Zero Is A Many-Splendored Thing

NBI Getting to Zero
Oakland, CA
October 11, 2019

Commissioner J Andrew McAllister, PhD
California Energy Commission

Policy Drivers

➢ Double energy efficiency savings by 2030
➢ Clean electricity: 60% by 2030; 100% by 2045
➢ Equitable low-carbon solutions for low-income residents & disadvantaged communities
➢ Electrify transportation
➢ Decarbonize buildings & industry

Carbon-neutral economy by 2045
Electricity CO2 Emission Intensities

Zero (Net) Energy is Not Zero Emissions
..but it’s a great set of tools, platform, and a nice start for socializing quality building practices.
COMMIT THIS TO MEMORY

CLEAN SUPPLY + DEEP EFFICIENCY + DEMAND FLEXIBILITY = DECARBONIZATION

RPS / SB100 / All-Scale Storage Vehicle Electrification & LCFS
EE Portfolios / Procurement T24 building energy standards Local “Beyond” Codes AB 758 / SB 350 (EE x 2) Pay-For-Performance
Utility Programs (DRAM); CAISO RATES – time & location T24 building standards Load Management Standards SB 49 – signed into law!!
Clean, Least-Cost Reliability Better AQ, Health, New Jobs ....and A FIGHTING CHANCE AGAINST CLIMATE CHANGE

Efficiency + Flexibility

Emerging consensus:
• Alliance to Save Energy: “Active Efficiency”
• NASEO–NARUC effort on Grid-Interactive Efficient Buildings
• Deeper thinking by Gridworks, E3, Recurve, Rahus, Kevala
• NY, HI, MA, RI, MD...many other states
CA EE Action Plan: Please Comment!

1. Double Energy Efficiency Savings by 2030
2. Energy Equity
3. Building Decarbonization

Reduce GHG 40% below 1990 levels by 2030

2019 T24 Energy Code

- High performance envelopes
- On-site PV requirements to offset expected annual electricity (of a dual-fuel home)
- All-electric performance baseline (optional) for low-rise residential & performance credits for high performance HPWHs
- Performance credit for behind-the-meter batteries
2022 T24 Part 6 Discussion

- Focused on Commercial & Multifamily
- Improvements to Shell, Lighting, Mechanical, Hot Water, and Grid-responsiveness
- Update TDV to align better with emissions
- Improve usability for multifamily projects
- Platform for ongoing industry collaborations, such as...

Thin Center Glass Triple-Pane Windows

- Envelope efficiency is key for building decarb
  - HPA, HPW, QII are part of this evolution
  - Windows are best opportunity for additional savings
- In 2018 CEC/CBIA/LBNL/IOUs/window manufacturers co-founded the California High Performance Collaborative (C-PAW) to “mainstream” skinny triple pane windows
- Same dimension, weight, labor as traditional windows
- PG&E / CBIA new incentives for CZ 11, 12, 13
- A classic MT opportunity with huge upside.
Load Management Standards

WAA (1974): “...the commission shall consider, but need not be limited to, the following load management techniques:

(1) Adjustments in rate structure to encourage use of electrical energy at off-peak hours or to encourage control of daily electrical load....

(2) End use storage systems which store energy during off-peak periods for use during peak periods.

(3) Mechanical and automatic devices and systems for the control of daily and seasonal peak loads.”

Appliance Standards for Demand Flexibility

Legislation SIGNED 10/10/19! – AB 49 (Skinner) grants CEC authority to develop & implement Demand Flexibility Standards for Appliances
SB 1477: BUILD & TECH

SB1477 allocates $200M over four years to support new construction and retrofitting projects that decarbonize California’s building sector.

BUILD
- Incentive program
- New residential & non-residential buildings
- Low-income housing focus

TECH
- Market transformation program
- Existing residential buildings
- Space and water heating focus

Onward!