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California's Progress Toward the 7GW Goal

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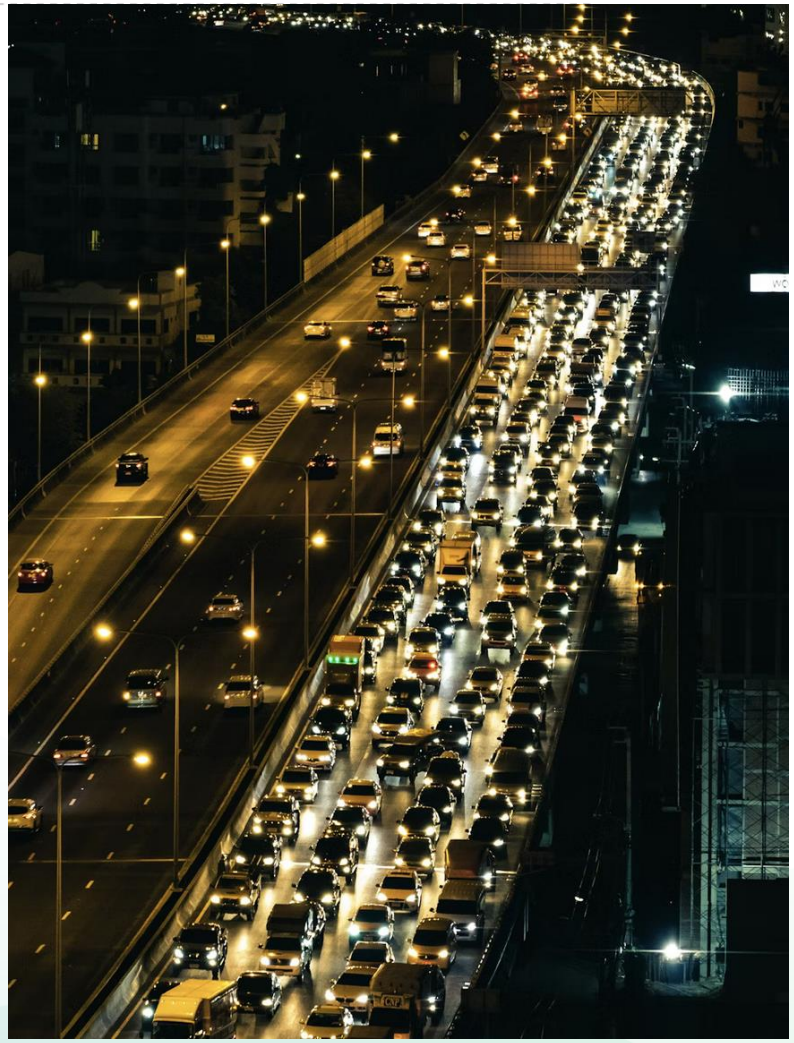
Load Flexibility Definition:

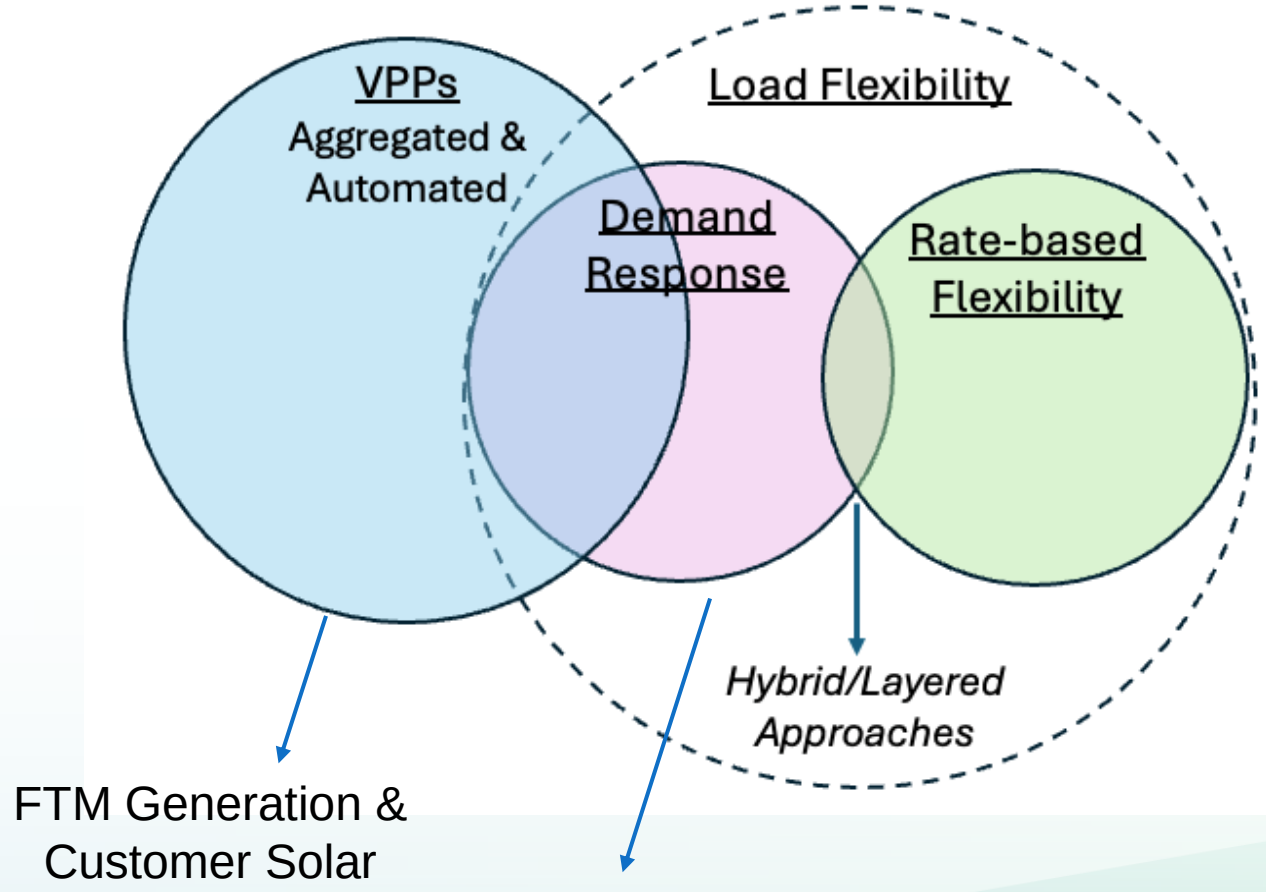
CEC's SB 846 Report (2023) Definition:

"Load flexibility is the capability to shift or shed electric load or demand away from times when electricity is expensive, polluting, and scarce to times when it is inexpensive, clean, and plentiful."



Load Flexibility and VPP Overlap

Key characteristics of load flexibility strategies



Source: California Energy Commission

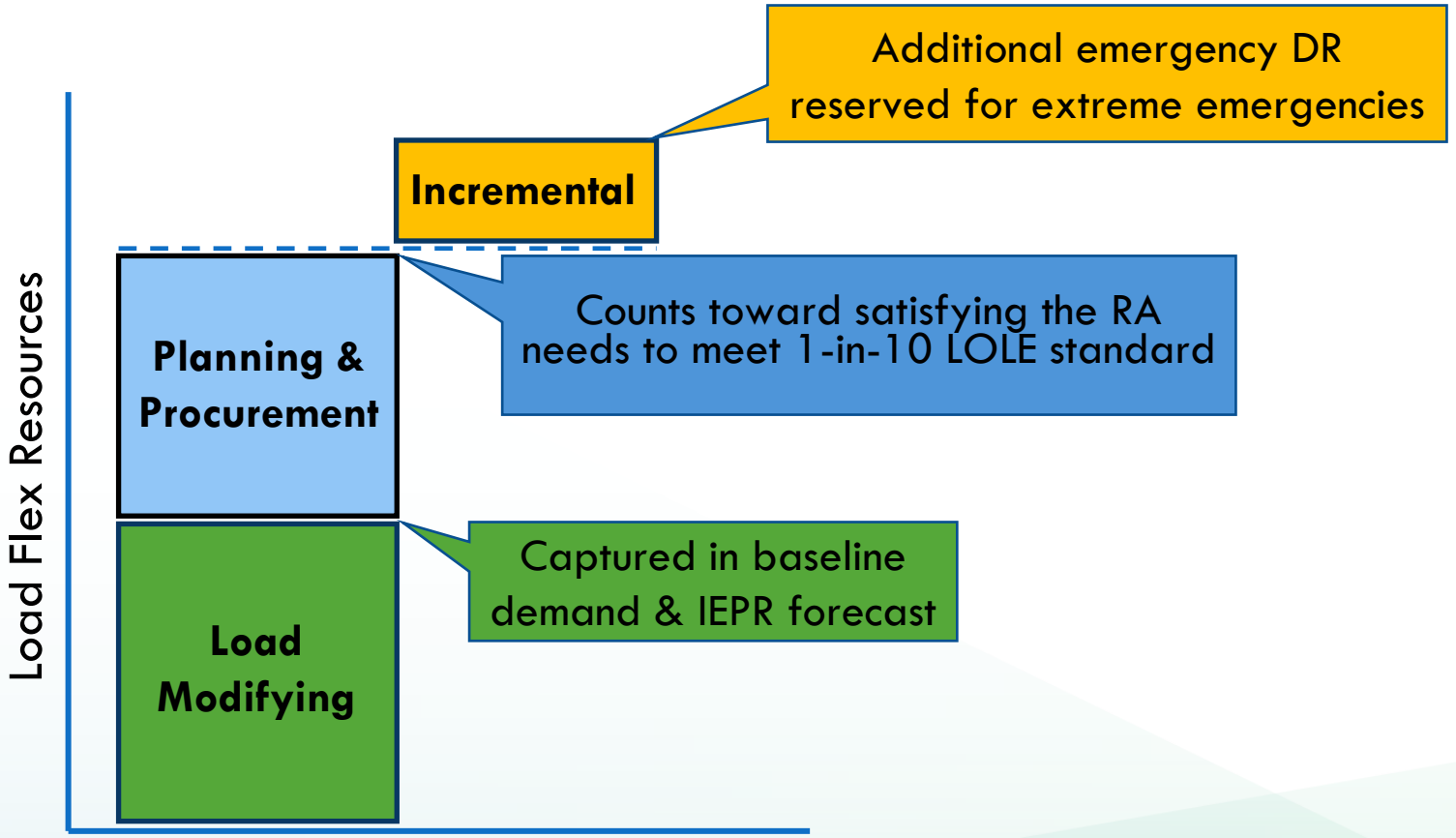
Defining “net-peak”

The SB 846 requirement for load-shifting goal to reduce the “net-peak” can be applied at multiple levels and different weather conditions:

- Distribution circuit-level
- Transmission-level (at each node)
- Utility-level (monthly or annual)
- CAISO-level system net-peak
- Statewide demand net-peak

**CEC’s 2023 D-FLEX modeling considered the CAISO net-peak and average (1-in-2) weather year in the reference scenario.*

CA Load Flexibility Resource Stack



Source: California Energy Commission

RA: Resource Adequacy
LOLE: Loss of Load Expectation

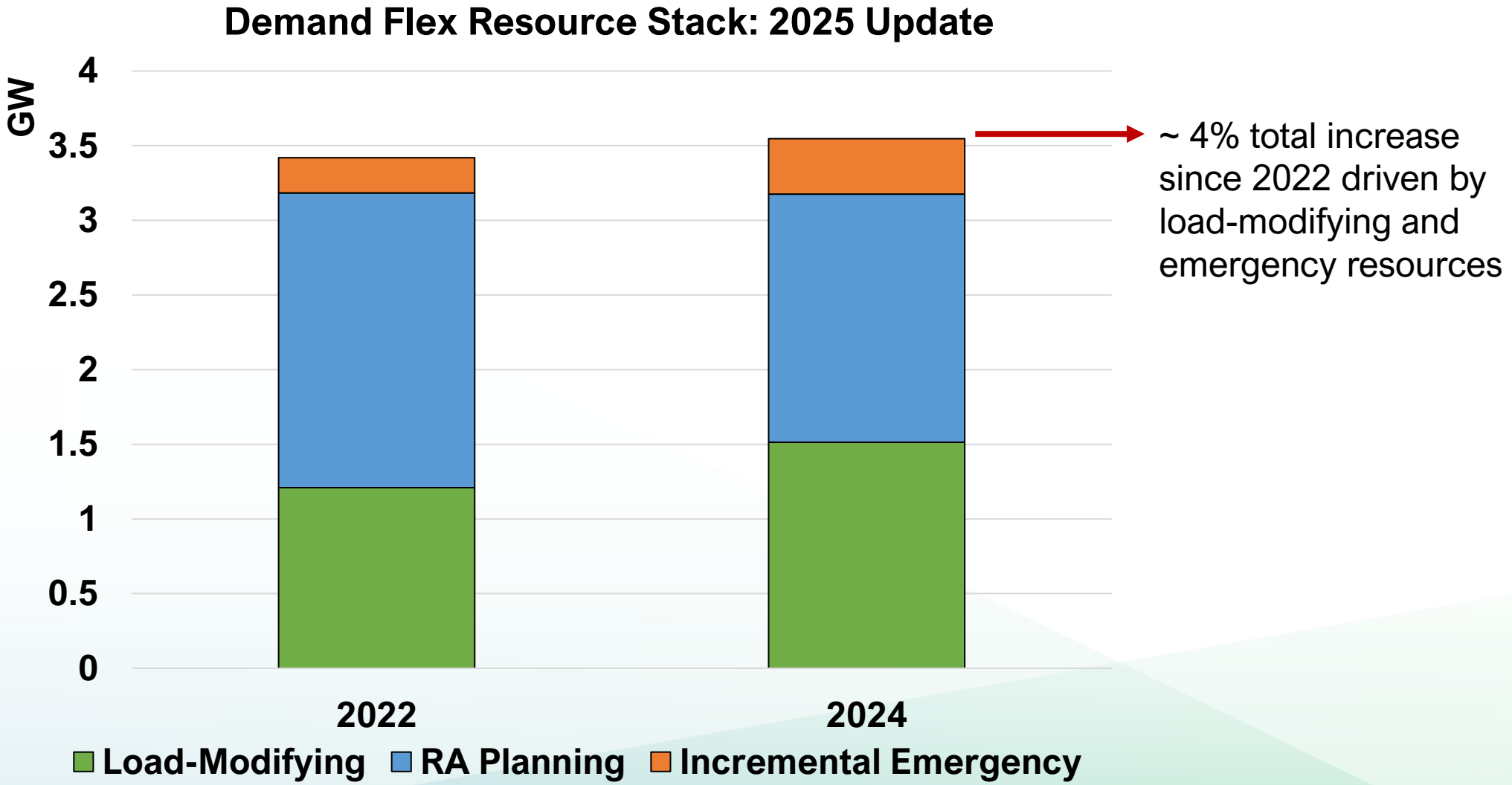
Drawing on multiple resources to assess value

1. IOU Load Impact Protocol (LIP) and RA net capacity reports
   - Including Emergency Load Reduction Program (ELRP) reports
2. CAISO DR Performance Reports
3. IEPR DER forecast (non-event-based load impacts only)
4. IEPR Demand Forms (to evaluate CCA and POU programs)
5. POU IRP projections (to evaluate POU's RA-eligible DR)
6. DSGS program test event and enrollment records

Need a more consistent way to uniformly measure statewide load flexibility

IOU: Investor-Owned Utility
POU: Publicly-Owned Utility
CCA: Community Choice Aggregator
DSGS: Demand Side Grid Support

2024 Resource Estimate is ~ 3.5 GW



Source: California Energy Commission

2024 Estimates – Key Assumptions

(1) The TOU impact estimate of 1,000 MW from the SB 846 (2023) report is considered as the baseline amount for 2022.

(2) 2023 IEPR incremental customer battery discharge estimate is scaled to reflect the entire battery population for 2024.

(3) Potential overlap between EV-TOU rate impacts and the tariff-based customer battery discharge impacts is ignored.

2022-2024 Estimates (Breakdown)

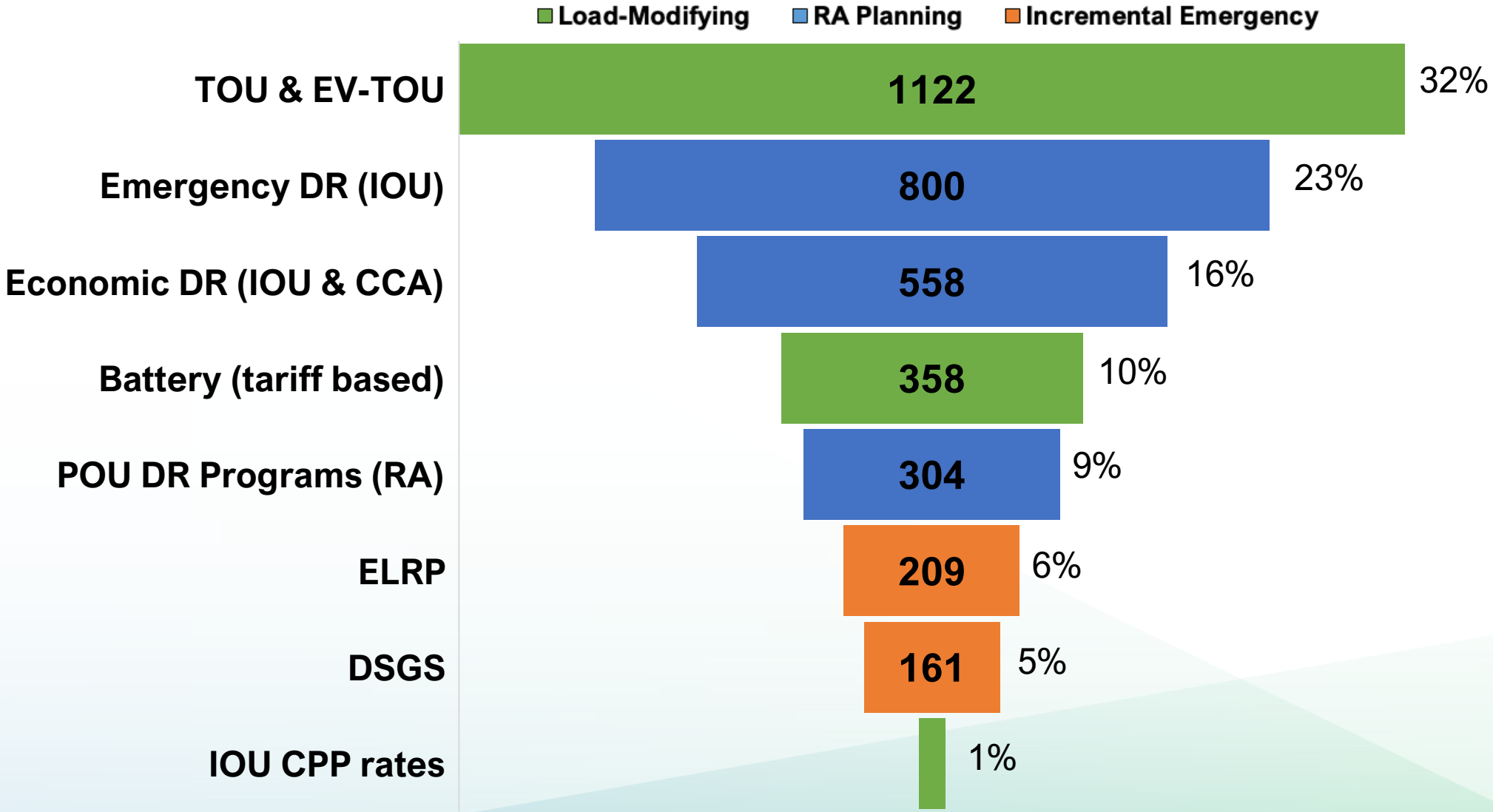
Load-Modifying	2022	2023	2024
Time of use (TOU) & EV-TOU rate impacts	1000	1078	1122
Customer storage (non-event based)	173	266	358
IOU Critical Peak Pricing (CPP) impacts	30	21	31
CCA customer programs	7	3	3
RA Planning			
Emergency DR (IOU portfolio)	740	750	800
Economic DR (IOU & CCA)	1014	906	558
POU DR Programs (RA-eligible)	210	233	304
Incremental Emergency			
ELRP	190	190	209
DSGS*	46	46	161
GRAND TOTAL	**3410**	**3493**	**3546**

**The DSGS estimates are based on a preliminary CEC staff analysis and are subject to change.*

Source: California Energy Commission

Efforts such as FlexAlert and Department of Water Resources pumping load curtailments can provide additional load flex under stressed system conditions

2024 Load Flex Resource Mix Ranked (in MW)



Source: California Energy Commission

Key Takeaways: The Progress

Overall, load-shifting resources have increased by about 4 percent between 2022 and 2024:

- Non-RA DR (Load-Modifying and Incremental Emergency) has increased about 32 percent (or 438 MW),
  - ➢ Growth is largely driven by EVs, batteries, and the DSGS contributions.
- CAISO-integrated DR portfolio has decreased by about 23 percent (or 302 MW).
  - ➢ DRAM program sunset might have been a contributing factor.

2030 Projections – Key Assumptions

(1) 2023 IEPR incremental customer battery discharge estimate is scaled to reflect the entire battery population through 2030.

(2) IOUs' economic and emergency DR portfolio is assumed to stay flat based on their load impact protocol projections.

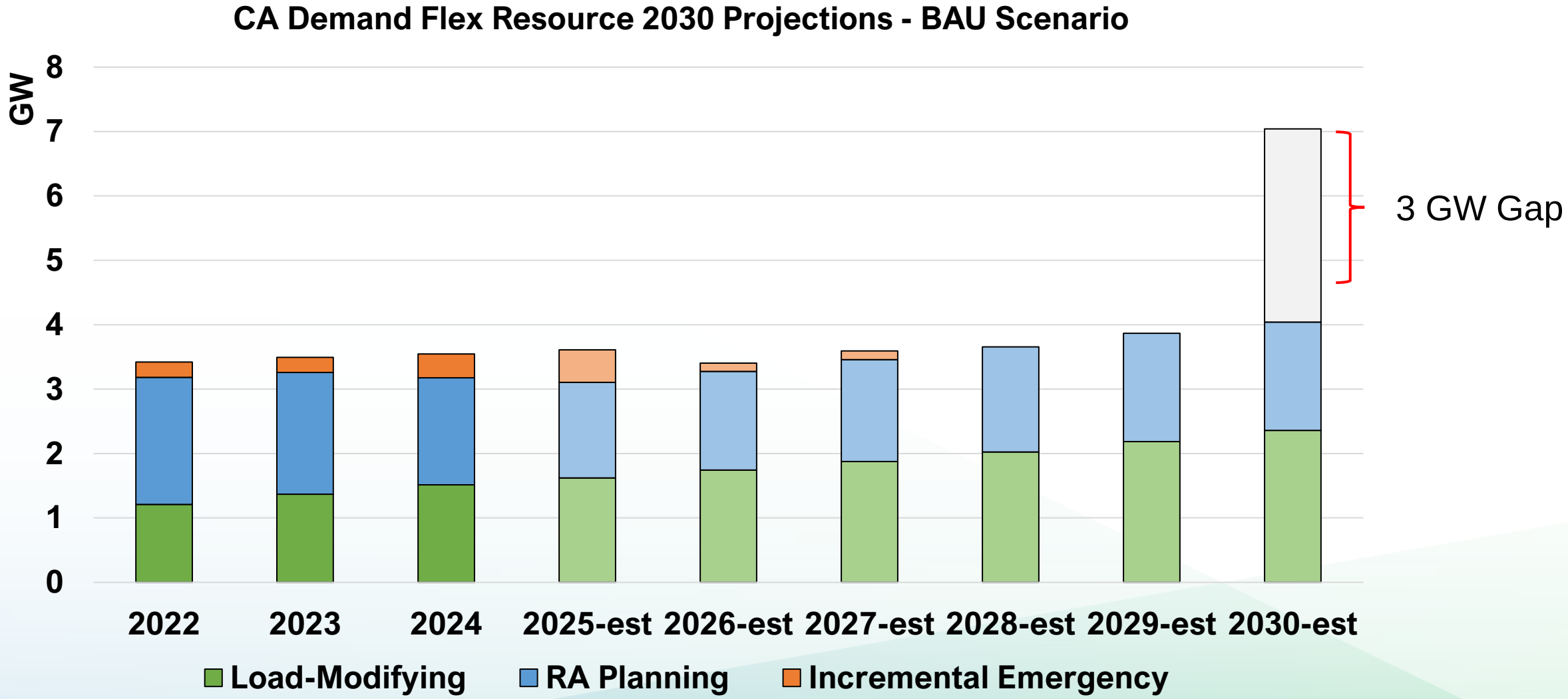
(3) IOU's 2024 DR LIP NQC reports provide estimates through 2026. The load impacts from EV-TOU rates are assumed to grow linearly through 2030.

(4) Does not include extensions for ELRP and DSGS beyond current program end dates.

- Reflecting the Governor's proposed budget for FY25/26 for DSGS

NQC: Net Qualifying Capacity

2025-2030 Projections: Business-As-Usual (BAU) Conditions



Source: California Energy Commission

Key Takeaways

2030 Projections:

- CA may not reach the 7 GW target under BAU market conditions.
- CA needs additional near-term strategies to reach the 7 GW target by 2030.

The Unknowns:

- V2X and data center potential impacts are still largely unknown
- New IOU efforts, such as hourly dynamic rates, may improve the outlook.
- Changes in state and federal electrification incentives will likely impact the 2030 projections.

Emerging Policy/Planning Questions

1. What should be California's strategy for doubling Load Modifying resources over the next 5 years?
2. Should the progress tracking effort for the 7 GW target be inclusive of the FlexAlert and/or CalOES text alert contributions?
3. What is California's long-term plan for Incremental & Emergency resources?

CalOES: Governor's Office of Emergency Services

Next steps:

1. 2025 IEPR report to analyze the load flexibility growth and stakeholder outreach results.

2. Updated D-FLEX tool modeling results in 2026:
   - Incorporates the 2025 IEPR forecast results
   - Informs the 2027 IEPR load-shift goal setting process.

3. Big data insights related to existing DER utilizations to inform modeling assumptions and future goal-setting efforts:
   - Informed by CEC's smart meter data repository
   - Will be shared under CEC's informational DER proceeding.

Thank You!

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