

A State Perspective on California's Energy Management and GHG Reduction Strategies

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Overview of Energy Sector & CARB Initiatives Affecting Homes

1. State Legislation endorses California's Energy Action Plan
2. Efficiency potential in homes; current utility programs
3. CPUC's California Energy Efficiency Strategic Plan
4. Investor-owned utility 2009-2011 efficiency proposals
5. Other CPUC-overseen demand-management programs
6. What CARB's AB 32 Draft Scoping Plan says about strategies that involve homes





1. State Legislation Endorses California's Energy Action Plan



- Public Utilities Code Sections 454.55, 454.56, and 1002.3 –
 - Electric and gas utilities required to use **energy efficiency savings as the first resource** to meet customer demand. EE linked to resource planning
- SB1037 (Kehoe, 2005) - Utilities must achieve **all cost-effective energy efficiency before** building new power plants, signing new natural gas supply contracts or building new transmission lines
- Energy efficiency projected to deliver 26.4+ million tons of CO2 emissions reductions (at least 15% of AB32's GHG goals for 2020).





2. Analyzing Home Energy Use

California's Residential Sector Characterization*

Type of Household	UEC	% Total	Ave # Residents	Ave. Sq. Ft.
Single Family	7,105	59%	3.21	1,787
Multi-Family	3,953	37%	2.6	997
Mobile Homes	5,662	4%	2.26	1,167
Total	5,914	100%	2.96	1,541

Year	Energy (GWh)	Demand (MW)	Res % Total Statewide	Year	State Population (Millions)	Number of Households (Millions)
2008	93,601	25,394	32%	2008	38.2	12.6
2018	112,000	30,772	34%	2018	43.1	13.9

* As presented in the Convener's Report: http://www.californiaenergyefficiency.com/stakeholder_summary.shtml

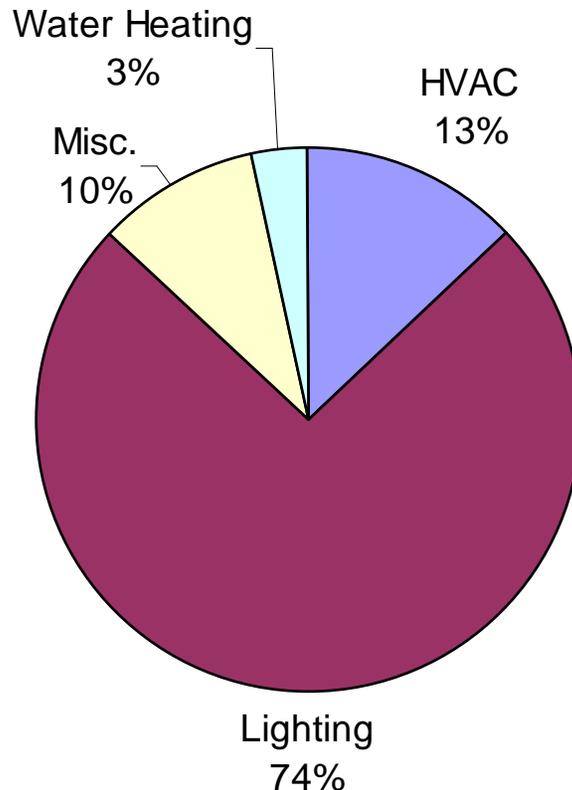




2. Analyzing Home Energy Use

Residential Electric Efficiency Potential: 10.2 TWh

(based on past utility experience, with full-cost incentives), Draft 2007 Itron Study

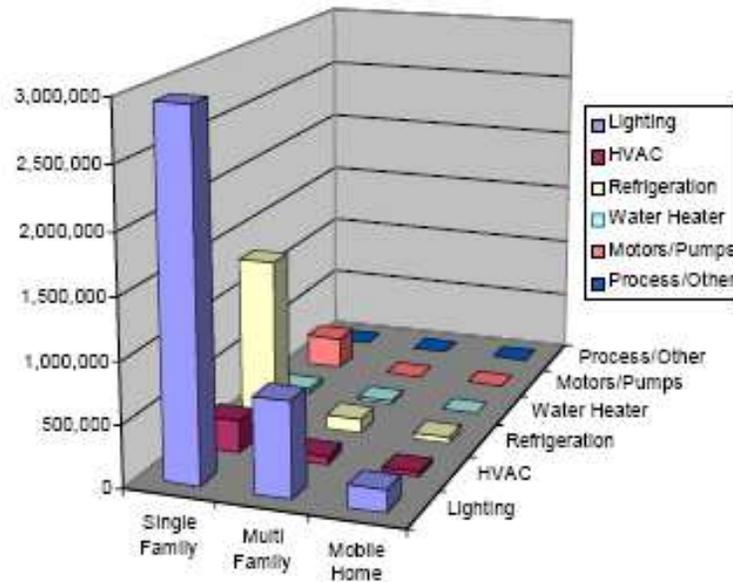




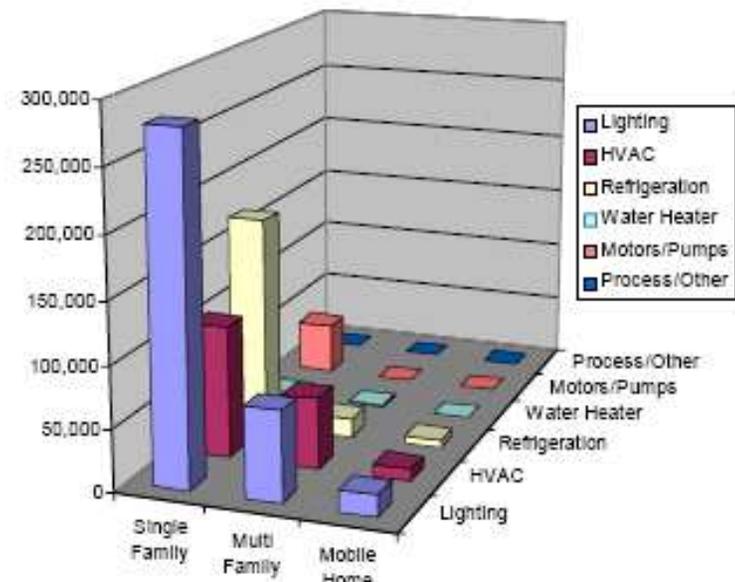
2. Analyzing Home Energy Use

Illustrative Electric Economic EE Potential by End Use and Residential Segment

Residential Annual Economic Potential of Energy Efficiency by End Use (MWh)



Residential Annual Economic Potential of Energy Efficiency by End Use (kW)



Source – Exhibit SCE-1 Southern California Edison Testimony, Application for Approval of Low Income Assistance Programs and Budgets for Program Years 2009-2011, pg. 32.





2. Current Utility Program Targets

CALIFORNIA'S AGGRESSIVE EE PROGRAM – 2004-2013

- Eliminates need for 10 new power plants



- Eliminates 9 million tons of CO₂ emissions (equal to 1.8 million cars)



- \$10 billion in net savings



to consumers





Types of EE strategies among 200+ IOU programs

- Rebates
- Audits
- Direct Installation
 - low-cost measures
- Inefficient Appliance Turn-In
 - New EE appliance incentives (e.g. refrigerators)
- Low Income EE (LIEE)



- Local Government and Third Party Partnerships
- Emerging Technologies
- Performance Contracting
- Energy Management Services
- Public Outreach / Education



2. Current Utility Program Targets

2006-08 Programs Targeting Existing Homes & Buildings

- Residential Retrofit Programs (w/o LIEE)

- Total 3-Year Budget ~ \$488 Million
- Residential Sector Savings ~ 2923.5 GWH, 380 MW, 9.9 MMTh



- Commercial Retrofit Programs

- 3-Year Budget ~ \$1.17 billion
- Commercial Sector Savings ~ 3383 GWH, 661 MW, 71.3 MMTh

Note – Reported retrofit numbers not yet verified by Energy Division staff.

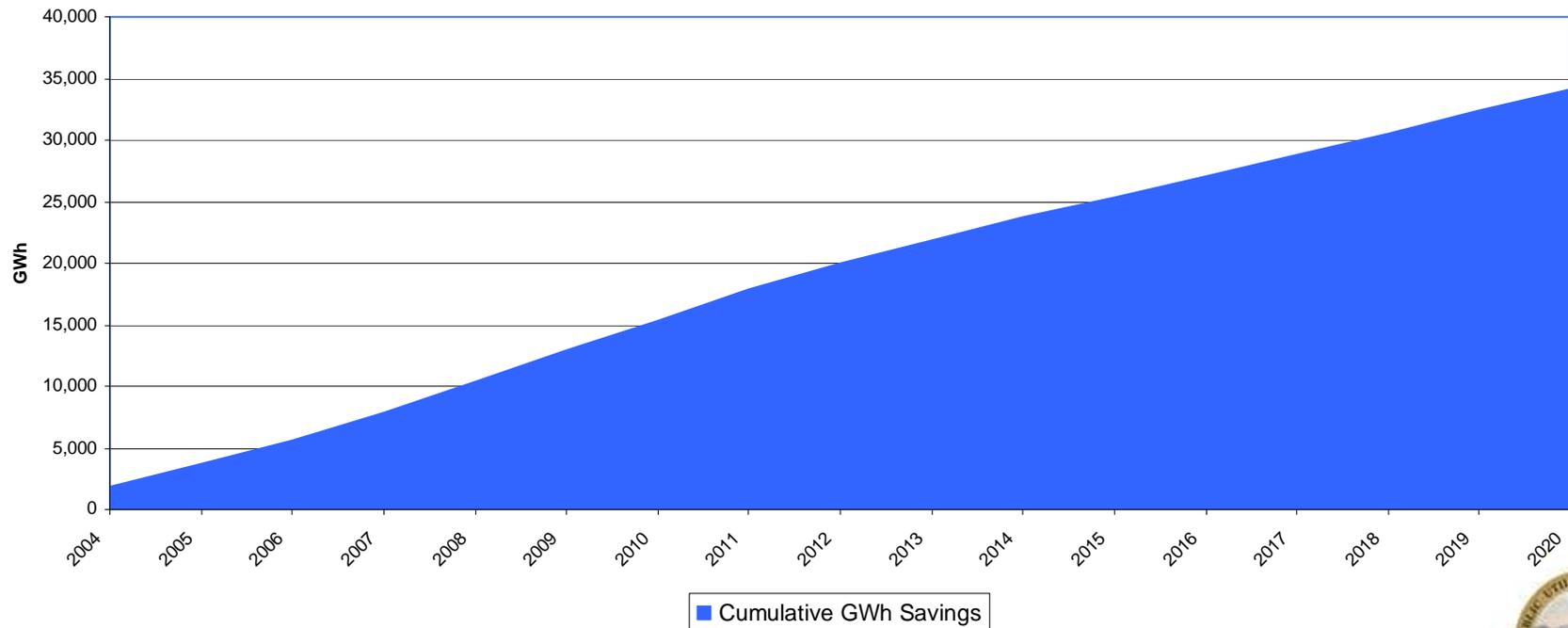




3. CPUC's Proposed California Energy Efficiency Strategic Plan & EE Goals Through 2020

(Updated goals for 2012-2020 to be adopted Summer 2008)

Cumulative Energy Efficiency Savings Goals 2004-2020



4 BIG BOLD Energy Efficiency Strategies



Commercial New Construction

- All new commercial construction in California will be zero net energy by 2030.



Residential New Construction

- All new residential construction in California will be zero net energy by 2020.



Residential / Small Commercial HVAC

- Heating, Ventilation, and Air Conditioning (HVAC) industry will be reshaped



Low-Income Energy Efficiency

- All eligible low-income homes will be energy-efficient by 2020



Strategic Plan - Residential Themes

- **Integrating DSM** (EE, DR, DG/CSI) offerings & programs— (all sectors)
 - coordinated incentive programs, audits
- Expanded **whole building approaches**
 - Incentives for integrated design
 - Comprehensive retrofit programs
 - Financing tools to be developed
- **Slowing “plug load” growth**
Coordination of IOU emerging technologies, manufacturer outreach, CEC Codes & standards, PIER research





Strategic Plan - Heating, Ventilation, AC (homes and commercial)

- Improved installation and maintenance
 - Quality installer certification program
 - Tracking system from unit sale to permitting
 - Quality branding program
- Focus on training installers, permitting agencies
- Expanded compliance programs
- Research & Design of HVAC systems suited to Western Climate





LOW INCOME ENERGY EFFICIENCY



- Programmatic Initiative:
By 2020, provide all willing and eligible low income households all cost effective energy efficiency measures



- Free measures offered (including audits) to income qualified persons
- New utility applications for 2009-2011 have budgets 50% to 100% of current budget levels with increased savings





On the Horizon: Widen the Scope to Embrace Comprehensive Approaches

- Integrate goals for energy efficiency, solar, GHG reduction, advanced metering, demand response
- Water-energy connection (reduced water use saves pumping, treatment, heating energy)
- Green Buildings – 75%+ of economic savings come from energy features, then water; also good for indoor air quality, health, green/renewable materials, & solid waste management
- Time of sale home improvements can accelerate market adoption





JOBS in ENERGY EFFICIENCY

- HVAC
- Lighting
- Glazing
- Plumbing
- Masonry
- Roofers
- Carpentry
- Refrigeration
- Construction



- AUDITORS
- Bldg Ops/Mgmt
- Educators
- NGOs
- Trainers
- INNOVATORS
- Consultants
- Policy Makers
- MORE!!!!

Demand in existing and new EE job categories provides opportunities

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for jobs in all skill and income levels.





4. IOU residential efficiency program expenditures proposed, 2009-2011

PG&E	\$80 million + <i>unspecified share of \$650 million proposed for “cross-sectoral programs”</i>
SCE	\$342 million
SCG	\$57 million
SDG&E	\$88 million



5. Other CPUC programs

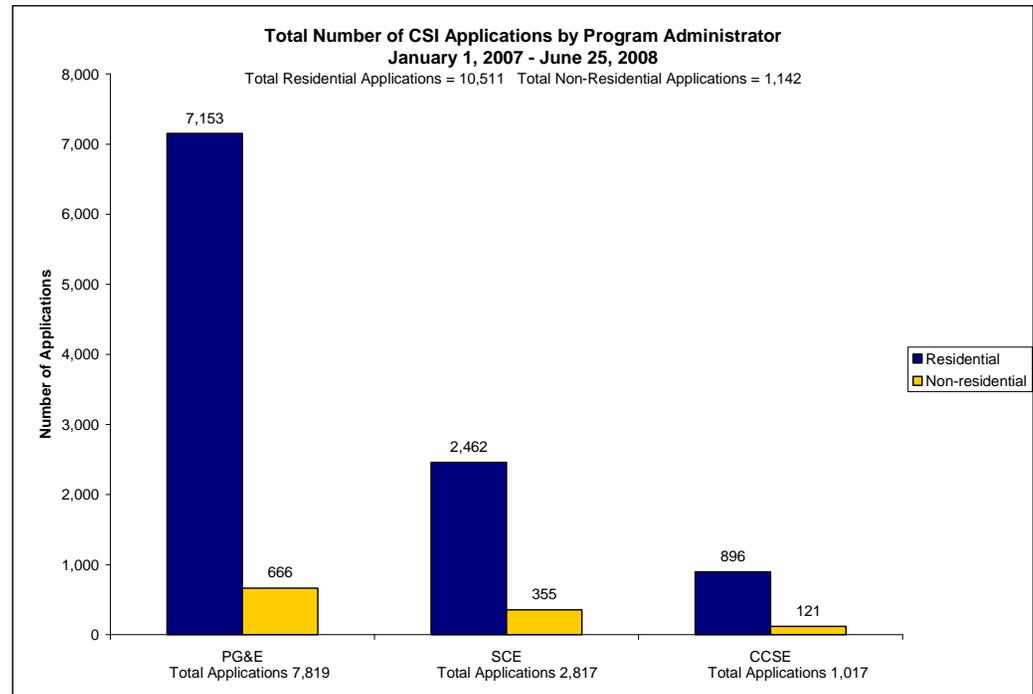
California Solar Initiative – solar incentives for dwellings in IOU service areas

The California Solar Initiative (CSI) offers:

- Financial incentive based the size and estimated performance of your solar system
- Net energy metering (which credits customers for any excess power their solar systems may produce)
- Consumer protection requirements (like mandatory 10-year warranties for all solar system equipment)

For 1/07 – 6/08:

- More than 11,000 Californians have applied for CSI incentive; and
- Over 33 MW of solar energy have been installed on California homes



5. Other CPUC programs

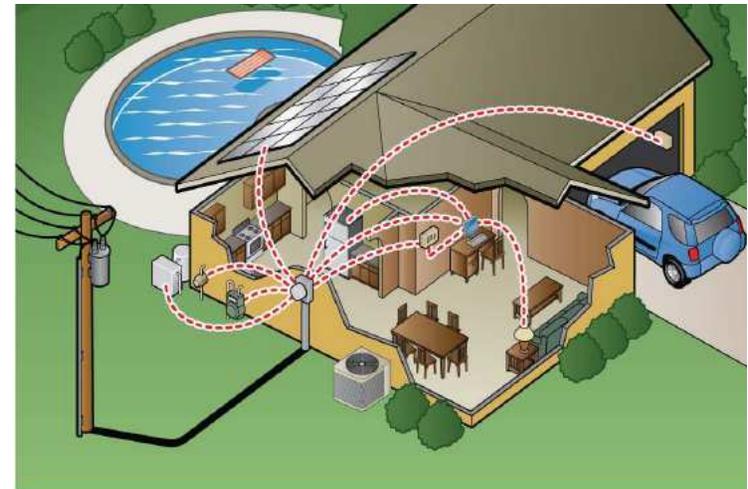
ADVANCED METERING INFRASTRUCTURE (AMI)

- The CPUC has an ambitious plan to replace conventional electric meters with Advanced Metering Infrastructure (AMI)
- “Smart meters” and new meter technology:
 - Supports goals for energy efficiency and demand response.
 - Customers gain new access to information and greater control over their energy use and bills.
 - Empowers customers to make informed, intelligent choices about their electricity use



CPUC Support for Customer-Side Enabling Technologies

- All IOUs offer financial incentives to commercial & industrial to implement “AutoDR” technologies
 - Links facility EMS with utility price or reliability signals for pre-programmed Demand Response
- IOUs offer Programmable Communicating Thermostats
- Current IOU advanced metering deployments incorporate a standard Home Area Network link
 - Connects to consumer appliance and devices in the home

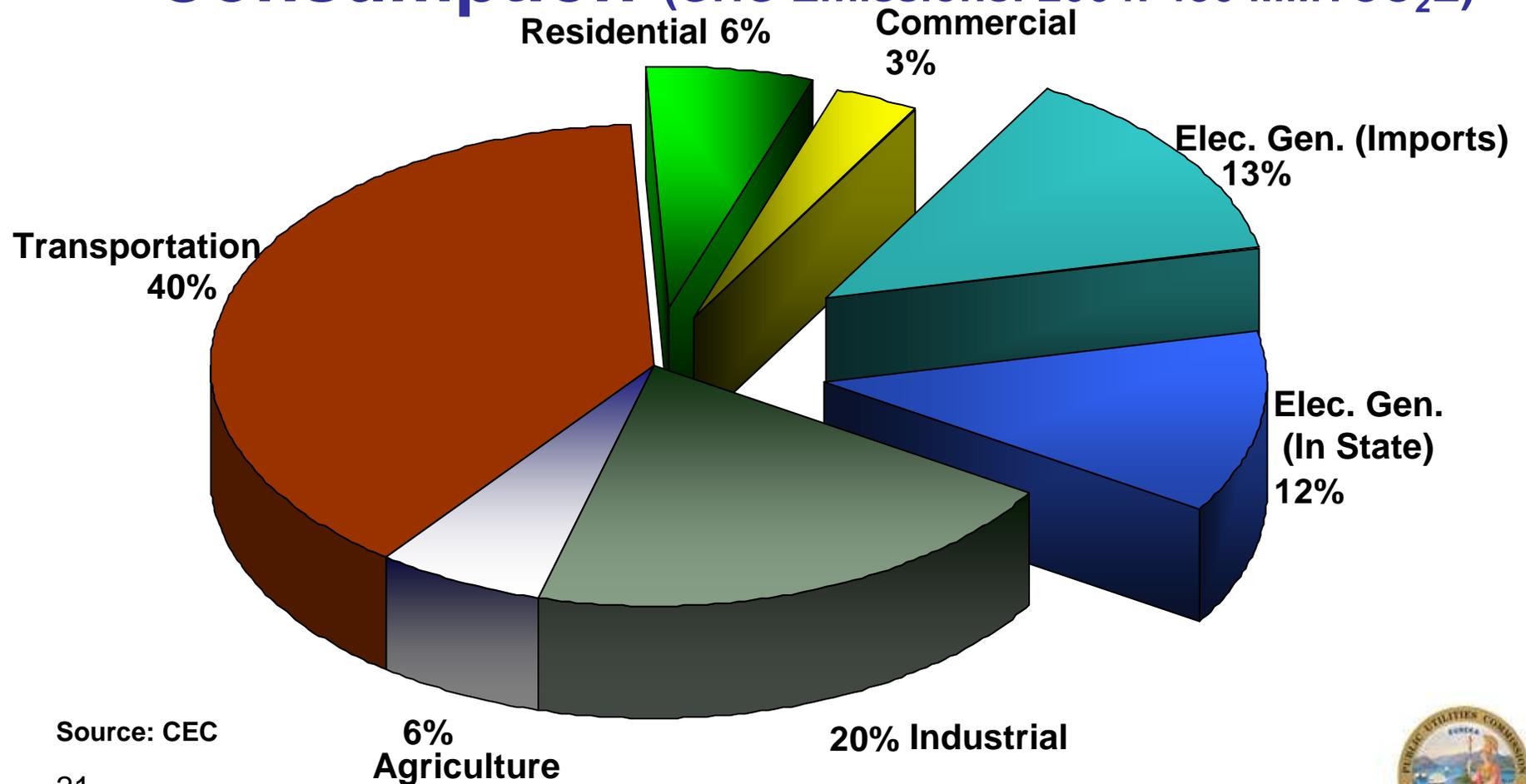


Home Area Network





6. CARB's AB 32 Draft Scoping Plan Targets Home Gas & Electricity Consumption (GHG Emissions: 2004: 480 MMTCO₂E)



Source: CEC

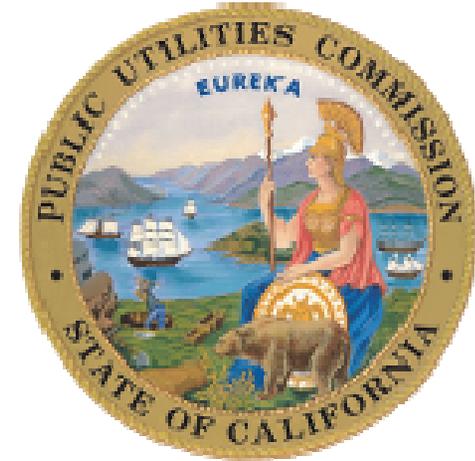
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CARB 2007



More Information



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