



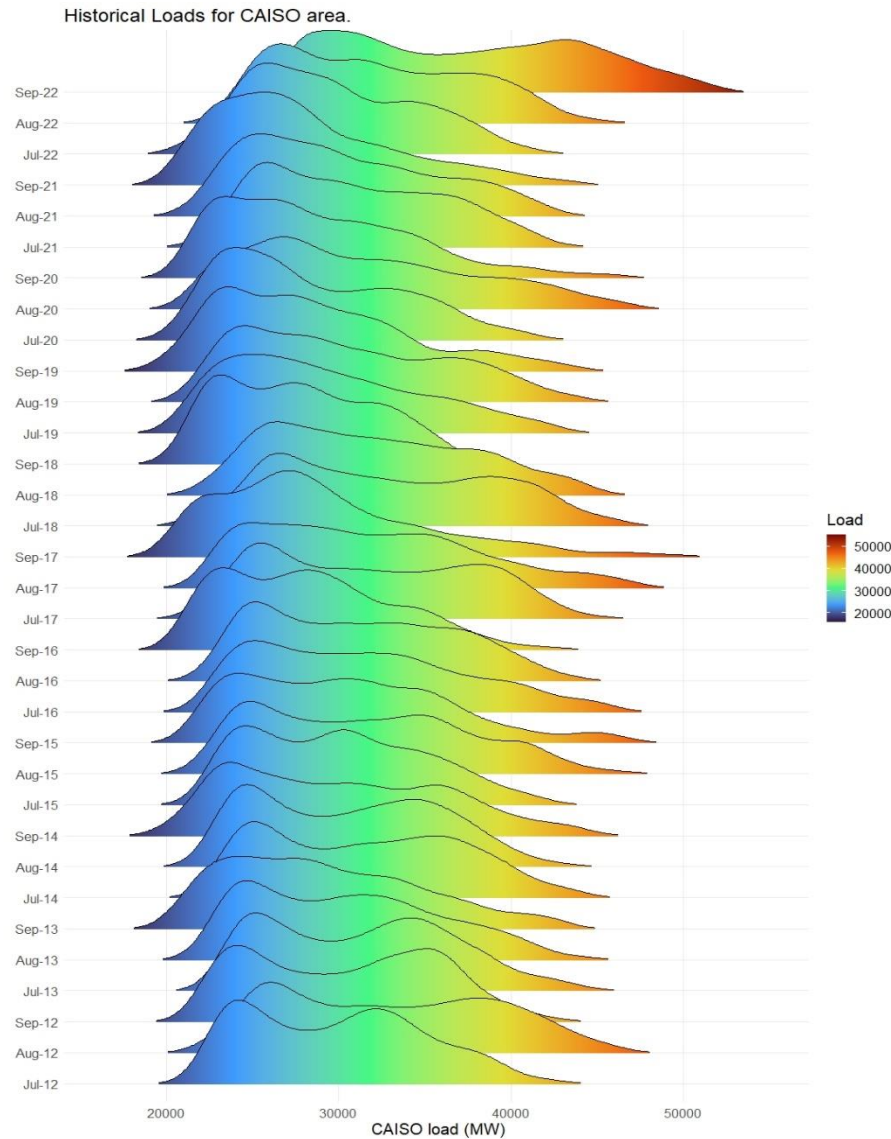
# September 2022 Western Heat Event

## *Key findings and lessons learned*

Elliot Mainzer  
President & CEO, California ISO

Secretary of Energy Advisory Board Meeting  
October 25, 2022

# The September heat wave was extraordinary in duration and intensity



# Heat records – September 1-10

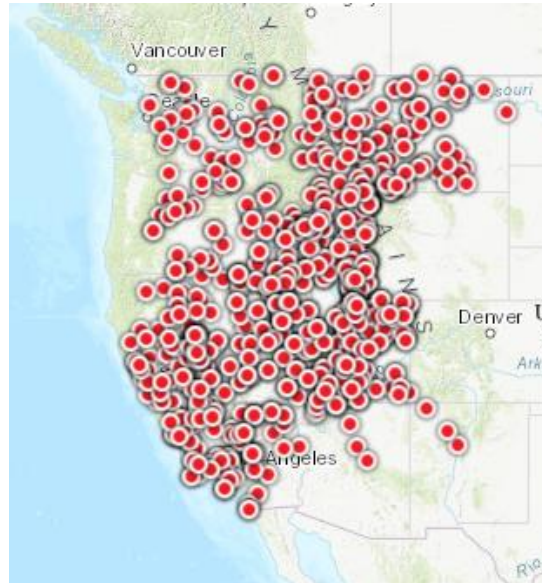
28 California cities broke or tied all-time records for maximum temperatures.

- Sacramento – 116
- San Jose – 109
- Livermore – 116

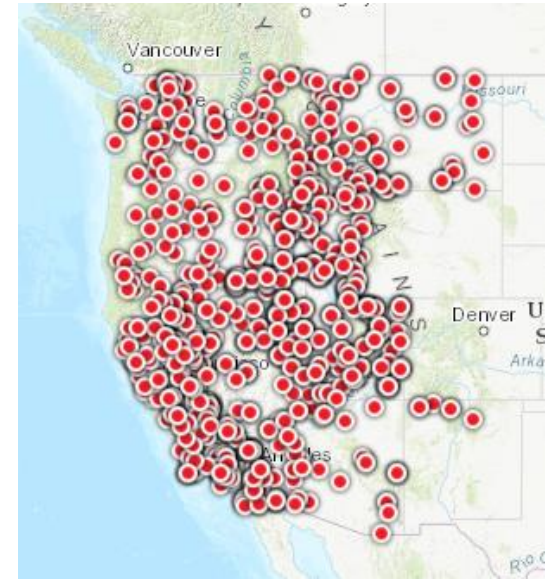
Across the West:

- 2,864 daily highest maximum temperature records tied or broken
- 2,074 daily high minimum records tied or broken

Highest **maximum** temperature records

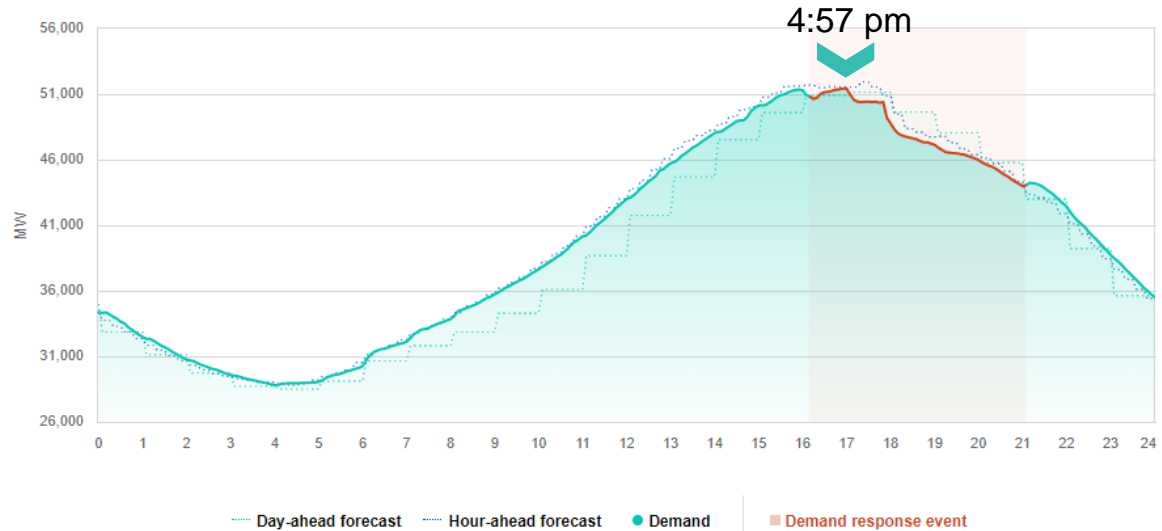


Highest **minimum** temperature records



# Demand records for September 6, 2022

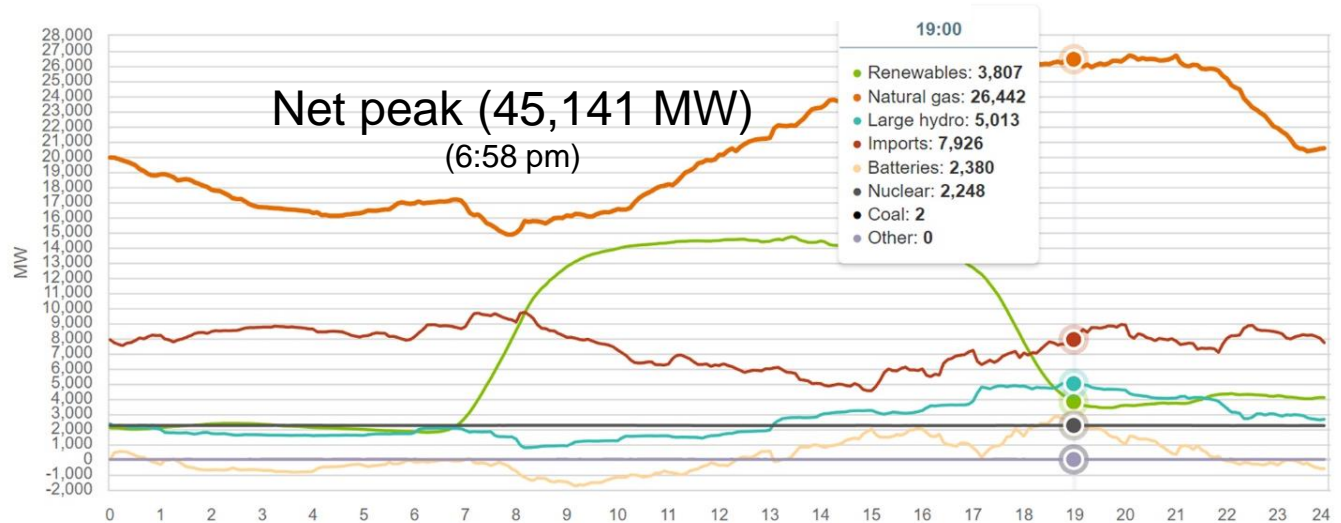
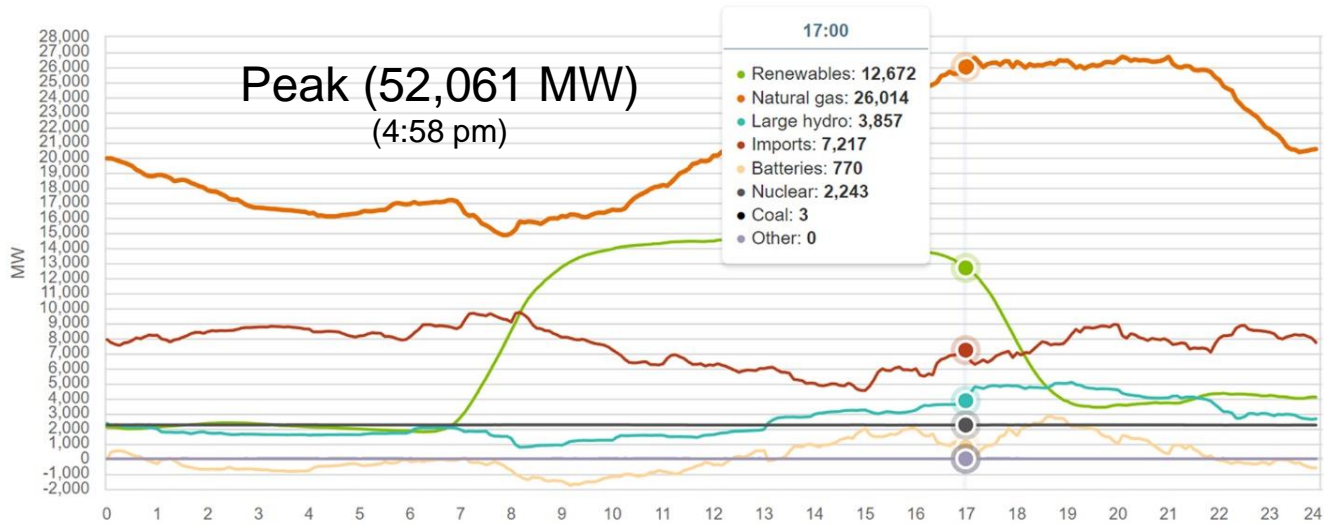
ISO all-time  
record  
**52,061 MW**



Western  
Interconnection  
record  
**167,500 MW**

RC West all-time  
record  
**130,920 MW**

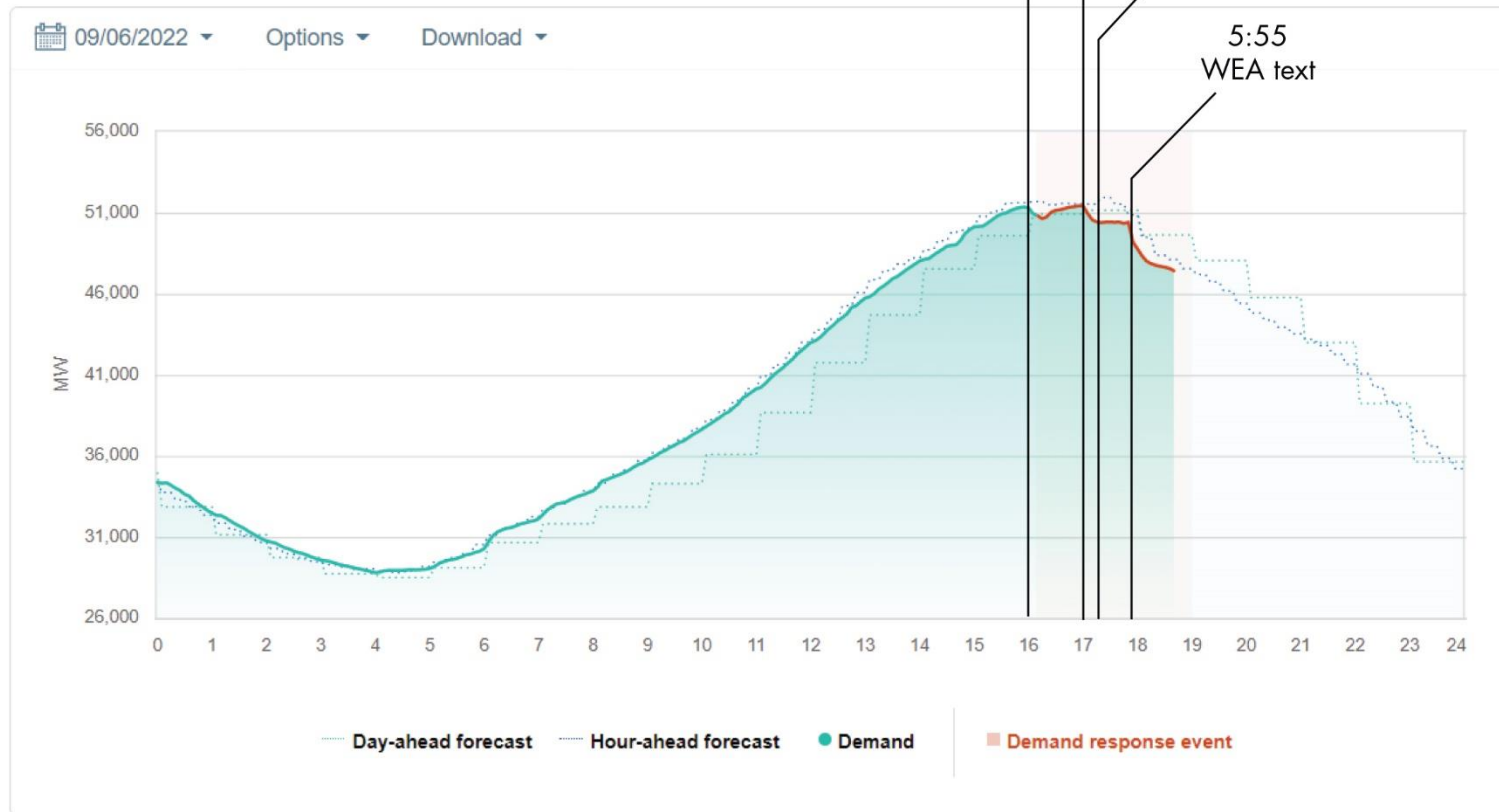
# Sept 6 peak and net peak resource stack



# Sep. 6 demand response and emergency resources

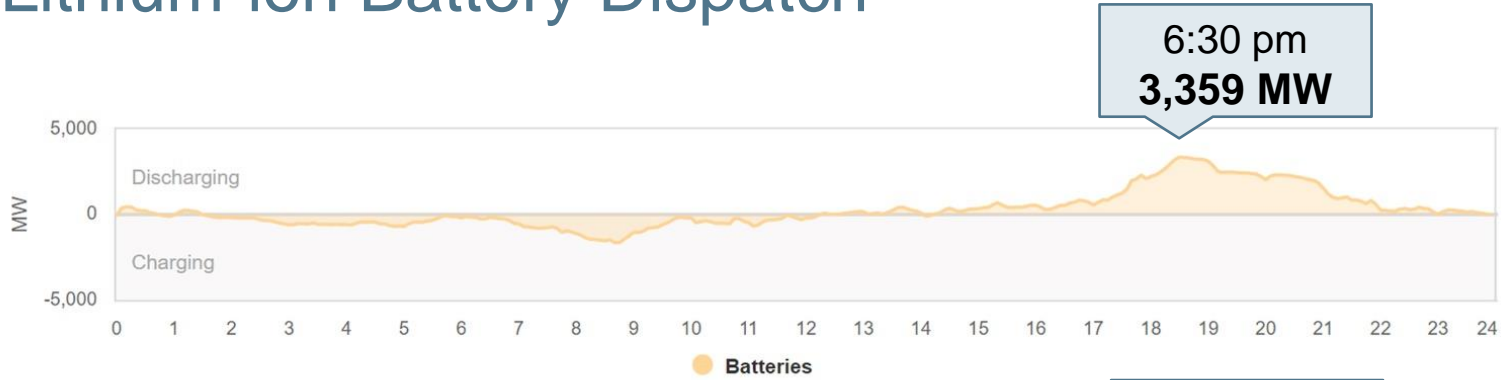
## Demand trend

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



# 4-hour Lithium-ion Battery Dispatch

Sept 5



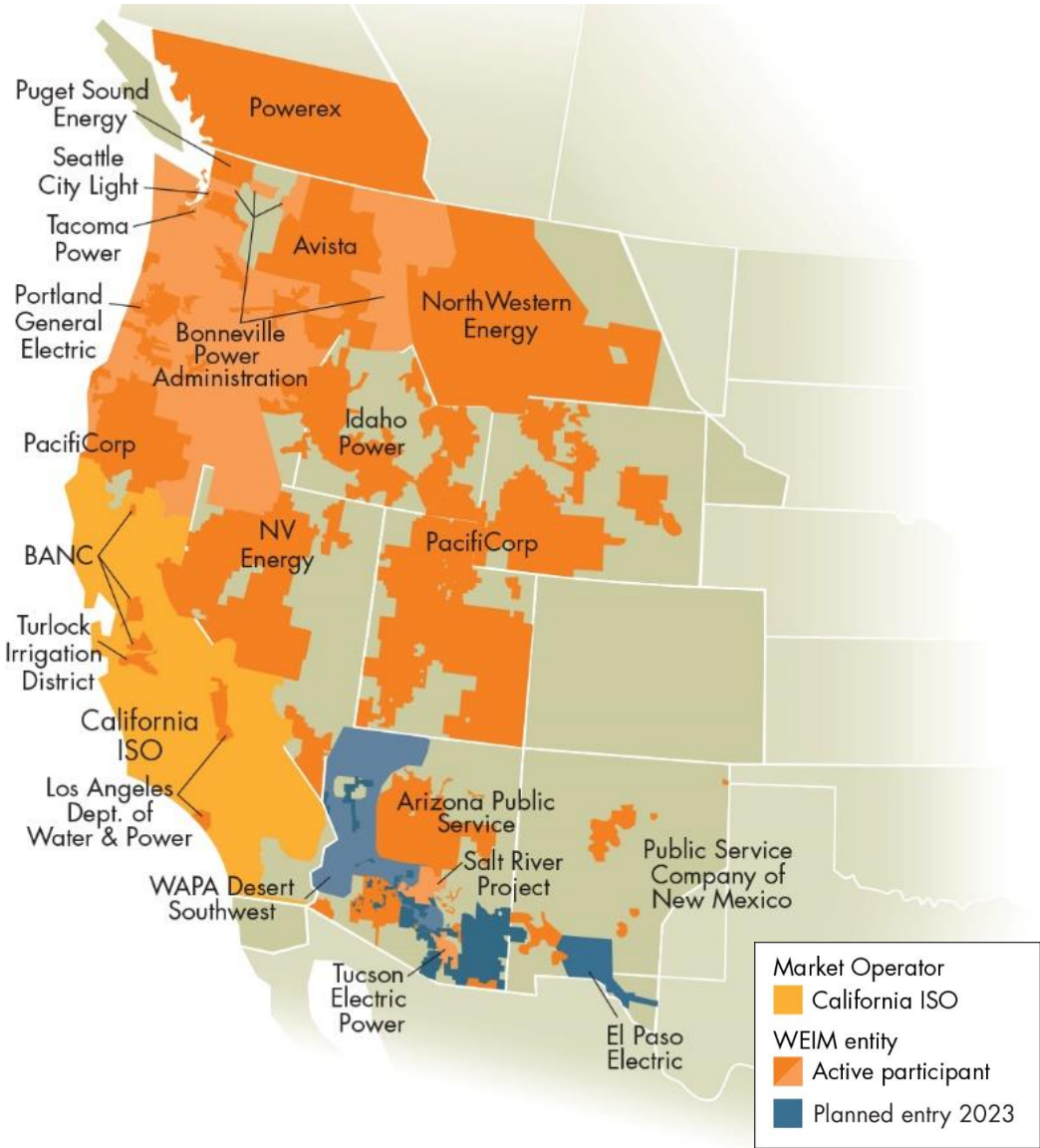
Sept. 6



Sept. 7



# Western Energy Imbalance Market (WEIM)



- Excellent performance during heat wave.
- Efficiently cycled energy between utility systems across the West and supported reliability during very stressed grid conditions.
- Demonstrated value of wide-area coordination across the Western US and highlighted potential additional reliability and cost-saving benefits of an Extended Day-Ahead Market (EDAM).



# What went well

- Several thousand MW of new clean energy capacity installed in CA since summer 2020 helped meet historic loads.
- Improved communication and coordination across state/federal government and industry.
- Advance preparation and table top exercises with load-serving entities within California and across the West.
- Effective pre-emptive maintenance and outage coordination of power and transmission infrastructure.
- Excellent overall fleet performance, including renewables, storage, nuclear and natural gas. Meaningful amount of DR.
- CAISO demonstrated its ability to support other Western Balancing Authorities through exports and wheel-throughs.
- Strong Western EIM performance.
- Geographic diversity of weather patterns and a good hydro year in the Northwest.

# Opportunities for improvement

- Continue to strengthen resource adequacy programs (California and WRAP), adapt planning models to address changing temperature and load patterns resulting from climate change, and expedite construction of new clean energy infrastructure (both power and transmission).
- Establish more automated, pre-emptive load flexibility capabilities.
- Achieve greater visibility into supply and demand across West and improve liquidity and reliability by implementing EDAM.
- Ensure market design for storage aligns with reliability needs of the grid.
- Establish well-managed set of strategic reserve resources to manage extreme events that lie outside of the standard planning horizon.
- Continue to strengthen communication channels and tabletop exercises to be prepared for a wide variety of future scenarios.