



California ISO

ESIG Spring Technical Workshop - Keynote

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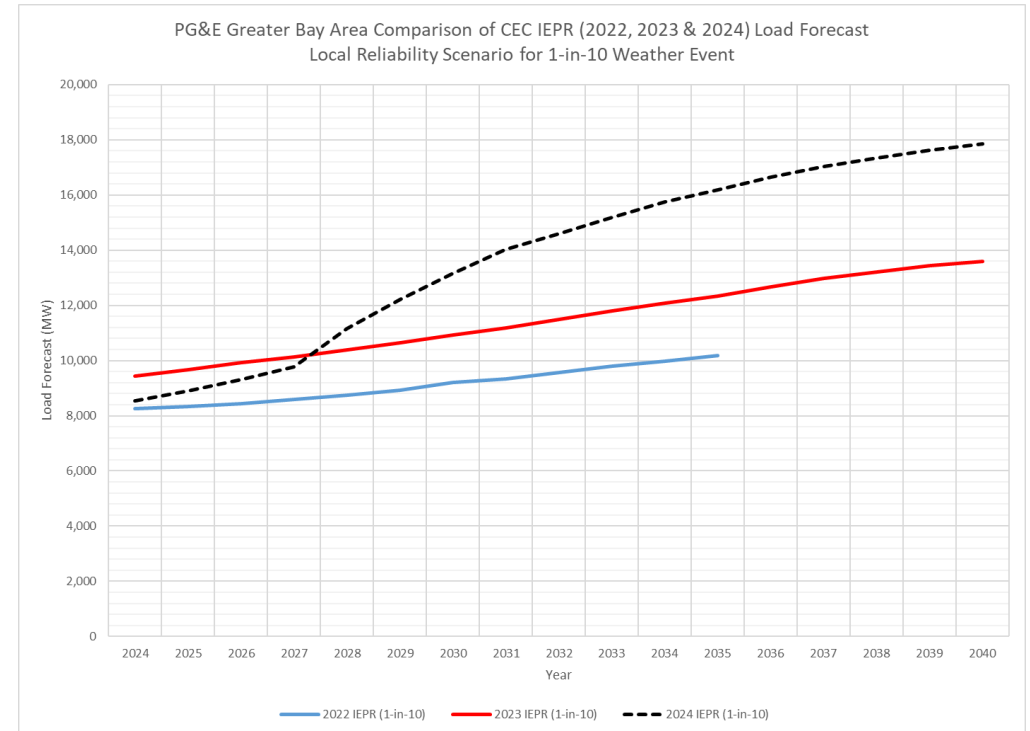
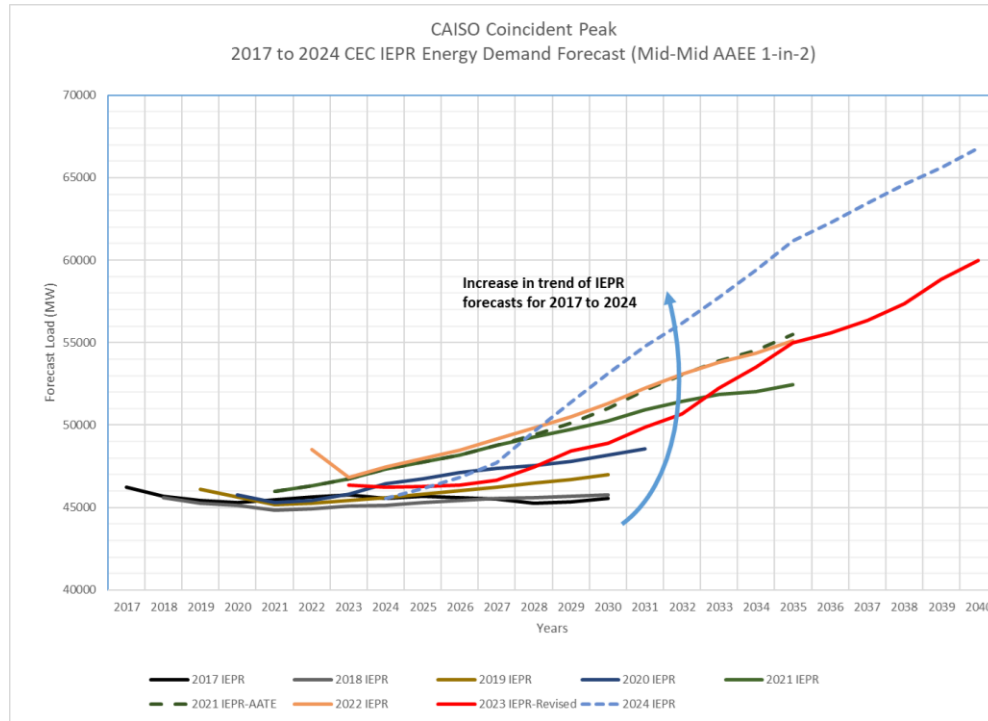
March 17, 2026

Topics

- Evolving supply and demand picture
- Operational observation of Inverter Based Resources and Storage
- Regional coordination

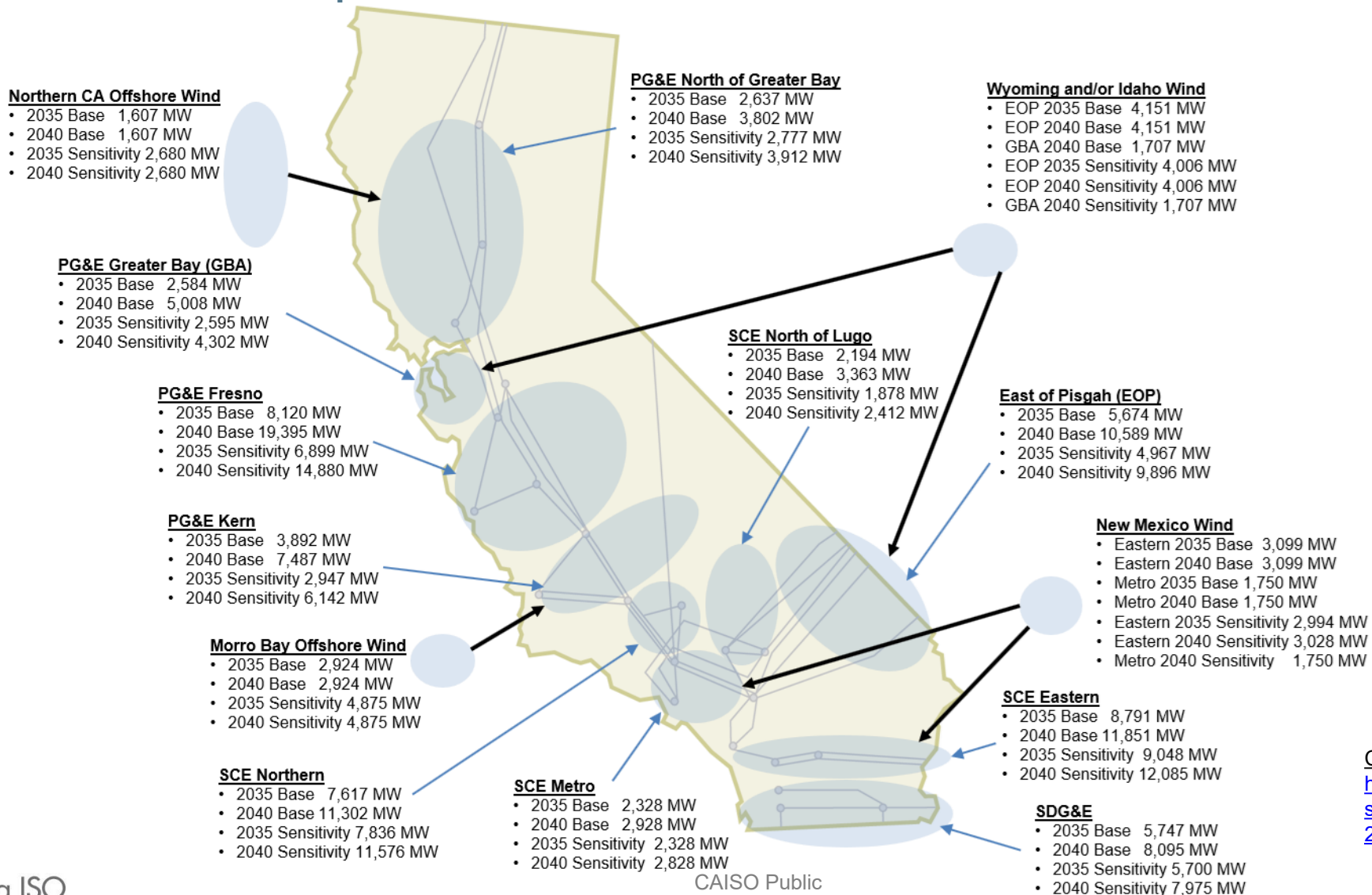
Increasing Load Forecast

- CEC load forecast on ISO system continues to increase in 2024-2025 TPP, especially in 10 to 15-year planning horizon, and in particular the Greater Bay area has a significant increase
- Greater Bay area affected by concentration of datacenter loads above other load growth



CEC 2024 IEPR California Energy Demand, 2024-2024 Forecast Files: <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report-iepr/2024-integrated-energy-policy-report-0>

The 2025-2026 Transmission Plan continues to utilize the zonal approach for resource development

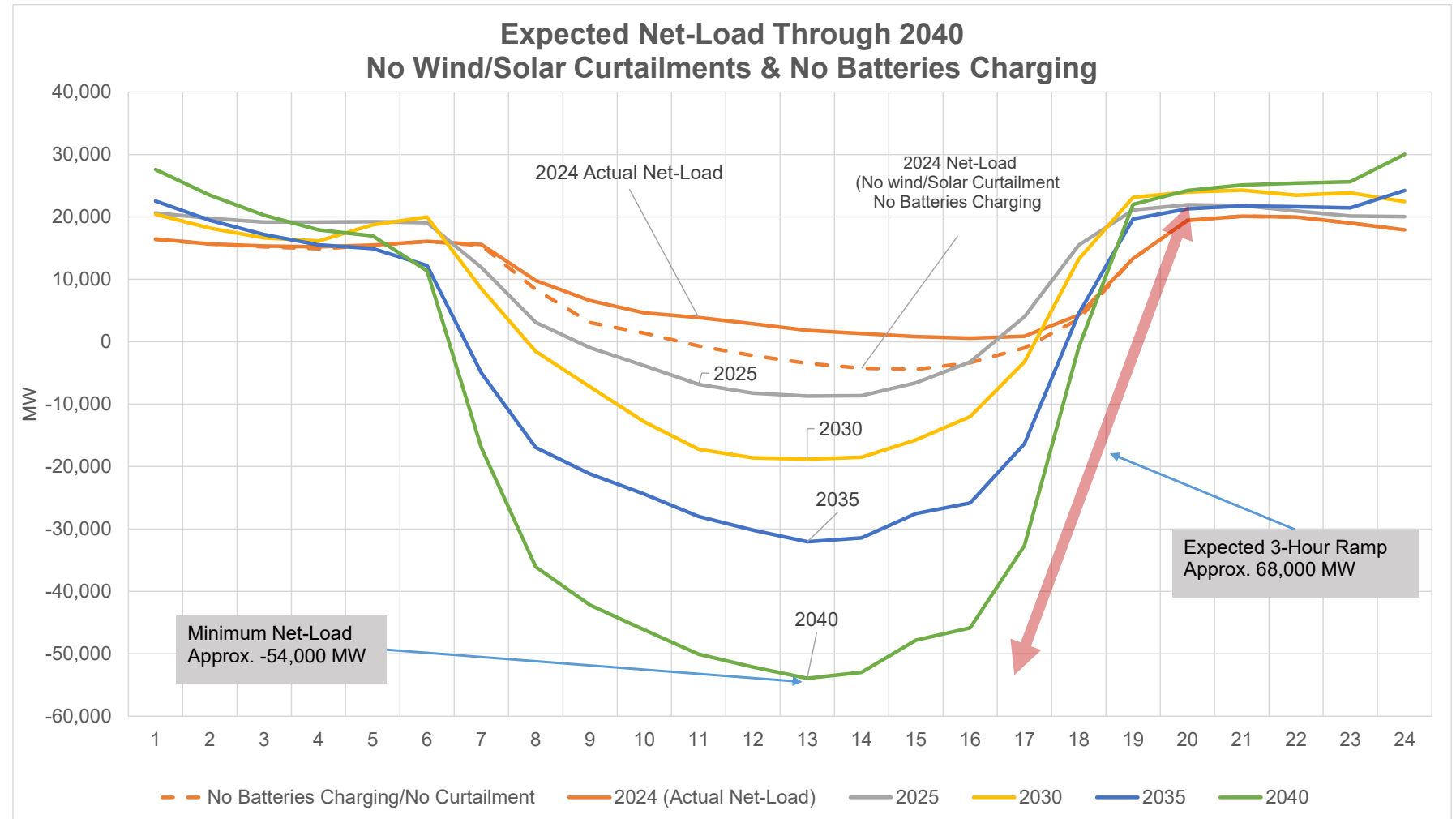


Note: CPUC portfolio decision indicated to assess the out-of-state capacity identified in the portfolio; however, to only approve transmission and reserve MIC for 5,700 MW of out-of-state wind (1,500 MW from WY, 1,100 MW from ID and 3,099 MW from NM)

CPUC Decision 25-02-026
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M557/K879/557879249.PDF>

Actual 2024 net-load and expected net-load and 3-hour ramps through 2040

- Expected net load is based on the CEC's 2024 IEPR Load forecast (2nd Publication)
- Wind/solar capacity projections are based on CPUC's 2023 Preferred System Plan with 2025-2026 IRP Portfolio Update
- Years 2025 through 2040 does not include wind or solar curtailment or batteries charging
- OOS/Offshore Wind profiles were derived from NREL Windspeed model



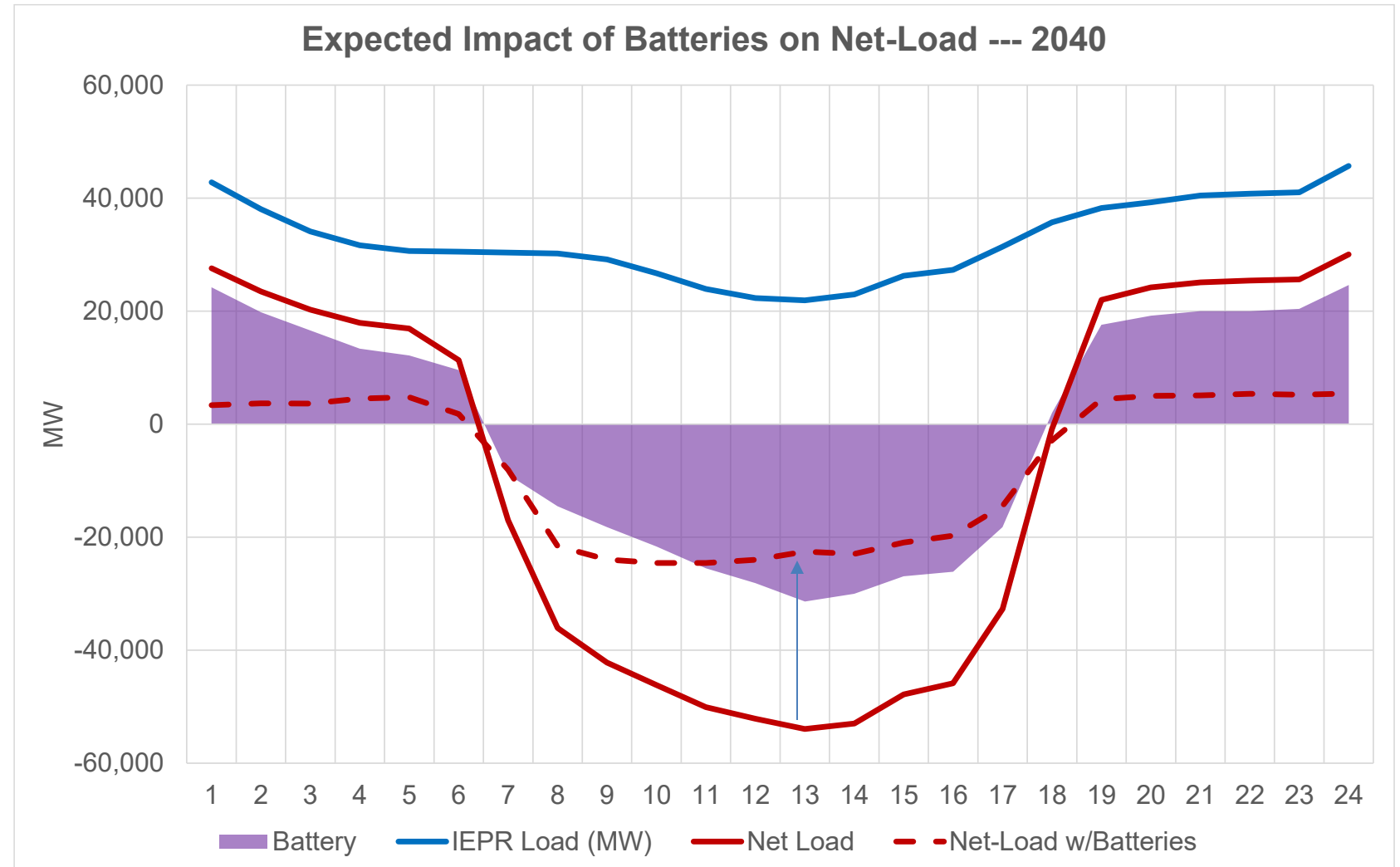
Expected impact on net-load due to batteries charging/discharging schedule in the 2040 timeframe

Spring 2040

- Max Load is approx. 46,000 MW
- Minimum net-load is expected to drop to about -54,000 MW
- Maximum 3-Hour upward ramp is expected to be about 68,000 MW

Impact of Batteries

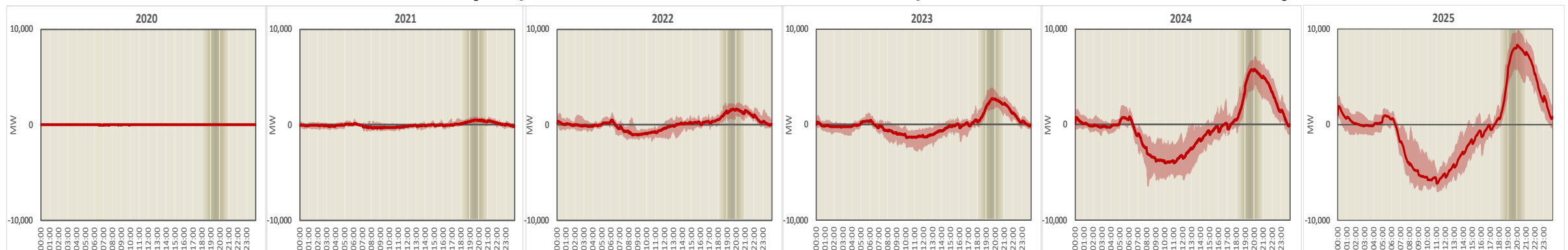
- Minimum net-load is expected to reduce from -54,000 MW to -25,000 MW
- 3-Hour upward ramp is expected to reduce from 68,000 MW to about 24,000 MW



Battery increase in the past few years

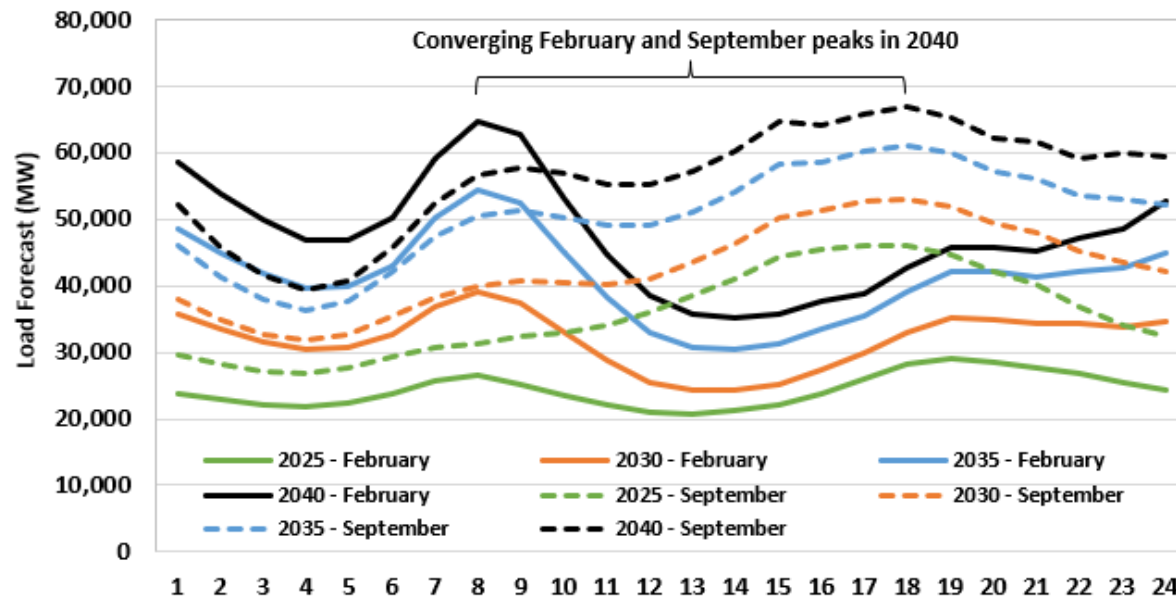


Standalone battery operations from June to September in the CAISO system

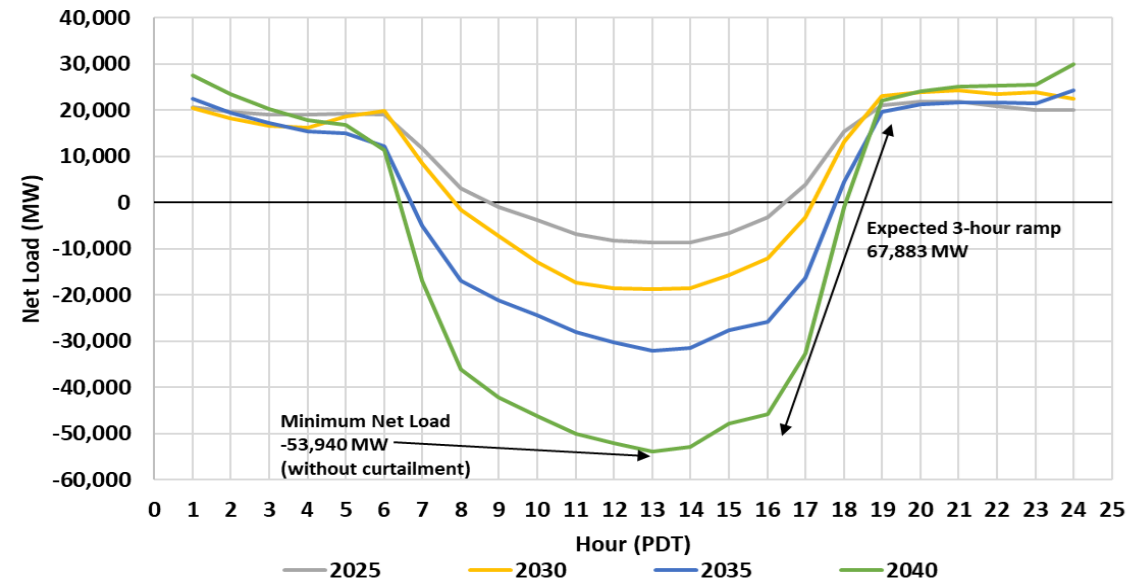


Resource planning is driven by shifting peak demand, expanding renewables, climate impacts, and evolving policy

February and September Gross Load Peaks (2025 - 2040)



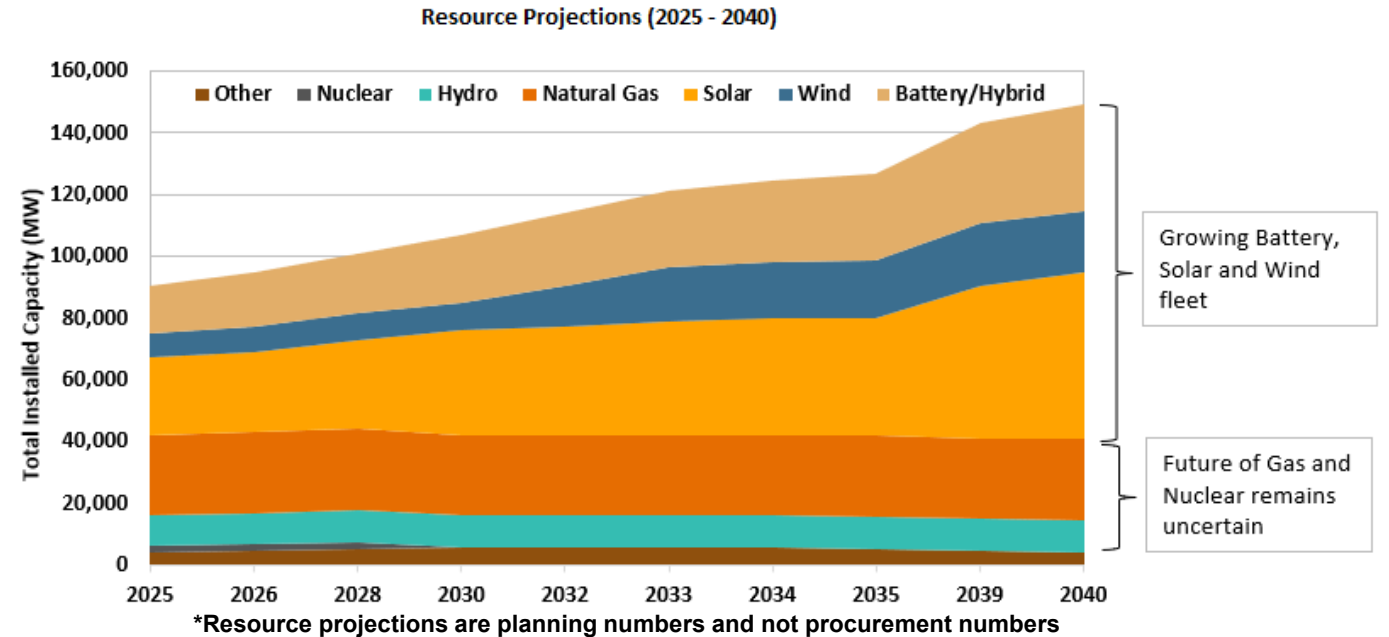
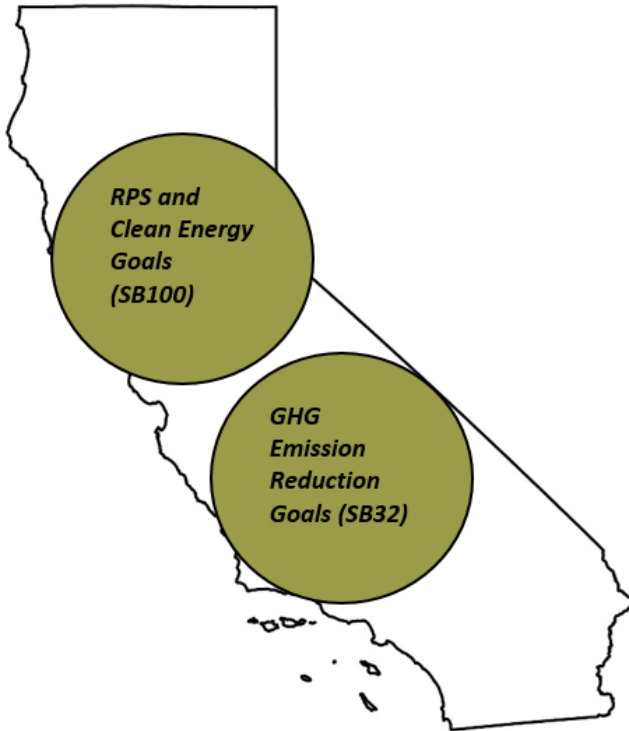
Expected Net Load through 2040 (April)



- **Dual seasonal peaks & flatter load profiles** – increases the need for year-round flexibility and capacity while also having fewer low-demand periods to recharge storage or schedule maintenance
- **Steep ramping need & role of batteries** – Today's ~22 GW in 3 hours could potentially grow to ~40 GW by 2040

California's electric grid is evolving

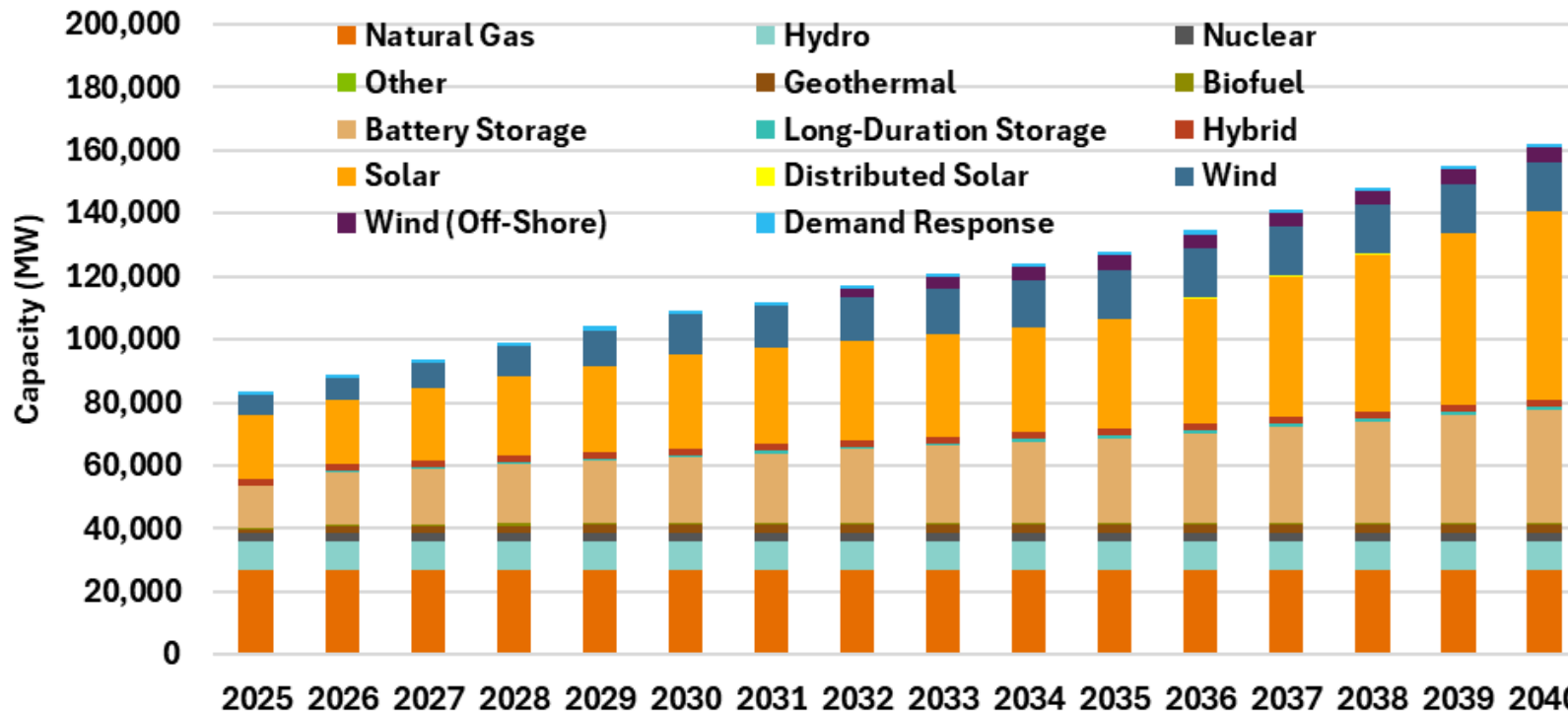
Future resource portfolio should include flexible and diverse resources capable of delivering reliability, operability, and resilience across all seasons and system conditions.



In addition to fleet evolution, increased renewable penetration, policy mandates, cost pressures, new load growth (types and magnitude), and new technology development – there is a west-wide demand for clean capacity with differing market structures and a need for coordinating planning and operational strategies

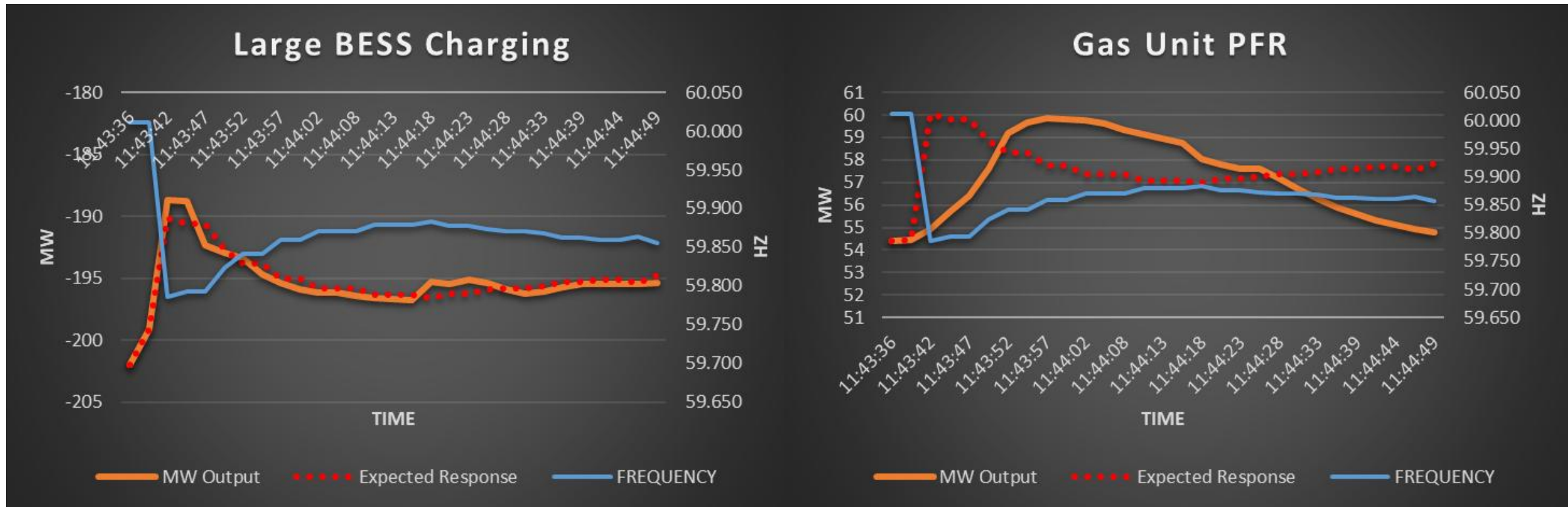
The assessment utilizes the recent 2025-26 TPP portfolio, which plans for more than 80 GW of new solar, wind, and storage by 2040

Existing + Planned Capacity (2025 - 2040)



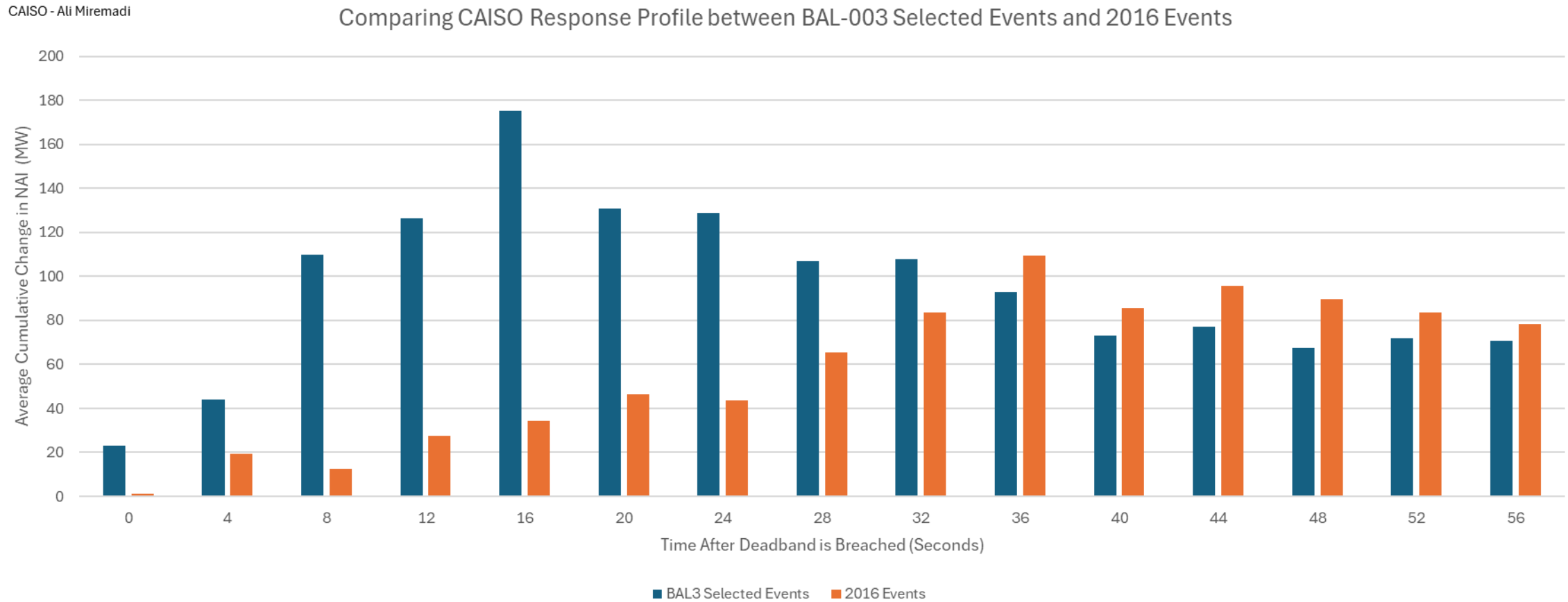
- The CPUC's portfolio nearly doubles nameplate capacity of system resources
- Portfolio has very little gas retirement; and beyond the renewables and battery storage, only has ~2.8 GW of geothermal and long-duration energy storage
- The portfolio uses the 2023 IEPR load projections

Compliance Measurement - Actual Examples of Arresting and Recovery PFR



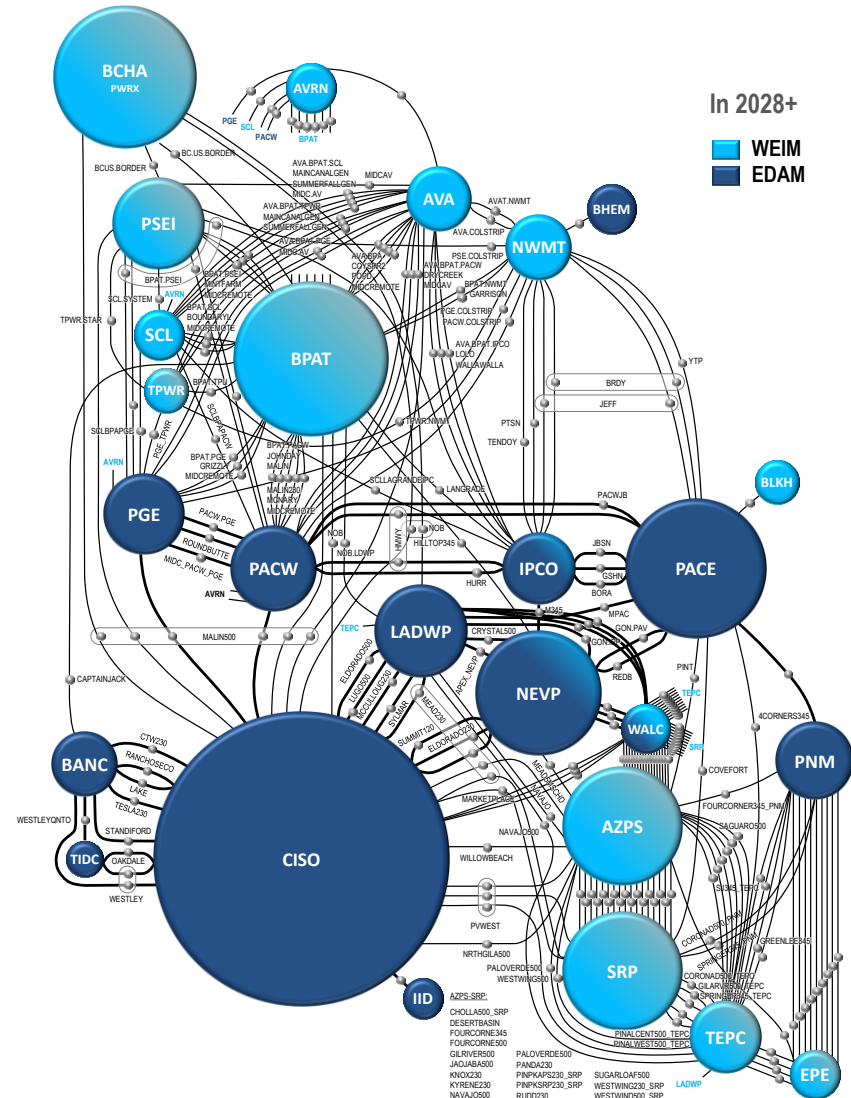
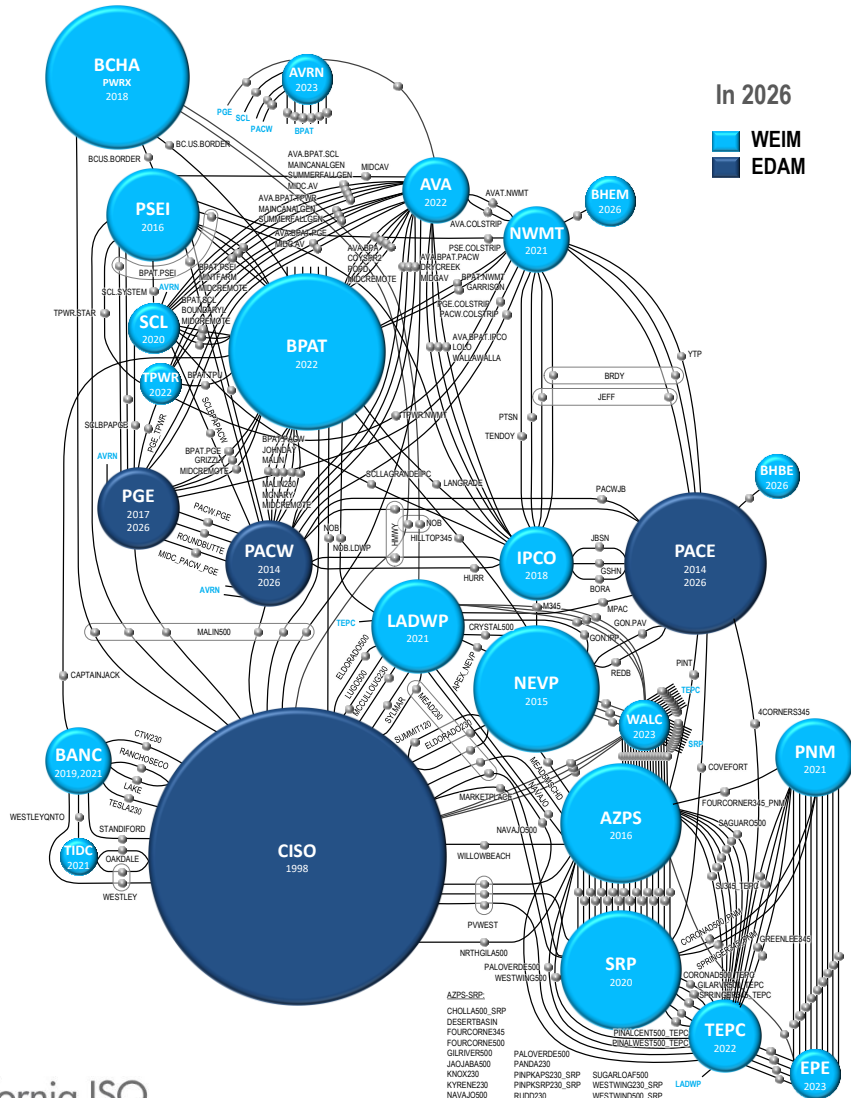
CAISO PFR Response Has Shifted from Recovery to Arresting Due to IBR

Compliance Measurement

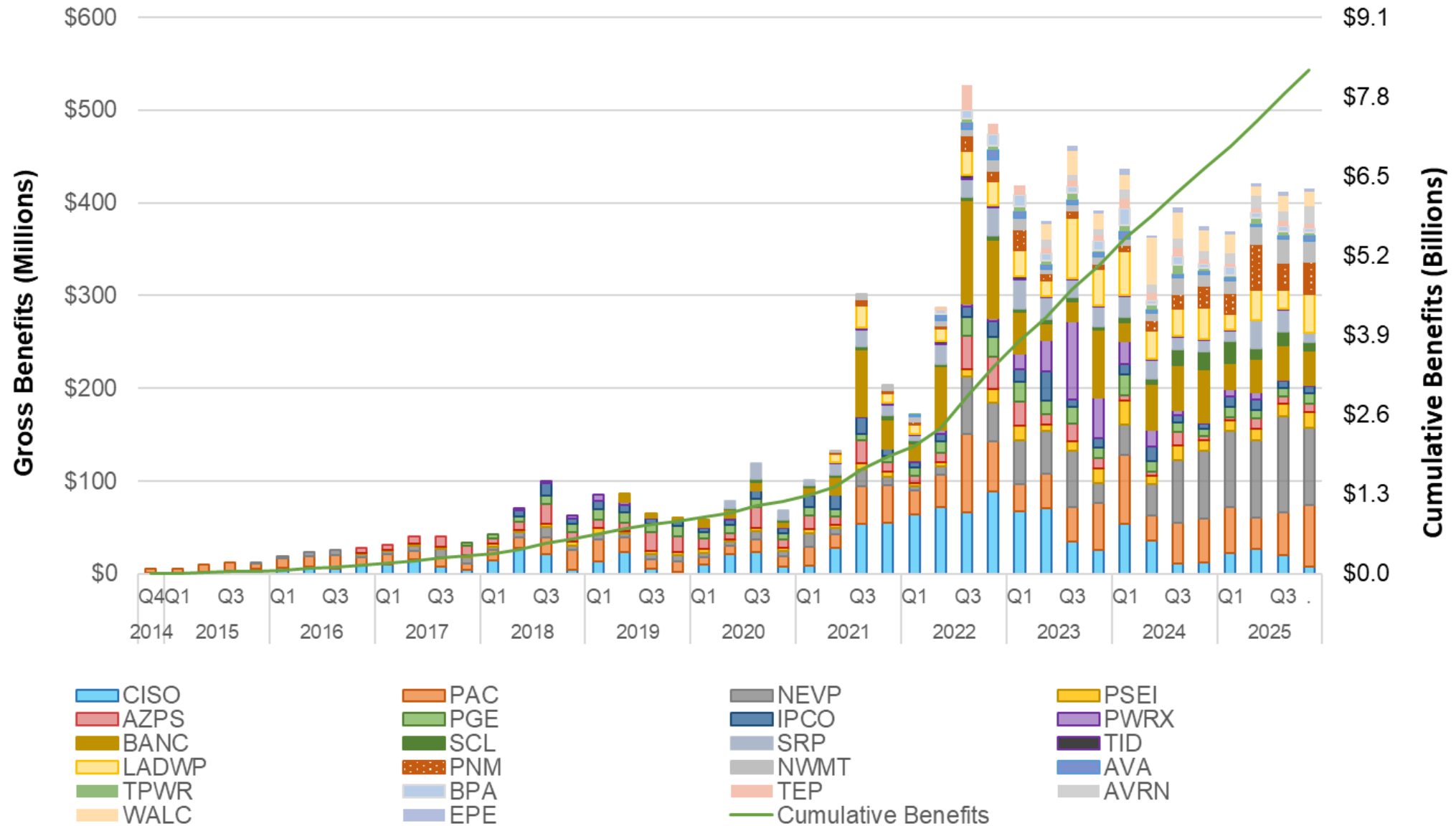


Western Energy Market (WEM) energy transfer paths

EDAM is a continuous and well-connected system.

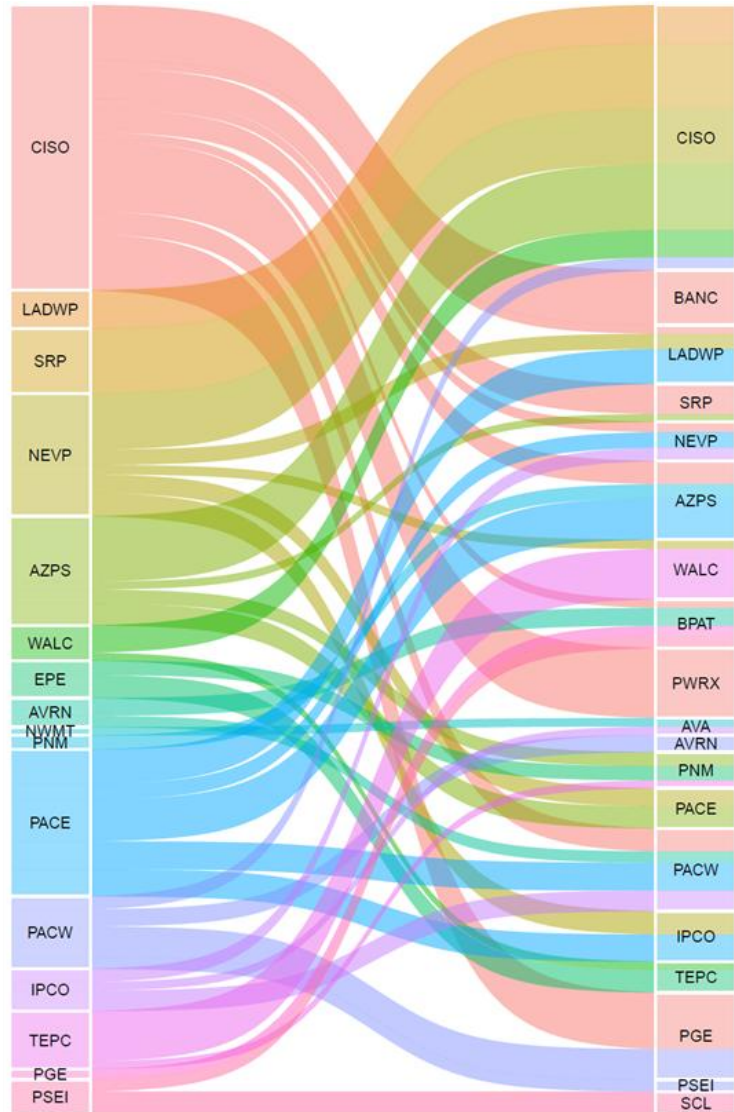


WEIM surpasses \$8 billion of total benefits since inception

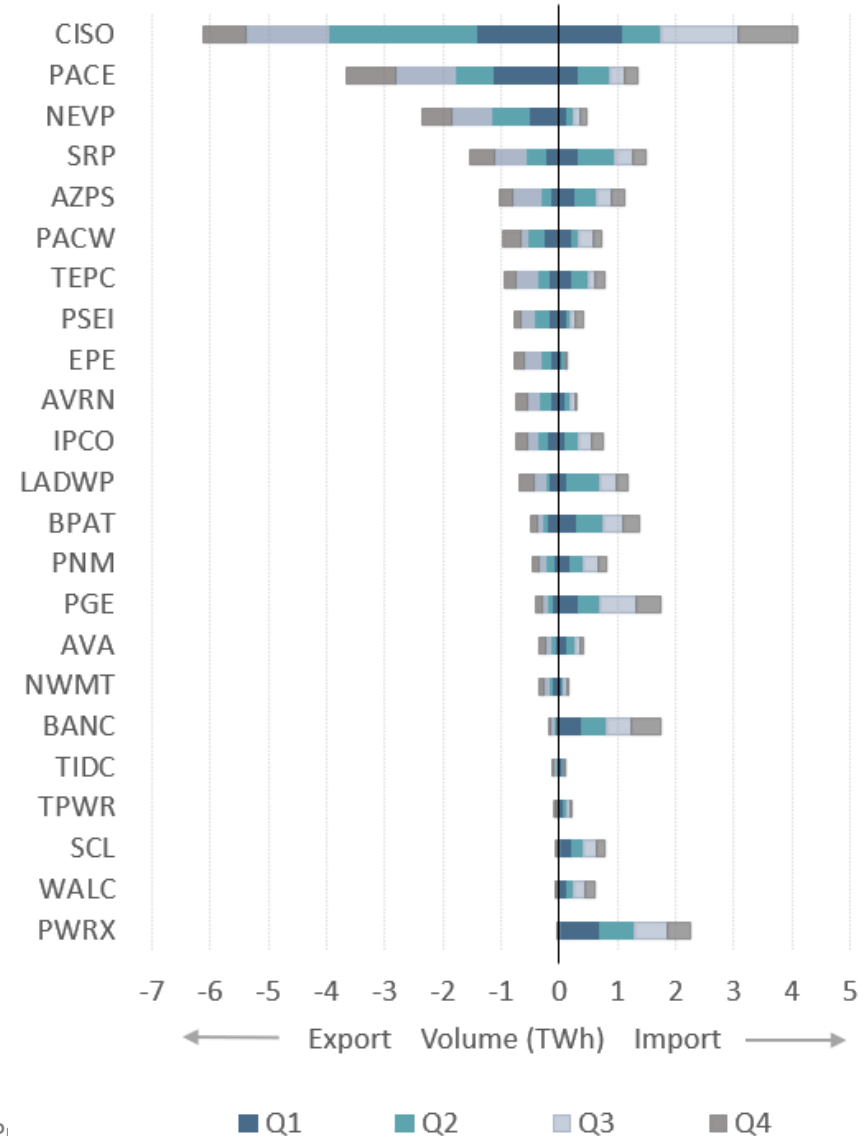


Transfer volumes remained high in Q4 2025

Transfers in Q4 2025



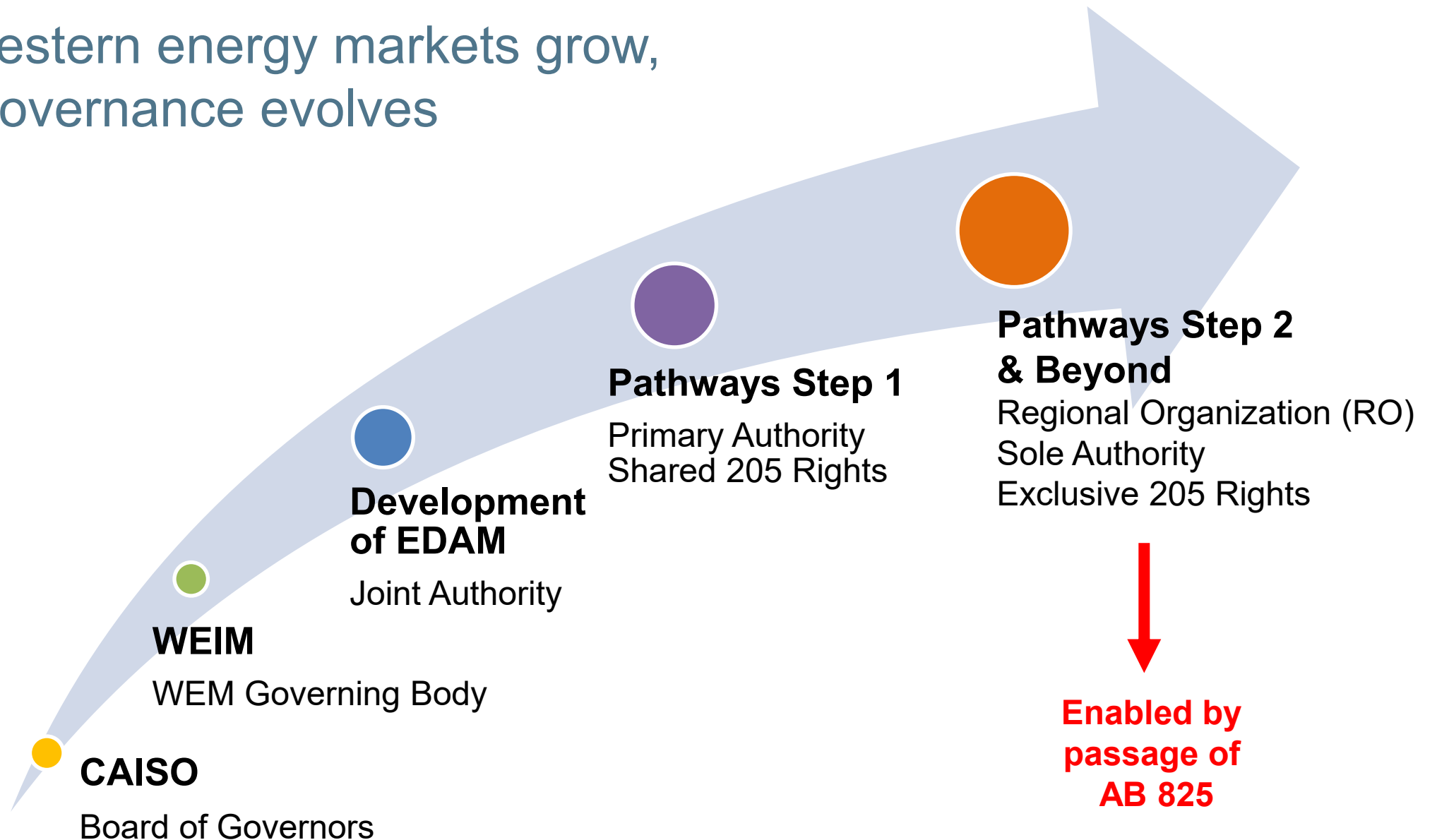
Total transfers in 2025



The WEIM continues to unlock large volumes of economic transfers



As the western energy markets grow, market governance evolves



Next Steps: Looking Towards the Future



Determine long-term flexibility and reliability requirements in the 5,10,15-year time frame across a range of potential scenarios to support long-term resource and transmission planning



Seek to ensure long-term diverse resource procurement with adequate energy attributes



Support efforts to identify, plan for, and develop clean firm dispatchable alternative resources to replace future gas needs



Impacts of legislation on near-term clean energy resource choices and potential risks to the current planning resource trajectory



Continue to collaborate with state agencies and LRAs on aligning long-term load, resource, and transmission planning to ensure a robust grid for the future