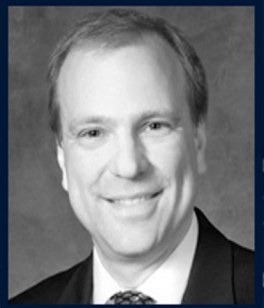
CALFLEXHUB SYMPOSIUM

NOVEMBER 3 | 8am-4pm PT

MARY ANN PIETTE



ANDREW MCALLISTER

RAM NARAYANAMURTHY

ACHINTYA MADURRI

BETH REID

KEYNOTE SPEAKERS: Mary Ann Piette, Associate Lab Director, Principal Investigator, Berkeley Lab; **Andrew McAllister,** Commissioner, California Energy Commission; **Ram Naranyamurthy,** Deputy Director, Department of Energy; **Achintya Madduri,** Senior Analyst, CPUC; **Beth Reid,** CEO, Olivine

2023

CalFlexHub

BERKELEY LAB

MOMENTUM

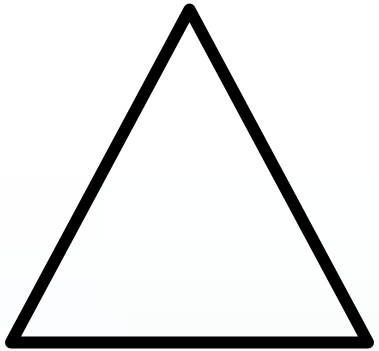
Load Flexibility:
A Resource for our Time

CalFlexHub Symposium, November 3, 2023

Commissioner Andrew McAllister

Why Flexible Load?

System Reliability

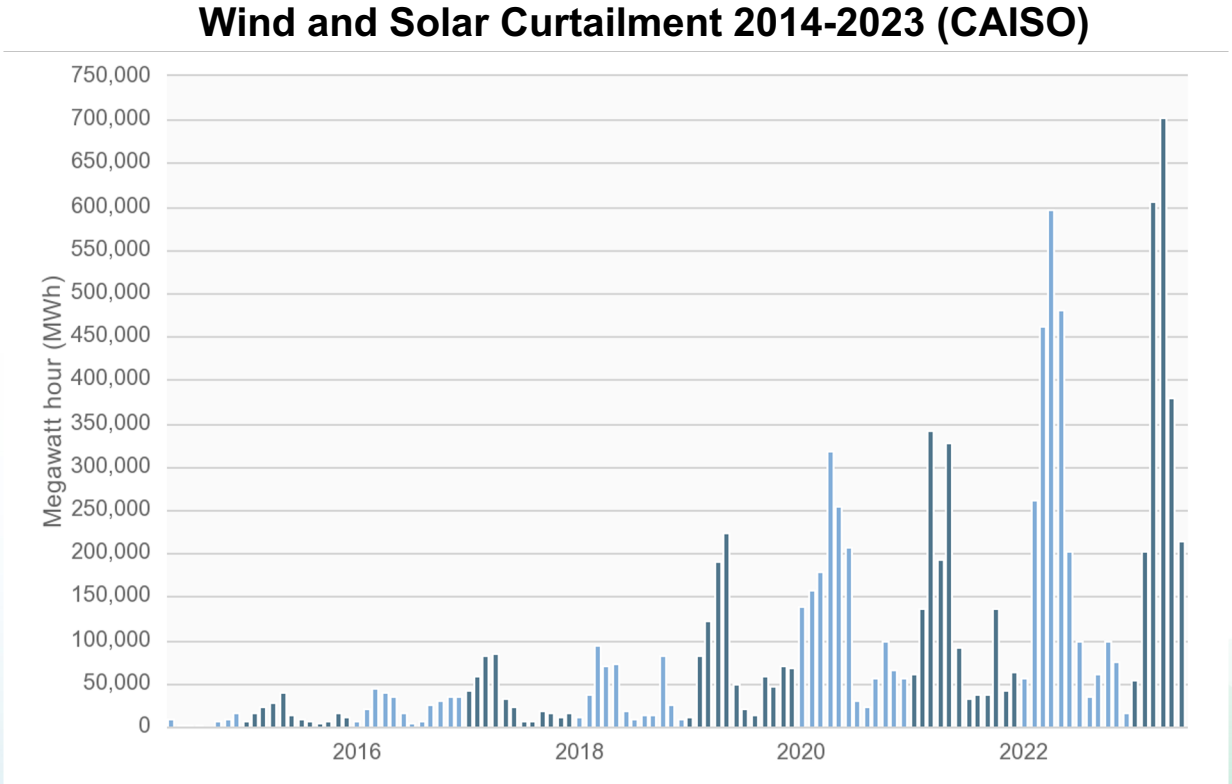


Cost Management

Decarbonization

Synonyms: Load Management, Load Flexibility, Demand Flexibility

The Renewable Grid: Nature Happens!



CA Load Flexibility Initiatives

CEC Load Management Standards & Market Informed Demand Automation Server (MIDAS)

Flexible Demand Appliance Standards (SB 49)
First Covered Device: Pool Controls

Energy Code (Title 24 Part 6):
Joint Appendices 12 (BTM Batteries) and 13 (HPWH Load Flex)

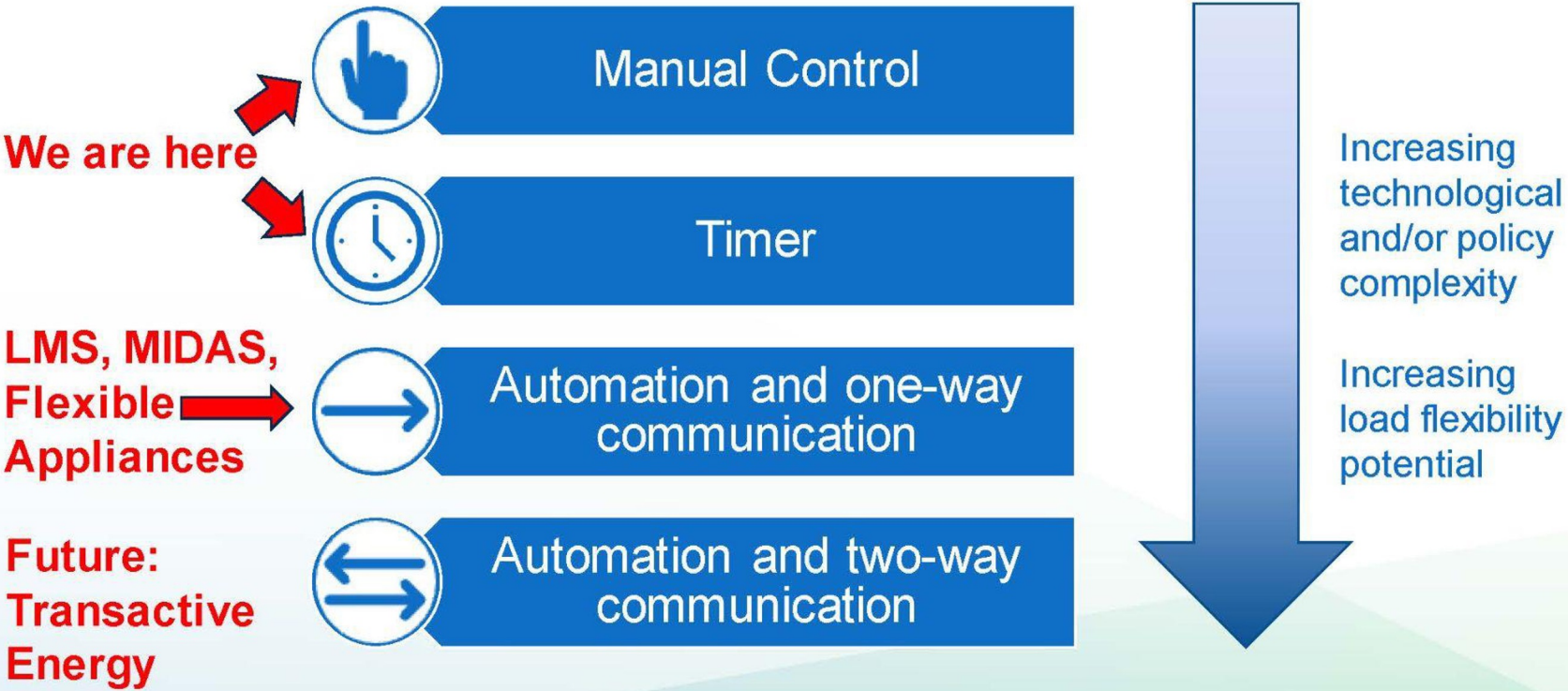
Research and Development: EPIC - CalFlexHub

Reliability Planning: SB 100, AB 205, SB

846 CPUC: Ratemaking

Advance Demand Flexibility Proceeding (22-07-005) Guidance and individual GRCs

How to Flex Load



Adopted Load Management Standards

1	Rate Database	• Maintain the accuracy of existing and future time-varying rates in the publicly available and machine-readable MIDAS rate database.
2	Third-Party Services	• Develop a standard rate information access tool to support third-party services (RateID/RIN)
3	Hourly Rates	• Develop and submit locational rates that change at least hourly to reflect marginal wholesale costs.
4	Customer Education	• Integrate information about new time-varying rates and automation technologies into existing customer education and outreach programs.

Basic Tenants

All customers should be able to:

- Readily find the current price of electricity for their building
- Connect their devices to their time-varying electricity rate
- Quickly give their energy service provider access to their rate
- Choose to receive prices or GHG signals that change hourly or sub-hourly
- Purchase automation that can respond to price or GHG emission signals
- Feel confident that cybersecurity risks are low or nonexistent

Flexible Demand Appliance Standards

- Standards enable an appliance to schedule, shift or curtail its electrical demand, with consumer consent
- Pool Controls Standards (2023): pool controls must include:
  - Optimized default schedule
  - Wireless connectivity
  - Consumer consent protections
  - Cybersecurity protections

Building Energy Code (T24 P6): Load Flex Compliance Credits

- CA Energy Code compliance credits support: demand flexibility, resilience, and maximize self-utilization
- Battery storage qualification requirements in Joint Appendix 12; currently three control strategies
- Heat pump water heater demand management qualification requirements in Joint Appendix 13

Load Shift Goal (SB 846)

Top Resources:

- Residential and commercial cooling and refrigeration
- For 2030, also includes agricultural pumping, industrial process loads, electric vehicles

Source: LBNL Phase 4 DR Potential Study

See: Senate Bill 846 Load Shift Goal Report

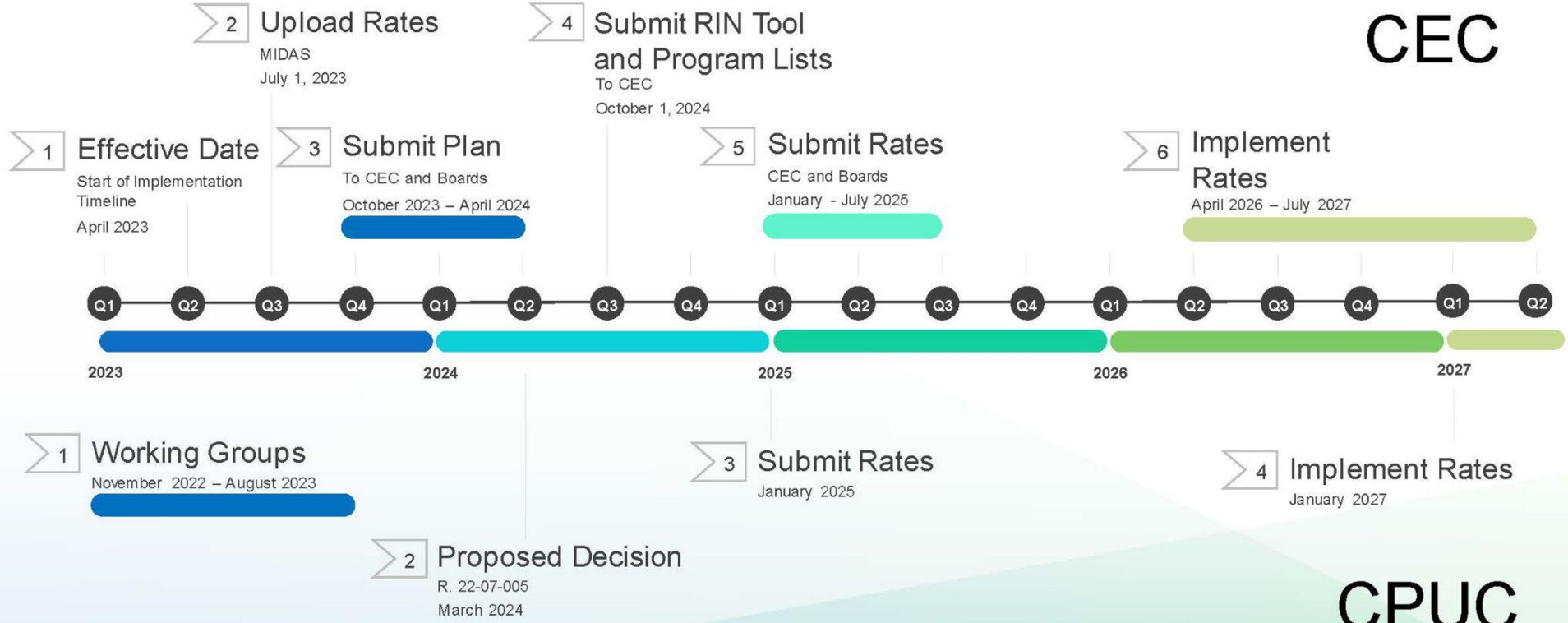
Table ES-2: Proposed Statewide Load-Shift Goal by Intervention

Category	Intervention	2022 Estimate	2030 Goal
Load-Modifying (LM)	TOU Rates	620–1,000 MW	3,000 MW
	Dynamic Pricing	30 MW	
	LM Programs	7 MW	
Resource Planning and Procurement	Economic Supply-side DR	670–825 MW	4,000 MW
	Reliability Supply-Side DR	740 MW	
	POU DR Programs (Non-ISO)	210 MW	
Incremental and Emergency (I&E)	I&E Programs	800 MW	
	Emergency Back-Up Generators*	375 MW*	
Total (nearest 100)		**3,100–3,600 MW**	**7,000 MW**

CPUC Load Flexibility Timeline

Year	Milestone
2023	Demand Flex Working Groups and Proceeding R. 22-07-005
Early 2024	Proposed Decision on Rates for Demand Flex R. 22-07-005
Jan 2025	IOUs submit hourly marginal cost-based rates to CPUC
Jan 2027	Hourly marginal cost-based rates and programs at IOUs

LMS + CPUC Demand Flex Timeline



EPIC RD&D: CalFlexHub!

- Developing and deploying signal-responsive demand flexibility technology solutions
- Advance the technology market to accelerate decarbonization, electrification, and support grid reliability
- Inform and support the Load Management Standards and Flexible Demand Appliance Standards
- Enable equitable demand flexibility solutions for disadvantaged and low-income communities

Thank You!