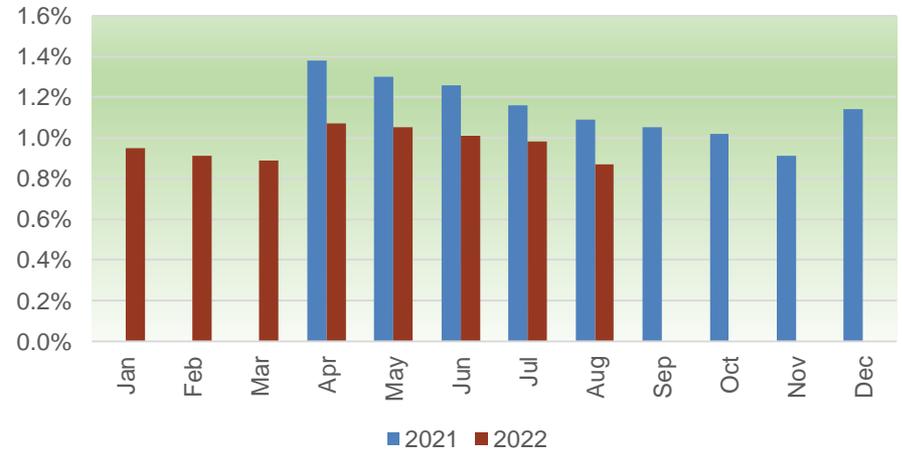


# EIM T-60 forecast

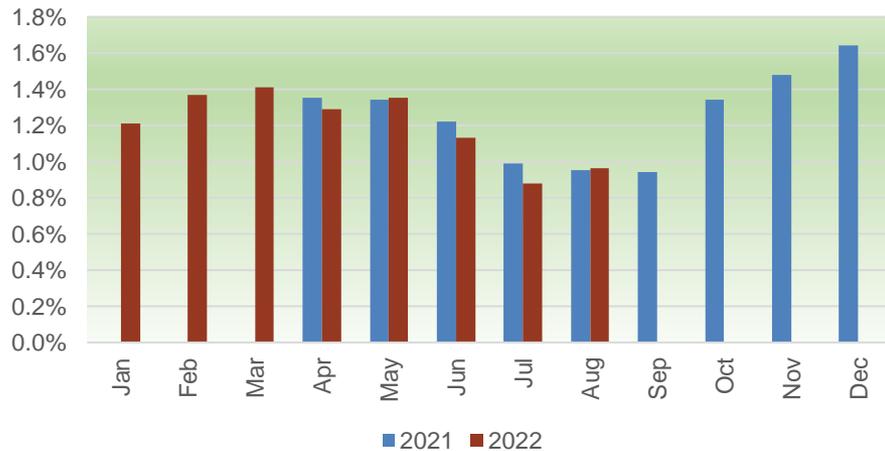
### SCL T-60 Forecast



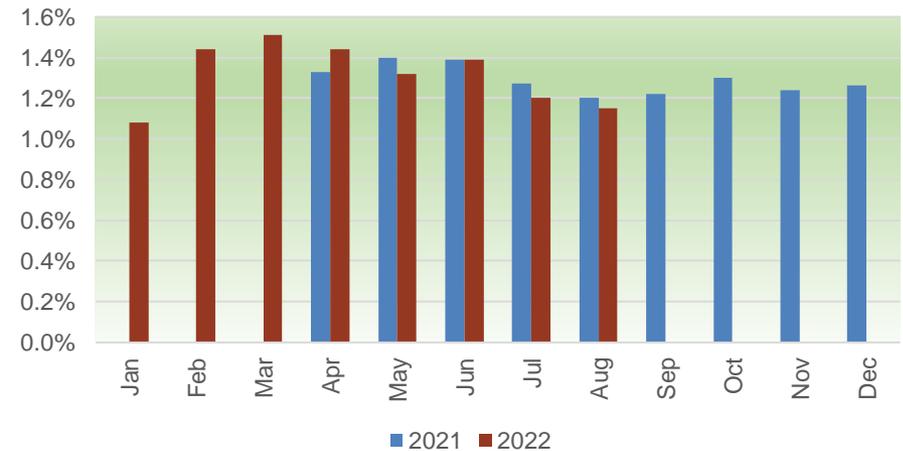
### LADWP T-60 Forecast



### TIDC T-60 Forecast

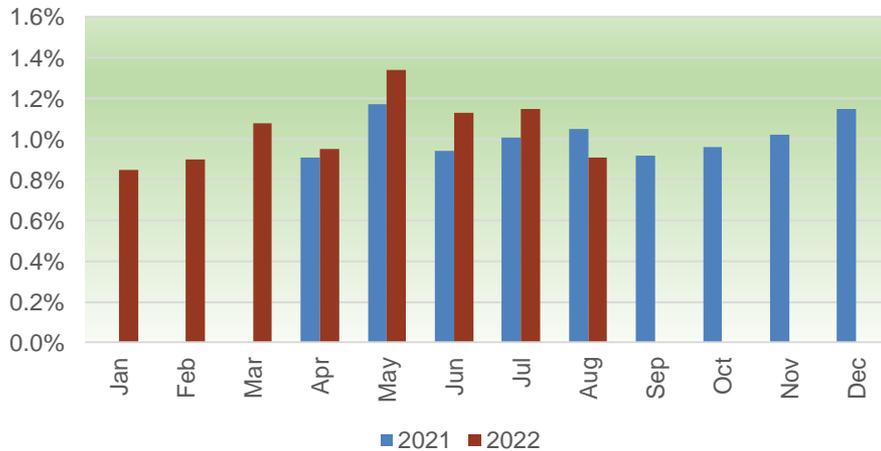


### PNM T-60 Forecast



# EIM T-60 forecast

### BANC T-60 Forecast



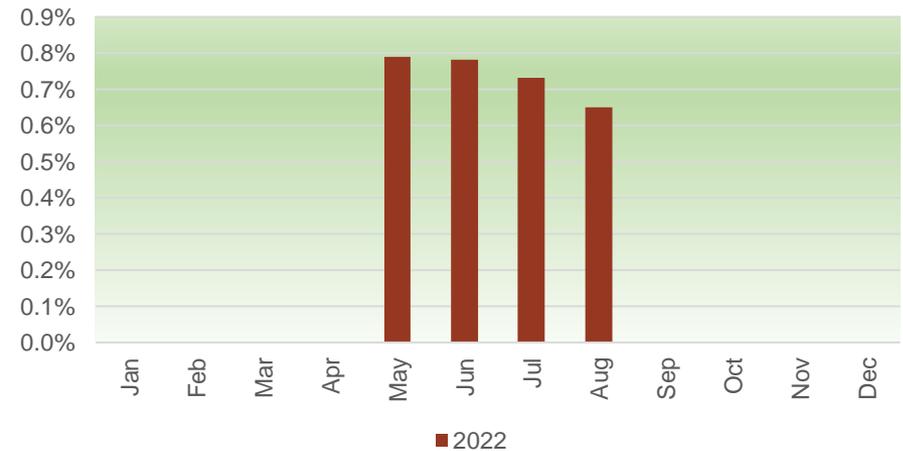
### NWMT T-60 Forecast



### AVA T-60 Forecast



### BPA T-60 Forecast

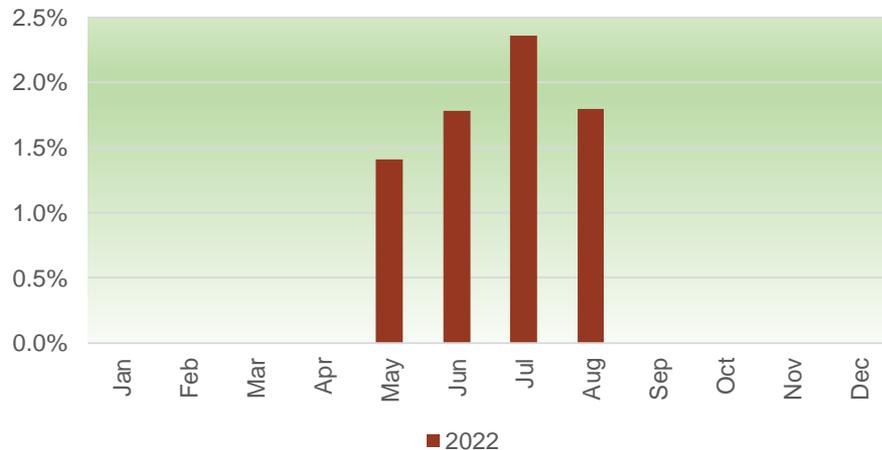


# EIM T-60 forecast

## TPWR T-60 Forecast



## TEP T-60 Forecast



# Release Plan Update

Trang Vo  
Senior Project Manager,  
Strategic Initiative Management

# ISO Training Schedule

Training Course	Date and time
Hybrid Resources Phase 2B – Metering Requirements Overview	September 26, 2022 11am – 12:00pm

Are you looking for more training?

The ISO Learning Center has computer based training available for lots of topics. Check out the Learning Center:

<http://www.caiso.com/participate/Pages/LearningCenter/default.aspx>

**NEW!! – Customer Training Needs Survey:**

<https://www.surveymonkey.com/r/caisotrainingneedsurvey>



# Release Plan Summary 2022

## **Fall 2022 Release**

Flexible Ramping Product Improvements – Deliverability

Hybrid Resources Phase 2B

Reliability Demand Response Resource Bidding Enhancements 2

Central Procurement Entity Implementation

## **2022 Independent**

Operations Systems Improvements Enhancements

WEIM Enhancements: ETSR UI

WEIM Enhancements: Shared Ramping Constraint – Move to 2023

# Transparency Enhancements 2022 - Summary

Area/System	Summary	Customer Value	Timeline
CAISO website; Today's Outlook	Counting methodology for battery capacity has been modified to reflect units online that have reached commercial operation date, and no longer includes those in the commissioning process. View the enhancement <a href="#">here</a> .	Provides clarity of what resources are actually on-line which helps in infrastructure planning purposes	Completed 3/31/22
CAISO website	Published a draft of its first <a href="#">20-Year Transmission Outlook</a> to help enable and accelerate the integration of new renewable resources onto the grid and to expand the planning horizon and bring together a wide cross-section of stakeholders to identify and set priorities for different possible solutions.	The transparency will help developers make more informed decisions on infrastructure planning and development.	Published Feb 2022
CAISO website	Transmission project tracking information; In conjunction with the CPUC and PTOs, quarterly public stakeholder forums provide status updates on the transmission projects previously approved through the transmission planning process and network upgrades identified in the generation interconnection process. Meeting materials related to the Transmission Development Forum can be found <a href="#">here</a> , or on <i>CAISO.com &gt; Stay Informed &gt; Meetings and Events &gt; User groups and recurring meetings</i> .	This additional transparency will help market participants make more informed decisions when going through the procurement process, likely leading to reduced number of interconnection requests.	Started Jan 2022; to be conducted quarterly

# Transparency Enhancements 2022 – Summary (cont.)

Area/System	Summary	Customer Value	Timeline
CAISO website	IPE Data Transparency efforts: The ISO agreed that additional data will be made available to participants as public data. The ISO requested stakeholders provide specific data items that they wanted to have. Summary information gathered from various studies/reports to help interconnection customers identify locations where resources can connect without requiring costly and long lead time upgrades.	Stakeholders can independently evaluate the interconnection queue trends and be able to develop data driven opinions of the various reforms. This additional data will allow for more effective and efficient queue position evaluations and data analysis. It will also provide a more realistic picture of when additional capacity is expected to come online.	We are in process of getting the data we need in RIMS and then working to determine how to efficiently and effectively publish such data. Nothing has been published to date.
CAISO website	Posted a new document that supports the DA Summer Report by providing an explanation of information included in the report. <a href="#">Explanation of data included in the Day-Ahead Summer Reports</a> , is located at the top of the reports. available on the <a href="#">Reports and Bulletins webpage</a> , under the <i>Market performance reports</i> heading, <i>Day-ahead daily market watch and summer reports</i> subheading	Understanding the posted data allows for informed decision making by participants in the market.	Implemented May 9, 2022
OASIS	Publication of RUC/HASP/RTPD/RTD adjustments (load forecast adjustments/load bias). View the enhancement <a href="#">here</a> , or on <i>OASIS.com &gt; System Demand &gt; Load Adjustments</i> .	Provides market efficiency by allowing participants to understand the risk and uncertainty around decisions when formulating energy bides, along with improving their ability to manage and plan for the use of their resources in the market.	Completed 6/8/22 Training on 4/28/22
OASIS	Publication of curtailment (schedule reduction) data (wheels, exports, load). View the enhancement <a href="#">here</a> , or on <i>OASIS.com &gt; Energy &gt; Schedule &gt; Schedule Reductions</i> .	Same as above.	Completed 6/8/22 Training on 4/28/22
CMRI	Publish Resource-Specific RSE Capacity Test Data Publish Resource-Specific RSE Flexible Ramping Test Data	Same as above.	Completed 6/15/22 API: 2022 Training on 5/16/22

# Transparency Enhancements 2022

Area/System	Summary	Customer Value	Timeline
OASIS	Increased Resource Sufficiency Evaluation (RSE) Data on RSE Results and Additional Data Transparency and Reporting – Publish Balancing Authority Area (BAA) RSE Capacity Test Data. View the enhancement <a href="#">here</a> , or on <i>OASIS.com &gt; Energy &gt; Energy Imbalance Market &gt; WEIM RSE Capacity Tests</i> .	Provides market efficiency by allowing participants to understand the risk and uncertainty around decisions when formulating energy bids, along with improving their ability to manage and plan for the use of their resources in the market.	Completed 6/15/22 Training on 5/16/22
OASIS	Increased RSE Data on RSE Results and Additional Data Transparency and Reporting – Publish BAA RSE Flexible Ramping Test Data. View the enhancement <a href="#">here</a> , or on <i>OASIS.com &gt; Energy &gt; Flexible Ramping &gt; Flexible Ramp Requirements Inputs and Outputs</i> .	Same as above.	Completed 6/15/22 Training on 5/16/22
CAISO website Today's Outlook page and ISO Today mobile app	Redesign of the existing Capacity chart to better define available capacity and call out reserves portion. View the enhancement <a href="#">here</a> .	Provides market efficiency by allowing participants to understand the risk and uncertainty around decisions when formulating energy bids, along with improving their ability to manage and plan for the use of their resources in the market.	Completed 6/6/22 Training on 5/16/22 .
CAISO website Today's Outlook page and ISO Today mobile app	Highlighted line on the Demand Trend that visually indicates when Demand Response is being dispatched and its subsequent divergence from the load forecast. View the enhancement <a href="#">here</a> .	Same as above.	Completed 6/6/22 Included in Today's Outlook release training. Training completed.

# Release Plan Summary WEIM Spring 2023

## **WEIM Spring 2023 Release**

WEIM 2023 – Avangrid

WEIM 2023 – El Paso Electric

WEIM 2023 – WAPA Desert Southwest Region

# 2022 Fall Release

# Fall 2022 Release Overview

	BRS	Config Guide	Tech Spec	Draft Tariff*	BPMs	External Training	Market Sim	Production Activation
<b>Fall 2022 Release</b>								
<b><u>Hybrid Resources Phase 2B</u></b>	8/3/21 V1.3 3/10/22 V1.4 8/3/22 V1.5 8/25/22	01/25/22	09/10/21  ALFS MF  7/15/22, 8/26/22 – OASIS, CMRI	09/17/21  Accepted 11/30/21	02/14/22	8/18/22  9/26/22 - Metering	Start 09/28/22	12/01/22
<b><u>FRP Improvements - Deliverability</u></b>	<u>V1.0: 1/28/21,</u> 03/11/22 V1.1 8/1/22 V1.2 8/22/22	06/30/22	07/15/22 – OASIS  CMRI	08/31/20  Filed 8/15/22	9/23/22	9/07/22	Start 09/26/22	12/01/22
<b><u>RDRR Phase 2</u></b>	<u>6/21/22</u>	N/A	N/A	Filed 8/22/22	9/2/22	8/30/22	Start 09/28/22	By 12/01/22
<b><u>Central Procurement Entity Implementation</u></b>	3/10/22 <u>v 1.1 4/7/22</u> 9/14/22	06/30/22	N/A	Filed 4/8/22  Approved 7/1/22	10/28/22	9/14/22	Start 09/19/22	MF/CIRA by 10/13/22  Effective Date 1/1/23 for 2023 RA Year

# Fall 2022 – Hybrid Resources Phases 2-B - Overview

Project Information	Details/Date
<p><b>High Level Business Problem or Need</b></p>	<p>The ISO launched this stakeholder initiative to identify new or enhanced market rules and business processes needed to accommodate hybrid resources, resources that consist of two sets of market rule changes that will facilitate mixed-fuel type project participation (hybrid and co-located resources) in the ISO markets.</p>
<p><b>High Level Project Scope</b></p>	<p><b>Phase 2</b> focuses on modifications that will explore how hybrid generation resources can be registered and configured to operate within the ISO market. The initiative will further develop solutions allowing developers to maximize the benefits of their resource's configuration. Additionally, hybrid resource configurations also raise new operational and forecasting challenges that the ISO plans to address during this initiative.</p> <p>The Phase 2 project has been split into two separate implementations, phases 2-A and 2-B, to support strategic delivery timing. Phase 2-B information is available under the Spring 2022 release section.</p> <p><b>Phase 2-A</b> was implemented on December 15, 2021. This phase focuses on implementing Ancillary Services (AS) and High Sustainable Limit (HSL) functionality with a focus on the EMS and IFM/RTM systems.</p> <p><b>Phase 2-B</b> is scheduled to implement Fall 2022. This project phase focuses on implementing the Hybrid Dynamic Limit functionality, Multiple ACC, along with all remaining project scope to include changes to systems RIMS, Master File, EMS, SIBR, IFM/RTM, OASIS, ALFS, Settlements, MRI-S Metering, CMRI, MPP, Today's Outlook, ISO Today Mobile Application, Monthly Renewables Performance Report, Wind and Solar Real-Time Dispatch Curtailment Report', and the Over Supply Page.</p> <p><b>External BRS Posting:</b> V1.5 posted on 8/25.</p>
<p><b>BPM Changes</b></p>	<p>Direct Telemetry, Market Instruments, Market Operations, Metering, Settlements and Billing</p>
<p><b>Tariff Changes</b></p>	<p>Proposed sections 4.18, 34.1.6.3, 30.5.6.1 Sections 27.13, 8.4.1.1(g), 8.4.3, Appendix K, Parts A, B and C, 8.2.3, 8.4.5, 34.7, 11.6.6, 4.8.2, 40.9.2 (b) (D)</p>
<p><b>Impacted Systems</b></p>	<p>ALFS, CMRI, Reporting, IFM/RTM, Master File, OASIS, RIMS, Settlements, MRI-S Metering, SIBR, MPP, Today's Outlook, ISO Today Mobile Application, Monthly Renewables Performance Report, Wind and Solar Real-Time Dispatch Curtailment Report, Over Supply Page.</p>

## Fall 2022 – Hybrid Resources Phase 2-B

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Nov 18, 2020	✓
External BRS	Post External BRS (Includes Phase 2-A and 2-B)	Aug 3, 2021	✓
	Post BRS v1.3	Mar 10, 2022	✓
	BRS v 1.4	Aug 4, 2022	✓
	BRS v 1.5	Aug 25, 2022	✓
Config Guides	Post Draft Config Guides	Jan 25, 2022	✓
Tech Spec	Create ISO Interface Spec (Tech spec)	Sep 10, 2021	✓
Tariff	File Tariff	Sep 17, 2021	✓
	Accepted	Nov 30, 2021	✓
Market Sim Scenarios	Post proposed scenarios (Unstructured)	Feb 8, 2022	✓
BPMs	Publish Final Business Practice Manuals for mkt sim	Feb 14, 2022	✓
External Training	Deliver External Training	Aug 18, 2022	✓
Market Sim	Market Sim Window	Aug 22, 2022 – Oct 28, 2022	
		Start Sep 28, 2022	
Production Activation	Hybrid Resources Phase 2-B	Dec 1, 2022	

# Fall 2022 – Flexible Ramping Product Improvements Deliverability

Project Information	Details/Date
<b>High Level Project Scope</b>	<p>The scope of the project FRP Deliverability is:</p> <ol style="list-style-type: none"> <li>1. Procurement of FRP for BAA's that fails the flex test is separate for each BAA.</li> <li>2. Procurement of FRP for BAA's that pass the flex test for the entire group of BAA.</li> <li>3. Transmission constraints and transfer limits are enforced in FRP deployment scenarios</li> <li>4. Distributing the uncertainty requirement in each BAA load and VER locations versus just load</li> <li>5. Distributing the demand curve surplus variable as a decision variable at load aggregation points (LAP) versus Balancing Authority Areas (BAA)</li> <li>6. To establish the Locational Marginal Capacity Prices (LMCP) for FRP</li> </ol> <p>The scope of the FRP Requirements Enhancements is:</p> <ol style="list-style-type: none"> <li>1. To enhance the current approach by adopting a quantile regression method to adjust the current flexible ramping product up and down requirement.</li> <li>2. Calculation of the demand curve.</li> </ol>
<b>BPM Changes</b>	Market Instruments, Market Operations
<b>Tariff Change</b>	Yes
<b>Impacted Systems</b>	RTM, Settlements, CMRI/OASIS
System	High Level Changes
<b>Real Time Markets (RTM)</b>	<ul style="list-style-type: none"> <li>• RTM to be impacted based on the change in the FRP procurement systems.</li> <li>• Input data needed for forecasted advisory in the binding interval for RTPD for approx. 40 work days or weekends.</li> <li>• New demand curve calculation is needed.</li> </ul>
<b>Settlements</b>	<ul style="list-style-type: none"> <li>• Prices are nodal therefore mechanics for cost allocation pricing to be changed</li> <li>• Nodal FRP prices</li> </ul>
<b>CAISO Market Results Interface (CMRI)/ Open Access Same time Information (OASIS)</b>	<ul style="list-style-type: none"> <li>• Publish Resource Nodal prices for the FRP awards (CMRI)</li> <li>• Publish requirements for FRP per BAA and BAA group (OASIS)</li> <li>• Publish surplus by LAP (OASIS)</li> <li>• Publish the nodal FRP prices (OASIS)</li> </ul>

# Fall 2022 – Flexible Ramping Product Improvements Deliverability

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sept 30, 2020	✓
External BRS	Flexible Ramp Product: Deliverability	Jan 28, 2021	✓
	Flexible Ramp Product: Requirements Enhancements	Mar 11, 2022	✓
	BRS 1.1	Aug 1, 2022	✓
	BRS 1.2	Aug 22, 2022	✓
Tariff	File Tariff	Aug 15, 2022	✓
BPMs	Publish Draft BPM updates	Sept 08, 2022	
Config Guides	Post Draft Config Guides	Jun 30, 2022	✓
Tech Spec	Publish Technical Specification - OASIS	July 15, 2022	✓
	Publish Technical Specification – CMRI	N/A	
External Training	Deliver External Training	September 7, 2022	✓
	Deliver External Training - Metering	September 26, 2022	
Market Sim	Market Sim Window	Aug 22, 2022 – Oct 28, 2022	
		Start Sep 26, 2022	
Production Activation	FRP Deliverability	Dec 1, 2022	

# Fall 2022 – Reliability Demand Response Resource Phase 2

Project Information	Details
<b>High Level Project Scope</b>	<p>The purpose of this initiative is to better reflect Reliability Demand Response Resources' (RDRR) operational capabilities in the market via select enhancements to real-time bidding for discrete RDRRs.</p> <ul style="list-style-type: none"> <li>• Infeasible Discrete RDRR RT Dispatch via Pmin Re-Rate</li> <li>• Discrete RDRR Cap Increase</li> </ul>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>• Demand Response: Document process of submission and approval of discrete RDRR 100 MW exception.</li> <li>• Market Instruments: Document MF Changes</li> <li>• Market Operations: Document RTM Changes</li> <li>• Settlements and Billing: Documentation-Only Impact</li> </ul>
<b>Tariff Change</b>	Yes
<b>Impacted Systems</b>	MF, RTM

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	July 20-21, 2022	✓
External BRS	RDRR Phase 2	Jan 21, 2021	✓
Tariff	File Tariff	Aug 4, 2022	✓
BPMs	Publish Draft BPM updates	Aug 26, 2022	✓
Config Guides & Tech Specs	Post Draft Config Guides and Publish Technical Specifications	N/A	
External Training	Deliver External Training	Aug 30, 2022	✓
Market Sim	Market Sim Window	Aug 22, 2022 – Oct 14, 2022 Start Sep 29, 2022	
Production Activation	RDRR Ph2	By Dec 1, 2022	

# Fall 2022 – Central Procurement Entity Implementation

Project Information	Details
<b>High Level Project Scope</b>	<p>The CAISO tariff currently allows LSEs to aggregate responsibilities to procure Local Capacity Area Resources. However, given the unique nature of the CPE as outlined in CPUC D. 20-06-002, relying solely on this existing tariff provision is not sufficient to facilitate implementation of the CPE construct. The CAISO has identified additional needed tariff, software, and business process enhancements. Although the CPUC's CPE order is the impetus for this stakeholder initiative, the CAISO does not propose to limit a CPE to CPUC-jurisdiction LSEs. The CAISO instead proposes to allow all Local Regulatory Authorities (LRAs) to designate a CPE to procure local resources on behalf of its LSEs and that LRAs may designate the same CPE to procure local resources on behalf of the LSEs under the jurisdiction of those multiple LRAs.</p> <p>Scope:</p> <ol style="list-style-type: none"> <li>1. Recognizing a Central Procurement Entity (CPE)</li> <li>2. System and Local Obligation for CPE and LSEs with Load in Multiple Transmission Access Charge (TAC) Areas</li> <li>3. Allocation of System and Flexible Attributes of Local Resource Adequacy (RA) Resources</li> <li>4. Clarification of Capacity Procurement Mechanism (CPM) Process and Cost Allocations in regards to CPE changes</li> </ol>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>- Reliability Requirements</li> <li>- Settlements and Billing</li> </ul>
<b>Tariff Change</b>	Yes
<b>Impacted Systems</b>	MF, CIRA, Settlements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Central Procurement Entity BRS	Apr 8, 2022	✓
Tariff	File Tariff	Apr 8, 2022	✓
BPMs	Publish Draft BPM updates	Aug 26, 2022	✓
Config Guides	Post Draft Config Guides	Jun 30, 2022	✓
Tech Specs	Publish Technical Specifications	N/A	
External Training	Deliver External Training	Sep 14, 2022	✓
Market Sim	Market Sim Window	Sep 19, 2022 – Sep 30, 2022	
Production Activation	MF and CIRA availability for registrations	Oct 13, 2022	
	Full project activation	Jan 1, 2023	

# Independent 2022 Release

# Operations Systems Improvements 2021/2022 Enhancements

Project Information	Description
<b>High Level Business Problem or Need</b>	<ul style="list-style-type: none"> <li>The goal of this project is to deliver timely systems improvements that support efficient day-to-day work and operations. The project aims to improve market robustness, performance, and the technology foundation for system grid reliability by updating functionality and interfaces to reduce workarounds, automating manual processes and addressing functionality enhancements. A list of specific high priority improvements will be the scope for the project. A number of these improvements may have an impact on the way in which customers interact with CAISO systems.</li> </ul>
<b>Affected Systems</b>	<ul style="list-style-type: none"> <li>A preliminary list of enhancements is included on the next slide.</li> </ul> <p>PLEASE NOTE: This list may change as the project progresses and priority are factored. The goal is to provide advanced notification of changes whenever possible</p>
<b>Schedule</b>	<ul style="list-style-type: none"> <li>External BRS                      2022 External BRS v1.0 Published 5/3</li> <li>    UPDATE v1.1 <a href="#">Published 8/12</a></li> <li>MAP Stage Availability        Multiple*</li> <li>Customer Training              Multiple*</li> <li>PROD                                    Multiple*</li> </ul> <p>* The plans for testing and deployment will vary between improvement items as these may be released individually or in groups. More information on specific improvements will be made available as planning and schedules are solidified.</p>

# Operations Systems Improvements Projects

## List of Proposed Improvements\*

\*PLEASE NOTE: This list may change as the project progresses and priorities are factored. The goal is to provide advanced notification of changes whenever possible

2021		
System	Summary Description	
ADS	Add advance filter & additional color scheme for Commitment Instructions in ADS Instructions Table/Grid	Training – October 2022 Unstructured Mkt Sim- October 2022 PROD – October 2022

2022		
System	Summary Description	
ADS	ADS - Ability to update existing configuration	Training – October 2022 Unstructured Mkt Sim- October 2022 PROD – October. 2022
Market	Modify Unit Details UI	Outreach/Release Note – 2023 PROD - 2023

# Operations Systems Improvements Projects

## List of Proposed Improvements\*

\*PLEASE NOTE: This list may change as the project progresses and priorities are factored. The goal is to provide advanced notification of changes whenever possible

2022 (cont.)

System	Summary Description	
RC Portal	View-based alerting: Create a view that filters the library and alerts user for changes to that specific view (when documents become available or changed).	Training Materials/Release Notes – 10/10/22
RC Portal	RAS Submit Reports workflow: Track if a report has been reviewed and communicate within the record.	
RC Portal	Add Title to TOP-003 Library: Add Title so name of document isn't only shown	PROD – 10/17/22

# WEIM Enhancements

Project Information	Details/Date
<b>High Level Business Problem or Need</b>	To collectively address important issues identified by WEIM market participants through Customer Inquiry, Dispute and Information system (CIDI) requests to improve the visibility, functions and features in Energy Imbalance Market (WEIM).
<b>High Level Project Scope</b>	<ul style="list-style-type: none"> <li>• BAAOP: ETSR detail screen will be available to BOTH RTMO and WEIMs. (First drop for testing will only be available to RTMO).</li> <li>• BAAOP: WEIM shared ramping constraint IS NOT editable through UI.</li> </ul>
<b>BPM Changes</b>	WEIM, Market Instruments
<b>Tariff Change</b>	Section 29.4
<b>Impacted Systems</b>	RTM/BAAOP, RTM/Integration

System	High Level Changes
<b>Real-Time Market (RTM)</b>	<p>BAAOP: ETSR detail screen will be available to BOTH RTMO and WEIMs. (First drop for testing will only be available to RTMO).</p> <ul style="list-style-type: none"> <li>• New ETSR detail screens</li> </ul>
<b>Real-Time Market (RTM)</b>	<p>BAAOP: WEIM shared ramping constraint IS NOT editable through UI.</p> <ul style="list-style-type: none"> <li>• Shared ramping capability constraint</li> <li>• UI for WEIM entity input parameters for ramp sharing</li> <li>• Use in the optimization for each resource based on BAA ramp share parameters</li> </ul>

# 2023 CRR System Upgrade

# 2023 – Congestion Revenue Rights (CRR) Upgrade

Project Information	Details/Date
<b>High Level Project Scope</b>	<p>The Congestion Revenue Rights (CRR) system was implemented by CAISO in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation. The current CRR system is at its end of life, does not have the flexibility to accommodate future policy changes and requires the ISO to calculate data and run processes manually outside the current system to produce a successful CRR Auction.</p> <p>The CAISO has decided on a significant upgrade of the existing CRR system and adopt the latest technology stack aligned with CAISO's technology standards, consolidate all CRR related functions, minimize human errors, reduce processing time, eliminate manual workarounds, and positions the system to accommodate policy changes down the road.</p>
<b>BPM Changes</b>	Yes, details TBD
<b>Tariff Change</b>	No
<b>Impacted Systems</b>	CRR, AIM, CMRI, OASIS, CTS, Market Clearing, EMMS, IFM/RTN, MQS, Master File, MPP, Settlements, WebOMS, ETCC.

# 2023 – Congestion Revenue Rights (CRR) Upgrade

System	High Level Changes
<b>CRR</b>	<p>Significant system upgrade including:</p> <ul style="list-style-type: none"> <li>• Enhancements made to the new CRR application.</li> <li>• Automatic publishing of CRR market results.</li> <li>• Automatic CRR notification.</li> <li>• New CRR schedule calendar.</li> <li>• New CRR FNM access.</li> <li>• New CRR data submission and download interface UI/API.</li> <li>• Other TBDs identified through BRS development.</li> </ul>
<b>AIM</b>	<ul style="list-style-type: none"> <li>• New users and roles to support new CRR functionality</li> </ul>
<b>CMRI</b>	<ul style="list-style-type: none"> <li>• Full and incremental Payload publishing</li> <li>• Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis</li> <li>• Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis</li> </ul>
<b>OASIS</b>	<ul style="list-style-type: none"> <li>• Publish CRR Calendar, and all available CRR market names, and credit margin information, 3 year historical expected value..</li> <li>• Allow authorized users to publish CRR inventory payloads</li> <li>• Broadcast the following: set aside values, the results of all CRR markets, retired pnode/anode mapping, binding constraints, initial and updated CRR source and sink list for each CRR market,</li> </ul>
<b>CTS</b>	<ul style="list-style-type: none"> <li>• Broadcast</li> </ul>
<b>EMMS</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from EMMS</li> </ul>
<b>IFM/RTN</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from IFM/RTN</li> </ul>
<b>MQS</b>	<ul style="list-style-type: none"> <li>• MQS will consume and process SCID in a new format</li> <li>• MQS will consume ownership payload in bulk</li> </ul>
<b>Master File</b>	<ul style="list-style-type: none"> <li>• Master File will be modified as needed to support the new CRR functionality</li> </ul>
<b>MPP</b>	<ul style="list-style-type: none"> <li>• CRR will provide pre-configured external reports</li> </ul>
<b>Settlement</b>	<ul style="list-style-type: none"> <li>• Settlements will be modified as needed to support the new CRR functionality</li> </ul>
<b>WebOMS</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from WebOMS</li> </ul>
<b>ETCC</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from ETCC</li> </ul>

## 2023 – Congestion Revenue Rights (CRR) Upgrade

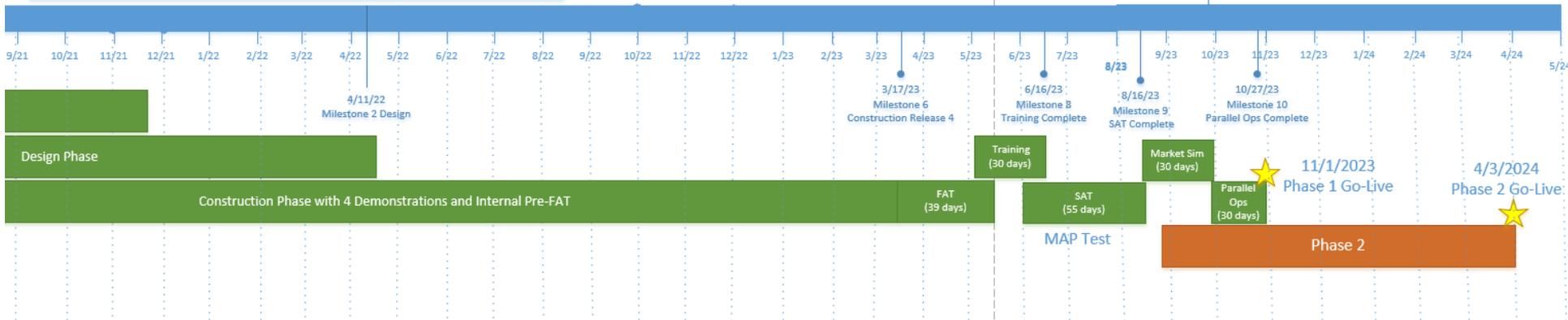
Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Publish External BRS	N/A	
Config Guides	Post Draft Config Guides	N/A	
Tech Spec	Publish Technical Specification	Draft 11/5/21	✓
Tariff	File Tariff	N/A	
BPMs	Publish Draft BPM updates	Mar 1, 2023	
External Training	Deliver External Training	May 8, 2023 – Jun 16, 2023	
Market Sim	Market Sim Window	Aug 17, 2023 - Sep 27, 2023	
Production Activation	CRR Upgrade	Nov 1, 2023	
Effective Date	First Trade Date for Monthly Auction results on new system	Jan 1, 2024	
Phase 2 Production Activation	Phase 2 Go-Live	Apr 3, 2024	

# 2023 CRR System Upgrade – Milestone Schedule

## CRR System Replacement Timeline

Schedule approved by CAISO and RI

Contract amendment in progress



Phase 2 scope is being added to the External BRS.

[Link to Business Requirements Specifications - Congestion Rights Revenue Upgrade \(posted 5/10/2022\)](#)

# 2023 CRR System Upgrade – Get Connected

- CRR External meetings:
  - **Bi-weekly Technical User Group (TUG)** Tue 10 AM, alternates with RUG.
    - Meetings available on the CAISO calendar on [www.caiso.com](http://www.caiso.com)
    - Meeting details and presentation materials are available on the CAISO Developer site at [www.developer.caiso.com](http://www.developer.caiso.com) , which requires an account to be setup for access
  - **CRR Customer Partnership Group**
    - Next CPG meeting is Wed, 8/10 @ 10 AM

# 2024 Settlement Upgrade

# 2024 - Settlement Upgrade - Overview

The current settlement system, implemented in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation, is nearing its end of life. The CAISO is upgrading existing settlement applications to approved architectural and information security standards.

Benefits for our customers include:

- Improved business efficiency
- Better gathering and analysis for data and front-end improvements for customers interacting with CAISO Settlement Systems
- Increased transparency for some calculations
- Accommodating data processing increases resulting from new market products and an increase in market participants
- Ability to perform complex settlement calculations

# 2024 - Settlement Upgrade – Get Connected

- Vendors and Market Participants plan to attend:
  - **Settlement User Group (SUG)** 10 AM on Wednesdays, alternating with RUG. (Next meeting 3/2)
    - Schedule updates, request for enhancements, Configuration change details, examples, calendar format differences etc.
- Settlement technical users plan to attend:
  - **Bi-weekly Technical User Group (TUG)** 10 AM on Tuesdays, alternating with RUG. (Next meeting 3/1)
    - B2B Improvements and New API specifications will be presented and discussed in this meeting
    - meeting details and presentation materials are available on the CAISO Developer site at [www.developer.caiso.com](http://www.developer.caiso.com) , requires an account setup for access

*Note: Meetings are available on the CAISO calendar on [www.caiso.com](http://www.caiso.com)*

# 2024 - Settlement Upgrade – Targeted Goals

- The ISO will work closely with our market participants to ensure seamless transition from e-terra 2.5 to 3.0 configuration output file.
- The ISO will provide a forum for participants to ask more technical questions.
- The ISO will provide an environment with production-like data allowing customers to validate changes.
- The system will provide settlement outputs in various file formats, allowing all customers to access and use the data in day-to-day operations. The ISO will strive to make formulas and inputs transparent to enable market participants to monitor and/or validate settlement results.
- The ISO will provide market participants with an extended market simulation
- The ISO will give timely support to the market participants and their vendors during the testing phase.

## 2024 - Settlement Upgrade – Targeted Goals Cont.

- From a vendor perspective:
  - ISO will provide third party vendors with support during the transition period.
  - ISO will provide an extended market simulation and/or parallel statements and invoices during the transition period so vendors can resolve defects on their systems.
  - ISO will provide open communications to resolve settlement differences through a customer forum.

# 2024 - Settlement Upgrade – We would like to hear from you

- Decomposition of the settlement files
  - Migrating to OpenAPI specifications
  - Upgrading to a new output config file format
  - Any other enhancement requests?
- 
- Next steps
    - Use the CIDI process to submit comments and enhancement requests. Your submittal will be reviewed and added to a master list that will be presented at the Settlement User Group (SUG)
      - The CIDI ticket will be closed once added to the SUG master list.

# Stay Informed

# Ways to participate in releases

- Visit the Release Planning page
  - <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>
- Attend meetings
  - Release Users Group (RUG) bi-weekly meetings
    - Initiative status updates
    - System change updates on independent releases
  - Market Simulation calls
    - Visit the ISO calendar at [www.caiso.com](http://www.caiso.com) for meeting dates and times and add events to your calendar
    - Typically held on Mondays and Thursdays
  - Market Performance and Planning Forum
    - Bi-monthly review of market performance issues
    - High level discussion of release planning, implementation and new market enhancements

# What to look for on the calendar...

## Calendar of Meetings, Training and Events

Month: February Year: 2018 Calendar View List View Print View

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	5 WebbCONF: Market Simulation 2:00pm - 3:00pm	6 Training: Get to Know the ISO - Day 1 9:00am - 4:00pm WebbCONF: Imbalance Conformance Enhancements 10:00am - 12:00pm WebbCONF: Technical User Group 10:00am - 11:00am	7 Deadline: Comments - Interconnection Process Enhancements 2018 - Issue Paper and Meeting Discussion Training: Get to Know the ISO - Day 2 9:00am - 4:00pm Meeting: Flexible Resource Adequacy Criteria Must Offer Obligation Phase 2 - Revised Draft Flexible Capacity Framework 10:00am - 4:00pm WebbCONF: Market Settlement User Group 10:00am - 11:00am	8 Meeting: Audit Committee Teleconference (Executive) 3:30pm - 9:30am Training: Settlements 101 9:00am - 4:00pm Meeting: 2017-2018 Transmission Planning Process 10:00am - 4:00pm WebbCONF: Market Simulation 2:00pm - 3:00pm	9 Training: Settlements 201 9:00am - 4:00pm	10
11 WebbCONF: Participating Transmission Owner Per Unit Cost Guides 10:30am - 12:00pm WebbCONF: Market Simulation 2:00pm - 3:00pm	12 Meeting: Congestion Revenue Rights Auction Efficiency 10:00am - 4:00pm WebbCONF: Release User Group 10:00am - 11:00am Call: Energy Imbalance Market Governing Body Teleconference (Executive) 11:30am - 12:30pm	13 Deadline: Submissions - April 2018 Monthly Resource Adequacy and Supply Plans Call: Congestion Revenue Rights 11:00am - 11:30am WebbCONF: Outage Management System Customer Partnership Group 2:00pm - 3:00pm	14 Deadline: Comments - Review Transmission Access Charge Structure Straw Proposal and Meeting Discussion Call: Board of Governors Teleconference (General) 3:15pm - 9:00am Call: Board of Governors Teleconference (Executive) 9:00am - 10:00am Call: Market Update 10:15am - 11:00am WebbCONF: Market Simulation	15	16	17

Market Sim



Market Sim



Release Users Group (RUG)



# Policy Update

Brad Cooper

Senior Manager, Policy Integration and Governance

# Interconnection Process Enhancements

- **Scope:** Enhancing the CAISO's generator interconnection and deliverability allocation procedures
  - Enhancements to address queue overload
  - Broader process reform considerations focusing on aligning the interconnection process with LSE procurement processes
- **Decisional Classification:** CAISO Board only
- **Status:**
  - Phase 1 – Approved at May 2022 CAISO Board meeting
  - Phase 2 - Oct 2022 CAISO Board meeting

# Washington WEIM Greenhouse Gas Enhancements

- **Scope:** Market enhancements to support Washington WEIM entities with their reporting of WEIM transactions under Washington's Climate Commitment Act.
- **Decisional Classification:** Joint WEIM Governing Body/CAISO Board
- **Status:**
  - Revised straw proposal/draft final proposal posted on Sep 22
  - Oct 2022 CAISO Board and WEIM Governing Body meetings

# WEIM Resource Sufficiency Evaluation Enhancements

## – Phase 2

- **Scope:**
  - Requiring CAISO low-priority exports to be e-tagged as firm provisional
  - Adjusting RSE obligations to account for low-priority exports
  - WEIM emergency energy assistance
  - Load conformance in the RSE
  - Measures of uncertainty (intertie and net load)
- **Decisional Classification:** Joint WEIM Governing Body/CAISO Board, WEIM Governing Body advisory
- **Status:**
  - Revised draft final proposal posted on Sep 7
  - Final proposal to be posted Sep 30
  - Oct 2022 CAISO Board and WEIM Governing Body meeting

# Capacity Procurement Mechanism – Track 1

- **Scope:** Addresses various Capacity Procurement Mechanism operational and process enhancements
- **Decisional Classification:** CAISO Board only
- **Status:**
  - Draft final proposal posted on Sep 16
  - Dec 2022 CAISO Board meeting

# Energy Storage Enhancements

- **Scope:** Market enhancements to efficiently dispatch storage resources in alignment with operational needs.
  - New features for local areas, ancillary services enhancements
  - Enhancements to the co-located resource model
- **Decisional Classification:** Joint WEIM Governing Body/CAISO Board
- **Status:**
  - Draft final proposal posted Aug 22
  - Workshop held on Sep 12
  - Final proposal planned to be posted in Oct
  - Dec 2022 CAISO Board and WEIM Governing Body meetings

# Storage Modeling Enhancements

- **Scope:** Continue to pursue enhancements to the CAISO market's energy storage models
  - Potentially incorporating costs based on state of charge into the CAISO's "Energy Storage Resource (ESR)" market model
  - Potentially potential enhancements to the CAISO's "Non-Generation Resource (NGR)" model
- **Decisional Classification:** Joint WEIM Governing Body/CAISO Board
- **Status:**
  - Workshops in Q1 2023 to initiate the initiative
  - 2023 CAISO Board and WEIM Governing Body meeting

# Ancillary Service State of Charge Constraint

- **Scope:**
  - Follow-up to CAISO's September 19 tariff amendment regarding the ancillary service storage state of charge requirement and related uplift payments
  - Initiative will consider potential additional revisions
- **Decisional Classification: TBD**
- **Status:**
  - Straw proposal to be posted in October

# Day-Ahead Market Enhancements

- Scope:
  - Co-optimizing supply based on both cleared demand and imbalance reserve product needs
  - Residual unit commitment process improvements
- Decisional Classification: partially WEIM GB advisory, partially Joint WEIM Governing Body/CAISO Board
- Status:
  - Held workshops in September
  - Fourth revised straw proposal to be posted Oct 6
  - Dec 2022 CAISO Board and WEIM Governing Body meeting briefing

# Resource Adequacy Enhancements – Phase 2

- **Scope:**
  - Day-ahead market enhancements alignment
    - Addressing in that initiative
  - Enhance must offer obligations for storage and conditionally available resources
    - Bid insertion modifications
  - Other changes to accommodate CPUC changes
- **Decisional Classification – limited items potentially WEIM Governing Body advisory**
- **Status:**
  - Straw proposal posted in Oct 2021
  - Remaining schedule TBD

## Extended Day-Ahead Market

- **Scope:** Extending day-ahead market to WEIM entities. Scope includes:
  - Supply commitment and resource sufficiency
  - Transmission commitment and congestion rent allocation
  - Greenhouse gas accounting and costs
- **Decisional Classification:**
  - Proposed that the EDAM initiative fall under CAISO Board/WEIM Governing Body joint authority
- **Status:**
  - Revised straw proposal posted August 19
  - Workshops in August through October
  - Draft final proposal to be posted on Oct 26
  - Dec 2022 CAISO Board and WEIM Governing Body meeting briefing

# Transmission Services and Market Scheduling Priorities

- **Scope:**
  - Process for wheeling transactions through the CAISO BAA to obtain high-priority scheduling rights
  - Enhancements to processes for exporting from non-resource adequacy resources
- **Decisional Classification: WEIM Governing advisory**
- **Status:**
  - FERC approved extension of current framework on March 18
  - Revised straw proposal to be posted in early Nov
  - Dec 2022 CAISO Board and WEIM Governing Body meeting briefing

# Price Formation Enhancements

- **Scope:**
  - Scarcity pricing enhancements that better reflect tight supply
  - Consideration of fast-start pricing in the CAISO markets
  - Enhancements to how the real-time market uses advisory prices
  - Bid cost recovery changes focused on storage resource interaction with the real-time market's multi-interval optimization
  - Improvements to local market power mitigation to more accurately assess transmission constraints between BAAs
  - Other price formation issues important to stakeholders
- **Decisional Classification: WEIM Governing Body advisory**
- **Status:**
  - Posted issue paper in June and held workshop in July
  - Additional workshops planned for Oct 21 and Dec 2
  - Mid 2023 joint CAISO Board and WEIM Governing Body and

# Market Parameter Changes Enhancements

- **Scope:**
  - Minimum shift factor used in the CAISO market
  - Procedure for change penalty prices used in the CAISO market
- **Decisional Classification: Joint WEIM Governing Body/CAISO Board**
- **Status:**
  - Straw proposal posted in April
  - Remaining schedule TBD

## Upcoming meetings

The next MPPF is scheduled for December 8, 2022.

MPPF related materials are available on the ISO website [here](#).

### **Agenda topic suggestions:**

- Submit through CIDI
  - Select the *Market Performance and Planning Forum* category
- Send email to [isostakeholderaffairs@caiso.com](mailto:isostakeholderaffairs@caiso.com).