Keynote
Western Cooling Efficiency Center
2016 Affiliates Forum

California Energy Policy – Old and New
A Snap Shot

- Building Energy Efficiency – Past: Title 24, Appliance Standards and Present: AB 758, SB 350, AB 802
- Schools – Prop 39, SB/AB 39
- Renewable Energy – RPS then and now
- Transportation Electrification – SB 350
- Energy Storage – all of the above
- Integrated or stand alone?
NANCY SKINNER
Senior Policy Fellow, Energy and Transportation Cluster, UC Davis. Former State Assembly Member

• Author, AB 758: CEC Energy Efficiency Action Plan for Existing Buildings

• Co-Author 2011 SB1x, 33% Renewable Energy Portfolio Standard

• Led effort to direct $2.5B Prop 39 funds to schools & community colleges to finance facility energy upgrades

• Author, AB 2514: CA Energy Storage Mandate

• Founder ICLEI Local Governments for Sustainability, Director Cities for Climate Protection
California has a History of Tackling Big Challenges

1972:
Rand Report: Electricity demand growing at 8% per year
Utilities predict 40 new nuclear power plants needed

1974:
Jerry Brown elected Governor
California Energy Commission created to help CA lead on energy efficiency and renewables

1975:
CA initiates first efficiency standards for buildings and appliances

1980’s
CA initiates Title 24- Energy Efficiency Bldg Code
California Advancing Energy Efficiency

kWh / person (indexed to 1975)

- Rest of United States
- California
- Savings in Industrial Sector
- Savings in Commercial Sector
- Savings in Residential Sector

2009: The Energy Commission’s TV efficiency standards take effect, saving Californians $1 billion / year.


Energy Efficiency Standards Remain a Top Priority
AB 758 - 2009

• Authored by Assemblymember Skinner, Speaker Karen Bass

• Directed California Energy Commission to develop comprehensive program to retrofit existing residential and commercial buildings to achieve energy savings and GHG reductions.

• First comprehensive statewide energy efficiency retrofit program for existing buildings in the US.


• Plan focused on increasing access to building energy use data to drive market transformation
Greenhouse Gas Emissions from Existing Buildings in California

• Existing buildings are relatively inefficient:
  – 72% of residential buildings & over 5 billion square feet of commercial space constructed prior to “Title 24” building efficiency standards

• GHG emissions are significant:
  – 14% of California's total GHG emissions attributable to Residential Buildings, 8% to Commercial Buildings.
  – 71% of residential building GHG emissions are attributable to homes built prior to implementation of Title 24.

• Reduction potential is also significant:
  – Full implementation of AB 758 can meet or exceed ARB's 2020 targets for energy and water use efficiency – representing 12 percent of the reductions identified in the AB 32 Scoping Plan, or 20.9 MMT CO2e.
A small house, 1000 ft\textsuperscript{2}, of white roof, replacing a colored roof, offsets the emission of 10 tonnes of CO\textsubscript{2}
Cool roof technologies

**Old**
- flat, white

**New**
- pitched, cool & colored
Congratulations to UC Davis
SB 350 - 2015

- Authored by Senate Pro Temp Kevin De Leon

- Set 3 new, ambitious goals:
  - 50% Renewable Energy by 2050
  - 50% increase in expected building energy efficiency
  - Goal to electrify transportation

- Goal to electrify transportation inserted when original goal to reduce transportation petroleum use by 50% was deleted

- CEC directed to develop regulations, implementation for building energy efficiency goal
CA Renewable Portfolio Standard

2013: 20%

2020: 33%

2030: 50% SB 350
California Making Rapid Progress: 25% Powered by Renewables Today

- 2002: 20% RPS by 2017
- 2006: 20% RPS by 2010
- 2008: 30% Federal ITC
- 2011: 33% RPS by 2020

Renewables grow from 12% to 25% in 6 years.
AB 802 - 2015

• Authored by Assemblymember Das Williams

• Establishes statewide “benchmarking” and energy use disclosure program for large commercial, multi-family buildings (50,000 sq ft+)

• Replaces energy use disclosure provisions of AB 1103

• Requires Utilities to provide aggregated energy usage data to owner, owner’s agent, or tenant

• Benchmarking will enable comparison of energy consumption per square foot for comparable classes of buildings to help owners and tenants evaluate energy usage and identify efficiency projects
AB 802 - 2015

• CEC responsible for implementing, developing regs

• UC Davis Energy Efficiency Workshop identified key policy considerations:
  - focus disclosure on entity that pays utility bill
  - disclosure by occupants & owner needed, will increase benefits of data (sub-metering, plug load)
  - benchmarking packaged with streamlined incentive programs needed to spur change
  - occupants not objecting to energy use disclosure, reverse of privacy concerns expressed by IOUs
Prop 39, SB/AB 39

- Directed funds to every CA School District to fund energy upgrades to facilities & buildings
- Program now in third year
- School districts using funds to develop energy plans, conduct energy audits, implement efficiency and install DG, e.g.; rooftop solar
- UC Davis Energy Efficiency Center trained CA Conservations Corps members to conduct ASHRAE Level 1 audits, compiled data from audits for submission to CEC
Manteca Unified
Manteca Unified

• ~18 (out of 25) schools with solar installations

• District-wide Green Council

• Energy & water conservation, waste diversion, green cleaning, green purchasing, healthy food

• Reduced energy consumption by 31% and saved $3.3 million/year in avoided costs through conservation and “energy education”

• District-wide Committee – L.O.G.I.C. Leadership on Green Initiatives Committee
AB 2514 - 2010

• Energy Storage Mandate

• Required CPUC to determine how much storage IOUs should buy in combination with generation procurement

• First goal set in 2013 – required three IOUs to put 1.3 GW of storage on the grid by 2020

• As first step IOUs had to contract for 50 MW of storage by the end of 2014

• SCE purchased over 250 MW of energy storage — more than five times the amount CPUC required
Storage now and in the future

Storage is cost-competitive now
  » Southern California Edison chose to procure over 5x the amount of energy storage required by the CPUC.
  » 50 MW of energy storage required. 261 MW Procured.

Models of storage in the future reveal many benefits\(^1\):
  » Energy storage reduces the need for natural gas ‘peaker plants’
  » Reduces need to cut-back renewables
  » Reduce costly and emission-intensive ‘starts’ of fossil plants.

\[\text{“Within a few years, I don’t see the need to purchase a new gas peaker ever again”}\]

Jim Avery, SVP San Diego Gas and Electric
11/17/14, NARUC Energy Storage Panel Discussion

The World’s Largest Iron-Chromium Flow Battery

EnerVault Iron-Chromium Technology
1 MWh capacity at 250 kW (4 hour duration)
Turlock, CA
Energy Commission Funding: 60 Storage Projects in CA

- $34 M Funded
- $111M match funding leveraged

Coauthored Roadmap with CPUC and CAISO to guide activities
Electric Vehicle Sales
(January 2014 – July 2014)

Source: EV Obsession (http://evobsession.com/), 2014
Alan Baum, Baum & Associates, 2014
Largest Manufacturing Plant in CA is Now Electric Vehicles

Tesla employs over 11,000 people

MORE THAN 100,000 ELECTRIC VEHICLES IN CALIFORNIA TODAY

Tesla Factory
Fremont, CA
Innovation in Electric Vehicles:
30 mile range, recharges in 10 minutes

Proterra Battery Electric Bus
CA Energy Policies
Integration or Stand Alone?

• Energy Storage integrated in RPS deployment?

• Will focus on buildings lead to reduction in energy use? Load shifting? Self generation?

• Will EVs be deployed as storage?

• Will policies result in CA achieving maximum output per unit of energy input?

• Will policies result in carbon reduction?