

<b>DOCKETED</b>	
<b>Docket Number:</b>	21-ESR-01
<b>Project Title:</b>	Resource Planning and Reliability
<b>TN #:</b>	269794
<b>Document Title:</b>	Combined Slide Deck - 2026 Summer Energy Reliability Workshop
<b>Description:</b>	N/A
<b>Filer:</b>	Mikayla Roberts
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	5/4/2026 8:37:55 AM
<b>Docketed Date:</b>	5/4/2026



# Summer Energy Reliability Workshop

California Energy Commission

Date: May 4, 2026



# Housekeeping

- Public comments due May 18, 2026
- CEC Docket 21-ESR-01



# Comments from the Dais



# Introduction – Workshop Overview

- Anticipated Summer Conditions
- California Resources
- Summer Reliability Assessments
  - California ISO
  - Publicly Owned Utilities





# Panel: Anticipated Summer Conditions

Moderator: David Erne, CEC

- Amber Motley, California ISO
- Jeff Fuentes, California Department of Forestry and Fire Protection
- Branden Sudduth, Western Electricity Coordinating Council



California ISO

# 2026 Summer Meteorological Outlook

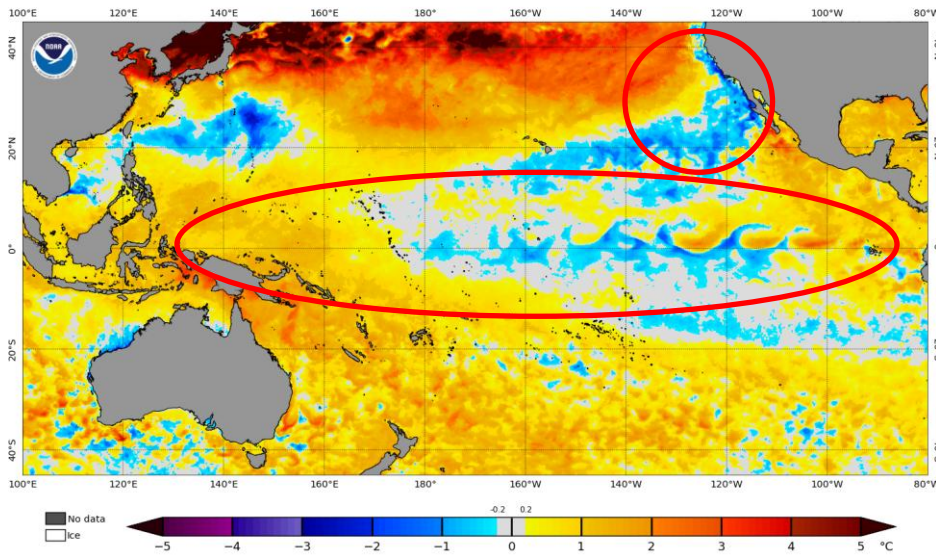
Amber Motley

Director, Short Term Forecasting

# 2025 Summer: Observations

- Above normal temperatures across the western U.S., strongest in the Pacific NW and Desert SW
  - California experienced a cooler July
- Near or below normal precipitation across the West

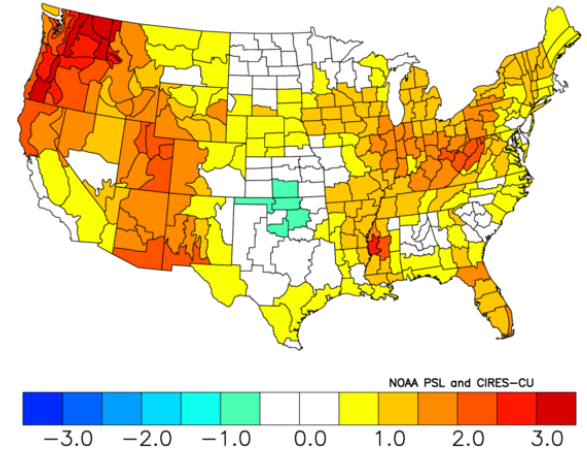
NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 1 Aug 2025



Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.6	0.6	0.5	0.3	0.0	-0.2	-0.4	-0.5	-0.8	-1.1	-1.2	-1.1
2021	-0.9	-0.8	-0.7	-0.5	-0.4	-0.3	-0.3	-0.4	-0.6	-0.8	-0.9	-0.9
2022	-0.8	-0.8	-0.9	-1.0	-0.9	-0.8	-0.8	-0.9	-1.0	-0.9	-0.8	-0.7
2023	-0.5	-0.3	0.0	0.3	0.6	0.8	1.1	1.4	1.6	1.8	2.0	2.1
2024	1.9	1.6	1.3	0.8	0.5	0.2	0.1	-0.1	-0.2	-0.2	-0.3	-0.4
2025	-0.4	-0.2	-0.1	0.0	0.0	0.0	-0.1	-0.3	-0.4	-0.5	-0.6	-0.5
2026	-0.4	-0.2										

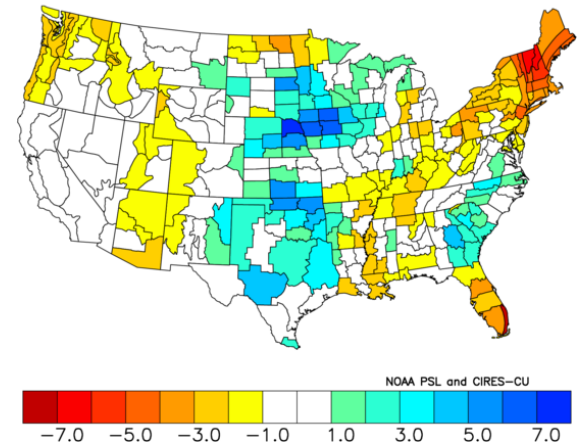
## Temperature

NOAA/NCEI Climate Division Temperature Anomalies (F)  
Jun to Aug 2025  
Versus 1991–2020 Longterm Average



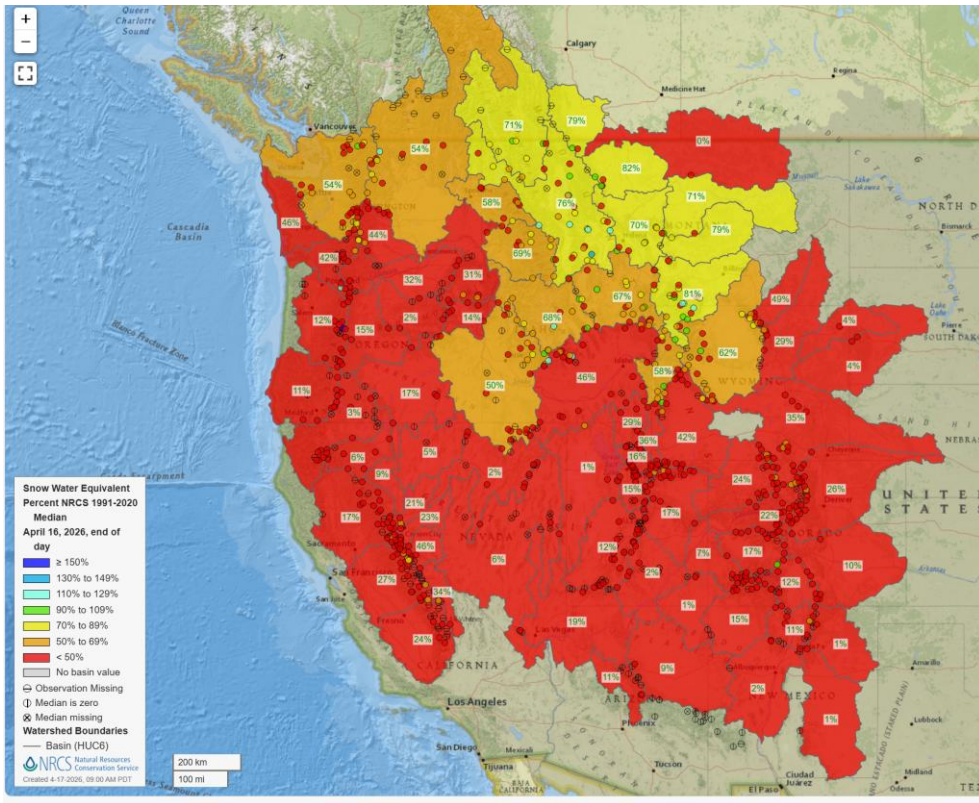
## Precipitation

NOAA/NCEI Climate Division Precipitation Anomalies (in)  
Jun to Aug 2025  
Versus 1991–2020 Longterm Average



# Below normal snow water in the mountains west-wide and most reservoirs below capacity

## Snow Water Equivalent



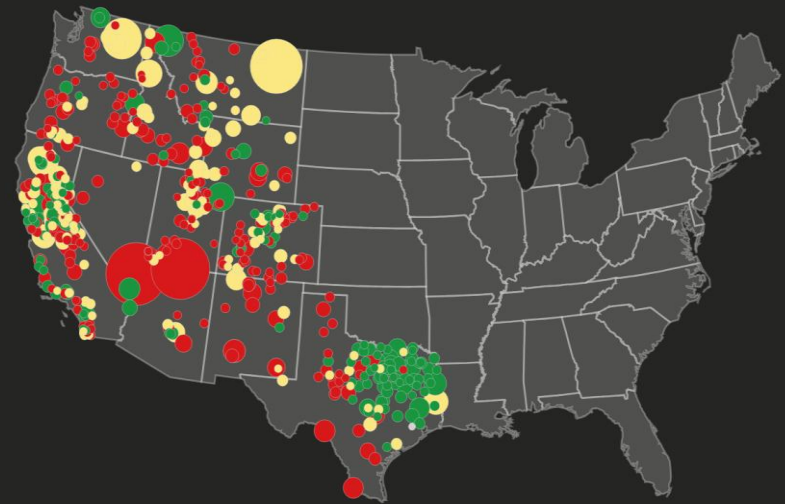
## Reservoirs

Percent Full for Month Ending (March 2026), or Most Recently Available Month

■ 75%+ ■ 50%+ ■ Less than 50%

Reservoir Capacity (acre feet)

○ 0 ○ 6,469,250 ○ 12,938,500 ○ 19,407,750 ○ 25,877,000

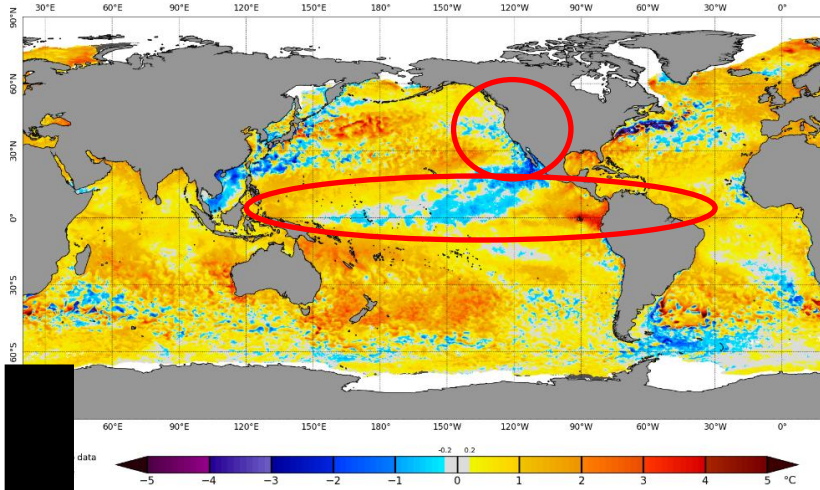


# Comparing spring sea surface temperature anomalies

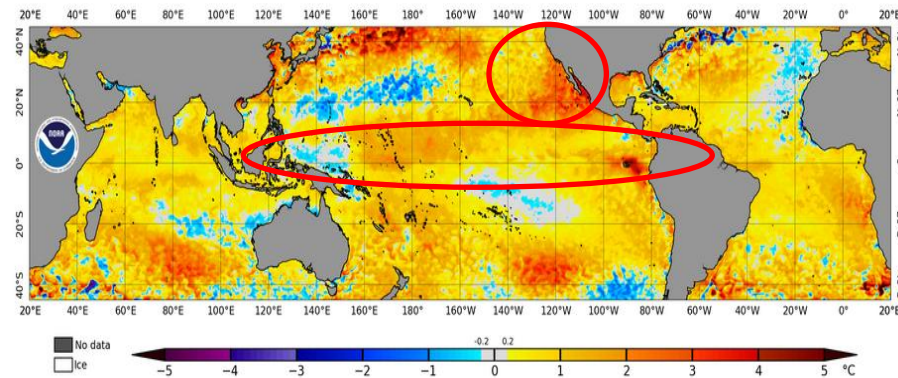
April 2025

April 2026

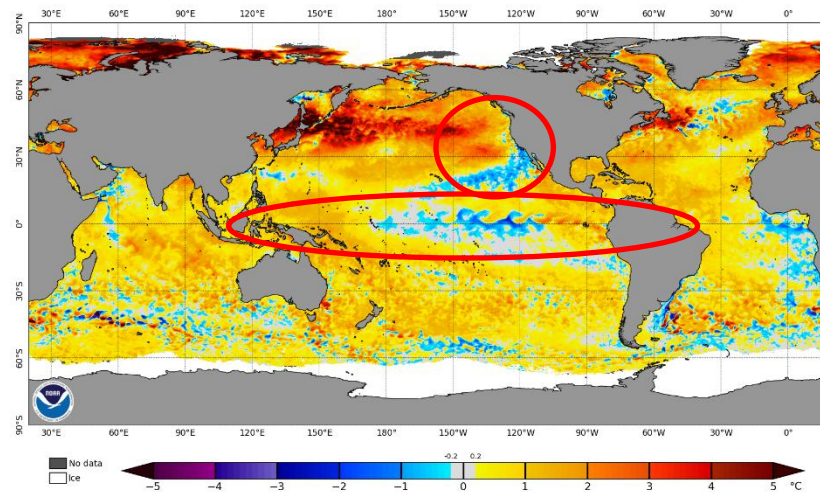
NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 7 Apr 2025



NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 15 Apr 2026



NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 15 Aug 2025



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2022	-0.8	-0.8	-0.9	-1.0	-0.9	-0.8	-0.8	-0.9	-1.0	-0.9	-0.8	-0.7
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2025	-0.4	-0.2	-0.1	0.0	0.0	0.0	-0.1	-0.3	-0.4	-0.5	-0.6	-0.5
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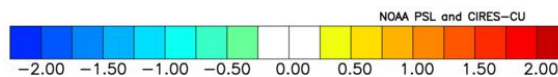
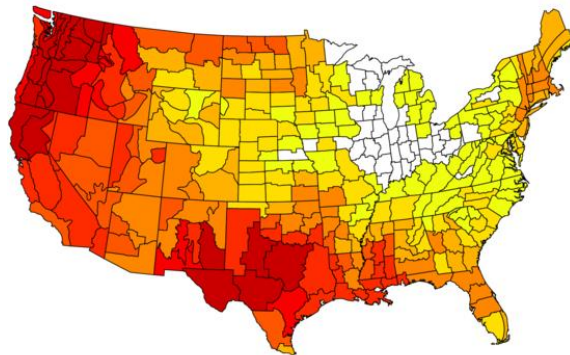
# Similar years: 2015, 2018, 2022, 2023, 2024

## Climate analogs point to elevated summer heat risk

- Focusing on prior summers with similar SSTs, ENSO phase, drought condition, and recent warming trends.
- Warmer coastal SSTs may limit marine influence and raise coastal temperature risk.
- Pattern also aligns with increased Pacific tropical activity.

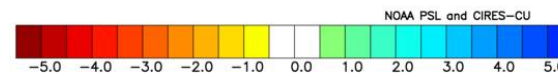
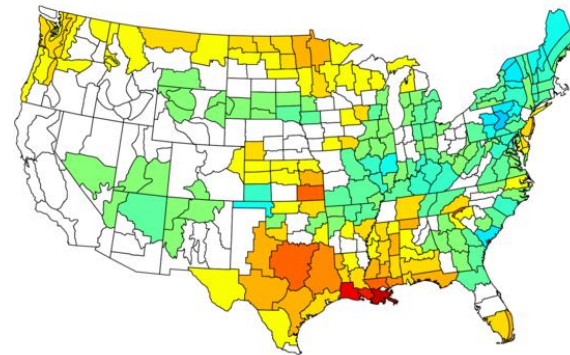
### Temperature

NOAA/NCEI Climate Division Composite Temperature Anomalies (F)  
Jun to Aug 2015,2018,2022,2023,2024  
Versus 1991–2020 Longterm Average



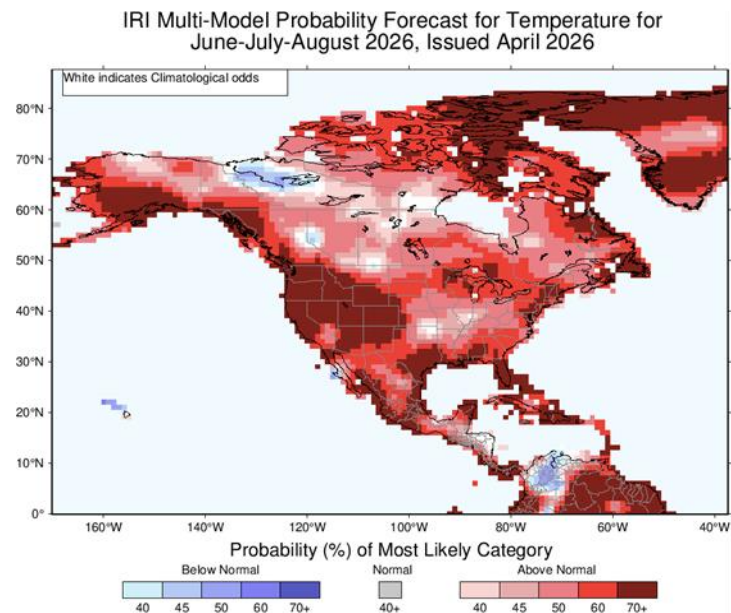
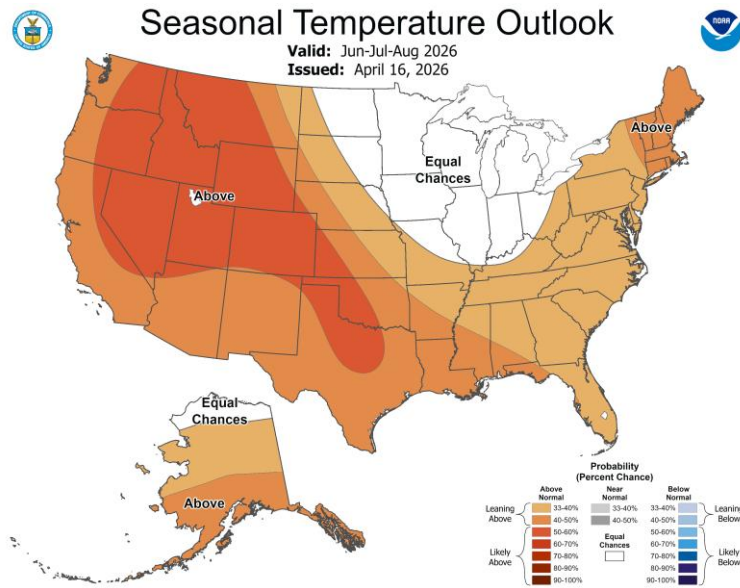
### Precipitation

NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)  
Jun to Aug 2015,2018,2022,2023,2024  
Versus 1991–2020 Longterm Average



# Temperature Outlook June – August 2026

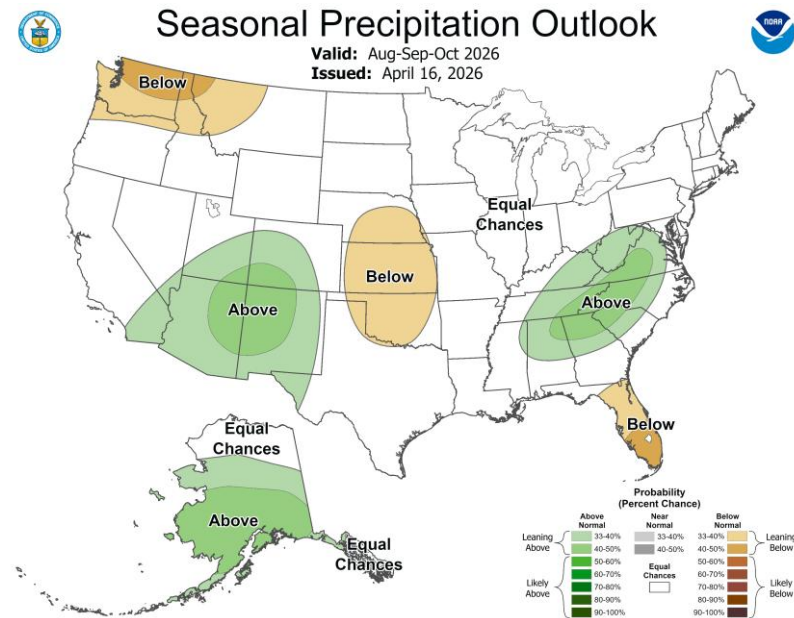
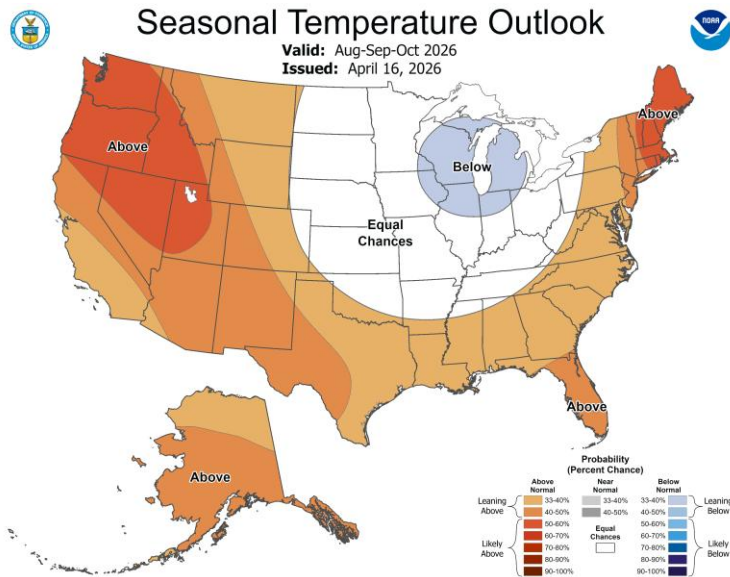
- Increased chances of above normal temperatures compared to recent summers along coastal California and Pacific Northwest
- Long-range suggests a hot start to summer
- Strong warm anomalies favored across the northern and central western U.S., including the Great Basin, Rockies, Pacific Northwest



# Weather Outlook

## August – October 2026

- Increased odds of above-normal temperatures in August-September, centered on the Pacific Northwest
- Drier-than-normal risk persists for the Pacific Northwest, while above-normal rainfall remains favored across the Desert Southwest



# 2026 Summer Reliability Outlook

**Branden Sudduth**

*Vice President, Reliability Planning & Performance Analysis*

**CEC Summer Energy Reliability Workshop**

**Electric Reliability  
& Security for the West**

May 4, 2026

# Electric Reliability Risks – California

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- Extreme heat/natural disasters
- Cybersecurity
- Wildfires
- Inverter-based resource variability
- Energy transfers
- Supply chain

# Hydro Outlook

## Projections for Lake Powell's surface elevation

In early March 2026, the U.S. Bureau of Reclamation's "most probable 24-month projections" for Lake Powell's surface elevation showed the reservoir could dip below the minimum level required for producing hydropower at Glen Canyon Dam late in the year.

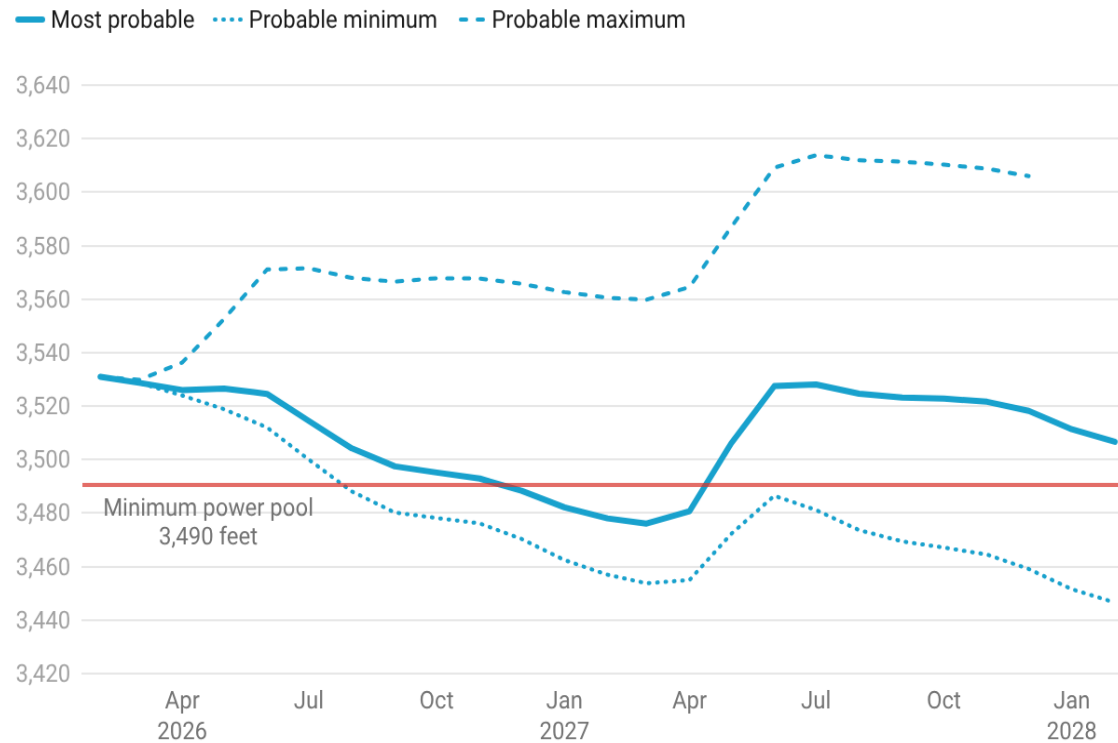


Chart: The Conversation/CC-BY-ND • Source: Bureau of Reclamation • Created with Datawrapper

- **Western Area Power Administration**
  - Set to publish annual letter to stakeholders by early May highlighting the summer outlook
- **Bonneville Power Administration**
  - In February, federal judge ordered 8 dams on the Columbia and Snake rivers to adjust operations to help salmon, diminishing hydro output
- **Hoover Dam (Lake Mead)**
  - Full pool level: 1,229 ft
  - Minimum power pool elevation: 950 ft
  - Current level: 1,059 ft
  - Nameplate capacity: 2,080 MW
- **Glen Canyon Dam (Lake Powell)**
  - Full pool level: 3,700 ft
  - Minimum power pool elevation: 3,490 ft
  - Current level: 3,526 ft
  - Nameplate capacity: 1,021 MW

# Summer Reliability Assessment (SRA)

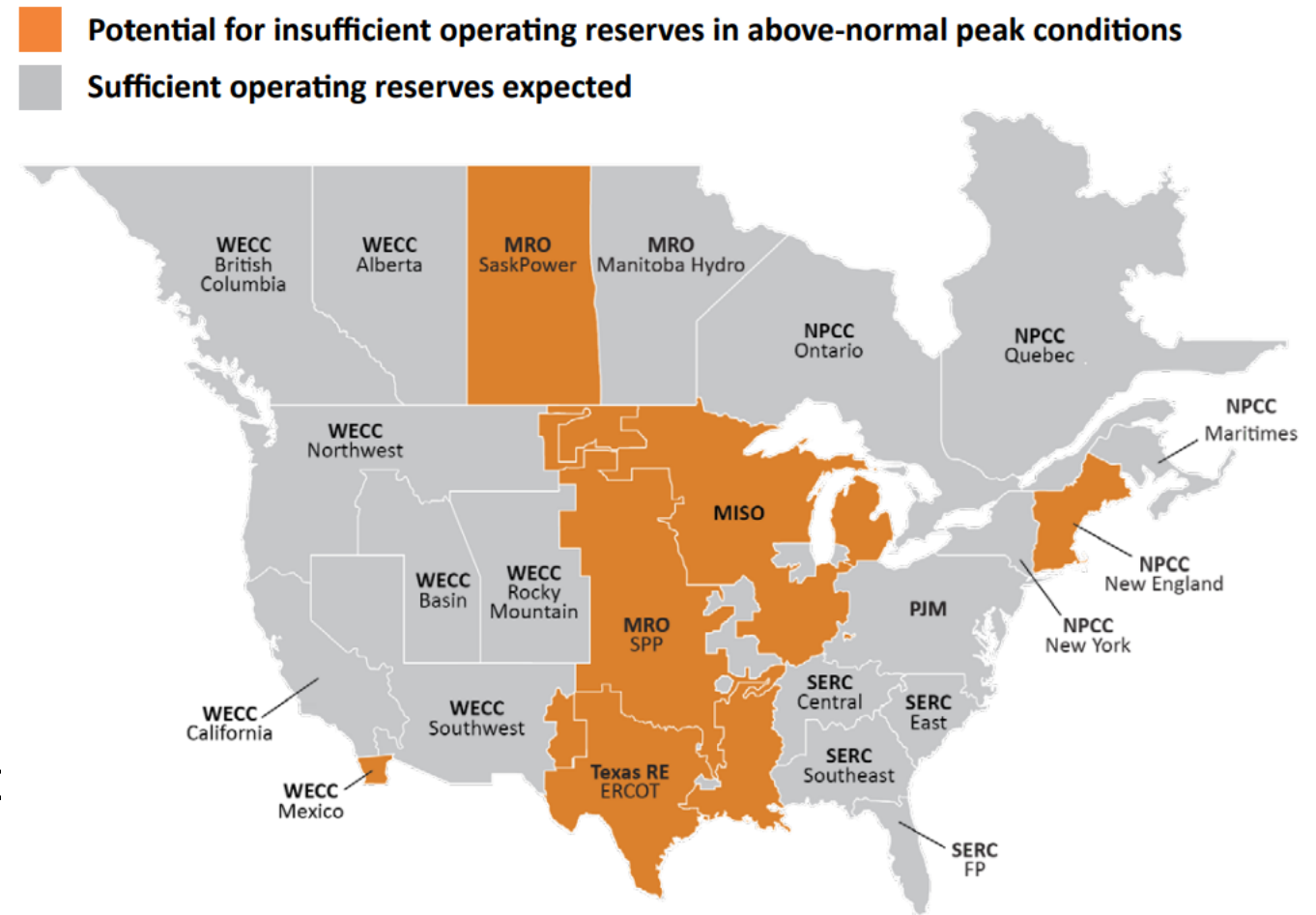
## • Extreme Conditions

- At or above 90/10 demand forecast
- Abnormally high generator outages
- Low availability of variable resources

## • Normal Conditions

- Average demand conditions (50/50)
- Typical outages and availability of variable resources

## 2025 SRA (2026 Infographic expected mid-May)

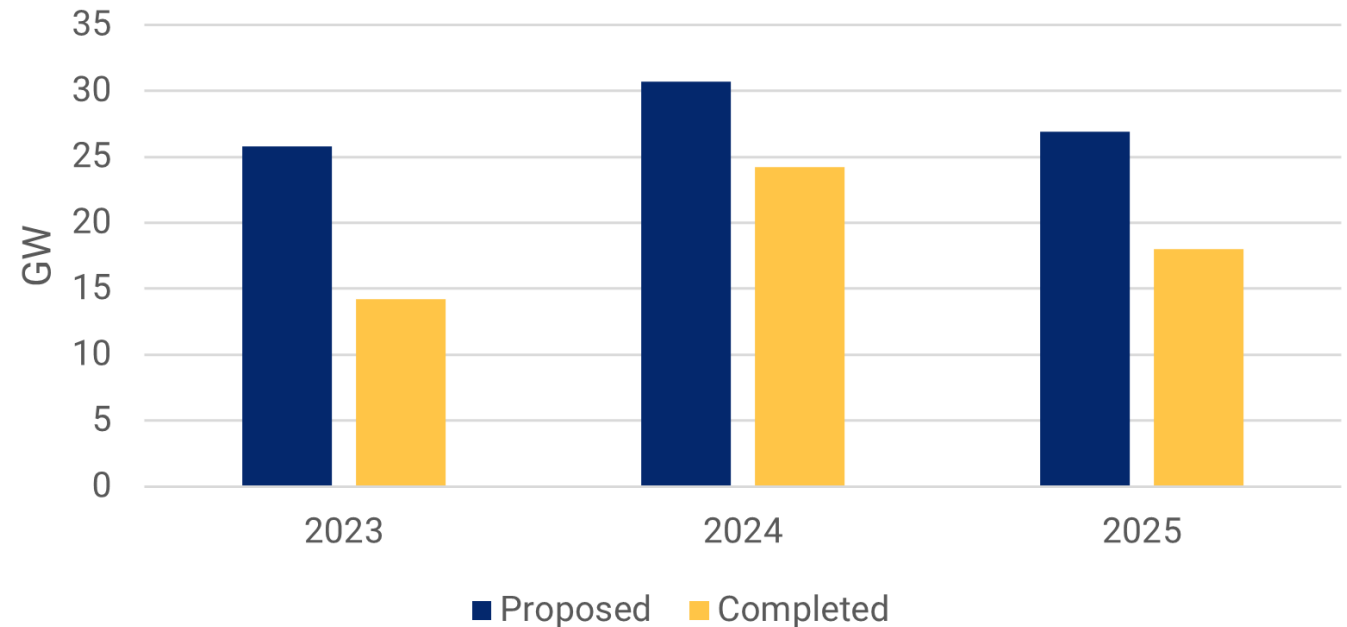


# Proposed vs. Completed Resource Additions

- Resource completion percentage dropped significantly in 2025 in California

Year	Western Interconnection	California
2023	55%	52%
2024	79%	94%
2025	67%	56%
3-Year-Avg	67%	67%

Western Interconnection: Proposed Capacity vs Completed Capacity, 2025





# WECC



[engage@wecc.org](mailto:engage@wecc.org)



[www.wecc.org](http://www.wecc.org) | 801-582-0353



155 N 400 W, Salt Lake City, Utah 84103, USA

# Dais Q & A for Panel 1



**Ten Minute Break  
Return @ 10:35 am**





# Panel: California Resources

Moderator: Elise Ersoy, CEC

- Christina Pellicio, CPUC
- Tony Zimmer, Northern California Power Agency
- Jorge Quintero, Department of Water Resources
- Rohimah Moly, Governor's Office of Business Development

# New Energy Resources to Serve CAISO Load

Christina Pelliccio

Analyst, Integrated Resource Planning Procurement Oversight

CPUC Energy Division

May 4, 2026

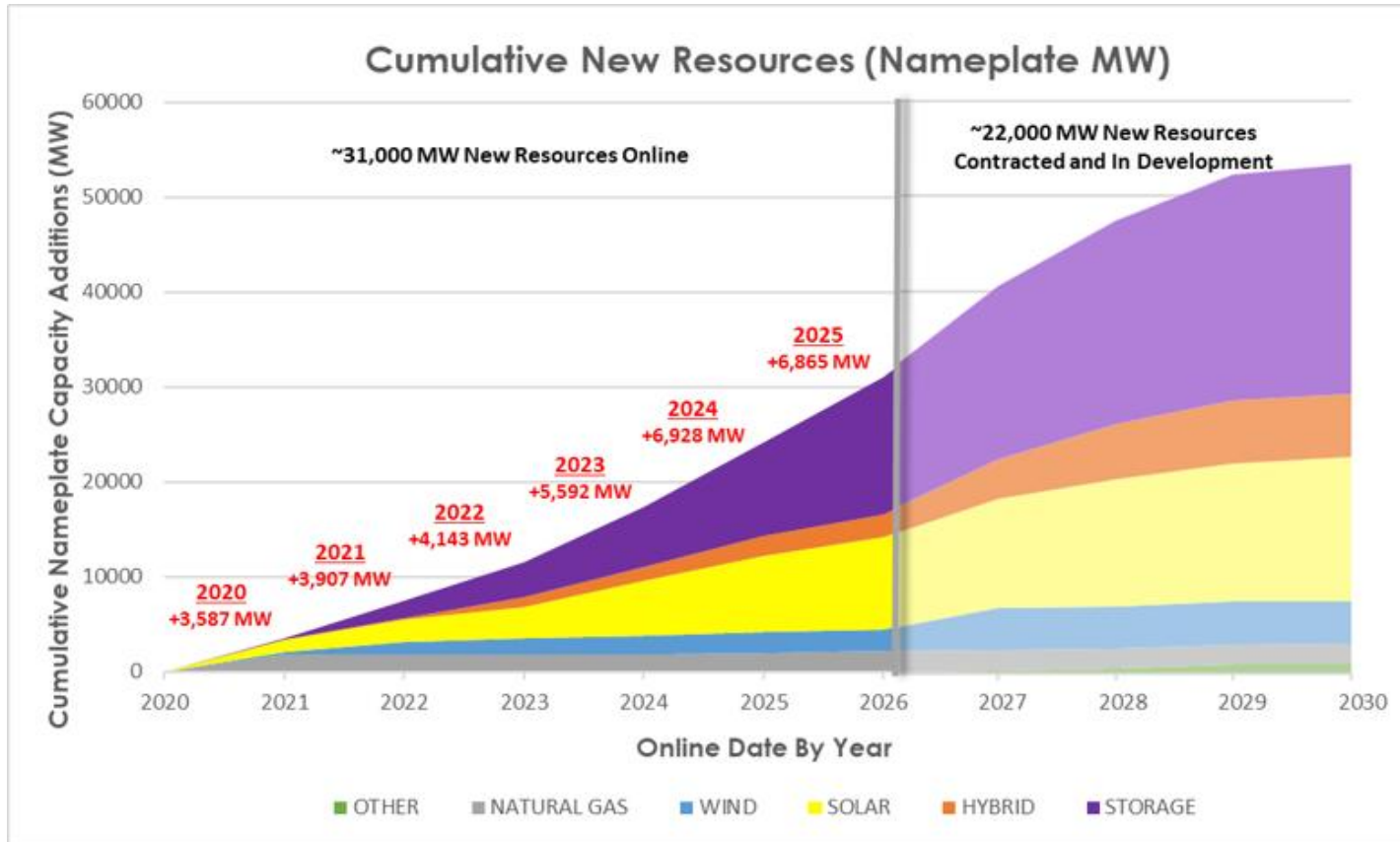
# New MWs Online - Nameplate

## By Year and Resource Type

Data includes projects online as of March 31, 2026

Technology Type	2025 MW	2026 MW (to date)	2020-2026 Cumulative MW
SOLAR	1,426	48	9,444
STORAGE	4,536	262	14,589
HYBRID (SOLAR + STORAGE)	399	1	2,045
WIND	27	0	1,154
GEOHERMAL	0	0	41
HYDRO, BIOMASS, BIOGAS	5	0	44
<b>Subtotal Total New SB100 Resources, IN-CAISO</b>	<b>6,393</b>	<b>311</b>	<b>27,316</b>
NATURAL GAS, incl. Alamitos & Huntington Beach	13	0	1,551
<b>Total New Resources, IN-CAISO</b>	<b>6,406</b>	<b>311</b>	<b>28,867</b>
New Imports, Pseudo-Tie or Dynamically Scheduled	459	170	2,515
<b>Total New Resources, including Imports</b>	<b>6,865</b>	<b>481</b>	<b>31,382</b>

# New Online & Expected Resources in CAISO

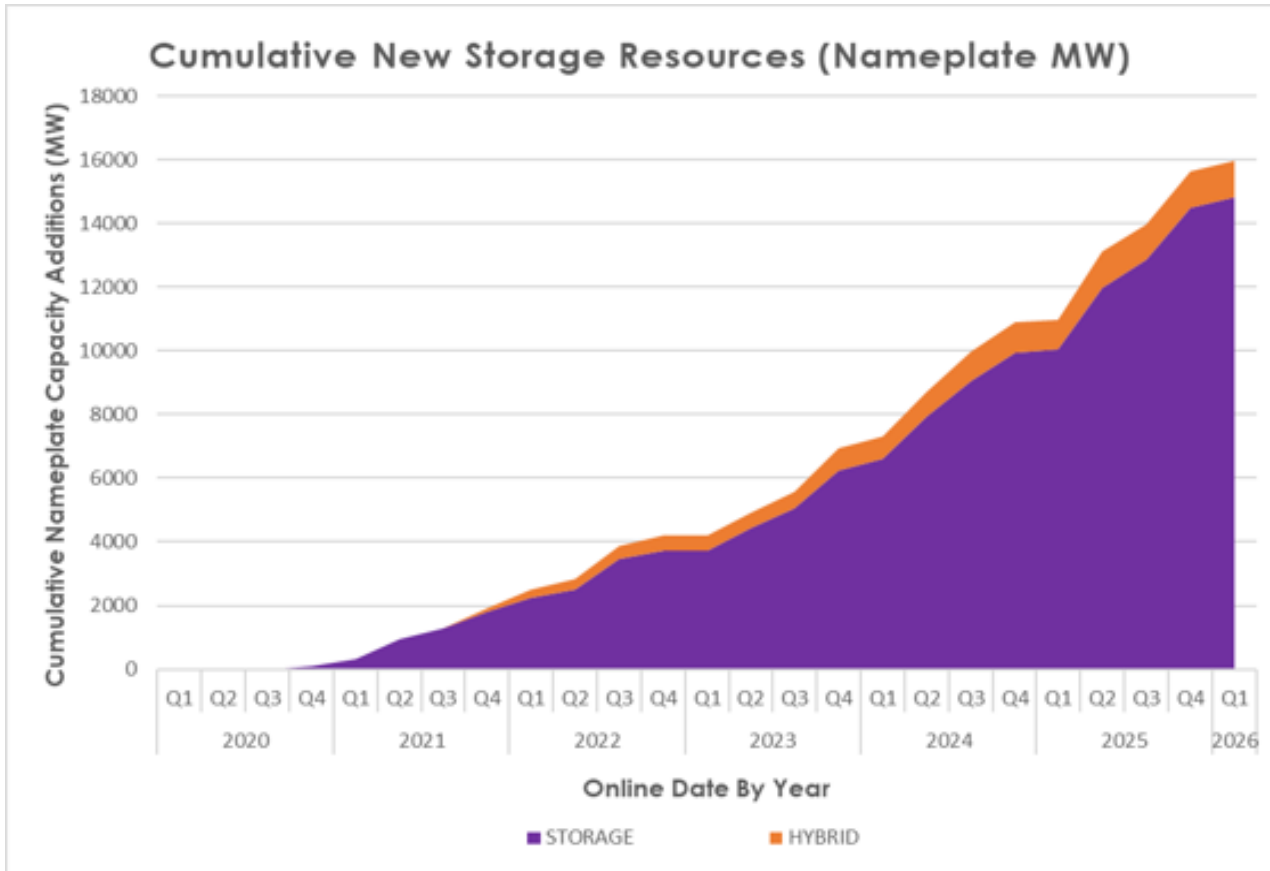


**Note:** Data shown here includes new resources added to CAISO grid, including imports. "Other" resources includes geothermal, biomass, biogas, and hydropower. Data includes projects online/expected as of March 2026.

- **Online** – Over 31,000 MW of new resources were added between 2020 and 2026 to date.
- **2025** – For the second year in a row, California brought over 6,500 MW of new nameplate capacity online to serve the CAISO territory.
- **Future** – ~22,000 MW of additional resources are currently under contract and in development; additional contracting will be done to fully meet the CPUC IRP orders by 2032.
- **Technology** - Most of the new resources installed and expected are battery storage, solar, or hybrids (usually solar+storage).

# Total Storage Online By Year

Data includes projects online  
as of March 31, 2026



**Note:** Data shown here shows a snapshot of new resources added to the CAISO grid Q1 2020 – Q1 2026, including specified CAISO imports. Hybrids include some storage, and some other (usually solar) technology. MW shown here only include the storage portion of hybrids.

California Public Utilities Commission

- **Installed to date:** ~16,000 MW of storage nameplate capacity is online serving the grid as of March 2026, including imports.
  - Includes ~150 MW of storage added prior to 2020
  - Includes standalone battery storage and the storage component of hybrid resources
- **Expected future installs:** An additional 13,000 MW of storage resources is under contract and expected to come online by 2029.

# Integrated Resource Planning Procurement Orders

CPUC Orders	Total	2021-2023	2024-2026	2027-2029	2030-2032
<b>D.19-11-016</b> Applies to 25 LSEs since 18/43 LSEs opted out.	<b>3,300 MW</b>	3,300 MW			
<b>D.21-06-035 (MTR)</b> Applies to all CPUC-jurisdictional LSEs.	<b>11,500 MW</b>	2,000 MW	7,500 MW	2,000 MW	
<b>D.23-02-040 (Supplemental MTR)</b> Applies to all CPUC-jurisdictional LSEs.	<b>4,000 MW</b>		2,000 MW	2,000 MW	
<b>D.26-02-057</b> Applies to all CPUC-jurisdictional LSEs.	<b>6,000 MW</b>				6,000 MW
<b>Cumulative MW NQC Ordered</b>	<b>24,800 MW</b>	<b>5,300 MW</b>	<b>14,800 MW</b>	<b>18,800 MW</b>	<b>24,800 MW</b>

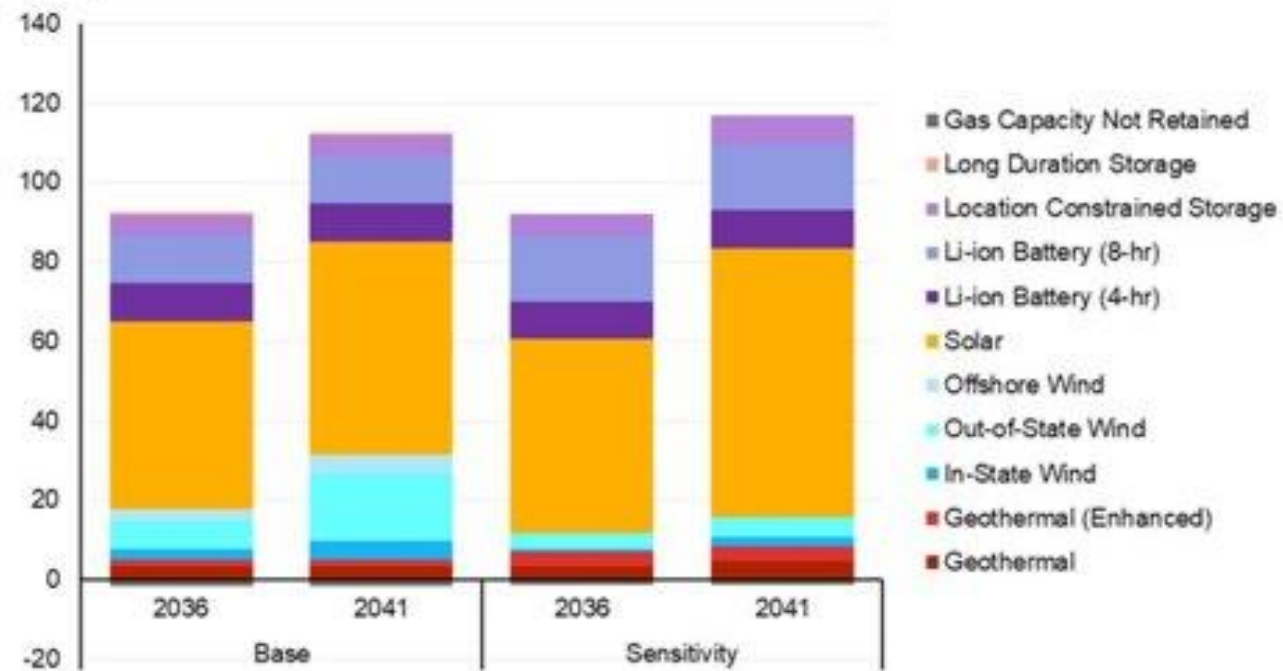
Note: MW reported in terms of September net qualifying capacity (NQC)

- **CPUC Procurement Orders:** Many new resource additions are the result of CPUC Integrated Resource Planning procurement orders, which have ordered roughly 25 GW of new, clean net qualifying capacity between 2021-2032.
- **NQC:** The CPUC orders procurement in terms of net qualifying capacity (NQC), which represents the amount of capacity a resource can contribute to grid reliability. The 25 GW NQC of procurement orders will yield many more MW in terms of nameplate capacity.
- **New Procurement Ordered:** On Feb 26, 2026, the CPUC issued a decision in its IRP proceeding that orders CPUC-jurisdictional electricity providers to procure a total of 6,000 MW NQC in the 2030-2032 timeframe.

# CPUC Decision on Electric Resource Procurement and Transmission Planning

- The CPUC transmits IRP resource portfolios to the CAISO for use in its annual Transmission Planning Process (TPP) to identify future transmission needs.
- For the 26-27 TPP, the CPUC transmitted one base case and one sensitivity portfolio to the CAISO focused on a limited wind deployment future.
- There is an increase in selected capacity for 26-27 TPP (when compared to 25-26 TPP base case) to account for higher forecasted load. More of nearly every resource type is selected to meet reliability and GHG reduction needs.

**New Resource Buildout in 26-27 TPP Cases (GW)**





# **Building a Reliable and Resilient Generation Portfolio**

# ABOUT US

POWERING  
THE  
**FUTURE**  
- SINCE 1968



## WHO WE ARE

The Northern California Power Agency (NCPA) is a Joint Powers Agency representing 16 consumer-owned utilities and districts that provide reliable, affordable, and clean energy to more than 700,000 Californians. Through joint action, NCPA delivers cost-effective wholesale power, energy services, and advocacy on behalf of public power consumers.

-  **16** Member Communities and Districts
-  **700,000+** Electric Customers Served
-  **54%** Emission-Free Generation Portfolio
-  **788MW** Combined Generation Capacity
-  **100%** Locally Controlled and Not-for-Profit
-  **Largest** power customer of the Central Valley Project



## FACILITIES

- ★ NCPA Headquarters
- ◆ Geysers Geothermal Project
- ◆ CT-1 Combustion Turbine Project
- ◆ CT-2 Combustion Turbine Project
- ◆ Stanislaus River Hydroelectric Projects
- ◆ Lodi Energy Center
- NCPA Member Systems

## Our Members:

Alameda • Biggs • Gridley • Healdsburg • Lodi • Lompoc • Palo Alto • Plumas-Sierra REC  
Port of Oakland • Redding • Roseville • Santa Clara/Silicon Valley Power • San Francisco  
Bay Area Rapid Transit District (BART) • Shasta Lake • Truckee Donner PUD • Ukiah

## Resource Diversity is Key to Reliability

- ***Mission***: Provide safe, affordable, reliable, and environmentally responsible wholesale power supply to our public power Members through joint action
- ***Goal***: Develop a diversified energy supply portfolio that is complementary to meet current and future demand
- ***Customer Focused***: Build a power supply portfolio that is aligned with both State and Local goals and objectives, with focus on reliability and affordability

## Resource Diversity

- Hydroelectric
  - Flexibility, peaking capacity
- Geothermal
  - Base load renewable generation
- Natural Gas
  - Flexibility, renewable integration
- Landfill Gas
- Solar
- BESS
  - Renewable integration
- Wind

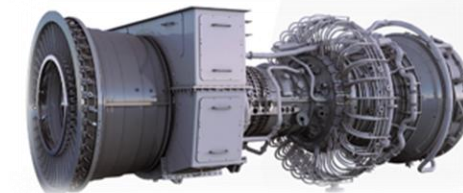
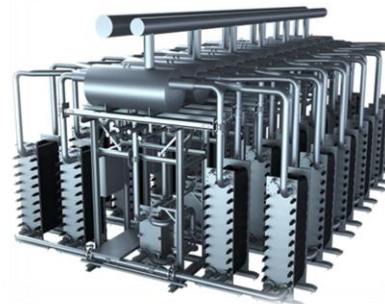
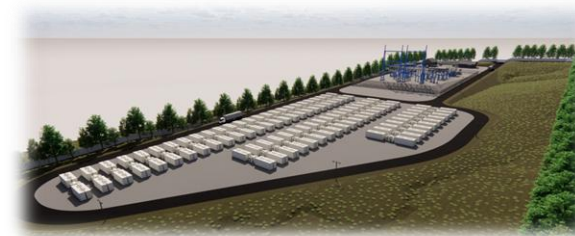
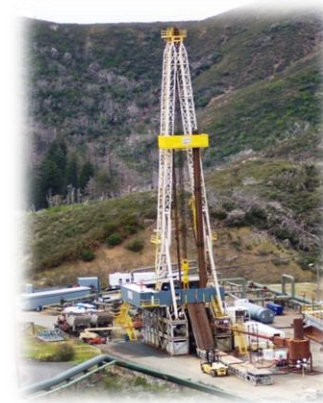


## New Resource Development

- NCPA and public power are actively planning for the future, coordinated planning activities
- *Drivers*: forecasted load growth driven by integration of data centers and electrification, decarbonization
- *Key challenges*: permitting, interconnection, supply chain, political and regulatory uncertainty
- *Opportunities*: new resource development, regional markets, increased coordination

# Near Term / Long Term Goals

- New Resource Development
  - Solar PV
  - BESS
- Enhance Existing Fleet
  - Advanced geothermal drilling
  - Repowering of old technology
  - Gained efficiency
  - Increased capacity
  - Alternative fuel supply
- Other solutions
  - Responsive Load



## Silicon Valley Power and Emerald AI Launch Pilot to Demonstrate Flexible Data Centers in Santa Clara and Unlock Power Capacity for AI

Collaboration will evaluate how grid-responsive data centers can unlock grid capacity to accelerate AI infrastructure while supporting reliability and affordability in the heart of Silicon Valley

**SANTA CLARA, Calif.** – Silicon Valley Power (SVP), the municipally owned utility of the City of Santa Clara, and Emerald AI today announced a pilot program to demonstrate how flexible data centers can help support grid reliability, affordability, and more efficient system planning as advanced digital infrastructure continues to grow in Silicon Valley. Flexible data centers can adjust power consumption in response to grid conditions without disrupting critical AI workloads.



# Questions / Comments

# State Water Project's Summer 2026 Operations Outlook

May 04, 2026

CDWR-SWP-O&M-POM



Jorge Luis Quintero, P.E.

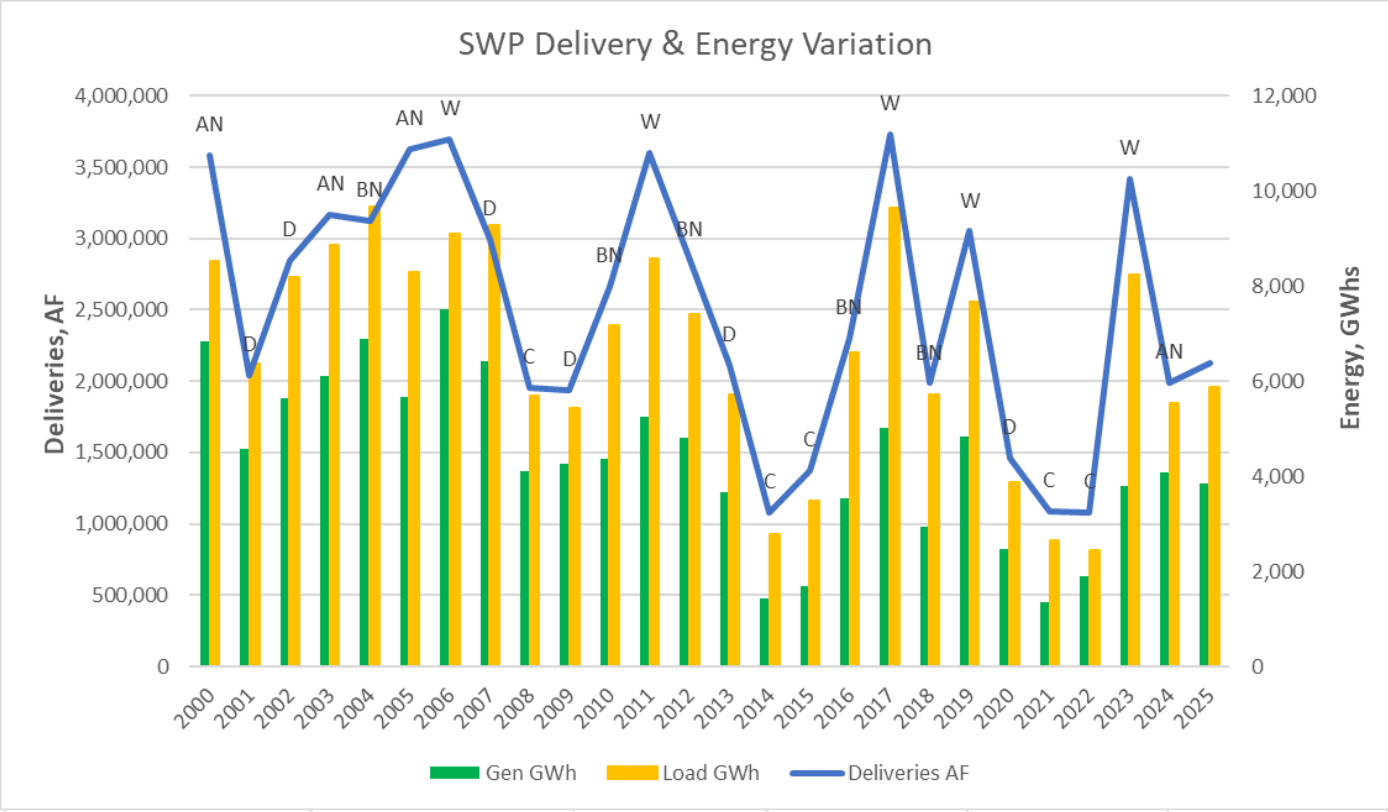
# SWP Facilities

- 36 Storage Facilities
- 21 Pumping Plants
- 5 Hydro Power Plants
- 4 Pump-Gen Plants
- 700 Miles of Canals & Pipelines



# SWP Historical Variability of Operations

- Hydrology drives supply
- Reflects operational constraints and water contractor demands
- SWP hydro plants only (other non-hydro power resources not included)



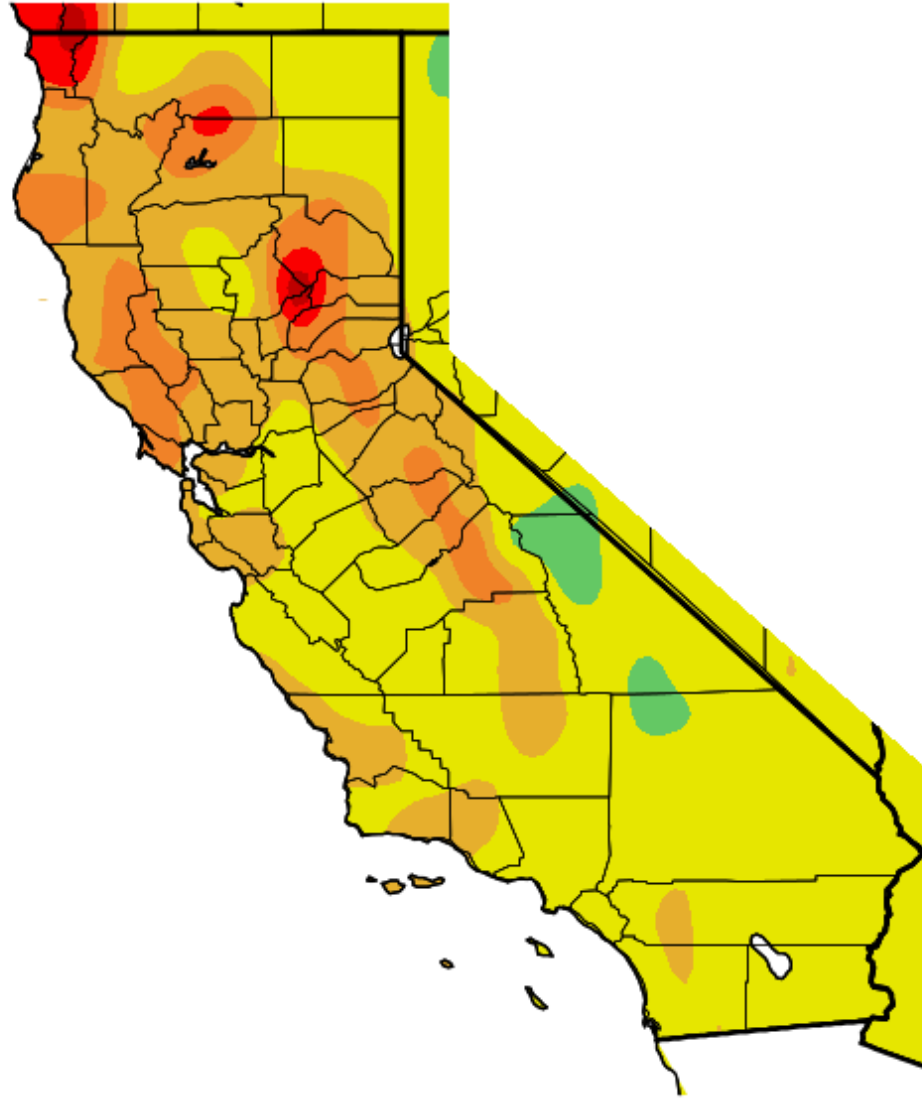
Water Year Type	Deliveries AF	Gen GWh	Load GWh	# of Years	Alloc %
W	3,497,122	5,287	8,646	5	88%
AN	2,899,515	5,305	7,416	5	72%
BN	2,582,604	4,507	7,314	5	55%
D	2,231,295	4,508	6,477	6	44%
C	1,315,692	2,096	3,411	5	14%

Dataset: 2000 to 2025



# 2026 Hydrology Map

Precipitation Departure from Average (in.)  
1/1/2026 - 4/7/2026



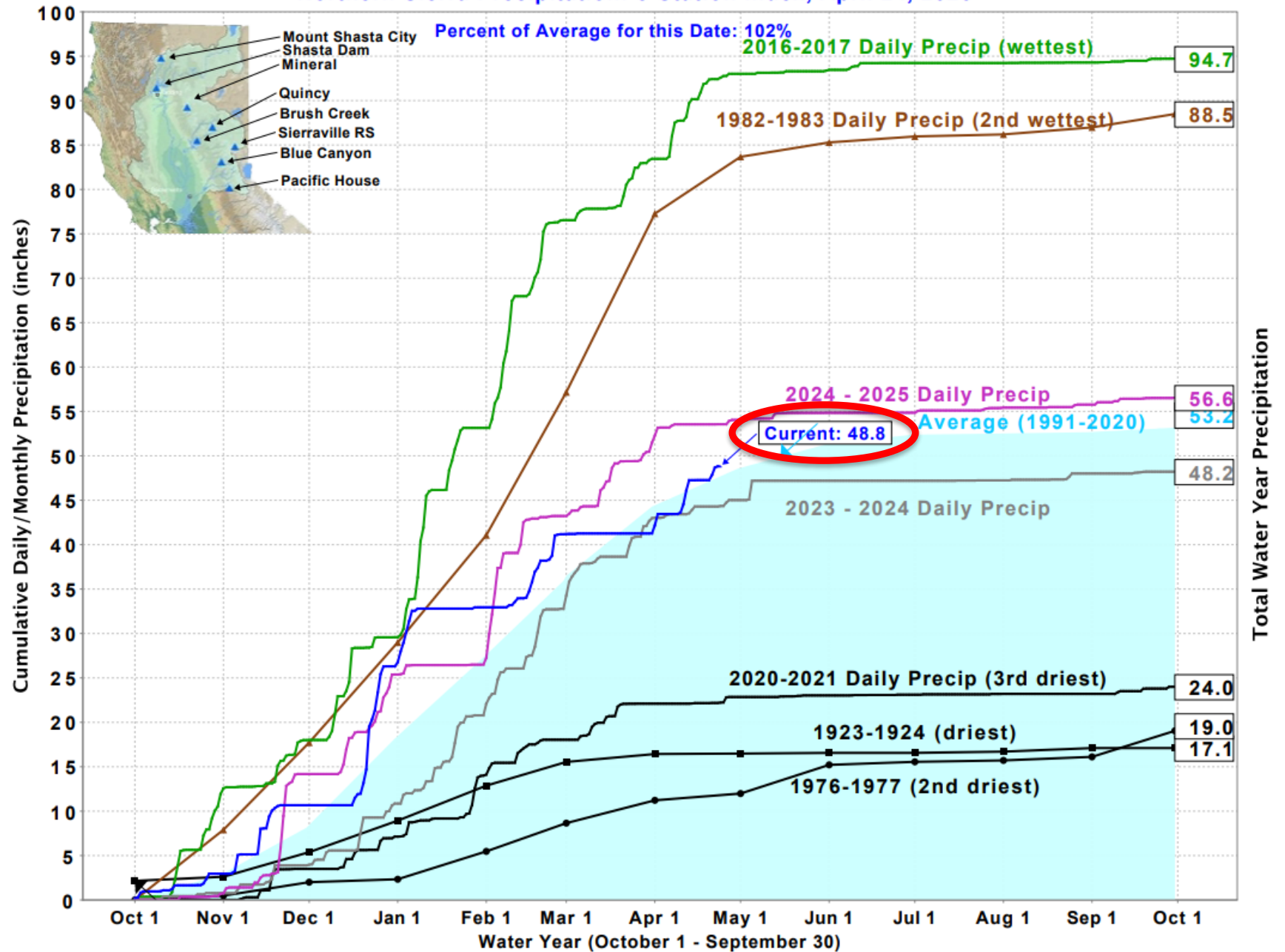
Generated 4/ 8/2026 at WRCC using provisional data.  
NOAA Regional Climate Centers



CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

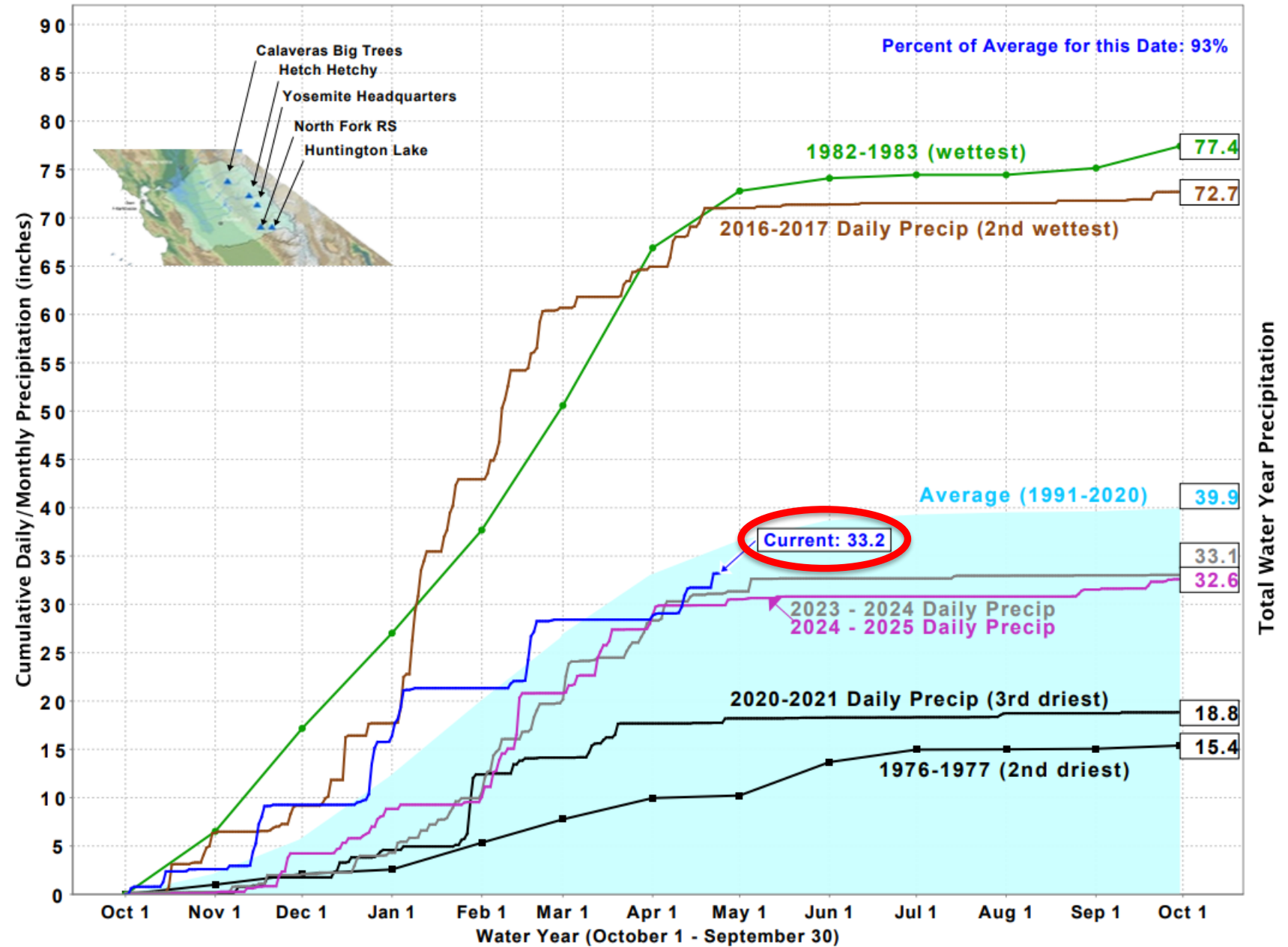
# 2026 Hydrology - Northern Sierra

Northern Sierra Precipitation: 8-Station Index, April 24, 2026



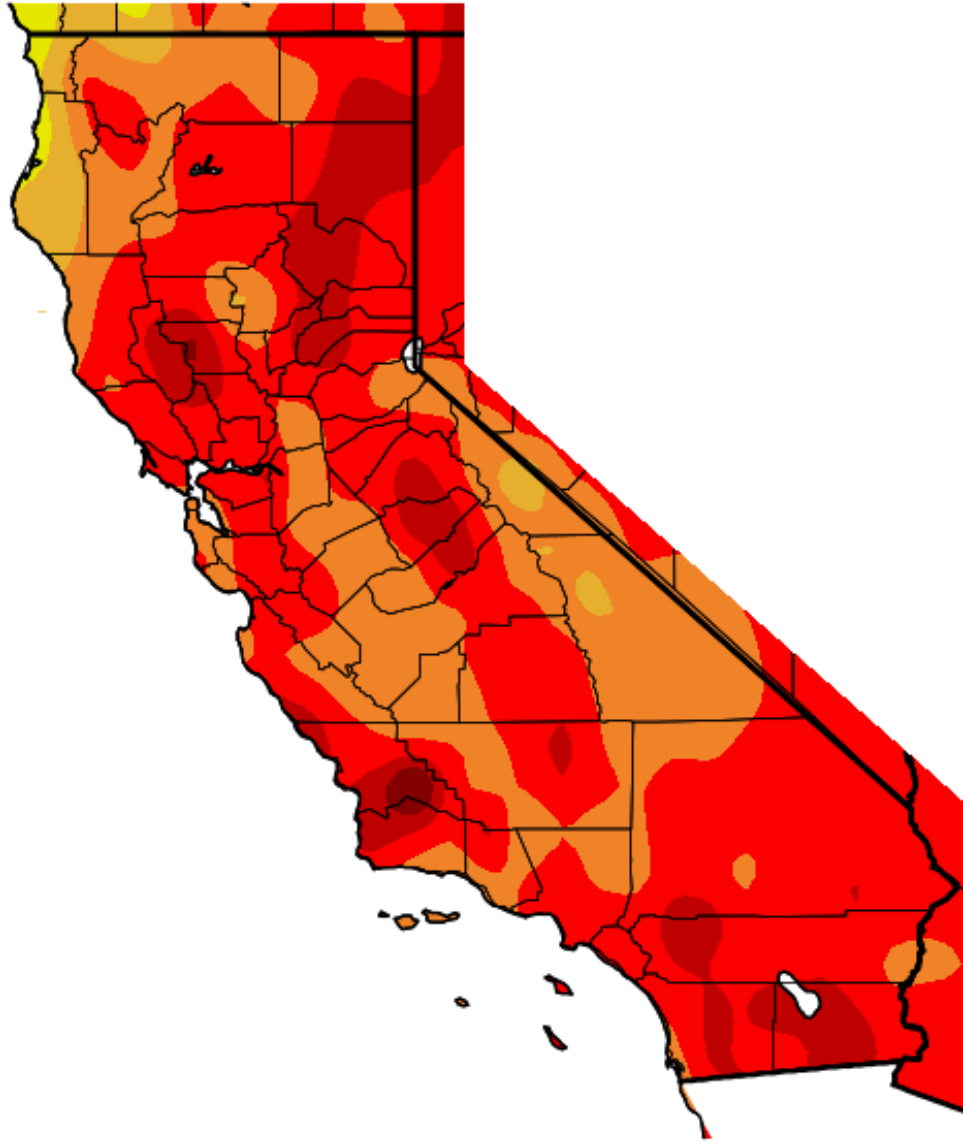
# 2026 Hydrology - San Joaquin

San Joaquin Precipitation: 5-Station Index, April 24, 2026



# 2026 Temperature Map

Av. Max. Temperature dep from Ave (deg F)  
1/1/2026 – 4/7/2026

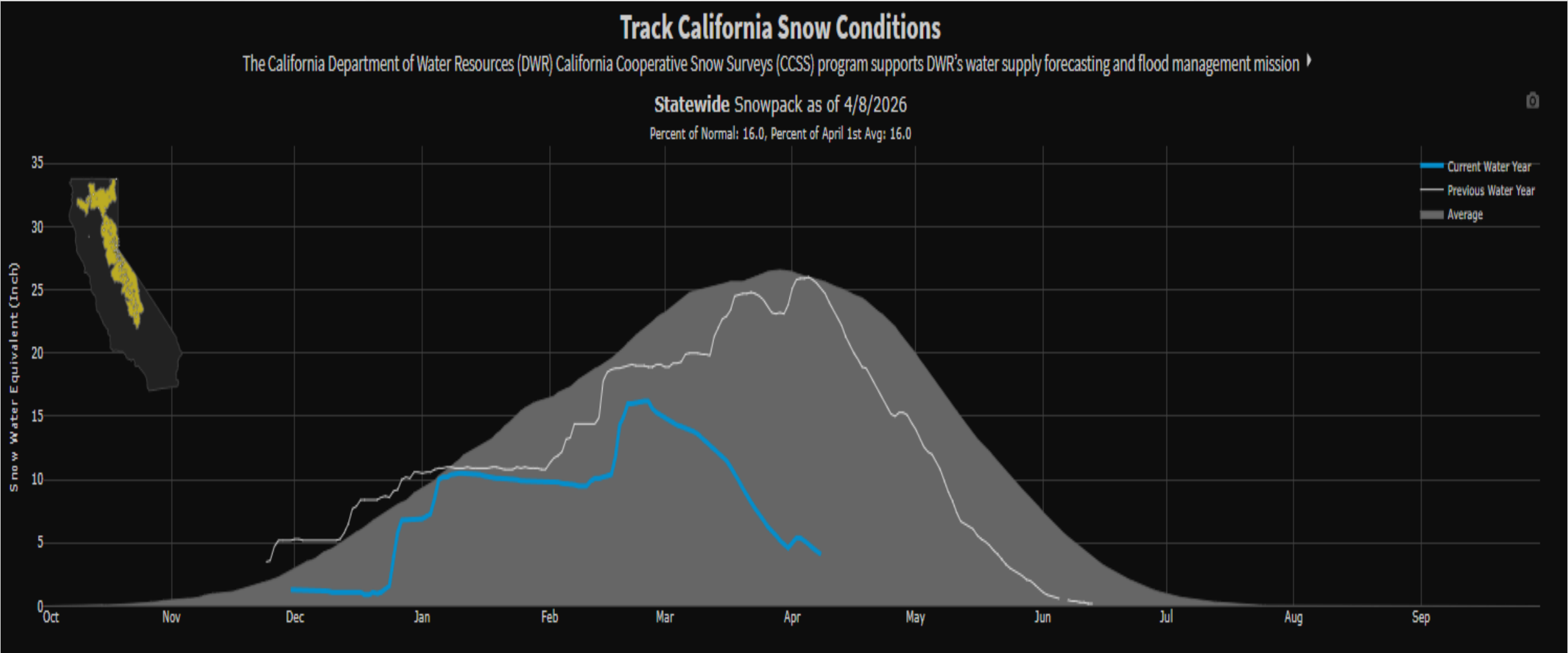


Generated 4/ 8/2026 at WRCC using provisional data.  
NOAA Regional Climate Centers

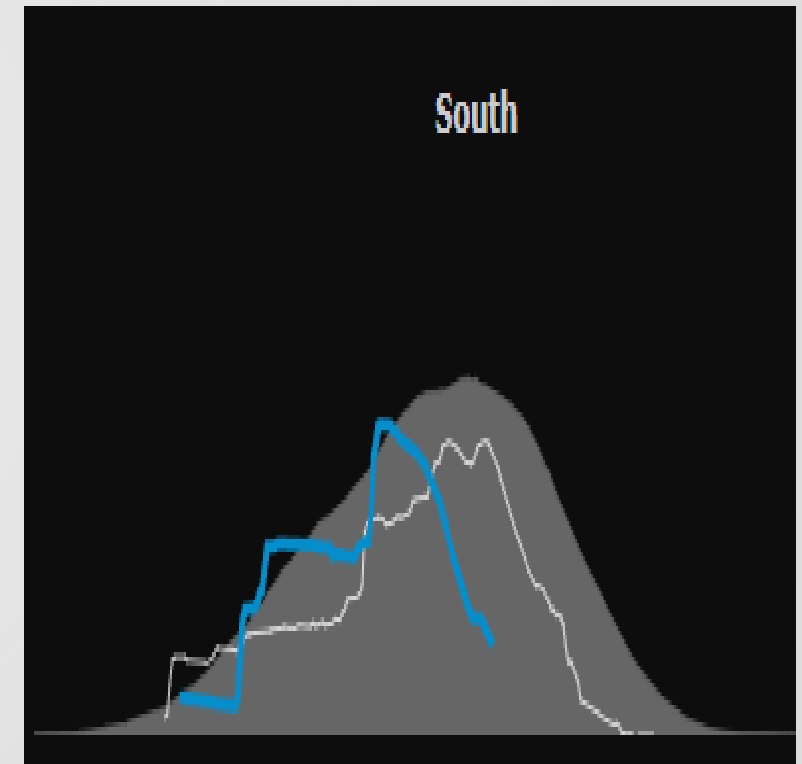
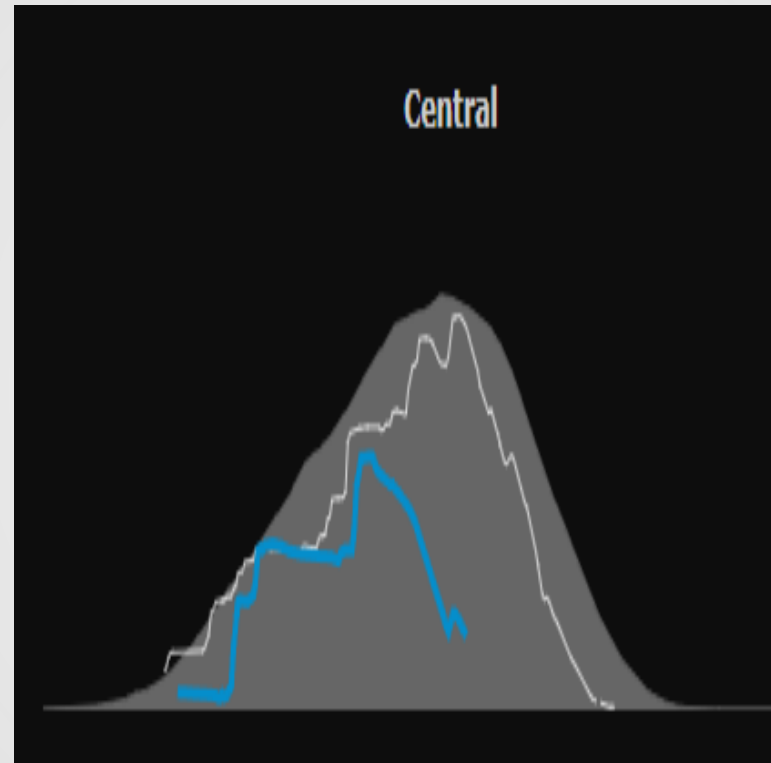
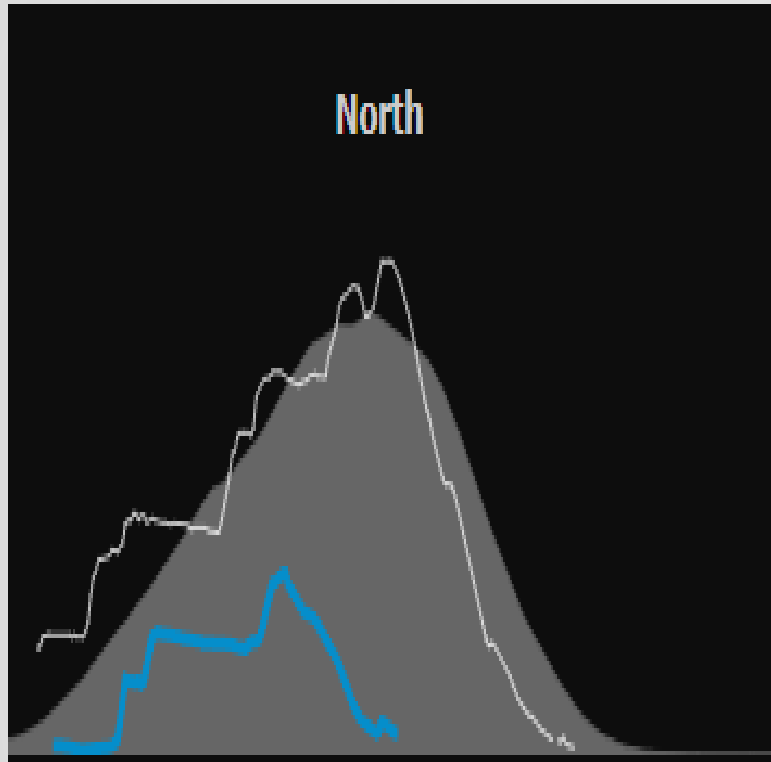


CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

# 2026 Snowpack – Statewide



# 2026 Snowpack – by region



# SWP Operations – 2026 System Outlook

## SWP Generation

- Oroville Complex, San Luis Gen, Devil Canyon, Warne, Alamo, Mojave

## SWP Pump Load

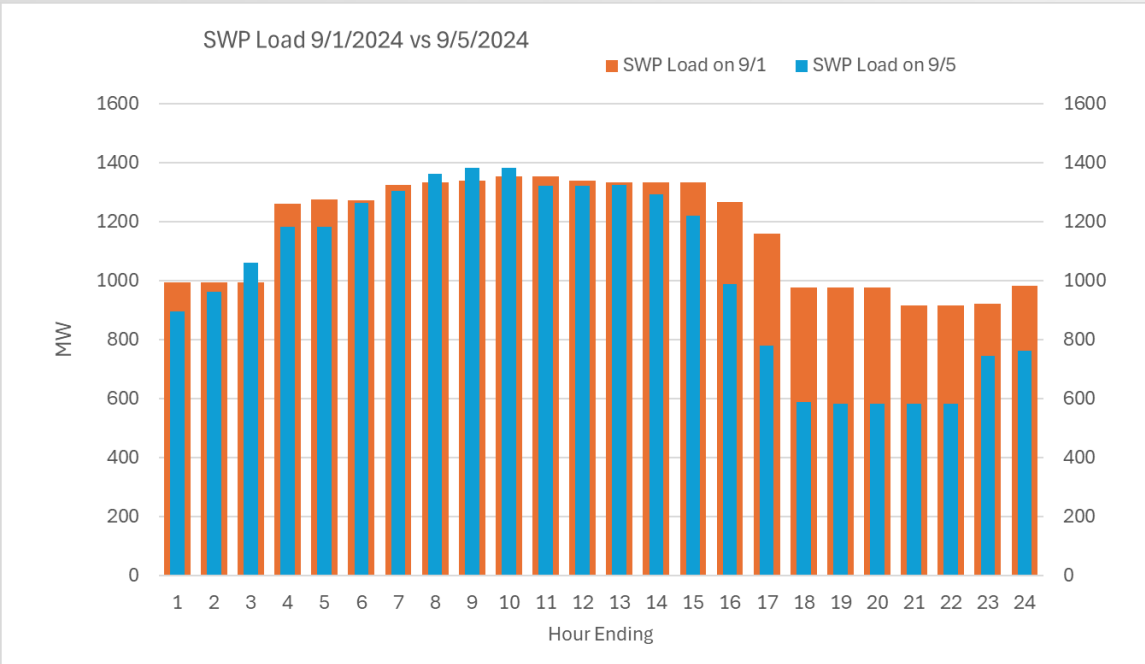
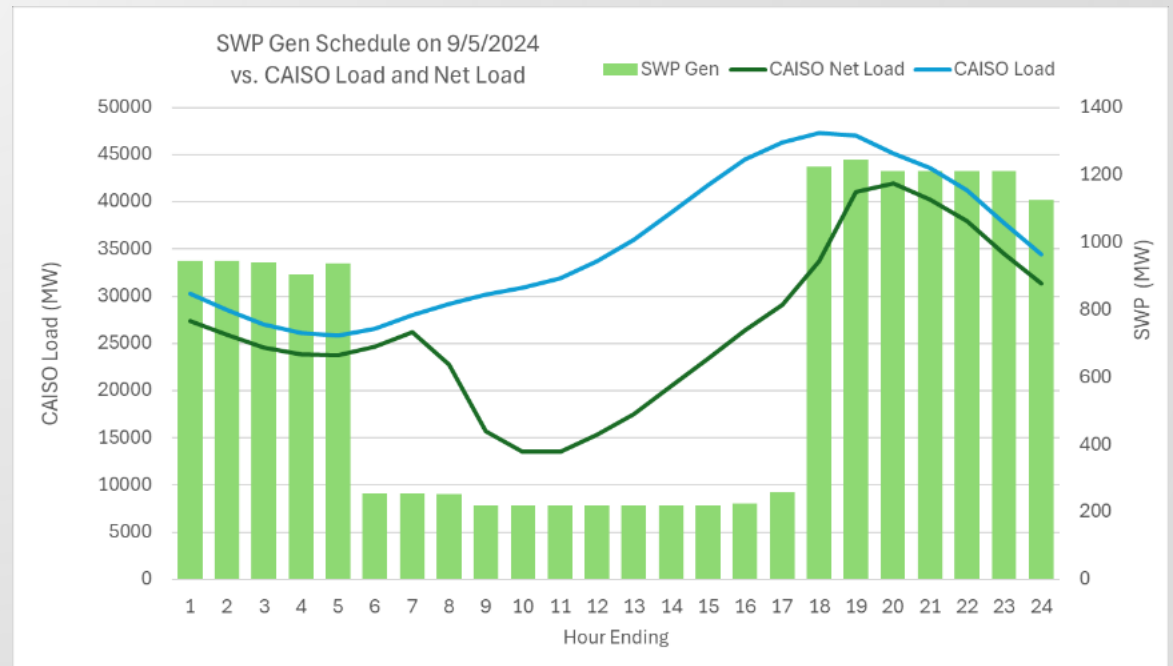
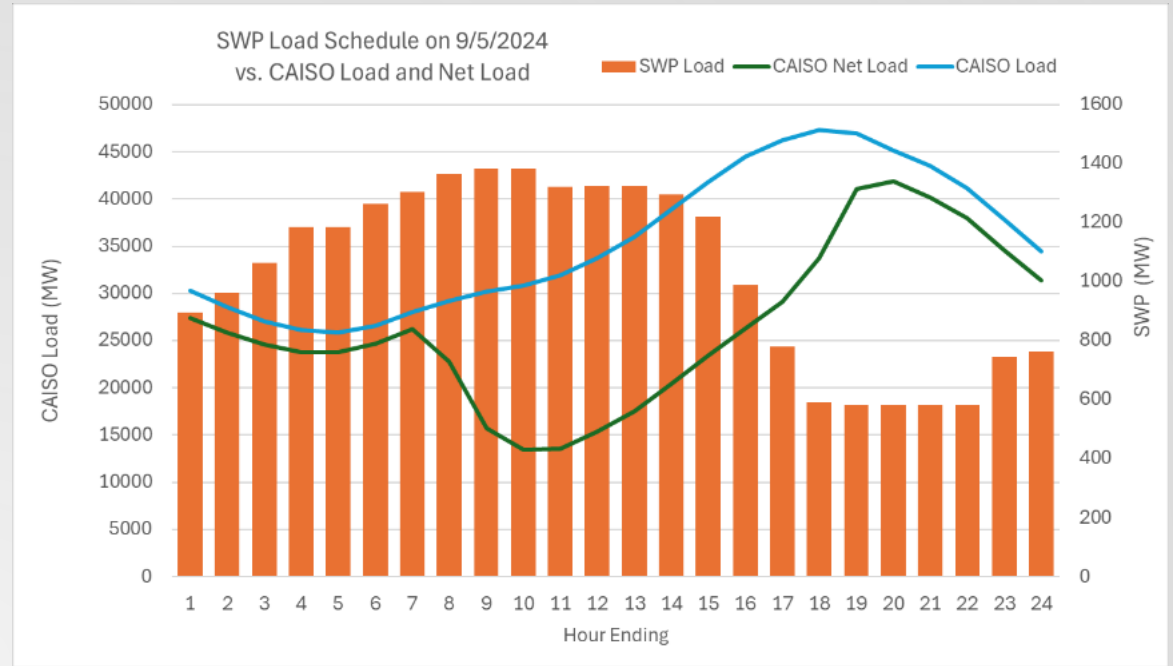
- Banks, San Luis Pump, Dos Amigos, Valley String, Pearblossom, Oso

SWP Net System Gen & Pump						
Ave HE17-21	2023 Meter		2024 Meter		2025 Meter	
Month	Gen	Pump	Gen	Pump	Gen	Pump
July	624	1113	917	676	988	736
August	678	1052	846	839	889	720
September	799	1038	786	666	672	732

2026 Forecast			
Low		High	
Gen	Pump	Gen	Pump
623	332	725	521
514	269	647	432
389	279	566	439



# 2024 Flexibility based on 3-7 Day Communication



# Questions?





California Energy Commission | Summer Energy Reliability Workshop

# Emerging Trends in Clean Energy Project Deployment

Rohimah Moly, Deputy Director for Energy and Climate @ GO-Biz

05.04.2026

# Energy Project Tracking

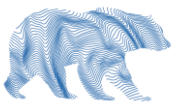
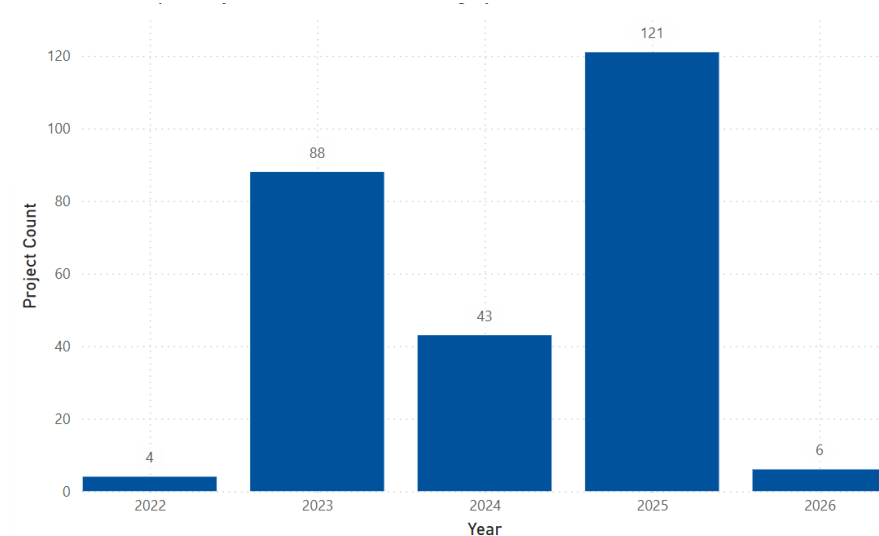
- **TED Task Force** | Joint interagency (GO-Biz, CPUC, CEC, CAISO) effort to provide project development support for new energy projects to come online in the near-term
- Meet with developers and other stakeholders to receive updates on progress of projects
- Provide project assistance, when feasible
- Collect and synthesize data
- Identify global challenges that may impact clean energy deployment and coordinate actions to address barriers



## 2025 Statistics

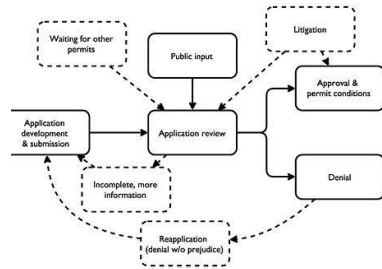
- # of projects tracked: **218**
- # of projects actively monitored: **146**
- # developers with active engagement: **38**
- # of projects with delay: **148**
- # of projects had delay resolved: **77**
- # of projects with delay that reached COD: **18**

## Unique Projects Added to Tracker by Year



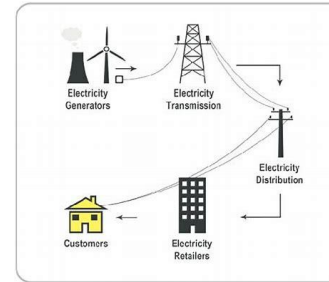
# Challenges to Energy Project Deployment

## Top Issues/Causes for Delays as Reported by Developers



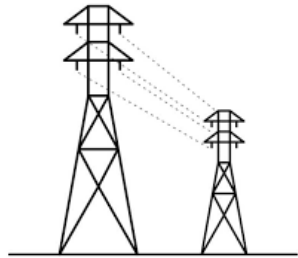
### PERMITTING

- Local, state and/or federal
- Environmental reviews
- Staffing capacity/turnover
- Community opposition



### INTERCONNECTION

- Documentation delays
- Easement issues
- Studies



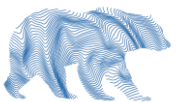
### TRANSMISSION

- Network upgrades
- Circuit breaker procurement
- Deliverability (queue management)
- Study issues



### SUPPLY CHAIN

- Global competition
- Very long lead time for circuit breakers and transformers



# Battery Storage Safety Concerns & Challenges

## Concerns/Challenges

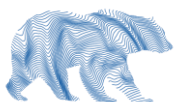
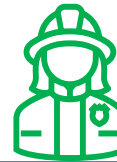
- Fire safety risks
- Environmental and health concerns
- Lack of permitting know-how
- Community opposition
- Moratoriums



Fifth Standard Project in Fresno County

## State Activities to Date

- Battery Storage Collaborative
- CPUC General Order 167-C
- OSFM Battery Safety Symposium
- GO-Biz Clean Energy Permitting Playbook and Toolkit
  - ✓ Overview of energy landscape and summary of survey findings
  - ✓ Resources Toolkit
    - ✓ Model ordinances for battery storage, solar and wind
    - ✓ Fact sheets and application checklists
    - ✓ Community engagement guide



# Expiring Federal Tax Credits for Energy Projects

## H.R. 1

- Accelerated the expiration of federal tax credits for solar and wind projects
  - Be in construction by July 4, 2026 or online by December 31, 2027
  - Meet “safe harbor” rules

## Clean Energy Executive Order N-33-25

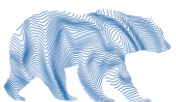
- Directed relevant state agencies to assist projects capture expiring federal tax credits
- Actions taken:
  - Conducted extensive outreach to developers
  - Convened stakeholder meetings
  - Coordinating and facilitating discussions between stakeholders on solutions to expedite energy project deployment

Aug 29, 2025

## Governor Newsom signs executive order to bolster California’s clean energy progress in face of Trump’s wrecking ball

**What you need to know:** The Governor signed an executive order today to help clean energy projects in the state capture federal tax credits before they expire as a result of HR 1, Trump’s Big Ugly Bill.

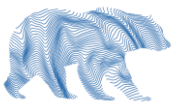
SACRAMENTO – As the Trump administration takes the country backward on clean energy deployment and development, Governor Gavin Newsom today signed an executive order to protect California’s decades of progress and double down on building more clean energy, faster.



# Addressing Barriers & Challenges

## Additional State Activities/Actions to Assist Clean Energy Project Deployment

- CEC Opt-In Program
- SB 149 | Judicial Streamlining
- CPUC GO 131-E | Transmission Permitting Process Streamlining
- GO-Biz Clean Energy Permitting Playbook and Toolkit
- CAISO Interconnection Process Enhancement (IPE) Process
- **GO-Biz | California Permitting Academy**
- **GO-Biz | Partnership with Governor's Innovation Fellows**



# Dais Q & A for Panel 2





# Public Comment - Morning

## Zoom:

- Use the “raise hand” feature to make verbal comments

## Telephone:

- Dial \*9 to raise your hand
- \*6 to mute/unmute your phone line. You may also use the mute feature on your phone.

## When called upon:

- Your microphone will be opened
- Unmute your line
- Spell your name for the record, then start your comment.

Limited to 3 minutes per person and 1 representative per organization.

## 3-MINUTE TIMER



**Lunch Break**  
**Return @ 1:00 pm**





# Panel: Summer Reliability Assessments

Moderator: Liz Gill, CEC

- Chie Hong Yee Yang, CEC
- Donald Brooks, CPUC
- Aditya Jayam Prabhakar, California ISO



# 2026 Summer Reliability Outlook

Chie Hong Yee Yang



# Overview

- Summer 2026 Electricity & Fossil Gas Reliability
- Objective: Assess system readiness under expected and stressed conditions
  - Fossil gas system reliability assessment
  - Electricity reliability assessments
    - Probabilistic assessment
    - Resource stack analysis

# Summer 2026 Fossil Gas Reliability Modeling



## Modeling Goals:

1. Assess ability of PG&E and SoCalGas to meet Summer 2026 forecasted peak gas demand.
2. Assess ability to refill gas storage to meet Winter 2026-2027 demand.

### Modeling Inputs

#### CEC Demand Forecasts

- Monthly average temperature
- Increased electric generation
- Summer peak day

#### CEC Supply Forecasts

- Pipeline capacities
- April 1<sup>st</sup> Storage Inventory



### Modeling Tools

- Gas balance tables comparing supply and demand
- Hydraulic models calculating system pressures and flows
- Stochastic models of hourly gas balances (SoCalGas only)

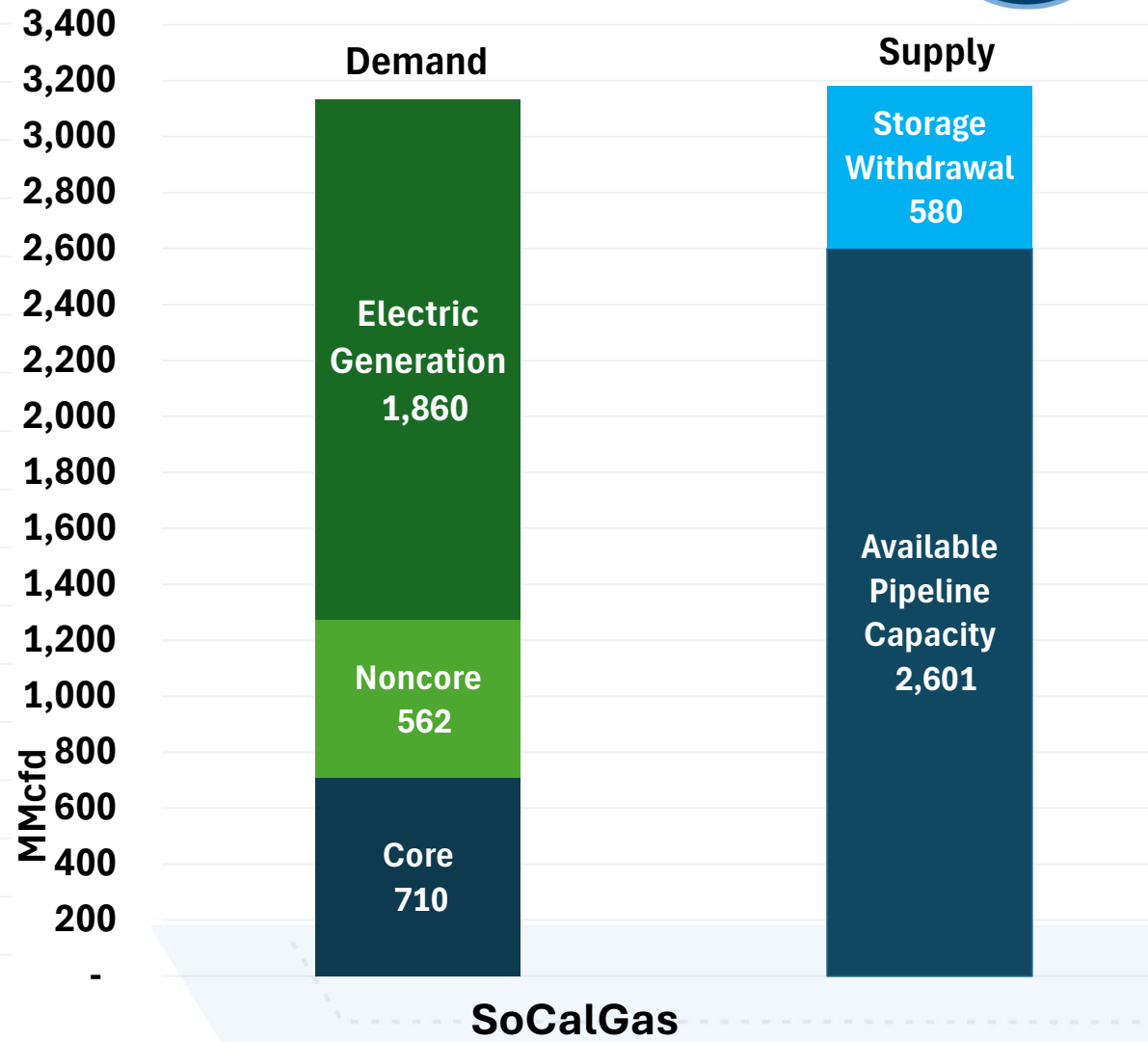
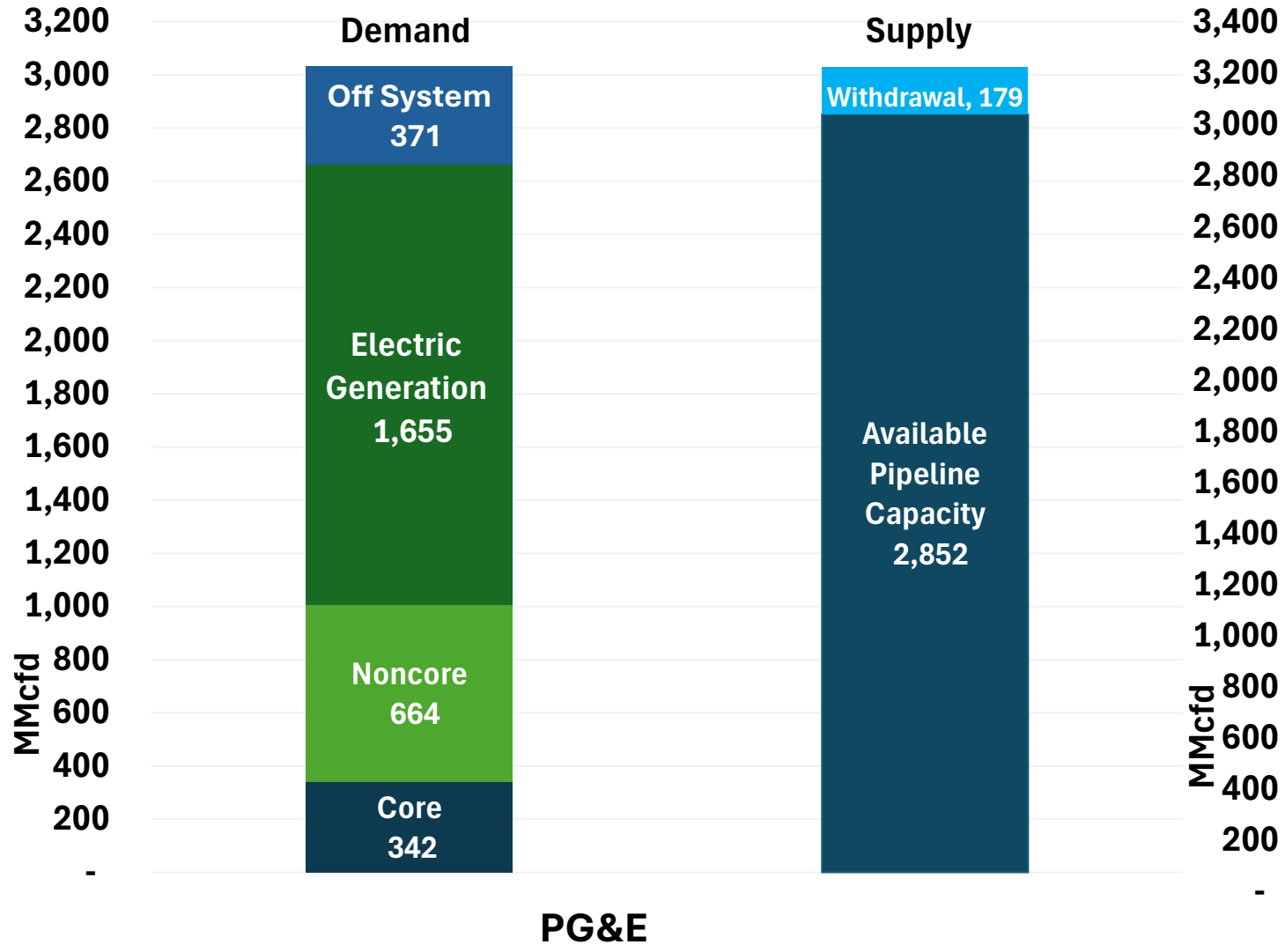


### Modeling Outputs

- Storage injections and withdrawals
- Storage inventories (April 30<sup>th</sup> through October 31<sup>st</sup>)
- Peak day hourly supply
- Peak day hourly demand



# Utilities Peak Day Scenario Daily Gas Balance

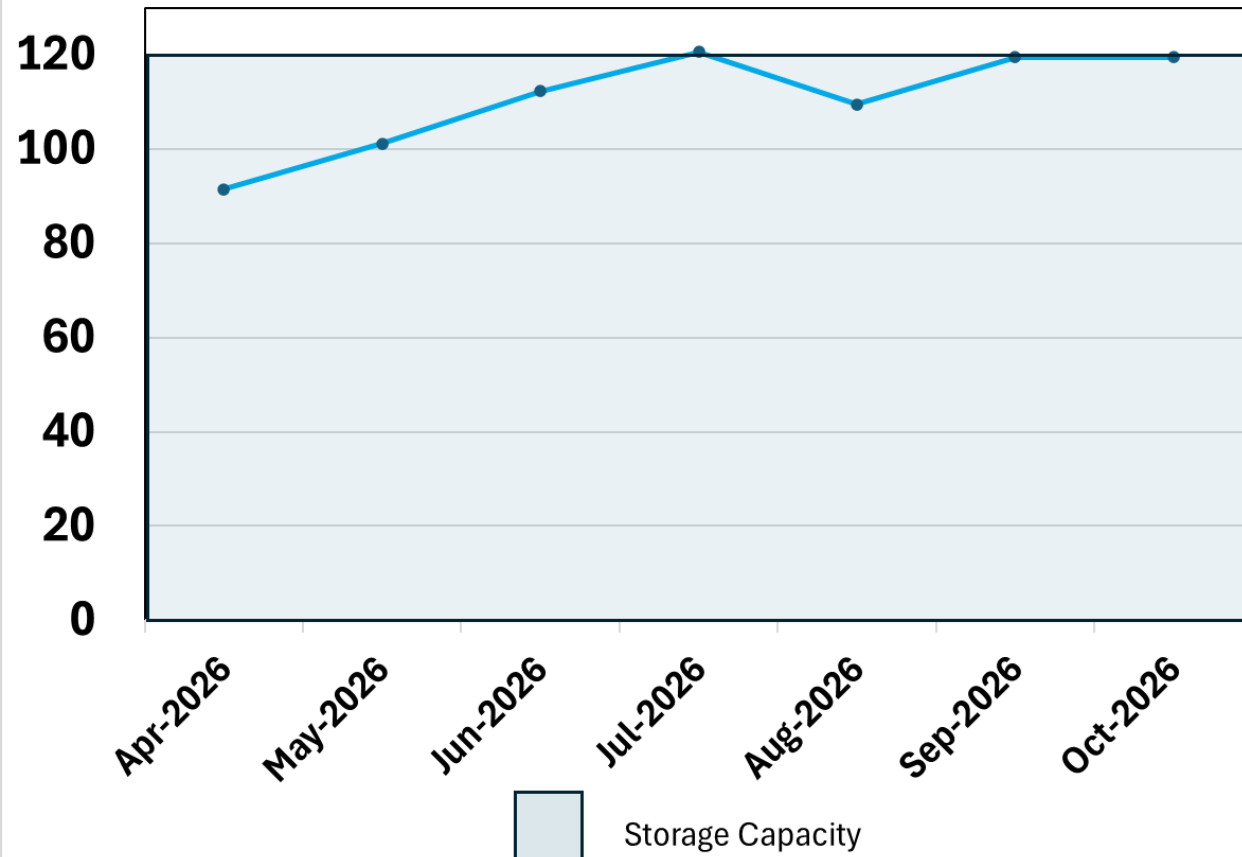


# Summer Storage Inventories

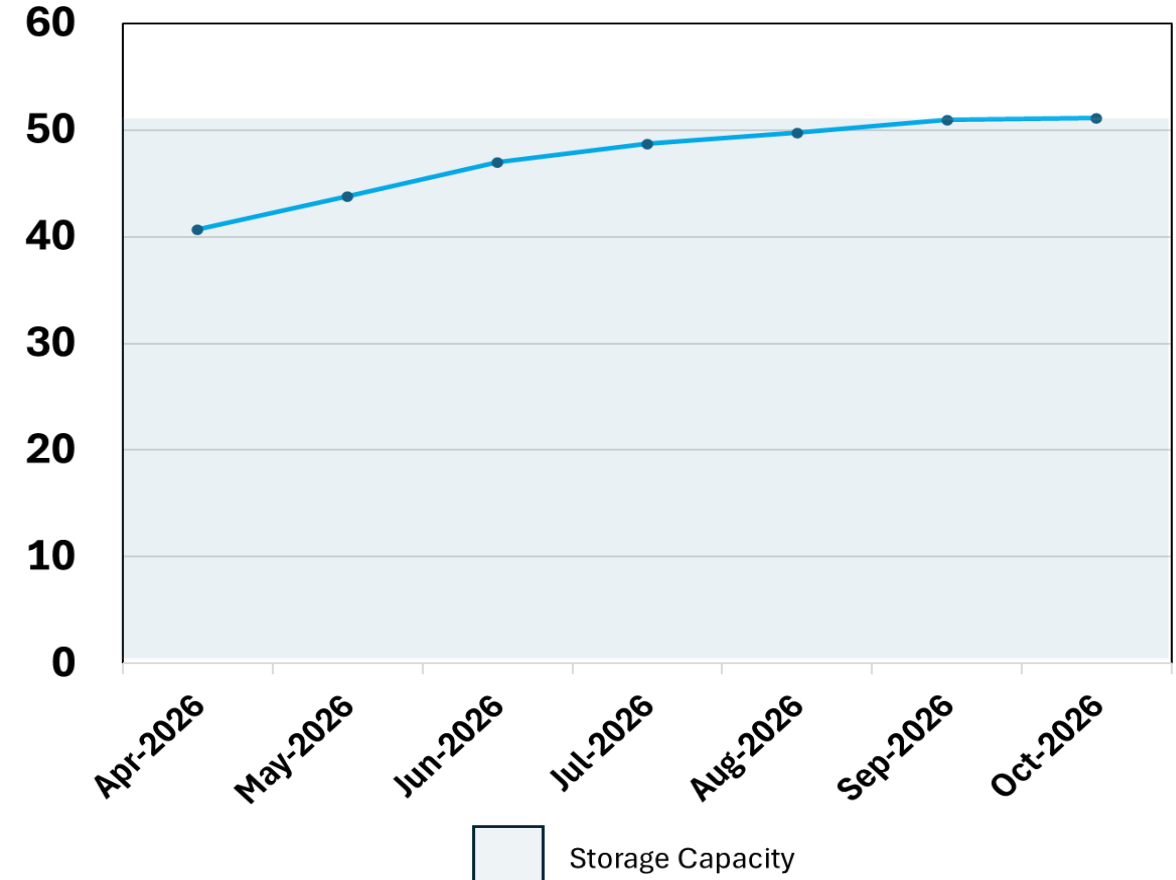
Key Takeaway: Gas storage levels are projected to be refilled to adequately meet Winter 2026-27 demand.



### SoCalGas Storage Inventory (Bcf)



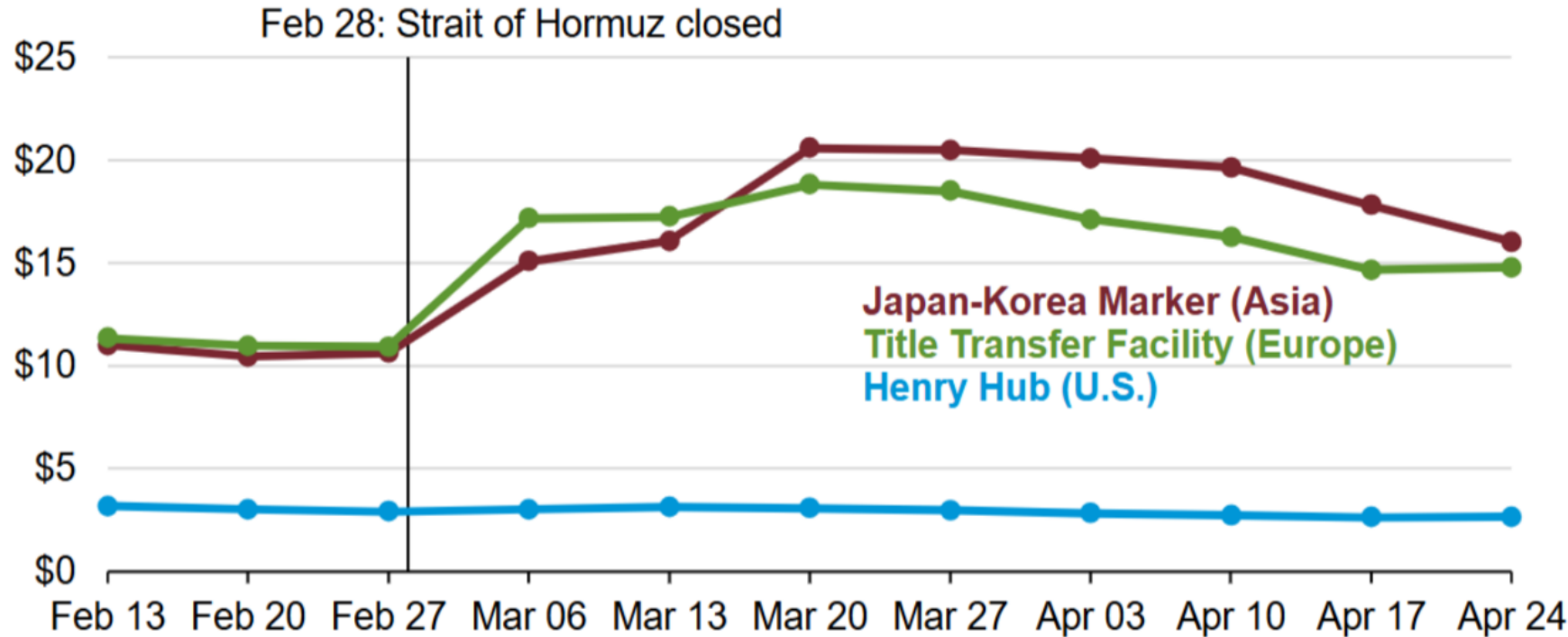
### PG&E Storage Inventory (Bcf)



# Global Fossil Gas Price Analysis



**Weekly average near-month international futures prices (Feb–Apr 2026)**  
dollars per million British thermal units (\$/MMBtu)



	TTF (EU)	JKM (Asia)	HH (US)
Preclosure	\$10.96	\$10.61	\$2.89
Current	\$14.80	\$16.02	\$2.68
% Change	↑35%	↑51%	↓9%

Pricing trends for fossil gas globally have diverged from the US since the closure of the Strait of Hormuz on February 28, 2026 due to ample seasonal fossil gas storage and supply domestically.

Source: EIA. <https://www.eia.gov/todayinenergy/detail.php?id=67604>, April 28<sup>th</sup>, 2026

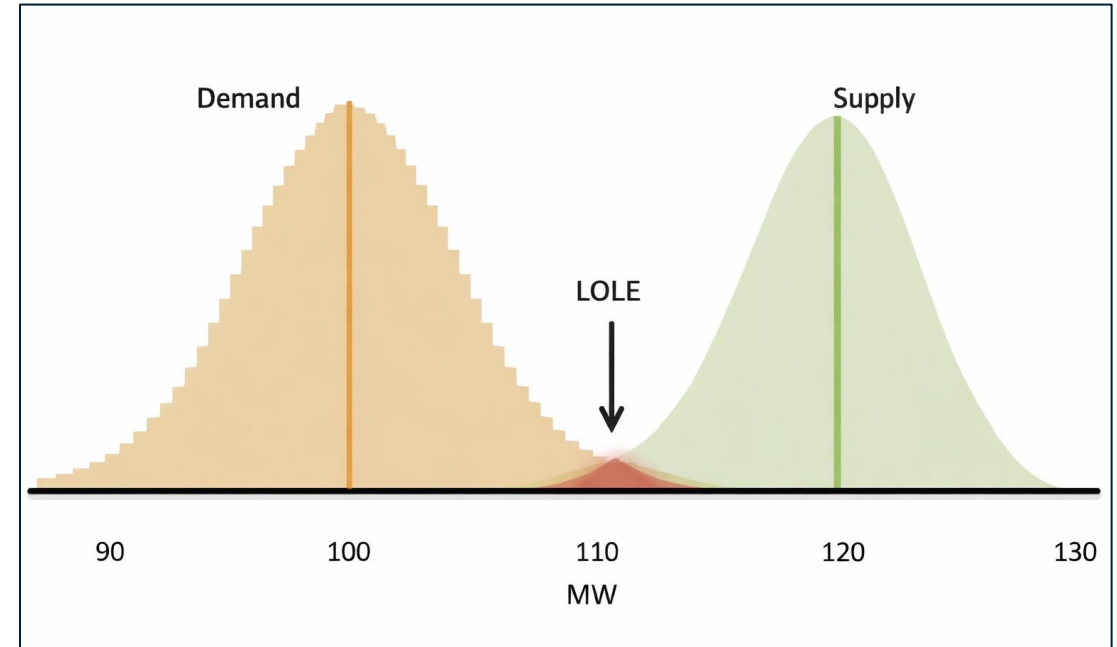
# Probabilistic Loss of Load Expectation (LOLE)

## Overview



- Reliability standard: less than 0.1 days/year LOLE (1-in-10)
- Captures key risks:
  - Resource availability uncertainty
  - Demand variability (hourly/weather-driven)
  - Generator outages
  - Import limitations
    - Hours 6-9, 17-23: 5,500 MW
    - All other hours: 11,665 MW
- Evaluates statewide system (IOUs + POUs) across multiple scenarios:
  - Base forecast
  - Forecast with Known Loads
  - Prior-year forecast comparison
  - Local reliability + Known Loads

## Illustrative Example of LOLE



Source: 2023 SPP Loss of Load Expectation Report

# Probabilistic Loss of Load Expectation - Methodology



- Statewide model using PLEXOS software
- Samples many weather years to capture demand and renewable variability
  - Includes extreme (tail-risk) conditions (e.g., 2022-type year)
  - Simulation design: 17 weather years × 24 sets of random generator outage combinations
  - Co-optimizes energy + reserves under system constraints
- Resource inputs based on:
  - EIA, CEC QFER, CAISO master generating capability data
  - CPUC procurement requirements (NQC)
  - Models both fully deliverable (CAISO NQC list) and energy-only resources

# Probabilistic Loss of Load Expectation – Key Results



- Meets reliability standard:  $\leq 0.1$  LOLE across all scenarios
- Statewide surplus\*:  $\sim 6\text{--}8$  GW to 1-in-10 standard
- CAISO surplus\*:  $\sim 5\text{--}6.5$  GW depending on scenario
- Results hold under stress cases (known loads, reduced imports)
- Near-term outlook: stable, but risks remain:
  - Load growth and electrification
  - Transmission constraints
  - Climate-driven extremes

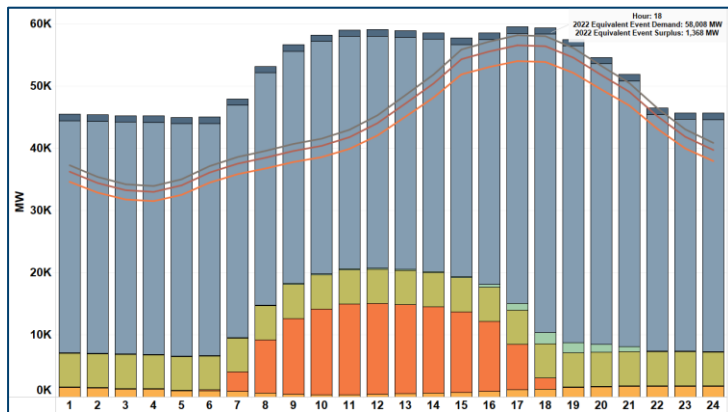
Scenario	2026 LOLE (days/year)	Effective Statewide Margins (GW)	Effective CAISO Margins (GW)
Base Scenario, 2025 IEPR Planning	0	7-8	6-6.5
2025 IEPR Planning with Known Loads	0	6-7	5-6
2024 IEPR Planning	0	7-8	6-6.5
2025 IEPR Local Reliability with Known Loads	0	6-7	5-6

\*Surplus is defined by adding firm load. Deficit is defined by adding perfect generation

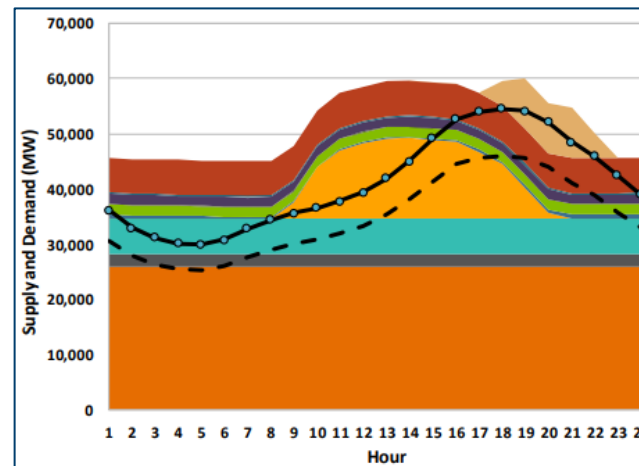
# Stack analysis - Overview



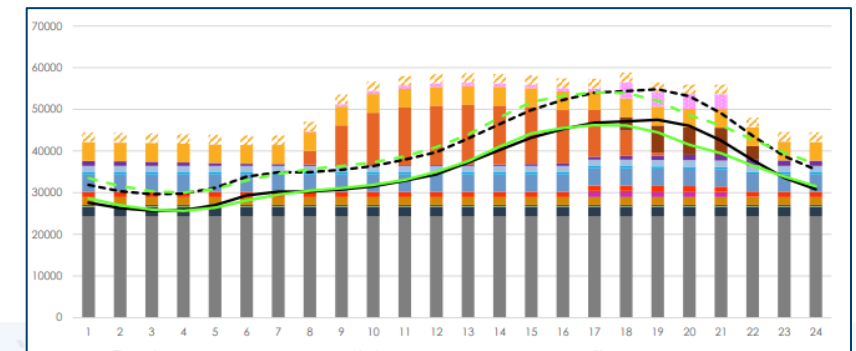
- Deterministic capacity comparison at peak conditions
- Visual and analytical tool that compares available generation capacity with forecasted electrical demand
- Identifies potential reliability gaps when demand exceeds supply
- Critical for reliability planning, resource adequacy, and contingency resource planning



Source: CEC



Source: California ISO

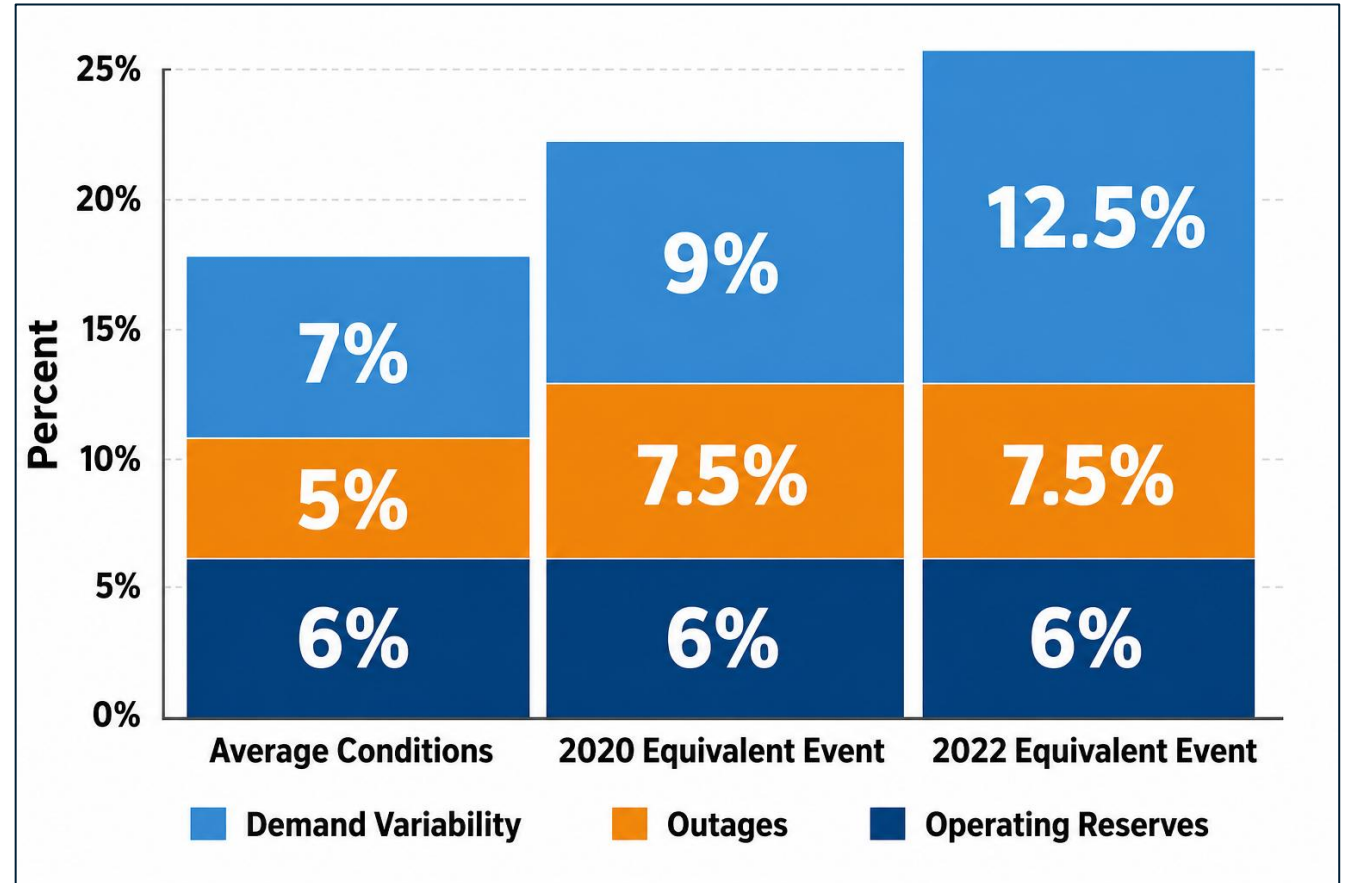


Source: CPUC

# Stack analysis – CEC Methodology



- Supply stack: RA-eligible capacity, RA imports
  - NQC used for all resources except for:
    - Solar, wind, and battery storage
- Demand: 1-in-2 monthly peak day load forecast + planning reserve margin (PRM)
- Output: surplus / shortfalls at most stressed hour(s)



Source: CEC



# Stack analysis – Key Results

- No shortfalls expected under average conditions or extreme events,
  - Tight conditions may occur if there is a coincident fire impacting transmission assets
- Cautiously optimistic summer outlook

	System conditions	Surplus/Shortfalls (GW)	
		No Coincident Fire Risk	Coincident Fire Risk
<b>Without Known Loads</b>	Average Conditions	<b>6.60</b>	<b>2.60</b>
	2020 Equivalent Event	<b>4.60</b>	<b>0.60</b>
	2022 Equivalent Event	<b>2.90</b>	<b>-1.10</b>
<b>With Known Loads</b>	Average Conditions	<b>5.40</b>	<b>1.40</b>
	2020 Equivalent Event	<b>3.20</b>	<b>-0.80</b>
	2022 Equivalent Event	<b>1.60</b>	<b>-2.40</b>

Results are for CAISO for September 2026, hour 18. All new resources are projected to be online by 6/30/2026.

# 2026 Contingency Resources



Type	Contingency Resource	Available MW July	Available MW August	Available MW September
SRR, SPAP[1]	DWR Electricity Supply Strategic Reliability Reserve Program[2] and State Power Augmentation Program	3,079	3,079	3,079
SRR	Demand Side Grid Support (DSGS)[3]	325	325	325
SRR	Distributed Electricity Backup Assets (DEBA)	0	0	0
CPUC	Ratepayer Programs (Emergency Load Reduction Program, Smart Thermostats, etc.)	200	200	200
CPUC	Imports Beyond Stack	0	0	0
CPUC	Capacity at Co-gen or Gas Units Above Resource Adequacy	599	599	499
Non-Program	Balancing Authority Emergency Transfers	300	300	300
Non-Program	Thermal Resources Beyond Limits: Gen Limits Needing 202c	25	25	25
	<b>Total</b>	<b>4,528</b>	<b>4,528</b>	<b>4,428</b>

1. Strategic Reliability Reserve and State Power Augmentation Program values show maximum expected MW capability.
2. Alamos Generating Station's NPDES Time Schedule Order expired on Dec. 31, 2025. Generation may be limited in 2026 to meet permit requirements, especially May–Oct.
3. DSGS capacity reflects current approved funding; future funding or participation may change capacity.

# 2026 Summer Reliability Outlook – Key Takeaways



- California meets reliability standards for 2026, with surplus available in most cases
  - Surplus capacity anticipated under normal and extreme heat, but tight conditions under coincident fire.
- The gas system can meet summer demand and refill storage for winter
- Overall: system is expected to be reliable, but should be monitored under extreme conditions → **cautiously optimistic outlook**

# CPUC Stack Analysis & Summer Assessments

Donald Brooks

Program and Project Supervisor, Energy Resource Modeling

CPUC Energy Division

May 4, 2026

# CPUC performs various types of analyses on a regular basis to support its planning and procurement processes

- As part of its Integrated Resource Planning, Resource Adequacy, and natural gas system planning processes, CPUC regularly engages in multiple types of reliability analyses:
  - For electricity system:
    - Resource stack analysis
    - Loss-of-load expectation (LOLE) analysis
  - For gas system:
    - Gas balance analysis
    - Hydraulic analysis
- To the extent possible, the information, methods, and tools used in these various studies is coordinated to allow for alignment.

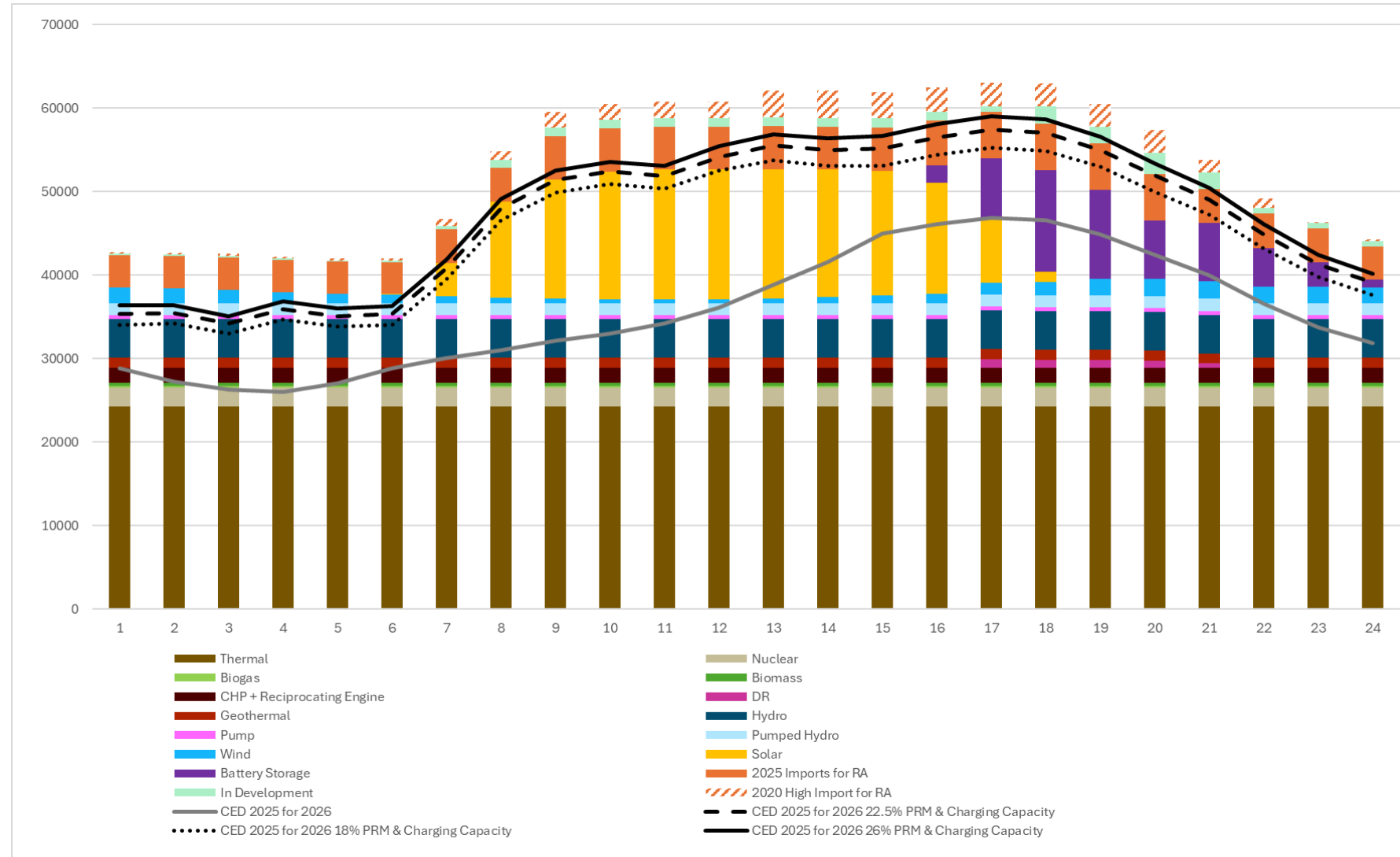
# 2026 CPUC Stack

# CPUC Slice Of Day (SOD) RA Compliance

- CPUC RA SOD Program has following requirements:
  - LSEs are required to make Year-Ahead and Month-Ahead RA showings that demonstrate they meet a 24-hour worst day need obligation, as opposed to a single net peak value.
  - LSEs must demonstrate that they have enough charging capacity to charge their storage resources.
  - The 24-hour monthly need is based on individual adjusted LSE load forecast benchmarked to the 2024 hourly CED IEPR vintage (for load forecast year 2026) plus a 18% planning reserve margin.
- The RA Team uses the above requirements as the foundation for our Supply Stack.

# Resource Adequacy Stack Estimate: September 2026

- CPUC stack is based on SOD counting rules and requirements.
- Imports are based on historical RA filing data
  - Including a conservative import assumption (solid orange- 5,600) and an optimistic import assumption (dashed and solid orange- 8,500)
- Gray line represents IEPR forecast for 2026, black lines include a PRM and model charging storage used later in the day.



# 2026 Sept. Stack Analysis Margin of Excess

Scenario	Peak RAR with PRM (HE 17)	Average Margin of Excess in Evening Hours (HE 16-24)
18% PRM with Import assumption of 5,600 MW	55,300 MW	5,300 MW
22.5% PRM with Import assumption of 5,600 MW	57,400 MW	3,500 MW
26% PRM with Import assumption of 5,600 MW	59,000 MW	2,000 MW

## Considerations

- Battery Capacity Distribution: Batteries were optimized to make evening supply margins approximately equal.
- Charging Sufficiency: Charging sufficiency for all battery capacity was demonstrated, including the batteries under construction.

# 2026 Supply Margin Analysis: Key Findings

- Under a range of assumptions, all 2026 summer months show installed capacity length relative to RA program obligations
- Batteries are becoming an increasingly significant part of the supply stack. Including our de-rate of In Development, we expect to see 16,000 MW of storage NQC in 2026 compared to 13,600 MW as of December, 2025.
- Optimizing storage is necessary to prevent negative supply margin in evening hours.
- There is enough energy to charge all batteries, even those that are unnecessary to fulfil RA obligations.

# 2026 Summer Electric Assessment: LOLE Analysis

# 2026 Probabilistic Model and Major Assumptions

- The Strategic Energy Risk Valuation Model (SERVM) was used for 2026 summer reliability assessment.
- Staff simulated 2026 using the dataset compiled in 2025 for the 2026-27 TPP. Major assumptions and datasets include:
  - 2024 IEPR Planning Scenario
  - Baseline resources established in 2024
  - CAISO Simultaneous Imports constrained to 4 GW in summer evening hours
  - External regions calibrated to near 0.1 LOLE to ensure realistic import patterns
  - Intra-CAISO transmission constraints respected, notably Path 26 and the connection from SDGE to SCE
  - Diablo Canyon online but other gas-fired OTC units offline

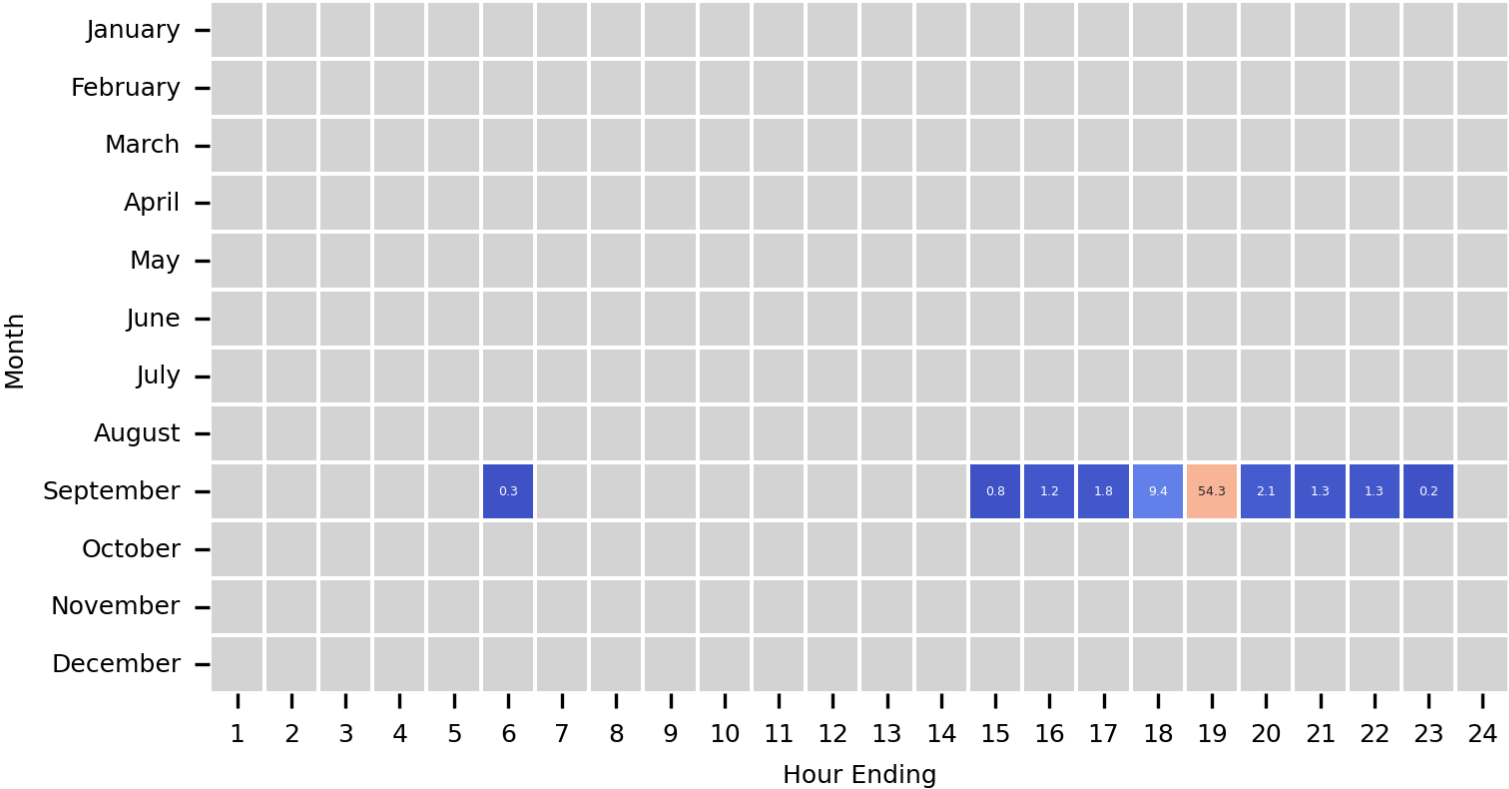
# Summer 2026 is expected to be reliable

- Results show that 2026 CAISO system is expected to be overly reliable, with a LOLE under 0.1
- Less than 20 cases show any reliability concerns - out of 2,645 cases.
- In the cases with concerns - only month with any loss of load – and those are still within LOLE standard – is September
  - Average length of an outage event is just under 2 hours and at a very minimal amount of load (72 MWh)
  - Normalized EUE relative to total electric demand is less than a thousandth of a percent

Annual Reliability Metrics		
Metric	2026	Units
LOLE Total	0.067	events/year
LOLE Capacity	0.067	events/year
EUE	72.5	MWh
LOLH Total	0.127	hours/year
LOLH Capacity	0.127	hours/year
LOLH/LOLE (average length of outage)	1.878	hours/day
Normalized EUE (EUE divided by total electric demand)	0.00088%	percent

# Typical high risk periods concentrated in evening hours though overall risk remains below reliability standards

EUE Heatmap for Year 2026 (MWh)



## Study shows system meets the reliability standard

- Unserved energy is shown for CAISO region by month and hour. Results are weighted average MWhs
- Any unserved energy is still concentrated in September, and during peak hours (HE 17-20)
- Total annual weighted average of EUE adds up to only 72.5MWh which is very low, and overall LOLE < 0.1

# 2026 Summer Electric Assessment: Key Findings

- CPUC results may be more conservative than other results due to differing assumptions, for example the characterization of ambient derates for thermal plants.
- Staff performed an assessment of 2026 peak summer conditions given expected electric demand and expected resource fleet.
- Study results show that 2026 peak summer season is expected to be reliable under a range of weather conditions and expected unit outages, with a Loss of Load Expectation (LOLE) = 0.067, which is better than the industry standard target of 0.1 (equates to one event expected in 10 years).
- SCE territory continues to contribute the most towards LOLE.
- Staff also studied peak summer conditions in the natural gas system, which is also expected to reliably serve demand this summer.

# 2026 Summer Gas Reliability Assessment

# 2026 Summer Gas Reliability Assessment Methodology and Tools

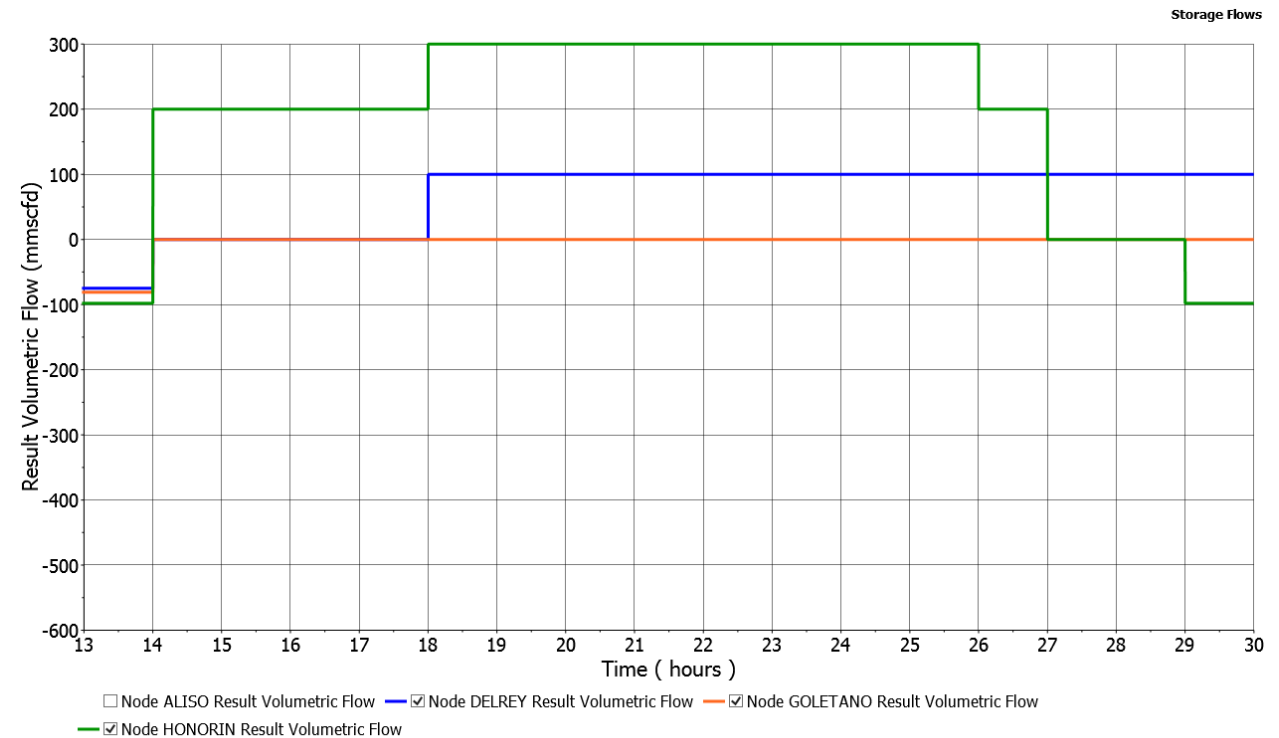
- Gas Balance Reliability Analysis:
  - Stochastic Daily Mass Balance Model.
  - Uses random draws from known probability distributions to simulate daily gas demand on SoCalGas system.
  - Using daily values of supply and demand, injection and withdrawal rates, metrics are calculated, such as the expected number of imbalance days and the expected daily inventory levels.
- Hydraulic Analysis:
  - Uses commercial pipeline simulation package; Synergi Gas.
  - Performs 24-hour transient simulations to model ramps accurately.
  - Laborious and requires iterative and manual interventions to find the correct operational actions such as injections, withdrawals, or changing regulators set pressures.

# 2026 Summer High Gas Demand Day Hydraulic Modeling Analysis

- A hydraulic simulation is considered successful if:
  - The pressure at all demand nodes is held above the minimum required pressure at these demand points for the duration of the simulation.
  - All facilities must operate within established capacities (i.e. demand is met).
  - The pressure at any point does not exceed the Maximum Allowable Operating Pressure (MAOP) at any point or time.
  - Linepack is restored, i.e. the amount of gas present in the pipeline at the end of the simulation is approximately equal to the amount of gas at the beginning of the simulation which guarantees each operating day does not impose any constraints on future days.
  - Storage fields can maintain the required withdrawal (or injection) capacity (mass flow rate)

# Hydraulic Modeling Analysis Inputs and Assumptions

- Uses Synergi Gas to perform a 24-hour transient simulation on SoCalGas network
- Demand (ED EG+ 2024 CGR) is 3,110 MMcfd
- Assumed supplies per attachment A is 3,215 MMcfd.
- Non-Aliso fields combined injection capacity at 95% is 254 MMcfd
- Start with injection into all three non-Aliso fields
- Switch to withdrawal to meet evening ramp



# 2026 Summer High Gas Demand Day: Key Findings

- The Gas Balance Reliability Analysis shows that the storage inventory levels of SoCalGas will remain full throughout 2026 summer.
  - However, this model does not take into account market decisions made by gas users comparing the price of gas from storage to that of pipeline gas.
  - The model time step is daily, so it does not factor in the hourly changes in demand that frequently drive storage withdrawals.
- The transient Hydraulic Modeling using Synergi Gas shows the SoCalGas pipeline-storage system is reliable.
  - SoCalGas can meet a summer high gas demand day reliably and without curtailments.
  - Specifically, the morning and evening ramps are met using hourly balancing from various storage fields.



# 2026 Summer Loads and Resources Assessment

Aditya Jayam Prabhakar

Director, Resource Assessment and Planning

May 4, 2026

# 2026 Summer Outlook: Resource Additions and Load Forecast



## Resource Additions

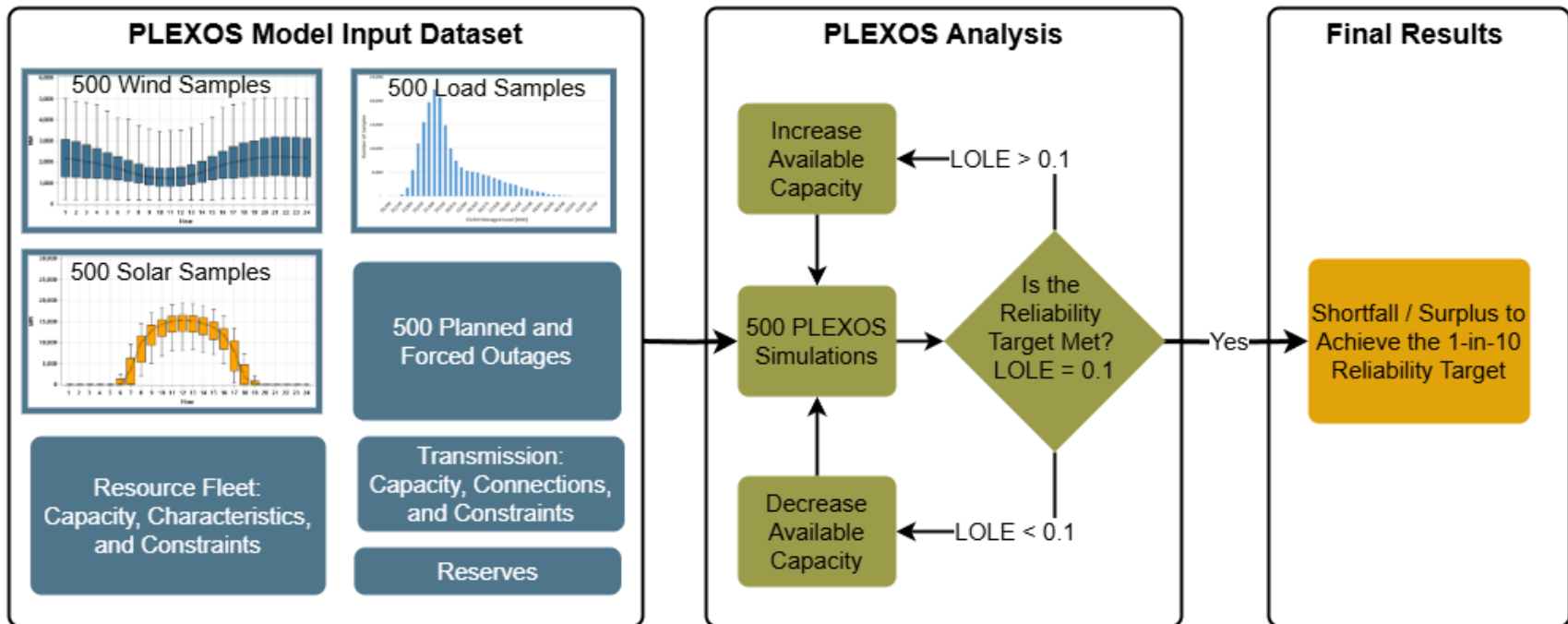
- Capacity added from September 1<sup>st</sup>, 2025 through April 1<sup>st</sup>, 2026: **2,127 MW**
- Capacity expected from April 1<sup>st</sup> through June 30<sup>th</sup>, 2026: **6,194 MW** (includes 3,167 MW of SunZia Wind project)



## Load Forecast

- September peak load forecast: **46,844 MW**, hour ending (HE) 18 (2025 California Energy Commission Integrated Energy Policy Report)

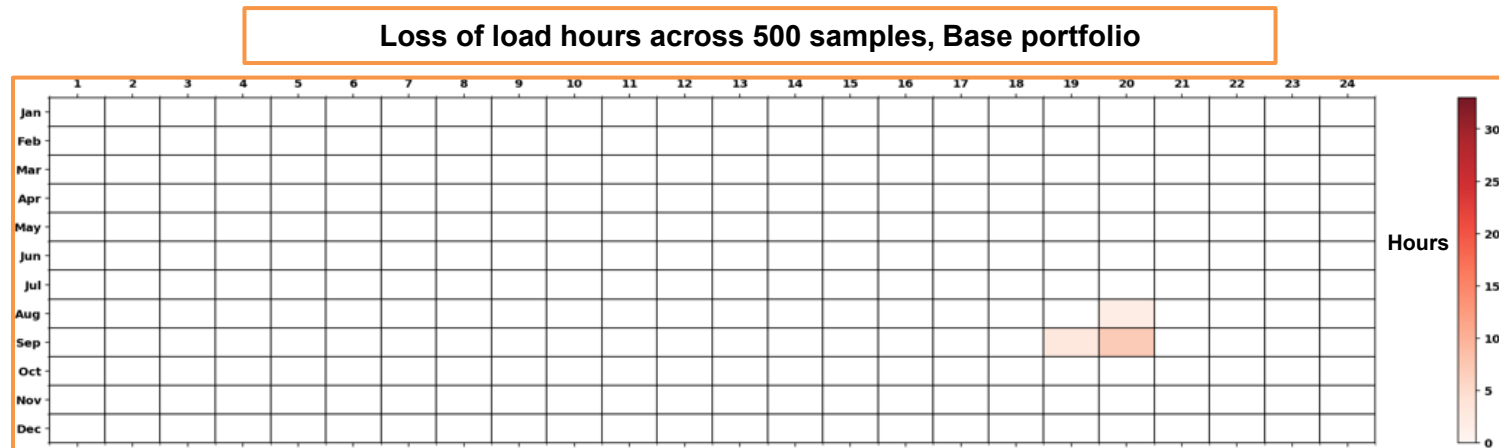
The ISO conducted a probabilistic assessment to evaluate the sufficiency of the anticipated 2026 RA-eligible fleet\* to meet the 1-in-10 loss of load expectation planning target



- **Loss of load expectation (LOLE) is a measure of the number of days per year for which the available generation capacity is insufficient to serve the demand and maintain required reserves at least once during that day. 0.1 LOLE or 1-day-in-10 LOLE equates to “1 day with an event in 10 years”.**
- **\* Additional supply accessible through the Electricity Supply Strategic Reliability Reserve Program (ESSRRP) and emergency assistance on the interties is not included as part of this assessment.**
- **PLEXOS is an energy market simulation engine.**

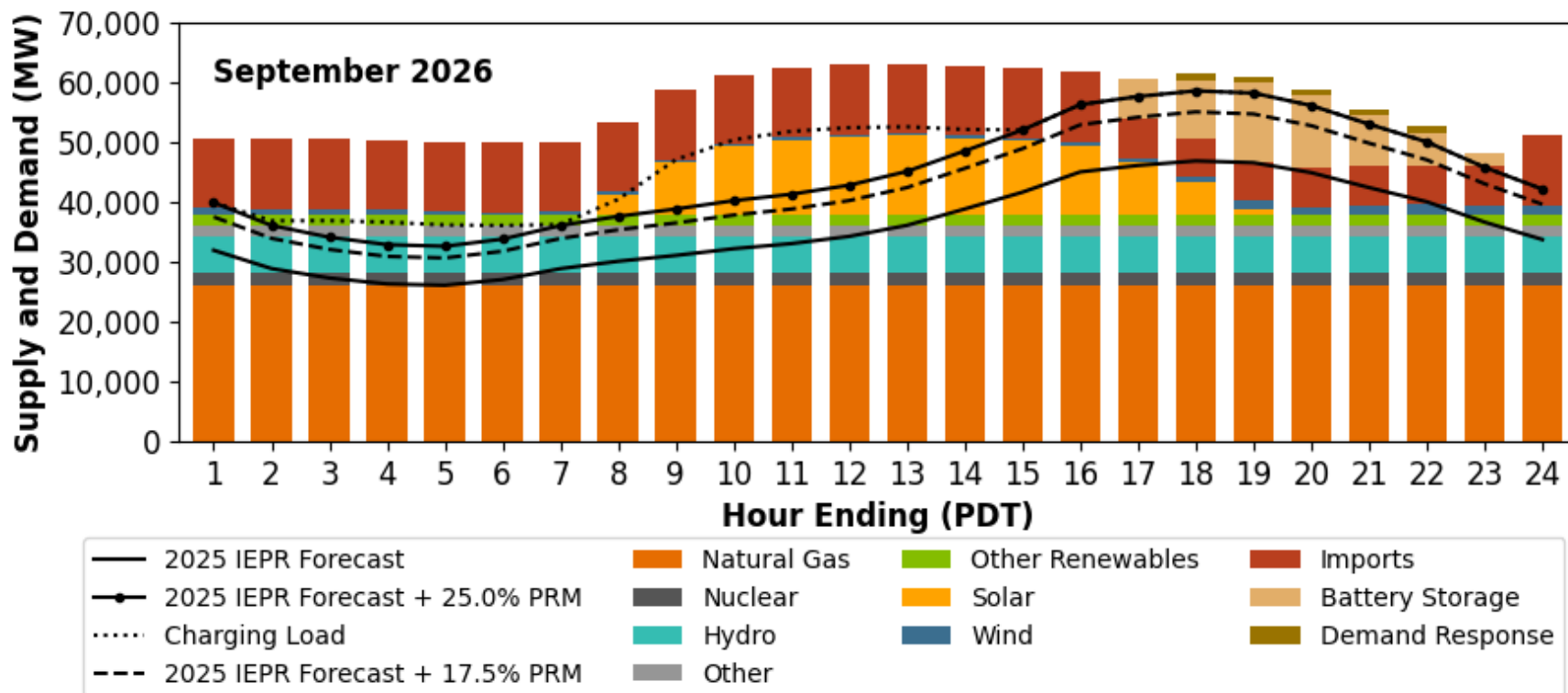
The ISO's probabilistic assessment concludes that the portfolio meets planning performance targets, yielding a surplus of 2,547 MW

This assessment evaluates the likelihood of needing emergency measures to balance supply and demand, rather than the actual loss of firm load



*This probabilistic assessment does not consider coincident extreme events such as west-wide heatwave events coincident with major wildfire impacting large amounts of supply.*

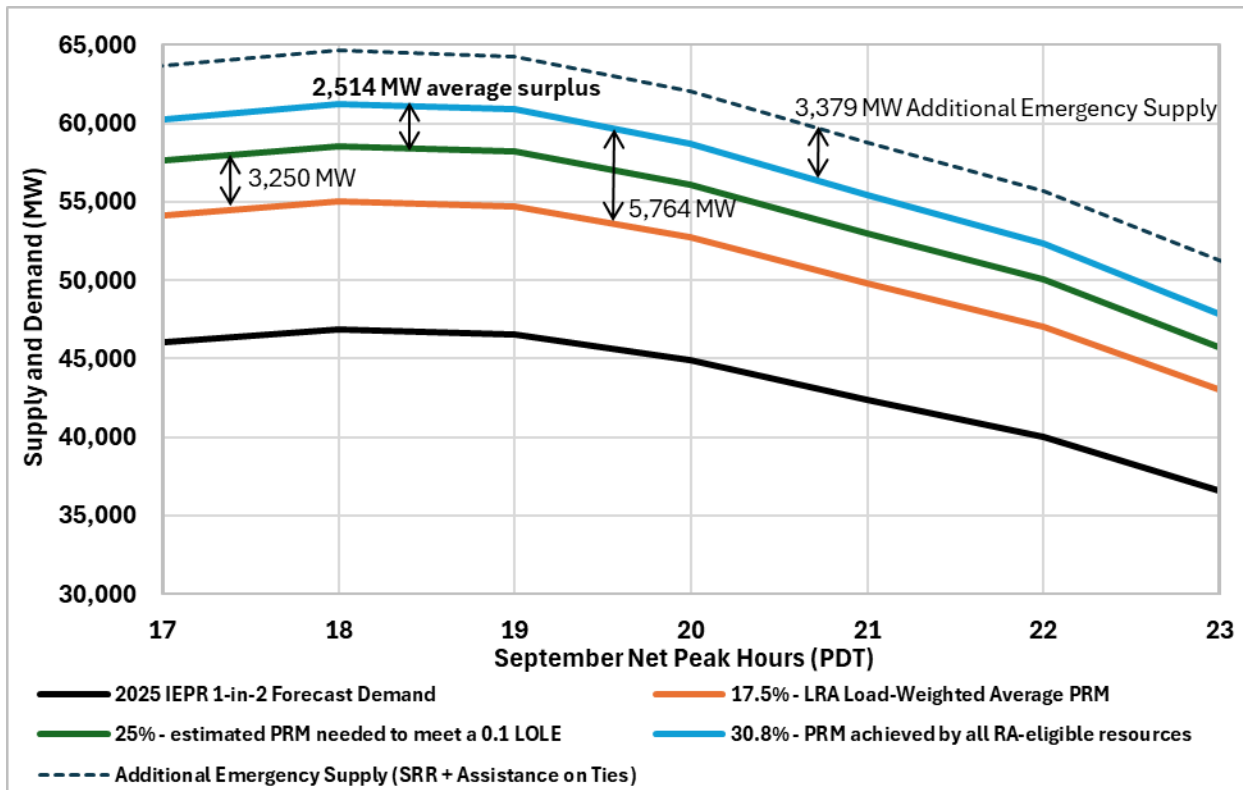
The ISO's multi-hour stack analysis also indicates a reasonable margin above the planning reserve margin required to achieve a 0.1 loss of load expectation



A planning reserve margin of **25 percent** is required to meet a **0.1 LOLE**, calculated by first subtracting the surplus capacity of 2,547 MW (as determined in the probabilistic study) from all available resources.

The **load-weighted average planning reserve margin** across all load serving entities for the 2026 resource adequacy year, which reflects Local Regulatory Authority established requirements, is **17.5 percent**.

# The 0.1 loss of load expectation translated to a planning reserve margin of 25% applied to the 1-in-2 2025 IEPR demand forecast for 2026



Assessment shows sufficient energy to meet a wide range of summer system conditions; however, abnormally dry conditions, extreme heat and wildfire conditions may still pose reliability risks.

# Dais Q & A for Panel 3



**Fifteen Minute Break  
Return @ 2:15 pm**





# Panel: Summer Reliability Assessments – Publicly Owned Utilities

Moderator: Liz Gill, CEC

- Jim Shetler, Balancing Authority of Northern California
- Kyle Bryant, Imperial Irrigation District
- Tony Skourtas, Los Angeles Department of Water and Power

# 2026 BANC Summer Readiness Update

## *CEC Summer Energy Reliability Workshop*

Jim Shetler

General Manager, Balancing Authority of Northern California

May 4, 2026



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### **BALANCING AUTHORITY OF NORTHERN CALIFORNIA**

A JOINT POWERS AUTHORITY AMONG  
Modesto Irrigation District, City of Redding, City of Roseville, Trinity Public Utilities District, City of Shasta Lake, and Sacramento Municipal Utility District  
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# BANC Overview



- A Joint Powers Authority among MID, Redding, Roseville, Trinity PUD, Shasta Lake, and SMUD
- 3<sup>rd</sup> Largest Balancing Authority in California
- Peak Load – 4,943 MW (2022)
- Generation Capacity – 5,493 MW
- Carbon Free Generation – 57.7%



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# 2025 Summer Operations Review

- BANC reached peak demand of **4,317 MW** on July 11, 2025, at 16:59

Entity	SMUD	MID	RSC	REU	Shasta Lake	Trinity PUD	WAPA footprint	BANC BA
Non-Simultaneous Peak Load (MW)	2,837	651	337	230	36	33	1,492	4,317



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# 2026 Summer Load Forecasts

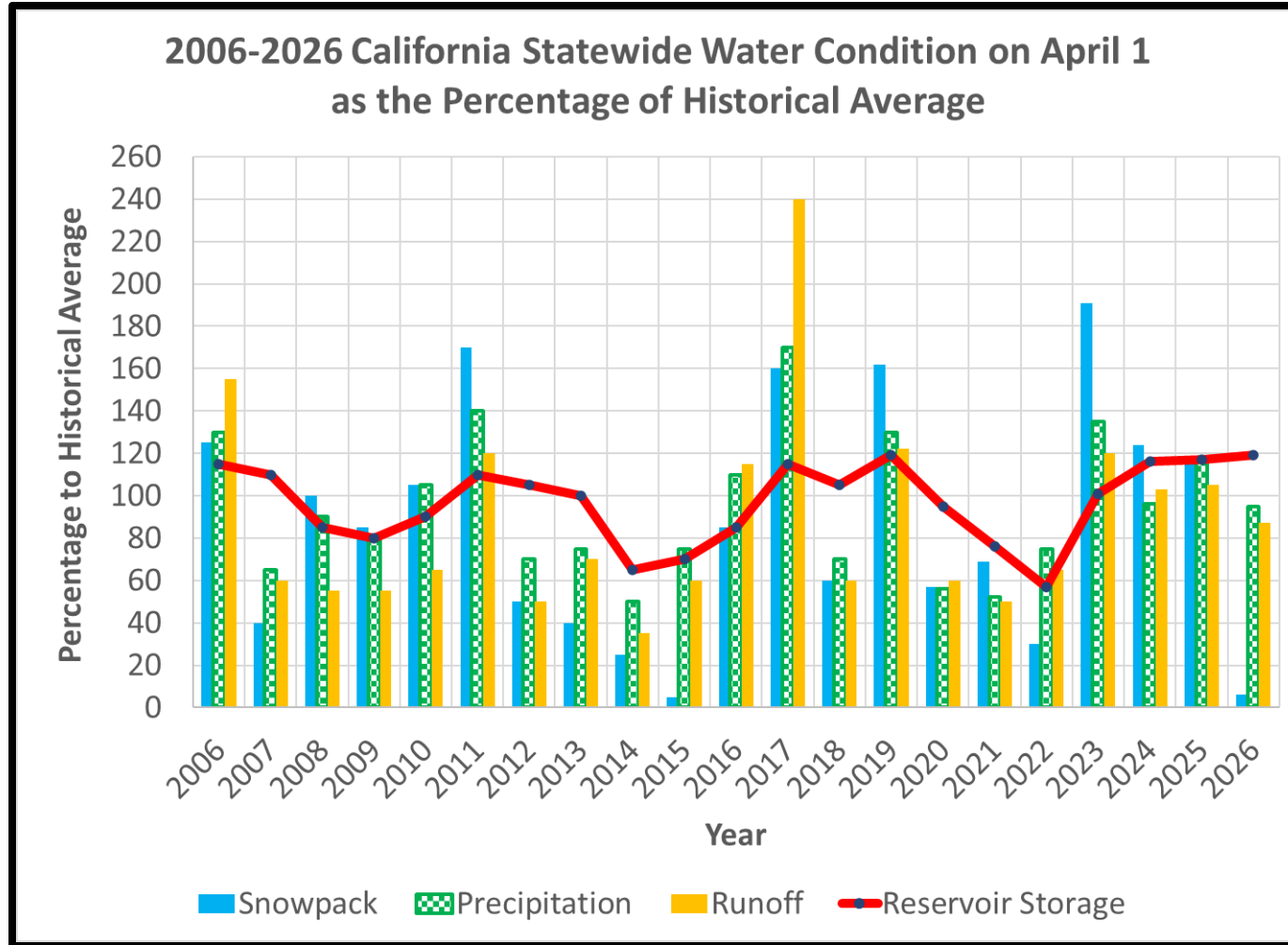
	1-in-2 Gross Peak Load Forecast (MW)	1-in-2 Net Peak Load Forecast (MW)	1-in-10 Gross Peak Load Forecast (MW)	1-in-10 Net Peak Load Forecast (MW)
SMUD	3,154	2,885	3,406	3,133
WAPA Footprint	1,588	1,575	1,708	1,695
MID	697	679	739	721
Roseville Electric	344	344	385	385
REU	235	235	239	239
Shasta Lake	34	34	38	38
Trinity PUD	27	27	28	28
<b>BANC Total</b>	<b>4,742</b>	<b>4,460</b>	<b>5,114</b>	<b>4,828</b>



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# 2026 Water Conditions



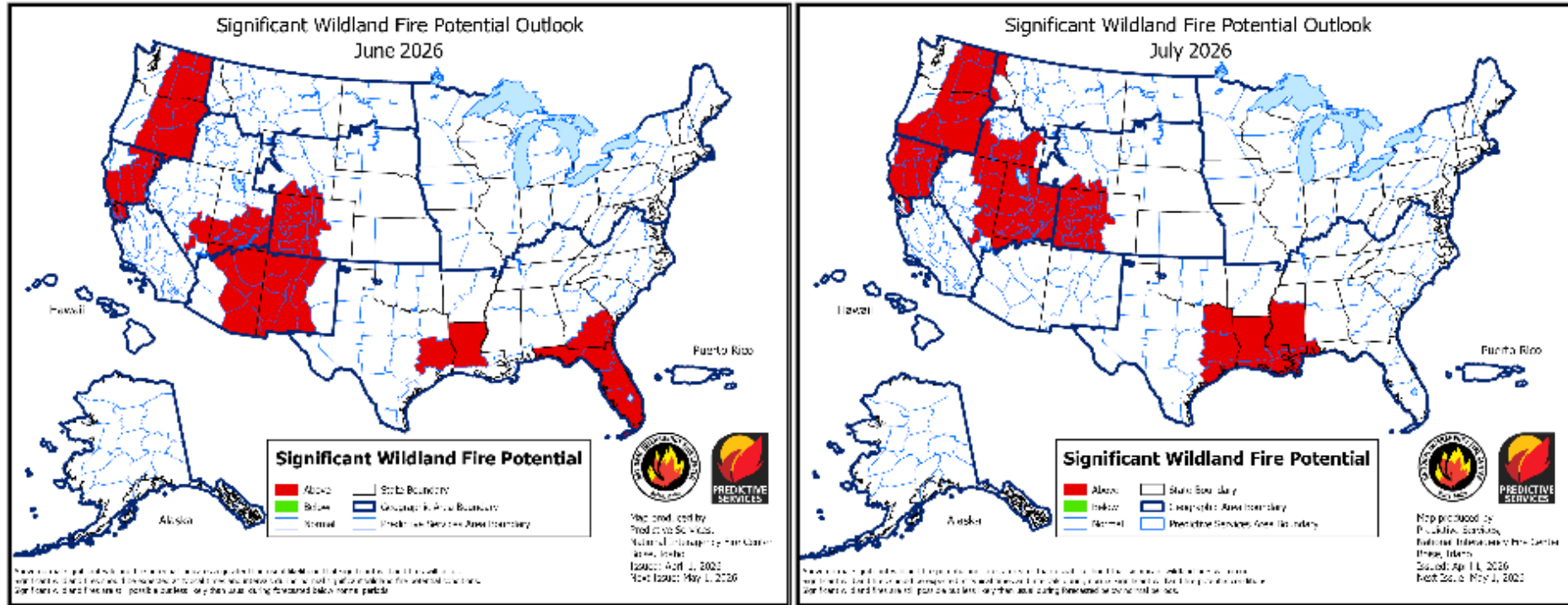
- Northern Sierra Snowpack – 6%
- Northern Sierra Precipitation – 95%
- Major Northern California Reservoir Levels – 119%
- Snow runoff – 87%
- Water year classification – “Below Normal”



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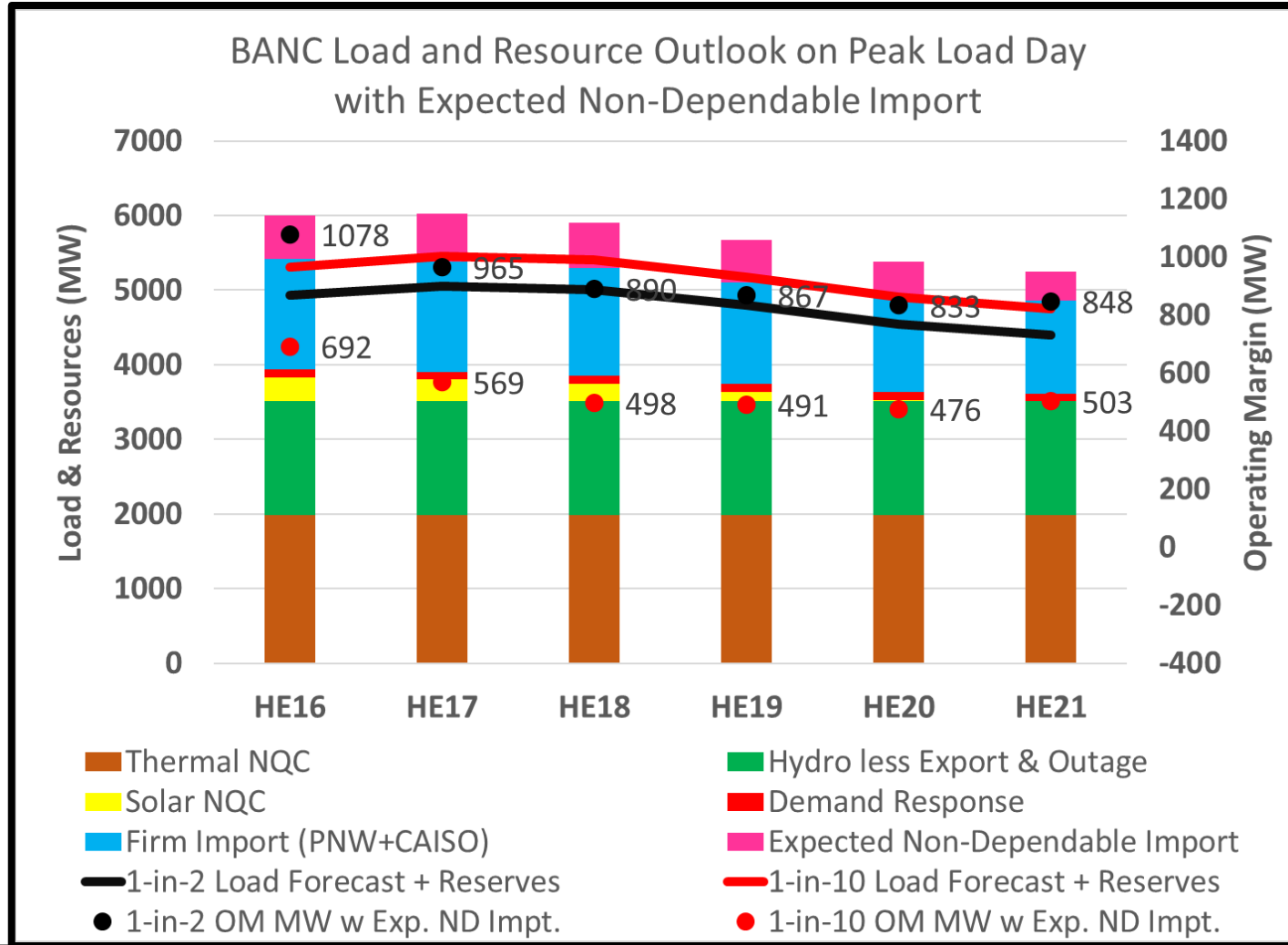
# 2026 Summer Wildfire Outlook (June and July)



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# 2026 BANC Load & Resource Outlook



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# *Special Operating Scenarios*

- California Oregon Intertie (COI) derate due to the loss of two 500 kV lines under wildfire condition
  - ⚡ Under 1-in-2 load condition, BANC would have sufficient operating margin with SMUD area potentially initiating DR programs (This condition occurred in the past on 7/9/2021 with the Bootleg Fire.)
  - ⚡ under 1-in-10 load condition, BANC could potentially be in EEA 3 with SMUD area potentially facing the risk of firm load shedding
- West-wide heatwave causing 1-in-20 load
  - ⚡ BANC would be in EEA 3 with SMUD area having potential risk of firm load shedding under 1-in-20 load condition
- Solar reduction due to wildfire smoke
  - ✓ Smoke reduces BANC load more than Solar
- CAISO BA in Energy Emergency Alert 3 (EEA 3)
  - ✓ Minimal import reduction (2~10%)



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# Summary

- Slightly higher 1-in-2 and 1-in-10 load forecasts
- “Below Normal” water conditions
- 95 MW generation outages throughout the summer
- Sufficient Operating Margin for both 1-in-2 and 1-in-10 load conditions under base case analysis.
- Lower risk of firm load shedding compared with 2025 due to reduced generation outages and increased firm imports.
  - Increased load shedding risk under the conditions of COI outages, energy shortage, or west-wide heatwave.
- BANC Power System Operators and the Operators from other BANC entities are having Summer Readiness Training to prepare for the reliable summer operations.



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# Questions?



**Jim Shetler – BANC General Manager**

**E-mail: [jimshetler@thebanc.org](mailto:jimshetler@thebanc.org)**

**Phone: (916) 870-3774**



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**IID**

*A century of service.*

# Imperial Irrigation District

*2026 Summer Reliability Workshop*

**Kyle Bryant,**  
**Manager Power Dept, Assistant**  
**May 4, 2026**

# Background

- The Imperial Irrigation District (IID) was established in 1911 and entered the power business in 1936. Proudly serving Imperial and Coachella Valleys and a portion of San Diego County, IID has a service area of **6,471 square miles with over 165,000** residential and commercial customers.

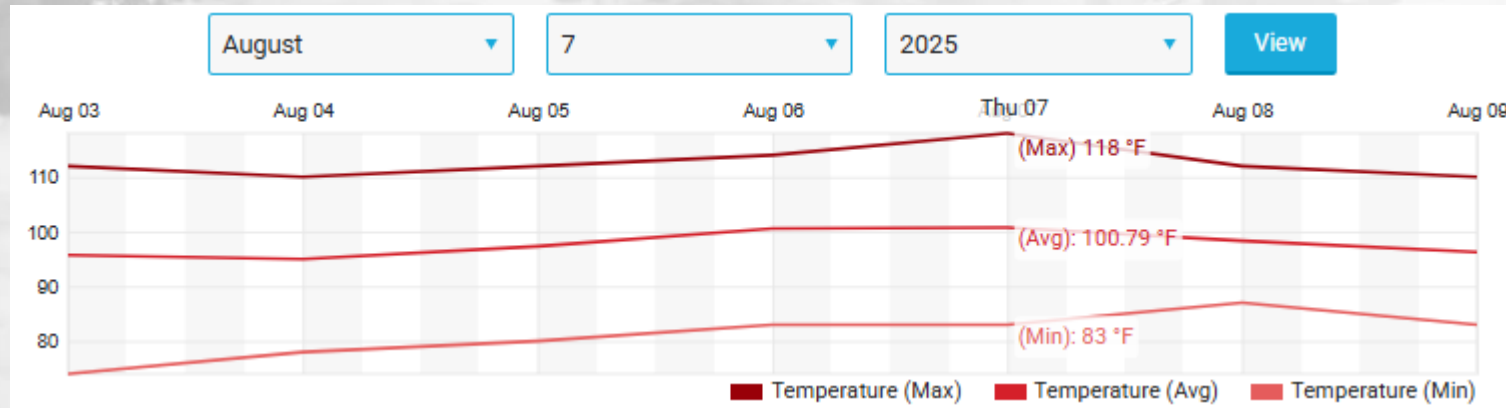


# Service Territory

- Balancing Authority historic peak of **1,177MW** in September 2024. Peak for 2025 was 1133MW.
- 1,780-miles of transmission network and over five thousand miles of distribution lines.
- Connected Generation Capacity is over 2,200MW
- Diverse resource portfolio including: geothermal, solar, hydro, and Battery.
- Battery Storage
  - *30MW/20MWh El Centro*
  - *30MW/120MWh Holtville*

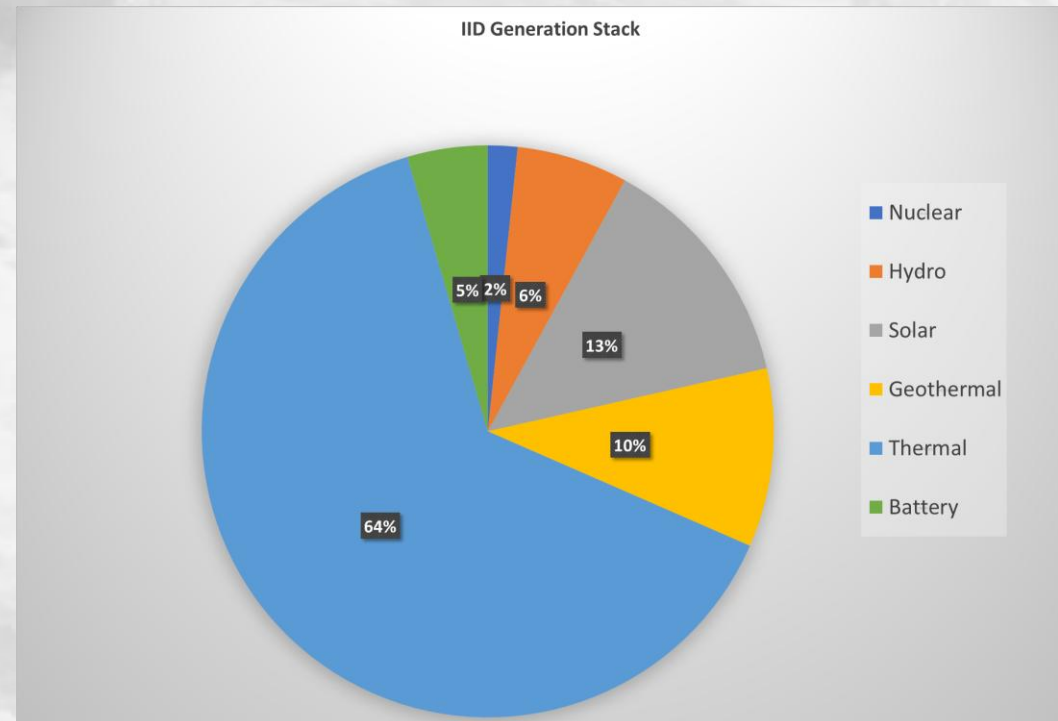
# This Summer

- 2026 summer load is projected to be slightly higher than last year's 1133MW.



# Generation Portfolio for 2026

- Over 172MW of distributed solar (roof top).
- Nameplate capacity of IID generation portfolio for 2026:



# Current Energy Storage

- 30MW/20MWh used for reliability:
  - *Spinning Reserves*
  - *Automatic Generation Control*
  - *Voltage support*
  - *Frequency Response*



- 30MW/120MWh used for reliability:
  - *Market Optimization*
    - Negative Pricing
    - Solar Ramp Hours

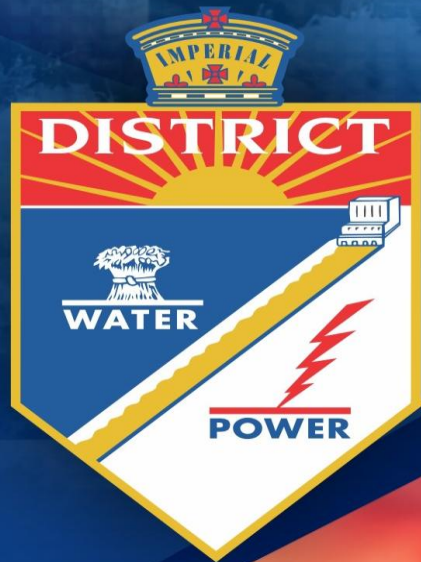
# System Upgrades

- Upgraded portions of 92kV lines to high temperature conductor.
- Added substation improvements to increase capacity and redundancy.



# IID Infrastructure





# IID

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# Summer Readiness 2026

## LADWP

Tony Skourtas

Director

Energy Control Center and Grid Reliability

May 4, 2026



# Load Forecast

## All-time Peak Load

- **6278-MW on August 31, 2017**  
(6502-MW non-conforming)

	<b>2017</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Peak Load	6278*	5226	6237	5179
Date	8/31	8/29	9/6	8/22
Temp – Downtown	102	94	110	93
Temp – LAX (Coast)	93	87	105	87
Temp SF Valley	110	105	114	108
Correlation (LOAD/TEMP)	62	55	57	54



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# Generation (1 of 2)

- OTC plants continue operation through 2029
- Valley CC and Haynes CC –  
major control system upgrades
- Scattergood Unit 6 - major overhaul
- Haynes Unit 10 – major overhaul



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# Generation (2 of 2)

## Intermountain Power Project

- IPP Units 1 & 2 (Coal) out of service Nov '25 (-1123MW)
- IPP Units 3 & 4 (CC) commissioning (+648MW)

Approx 475-MW Net decrease at IPP



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# Renewables

- Wind Generation
  - approximately 425-MW excluding PPA's
- Solar Generation
  - Added 400-MW of PV (Eland 1 & 2)
  - Total solar approximately 1520-MW
- Battery Storage 320MW



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# Net Generation

IPP	-475
Solar BESS	<u>+300</u>
Net change	-175
Firm Purchase	+200



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# Transmission

- Sylmar Bank E (Path 41)
  - Out since Nov '22
  - Replacement target date is ~~July '26~~ **Q2 2028**
- 230-kV Rinaldi-Tarzana 1 upgrade completed 2025



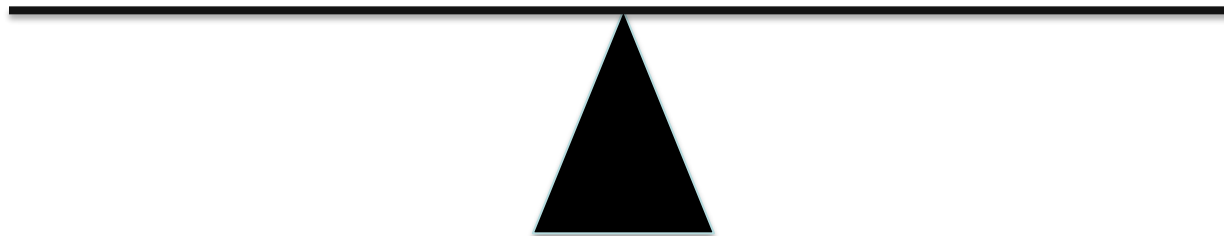
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# Resource Adequacy

- Net Max Plant Capacity      6,931 (6,208)
- Renewables                      3,390 (340MW @10%)
- Safe Total  $6208 + 340 = 6,548\text{MW}$

6,237 (all-time peak)

$6,548 - 575 + 200 = 6,167$





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# The Take Away

- Adequate Capacity -- prepared for all-time peak
- Transitioning to cleaner fuels
- Ability to Purchase more if needed
- Demand Response programs proving effective
- Concerns:
  - Reliability of older units
  - Hoover capacity decreasing



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**Thank You**

# Dais Q & A for Panel 4





# Public Comment - Afternoon

## Zoom:

- Use the “raise hand” feature to make verbal comments

## Telephone:

- Dial \*9 to raise your hand
- \*6 to mute/unmute your phone line. You may also use the mute feature on your phone.

## When called upon:

- Your microphone will be opened
- Unmute your line
- Spell your name for the record, then start your comment.

Limited to 3 minutes per person and 1 representative per organization.

## 3-MINUTE TIMER





# Closing Remarks