Keynote: The Next Level of Energy Efficiency

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Save Money, Save the World—The Next Level of Energy Efficiency

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Topics

• Why Am I Optimistic?
• California’s Future Driven By Climate Change
• What Are the Challenges?
• What Must We Do For The Next Level of Energy Efficiency?
Why Am I Optimistic?

Per Capita Electricity Sales (not including self-generation)

United States

California without standards and programs

California
U.S. Energy Use Since 1980

2014 EE savings ~$2500/capita

Source: ACEEE, EE in US, 2015
Back to California’s Leadership (NRDC)

**DECREASES POLLUTION**
- Avoided at least **30** large power plants since 1970s, 11 more expected to be avoided over the next decade
- Cuts MILLIONS OF TONS OF POLLUTANTS contributing to asthma, other ills

**CUTS ENERGY WASTE**
- Saved enough electricity since 2003 to power MORE THAN HALF OF CALIFORNIA’S HOMES FOR ONE YEAR
- Met about 1/5 of the state’s electricity need in 2013
- Helped keep per capita electricity use flat vs. 50% increase in rest of U.S. (since 1970s)

**SAVES CALIFORNIANS MONEY**
- Efficiency programs saved $12 billion after costs (2003-2013)
- Research projects yielded $446 for every $1 invested
- Newest building codes to save $6,000 per house
- Codes and standards saved a total of **$75 billion** (since 1970s)

**CREATE JOBS, SPURS ECONOMY**
- Efficiency jobs grew 15% compared to 2% economy-wide (2002-2012)
- California produces 2x benefit for every unit of electricity compared to the rest of U.S.

**HELPS LOW-INCOME CUSTOMERS**
- Low-income efficiency programs served almost 3 million households (since 2003)
- Saved enough electricity to power 90,000 homes and enough natural gas for nearly 80,000 homes for 1 year

**HELPS MEET CLIMATE GOALS**
- Slashed 30 million metric tons of CO₂ pollution, equal to annual emissions of 6 million cars (since 2003)
- Cuts one of the largest sources of California’s greenhouse gas emissions

Factors Reducing US Carbon Dioxide Intensity

Pre 1973 Energy Intensity Trend

Enhanced Energy Efficiency

Carbon Intensity of the Economy

Decarbonization of Energy Consumption

Source: Jim Sweeney, Stanford Univ., Energy Efficiency, Building a Clean, Secure Economy
Local Government Leadership (CA’s Local Government EE Portal)

- CA’s Energy Efficiency Strategic Plan
- Local EE, sustainability, and climate action plans
- Lead by Example in city buildings, esp. benchmarking
- Education, promotion and support
- Adoption of Title 24 Reach and local codes
- Supporting increased EE code compliance
What Are the Challenges?
CA’s Big Picture

- Historic Emissions
- Business As Usual
- 2020 Limit (AB 32)
- 2030 Limit (Executive Order)
- 2050 Limit (Executive Order)
CA Climate Change Strategies

CA’s Energy Use Per Capita Challenge

Source: Energy and Environmental Economics (E3), California PATHWAYS: GHG Scenario Results
EE’s Role - SB 350

DOUBLING THE 2014–2030 ENERGY SAVINGS TRAJECTORY

NOTE: 1 MMBtu = 300kWh
350,000,000 MMBtu = approx 100,000 GWH
Source: CEC
What Must We Do For The Next Level Of Energy Efficiency?
Use Our New Tools!

- Intelligent efficiency
- New technologies
- Behavior interventions and information
- Expanding financing mechanisms
- Focus on localized EE
Engage Locally and Internationally!

- Under 2 MOU/Compact of States and Regions
- Local Government Climate Roadmap
- ICLEI/Local Governments for Sustainability
- Global Network of Cities, Local and Regional Governments (UCLG)
- C40 Cities
- City Energy Project (NRDC/IMT)
- 100 Resilient Cities
- United States Climate Alliance
What Else Needs to Be Done?

- Enhance agency coordination and integration
- Update rules and policies
- Track progress and performance
Enhance Agency Coordination and Integration

• Establish an “EE Statewide Leadership Collaborative” with dedicated staffing
• Expand use of stakeholder collaboration, including parties that do not traditionally participate before state agencies
• Establish a statewide Market Transformation Collaborative
Update Rules: Technical and Economic vs. Market ("Regulatory") Potential

Source: Navigant, 2013 Goals & Potential Study
Additional load from EVs

Reduced load from self-gen PV

Reduced load from additional achievable energy efficiency for IOUs

In 2027, EVs only 17% of reduced load

Track Progress

- EE actions to track
  - Utility customer-funded EE programs (IOU/POU)
  - Mandatory building codes and appliance standards (state and federal)
  - Other programmatic efforts (PACE, local gov’ts, etc.)
  - Price and market effects

- Link EE reporting with carbon goal reporting

- Other considerations (count transportation electrification, fuel switching)
Dr. Arthur H. Rosenfeld (1926-2017)
The Art of Energy Efficiency
Thank You

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