



# Summer Market Performance Report – July 2021

Market Analysis and Forecasting  
California ISO

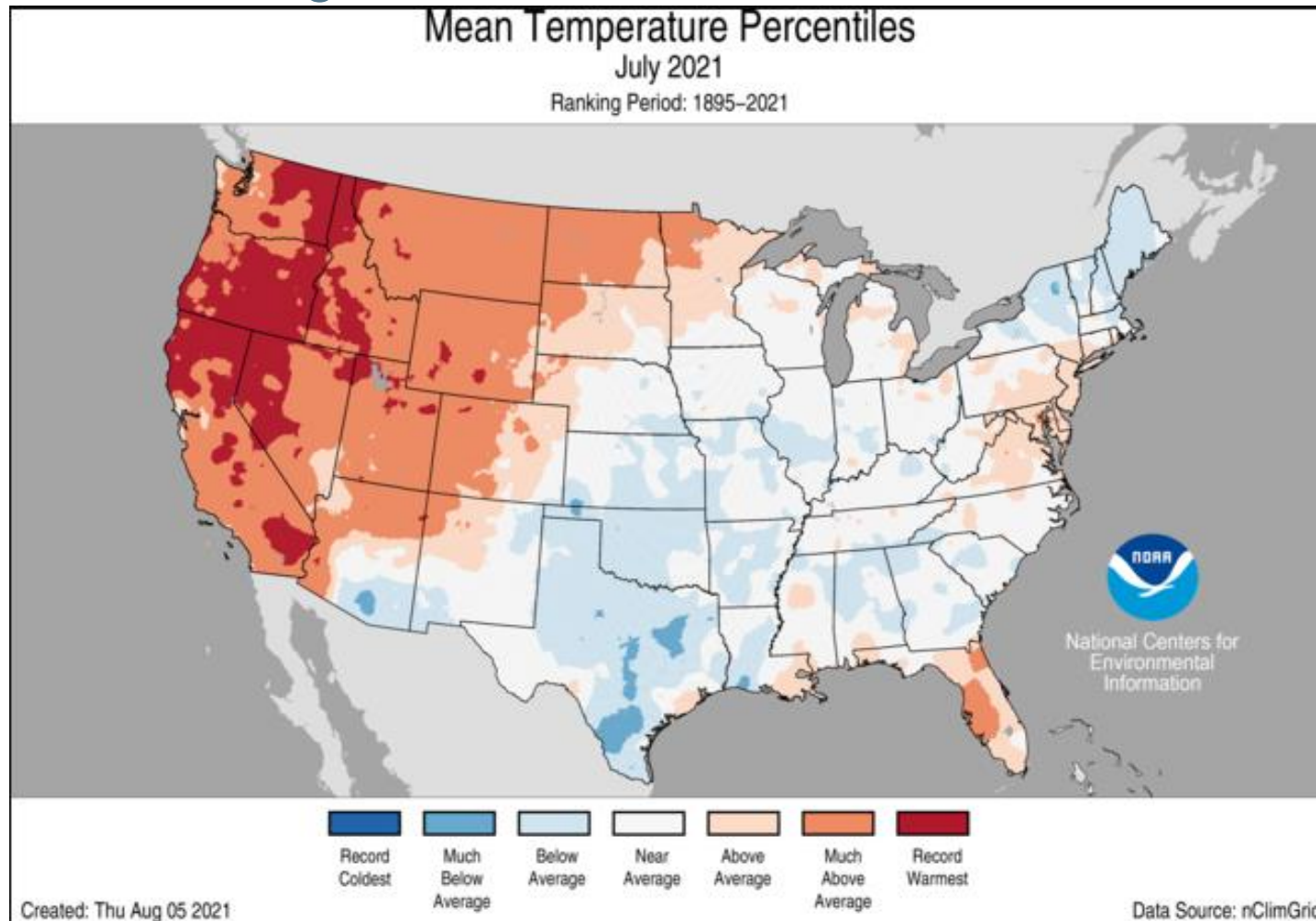
September 7, 2021

# The majority of Summer enhancements have been implemented by July

Summer enhancement	Date Implemented	Trigger	Dates
1. EIM resource capacity sufficiency test	15-Jun	Permanent feature	All the time
2. Import market incentives during tight system conditions	15-Jun	Warning or Emergency	July 9 and 10, 5-9pm
3. Intertie schedules information on OASIS	26-Jul	Permanent feature	All the time
4. Enhanced real-time pricing signals during tight supply conditions	15-Jun	Warning or Emergency	July 9, 5-9pm
5. Management of storage resources during tight system conditions	30-Jun	RUC undersupply	July 9, 28 and 29
6. Reliability demand response dispatch and real-time price impacts	4-Aug	Activation of RDRR	Not active in July
Load, export and wheeling priorities*	4-Aug	Permanent feature	Not active in July
Interconnection process enhancements	25-May	Permanent feature	Not used yet
CAISO's public communication protocols	29-May	System Event driven	July 9, 10, 12 and 28
Today's Outlook displays	Aug 18	Permanent feature	Not active in July

\* The wheeling through priorities the CAISO placed into effect are interim only and will sunset after May 31, 2022.

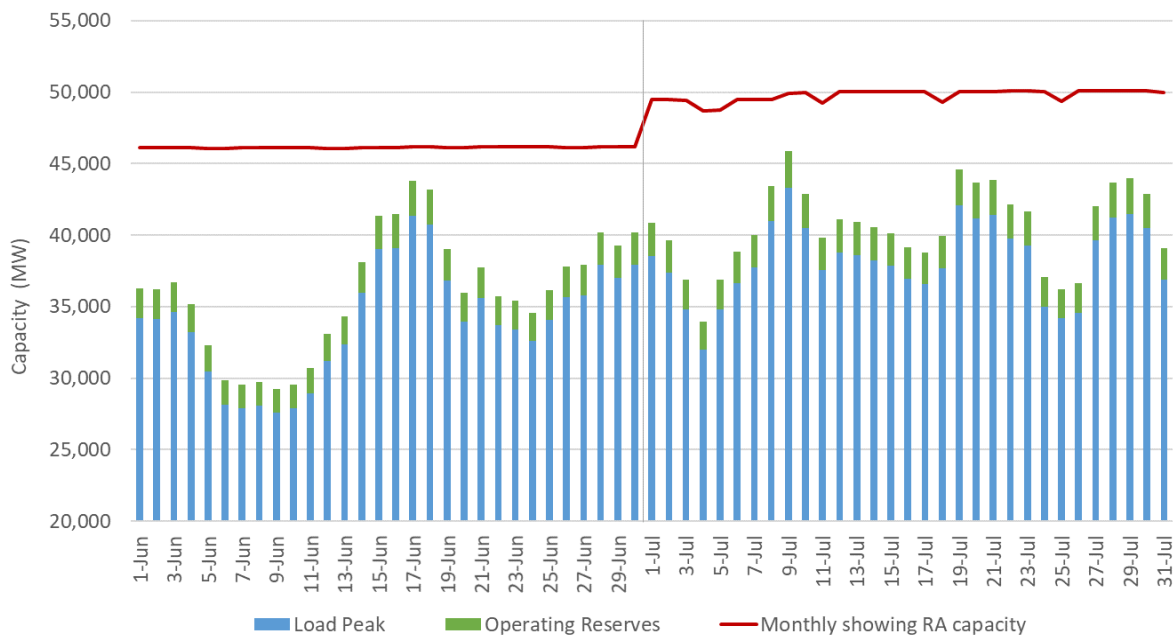
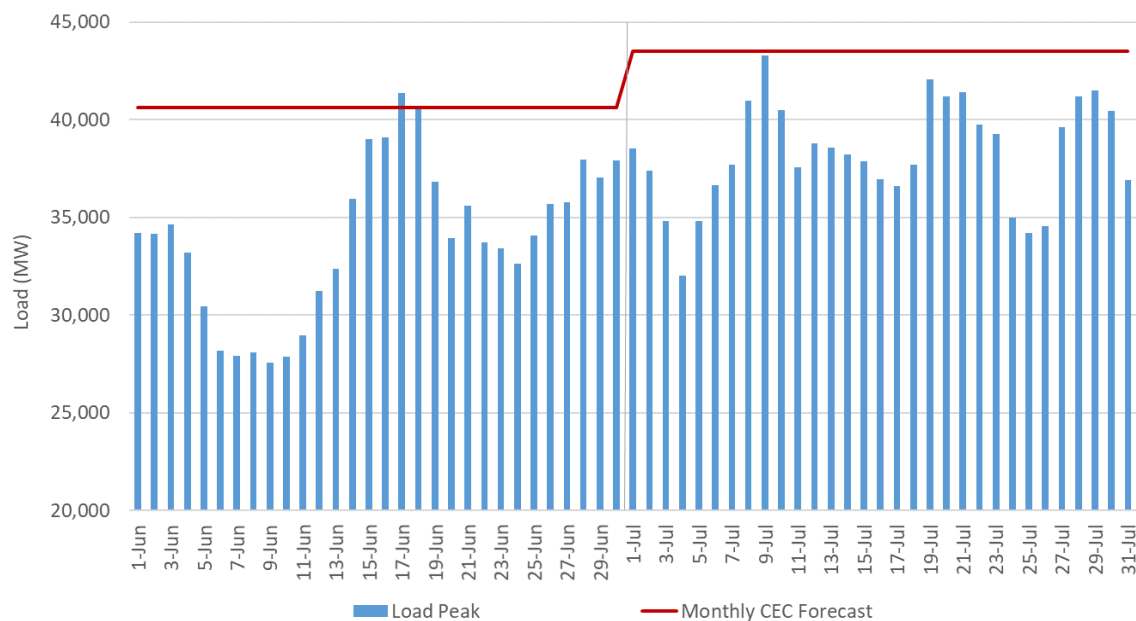
# Above average and record warmest temperature were observed throughout the Western United States



Source: <https://www.ncdc.noaa.gov/temp-and-precip/us-maps/>

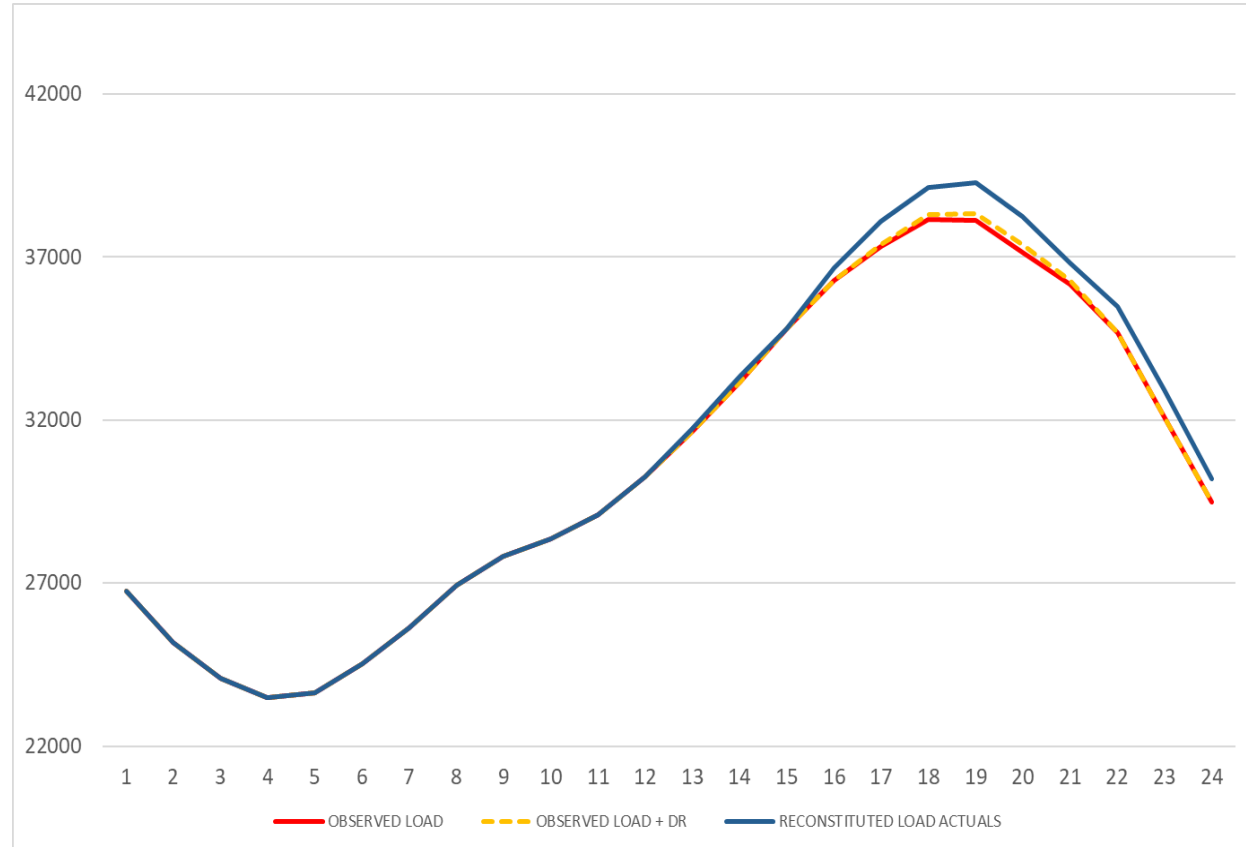
July 9 observed the load peak so far at about 43,285MW

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

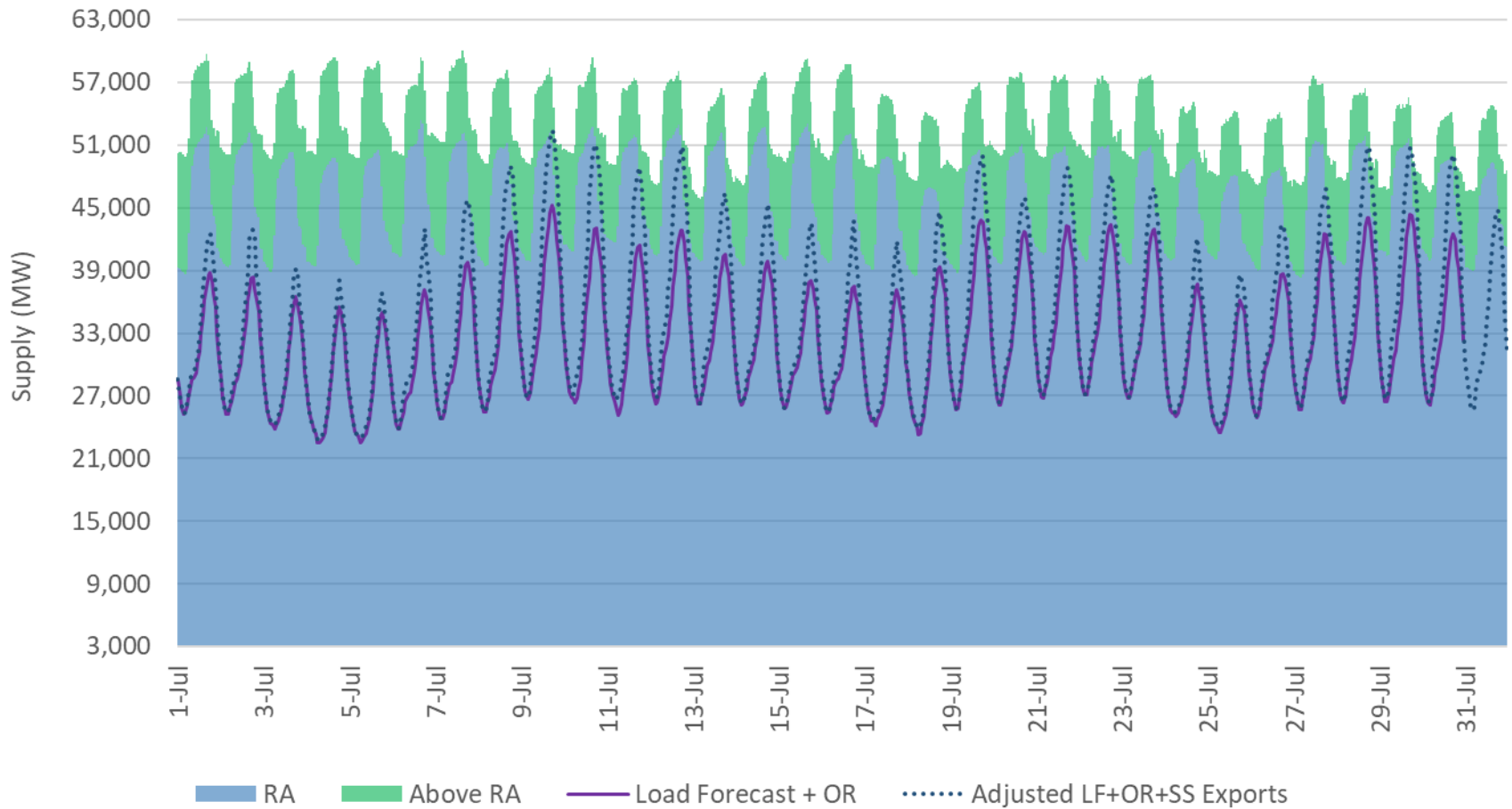


# Energy conservation contributed up to 940MW on July 12

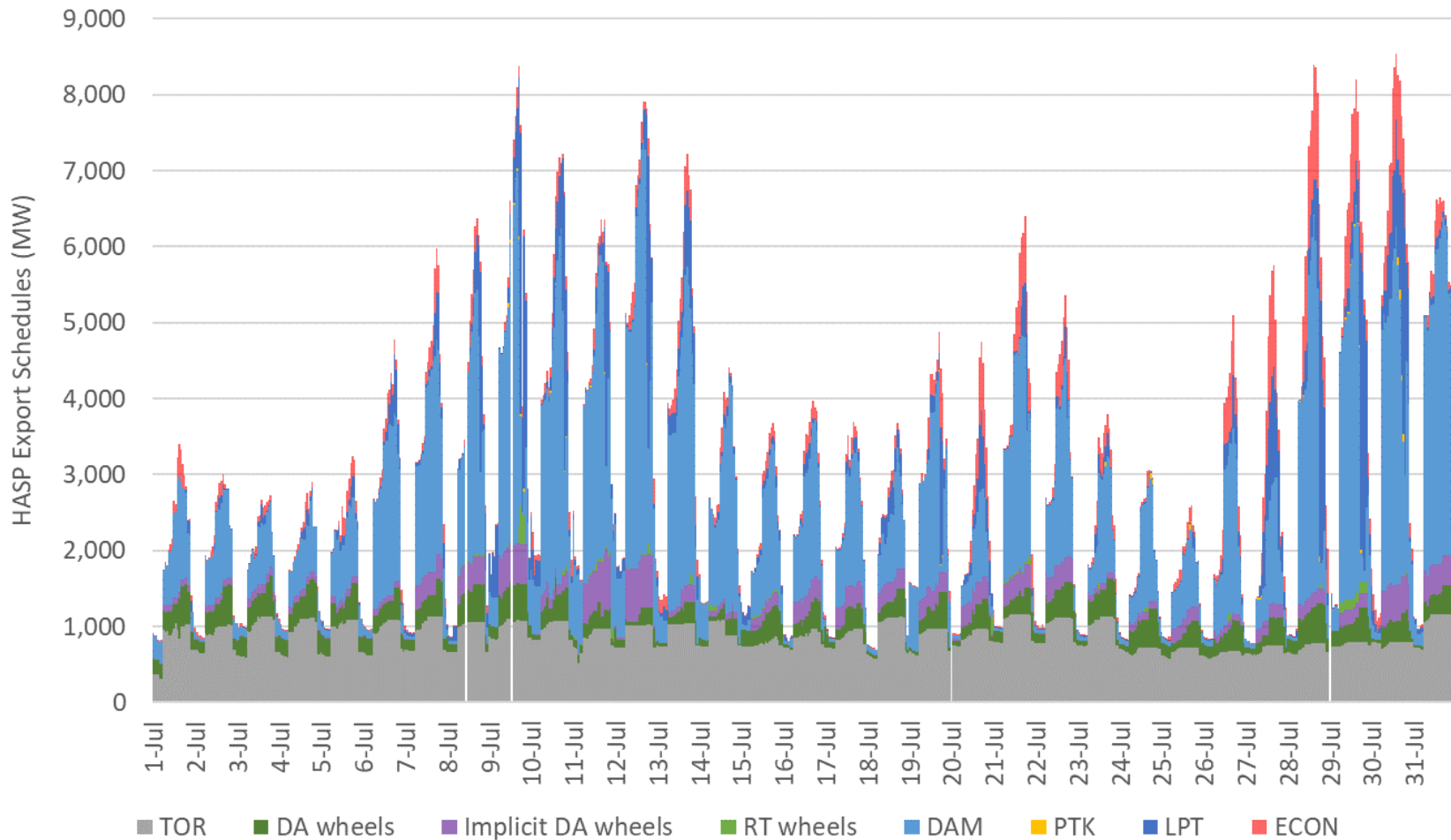
Date	Conservation
July 9 <sup>th</sup> , 2021	None Observed
July 10 <sup>th</sup> , 2021	18-190 MWs
July 12 <sup>th</sup> , 2021	380-940 MWs
July 28 <sup>th</sup> , 2021	0-100 MWs



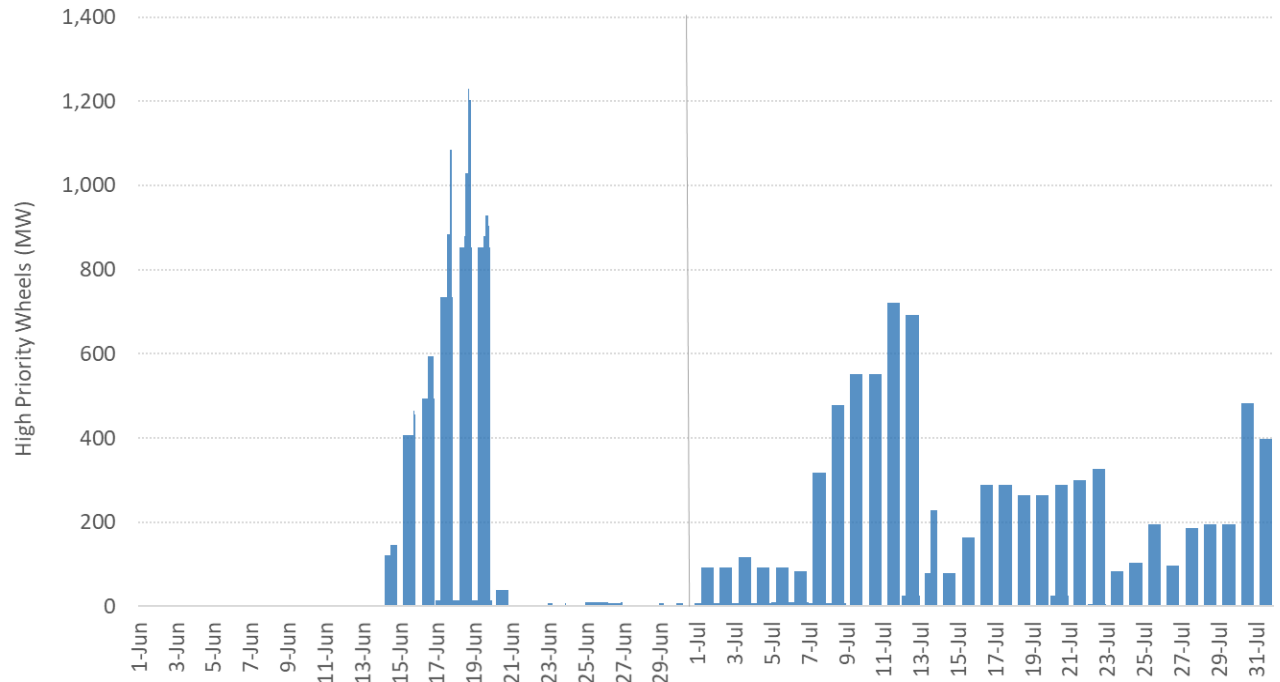
# RA capacity was generally sufficient to meet load needs



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



# Wheels through came in more consistently in July than in June, flowing mainly from Northwest to Southwest

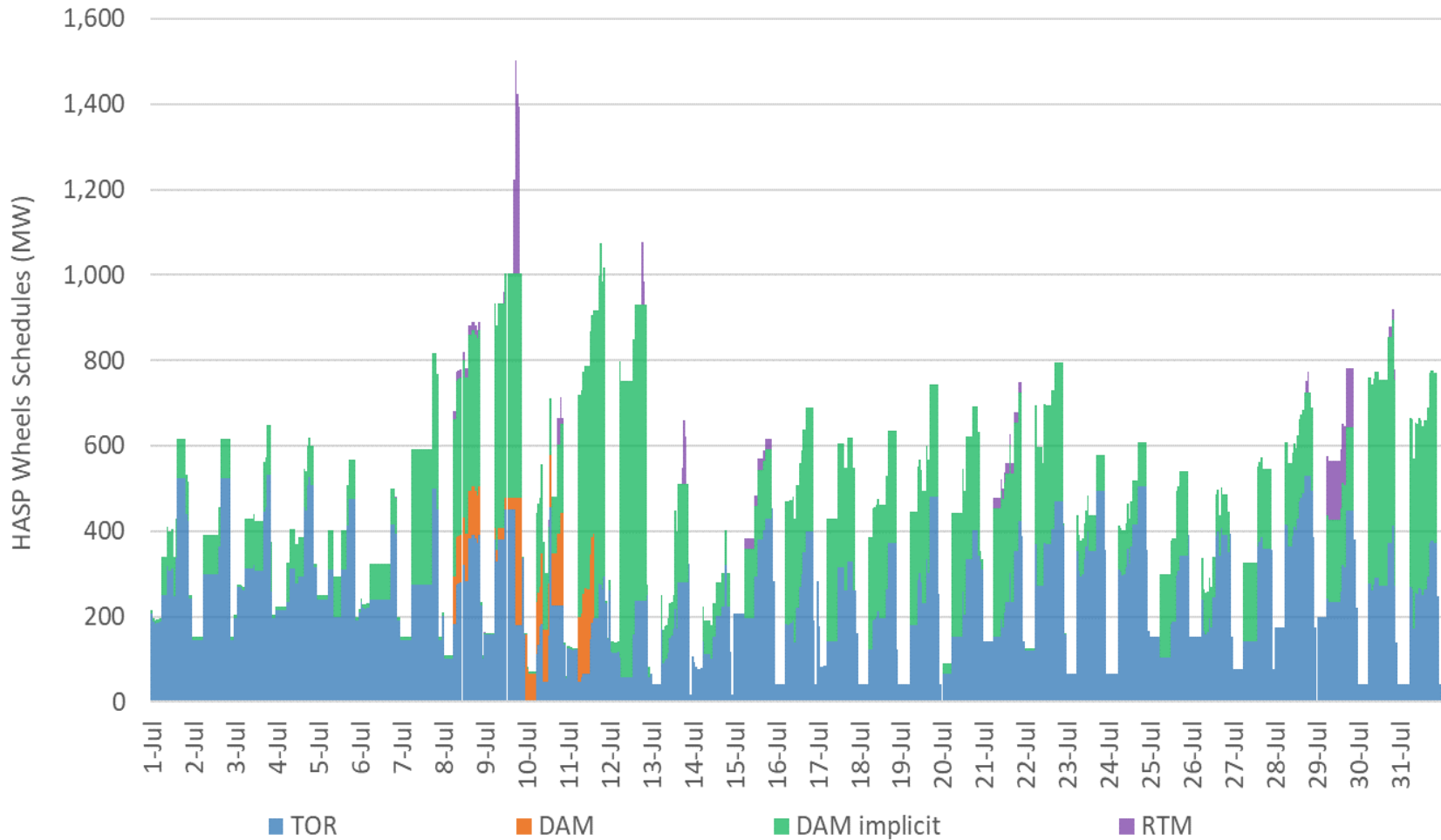


	Sink							
Source	MCCULLOUG500	PVWEST	ELDORADO230	MEAD230	WESTWING500	MDWP	MALIN500	NOB
CRAG	79	79						
MALIN500		186	96	13	15			
NOB	75	321		55	15	25		
PVWEST							288	288
SYLMAR	122	38						
TRCYCOTP	8	117						

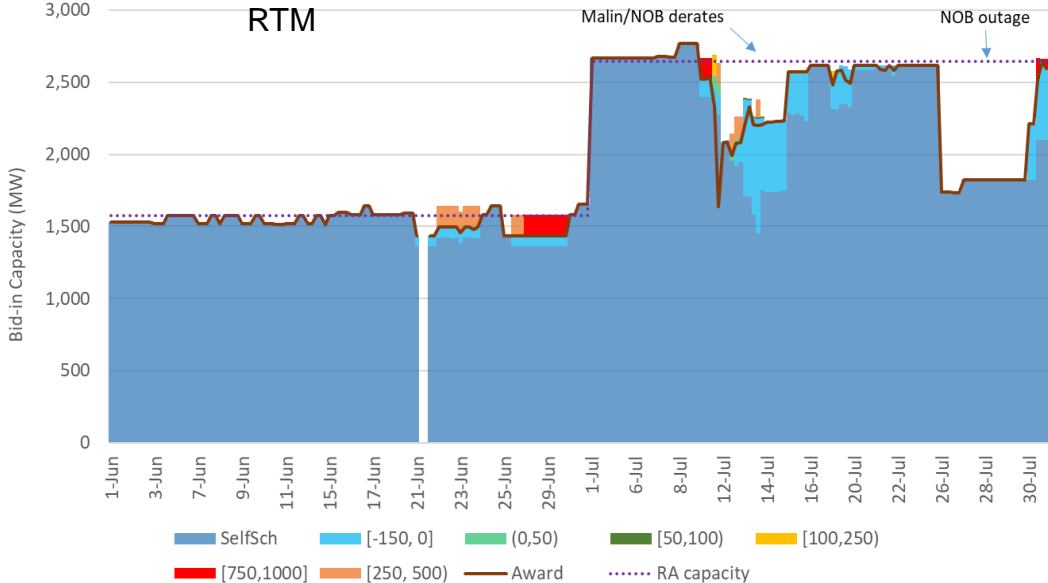
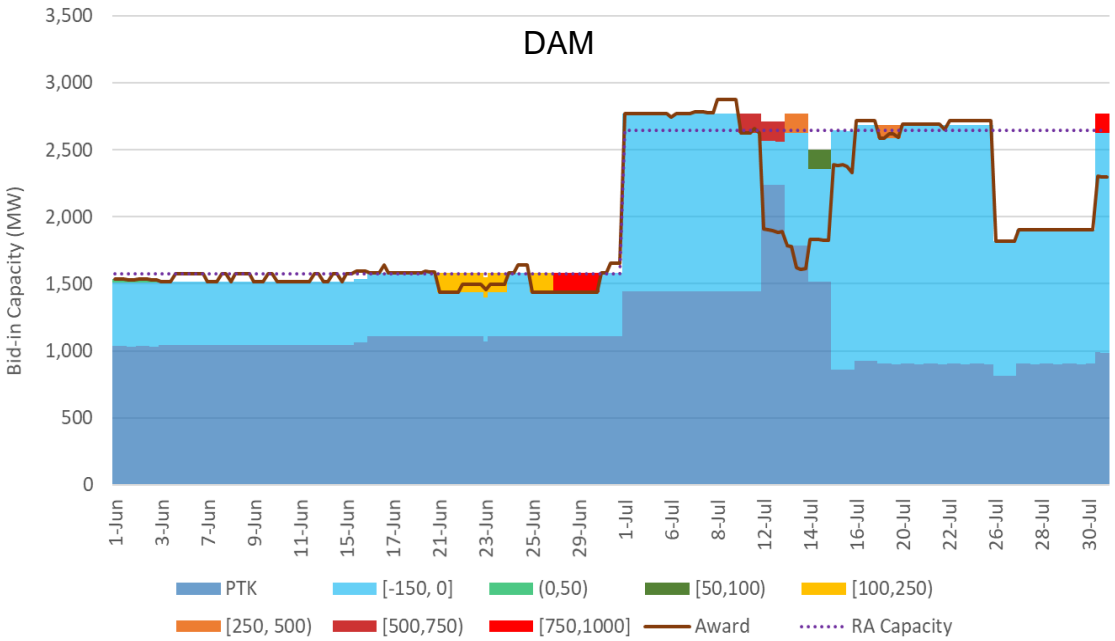
All self schedules wheels were cleared in the market



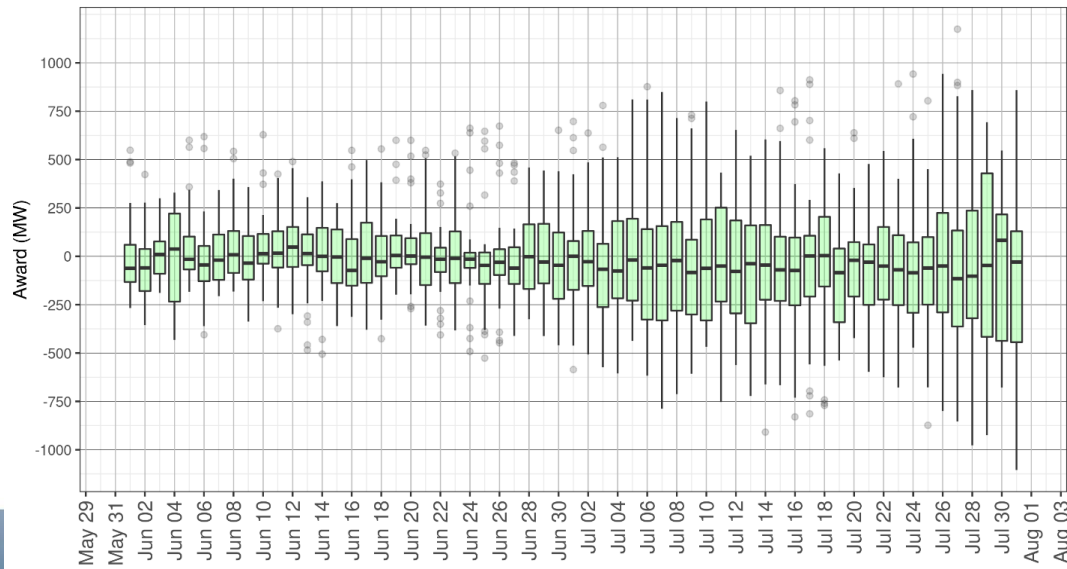
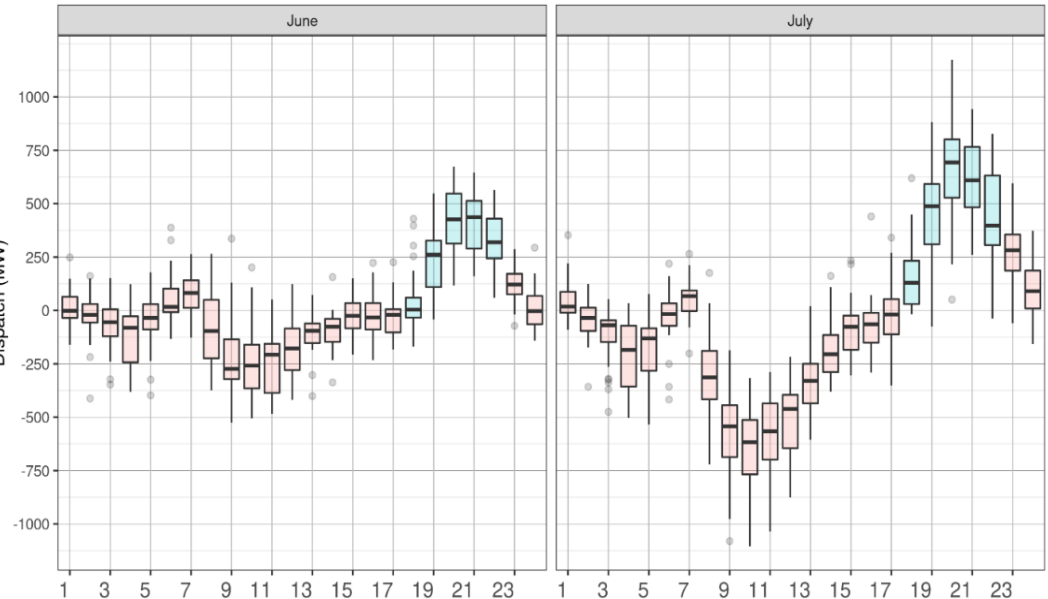
# About 500MW of additional wheels were self scheduled in the real-time market on July 9



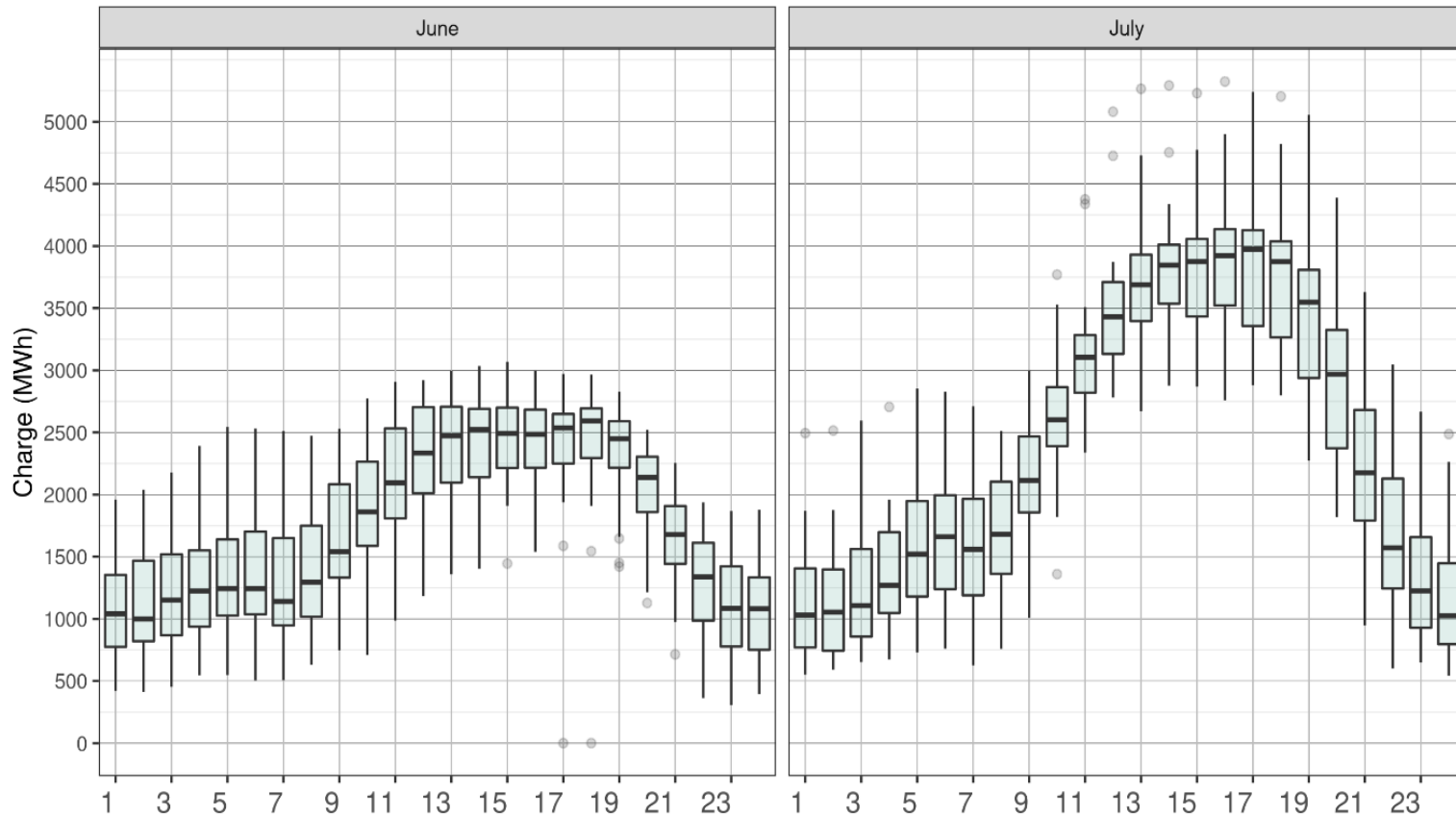
# Over 98 percent of RA imports bid in at or below \$0/MWh in July



# Storage resources are increasingly providing supply in critical hours



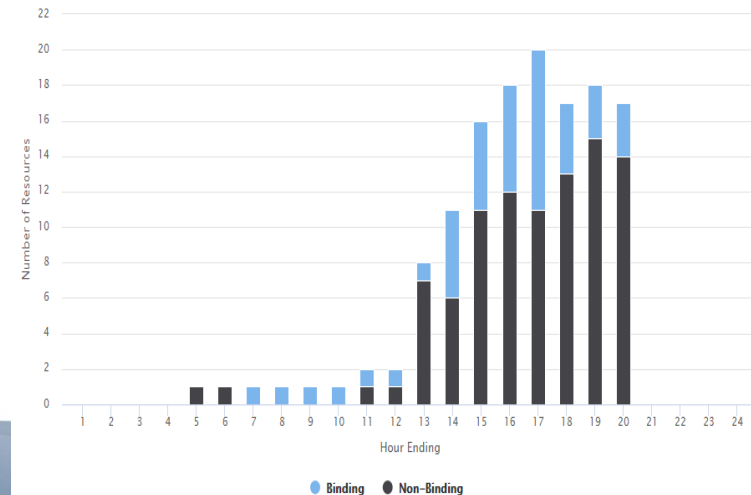
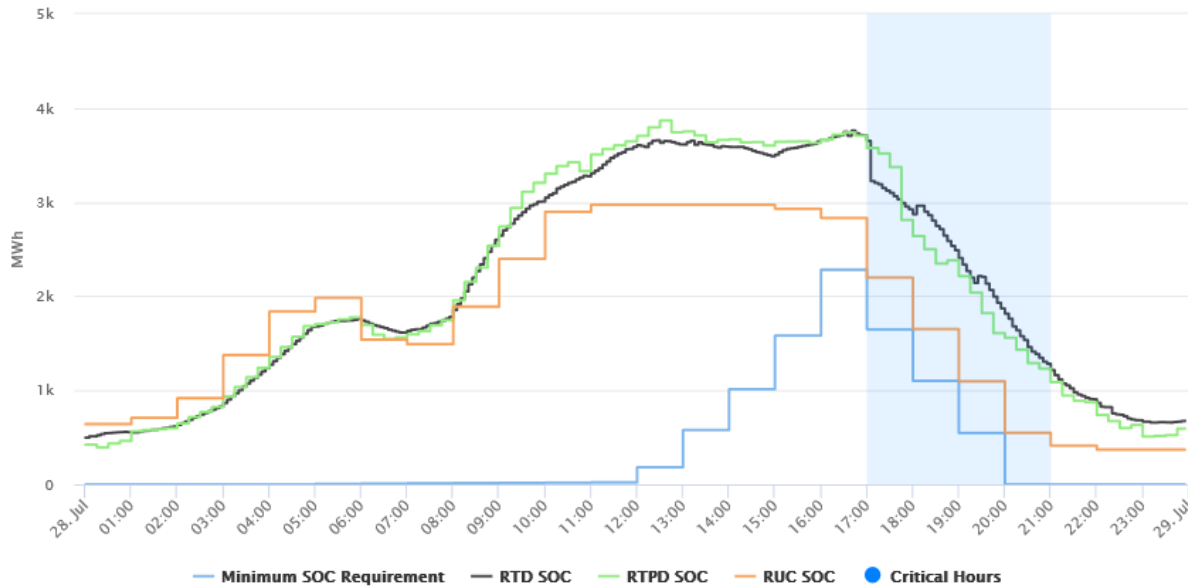
# Energy storage exceeded 5,500MWh in July, up from 3,000MWh in June



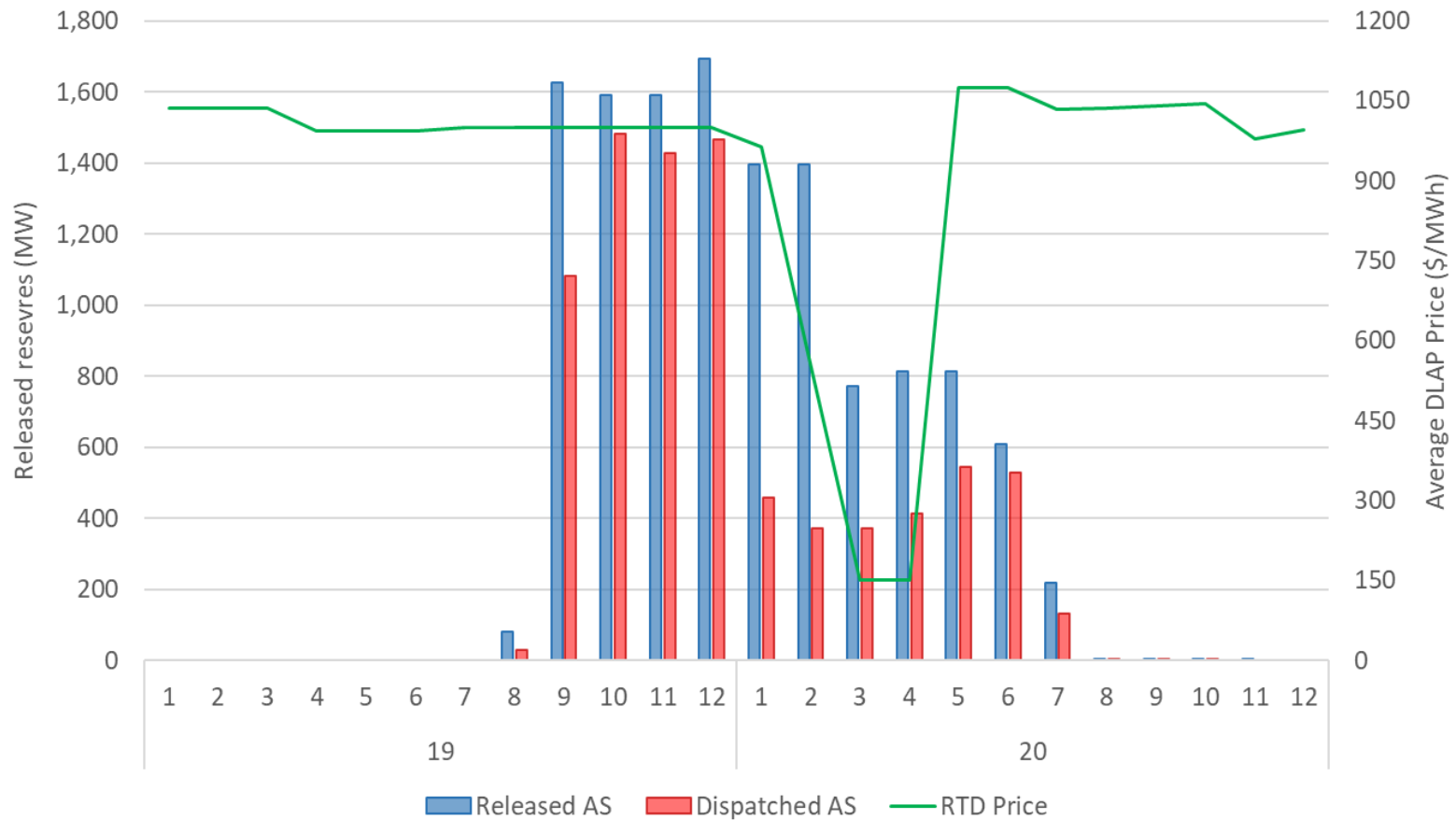
# Summer enhancement of the capacity test increased the number of CAISO's failures from 4 to 6, and from 84 to 245 for the EIM footprint



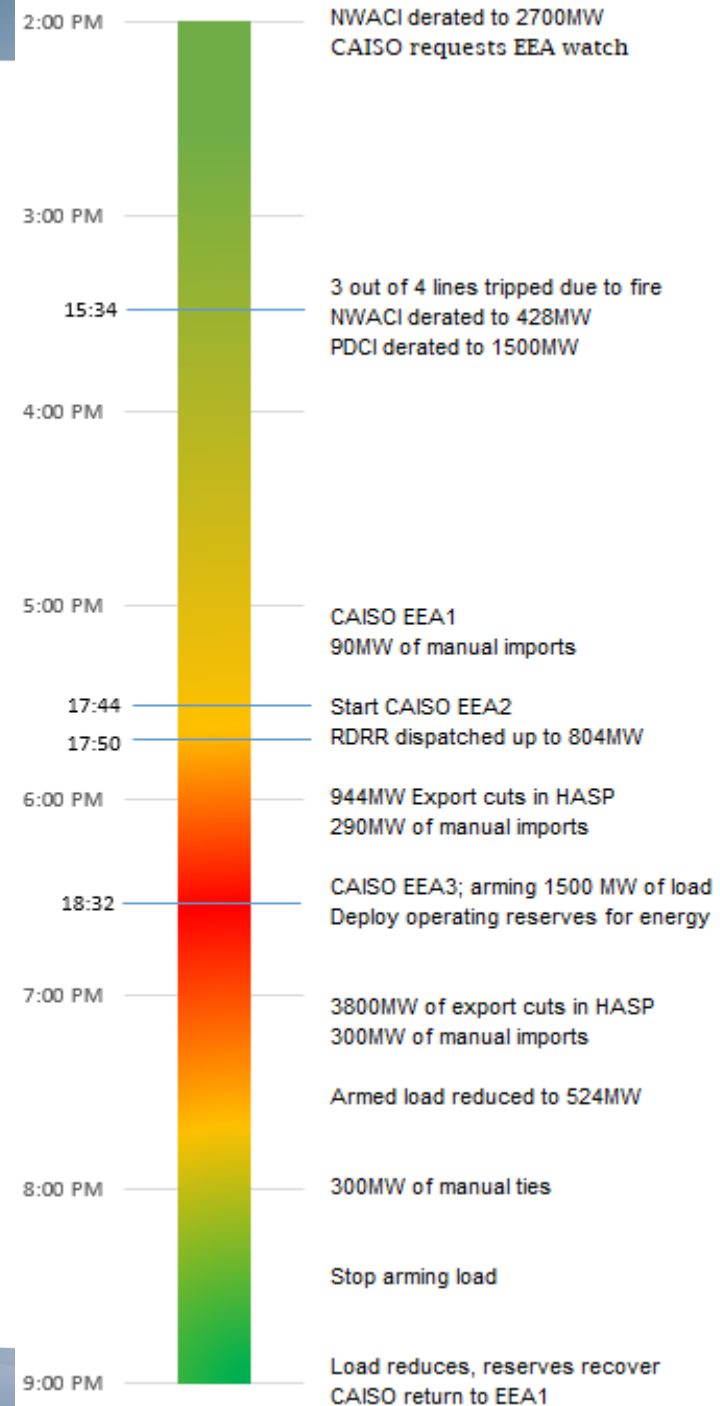
# The summer enhancement to preserve a minimum state of charge triggered on July 9, 28 and 29



# Scarcity pricing was triggered on July 9 and enabled contingency capacity to be released and dispatched at the bid cap

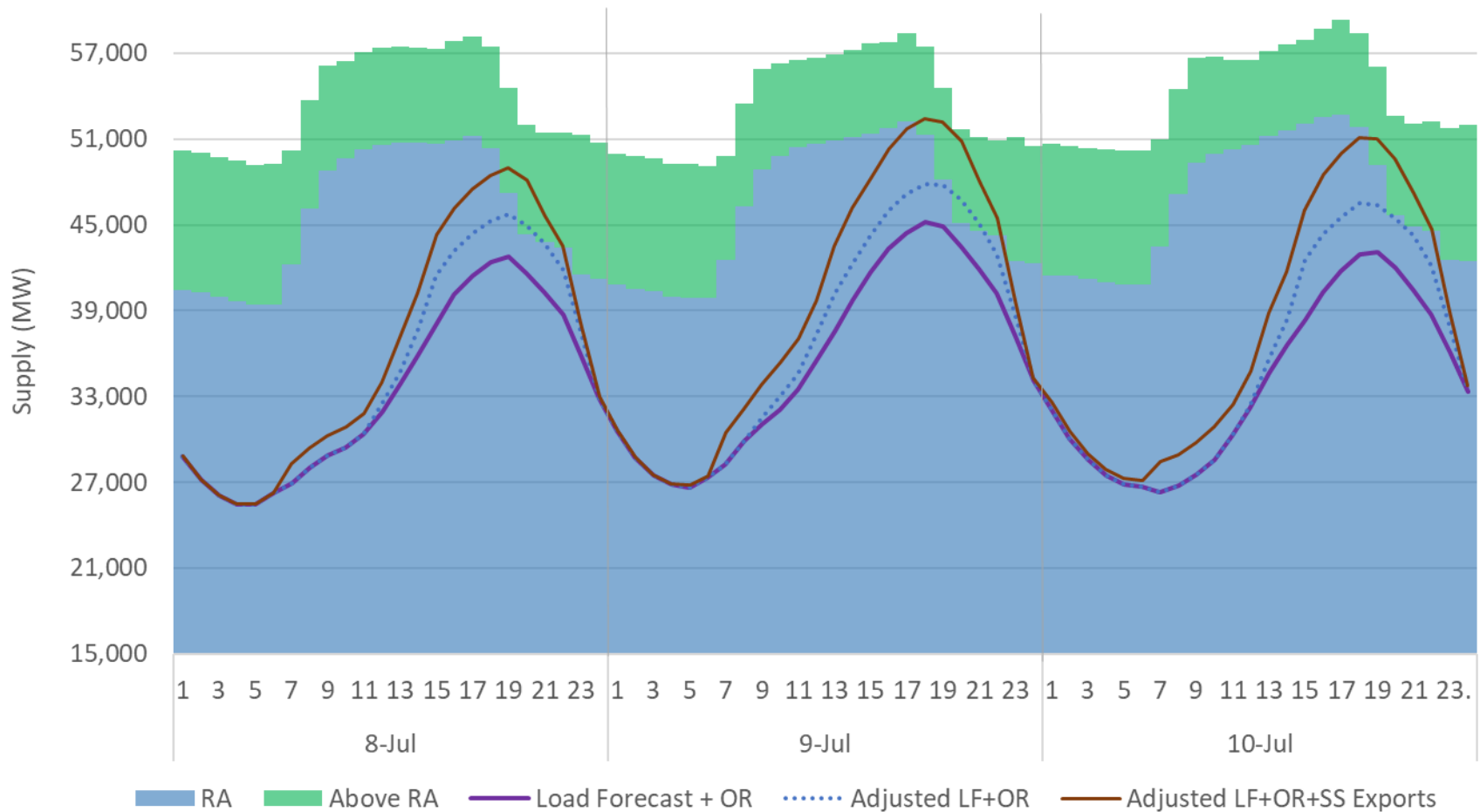


# Sequence of Events on July 9

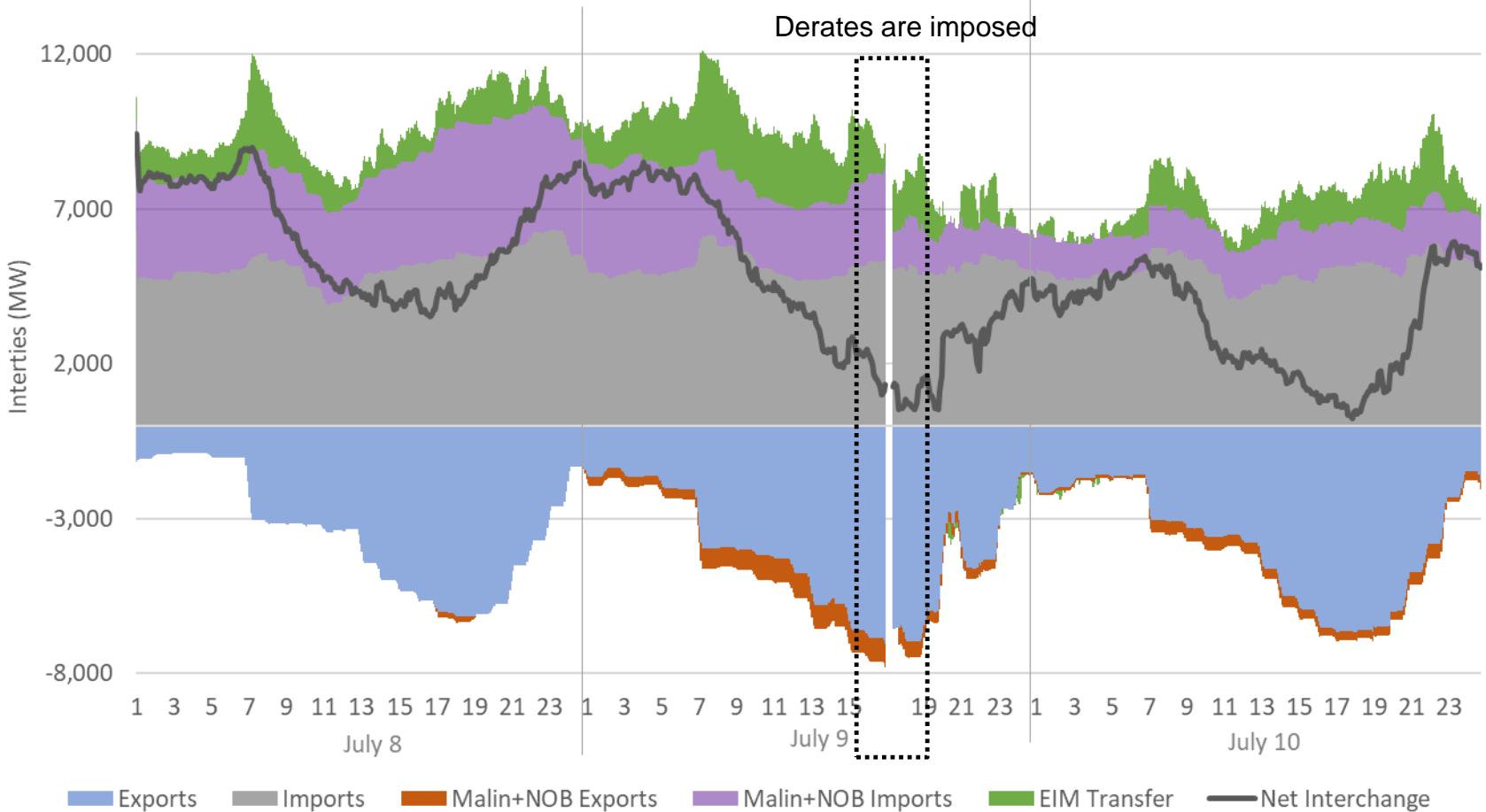




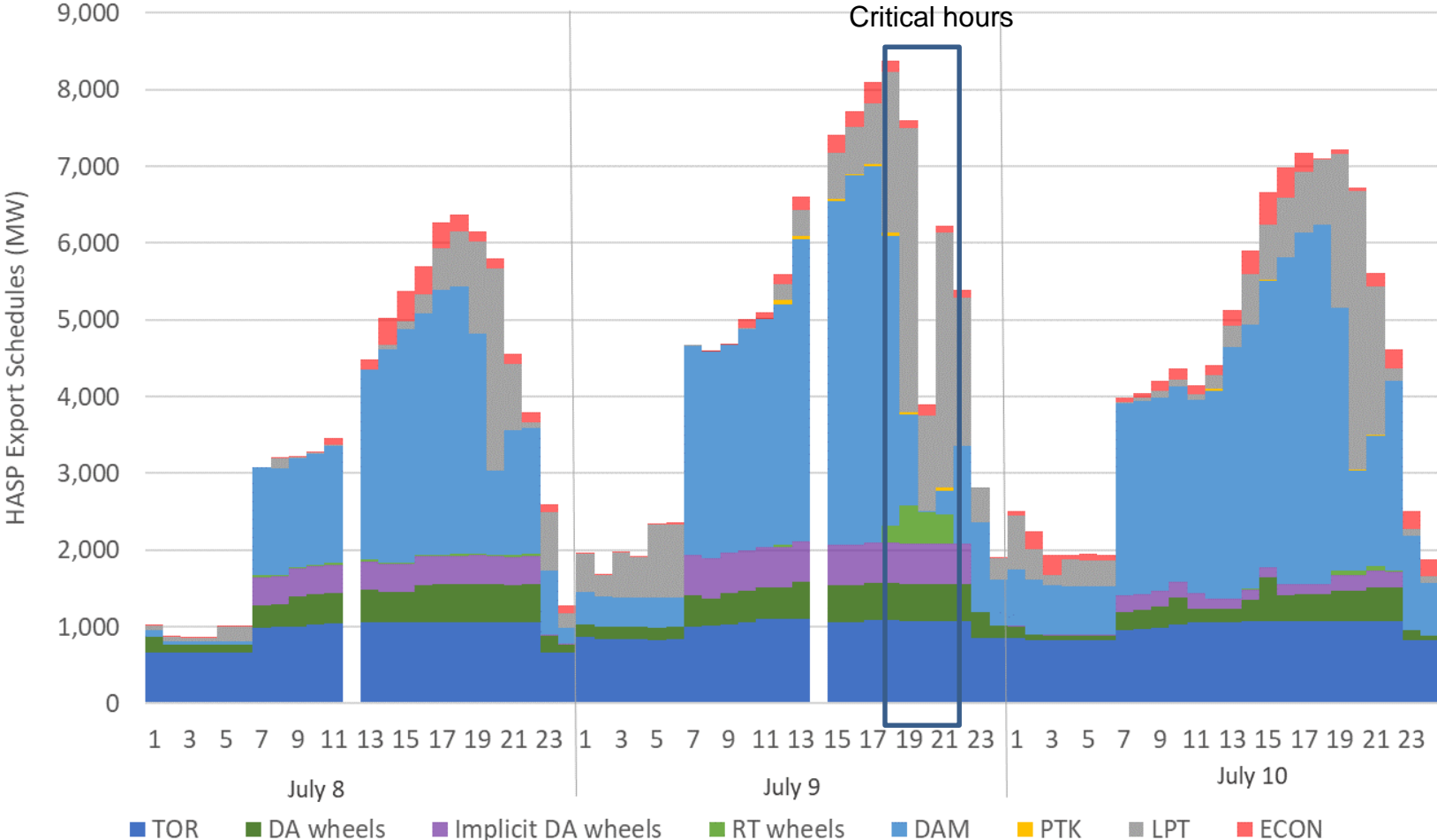
# Supply capacity was tight towards meeting CAISO's load, exports and uncertainty on July 9



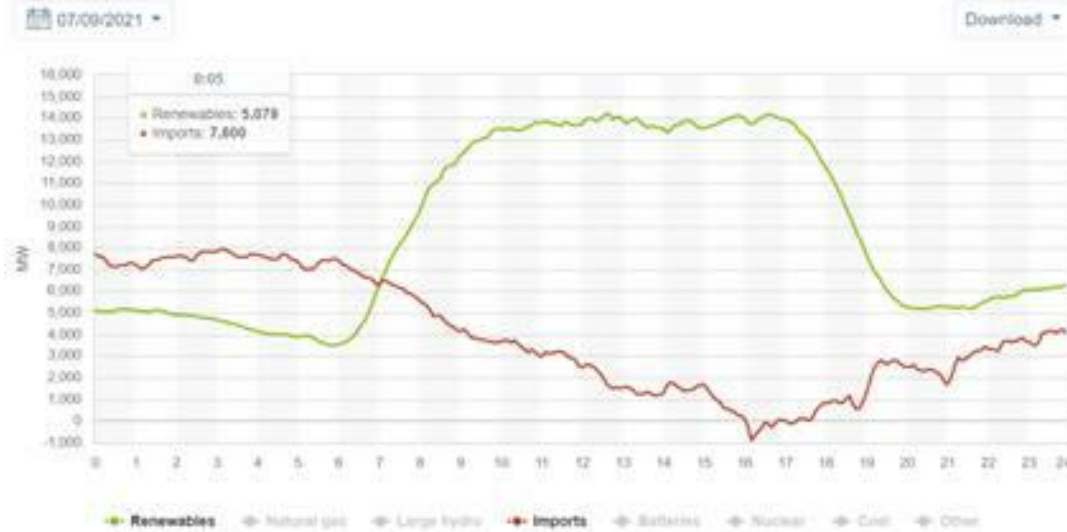
# Derates on Malin and NOB on July 9 prior to the peak led to loss of at least 1,500 MW imports



# 1. Over 80% of exports in this three –day window were highly protected (day ahead priority, TORs or wheels)



# Combined factors enabling exports



2. Exports tend to occur when solar output is abundant; largest volume occurring prior to gross peak

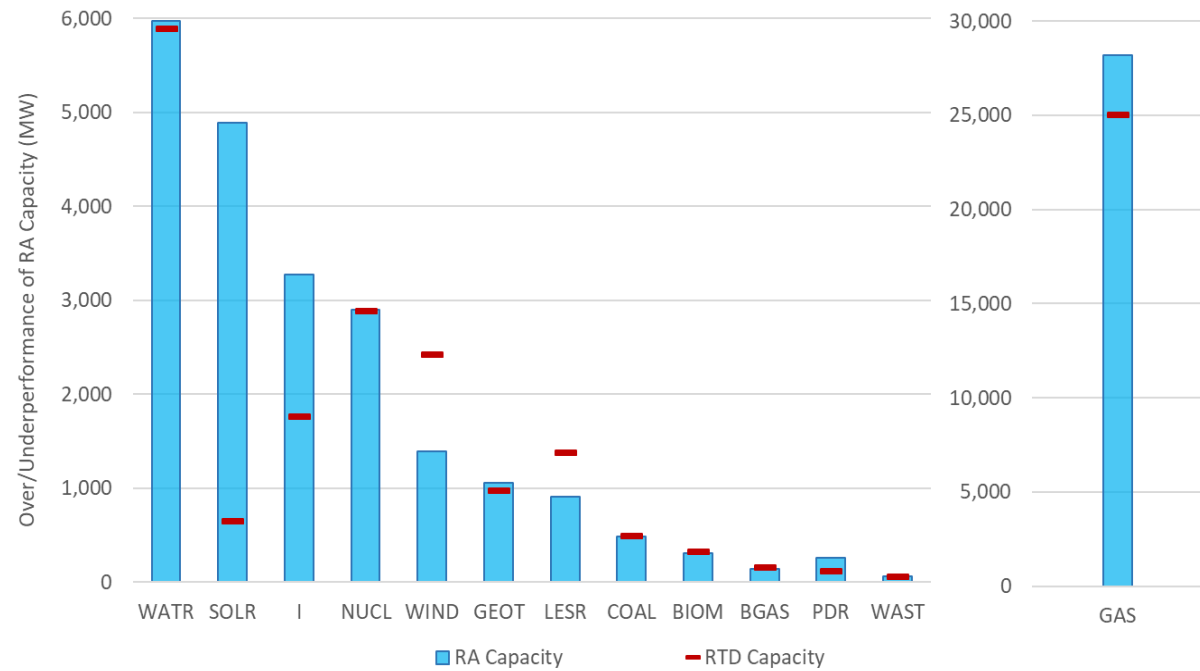
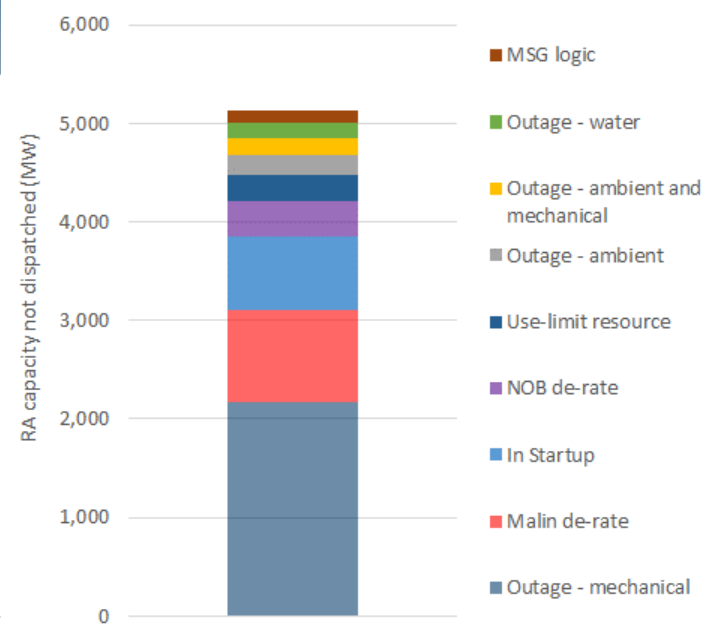
3. With high temperatures in the West, demand for scarce MW increases

4. Derates on Malin and NOB interties reduced supply available and created an imbalance between original imports and exports

5. Export cuts for HE 19, 20, and 21 came out of the market solution considering available supply, load conformance, and available EIM transfers

Ultimately the ISO and neighbors went to EEA3 but no load shed for CAISO or other BAA

# Performance of RA resources varied by technology and was impacted by unavailability

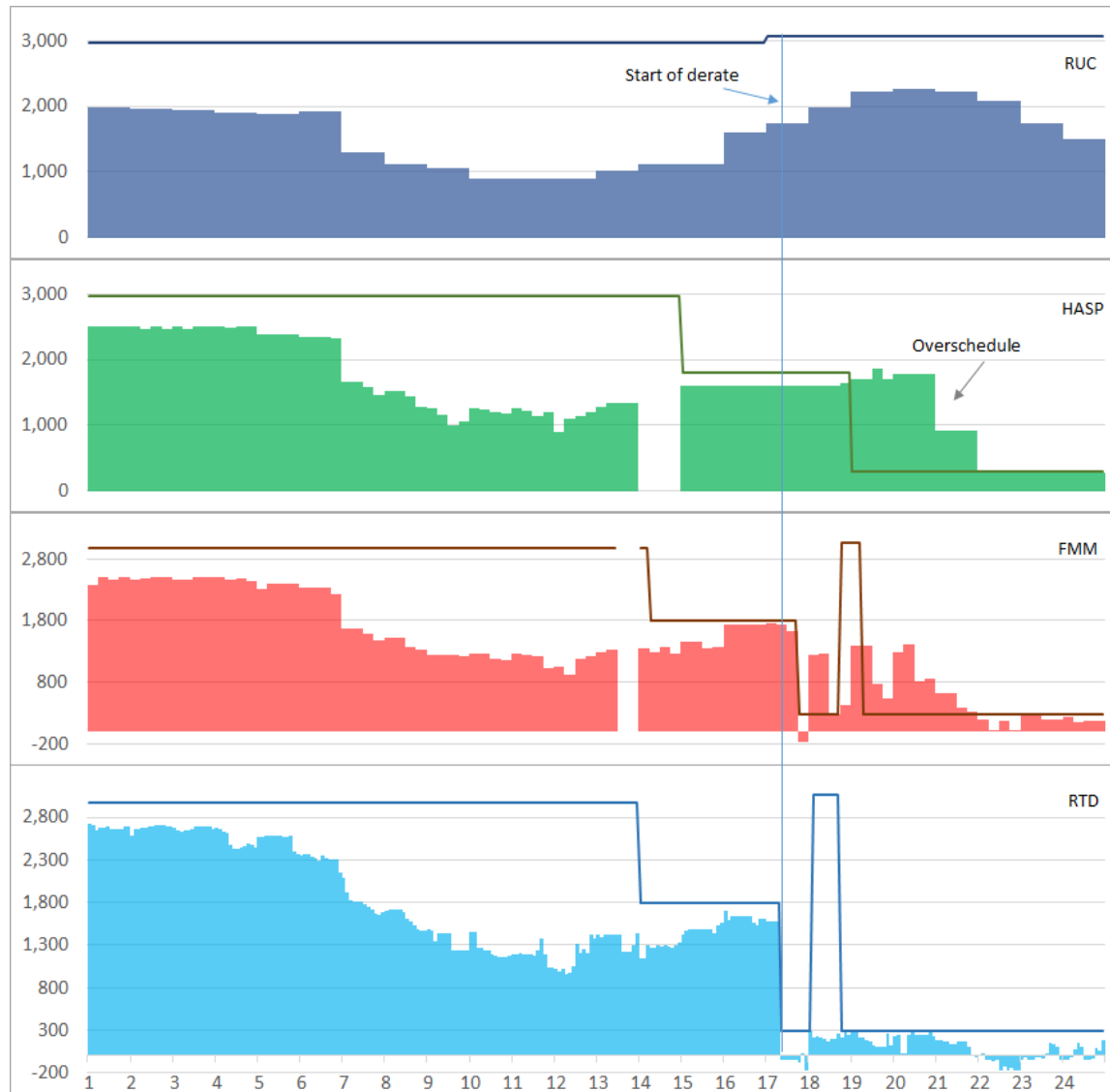


# Issues identified in July

1. Overscheduling on the Malin and NOB interties  
Action: Initiate process to pursue a Tariff change
2. Reversion of derates on the Malin and NOB interties  
Action: Completed review of procedure/practice
3. Loop flow effect on CRR settlements on the Malin constraint  
Action: software fix and retroactive rerun of settlements
4. Storage resource capacity not accounted for in the RUC process  
Action: Ongoing assessment
5. Export cuts not performing per HASP schedule  
Action: Review of tagging rules/practices
6. Miscalculation of flexible ramp capacity in resource sufficiency test  
Action: Software fix
7. Missed calculation of import uplifts  
Action: Manual clean up and review of current process

# Overscheduling or Intertie constraints in HASP markets

- Right after Malin derate, market overscheduled imports, which required operators to actively cut imports in real-time, exacerbating the tightness of supply
- Overscheduling of interties poses a reliability concern



# Overscheduling is the result of using specific penalty prices prescribed in the CAISO's tariff

- The heavy derates on Malin, high volumes of self schedules on the intertie and tight supply created the conditions for this issue to materialize
- Penalty prices for ITC constraints are defined in the Tariff at \$1,250/MWh in RUC and \$1,500/MWh in Real-time
- Market optimization found cheaper to relax the ITC limit than reducing import self schedules and relax further power balance constraint
- CAISO will initiate a process to pursue a Tariff change



# Thank you!

- The presentation and report are available on the Miscellaneous Stakeholder Meetings webpage at <http://www.caiso.com/informed/Pages/MeetingsEvents/MiscellaneousStakeholderMeetings/Default.aspx>.
- Please contact Kristina Osborne at [kosborne@caiso.com](mailto:kosborne@caiso.com) if you have any questions following today's call.

The logo for 'Energy Matters' features the word 'ENERGY' in orange and 'matters' in white lowercase letters on a teal background. To the right, three modern light bulbs are shown hanging from black cords against a light blue background.

## ENERGY matters

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

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

<http://www.caiso.com/about/Pages/Blog/default.aspx>

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