SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Blueprint for Energy Efficiency

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Yale Webinar Series
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Today's Discussion

- *About Southern California Edison*
- *Drivers of Energy Efficiency*
- *Energy Policies That Motivate Energy Efficiency Investment*
- *What's Happening in the Energy Efficiency Industry?*
- *What's Next for Energy Efficiency?*

About Southern California Edison

About Southern California Edison

- **One of the Country's Largest Investor-Owned Utilities**
  - 50,000 square miles
  - 14 million residents
- **Environmental Leadership**
  - **2007 – 11 EE Results**
    - ✓More than 8.6 billion kWh– Enough to power over 1.2 million homes for an entire year
    - ✓Resultant greenhouse gas emission reduction = 3.9 million metric tons -- Equivalent of taking 750,000 cars off the road
- **A National Leader in Energy Efficiency**
  - 1st or 2nd in the nation for electric energy savings in each of the last 12 years
  - 11 National US EPA ENERGY STAR® Awards

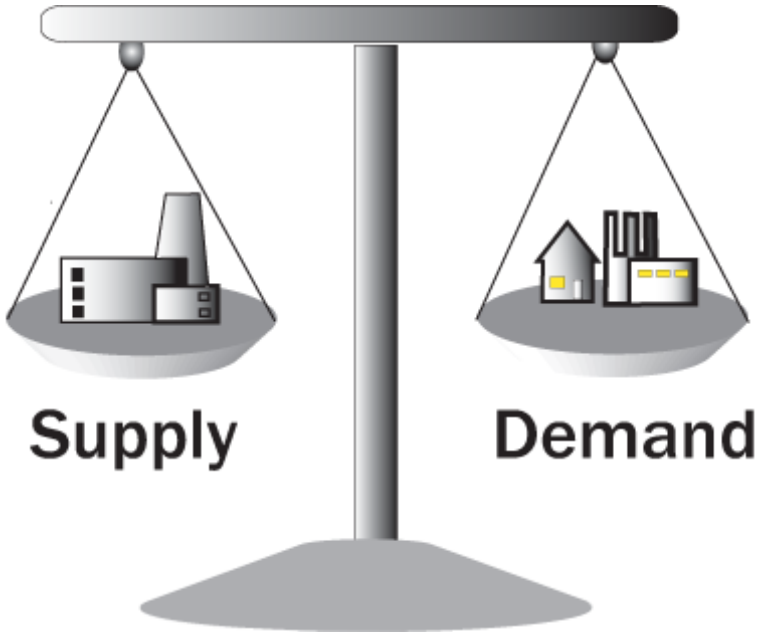
✓ ***Leading U.S. purchaser of renewable energy***

✓ ***Largest DR portfolio in California***

✓ ***Edison SmartConnect™ installing 5 million smart meters***

Drivers of Energy Efficiency

Energy Efficiency is Central to Demand Side Management Strategies

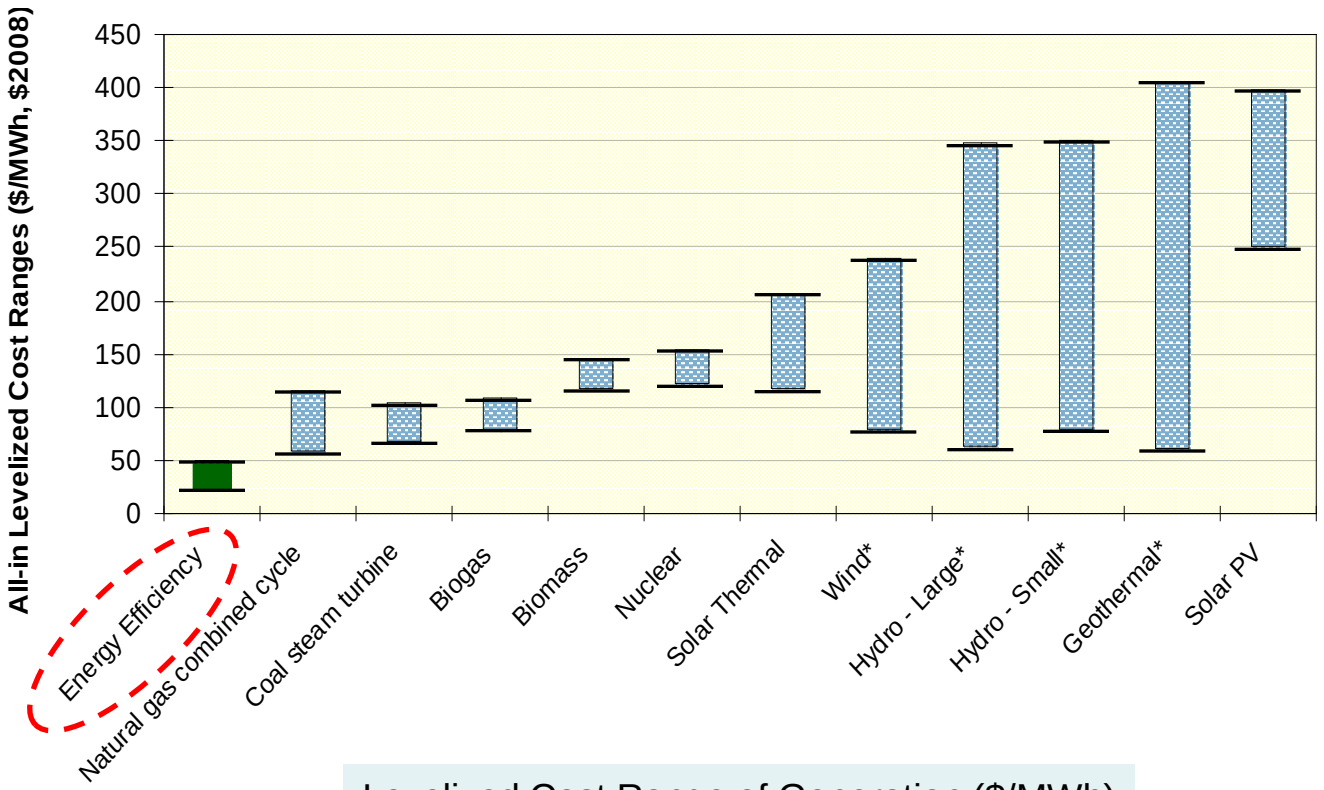


- **Conservation --** Using less of a resource
- **Energy Efficiency** -- Permanent installation of energy efficient technologies that reduce energy usage while maintaining a comparable level of service and customer value
- **Demand Response & Load Management** -- Changing the patterns of energy use, primarily at times of peak demand.

These explanations draw heavily from “Energy Efficiency and Conservation: Trends and Policy Issues,” California Energy Commission Staff Workshop Paper, May 2003.

EE is a Least-Cost Electricity Resource

- SCE's EE programs save energy at a levelized cost of $.03-.05 per kWh[1]



Levelized Cost Range of Generation ($/MWh)

- ✓ ***EE does not require transmission lines to serve load centers***
- ✓ ***EE operating costs are unaffected by oil / natural gas price fluctuations***

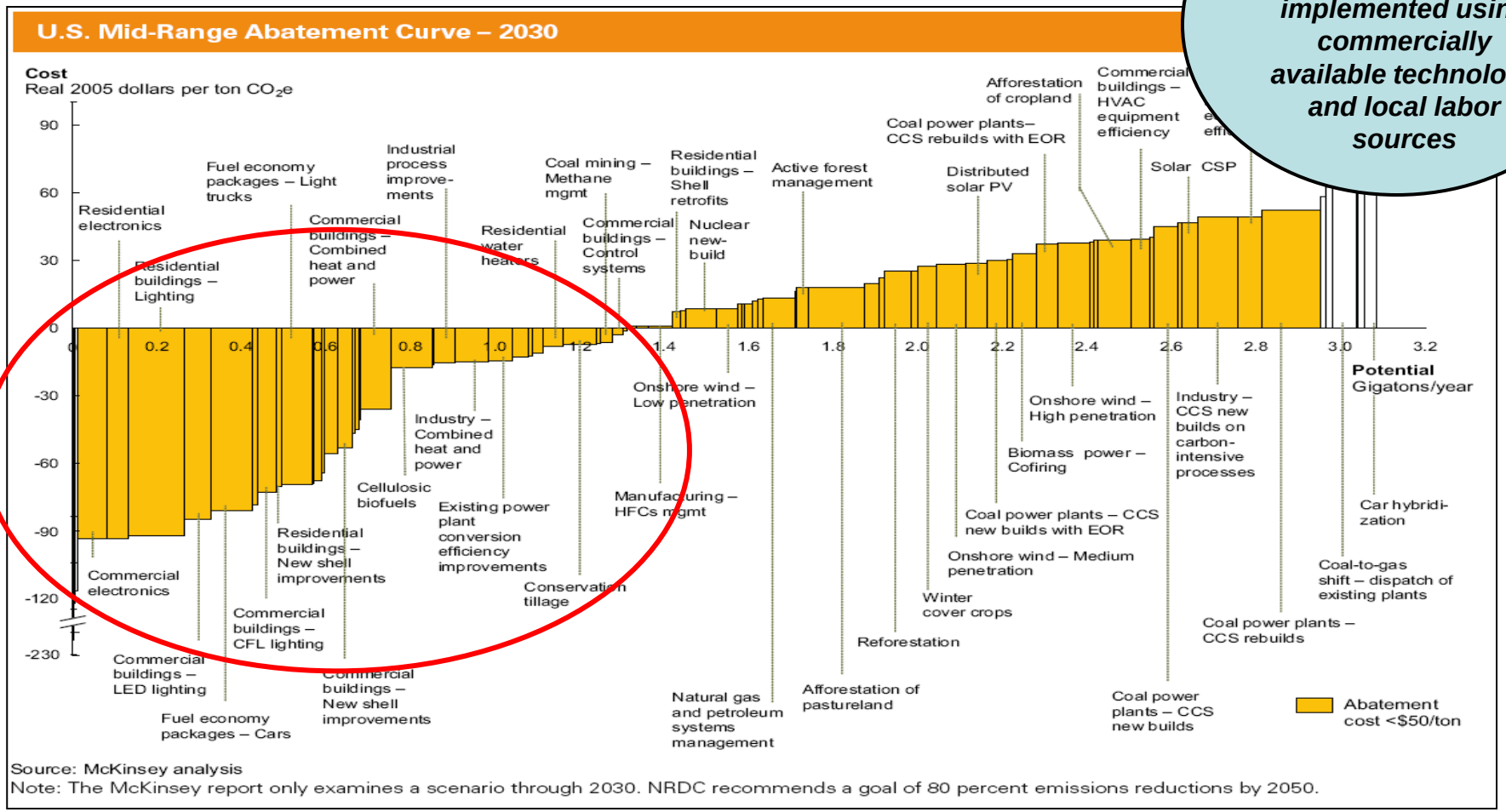
Source: Energy and Environmental Economics Inc. 2008

*Costs for these resources are highly site-specific and have wide ranges in cost depending on project location

[1]Levelized Cost: The present value of the total cost of building and operating a generating plant over its economic life, converted to equal annual payments. Costs are levelized in real dollars.

EE is a Least-Cost GHG Abatement Strategy

EE "Power Plants" can be quickly implemented using commercially available technology and local labor sources



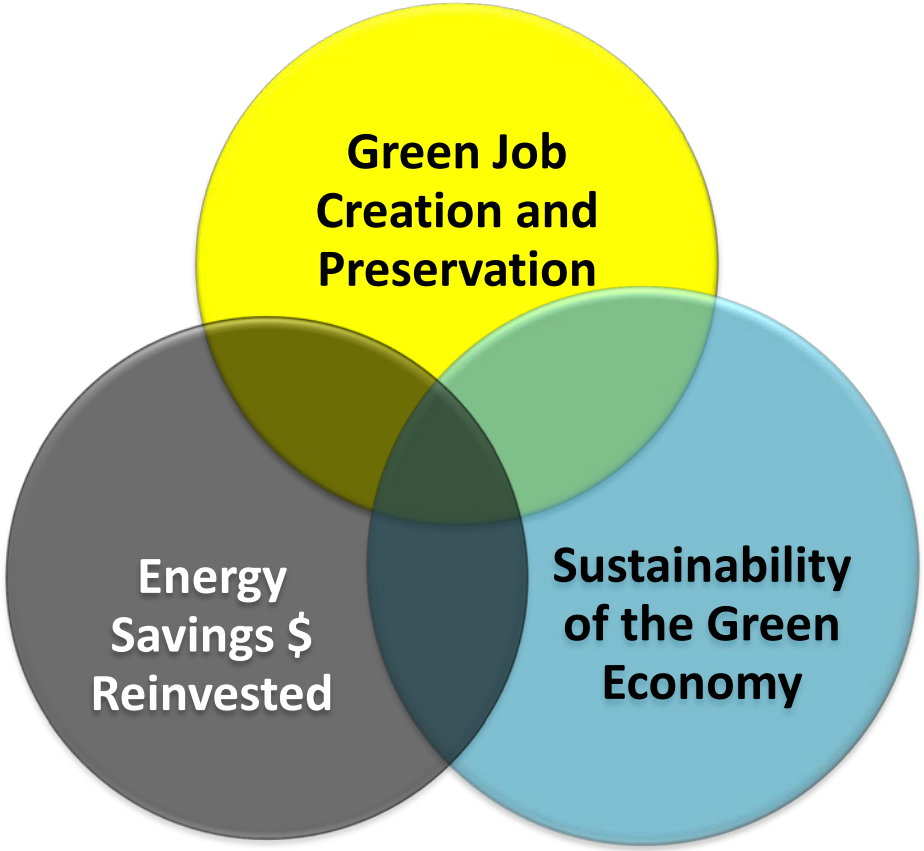
Source: McKinsey analysis
Note: The McKinsey report only examines a scenario through 2030. NRDC recommends a goal of 80 percent emissions reductions by 2050.

EE Creates Jobs and Stimulates Economic Growth

- Customer Savings in the Economy:
  Over the last 5 years SCE's customers saved more than $1.2 billion dollars[1] by participating in SCE programs

- Green Job Creation and Preservation:
  EE supports private markets with continued, stable contracts

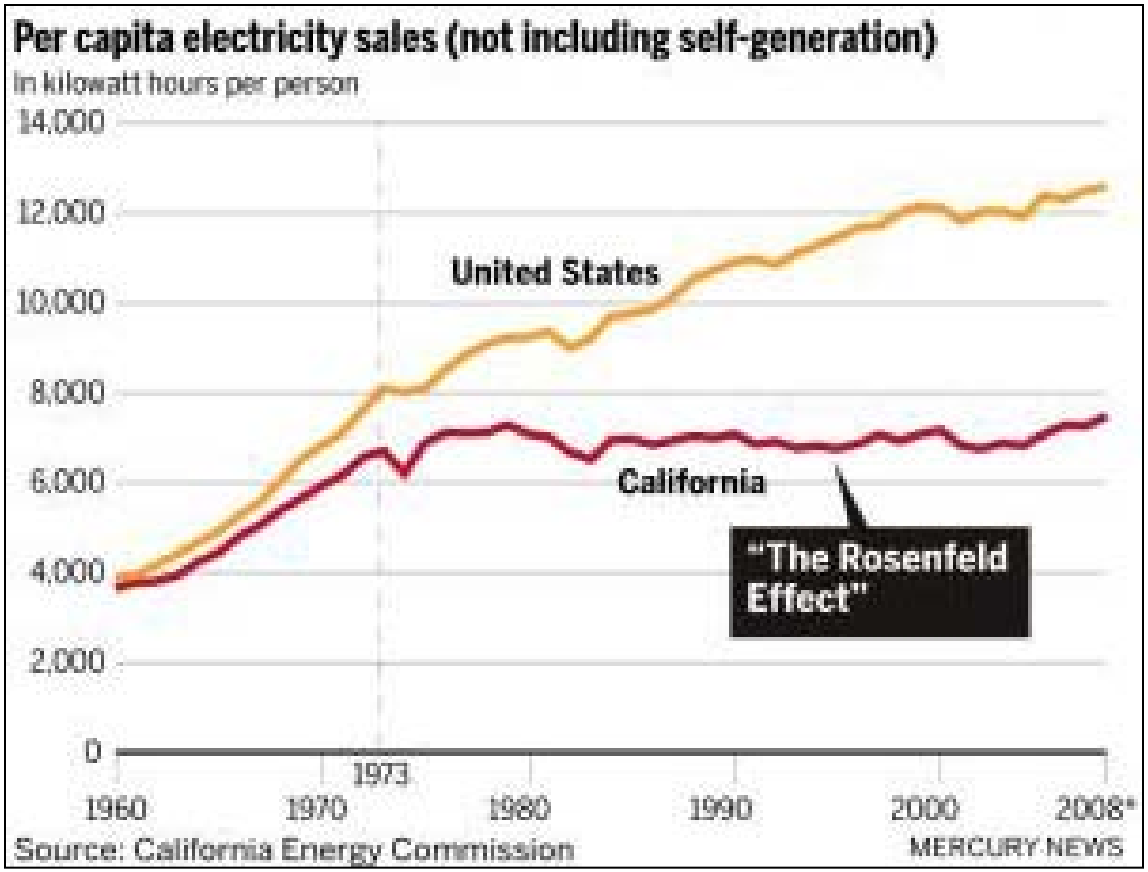
- Sustaining the Green Economy:
  EE contributes to market transformation through codes and standards, technology evaluation and workforce training



[1] Source: SCE 2010 Energy Efficiency Annual Report, internal SCE data

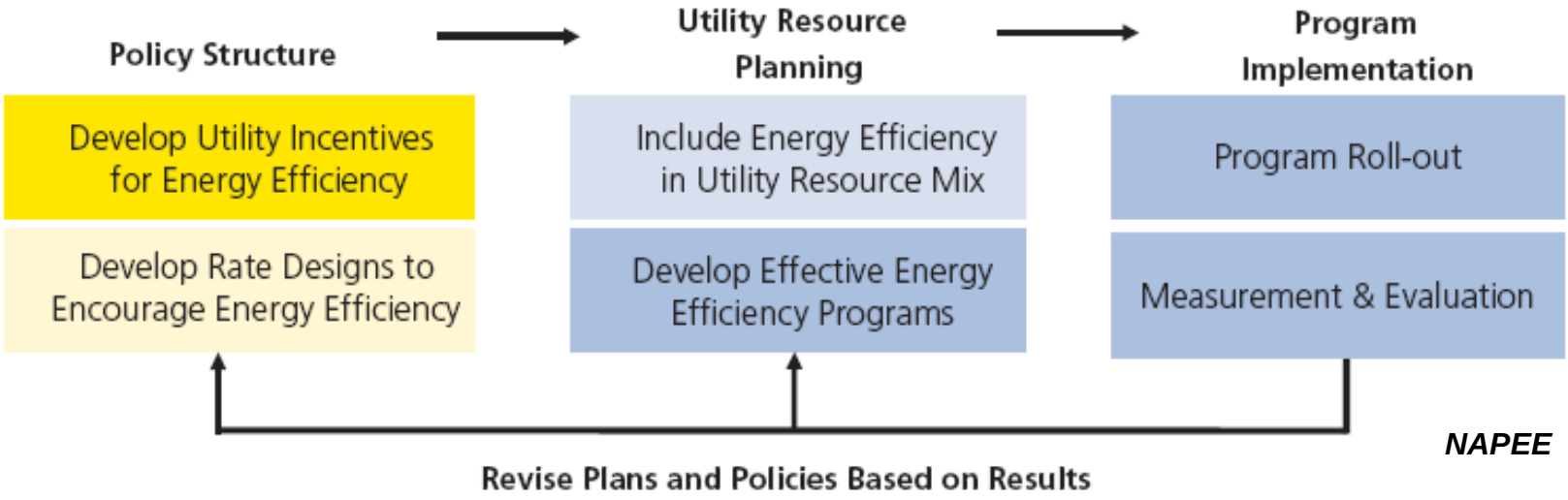
EE Has and Will Continue to Produce Significant Results

California Per Capita Electricity Consumption



Energy Policies Motivate Energy Efficiency Investment

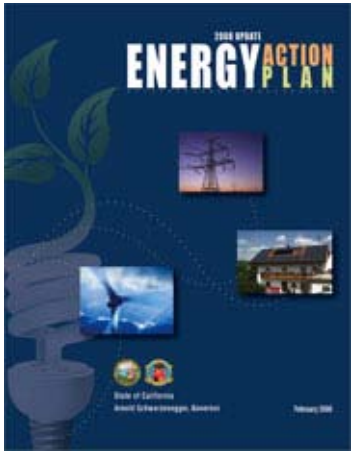
U.S. Model = Securing EE Investments & Implementation Through Utilities



- **National Action Plan for Energy Efficiency:** U.S. DOE and EPA facilitated plan to create a sustainable, aggressive national commitment to energy efficiency through gas and electric utilities, utility regulators, and partner organizations

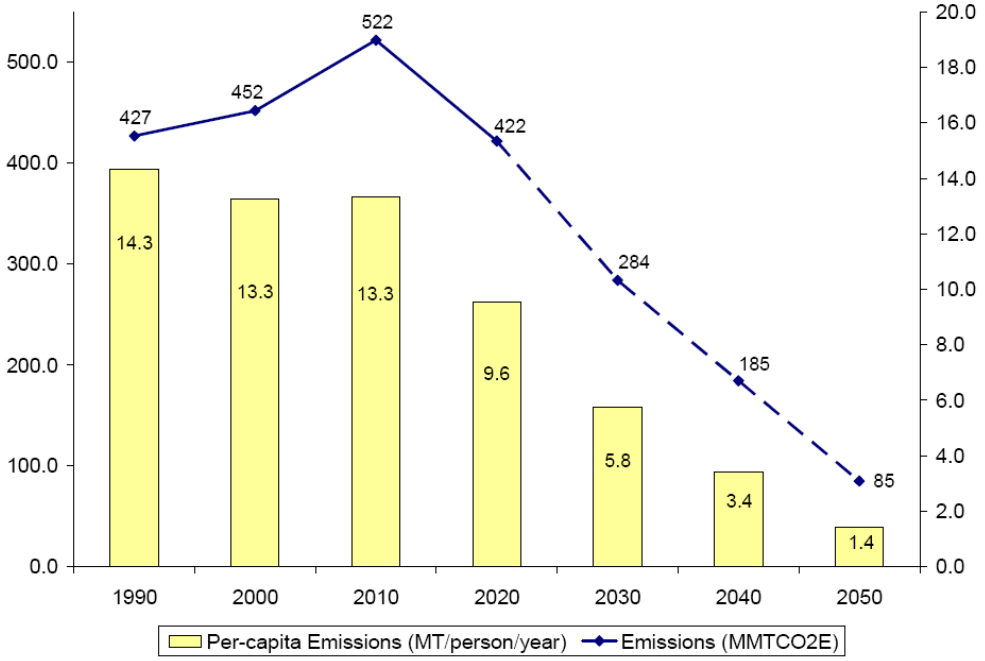
The California Example: CA Energy Action Plan

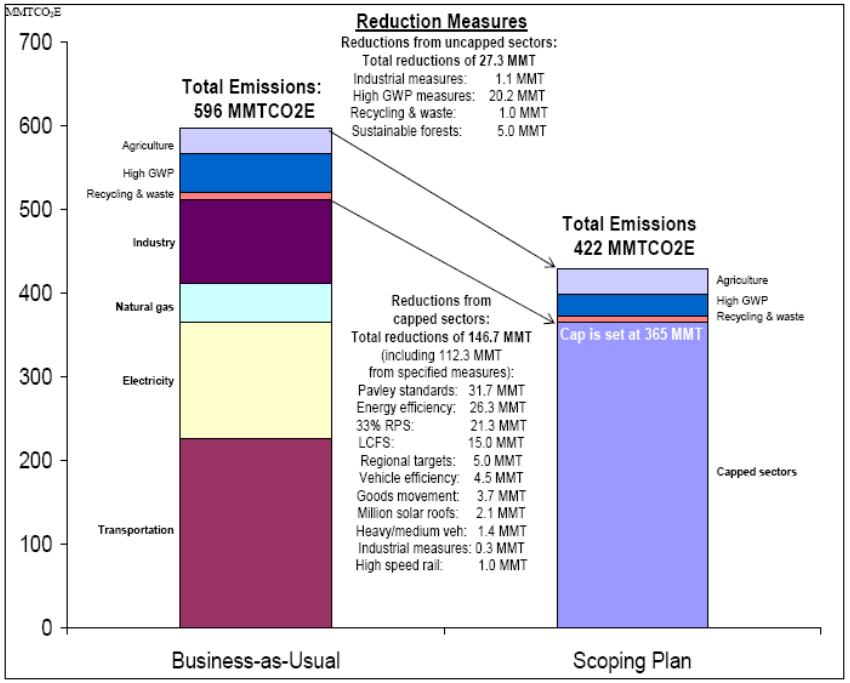
- **The California Energy Action Plan, first adopted in 2003, specifies California's energy policies**
  - Energy efficiency and demand response are first in the resource loading order
  - Cost-effective energy efficiency and demand response must be pursued before supply-side options
- **EE supports the following objectives:**
  - Reduces energy supply costs
  - Stabilizes per capita electricity consumption
  - Reduces air pollution
  - Supports economic development
  - Diversifies California's resource mix



The California Example: Assembly Bill 32

- California Global Warming Solutions Act (2006) = Reduce California GHG levels to:
  - 1990 level by 2020 (25% below "business as usual")
- AB32 Implementation Plan utilizes regulations and market-based systems to lower GHG emissions in CA.
  - Energy Efficiency is a primary GHG reduction strategy

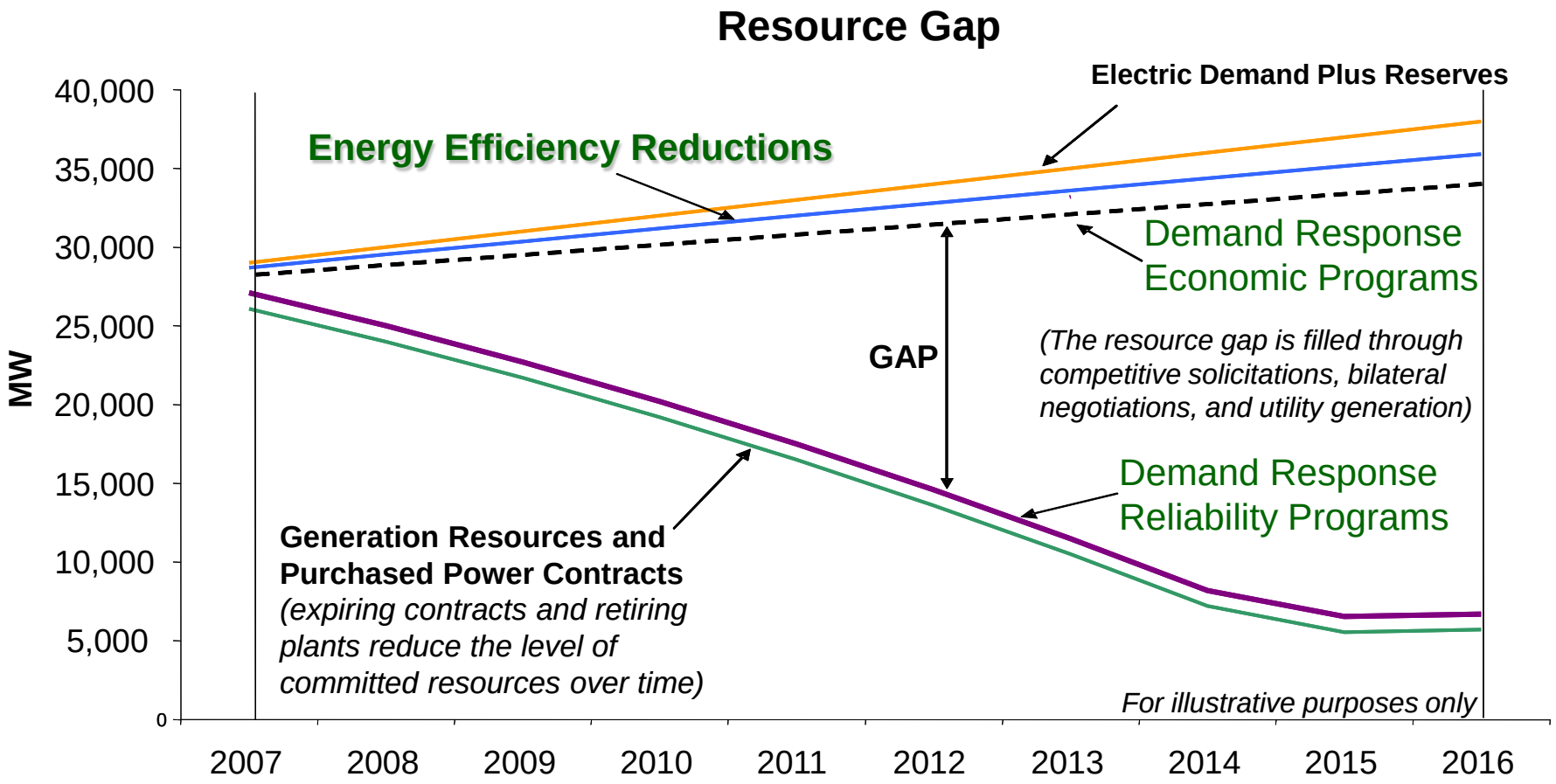




Source: CARB Scoping Plan

The California Example: Integrated Resource Planning

- EE is incorporated into the utility sales forecast as a reduction to sales



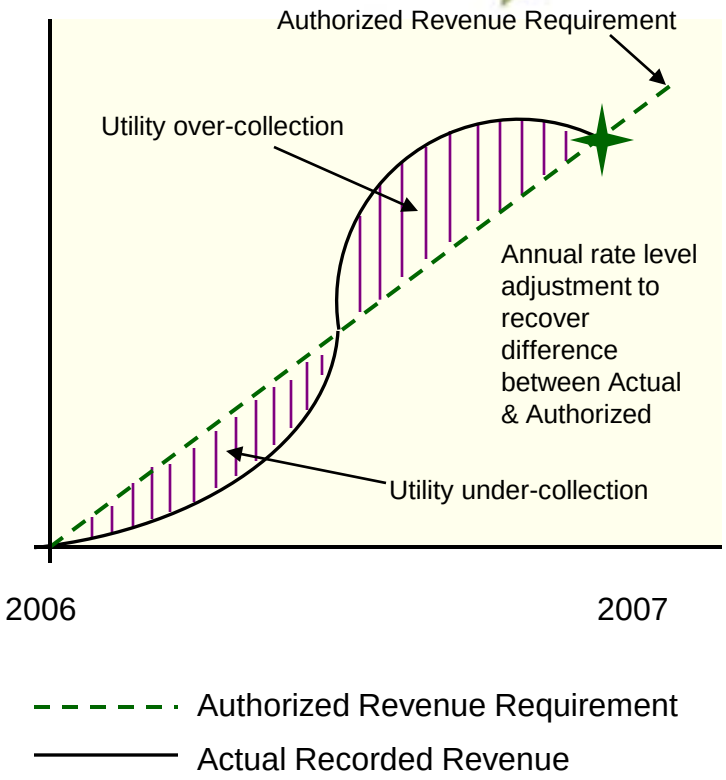
California Business Model for EE:

- There are three key components to SCE's Energy Efficiency Business that make it a sustainable and successful model:

  - ✓ Lost Revenue Mechanism (Decoupling)
  - ✓ EE Program Cost Recovery
  - ✓ Opportunity to Earn

California Business Model for EE: Decoupling Mechanism

- SCE is protected against lost revenue through decoupling.
  - "Decoupling" mechanism protects utility from lost revenues due to reduction in sales attributed to EE and other factors
  - Rates are adjusted annually to account for differences between forecasted and actual sales
  - "Decoupling" allows utility to recover authorized revenue requirements



Decoupling

California Business Model for EE: EE Program Cost Recovery

- SCE is authorized to recover its EE program costs
  - Goals and amounts established in Long-Term Resource Plan
  - Utilities apply for funding based on ability of EE to meet resource need
  - Amount recovered in rates along with other generation-related expenses

- SCE EE Program Budgets:
  - 2006-08: $750 Million ($USD)
  - 2010-12: $1.2 Billion ($USD)

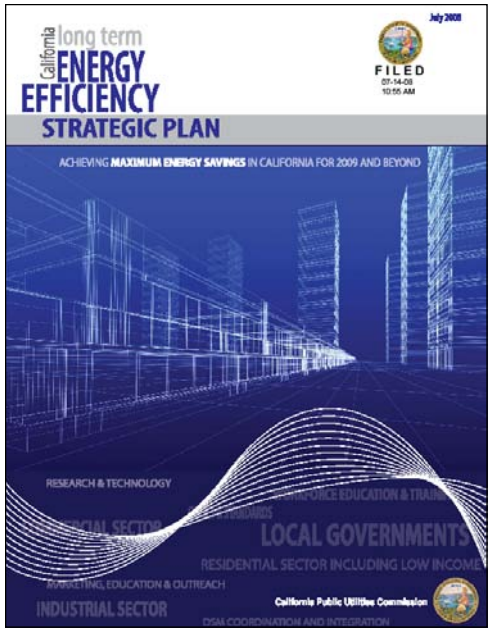
California Business Model for EE: Opportunity to Earn

- Shared Savings Incentive Mechanism
  - SCE earns when customers see substantial net avoided cost benefits from EE programs
  - Benefits are based upon avoidance or deferral of costs associated with supply-side resources, transmission and distribution, or environmental compliance

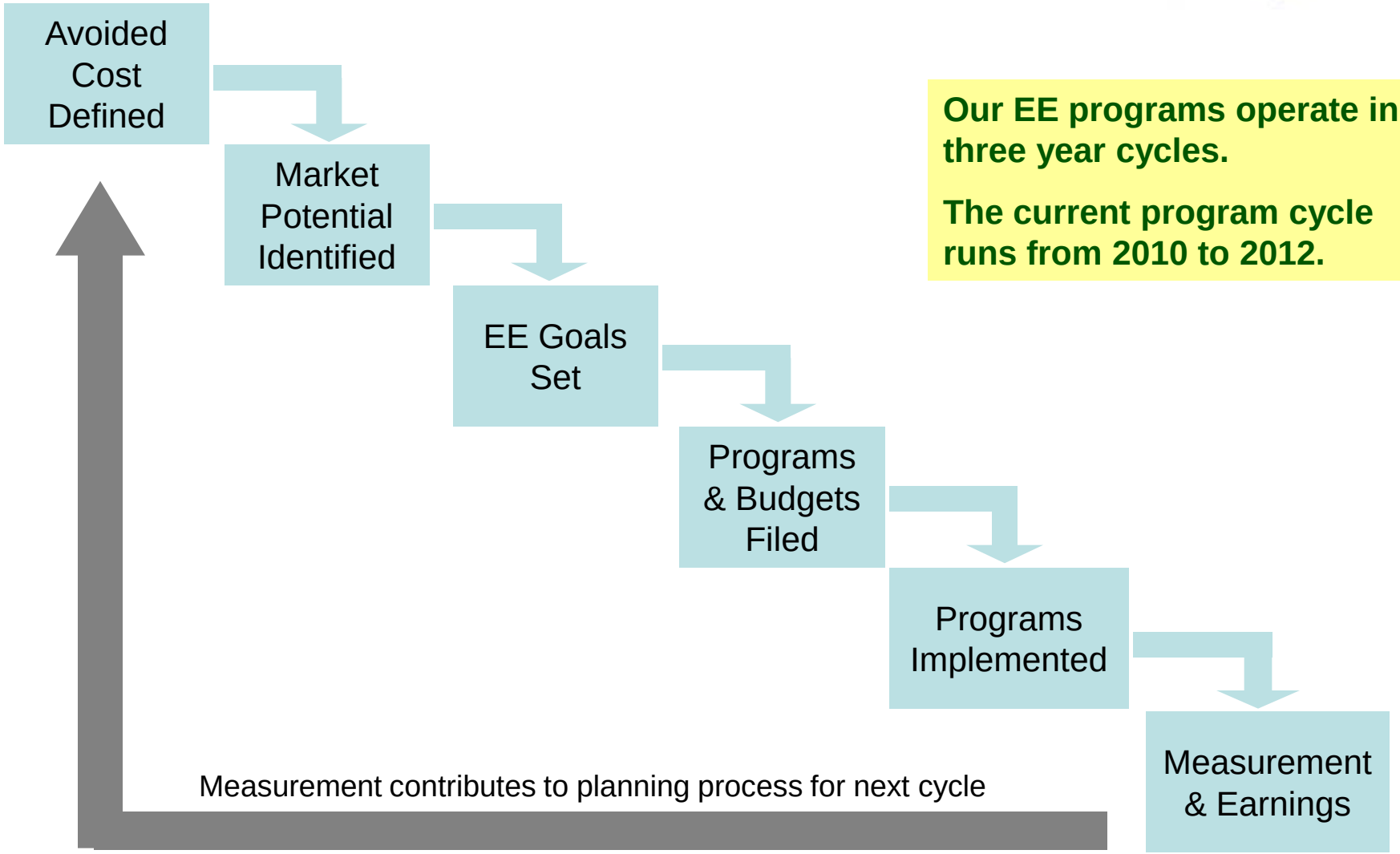
- The California Public Utilities Commission is reviewing the current mechanism and is considering reforms to provide for a more streamlined, transparent incentive program

The California Example: A Statewide Plan for EE

- **California Long-Term Energy Efficiency Strategic Plan**
  - ✓ Statewide roadmap to maximize achievement of cost-effective energy efficiency
- **Big-Bold Strategies Innovation:**
  - ✓ All new residential construction in California - zero net energy by 2020
  - ✓ All new commercial construction in California - zero net energy by 2030
  - ✓ Heating Ventilation and Air Conditioning (HVAC) industry and market - transformed to ensure that energy performance is optimal for California's climate
  - ✓ All eligible low-income households have a meaningful opportunity to participate in EE by 2020



The California Example: The National (NAPEE) Plan in Practice



Our EE programs operate in three year cycles.

The current program cycle runs from 2010 to 2012.

Review of the California Example

- California Energy Action Plan – EE and DR are first in the resource loading order
- EE integrated into IOU Long-Term Resource Planning process
- Energy savings goals established for IOUs
- California Business Model for Energy Efficiency:

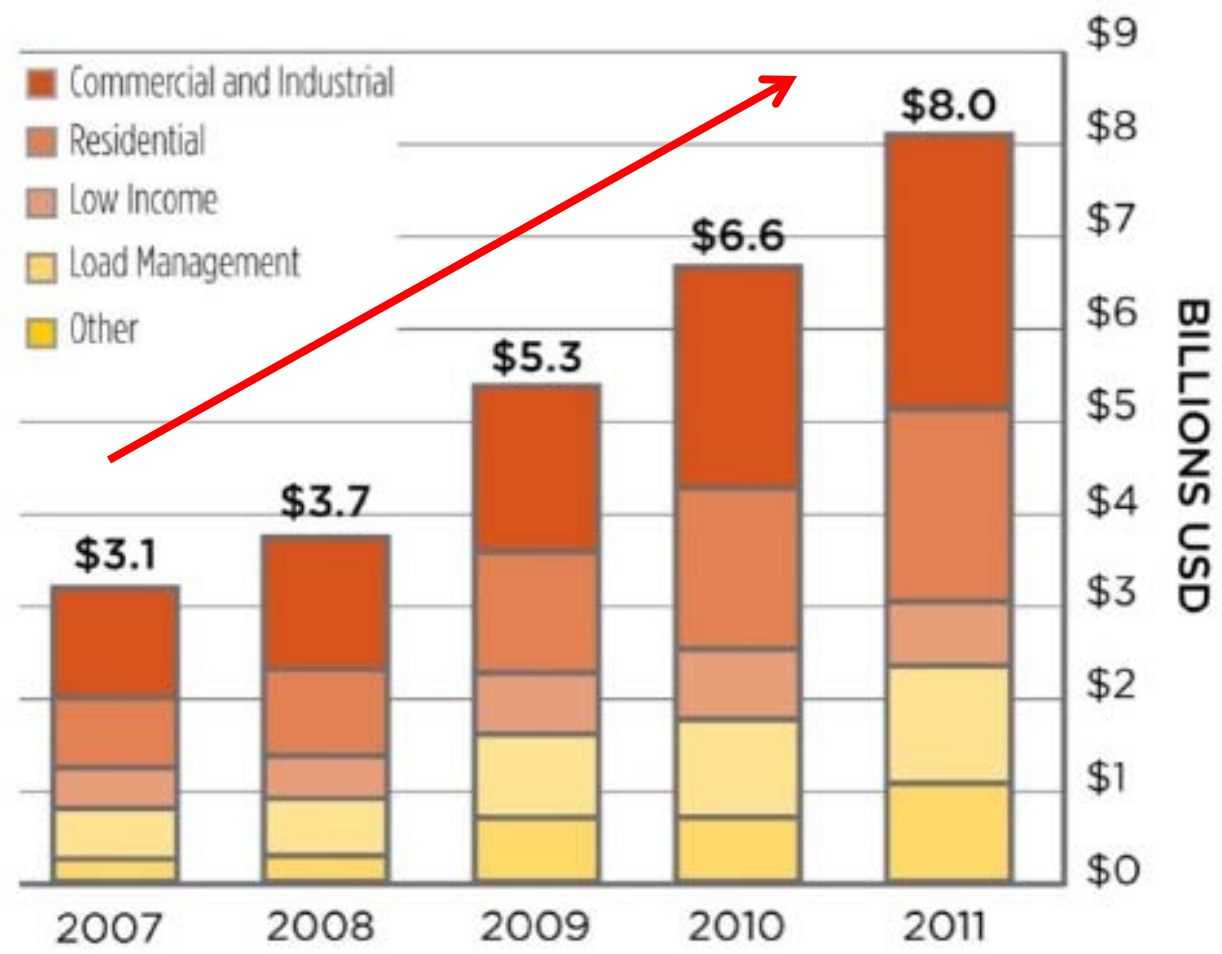
1. **Decoupling Mechanism** – Decouples recovery of revenue requirements from sales
2. **Program Cost Recovery** – Allowable recovery of EE program costs
3. **Shareholder Incentive** – Opportunity to earn incentives for success of EE programs; Goal = Comparability to supply-side returns.

2010 – 2012 Approved IOU Energy Efficiency Portfolios	
Budget	$3.1 Billion
Energy Savings	7 Billion kWh
Demand Reduction	1,500 MW
Gas Savings	150 Million Therms

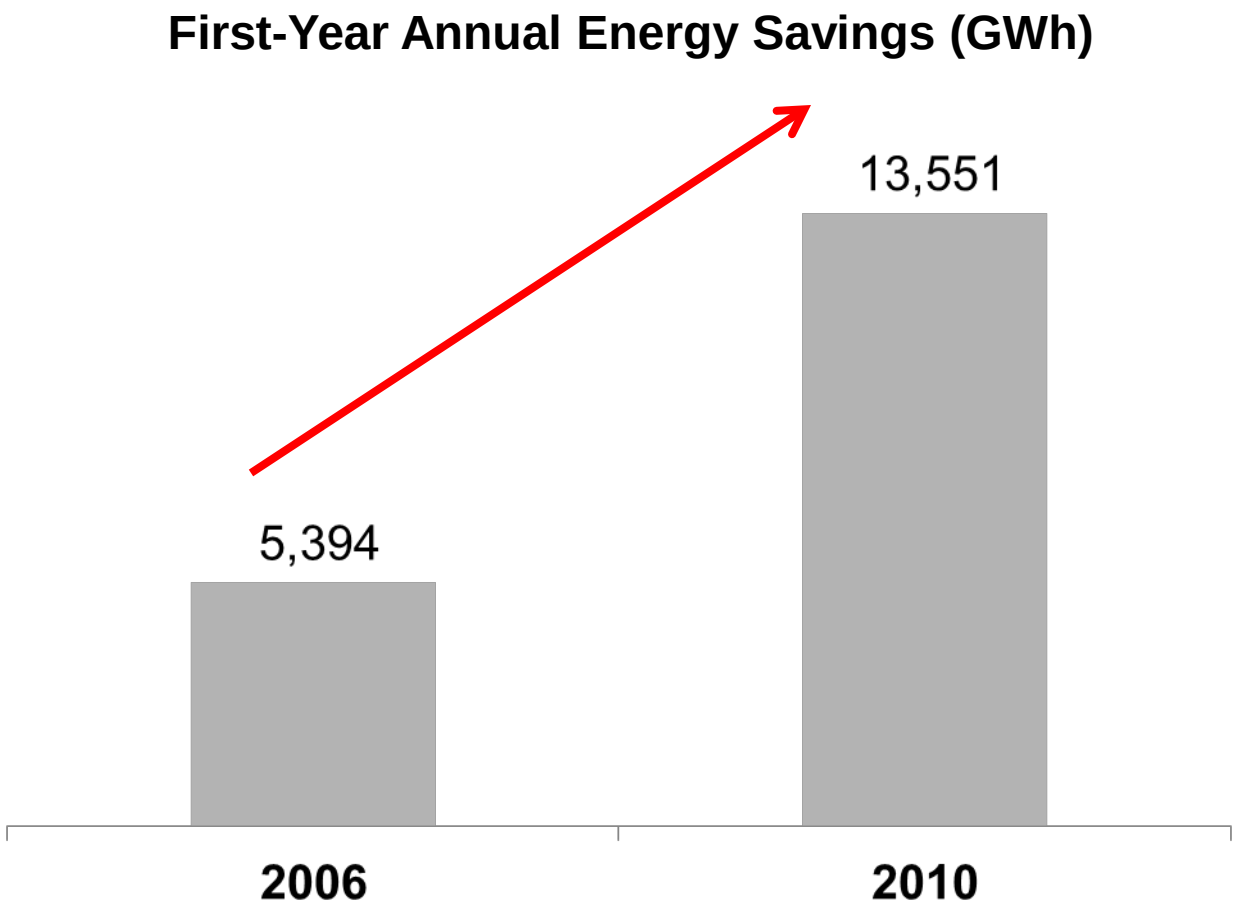
Since 2002, CA IOU EE programs have delivered over $7 billion in net resource benefits to customers

What's Happening in the Energy Efficiency Industry?

Massive US Investment in EE: More Than Doubled in 5 Years

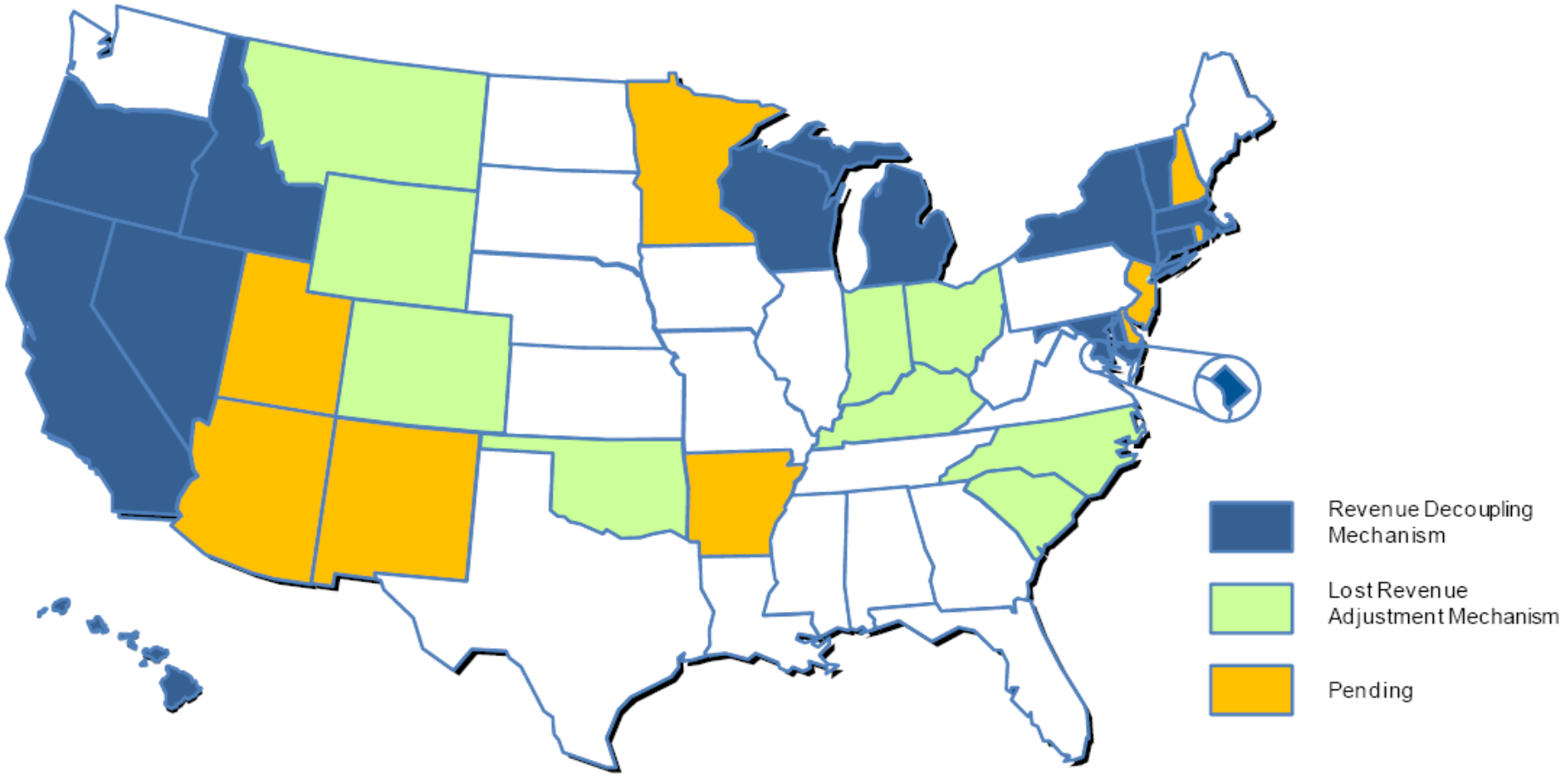


US Investment in EE Produces Results: Savings More Than Doubled in 5 Years



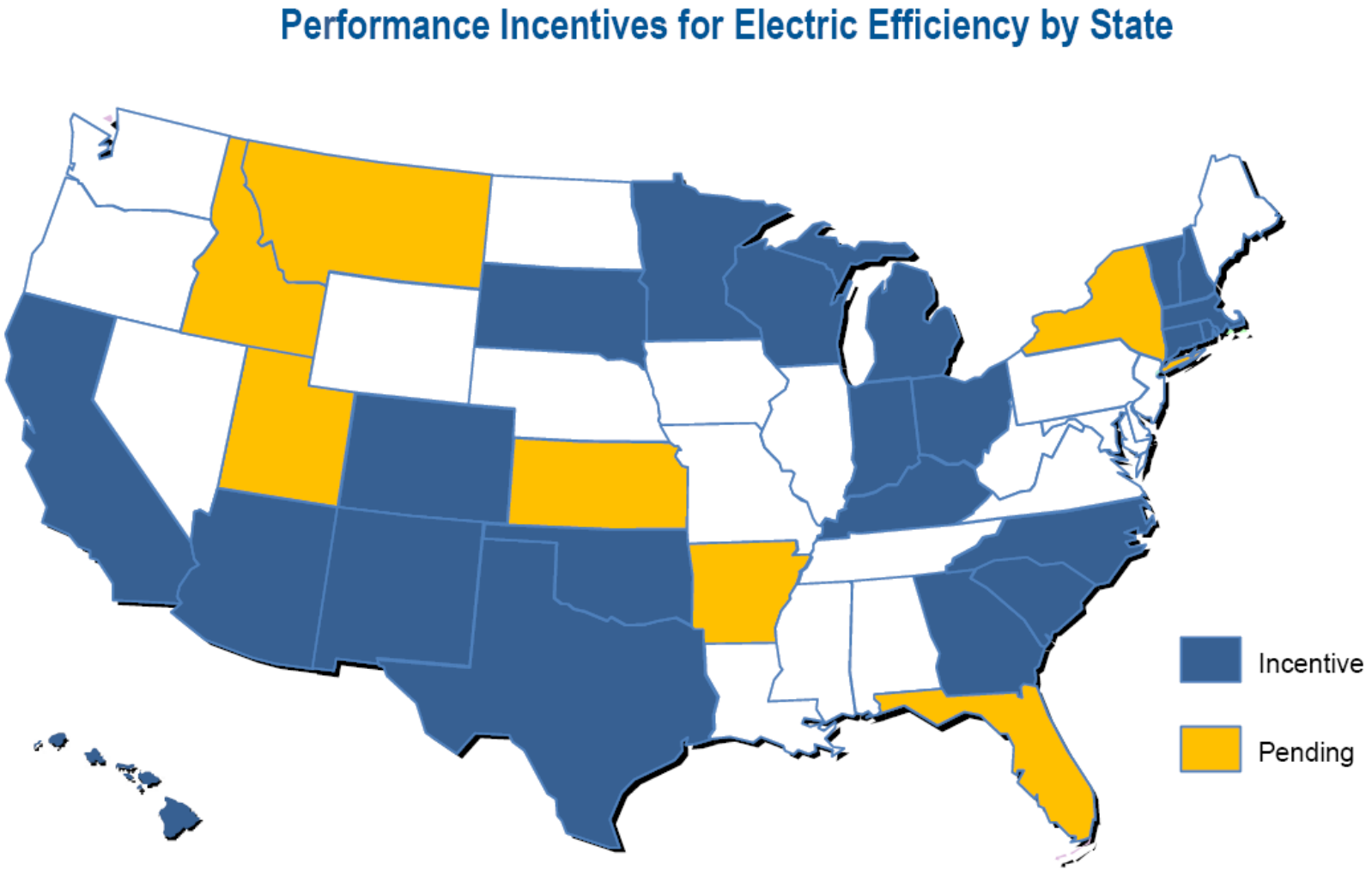
US Department of Energy, Energy Information Administration

Lost Revenue Mechanisms and Revenue Decoupling Mechanisms in the US Increasing



Source: IEE State Regulatory Frameworks, June 2011

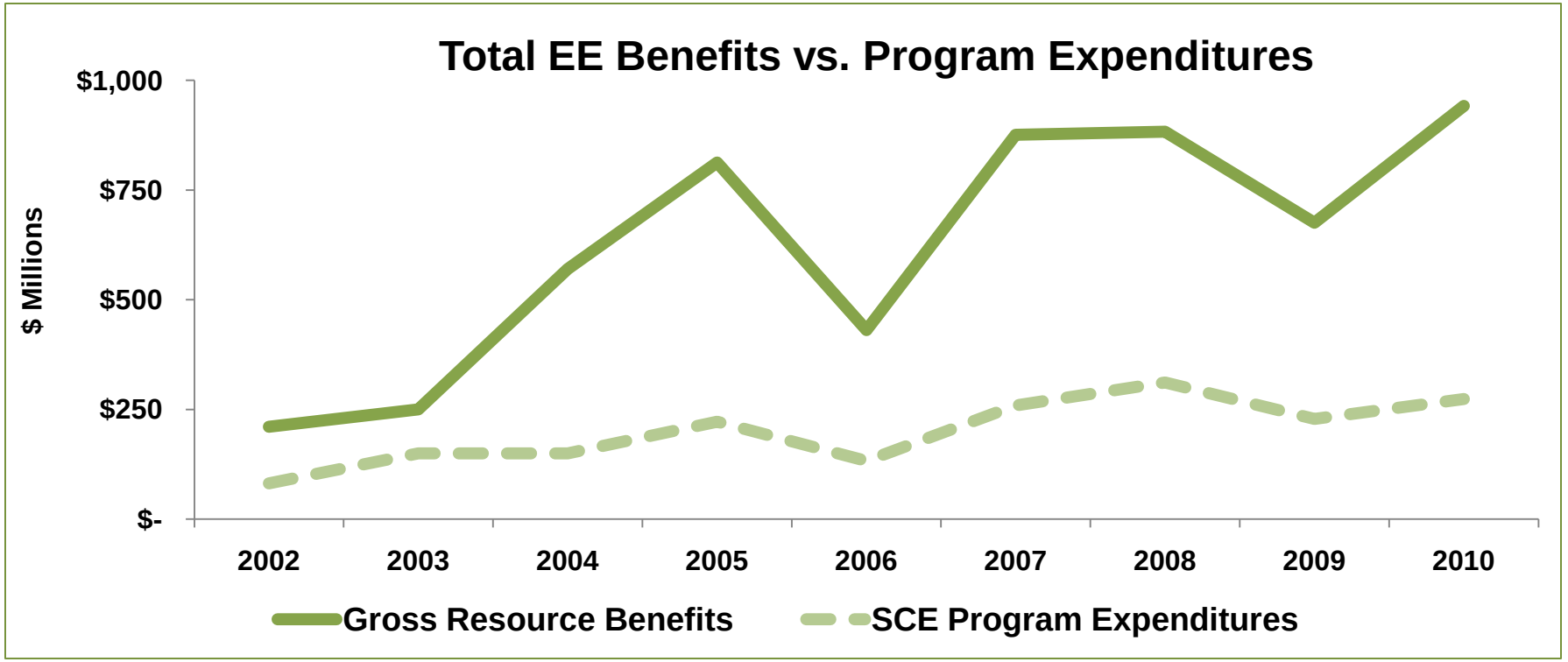
States Throughout US Continue to Authorize EE Incentive Mechanisms



Source: IEE State Regulatory Frameworks, June 2011

The California Example: Southern California Edison Results

- SCE's EE programs have delivered over $3 billion in net benefits (benefits minus costs) to society from 2002 to 2010:



Source: 2002-2010 SCE EE Annual Reports. Net Benefits to Billpayers (Total Resource Cost)

New EE Strategies in California

- **Advanced Consumer Lighting**
  - Provides upstream incentives to lighting manufacturers who supply advanced lighting technologies such as specialty CFLs, LEDs, cold cathode, and high efficiency incandescent bulbs.

- **Energy Upgrade California**
  - Designed to provide customers with a one-stop resource for whole-house energy efficiency improvements, delivering a customized and holistic home solution to customers to lower electricity use

- **On-Bill Financing**
  - Provides businesses and local governments with a revolving loan pool to help reduce the upfront capital costs required of efficiency projects
  - *Potential future financing mechanism includes On-Bill Repayment, which uses private capital that is repaid through utility billing system*

- **Behavioral Programs**
  - Some utilities have implemented Home Energy Reports (Opower) that offer customers comparisons with their neighbors
  - Behavior-based programs have been sought for the future program period (2013-14) – SCE will emphasize home energy audits as a pilot effort

The Future of Energy Efficiency

Utilities Must Be Put to Work to Maximize National Efficiency Savings

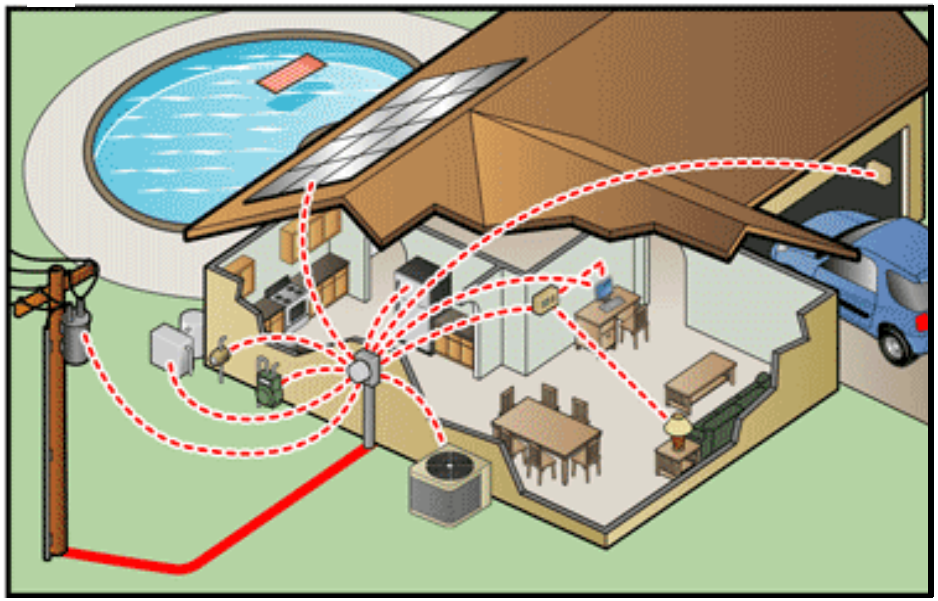
- Massive, sustainable investment in energy efficiency needs to come from the utility sector
- Utilities and regulators must strike a balance between acquiring short-term efficiency savings and driving market transformation and adoption of energy efficient behavior
- Overarching and collaborative energy efficiency strategic plan should be developed and utilized as a framework for efficiency portfolios

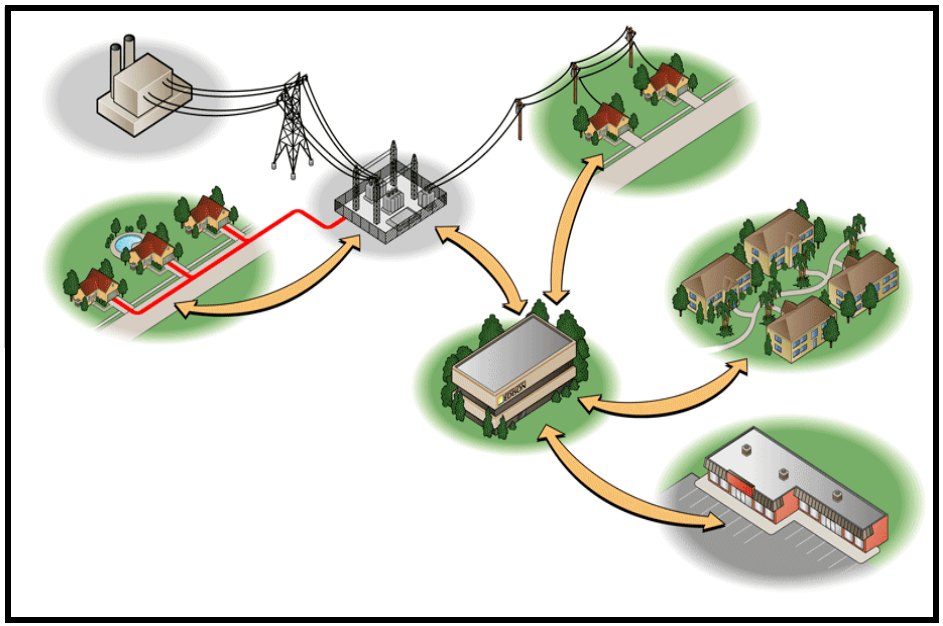
There is no "Silver Bullet" New Technology

- Demand-side management technologies must be integrated to provide maximum energy benefits

Future of DSM Technology: Dynamic Systems – "Prices to Devices"

- Networked, smart end-use devices will interact with the marketplace for electricity and other consumer-based services
- Systems will combine tools developed in demand response programs with advanced communications, embedded intelligence, and emerging "smart" end-use devices





Collaboration and Partnerships are Necessary to Continue EE Proliferation

SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

CLEAN ENERGY MINISTERIAL
Accelerating the Transition to Clean Energy Technologies

A network of more than 200 leaders from state and local government, businesses, non-governmental organizations, and their partners

Global collaborative that includes 23 governments that account for 80% of global GHG emissions and 90% of global clean energy investment

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Thank You!!

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Additional information about energy efficiency in California available at:

Southern California Edison
www.sce.com/

California Public Utilities Commission
www.cpuc.ca.gov/

California Energy Commission
www.energy.ca.gov/