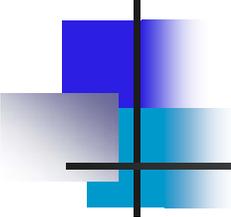


# Climate Change, Energy Efficiency and Demand Response Programs

## Pennsylvania PUC Demand Side Response Working Group



CPUC Staff Presentation  
January 19, 2007



# Overview

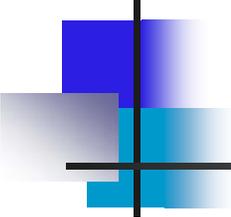
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- Climate Change Context
- Energy Action Plan Goals
- Energy Efficiency Programs
- Demand Response Programs
  - Jeanne Clinton
  - Zenaida Tapawan-Conway
  - Bruce Kaneshiro

# California Global Warming Protection Act

- ***Signed into law by Governor Schwarzenegger on September 27, 2006***
- Requires reduction in greenhouse gas emissions to 1990 levels by 2020
- Emissions covered
  - Carbon dioxide
  - Methane
  - Nitrous oxide
  - Hydrofluorocarbons
  - Perfluorocarbons
  - Sulfur hexafluoride





# California Global Warming Protection Act (continued)

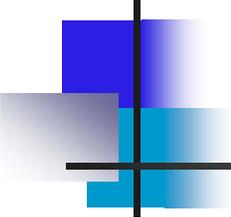
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- Sources covered
  - Any source or category of source whose emissions are at a level of significance...that its participation ...will enable the state board to effectively reduce greenhouse gas emissions and monitor compliance with the statewide greenhouse gas emissions limit
- Three elements to implementation
  - Reporting
  - Establishing 1990 emissions level
  - Reduction

# GHG Emission Reductions From EE & DR Programs – *23%+ of California Climate Action Goals for 2020*

CPUC Programs	GHG Savings (Million Tons CO <sub>2</sub> )	
	2010	2020
IOU Energy Efficiency Programs through 2013	4	8.8
Additional IOU EE/Demand Response Programs (2014- 2020)	NA	6.3
Municipal Utility EE Programs	1	5.9
Current Building & Appliance EE Standards	4	7
New Building & Appliance EE Standards	TBD	TBD
Green Buildings Initiative	0.5	1.8
Combined Heat and Power Initiative	1.1	4.4
<b>Total:</b>	<b>10.6</b>	<b>34.2</b>

Source: Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006.  
[www.climatechange.ca.gov](http://www.climatechange.ca.gov)

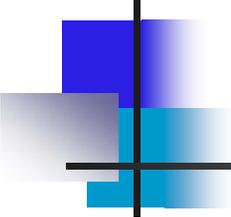


# The Energy Action Plan (EAP) \*

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- **Policy Goals:**
  - Meet California's energy growth needs *while optimizing energy efficiency and conservation*
  - Decrease per capita energy use and reduce toxic and greenhouse gas emissions
- **“Loading Order” for Energy Resources:**
  1. **Energy Efficiency**
  2. **Demand response & advanced metering infrastructure programs**
  3. **Renewable Generation**
  4. **Cleanest available fossil resources & Transmission**
- **EAP II: Adds climate change, RD&D, and transportation to the strategies**

\*The CPUC adopted the Energy Action Plan (EAP) in May 2003 in collaboration with the California Energy Commission (CEC) and the California Consumer Power and Conservation Financing Authority (CPA). In October 2005, the CPUC & CEC jointly prepared EAP II to identify further actions necessary to meet California's future energy needs.



# Energy Efficiency is a Resource

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- Generation Benefits:
  - Both capacity and energy savings
  - Lowers fuel supply and fuel costs
  - Reduces required reserves
- Transmission and distribution benefits:
  - Deferral of new investment
  - Improved reliability
- Resource Benefits:
  - Integrated Resource Planning
- Environmental Benefits:
  - Efficiency paves the way for sustainable growth
  - Reduces Green House Gas Emissions

# Funding of California's Energy Efficiency

## Programs

### Two Sources:

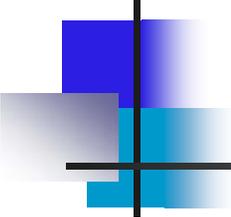
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#### 1. Public Goods Charge

- California's energy efficiency programs are funded by electric Public Goods Charge and natural gas Public Purpose Program charge applied to each customer's bill
- Surcharges approximately 1% (electric) and 0.7% (gas) of each customer's bill and provide approximately \$540 million to fund energy efficiency programs

#### 2. Procurement Funds

- Utilities "purchase" energy efficiency as they purchase electric supply
- The procurement portfolio includes energy efficiency along with traditional supply



# CPUC Sets Aggressive Energy Savings Goals through 2013

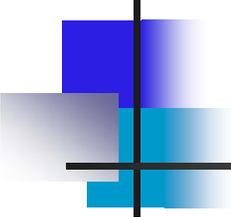
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- Goals adopted in D.04-09-060 consistent with Energy Action Plan
- Goals reflect importance of reducing energy use per capita in CA
- Electric goals expected to capture 70% of the economic potential & 90% of the maximum achievable potential savings
- Goals represent 116% increase in expected savings over the next decade
- Three-year cycle updating savings goals in concert with a three-year program planning & funding cycle for energy efficiency

# CPUC Energy Savings Goals would cut growth in energy use by more than half by 2013.

## Electricity and Natural Gas Program Savings Goals

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Annual Electricity Savings (GWH/yr)	1,838	1,838	2,032	2,275	2,505	2,538	2,465	2,513	2,547	2,631
Cumulative Savings (GWH/yr)	1,838	3,677	5,709	7,984	10,489	13,027	15,492	18,005	20,552	23,183
Peak Savings (MW)	379	757	1,199	1,677	2,205	2,740	3,259	3,789	4,328	4,885
Annual Natural Gas Savings (MMTh/yr)	21	21	30	37	44	52	54	57	61	67
Cumulative Natural Gas Savings (MMTh/yr)	21	42	72	110	154	206	260	316	377	444

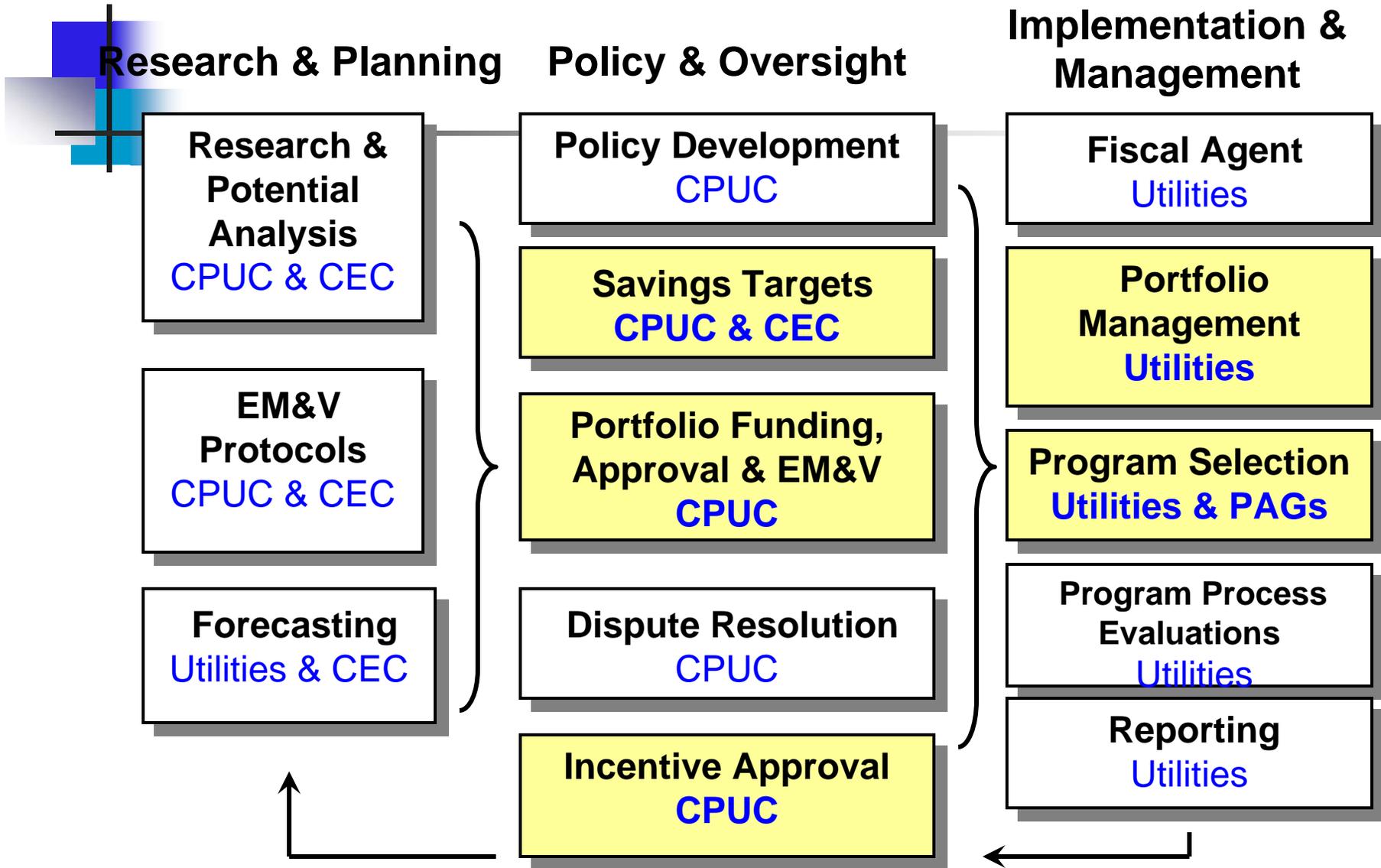


# CPUC Establishes New Administrative Structure for Post-2005 Energy Efficiency Programs (D.05-01-055)

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- Places utilities in lead role for developing program plans & managing portfolios with input from advisory groups
- Requires that utilities put at least 20% of the total portfolio to bid to non-utility implementers in each planning cycle
- Establishes safeguards: advisory group structure, competitive bidding minimum requirements, ban on affiliate transactions
- CPUC Energy Division responsible for: all EM&V studies, policy oversight, research & analysis, quality assurance, dispute resolution
- Energy Division & CEC staff to work in collaborative manner (research & analysis & EM&V)

# EE Program Administration: Post-2005



# 2006-2008 Energy Efficiency Budget & Projected Savings

2006-2008 Energy Efficiency Budget & Projected Savings				
	Budget (In Million)	Projected Savings		
		GWH	MW	MTH
PG&E	\$ 939	3,020	562	51,756
SCE	\$ 730	3,292	714	-
SDG&E	\$ 278	1,022	213	9,537
SCG	\$ 184	-	-	60,696
<b>Total</b>	<b>\$ 2,131</b>	<b>7,334</b>	<b>1,489</b>	<b>121,989</b>

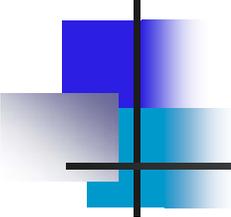
per D.05-04-043

# Overview of 2006-2008 Energy Efficiency Programs

- Statewide Programs
  - Residential
  - Commercial/Industrial/Agricultural
  - On/Off-Bill Financing
  - New Construction
  - Building and Appliance Codes & Standards
  - Emerging Technologies
- Statewide Marketing and Outreach
- Third Party (EE Contractors) Programs
- Government Agencies Partnership Programs



Summary of utilities' programs: <http://www.californiaenergyefficiency.com/>



# Types of Energy Efficiency Programs

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**Rebate** – Customer purchases energy efficiency measure at lower cost with the difference paid for by the program

**Audit** – Inspection of a home or business to identify energy efficiency opportunities

**Direct Install** – Installation of energy efficiency measures at no cost to the customer

**Appliance Turn-In** – Takes inefficient appliances out of circulation with free or rebated recycling services

**Education** – Training for the general public as well as trade allies such as builders or building operators

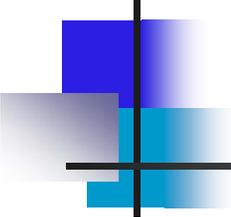
**Performance Contracting** – Typically nonresidential programs; provides rebate for equipment and building retrofit per unit of energy saved rather than per measure purchased or installed

**Energy Management Services** – Typically Nonresidential programs. A combination of audit services, rebates and/or direct install, as well as load management and self-generation.

# Cost Effectiveness of 2006-2008 Energy Efficiency Programs

The authorized \$2 billion funding will:

- Cut energy costs for homes & businesses by more than \$5 billion
- **Avoid building 3 large (500 MW) power plants** over the next three years
- Reduce global warming pollution by an estimated 3.4 million tons of carbon dioxide by 2008, which is equivalent to taking about **650,000 cars** off the road
- Increase funding for the Governor's Green Building Initiative (Executive Order S-20-04) to \$230 million/year, which is a 36 increase in annual funding for climate change efforts
- Provide **net resource benefits** (value of savings benefits minus program and customer out-of-pocket costs) of estimated **\$2.7 billion**, representing a benefit cost ratio (using Total Resource Costs or **TRC** test) of **2 to 1** return on the efficiency investment



# Monitoring and Indicators of Success for 2006-2008 Programs

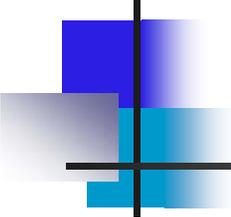
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## Monitor program results through:

- Tracking database reports on (a) program expenditures, installations & activities, and (b) program evaluation activities and results
- Independent verification of measure installations and costs

## Indicators of EE Success

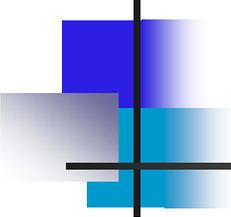
- Performance of each utility administrator evaluated at the portfolio level
  - Based on net resource benefits (value of energy savings minus program and customer out of pocket costs over the life of the measures)
  - Includes minimum performance threshold tied to achievement of energy and peak savings goals



# Issues/Challenges with the New Administrative Structure

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- CPUC involvement in EE portfolio development and balancing
- Refinements to Energy Efficiency Policy Manual
- Role of Program Advisory/Peer Review Groups' -- independent input and oversight to utility portfolio development and balancing
- "Competition" among utility, third-party & partnership programs
- Role of local government and others as "partners"
- Statewide vs. utility-specific programs
- Timing of program expenditures vs. program impacts
- Risk/Reward incentive to motivate maximum utility cost-effective EE results
- EM&V-related issues
  - CPUC staffing and contracting constraints
  - Coordination with utility process evaluations
  - Feedback loop to program planning and resource planning processes



## For More Information:

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