



2022 Record Heat Analysis Electric Power in the West Conference

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ISO – Public Use

California ISO:

Within its balancing authority area, the California ISO:

- Maintains reliability on the grid
- Manages the flow of energy
- Oversees the transmission planning process
- Operates the wholesale electric market

For much of the western U.S., the ISO:

- Operates the Western Energy Imbalance Market (EIM)
- Serves as Reliability Coordinator (RC West)



California ISO oversight:

Comply with

NERC

North American Electric
Reliability Corporation

Regulated by

FERC

Federal Energy
Regulatory Commission

The ISO is regulated by the federal government because management of interstate transmission lines falls under federal jurisdiction.

Part of

WECC

Western Electricity
Coordinating Council

Governed by a

FIVE

member board
Governor appointed,
Senate confirmed

California ISO facts:

As a federally regulated nonprofit organization, the ISO manages the high-voltage electric grid California and a portion of Nevada.

52,061 MW record peak demand
(Sept. 6, 2022)

32 million people served

224.8 million MWh of
electricity delivered (2020)

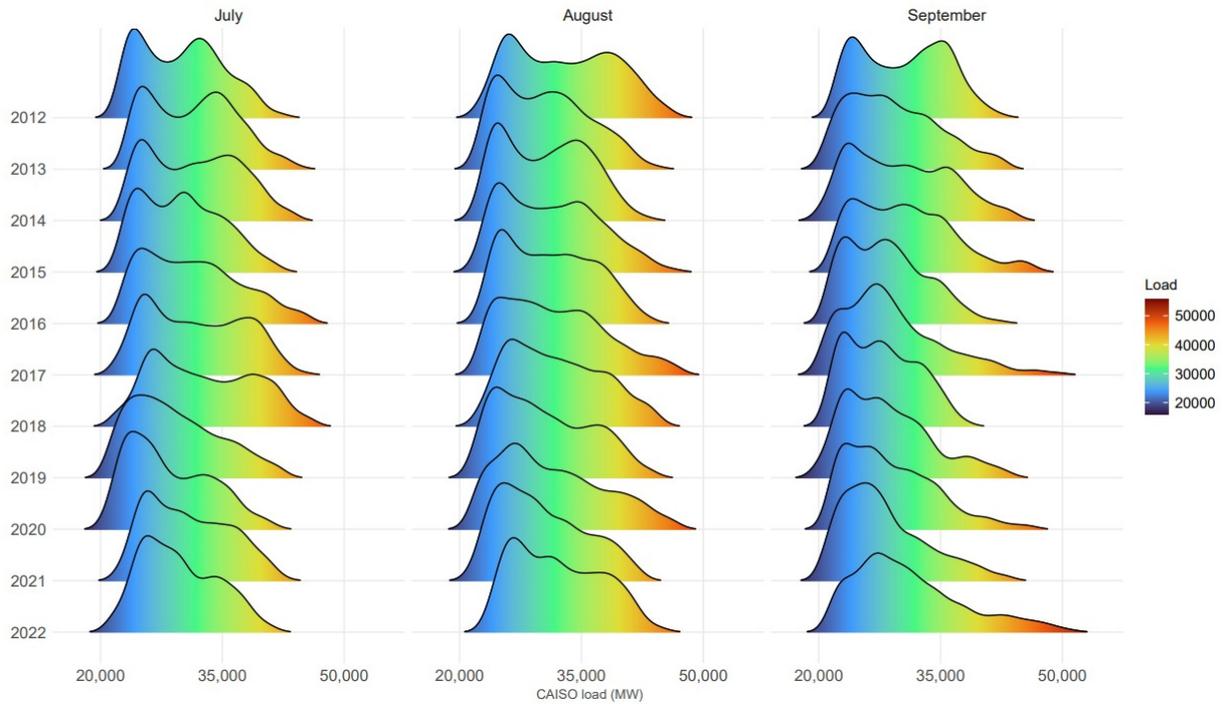
One of **9** ISO/RTOs in
North America

75,747 MW power plant capacity
Source: California Energy Commission

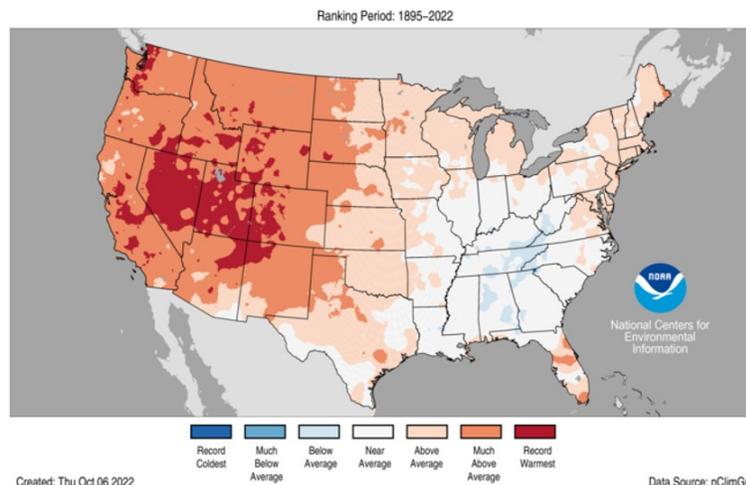
1,119 power plants
Source: California Energy Commission



CAISO's load peak broke a record at 52,061 MW on September 6:



A 10-day shattering heatwave drove record demands:



- Multiple cities in California had broken 100 year-old records for maximum and minimum temperatures.
- Using 28 years of weather data, the ISO weighted 3-day temperature through September 6 was a 1-in-25 year event.

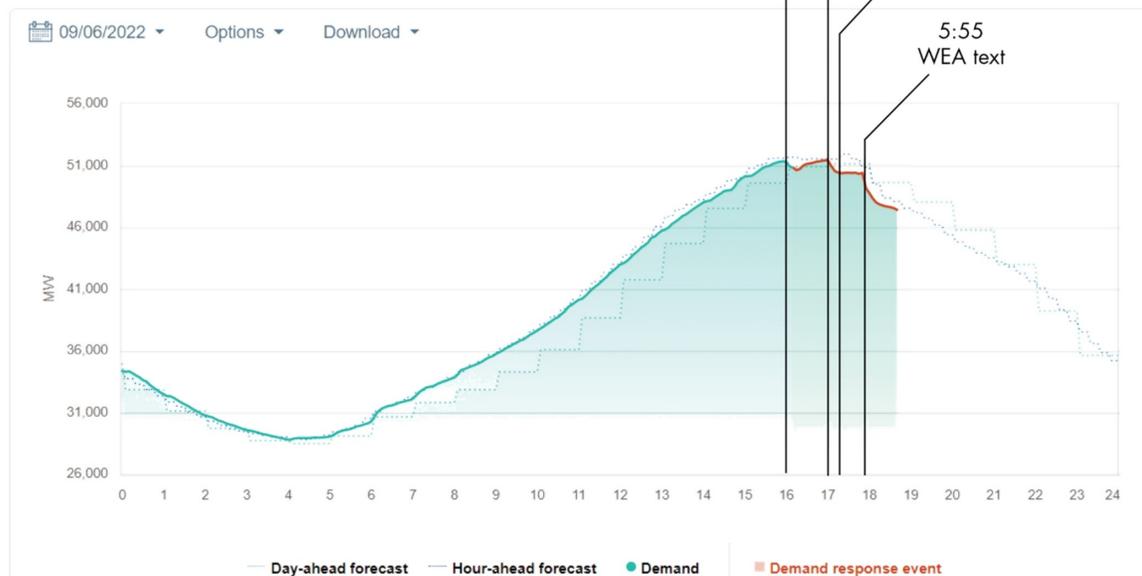
CAISO was able to keep the lights on due to actions taken, but also due to exogenous factors:

1. Increased capacity through resource adequacy procurement;
2. Enhanced coordination, awareness, and communications;
3. Market enhancements developed and implemented over the past two years;
4. The use of new state programs to provide non-market resources to address extreme events;
5. Arming load and demand response deployment, including Cal-OES call; and
6. Geographic diversity of extreme heat across the West.

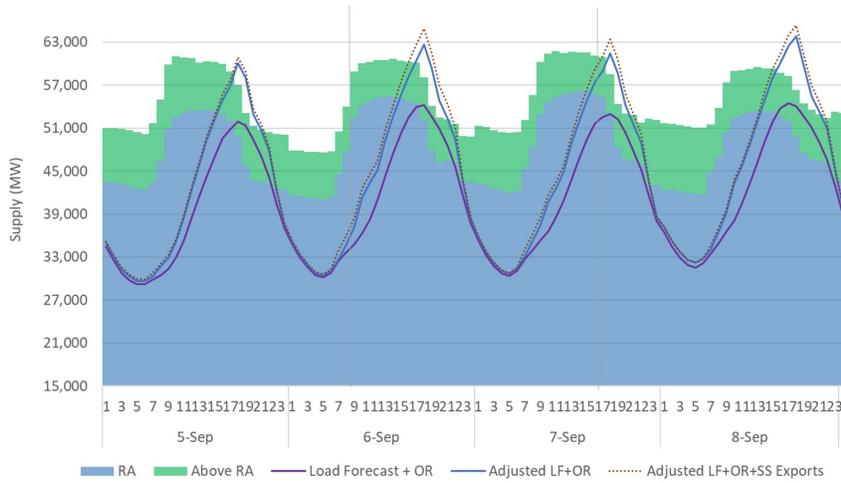
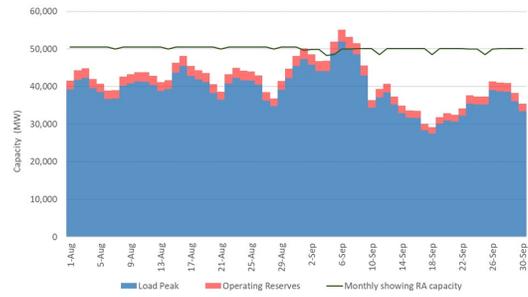
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Demand trend

System demand, in megawatts, compared to the forecasted demand in 5-minute increments.



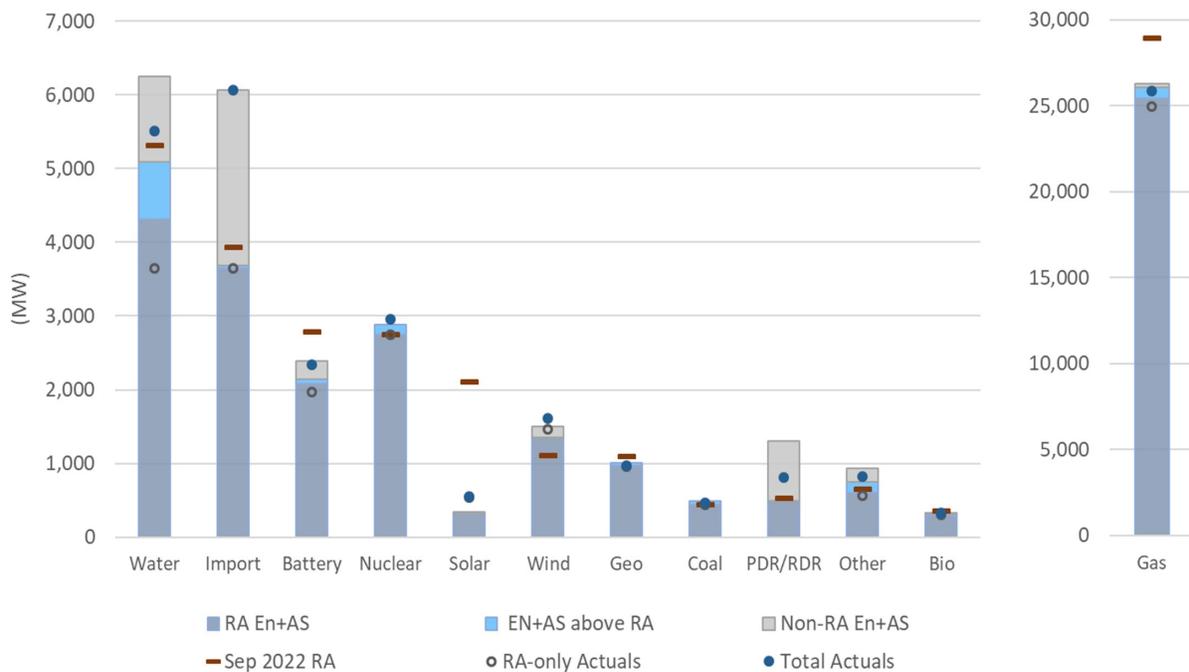
The loads levels during the heatwave were above the Resource-Adequacy capacity:



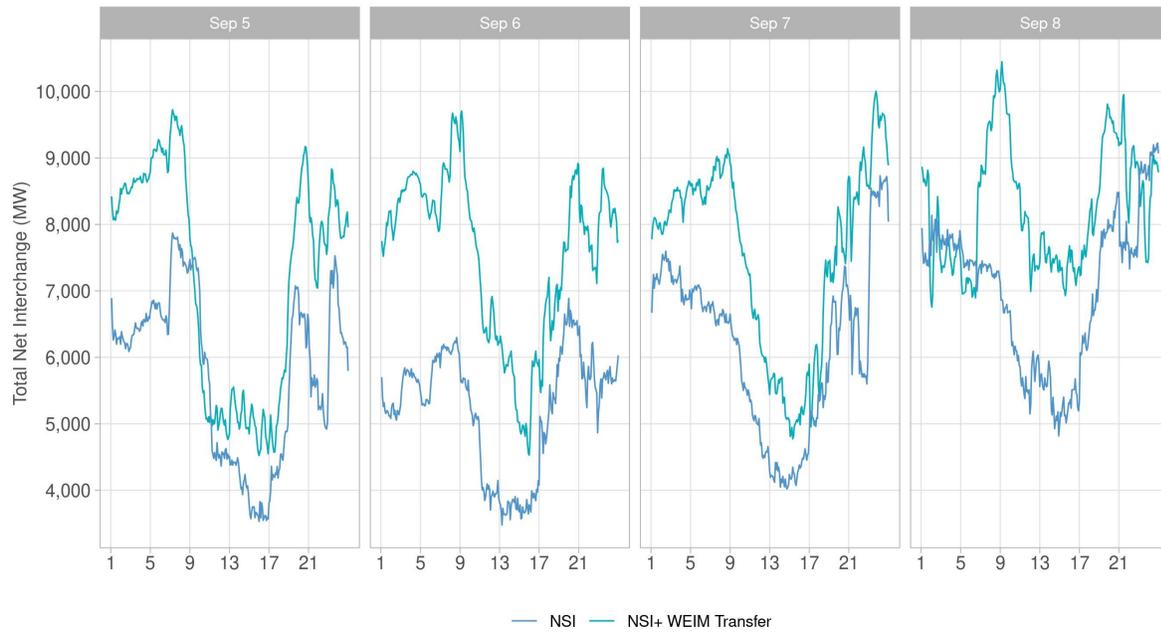
To meet the demand, CAISO relied upon:

- Above RA supply
- Non-RA supply
- Non-market capacity
- Conservation efforts

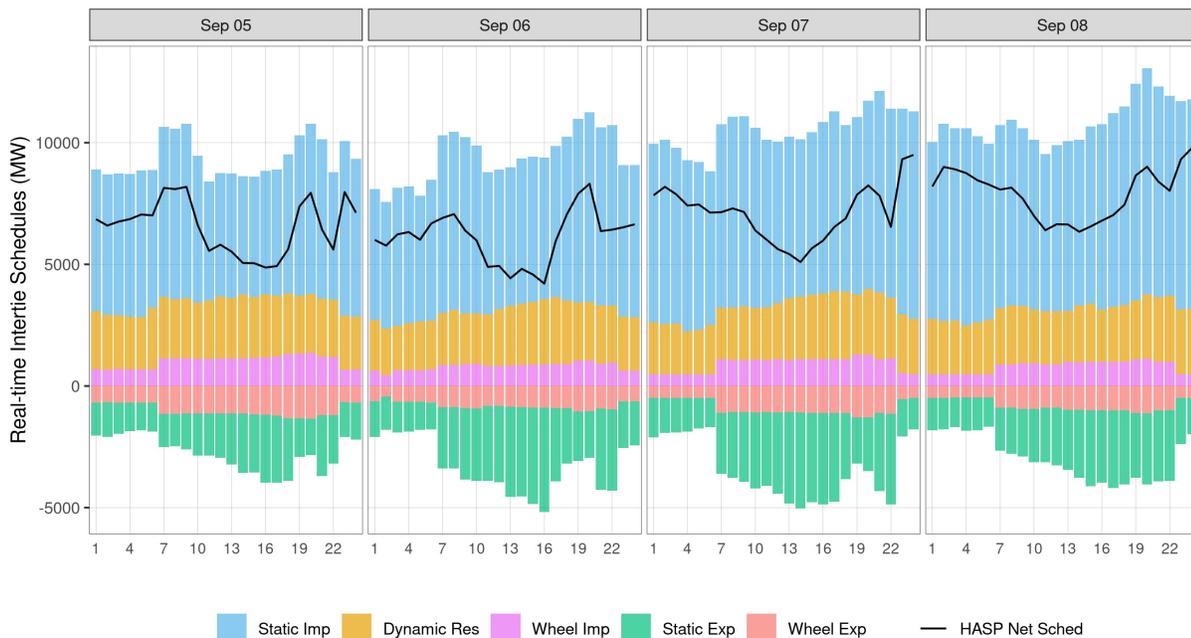
RA fleet performed at different levels depending on the time assessed:



CAISO observed robust level of net interchange during the heatwave, with over 6,000MW during the most critical times:



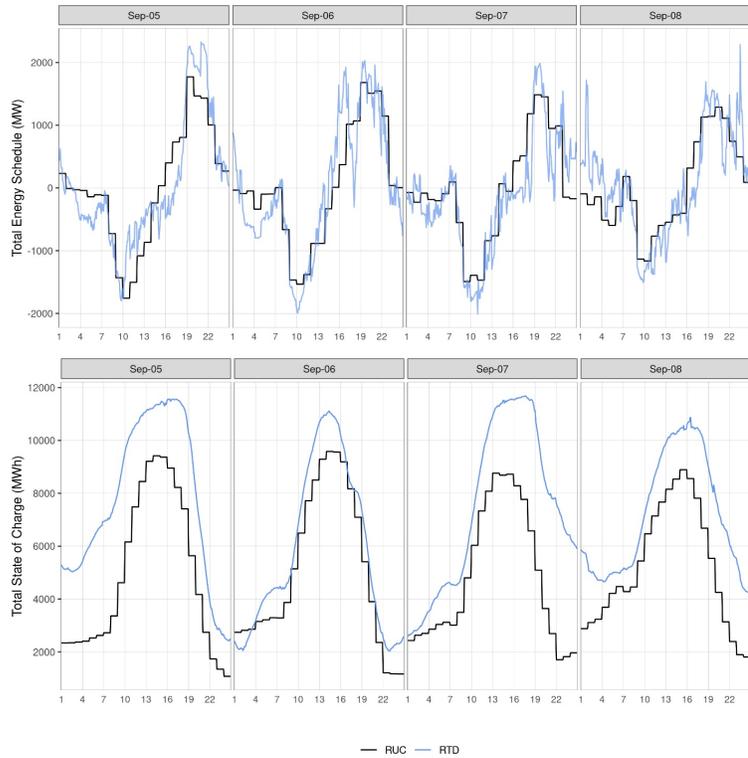
The net interchange volume depends on the level of both imports and exports:



Storage resources provided critical supply during peak hours:

On September 6 they were depleted too early in the day based on higher prices

Operators had to manually managed resources to manage the required “State of Charge”

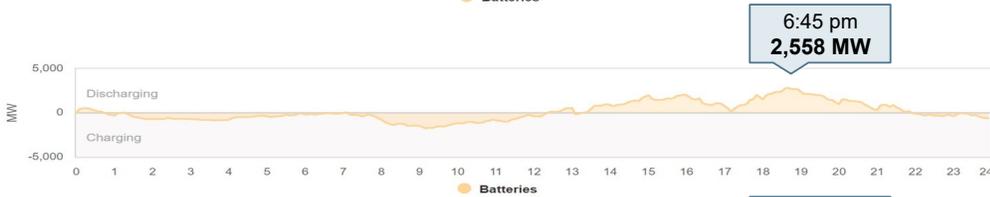


4-hour Lithium-ion Battery Dispatch:

Sept 5



Sept 6



Sept 7



Summary of take-aways:

- In 2022: A 10-day shattering heatwave drove record demands
 - Multiple Balancing Areas (BAs) were in Energy Emergency Alert (EEA)
 - Western Interconnection peaked on Sep 6
 - No significant wildfire impacted the Grid
- In 2021: Bootleg fire significantly impacted transfer capabilities between California and Oregon, resulting in multiple Energy Emergency Alert for multiple Bas
- Reliability through collaborations with all stakeholders (BAs, LSEs, agencies, customers, etc.)

Questions/Comments