CALFLEXHUB 2026 Symposium

APRIL 15, 2026 | 8 a.m. – 6 p.m. | Hybrid – Berkeley, CA & Online

Opening Remarks: Welcome to the 2026 CalFlexHub Symposium

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CalFlexHub Research Highlights

April 15, 2026

CalFlexHub Sympoisum

Mary Ann Piette,
Lawrence Berkeley National Laboratory

CalFlexHub

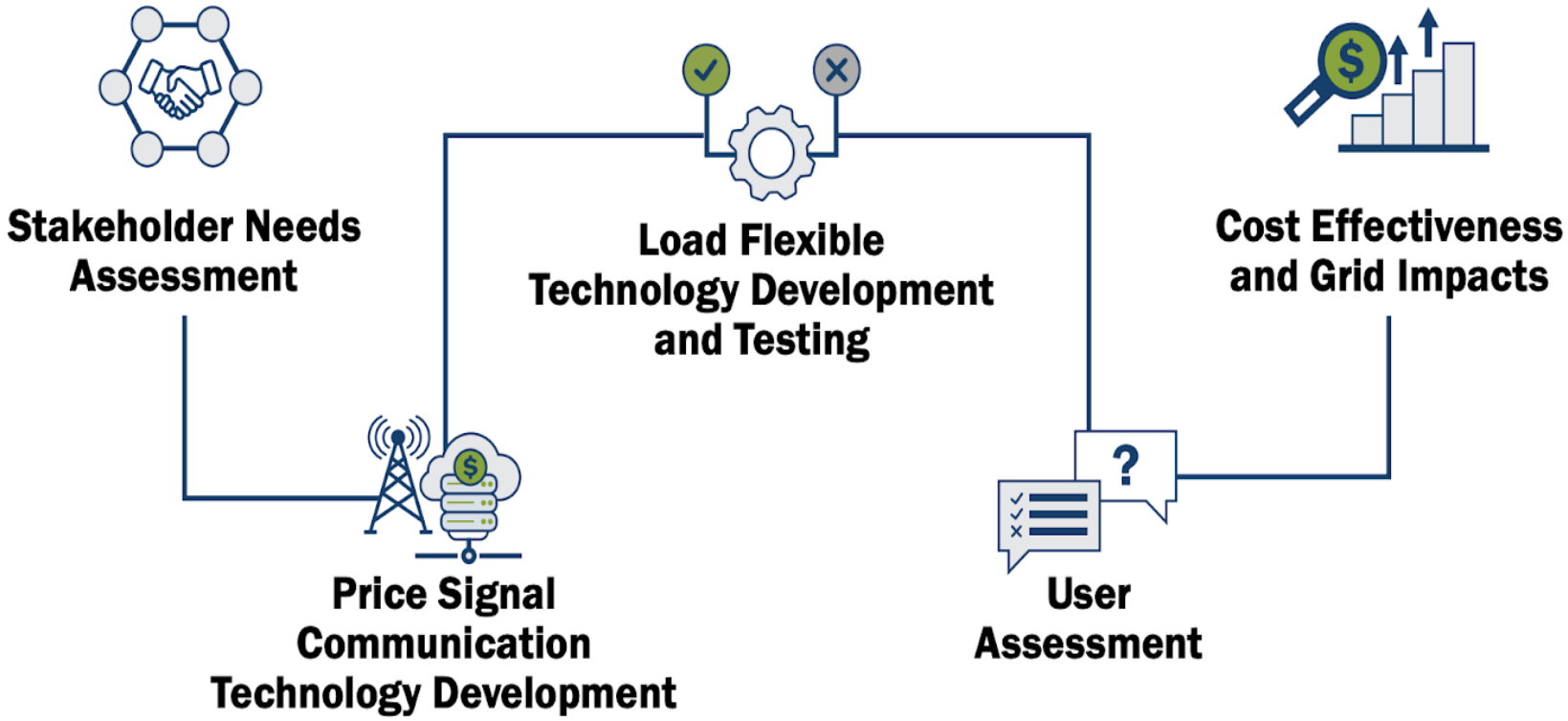
BERKELEY LAB

Presentation Overview

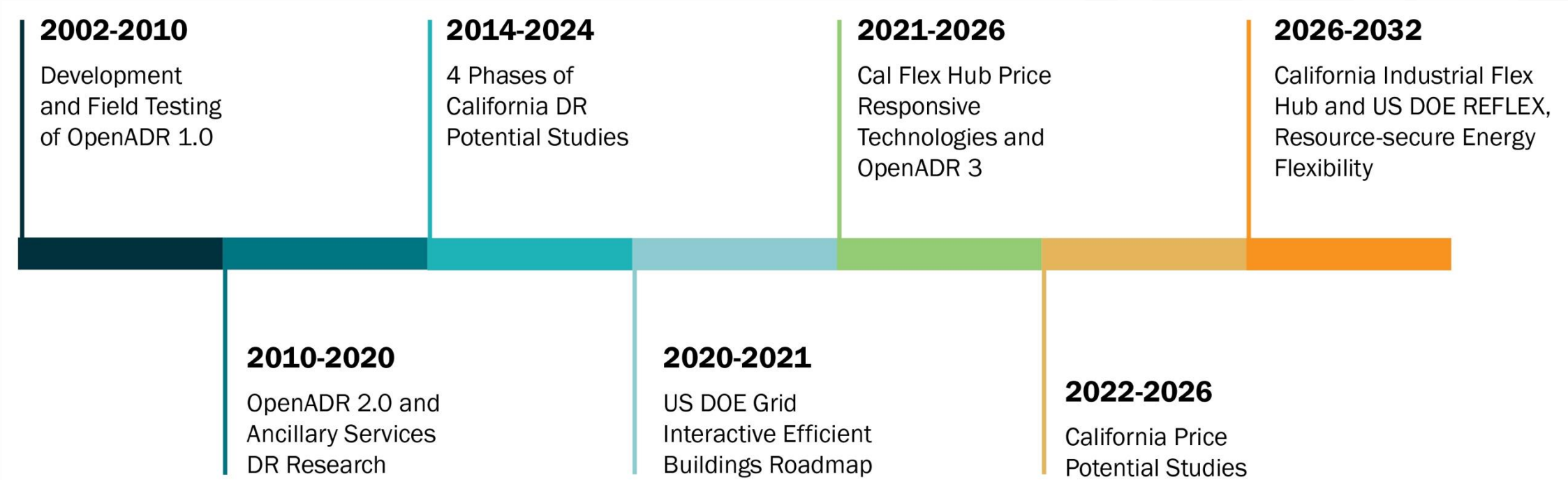
→ Welcome

→ Goals

→ Results & Next Steps



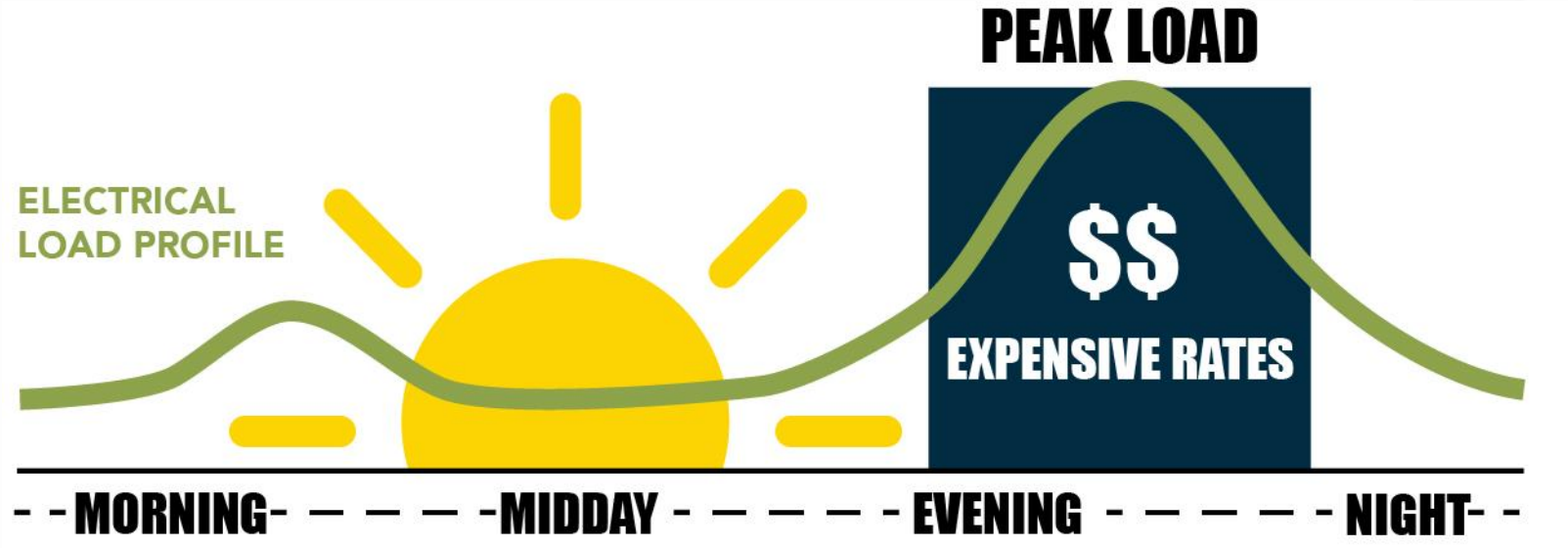
Past, Present, and Future LBNL Demand Flex R&D



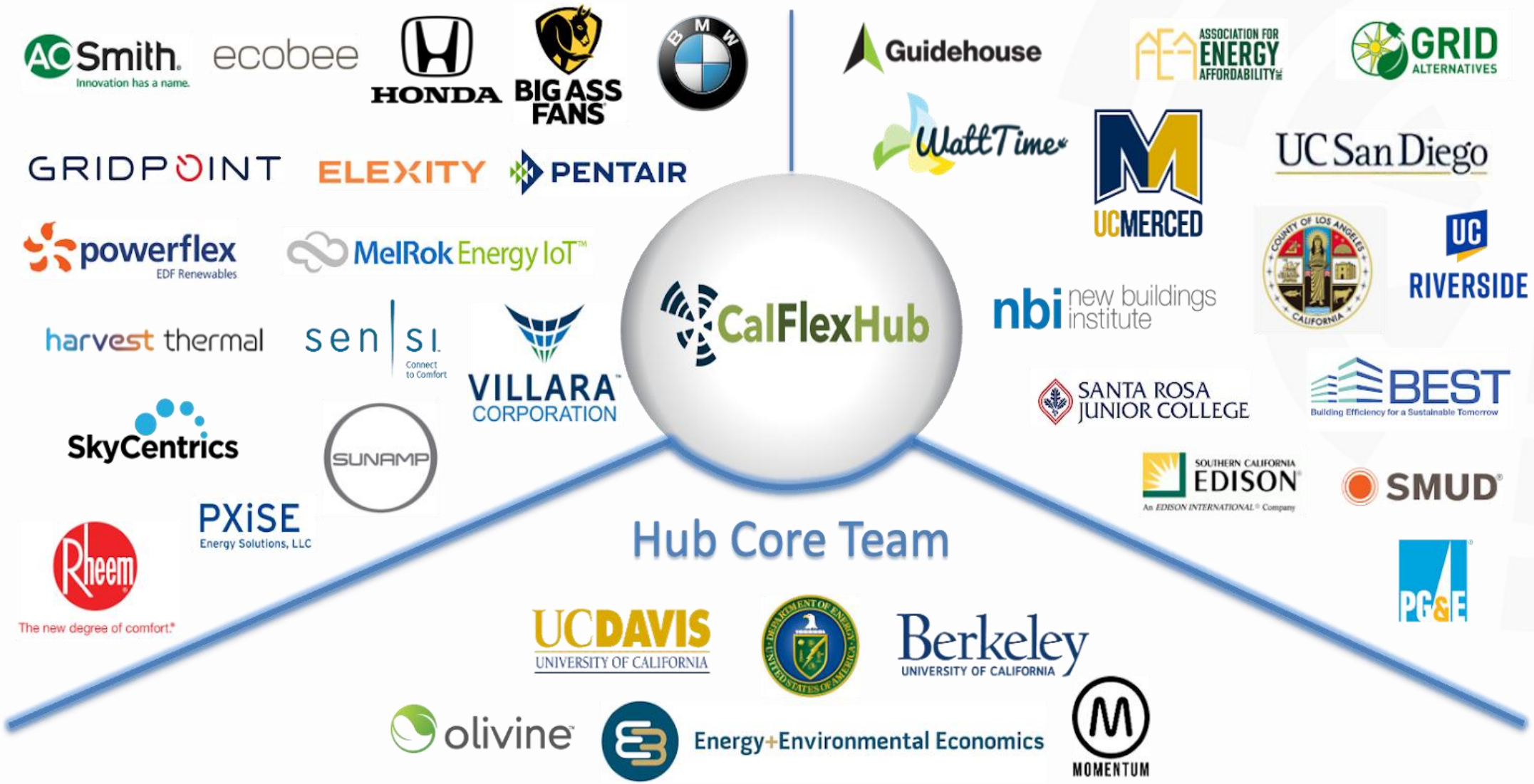
Goals of CalFlexHub

Support 7,000 MW 2030 State Load Flex Goal

- Develop, demonstrate, and evaluate pre-commercial, load flexible technologies for buildings and EVs
- Support use of standardized, interoperable communication technology
- Partner with industry to deploy at scale

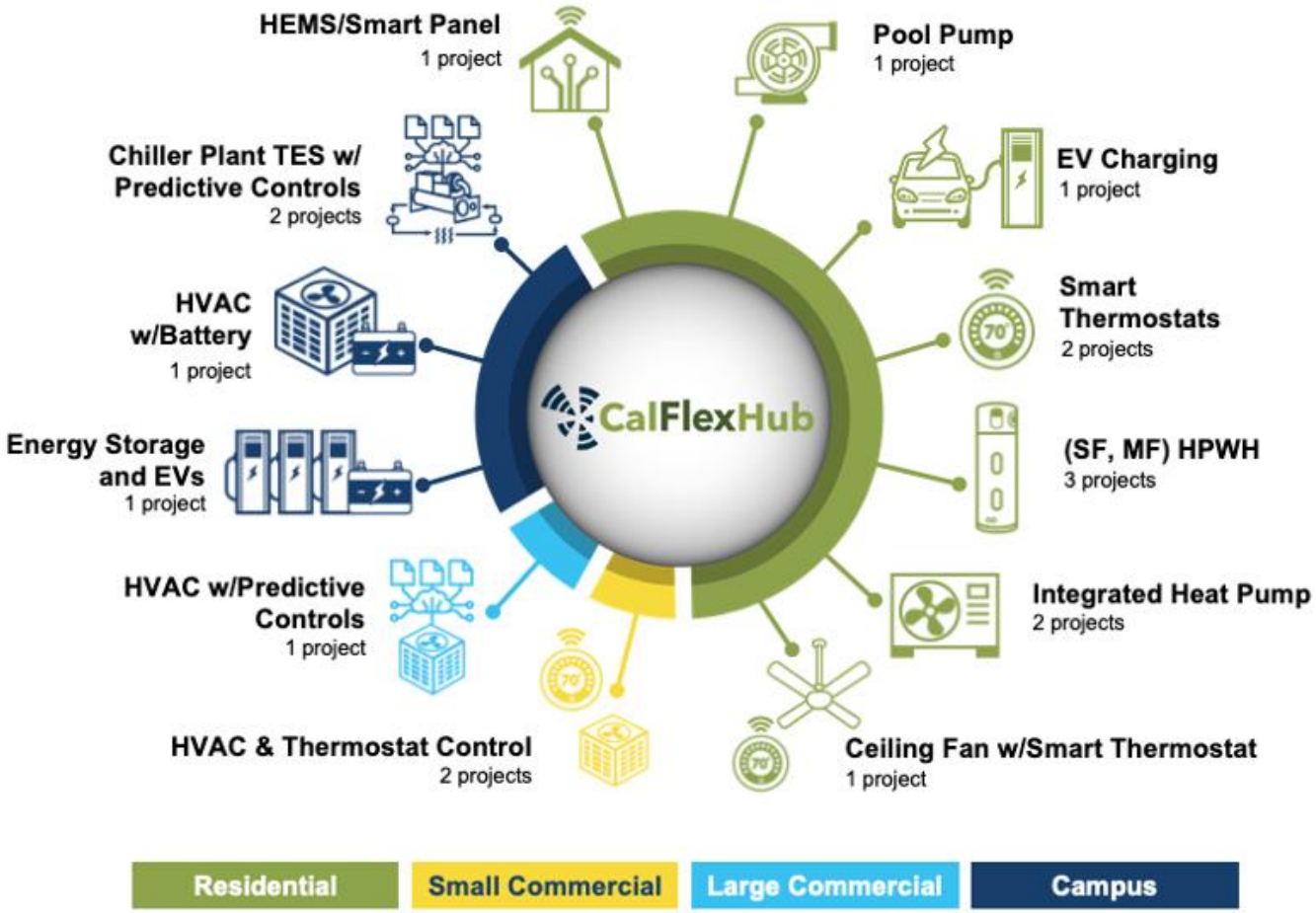


40 Industry and 24 Demo Site Partners



Results: Developed and Demonstrated Load Flex Tech That Could Provide > 2700 MW of Grid Potential

- 95 test sites
- 938 EVs
- 81 residential
- 11 commercial
- 3 campuses



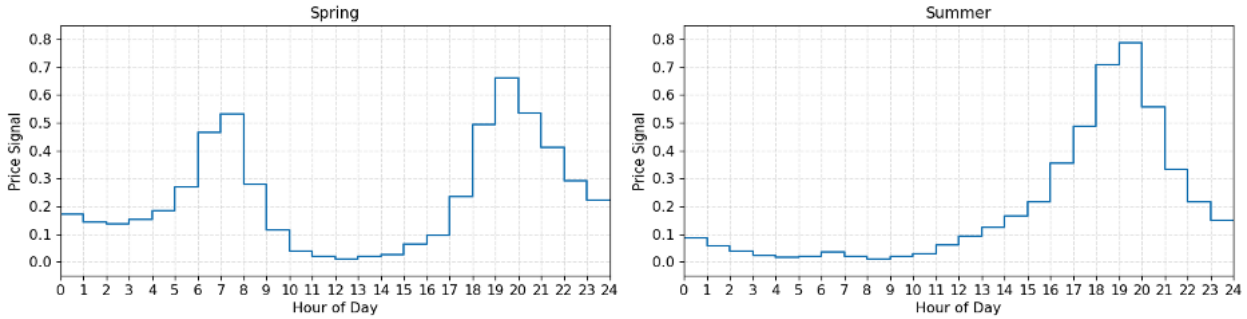
Results: Fostered Interoperable Price Communication Technology

CalFlexHub Efforts

- Led development of OpenADR 3 which is seeing California, national and global adoption
- Tested MIDAS continuously since 2022 helping debug code
- Developed fictitious prices for field testing

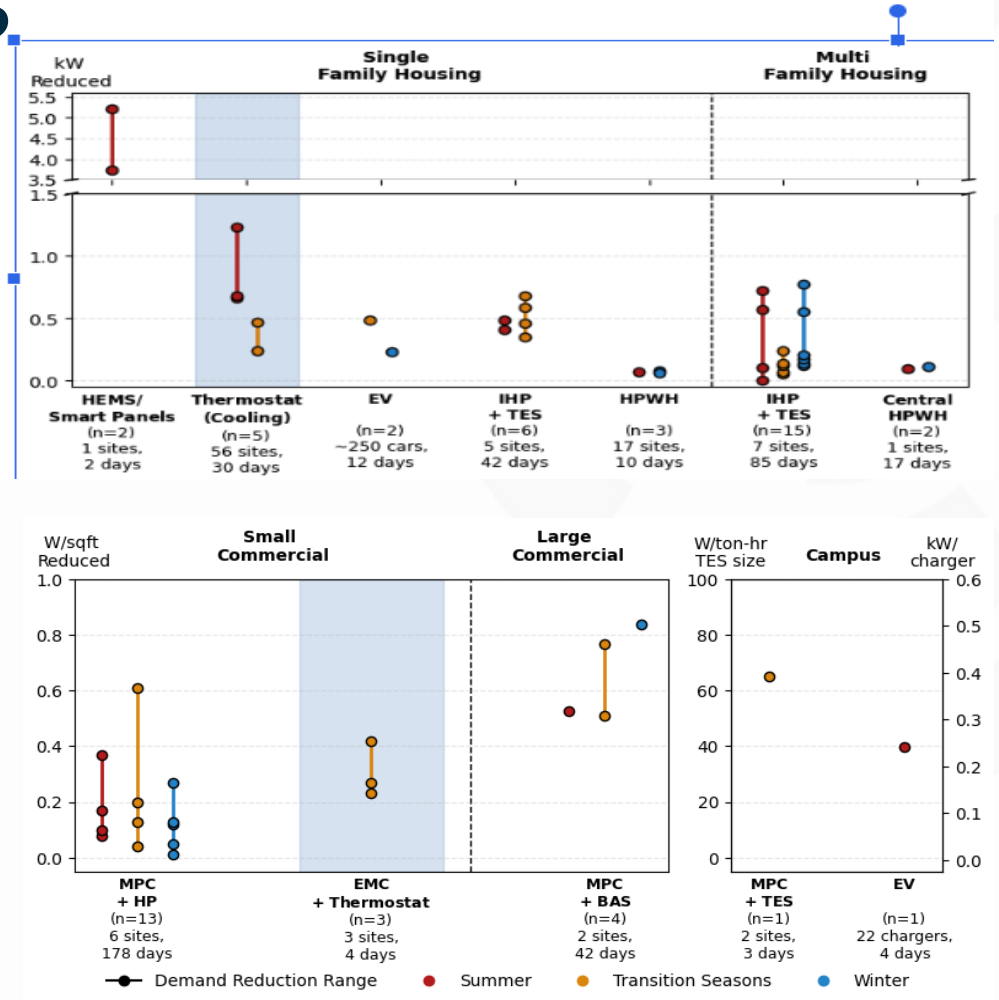
Next Steps

- Further research needed to evaluate how different tariff designs and demand flex programs can support customer value, mitigate bills volatility, while demonstrate grid value.



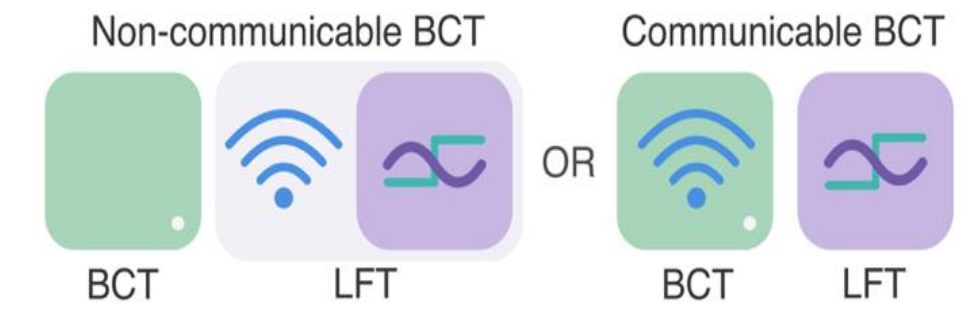
LFTs are Capable of Large Load Shifts in Response to Price Signals

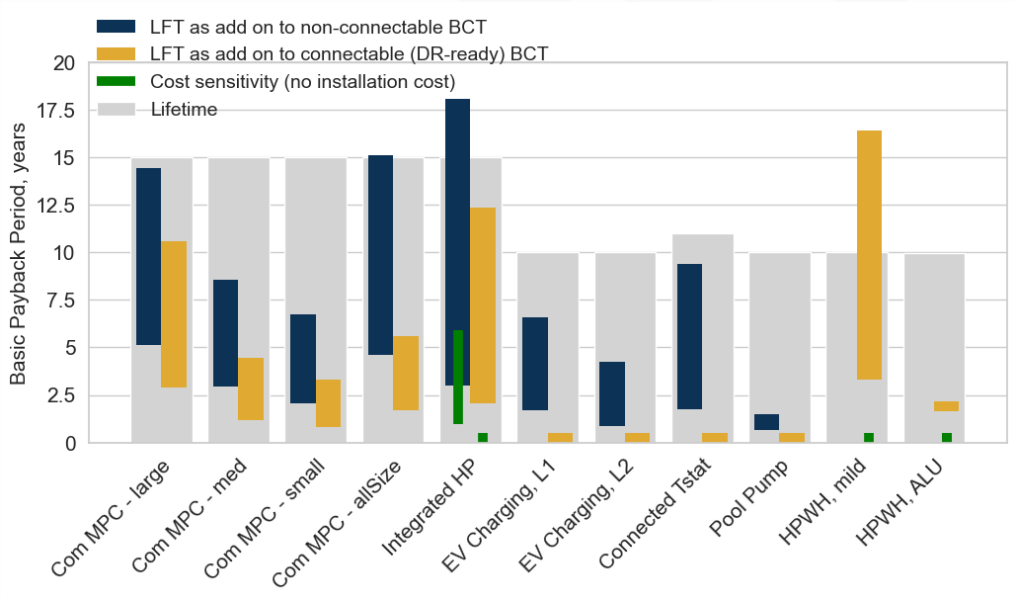
- **Most LFTs use energy storage**: building mass, water tanks, or electrical batteries. Dedicated energy storage is more predicable than building mass.
- **Majority of technologies demonstrated ability to shift 20-80%:** of end-use load over 6 hours.
- **Viability for large scale deployment:** consider factors cost effectiveness, user experience, business models, technical maturity and reliability.



LFTs Could Be Cost Effective

- All technologies evaluated are potentially cost effectiveness, depending on base case technology.
- Some tech require minimal change for price response; others require significant hardware and software upgrades.
- Further analysis of costs needed to understand implementation and operating costs, business models, and persistence of savings.
- Opportunities for broad participation for all Californians should be created.

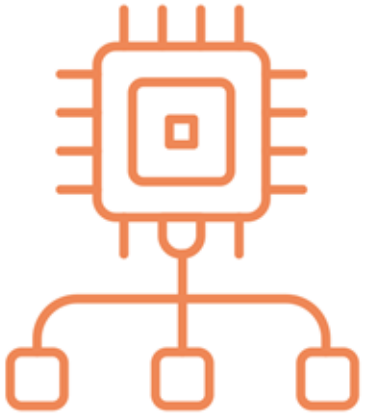




Challenges and Next Steps for LFTs

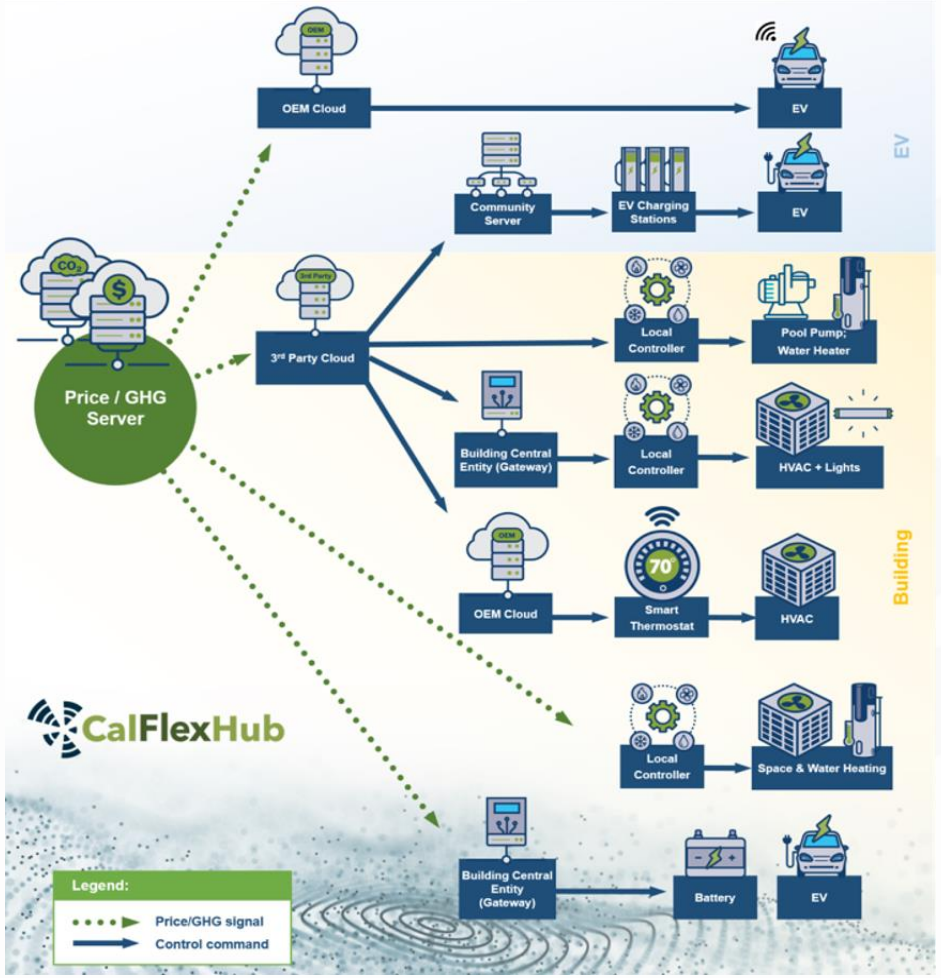
Methods to evaluate LFTs are complex and continued work on standardized lab and field evaluation procedures are needed.

- **Late-stage technologies:**
  - LFTs like connected thermostats, EV chargers, and HPWH have been tested, but **require system hardening**, **productization**, and the establishment of viable commercial **partnerships**.
- **Early-stage technologies:**
  - Integrated heat pumps and small commercial EMS, need extended**, larger-scale demos** to evaluate long-term performance and user experience.
  - For predictive controls, research and innovation needed **to reduce implementation costs and customization.**



Clear Incentives for Businesses to Invest, Innovate and Deliver Price Responsive LFTs are Needed

- Demonstrated 4 communication pathways; 3rd-party automation service cloud as most popular.
- Customers and automation service providers value simplicity
- Customers appreciate shifting happening without affecting daily life
- Current regulatory environment perceived as confusing and inconsistent, clear policy goals and targets, are needed



Acknowledgement and Next Steps

- **Thank You:** to the California Energy Commission and the large community of partners who collaborated. Special Thanks to Matt Fung!
- **Advisory Committee Meeting:** Forthcoming
- **Final Report:** August 2026
- **Sister Program:** Industrial Ag and Water Flex Hub is launching!