

# Regional Grid Management and Market Operations

Mark Rothleder  
SVP & Chief Operating Officer

Electric Power in the West  
Law Seminars International  
January 27, 2023

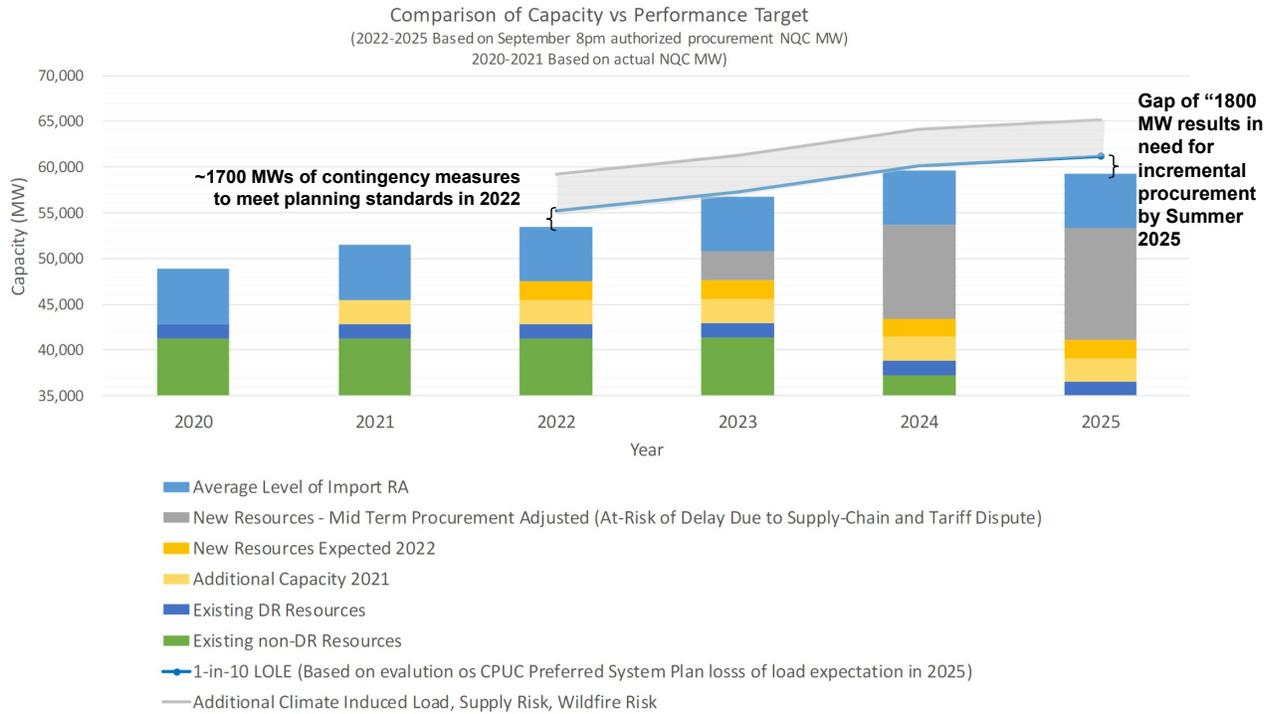
## Challenges

- Challenge 1: Capacity shortfall and meeting summer evening peak load
- Challenge 2: Increased ramping needs
- Challenge 3: Low renewable energy production from multi-day weather events
  - As the fleet transforms...
    - Diversify resources for evening peaks, include preferred resources that align with needs; e.g. geothermal and wind
    - Add both short- and long-duration storage focused on evening peak
    - Strategically maintain gas fleet

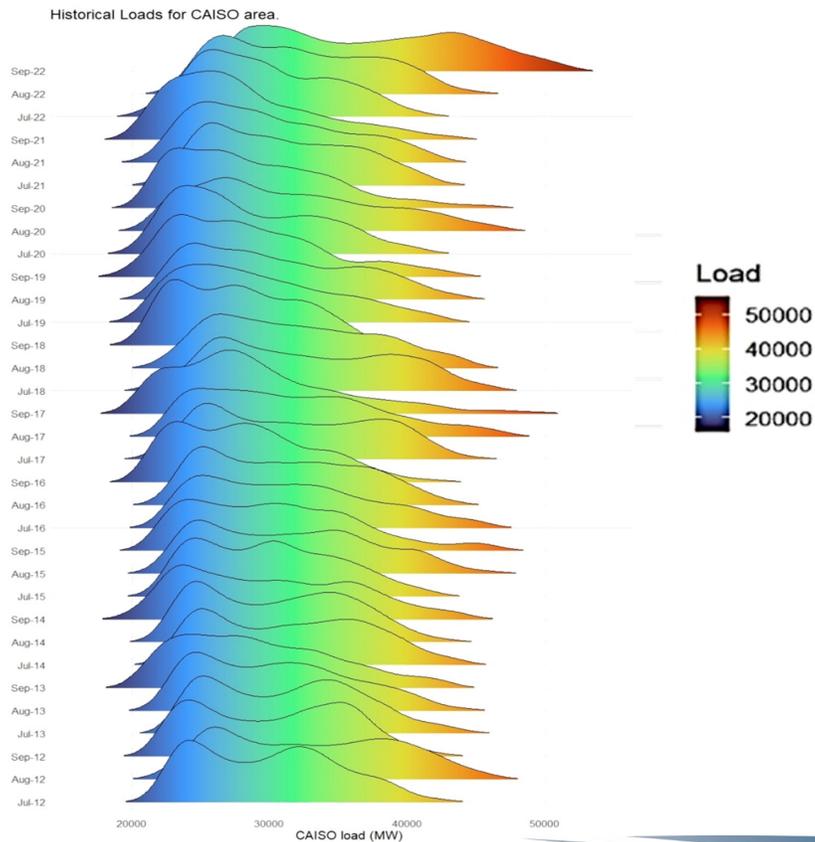
### Other actions to consider:

-  Add automated demand response
-  Increase energy efficiency

# September peak conditions 2022-2025



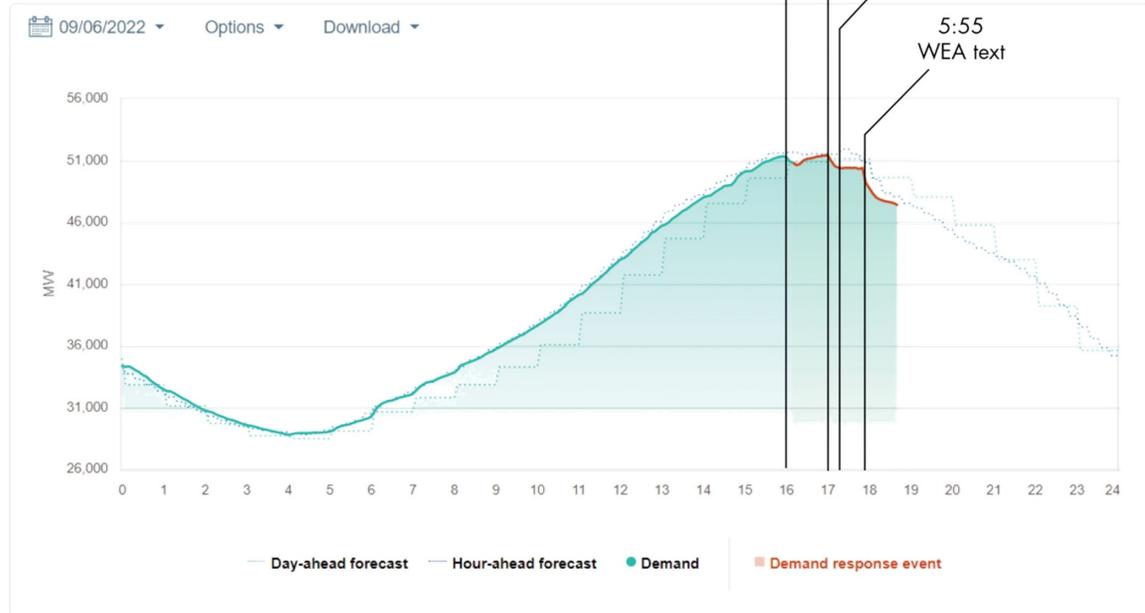
# The September heat wave was extraordinary in duration and intensity



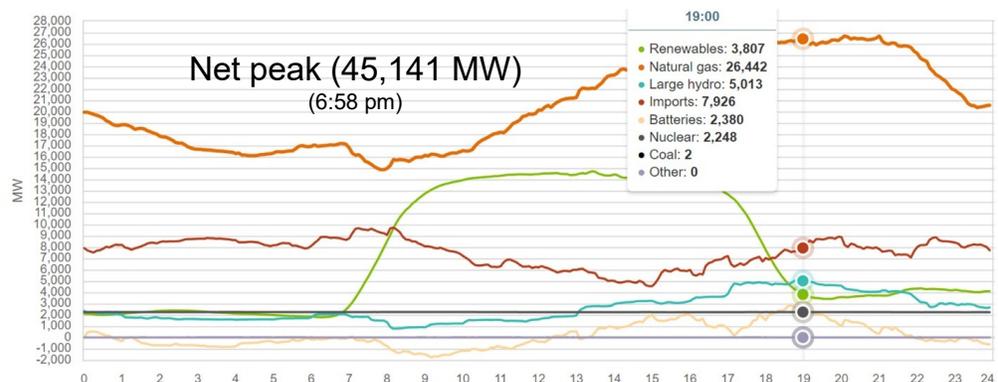
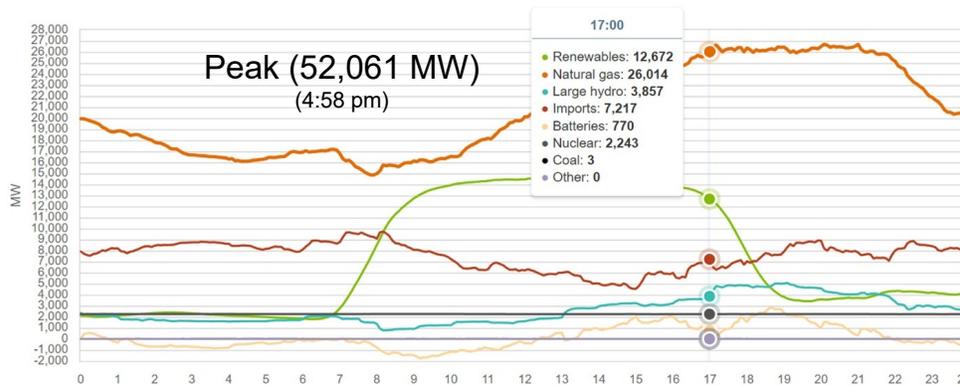
# Sept. 6<sup>th</sup> demand response and emergency resources

## Demand trend

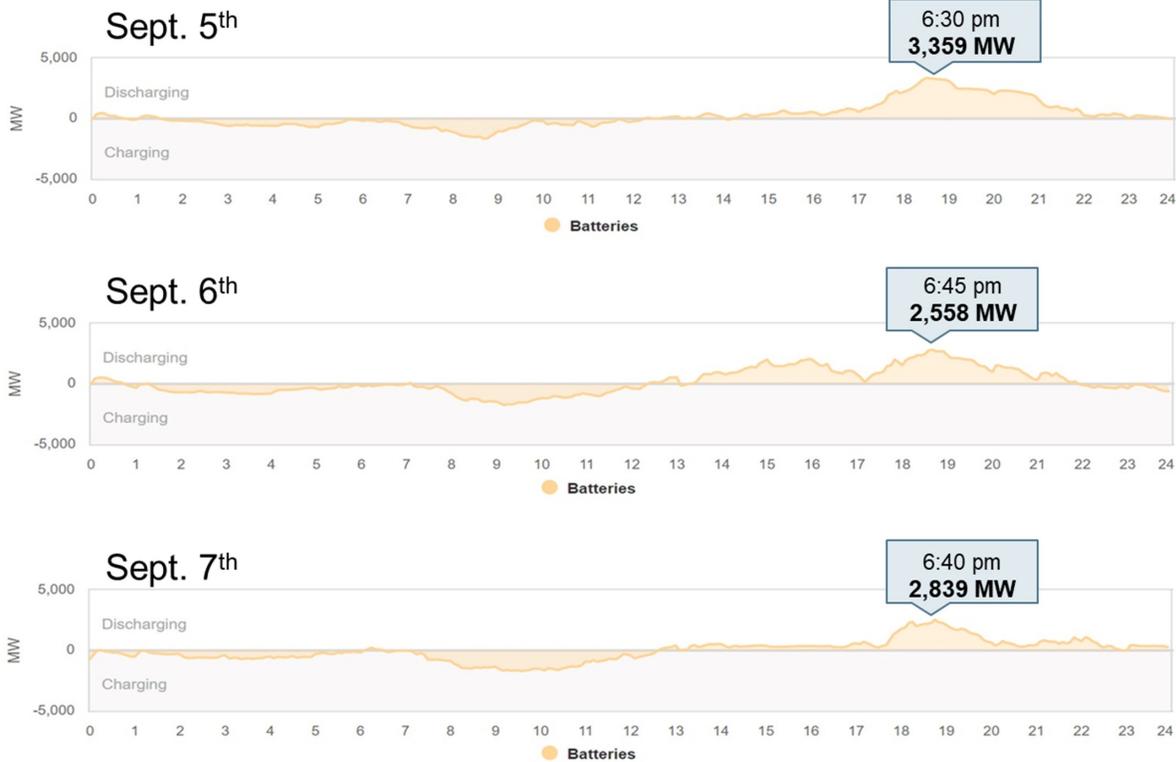
System demand, in megawatts, compared to the forecasted demand in 5-minute increments.



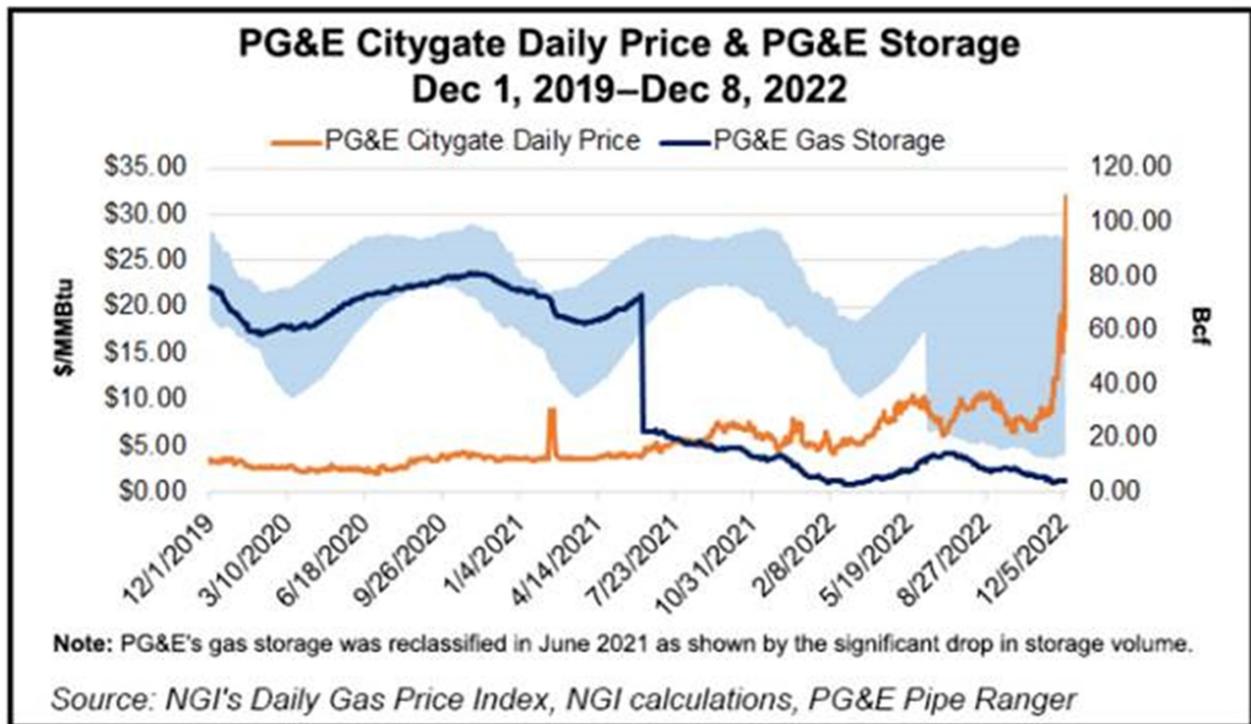
## Sept. 6<sup>th</sup> peak and net peak resource stack



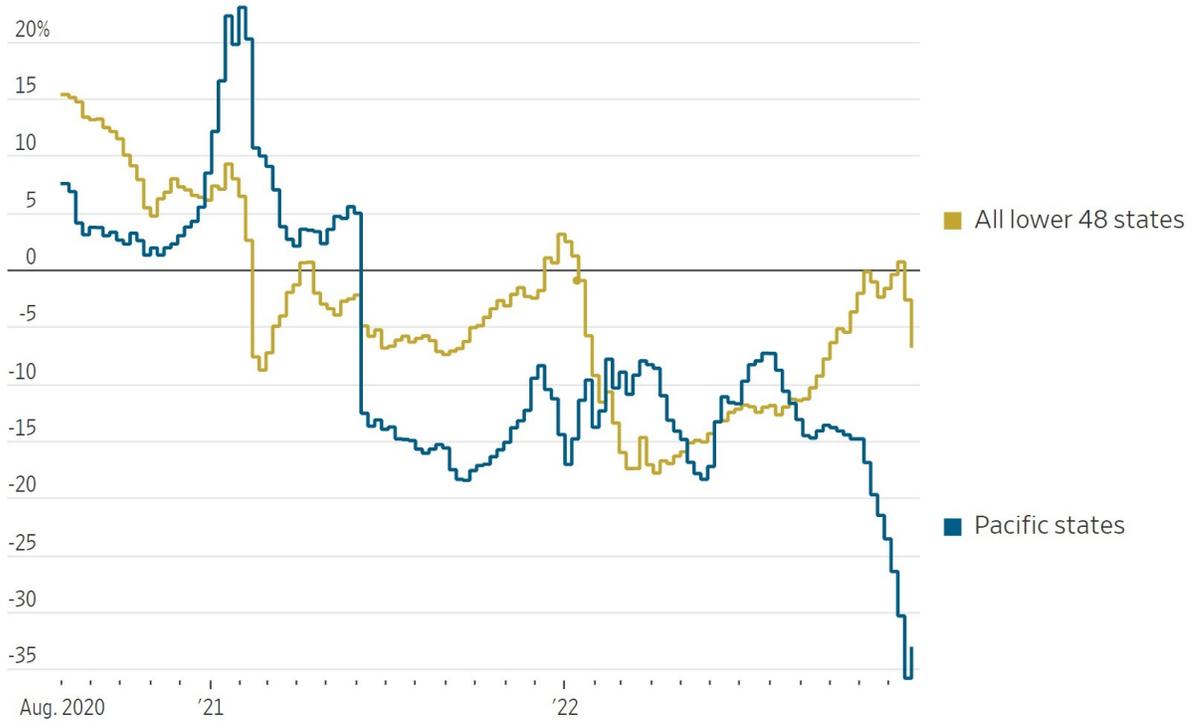
# 4-hour Lithium-ion Battery Dispatch



# Gas pipeline and storage availability impacting prices

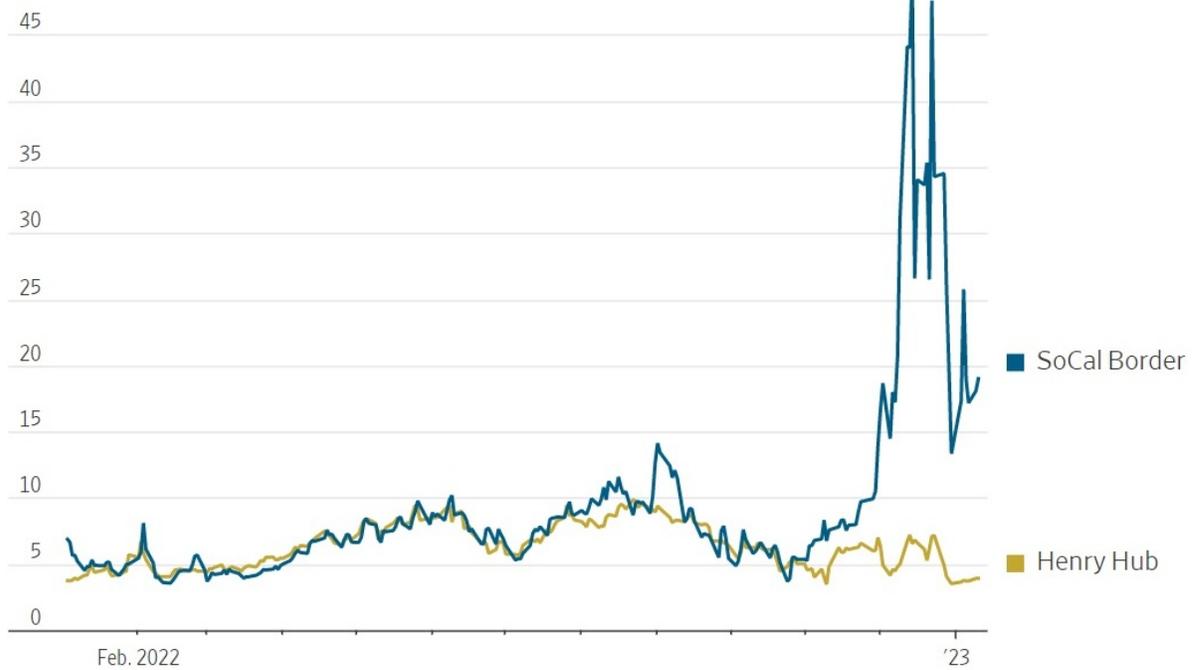


# Weekly natural-gas inventories vs. 5-year rolling average

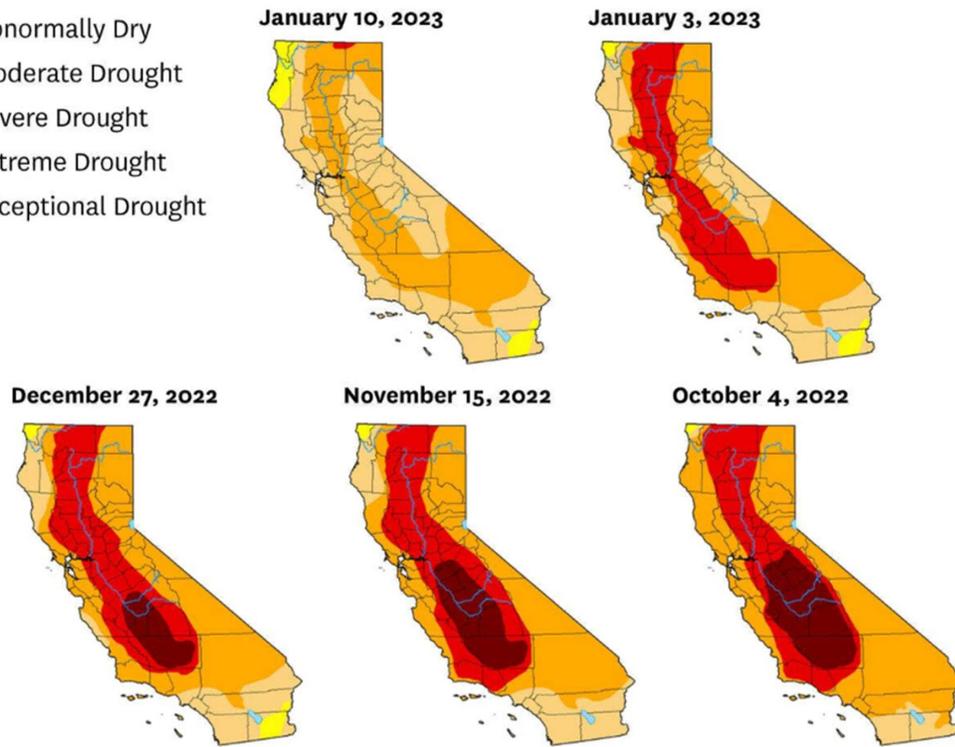


# Natural gas prices

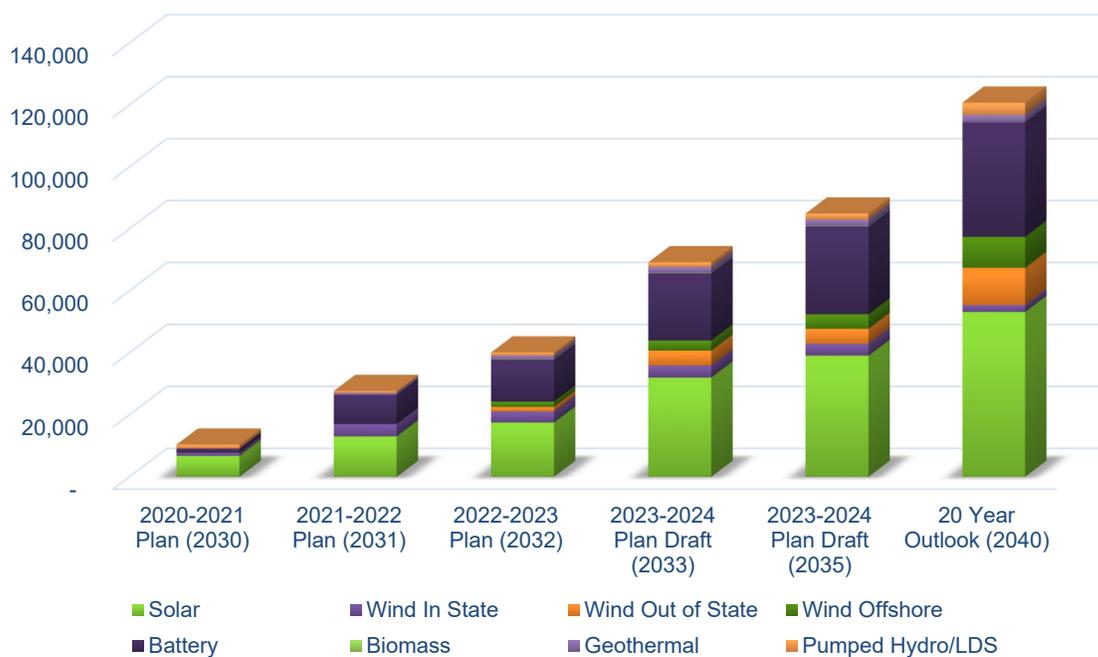
\$50 per million British thermal units



# Latest CA drought status



# State Agency Resource Plans Provided for ISO Transmission Planning



# The ISO's recent 20-Year outlook set out a long term architecture for in-state, offshore and out-of-state needs

**Based on resource needs coordinated with state agency planning**

53 GW	Solar
22.2 GW	Wind
2.3 GW	Geothermal
37 GW	Battery
4 GW	Long-duration Storage
120 GW	Total resource and storage requirement
\$30.5B	Estimated cost of transmission



## Evolving regional collaboration in the West

  
Market governance considerations

Coordinated long-term planning  
Resource adequacy  
Transmission access

**RTO**  
Single control & planning area

A regional, multi-state entity under independent governance

Transmission provisioning  
Resource sufficiency  
Efficient resource commitment

**EDAM**  
Day-ahead market

The EDAM would cover the complete wholesale market from Day-ahead to Real-time

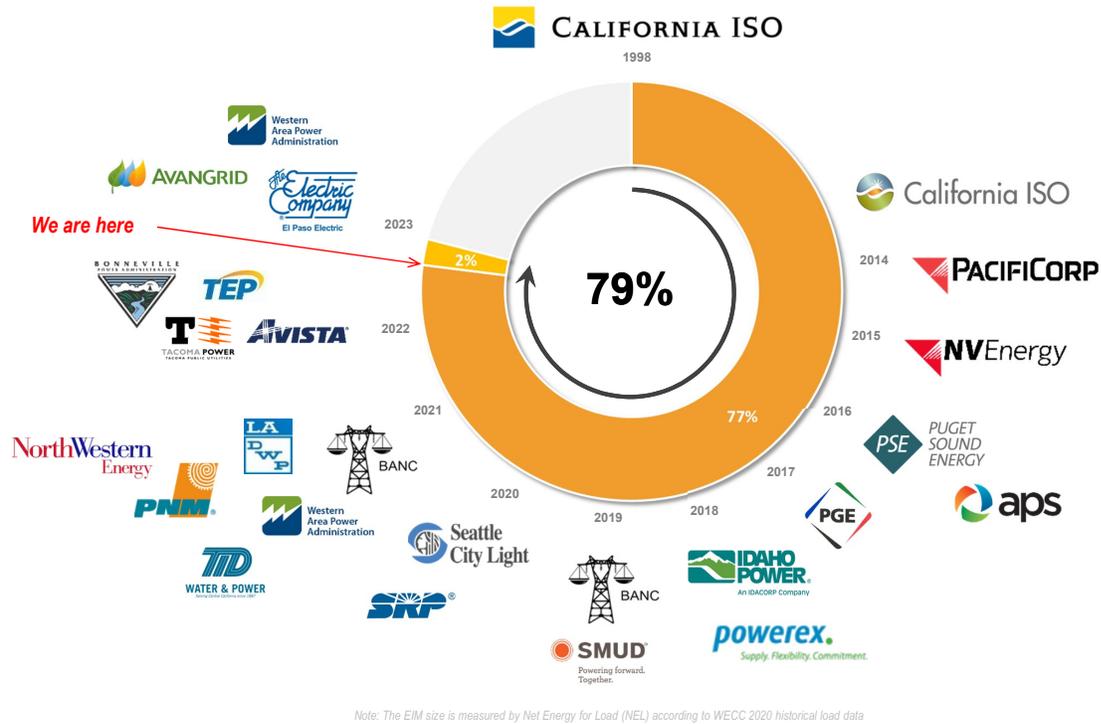
Bid-to-bill  
Full network model  
Metering

**WEIM** Under joint governance  
Real-time market

The WEIM achieves efficient "last minute" trading across participating regions

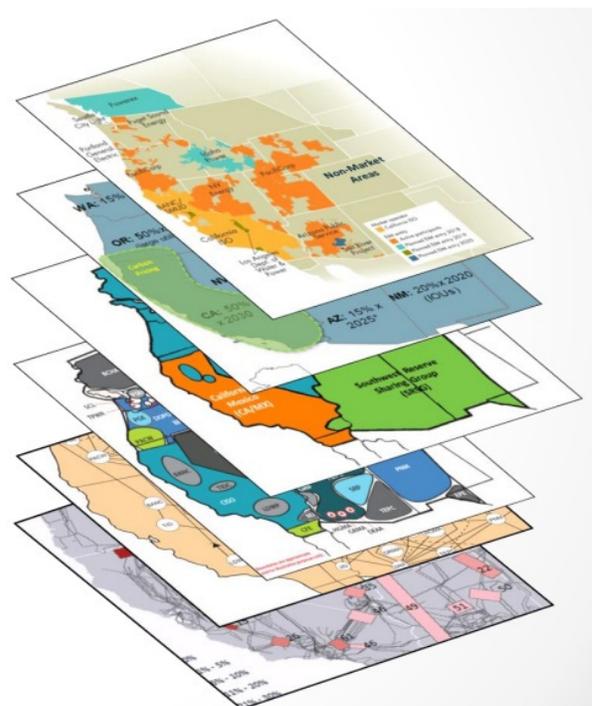


# WEIM is growing and producing over \$3 billion in benefits

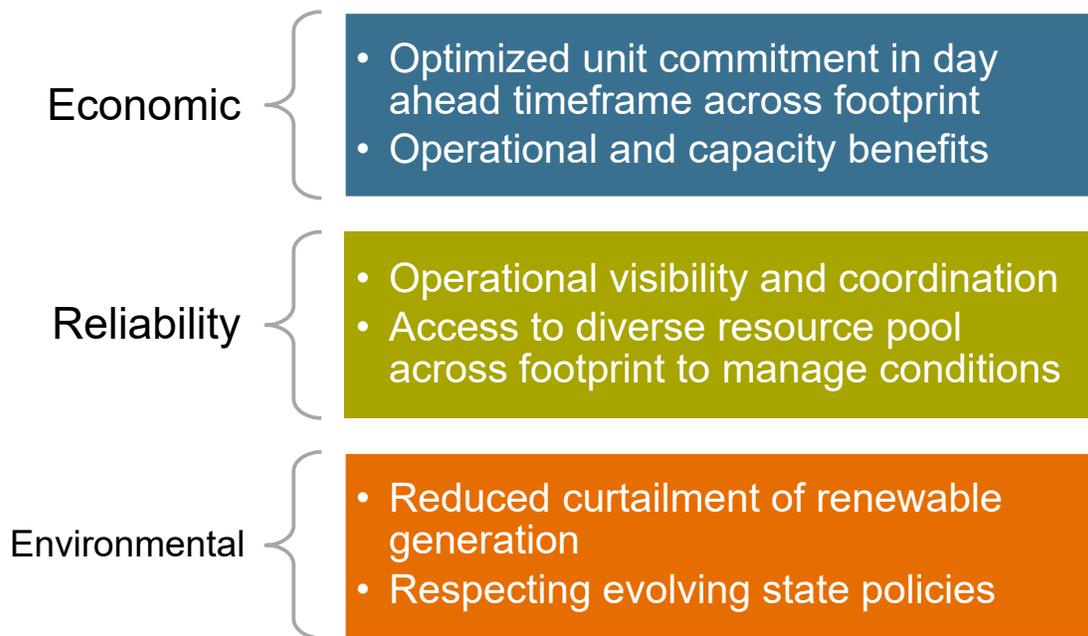


## Extended Day Ahead Market in the West

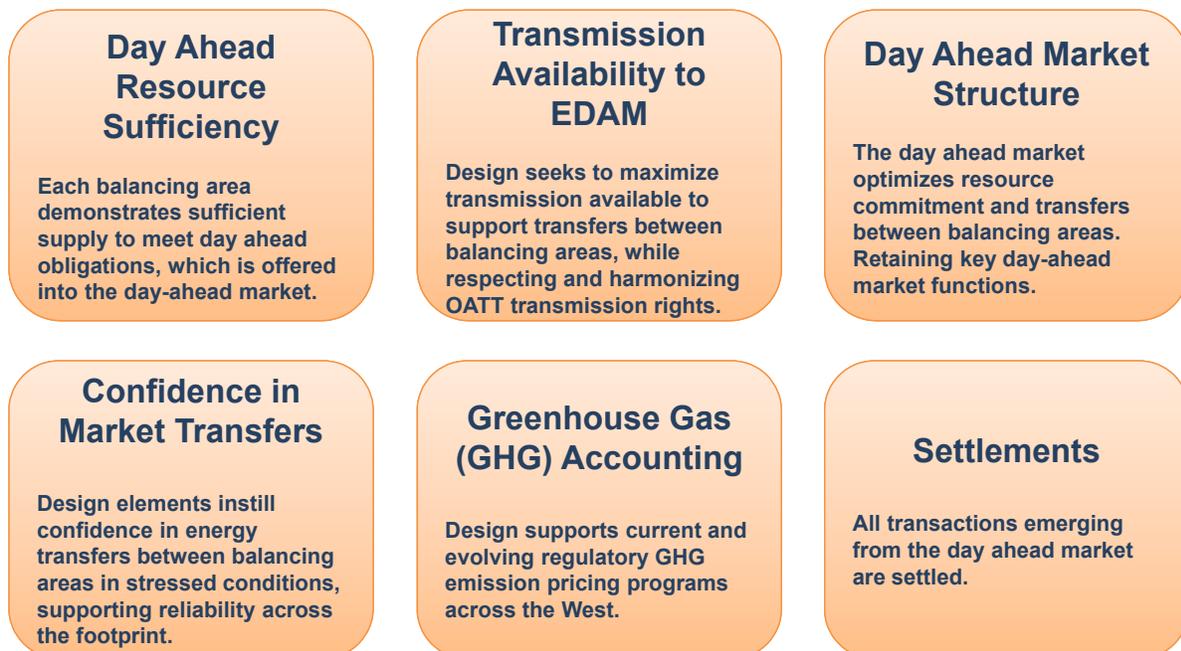
- Extension of the ISO day-ahead market across the West allows for optimized commitment of generation in the day ahead timeframe.
- Builds upon the WEIM, providing incremental economic, reliability, and environmental benefits.
- Balancing areas participating in EDAM retain their resource planning, transmission planning and reliability operation functions.



# Harnessing the Benefits of a Day-Ahead Market in the West



## EDAM Design Overview



## EDAM milestones

2023  
1<sup>st</sup> Quarter

- February 1<sup>st</sup> – Joint ISO Board of Governors & Western Energy Imbalance Market Governing Body meeting
- Exact Date TBD - Draft tariff publication and stakeholder process.

2023  
2<sup>nd</sup> Quarter

- FERC Filing

2023  
4<sup>th</sup> Quarter

- Implementation activities and coordination with interested entities.

2024

EDAM Go-Live

## Assembly Current Resolution 188 Requests Review of Studies of Expanded Regional Cooperation

Report responsive to request to:

- Produce a report that summarizes recent relevant studies on the impacts of expanded regional cooperation on California and identifies key issues...
- Provide updates to the transmission development and resource diversity estimates in the 2021 SB 100 Joint Agency Report...
- Discuss the regional transmission organizations development in other regional states, collaboration between states on energy policies to maximize consumer savings while respecting state policy autonomy...

