



California ISO

# SMUD Strategic Development Committee – CAISO Update

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# Agenda

- I. Load and Resources
- II. Western Energy Imbalance Market and Extended Day Ahead Market
- III. Pathways

# LOAD AND RESOURCES

# Summer 2023 Review

## Overview

- California load conditions were moderate while hydro conditions reflected record snowpack in California
- Southwest experienced record-breaking load conditions
- Northwest above normal load and at or below normal hydro conditions
- New forms and levels of uncertainty were experienced

## Role the WEIM had on reliability

- High west-wide regional demand created export out of California patterns never experienced
- WEIM demonstrated the power of being able to redirection energy from where it was available to where it was needed with the hour

## Growth of storage

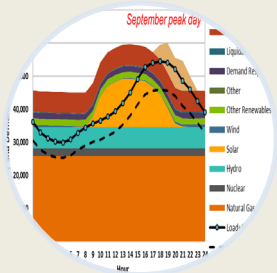
- Over 3,000 MW of storage added to the system approaching 6,000MW

## Forecast summer conditions in 2024 continue to improve over previous summers

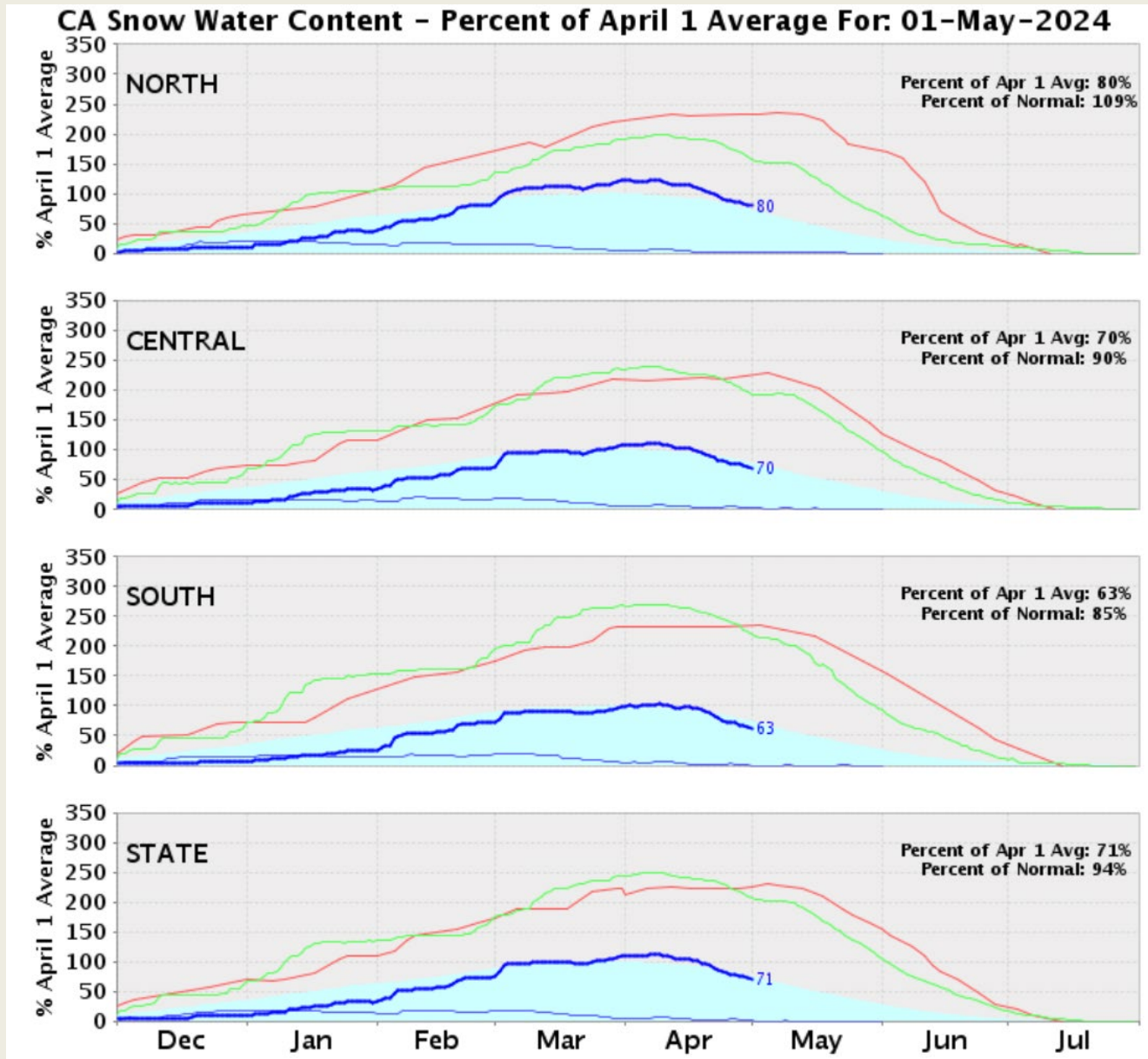
- Additional new capacity of 8,384 MW online or expected by June 30, since last August
  - Primarily solar and storage
  - Equals 4,919 MW of “net qualifying capacity”
- Average or moderately above average hydro conditions
- Softening of near-term load forecasts by CEC, and shift of peak load a few hours earlier in the day
- These gains more than offset generation retirements and transition of remaining OTC generation to strategic reserves.
  - Strategic reserves not included in this analysis
  - 2,895MW of OTC converted to strategic reserve / 841MW Retired

# These gains are demonstrated in both metrics the ISO is using to assess summer preparedness

- The calculated loss-of-load expectation exceeds the target 1-in-10 level
  - A margin of approximately 2,700 MW was found above the minimum needed to achieve target
  - Note the LOLE expectation relates to the probability of calling on emergency measures, not actual load shed
- The “stack analysis” capacity analysis found a surplus of at least 3,500 MW above a target 18.5% reserve margin across net peak load hours

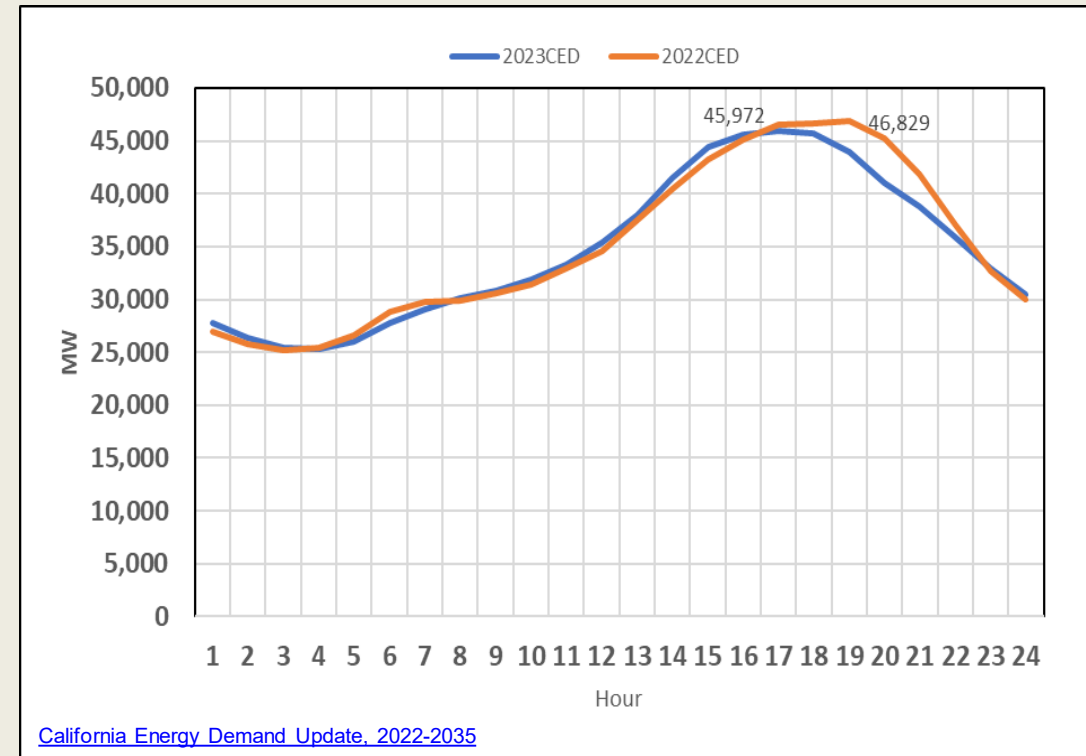


# Snowpack conditions are normal



# California Energy Commission Forecast

- Lower near-term growth in consumption (CAISO Planning Forecast)
  - Higher electric rate forecasts, lower Dept of Finance projections for population and households
- Increased Behind-the-Meter solar PV adoption
  - Lower system costs, higher electric rates lead to reduced payback period
- Refreshed base consumption profile
  - Leveraged more recent load and solar PV generation data
  - Peak hour occurs earlier in the day when solar PV has a greater peak-reduction effect. This is aligned with recent observed system peak hours
  - Lower system-wide coincidence peak
- 2024 Resource adequacy requirements were based on 2022 California Energy Demand (CED) forecast.



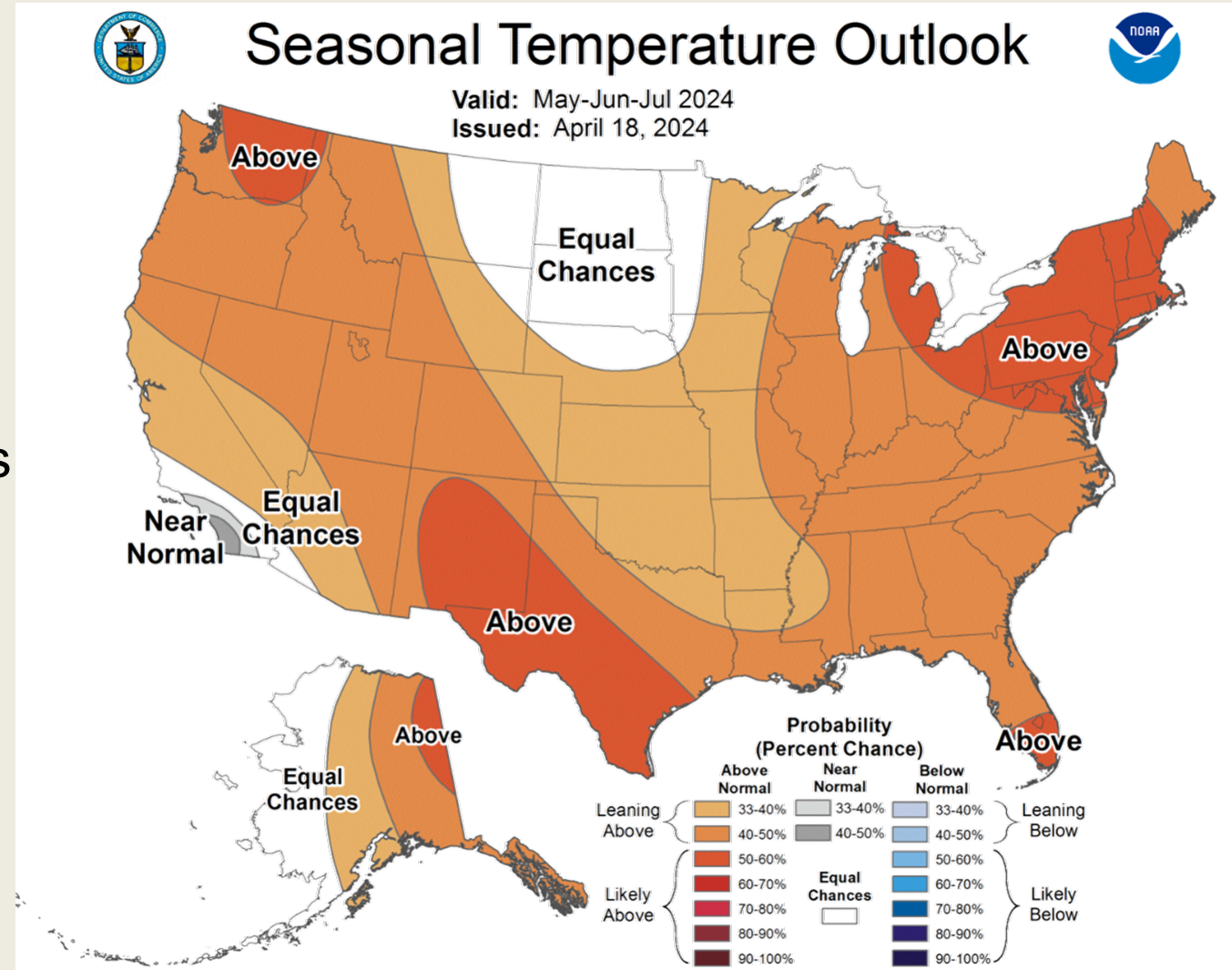
Peak monthly forecasts for 2024 (annual peak highlighted in yellow):

Month	2022 IEPR	2023 IEPR	Delta	% change
6	42,791	41,902	(889)	-2.1%
7	45,938	46,244	306	0.7%
8	46,569	45,059	(1,510)	-3.2%
9	47,475	45,972	(1,503)	-3.2%



# Weather forecast guidance shows an increased chance of heat waves across interior CA and high likelihood of above normal temperatures

- June - August 2024:
  - Above normal temperatures are most likely to occur across the Desert Southwest, and
  - A lower chance of above normal temperatures in coastal locations especially Southern California.
- August and September 2024:
  - Increased chance of heat events across interior California.



## Forecast summer conditions in 2024 continue to improve over previous summers

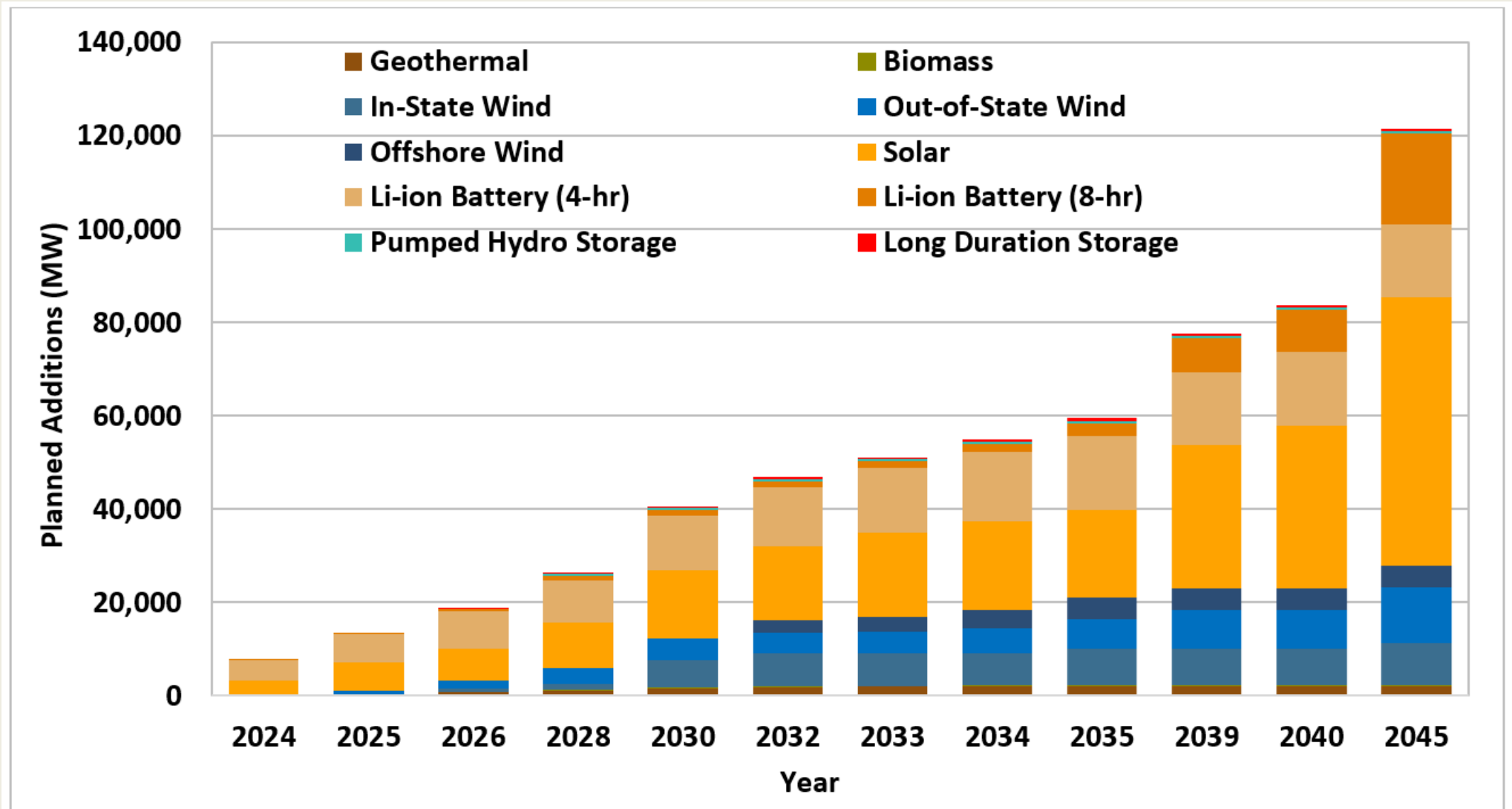
- Additional new capacity, average or moderately above average hydro conditions and softening of near term load forecasts by CEC more than offset generation retirements and transition of remaining OTC generation to strategic reserves.
- These result in both static and probabilistic ISO metrics being met with a reasonable margin
  - The loss of load expectation target of 1-in-10 is forecast to be met with a margin of approximately 2550 MW
- Strategic reserves continue to be a critical tool for reliability
  - While installed capacity is sufficient, some capacity may be contracted externally and not by California LSE
  - Extreme drought, wildfires and continued potential for widespread heating events and other disruptions continue to pose a high risk for outages to the ISO grid

# Forecast of installed resource capacity 2024-2025

Total Installed Capacity (MW)	2024	2025	2026	2028	2030	2032	2033	2034	2035	2039	2040	2045
Fuel Type												
Coal	480	0	0	0	0	0	0	0	0	0	0	0
Natural Gas	23,744	23,700	23,300	23,300	23,300	23,300	23,300	23,300	23,300	23,300	23,300	19,400
CHP	1,925	1,900	1,900	1,900	1,900	1,600	1,400	1,200	1,000	200	0	0
Nuclear	2,935	600	600	600	600	600	600	600	600	600	600	600
Geothermal	1,303	1,300	2,100	2,500	2,900	3,200	3,300	3,400	3,400	3,400	3,400	3,400
Biomass	487	500	500	700	700	700	700	700	700	600	600	600
Biogas	217	200	200	200	200	200	200	200	200	200	200	200
Hydro	8,523	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500
In-State Wind	8,027	8,200	8,600	8,900	13,700	14,800	14,800	14,800	15,700	15,700	15,700	17,000
Out-of-State Wind	11	600	1,700	3,400	4,500	4,500	4,500	5,300	6,300	8,300	8,300	12,000
Offshore Wind	0	0	0	0	0	2,700	3,300	3,900	4,500	4,500	4,500	4,500
Solar	22,037	25,000	25,900	28,900	33,800	34,800	36,900	38,000	38,000	49,700	54,000	76,500
Li-ion Battery (4-hr)	12,894	15,200	17,000	18,000	20,500	21,600	23,000	23,900	24,700	24,700	24,700	24,700
Li-ion Battery (8-hr)	67	100	600	1,200	1,400	1,600	1,600	1,900	3,000	7,400	9,200	19,700
Pumped Hydro Storage	1,483	1,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Long Duration Storage	0	0	100	300	300	400	400	500	500	500	500	500
Shed DR	2,446	2,500	2,200	2,300	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
<b>Total</b>	<b>86,579</b>	<b>89,800</b>	<b>94,700</b>	<b>102,700</b>	<b>116,700</b>	<b>122,900</b>	<b>126,900</b>	<b>130,600</b>	<b>134,800</b>	<b>152,000</b>	<b>157,900</b>	<b>192,000</b>

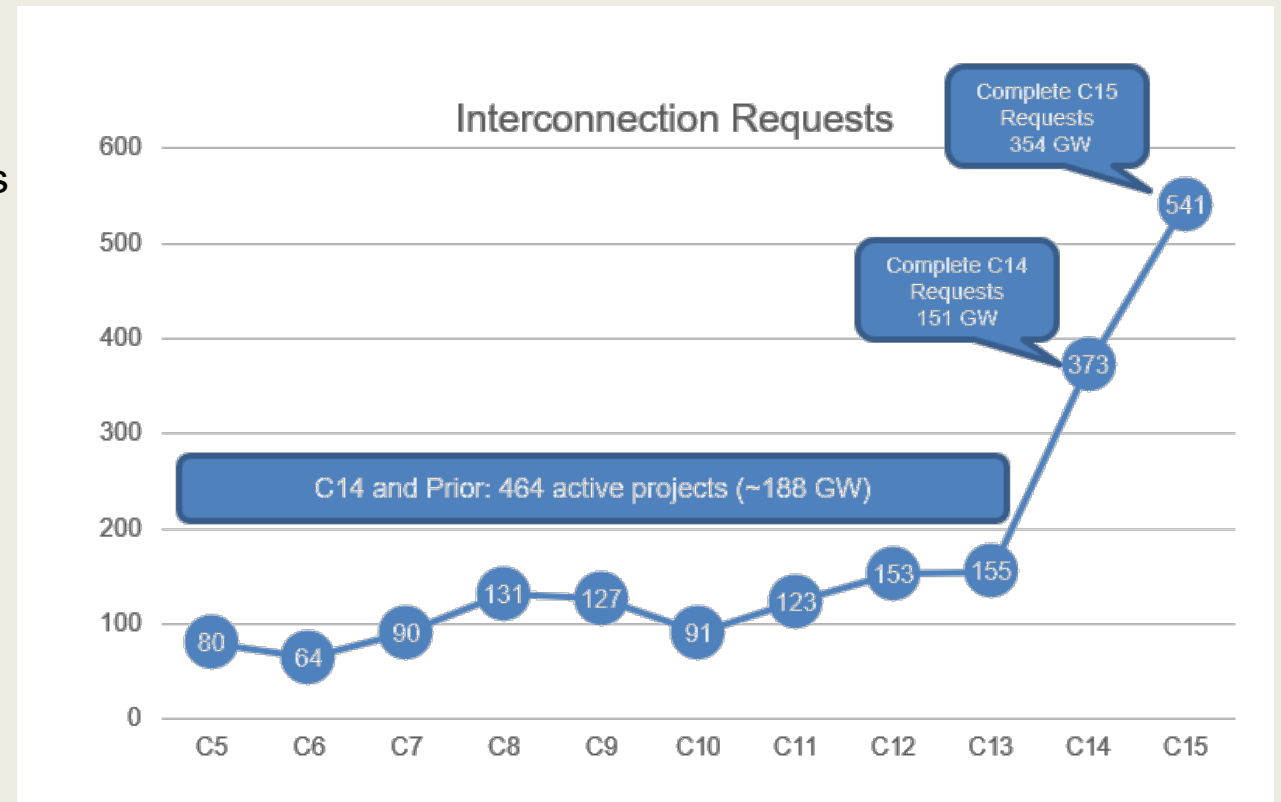
Source: CPUC 2023 Preferred System Plan

# Expected future capacity additions



# The ISO is developing transformative changes to its process through its “IPE 2023” initiative

- Changes needed to ensure new resources are added to the grid timely and efficiently by focusing on the higher value projects
- The IPE changes are being built on the new foundation set out in FERC Order 2023
  - Zonal approach to planning, procurement, and interconnection studies, with accessible data.
  - Scoring criteria to prioritize most “ready” projects for study process
  - Auction as a backstop mechanism to right-size the number of projects and capacity in the study process
  - Reform the merchant-financing “Option B” process
  - Enhance the Transmission Plan Deliverability (TPD) Allocation process.
  - Enhance queue management

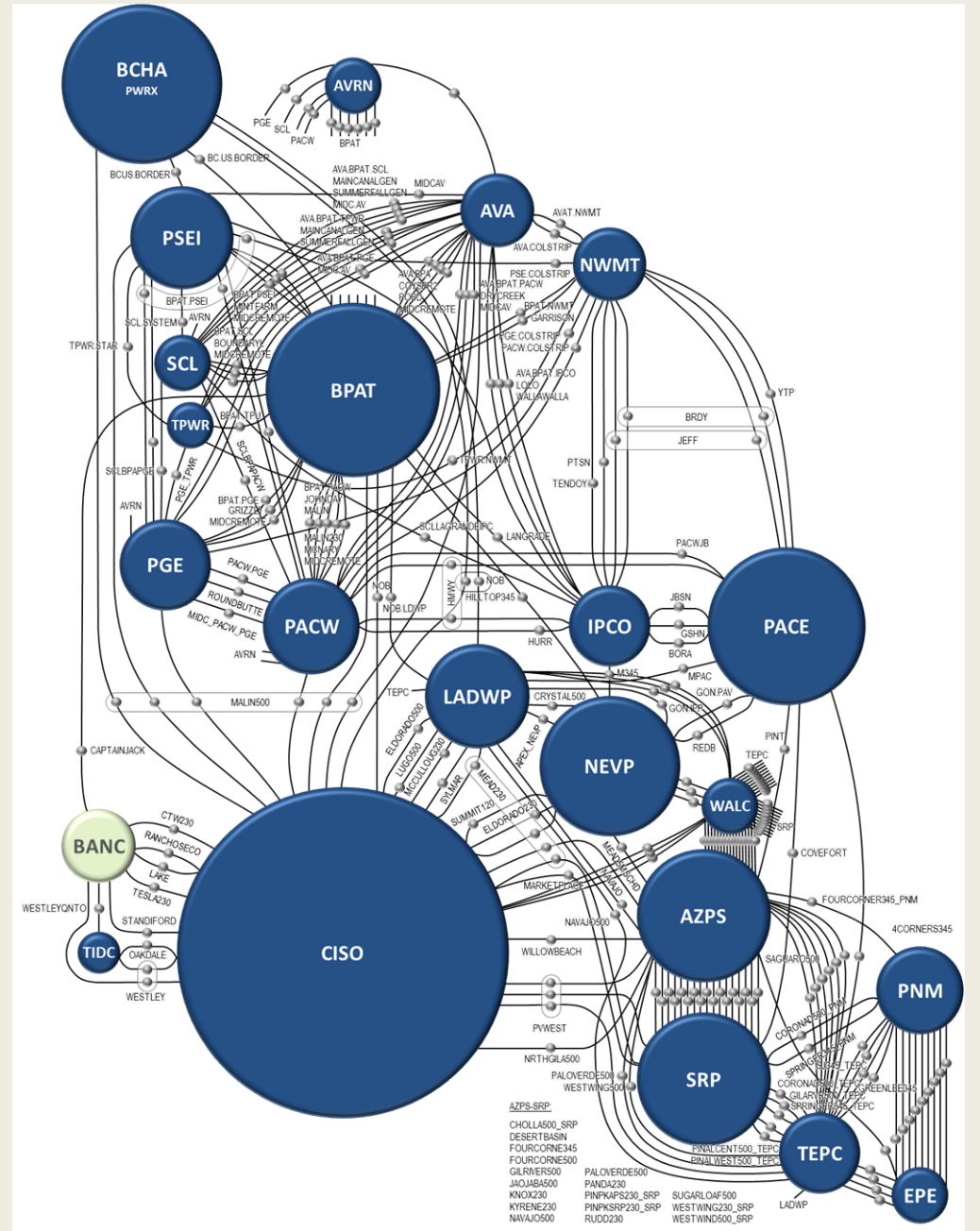
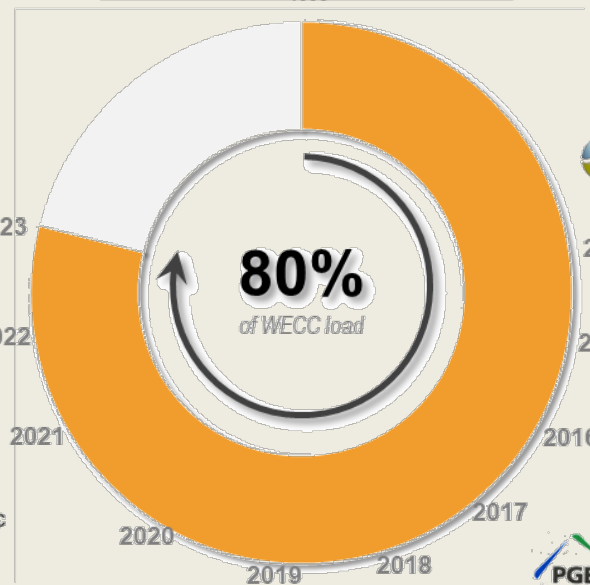


# **WESTERN ENERGY IMBALANCE MARKET (WEIM) AND EXTENDED DAY AHEAD MARKET (EDAM) UPDATE**

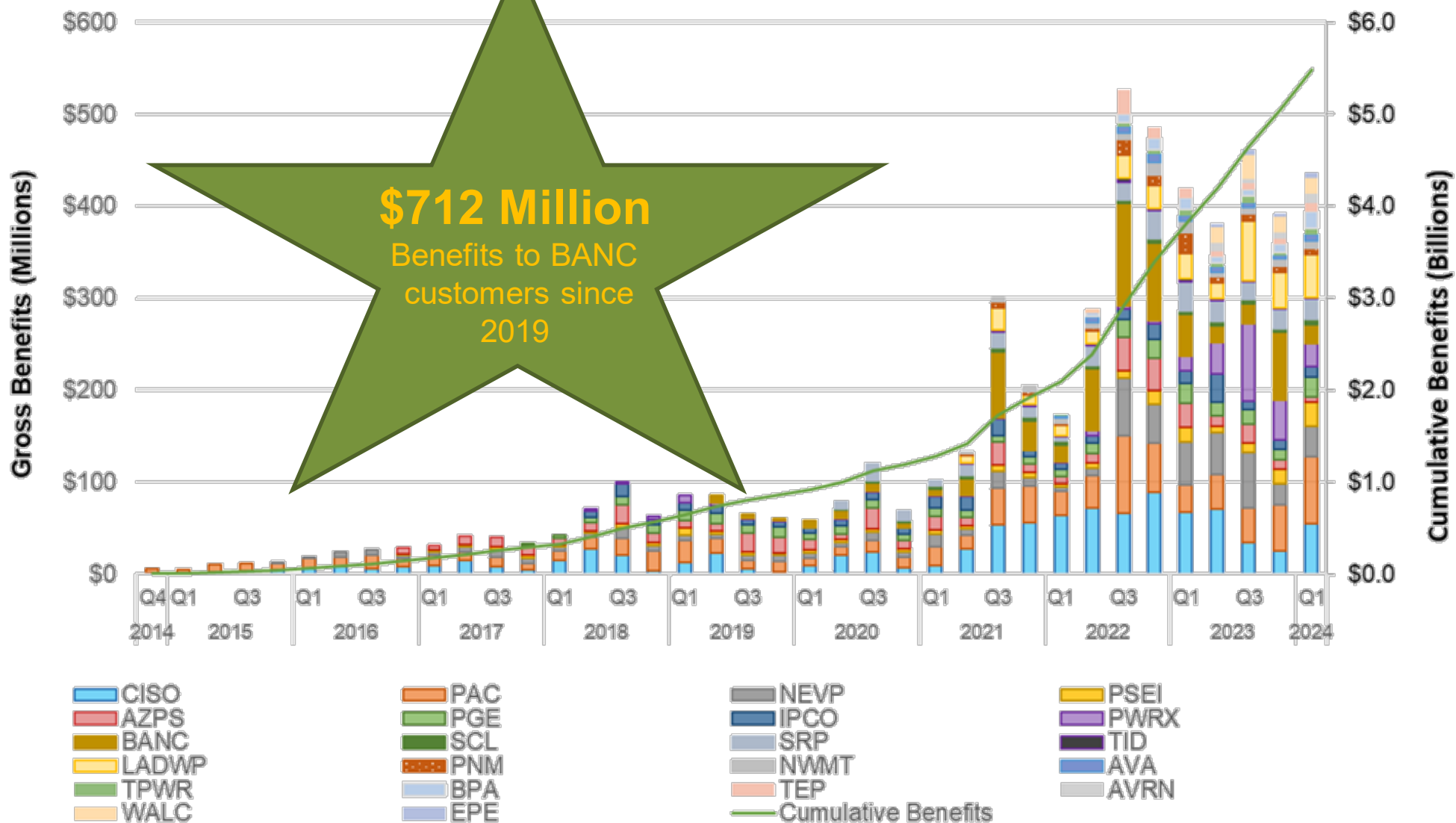


# WEIM coverage and ETSRs

**CALIFORNIA ISO**  
1988



# WEIM Benefits through Q1 - 2024



## Q1-2024 Benefits

### ECONOMICAL

**\$436.30 M**

Gross benefits realized due to more efficient inter-and intra-regional dispatch in the Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD)\*

### ENVIRONMENTAL

**25,802**

Metric tons of CO<sub>2</sub>\*\* avoided curtailments

### OPERATIONAL

**57%**

Average reduction in flexibility reserves across the footprint



## Recent Extended Day Ahead Market (EDAM) Activities

- EDAM access charge re-filing submitted to FERC on April 12<sup>th</sup>.
  - Establishes process for recovery of transmission revenues that may be impacted by EDAM
  - Mitigates potential cost shifts between transmission customers
- BANC
  - Continue to collaborate on implementation details with customers
- PacifiCorp
  - Signed Implementation agreement
  - launch of its tariff stakeholder process to support EDAM participation first meeting held on April 16<sup>th</sup>

## Extended Day Ahead Market (EDAM) footprint evolution

- Additional entities indicated their intent or leaning toward joining the EDAM:
  - Los Angeles Water and Power (LADWP)
  - Portland General Electric (PGE)
  - Idaho Power Company (IPC)
- Public Utilities Commission of Nevada (PUCN) proceeding on Day Ahead Market options.
  - Presentation on April 10<sup>th</sup> on EDAM, along with SPP presentation on M+

# Stakeholder Working Groups

- *GHG Accounting Working Group*
  - Stakeholder proposals on accounting for non-priced GHG state programs through market
  - Discussion on provisions of additional data and metrics to support compliance with different programs across the West
- *Price Formation Enhancements*
  - Review and discussion of Fast Start Pricing analysis
  - Continued discussion and consideration of enhancements to market power mitigation and scarcity pricing
- *Gas Resource Management*
  - Based on stakeholder discussion, shifting to policy design phase to evaluate stakeholder proposals and solutions

# PATHWAYS

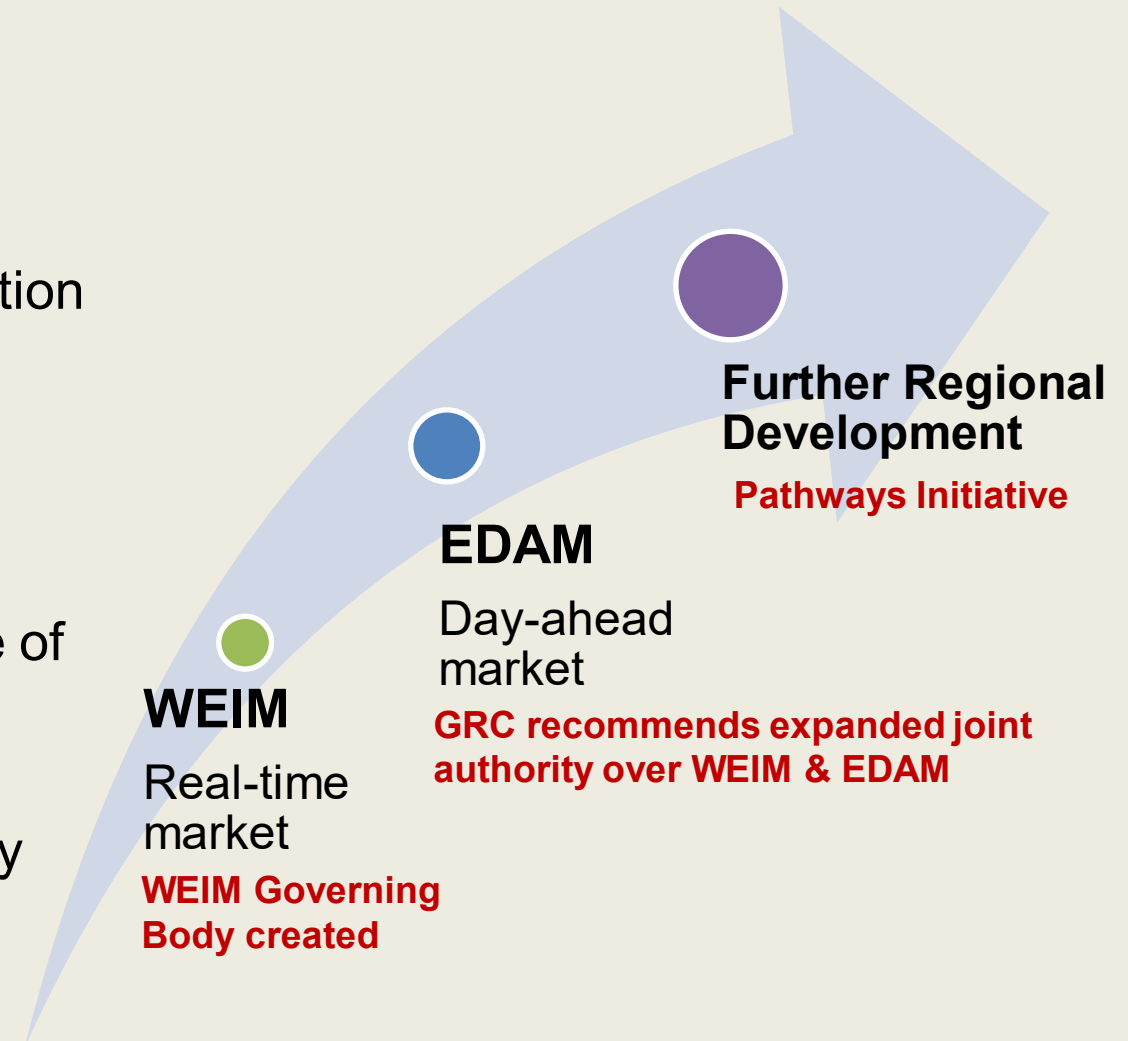
# As the market grows, governance continues to evolve

**CA ACR188 (2022)** - Requested ISO to compile existing studies on regional expansion and provide summary of potential impacts to CA.

- Showed measurable benefits of regional cooperation are production cost savings, capacity savings, emissions reductions and enhanced reliability.

**Letter from Western Commissioners (2023)** – Recognizes western coordination, including the opportunity for unified Western market and full range of western integration services, provides the greatest benefits for consumers.

- Recommends stakeholders gather and decide key elements of how an independent entity would be formed and structured
- Launch Committee formed – broad stakeholder representation, including commissioners



# Governance Pathways Initiative – Step 1 Process

Launch  
Committee  
work

- Public comments
- Refine and finalize Step 1 proposal
- Deliver to CAISO Board and WEIM GB

CAISO  
process

- Stakeholder meeting, presented by LC
- Public comments
- Review comments, determine how to proceed
- Joint Board/WEIM GB meeting – decision on Step 1

Pending  
trigger

- Develop revised governance documents
- Develop tariff changes
- FERC filing and approval

Step 1  
governance  
changes  
take effect

## Governance Pathways Initiative – Step 1 Key Components

- WEIM GB has primary authority over market rules
- Dual FERC filing rights
  - If, following current dispute resolution process, there is still disagreement, the CAISO would file two proposals with FERC
- Step 1 governance transition triggered when a set of geographically diverse non-CAISO WEIM Entities equal to or greater than 70% of the CAISO BAA annual load for 2022 have executed EDAM implementation agreements.
  - Expecting enough EDAM implementation agreements by Q1 2025
- WEIM/EDAM charter amended to reflect the requirement to consider the public interest in decision making

## Governance Pathways Initiative – Step 2 Key Elements

- Creation of a non-profit Regional Organization (RO)
- Passage of enabling legislation to narrow scope of CAISO corporate responsibility, transfer some management responsibility, retain BA function responsibility
- Transition of decision-making over WEIM/EDAM to the RO's Sole Authority within the same integrated tariff – governance versus institutional independence
- Creation of pathways for services beyond WEIM/EDAM with the RO as the governing and possibly host entity



## Governance Pathways Initiative – Step 2 Next Steps

- Public comment period closes: May 8
  - Incorporate feedback and refine proposals
- Step 1 implementation: June - September 2024
- Step 2 final recommendation: August/September 2024
- RO Initiation: September 2024 – January 2025
- CA legislative engagement (ongoing): 2025 legislative session