



CALIFORNIA PUBLIC UTILITIES COMMISSION



CPUC 2001 ENERGY EFFICIENCY AND CONSERVATION PROGRAMS

Report to the Legislature

**Prepared by the Energy Division
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ACKNOWLEDGEMENTS

This report was written by Julie A. Fitch and Tuukka D. Hess of the California Public Utilities Commission, Energy Division. Special thanks also go to Devra Bachrach and Leah Nichols, two interns from the University of California at Berkeley, Energy and Resources Group, for their contributions to an early version of this report.

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EXECUTIVE SUMMARY

2001 Background and Results

The past year has been like no other in the history of energy efficiency and conservation policy in the State of California. Not since the oil crisis of the 1970s have consumers been as conscious of their use of energy. Beginning in the summer of 2000 in San Diego with electric wholesale and retail price spikes, and continuing into the winter with record natural gas prices and the threat of electricity blackouts, consumers did everything in their power to reduce their use of energy.

While historically the California Public Utilities Commission (CPUC) has been the primary agency overseeing energy efficiency programs in the state, a number of new agencies became involved in program implementation this year through a series of emergency general fund appropriations by the legislature. Media coverage of the California energy situation also attained unprecedented dominance in 2001.

Due to the record number of agencies, dollars, and programs available to promote energy efficiency and conservation in California in 2001, it is difficult to ascribe successes to individuals programs or initiatives. Nonetheless, analysis of system-level data this past summer suggests that Californians saved between seven and ten percent of total energy usage over the previous year in each and every month. This translates into millions of kilowatt-hours saved and millions of dollars in bill savings to individual consumers in California.

What follows in this report is a summary of the contributions made by CPUC programs to alleviating the threat of rolling blackouts and high bills this past year. All energy and peak demand savings reported as a result of CPUC

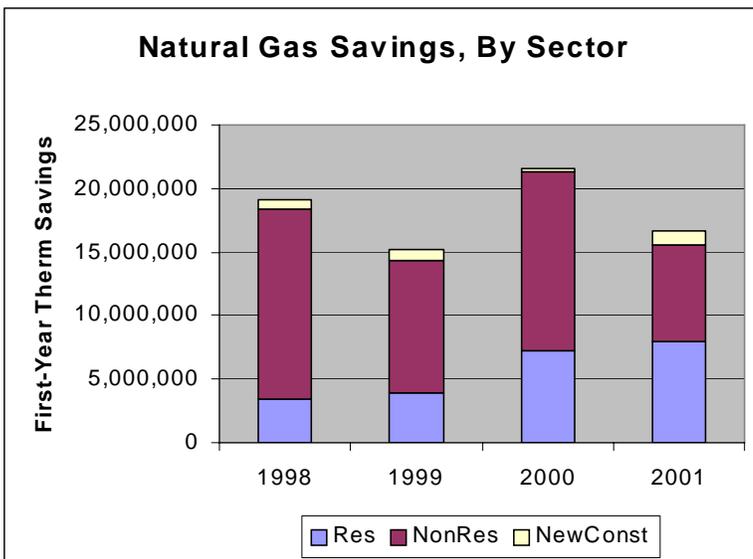
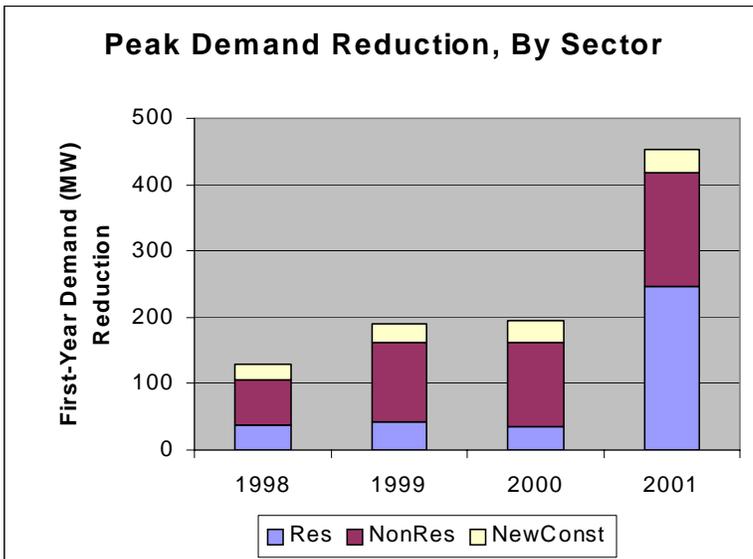
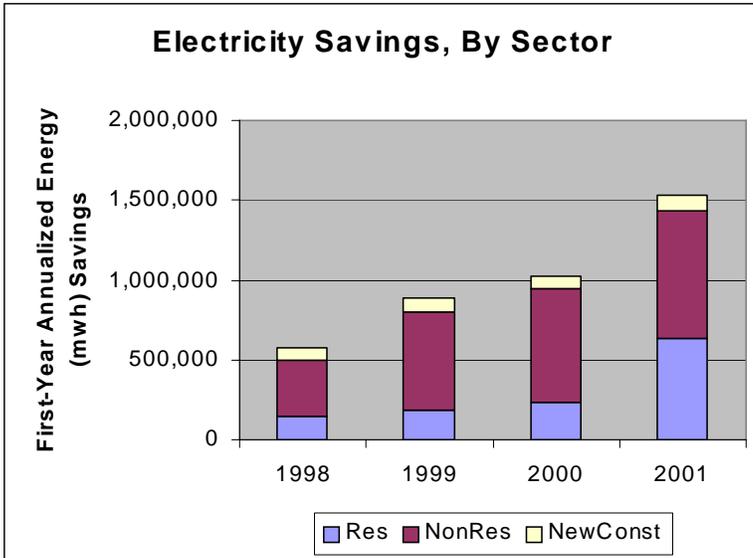
programs represent permanent savings that will persist as long as the energy-efficient equipment lasts.

Energy efficiency investments provide a mechanism to satisfy consumer energy demand in a reliable, cost-effective manner without the construction of additional costly and polluting generation capacity. Increased efficiency investments also prolong the life of California's existing transmission and distribution infrastructure.

In this report, we summarize the three types of energy efficiency programs that the CPUC oversaw in 2001, by funding source. These are:

- the **public goods charge (PGC) energy efficiency programs**, funded by electric and gas ratepayers through a surcharge on energy bills. These programs run every year (with electric funds authorized through 2011) and represent the backbone of energy efficiency programs in California
- the **Summer 2000 Energy Efficiency Initiative** (Summer Initiative) programs, created in August 2000 in response to the energy crisis and utilizing unspent PGC funds from prior years
- programs funded through **Senate Bill 5 of the first extraordinary session (SBx1 5)**, authored by Senator Sher, that allocated additional monies from the State's general fund to the CPUC for emergency energy efficiency initiatives in the summer of 2001.

Due to increased funding and emphasis on creating real and permanent energy savings, the energy efficiency programs run by the CPUC this year have been the most successful of any



since deregulation. We do not analyze the success or savings of 2001 programs run by other state agencies in this report.

Program Category	Budget (\$million)	Expenditures ¹ (as of 9/30/01)
PGC	\$288.1	\$275.0
Summer Initiative	\$72.0	\$79.1
SBX1 5	\$82.9	\$57.4
Total	\$443.0	\$411.4

The table above shows that of the funds budgeted for CPUC energy efficiency programs in 2001, 93% had already been spent or committed to particular consumers by the end of September.

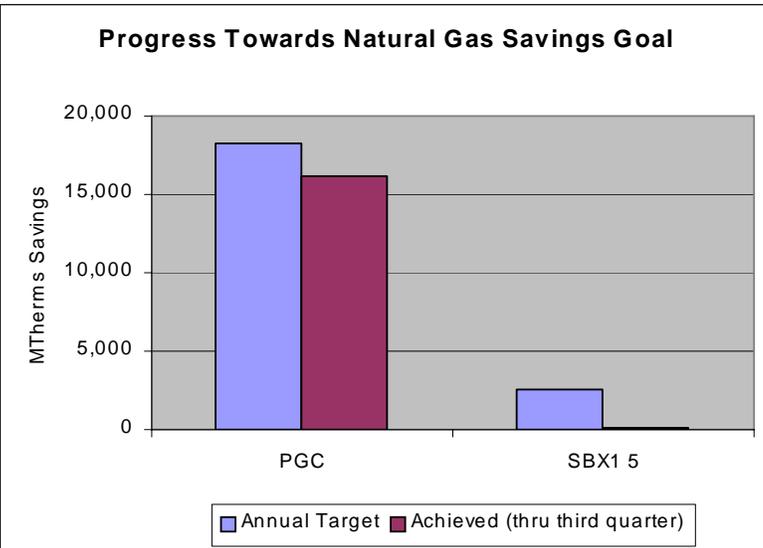
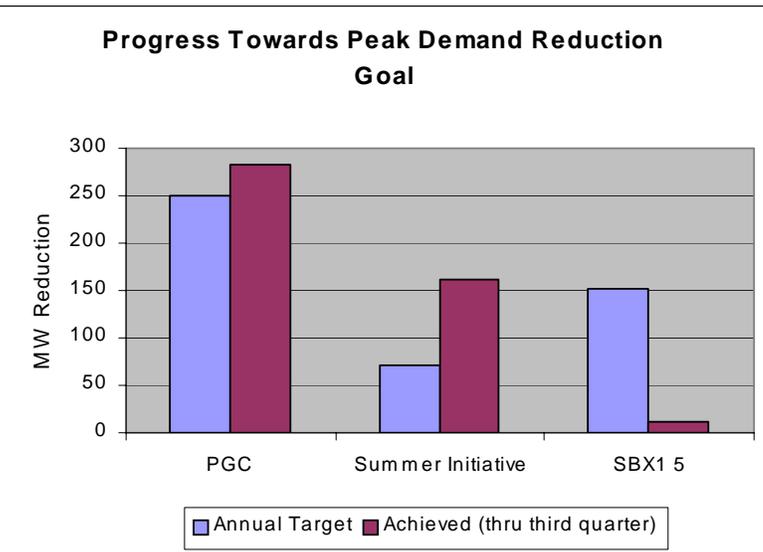
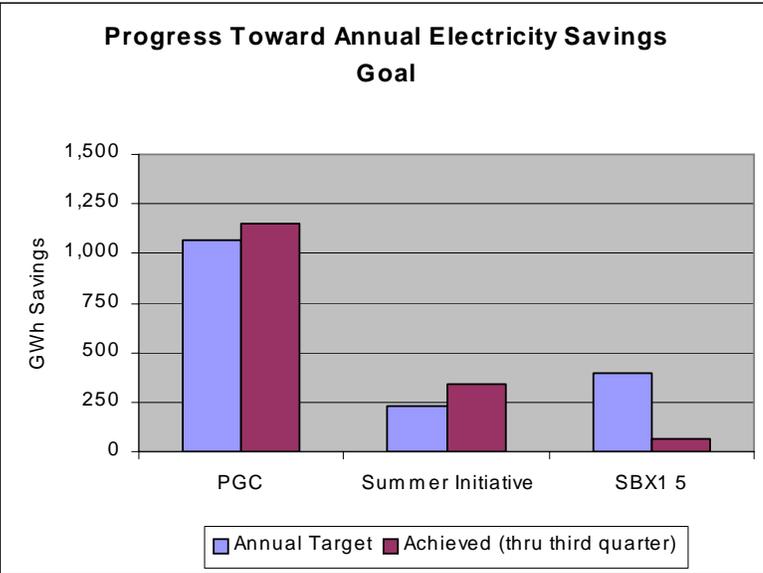
Those funds were utilized to produce energy savings results shown in the table below. The savings shown represent actual installed savings by the end of September. Programs or projects for which funds have been committed but for which installation of equipment is not yet complete are not included in the savings results.

Program Type	Elect. (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
PGC	1,151,587	281.9	16,134
Summer Initiative	339,687	162.0	448
SBX1 5	67,438	8.4	2,589
Total	1,558,712	452.4	19,171

Putting these results in context, 452 MW is equivalent to approximately nine “peaker” generating units, or slightly under 10% of the system peak demand of the California Independent System Operator. Installing that amount of peak capacity would likely cost at least \$180 million.

Electricity savings of 1,558 GWh are enough to power approximately 250,000 homes in the state

¹ Includes funds contracted and spent, as well as funds already committed to specific activities or consumers.



for one year. These energy savings will save Californians a total of about \$156 million in

energy costs this year alone. Energy savings reported above only account for first year savings. The majority of the CPUC energy efficiency programs will continue saving energy for at least ten years, fueling \$1.5 billion in investment in other areas of the State economy instead of the purchase of electricity or natural gas.

2001 Program Highlights

In this section, we highlight the seven most important program efforts during 2001. In some cases these programs were so successful as to obviate the need for further funding (such as rebates for LED traffic signals). In other cases, these programs represent creative approaches to energy efficiency that may well become the next generation of program offerings (such as the Oakland energy efficiency design assistance program or the Berkeley/San Francisco small commercial lighting pilot). These seven important efforts are summarized below.

- Compact Fluorescent Lighting.** Utility program administrators, partnering with manufacturers and retailers, have helped truly transform the market for these high-efficiency lighting technologies, such that nearly all consumers know how much those light bulbs can contribute to lowering their electricity bills.
- LED Traffic Signals.** 2001 was the year of the LED traffic light. Throughout California, these bright new LED bulbs have replaced dull, flat incandescent bulbs in intersections. These bulbs will save local governments millions of dollars annually on their electricity bills.
- Whole House Fans.** A year ago, whole house fans were boring. Today, they are

Energy Savings Results: All CPUC 2001 Energy Efficiency Programs

Program Type	Electricity (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
PGC PROGRAMS			
Residential			
Heating and Cooling	6,020	7	158
Lighting	237,611	53	0
Appliances	85,809	23	305
Retrofit & Renovation	72,439	31	6,915
Subtotal Res.	401,879	114	7,377
Nonresidential			
Large Comprehensive	298,379	55	4,300
Small Comprehensive	251,476	52	588
HVAC Turnover	39,876	11	0
Motor Turnover	5,931	1	0
Process Overhaul	5,632	1	2,673
Remodeling & Renovation	55,321	13	33
Subtotal Nonres.	656,615	133	7,595
New Construction			
Residential	20,481	15	192
Commercial	70,286	20	970
Industrial & Agricultural	2,326	0	0
Codes and Standards	0	0	0
Subtotal NC	93,093	35	1,162
PGC Total	1,151,587	282	16,134
Summer Initiative Programs			
Statewide			
Ecos: Halogen floor lamps	3,226	0	0
ARCA: Refrigerator recycling	148,175	15	0
Utilities: Pool efficiency	17,692	79	0
UC/CSU: Campus	20,224	6	0
Res-Team: Residential hard to reach	23,686	11	448

Program Type	Electricity (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
Utilities: LED traffic signals	73,263	12	0
Third party initiatives	14,579	30	0
Subtotal Statewide	300,845	154	448
Local Programs			
City of Oakland: EE design assist.	360	0	0
City of Oakland: Museum Chiller	300	1	0
SDG&E: Whole house fans	149	2	0
SDG&E: Floor lamp turn-in	281	0	0
Humboldt Creamery	417	0	0
Presidio Trust	712	0	0
COPE: Pumping efficiency	36,623	6	0
Subtotal Local	38,842	9	0
Summer Initiative Total	339,687	162	448
Senate Bill 5 Programs			
Residential Appliances	4,537	1	119
Residential Contractor	0	0	0
Residential Lighting	25,839	3	0
Residential Appliance Recycling	30,830	3	0
Small Commercial Lighting (Express Efficiency)	6,063	1	0
Small Commercial Lighting (Pilot)	169	0	0
SBX1 5 Total	67,438	8	119
GRAND TOTAL	1,558,712	452	16,701

among the most popular items in home improvement stores. They help cool homes, lowering costly air-conditioning bills.

4. **ENERGY STAR Appliances.** In 2001, appliance programs were so successful, many retailers report two- and three-fold increases in the percentages of Energy Star products they sell. *Flex Your Power* and mass media coverage helped make the Energy Star brand known to virtually every consumer in the State.
5. **Home Improvement Programs.** This year, building on synergies with appliance rebate programs and successful utility-manufacturer-distributor-retailer partnerships, home improvement programs have truly begun to motivate the do-it-yourself consumer. Unlike previous years, financial incentives were made available directly to consumers, in addition to contractors and installers.
6. **Oakland Energy Efficiency Design Assistance.** Through the Summer Initiative, Oakland is experimenting with one of the most innovative program designs in recent years. This program provides assistance to developers and designers during the building permitting process for new residential single and multi-family buildings, as well as for new commercial buildings, to help ensure opportunities for achieving energy savings are not lost.
7. **Neighborhood Approach to Small Business Lighting.** The Cities of Berkeley and San Francisco, using SBX1 5 funds, are developing novel ways to penetrate the small business market with program offerings. Historically, these businesses have been very difficult to convince to make investments in energy efficiency, but rate increases have encouraged these consumers to find ways to improve their energy efficiency.

Future Plans: 2002 and Beyond

The year 2002 begins another ten-year cycle of authorization for the electric public goods charge funds. In addition, we now have a permanent gas surcharge in place to fund gas energy efficiency programs.

In order to maximize effectiveness of expenditure of these ratepayer funds on the most effective and cost-effective programs and initiatives, the Commission has undertaken a rulemaking proceeding to examine its policies on energy efficiency investment. That proceeding, initiated in August 2001, will:

- Evaluate the success of the utilities' and Commission's ongoing energy efficiency programs
- Set forth a process for continuous improvement to the rules governing energy efficiency programs
- Address the future administrative structure for energy efficiency programs overseen by the Commission
- Select programs for operation beginning in early 2002.

On November 29, 2001, the CPUC adopted a decision that sets forth the goals, as well as detailed criteria, to be used to evaluate new program proposals expected from multiple providers of energy efficiency services. In 2002, the Commission will place special emphasis on opportunities for local entities to build infrastructure to deliver energy efficiency services in their areas.

The Commission will encourage continuation of successful approaches to energy efficiency, while providing an avenue for new infrastructures and new program ideas to be tested.

2001 IN CONTEXT

Introduction and Background

The past year has been like no other in the history of energy efficiency and conservation policy in the State of California. Not since the oil crisis of the 1970s have consumers been as conscious of their use of energy. Beginning in the summer of 2000 in San Diego with electric wholesale and retail price spikes, and continuing into the winter with record natural gas prices and the threat of electricity blackouts, consumers did everything in their power to reduce their use of energy.

Some consumer responses have been behavioral, such as turning off lights and modifying temperature settings. Other responses have been more permanent, resulting in the replacement of inefficient appliances and equipment.

While historically the California Public Utilities Commission (CPUC) has been the primary agency overseeing energy efficiency programs in the state, a number of new agencies became involved in program implementation this year through a series of emergency general fund appropriations by the legislature. Media coverage of the California energy situation also attained unprecedented dominance in 2001.

Due to the record number of agencies, dollars, and programs available to promote energy efficiency and conservation in California in 2001, it is difficult to ascribe successes to individual programs or initiatives. Nonetheless, analysis of system-level data this past summer suggests that Californians saved between seven and ten percent of total energy usage over the previous year in each and every month. This translates into millions of kilowatt-hours saved

and millions of dollars in bill savings to individual consumers in California.

What follows in this report is a summary of the contributions made by CPUC programs to alleviating the threat of rolling blackouts and high bills this past year.

This report addresses only CPUC energy efficiency programs, with energy efficiency being defined as an activity that creates a permanent reduction in energy use. All energy and peak demand savings reported as a result of CPUC programs represent permanent savings that will persist as long as the energy-efficient equipment lasts.

The CPUC also sponsors load management programs, the Governor's 20/20 program, a self-generation program, low-income energy efficiency/weatherization programs, and low-income bill payment assistance programs. Only energy efficiency programs are addressed in this report.

Energy efficiency investments provide a mechanism to satisfy consumer energy demand in a reliable, cost-effective manner without the construction of additional costly and polluting generation capacity. Increased efficiency investments also prolong the life of California's existing transmission and distribution infrastructure.

In the later sections of this report, we summarize in more detail the three types of energy efficiency programs that the CPUC oversaw in 2001, by funding source. These are:

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(authorized through 2011) and represent the backbone of energy efficiency programs in California

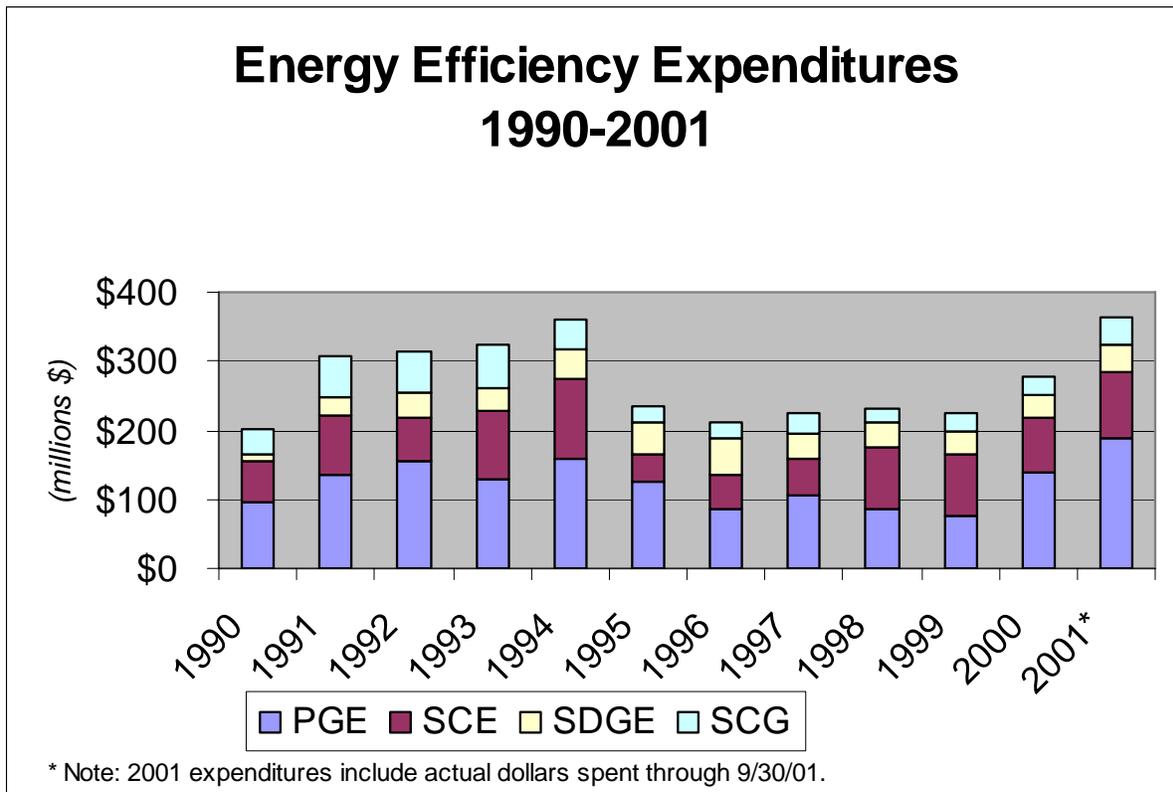
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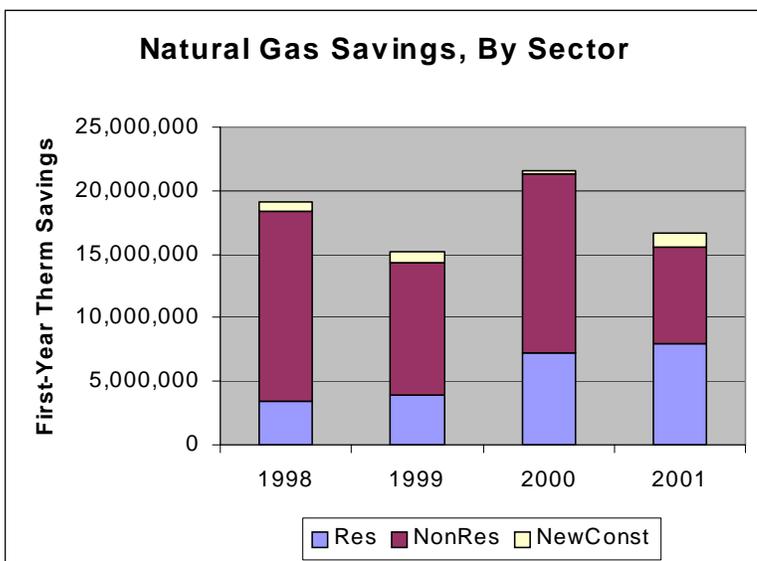
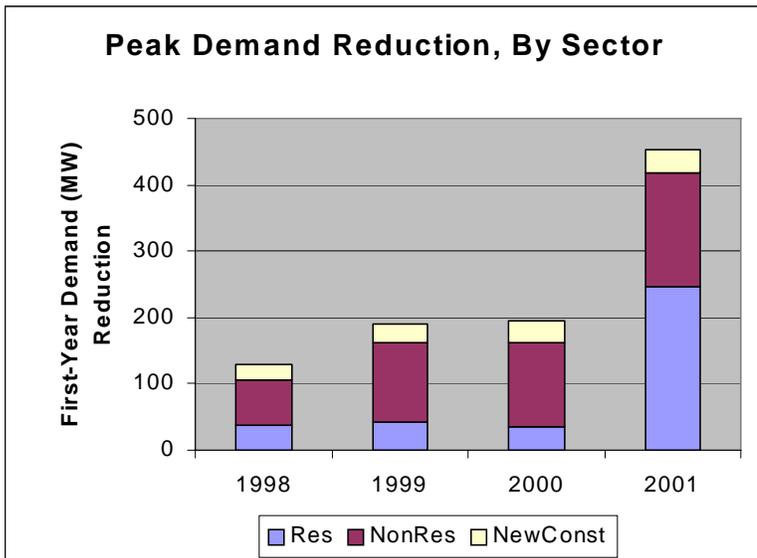
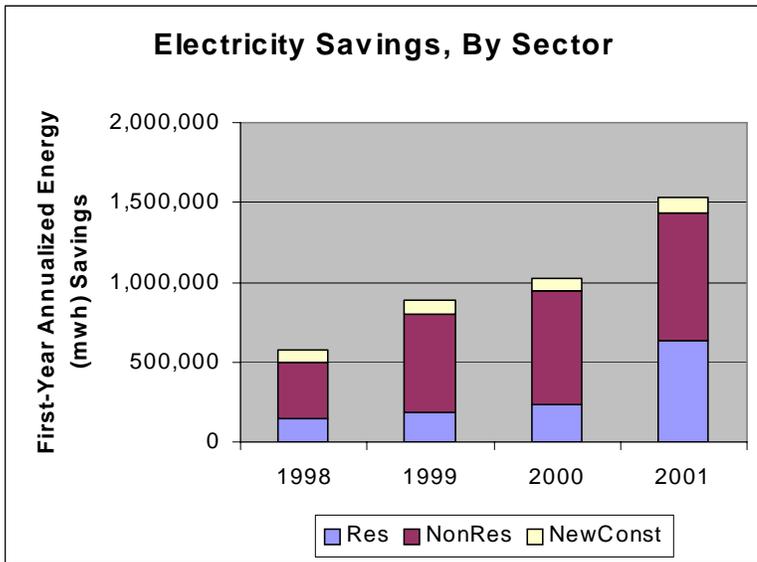
Details of these individual sets of programs are provided in subsequent sections of this report. The next section provides a broad summary of the impacts of the CPUC’s energy efficiency programs over the past decade, providing a context to within which to view individual efforts conducted in 2001.

2001 in Context

Since the 1970s, the CPUC has overseen the funding and design of energy efficiency programs in California. These programs promote cost-effective, environmentally beneficial investments in energy savings products and technologies.

California’s energy efficiency programs have historically encompassed some of the largest and most effective programs in the United States, providing a model for utility programs across the country. According to U.S. Department of Energy, Energy Information Administration, data, California ranks 49th of 50 states in per capita energy consumption. A good portion of the credit for that statistic goes to the CPUC’s long-term commitment to maintaining energy efficiency programs, as well as to the State’s strong codes and standards that have been steadily improved over the years.





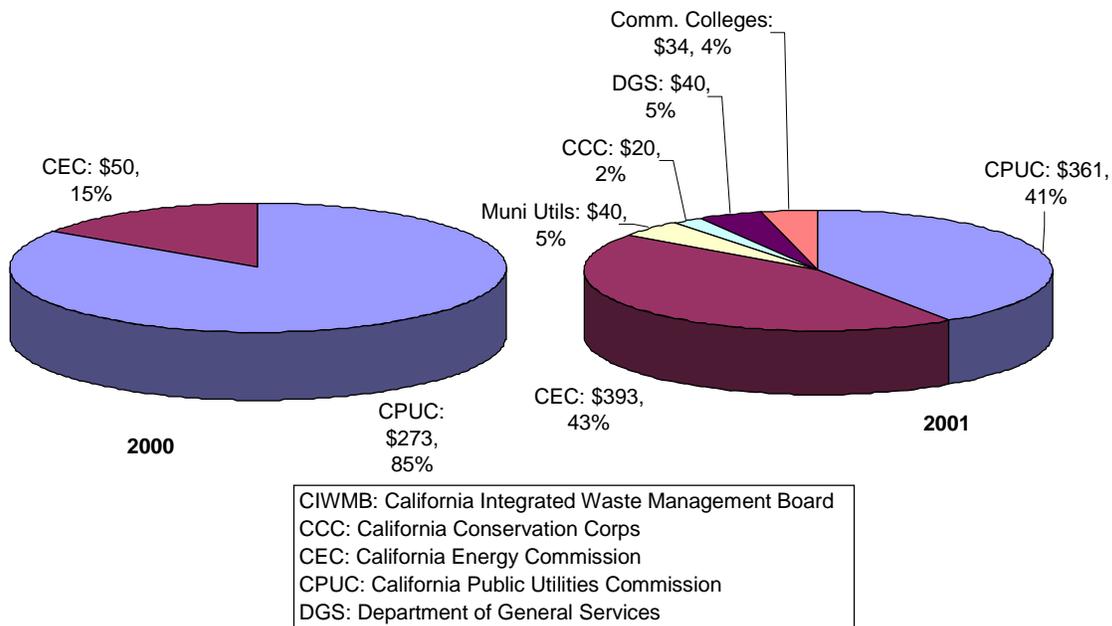
The past decade has contained a number of policy shifts by previous Commissions and other state actors on energy efficiency policy. During the early 1990s, energy efficiency programs were in full swing, with budgets paid for out of utility distribution rates totaling almost \$400 million per year in 1994. In 1995, growing uncertainty about deregulation planning produced lower energy efficiency spending until 1996, when the electric public purpose energy efficiency funding was set by Assembly Bill 1890, which also deregulated the electric industry.

Initially the electric PGC was established for four years (1998 through 2001). Because of uncertainty about continued funding beyond 2001, in 1998 the Commission moved toward a policy that emphasized removing barriers to energy efficiency in the market so that private sector entities would be able to provide energy efficiency service once public monies were no longer available to fund activities.

During this period, the Commission also established the California Board for Energy Efficiency (CBEE) which provided the Commission with policy advisory services. Between 1998 and 2000, short-term energy savings were de-emphasized relative to less quantitative goals of improving overall infrastructure and the ability of private sector entities to deliver energy efficiency. The CBEE also placed emphasis on utilities outsourcing as much delivery of energy efficiency programs as possible to the private sector, since funding would not be available beyond 2001.

In early 2000, primarily for legal reasons, the CBEE was disbanded. Then, in late 2000, the legislature extended the electric public goods charge for an additional ten years, from 2002 through 2011. This action, in combination with the escalation in wholesale electricity prices

**Portion of Energy Efficiency Funds
by State Agency in 2000 and 2001 (\$ in millions)**



beginning in late 2000, caused the Commission to reemphasize shorter-term energy and peak demand savings for its energy efficiency programs.

In late 2000, the legislature appropriated \$50 million in general fund expenditures to the California Energy Commission (CEC) to run additional programs beyond the CPUC's ongoing programs. In April 2001, the Governor signed SBx1 5, which appropriated \$242 to the CPUC to supplement existing program efforts, while appropriating more than \$400 million in new funds to other state agencies, including the CEC, the State and Consumer Services Agency (SCSA), and several other agencies to initiate new emergency programs to minimize peak demand in the Summer of 2001.

Despite all of the new funding appropriated in 2001, the CPUC programs and funding represent the largest source of permanent energy

efficiency improvement of any agency's. Many of the programs operated by other agencies this year emphasized either behavioral modification by consumers (such as those suggested by the *Flex Your Power* advertisements), or load shifting or demand-responsive activities, which also produce only temporary reductions in energy demand. The CPUC still maintains its focus on producing permanent energy and demand reduction, with particular emphasis on smaller consumers, including residential and small businesses.

The other new programs authorized and funded by the Legislature in 2001 that are comparable to the CPUC programs on an equal basis include the CEC initiatives given in the table below.

CEC Program	Funding (\$ mil.)	Peak Demand Savings (MW)
Innovative	\$47.0	33
Cool Roofs	\$23.9	1
Municipal Utilities	\$40.0	25
Total	\$120.9	59

2001 ENERGY EFFICIENCY PROGRAMS

Public-Goods-Charge-Funded Programs

How They Work

Under AB1890, and reconfirmed in AB995, the CPUC's energy efficiency programs are funded by the electric Public Goods Charge (PGC)² and natural gas surcharge³ applied to each customer's bill within each investor-owned utility's service territory. These surcharges comprise approximately 1.0% and 0.7%, respectively, of each customer's bill on a monthly basis.

The CPUC oversees the allocation of the electric PGC and gas surcharge funds collected from ratepayers of each of the four major utility service territories in California: Pacific Gas & Electric (PG&E), Southern California Edison (SCE), Southern California Gas (SCG) and San Diego Gas & Electric (SDG&E). The CPUC does not oversee programs operated by municipal utilities in California.

Each year, the CPUC solicits and approves plans for energy efficiency programs, which are then carried out within the service territories from which the ratepayer funds originate.

² The PGC includes electric public purpose funds provided for specifically in AB1890. Electricity energy efficiency funds are one component of the PGC (others component are low-income, renewables, and research and development, not addressed in this report).

³ The gas surcharge was established by AB1002 (Wright) in September 2000. Gas surcharge funds are also included in the PGC.

Traditionally, the major utilities have acted as the sole program administrators for these programs. This was the case for PGC programs in 2001 as well.

Energy efficiency programs are designed to provide a fair distribution of funds among residential and non-residential customers, on the basis of how much money was contributed to the overall fund by each class of ratepayers.

As distinct from many other agencies, the CPUC places particular emphasis on providing energy efficiency options to residential and small business consumers.

Program Descriptions

The CPUC traditionally selects from and approves utility proposals appropriate to the energy efficiency needs of California's consumers. The utilities then implement a set of Commission-ordered programs to decrease energy use in the following categories:

Lighting & Appliances

The lighting and appliance programs are designed to (1) improve consumer awareness of the energy and non-energy benefits of efficient lighting and appliances, (2) increase the availability and demand for these products, and (3) promote emerging technologies. Specific techniques

applied in a variety of different programs include:

- Promoting ENERGY-STAR^{®4} products,
- Offering direct rebates to consumers of energy efficient products,
- Educating consumers, manufacturers and distributors of energy efficient products using web-sites, newsletters, educational workshops, and on site auditing,
- Targeting multi-family units for volume purchasing of these products,
- Offering financial incentives to manufacturers to increase the supply and lower the price of these products,
- Providing equipment replacement subsidies or rebates and,
- Showcasing new technologies at important consumer locations.

During the summer of 2001, over 2.5 million compact fluorescent lamps were rebated by the four investor-owned utilities. This represents at least a five-fold increase over prior years.

Heating, Ventilation, and Air Conditioning (HVAC) Systems

Programs focused on HVAC systems seek to: (1) encourage the replacement of inefficient systems with efficient ones, (2) increase consumer recognition of ENERGY-STAR[®] products, (3) increase training of trade professionals in efficient HVAC

⁴ ENERGY-STAR[®] is a product label created by the EPA and DOE to help customers identify energy efficient products.

systems, (4) encourage design using the “whole-systems” approach, and (5) support the improvement of efficiency standards. These programs accomplish these goals by:

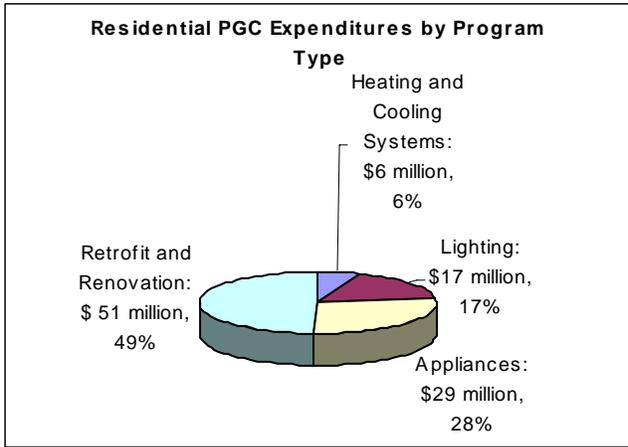
- Educating consumers through bill inserts and call centers,
- Providing training and technical assistance to HVAC contractors and distributors,
- Providing financial incentives to distributors and installers for stocking and installing efficient units,
- Managing Standard Performance Contract (SPC) programs, described below, for commercial customers, and
- Providing financing to residential customers for energy efficient HVAC projects.

In 2001, approximately 20,000 HVAC systems received financial assistance from CPUC PGC-funded programs.

Motors

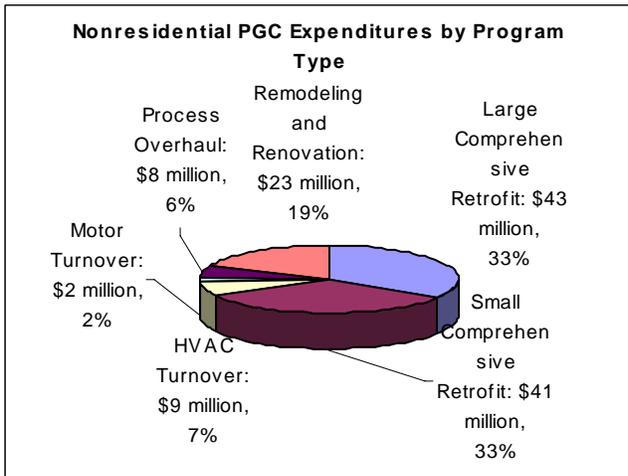
This set of programs endeavors to: (1) promote optimal motor system design and sizing, (2) facilitate consumer purchase of efficient motors and (3) increase the understanding of motor lifecycle costs. These programs accomplish these goals by:

- Offering training and technical assistance to encourage optimal system design and lifecycle cost analysis,
- Supplying on-site motor efficiency tests,



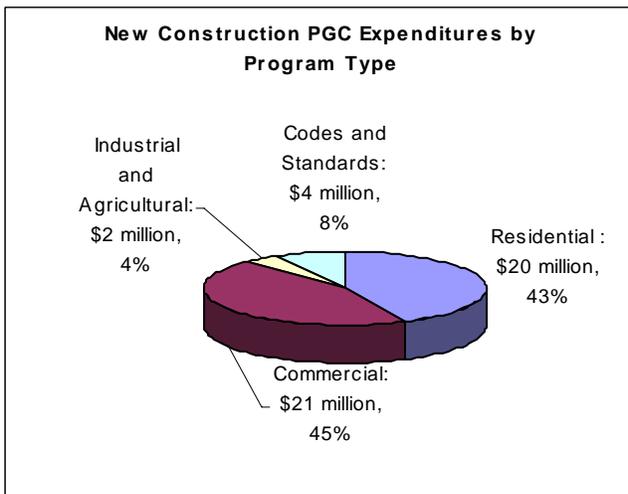
In addition to the above-mentioned product-oriented programs, the utilities also administer programs that target customers when investment decisions are made – during retrofits and renovations and during the construction of new buildings and homes.

Retrofits and Renovations



These programs are designed to: (1) increase energy efficient investments at the time of retrofit, renovation, or sale of a home, (2) link interested customers with providers of energy retrofit services and (3) increase the training of professionals who perform energy efficient retrofits.

Many different market participants can increase the likelihood of an energy efficiency retrofit. These programs not only target residential and commercial customers who either own or are buying a building (including multi-family houses, large energy customers, and governments) but also trade professionals (including engineers, designers, and contractors), real estate agents, mortgage professionals, and home inspectors.



The retrofit and renovation programs include:

- Managing SPC programs, and
- Providing financial incentives to motor distributors to stock and sell greater numbers of high-efficiency motors.
- Providing information on retrofit providers and ENERGY-STAR® windows, equipment, appliances, etc. to customers planning to buy, sell, or renovate a building
- Making energy audits available to customers to help them determine their efficiency retrofit needs.

- Providing training and technical assistance for trade professionals through Energy Center programs, libraries, and trade shows.
- Providing financing to residential customers for energy efficient projects.

New Construction

These programs seek to (1) increase the number of energy efficient new homes and buildings being built, (2) promote the ENERGY-STAR® New Homes brand, (3) raise awareness of the existence and benefits of energy efficient home mortgages, (4) promote energy efficiency in the professions of architecture and engineering, and (5) promote construction exceeding Title 24 building standards.

Market participants include consumers looking to buy new homes and decision makers in new construction projects; builders, contractors, and manufacturers; real estate agents and mortgage professionals; and architects, engineers and students.

Programs include:

- Targeting information to customers to promote energy efficient homes and mortgages.
- Recognizing new developments that include exemplary energy efficient homes.
- Offering training, design assistance, and information to trade professionals.
- Offering training to sales agents to enable them to more effectively sell efficiency upgrades to homebuyers.
- Holding a “green” building design competition for students to encourage formal education in energy efficiency.
- Offering financial incentives to builders of ENERGY-STAR® homes and to the owners, builders, or developers of efficient commercial buildings.
- Working with state and local governments to support and educate those who implement energy codes and standards.

PGC Program	Expenditures (\$ millions)*
Residential Programs	
Heating and Cooling Systems	\$5.8
Residential Lighting	\$17.2
Residential Appliances	\$29.3
Residential Retrofit and Renovation	\$51.2
Residential Subtotal	\$103.6
Nonresidential Programs	
Large Nonresidential Comprehensive Retrofit	\$42.7
Small Nonresidential Comprehensive Retrofit	\$41.1
Nonresidential HVAC Turnover	\$8.7
Nonresidential Motor Turnover	\$1.9
Nonresidential Process Overhaul	\$7.5
Nonresidential Remodeling and Renovation	\$23.2
Nonresidential Subtotal	\$125.2
New Construction Programs	
Residential New Construction	\$19.9
Commercial New Construction	\$20.8
Industrial and Agricultural New Construction	\$1.8
Codes and Standards	\$3.7
New Construction Subtotal	\$46.2
PGC Total	\$275.0

* Actual expenditures as of 9/30/01.

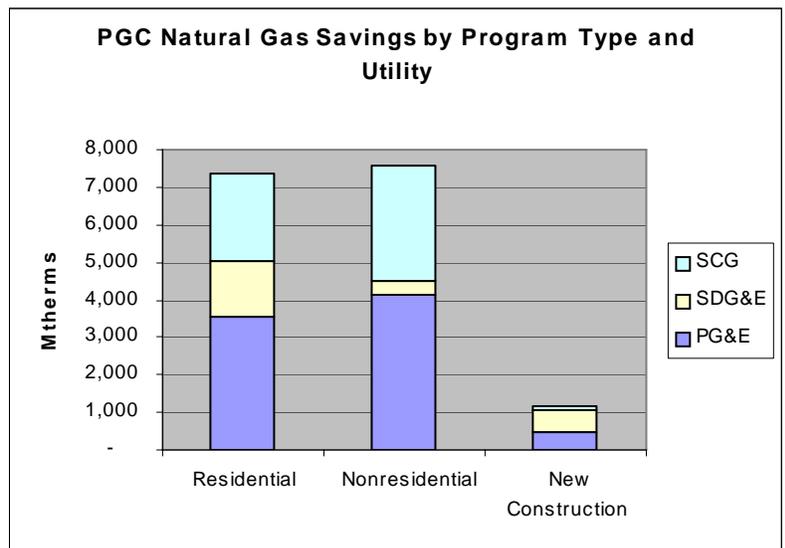
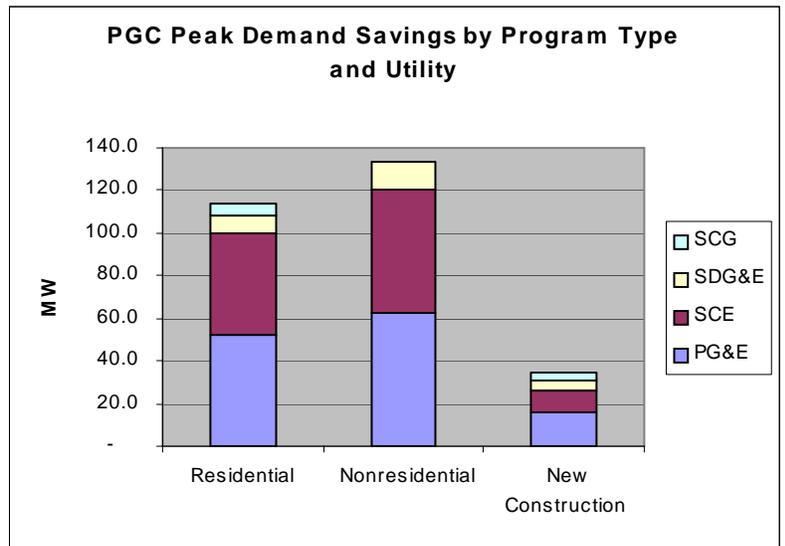
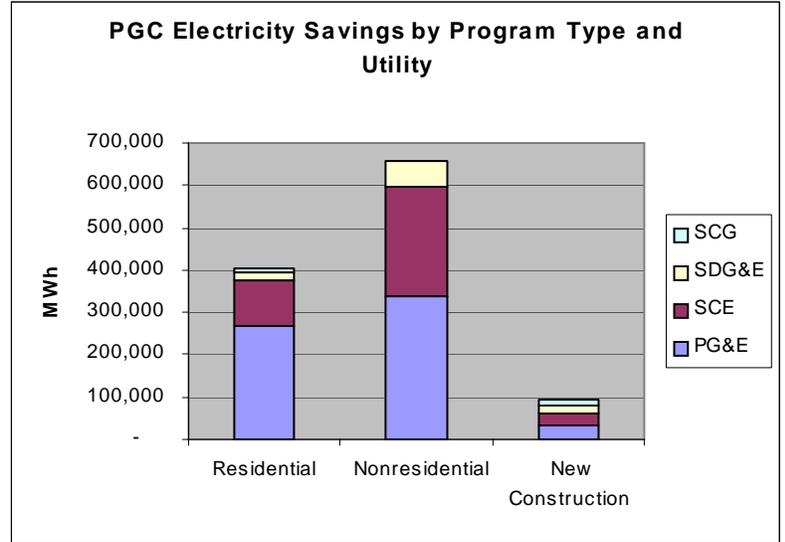
Statewide Programs

Some of the previously outlined programs are joint efforts between California's utility companies. The statewide coordination of these programs, outlined below, ensures a consistent pursuit of energy efficiency throughout the state.

Education Services

Several programs focus on educating consumers and distributors about the benefits of, and routes to achieve, energy efficiency.

- **Energy Guides (Residential and Business):** Provide information to consumers to help them make their homes or businesses more energy efficient.
- **Energy Centers:** Regional facilities that provide customers with information about and access to the latest energy efficient tools, technologies and programs.
- **Emerging Technologies Program:** Showcases new technologies by conducting demonstrations. Also provides documentation of the performance and maintenance requirements of new technologies.
- **Codes and Standards Support Effort (Local Government Initiative):** Facilitates the development of energy codes and standards by providing education, training, and support to state and local governments.



Lighting & Appliance Programs

The following programs include some of the most successful program efforts of 2001. They promote ENERGY-STAR® and other energy efficient products by offering incentives and education to market participants.

- **Upstream Lighting Program:** Encourages the manufacture and distribution of efficient lighting products.
- **Upstream Appliance Program:** Promotes improved distribution, stocking, and product availability.
- **Downstream Appliance Program:** Offers direct rebates and provides education to consumers.

In addition to providing rebates for over 100,000 new appliances in 2001, PGC funding this year also provided a vehicle for the closest coordination ever between energy efficiency programs and retailers. The *Flex Your Power* campaign, utilizing PGC funds, facilitated the interaction among rebate programs and a number of major retailers in the State.

Comprehensive Energy Management

CPUC programs also provide financial incentives to customers to encourage comprehensive energy management.

- **Standard Performance Contract (SPC) Program:** Offers incentive payments to commercial consumers or energy service providers for projects delivering verified energy savings.
- **Residential Contractor Program:** Encourages residential customers

to work directly with contractors to perform efficiency upgrades.

- **Express Efficiency Program:** Provides rebates for energy efficient technologies to small and medium sized business customers. This program maintains statewide consistency for product requirements and rebate levels.

Construction Services

These programs offer tools and incentives to contractors to facilitate the inclusion of energy efficiency in new construction and retrofit projects.

- **Statewide Builder Resource Guide:** A source of information to encourage energy efficient design of new buildings.
- **Savings by Design:** Provides design assistance, tools, training and financial incentives to promote energy efficient design of new commercial buildings.
- **Energy Design Resources:** Provides design tools and information resources that promote the construction of high-performance buildings. This program also facilitates the transfer of new technologies and gives recognition to exemplary projects.
- **California Home Energy Efficiency Rating System (CHEERS):** A non-profit corporation committed to developing, implementing, and managing a market driven residential Home Energy Rating System (HERS) for new and existing homes.

The Summer Initiative

In August 2000, the Commission allocated \$72 million in unspent energy efficiency funding from prior years (1998 and 1999) to seek new and innovative ideas from utilities and other parties to save energy and peak demand by the Summer of 2001.

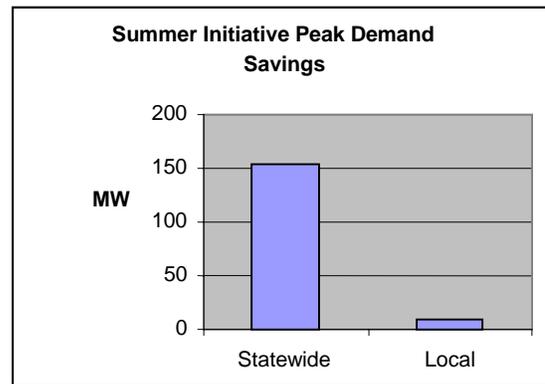
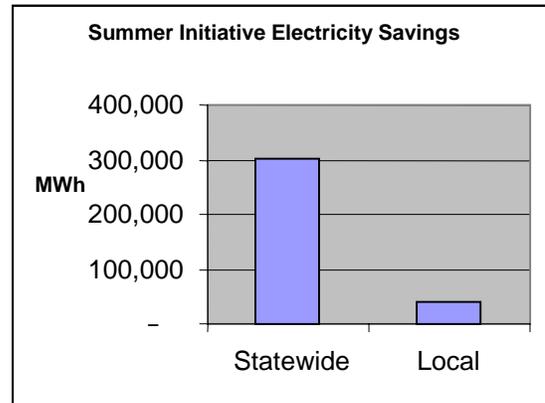
This Summer Initiative process was begun to help focus attention on a few targeted activities designed to emphasize reduction in peak demand during this critical period. Seven new statewide programs and eight projects in single locations were funded through this mechanism. The Summer Initiative programs were implemented in parallel to the utilities' ongoing electric PGC and gas surcharge programs described above.

Summer Initiative programs were required to:

- Provide verifiable demand-side electric energy efficiency or peak savings
- Be cost-effective.
- Address market failures.
- Provide benefits by the end of 2001.

Based on these criteria, the Commission chose to fund the programs described below out of a total or more than 35 program proposals received from approximately 25 different entities.

As of September 30, 2001, the Commission's Summer Initiative programs have saved 339 GWh of electricity, 162 MW of peak demand, and 448 million therms of natural gas.



Statewide programs

Ecos Consulting: Halogen Torchiere floor lamp replacement in institutional buildings

This program is designed to replace inefficient and dangerous halogen floor lamps with compact fluorescent lamp models, especially in institutional settings such as office buildings, nursing homes, and college dormitories.

Appliance Recycling Centers of America: Residential refrigerator recycling

This program targets residential consumers with more than one working refrigerator or freezer. Participants receive an incentive for relinquishing the appliance, and ARCA retires the units and recycles

components in an environmentally-friendly manner.

ensure the largest amount of energy savings.

Statewide Program	Expenditures (\$ thousands)*
Ecos Consulting: Halogen Torchiere floor lamp replacement	\$850
ARCA: Refrigerator recycling	\$10,165
Utilities: Pool Efficiency Programs	\$8,012
UC/CSU: Campus energy efficiency	\$8,033
Res-Team: Residential Hard to Reach	\$13,961
Utilities: LED Traffic Signals	\$33,824
Utilities: Third party initiatives	\$11,064
Statewide Total	\$73,379

* Expenditures as of 9/30/01.

Utilities: Pool Efficiency Programs

This program incorporates pool pump efficiency and time-of-day controls to ensure that pumps are not operating during peak hours. Efficient pumps provide long-term energy savings while timers help alleviate peak demand. This program contributed a great deal on its own to the reported peak demand reductions in the residential sector in 2001, due to the utilities' emphasis on installing pool pump timers, which emphasizes peak demand savings relative to annual electricity savings.

University of California/California State University: Campus energy efficiency

This program funds cost-effective energy efficiency projects at campuses across the entire State. Motor replacement and cooling projects were prioritized over lighting projects, to

Utilities and Res-Team: Residential Hard To Reach program

This program targets multi-family residential buildings and complexes, with a focus on providing comprehensive energy efficiency services, including lighting, water heating, HVAC, building shell and appliances. The program is implemented by the four utilities through standard offers to contractors and energy service companies for particular activities.

Statewide Program	Energy Savings (MWh)*	Demand Savings (MW)*
Ecos Consulting: Halogen Torchiere floor lamp replacement	3,226	0
ARCA: Refrigerator recycling	148,175	15
Utilities: Pool Efficiency Programs	17,692	79
UC/CSU: Campus energy efficiency	20,224	6
Res-Team: Residential Hard to Reach	23,686	11
Utilities: LED Traffic Signals	73,263	12
Utilities: Third party initiatives	14,579	30
Statewide Total	300,846	153

* Includes only savings realized as a result of actual installations by 9/30/01.

Utilities and Cities: Light Emitting Diode traffic light rebate program

This program encourages retrofit of traffic lights from traditional incandescent bulbs to LED lamps. This is a simple procedure that provides

reliable energy savings of up to 85% over traditional incandescent bulbs. Incentives were provided to cities on a statewide basis and savings were achieved by the summer of 2001. The CEC also operated a set of similar programs to offer rebates to cities with municipal utilities, as well as to offer low-interest loans for the portion of LED light replacement costs not covered by rebates.

Utilities: Third party targeted solicitation for demand reduction

In this program, utilities issued solicitations for innovative peak demand reduction opportunities from third party vendors.

Local programs

Local Program	Expenditures (\$ thousands)*
City of Oakland: EE Design Assistance	\$328
City of Oakland: Museum Chiller	\$296
SDG&E: Whole House Fans	\$105
SDG&E: floor lamp turn-in	\$50
Humboldt Creamery project	\$104
Presidio Trust efficiency measures	\$505
COPE pumping efficiency	\$4,281
Local Total	\$5,669

* Expenditures as of 9/30/01.

City of Oakland: Museum Chiller Replacement

This is a project to replace the cooling system at the Oakland Museum of California with an energy-efficient system.

SDG&E: Whole house fans

This program informs consumers about installation and operation of whole house fans, while providing financial incentives to consumers who choose to install them. A typical whole house fan consumes only 10% of the energy of a typical air conditioner.

SDG&E: Halogen torchiere turn-in

SDG&E operated several “turn-in” events to encourage lower-income customers to replace their halogen lamps with Energy Star models. Senior citizens and the working poor that fall outside of standard low-income assistance programs were targeted.

Humboldt Creamery: Various energy efficiency measures

This was a project to install efficient water pumps and replace pond effluent aeration devices at this business, improving the efficiency of their processes.

Presidio Trust: Various energy efficiency measures

This project installs a range of measures from lighting to energy management systems. Motor and cooling system upgrades were given the highest priority in an effort to target peak savings benefits.

California Oil Producers Electric Cooperative (COPE): Pumping efficiency measures

This program focuses on improving pumping systems and equipment using tested technologies in small and medium oil producers’ facilities. The program encouraged changing control systems, replacing or modifying pump motors, installing variable frequency

drives, and optimizing various oil pumping systems.

Local Program	Energy Savings (MWh)*	Demand Savings (MW)*
City of Oakland: EE Design Assistance	360	0
City of Oakland: Museum Chiller	300	1
SDG&E Whole House Fans	149	2
SDG&E floor lamp turn-in	281	0
Humboldt Creamery project	417	0
Presidio Trust efficiency measures	712	0
COPE pumping efficiency	36,623	6
Local Total	38,841	9

* Includes only savings realized as a result of actual installations by 9/30/01.

SBX1 5 Programs

Senate Bill 5 of the first extraordinary legislative session (SBX1 5), signed by the Governor on April 11, 2001, appropriated \$97 million to the CPUC for energy efficiency programs in the following categories:

- \$25 million⁵ to encourage the purchase of energy efficiency equipment, and retirement of inefficient appliances, and improvements in the efficiency of high-efficiency HVAC equipment, insulation, or other efficiency measures.
- \$60 million to provide incentives to encourage the replacement of low-efficiency lighting systems with high efficiency lighting.
- \$2.7 million⁶ for high-efficiency and ultra-low polluting pump and motor retrofits for oil and/or gas producers and pipelines.

The Commission was also given flexibility to shift funds among program areas in the legislation to the areas most likely to result in energy savings. The Commission allocated these funds primarily to supplement budgets for existing utility programs, though a few additional pilot and non-utility programs were also created or

⁵ The actual appropriation for this line item in the legislation was \$50 million for both low- and moderate-income consumers. The Commission earmarked the remaining \$25 million for use in existing low-income programs, leaving \$25 million for moderate-income residential consumers.

⁶ The original appropriation for this line item was \$12 million, but \$9.3 million was later eliminated by the Governor's plan for reduction in spending, published in November 2001.

supplemented. These programs are described in more detail below.

As of September 30, 2001, SBX1 5 programs have saved 67 GWh of electricity, 9 MW of peak demand, and 119 million therms of natural gas. The programs are on target to save a total of 394 GWh, 152 MW, and 2,589 million therms by the summer of 2002.

Utility Programs

Residential Appliance Programs

These programs focus on providing rebates to consumers for purchase of Energy Star appliances including clothes washers, dishwashers, room air conditioners, evaporative coolers and refrigerators.

Residential Contractor Program

This program provides incentives to contractors or homeowners for the following activities in single- and multi-family residential homes:

- Installation of low-flow showerheads
- Tuning up air conditioning and furnaces
- Duct testing and sealing
- Installing insulation
- Replacing windows
- Installing programmable thermostats
- Installing Energy Star appliances

Residential Lighting Rebates

This program offers both upstream and downstream incentives for high-

efficiency lighting, including CFLs, torchieres, and indoor and outdoor fixtures.

Express Efficiency Lighting (for small and medium commercial customers)

This program provides rebates to small and medium commercial customers for installing CFLs, hardwired fluorescent lamps, exit signs, and other high-efficiency lighting measures.

New Programs for Small and Multi-Jurisdictional Utilities

The Commission chose to make funds from SBX1 5 available to small and multi-jurisdictional utilities under its jurisdiction, since taxpayers in those territories also contributed funds. Ratepayers in those territories do not normally contribute to PGC funds. Because most of these utilities did not have existing programs and needed to create new infrastructure, their programs have started later and will create energy savings in time for Summer 2002.

Southern California Water Company, Sierra Pacific Power Company, and Southwest Gas Company will run several residential and non-residential programs. Included in their program plans are residential appliance rebates, geo-thermal heat pump assistance, weatherization measure incentives, residential lighting measure rebates, and non-residential lighting rebates.

Non-Utility Programs

In addition to augmenting existing utility budgets for ongoing programs, the Commission also authorized expenditures on two major non-utility programs described below.

Residential Appliance Recycling

This program, offered by the Appliance Recycling Centers of America in SDG&E, PG&E, and SCE territory in the State, offers consumers an incentive for pickup and environmentally-friendly recycling of replaced or second refrigerators, freezers, and room air-conditioners. Additional funding from SBx1 5 allowed this program to be offered in the Central Valley region, in addition to augmenting existing efforts in the Bay Area and all of SCE and SDG&E territory.

Small Business High Efficiency Lighting Pilot Program

This program represents a new effort by the Commission to test an innovative approach to offering small business lighting programs. The Commission contracted with the Cities of San Francisco and Berkeley to target restaurants, small retail and convenience stores, and small office buildings using a neighborhood-based approach to recruiting program participants. If successful, this approach may be used in many other cities in the State in the future.

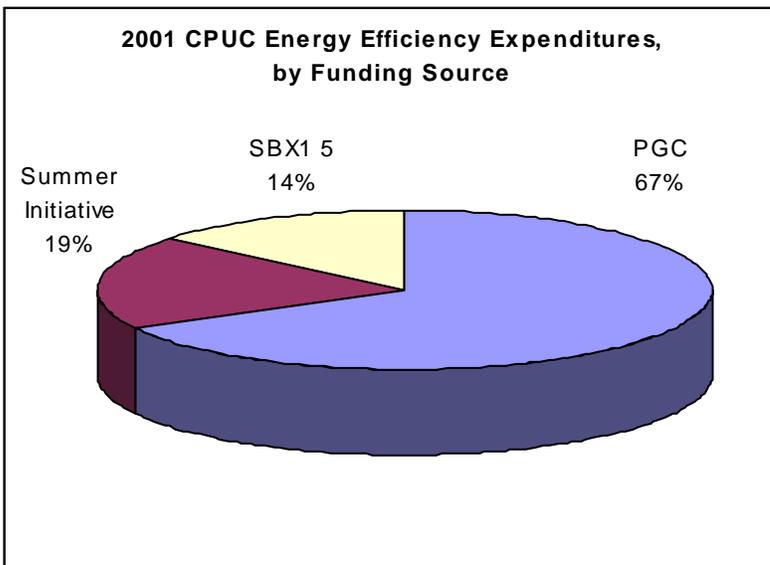
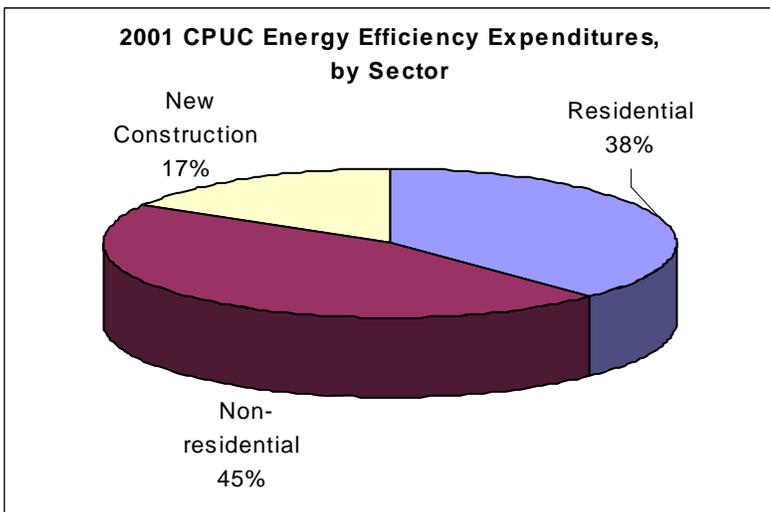
Program	Budget (\$ 000)	Expenditures⁷ (as of 9/30/01)
Residential Appliance Programs	\$25,300	\$12,400
Residential Contractor Program	\$10,000	\$7,900
Residential Lighting Rebates	\$15,000	\$5,000
Express Efficiency Lighting (for Small Commercial)	\$12,000	\$2,700
Residential Appliance Recycling	\$15,000	\$3,100
Small Business High Efficiency Lighting Program	\$10,400	\$1,700
Total	\$87,700	\$57,400

⁷ Includes funds contracted and spent, as well as funds already committed to specific activities or consumers.

2001 Overall

In summary, beginning in the Summer of 2000 and continuing in 2001, the CPUC regained a great deal of momentum for energy efficiency. Efforts were refocused on achieving concrete energy and peak demand savings to help relieve pressure from the electricity system during the Summer of 2001.

This section summarizes the expenditures made to date, as well as the energy savings achieved by CPUC programs in 2001.



Program Category	Budget (\$million)	Expenditures ⁸ (as of 9/30/01)
PGC	\$288.1	\$275.0
Summer Initiative	\$72.0	\$79.1
SBX1 5	\$82.9	\$57.4
Total	\$443.0	\$411.4

The table above shows that of the funds budgeted for CPUC energy efficiency programs in 2001, 93% had already been spent or committed to particular consumers by the end of September.

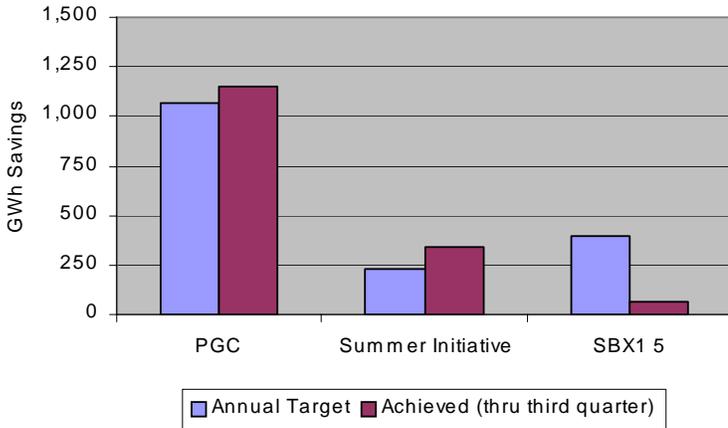
Those funds were utilized to produce energy savings results shown in the table below. The savings shown represent actual installed savings by the end of September. Programs or projects for which funds have been committed but for which installation of equipment is not yet complete are not included in the savings results.

Program Type	Elect. (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
PGC	1,151,587	281.9	16,134
Summer Initiative	339,687	162.0	448
SBX1 5	67,438	8.4	2,589
Total	1,558,712	452.4	19,171

Putting these results in context, 452 MW is equivalent to approximately nine “peaker” generating units, or slightly under 10% of the system peak demand of the California Independent System Operator. Installing that amount of peak capacity would likely cost at least \$180 million.

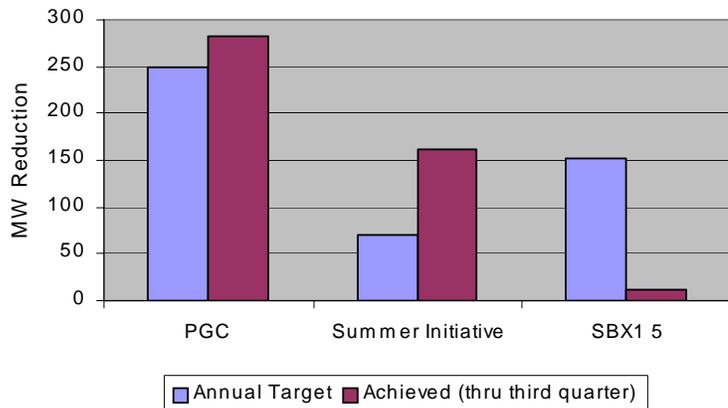
⁸ Includes funds contracted and spent, as well as funds already committed to specific activities or consumers.

Progress Toward Annual Electricity Savings Goal



Electricity savings of 1,558 GWh are enough to power approximately 250,000 homes in the state for one year. These energy savings will save Californians a total of about \$156 million in energy costs this year alone. Energy savings reported above only account for first year savings. The majority of the CPUC energy efficiency programs will continue saving energy for at least ten years, fueling \$1.5 billion in investment in other areas of the State economy instead of electricity.

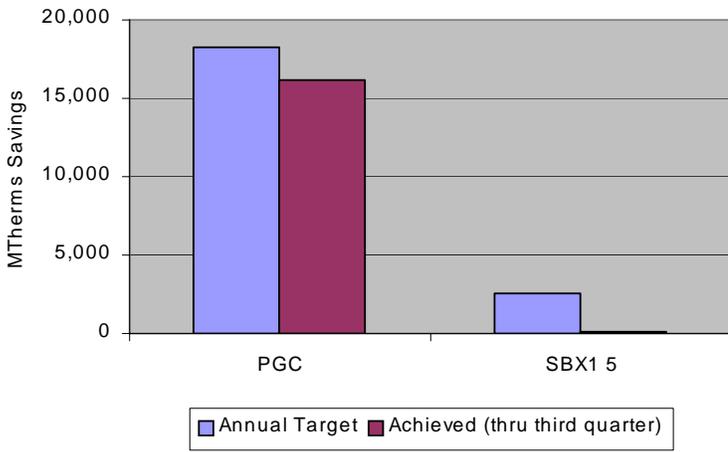
Progress Towards Peak Demand Reduction Goal



The table below also summarizes energy savings achieved by CPUC energy efficiency programs by sector.

Program Type	Elect. (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
Residential	660,402	242.1	10,414
Nonresidential	804,857	175.7	7,595
New Construction	93,453	34.6	1,162
Total	1,558,712	452.4	19,171

Progress Towards Natural Gas Savings Goal



In addition, the table on the following page gives a more detailed breakdown of the energy savings results achieved by CPUC programs this year.

Energy Savings Results: All CPUC 2001 Energy Efficiency Programs

Program Type	Electricity (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
PGC PROGRAMS			
Residential			
Heating and Cooling	6,020	7	158
Lighting	237,611	53	0
Appliances	85,809	23	305
Retrofit & Renovation	72,439	31	6,915
Subtotal Res.	401,879	114	7,377
Nonresidential			
Large Comprehensive	298,379	55	4,300
Small Comprehensive	251,476	52	588
HVAC Turnover	39,876	11	0
Motor Turnover	5,931	1	0
Process Overhaul	5,632	1	2,673
Remodeling & Renovation	55,321	13	33
Subtotal Nonres.	656,615	133	7,595
New Construction			
Residential	20,481	15	192
Commercial	70,286	20	970
Industrial & Agricultural	2,326	0	0
Codes and Standards	0	0	0
Subtotal NC	93,093	35	1,162
PGC Total	1,151,587	282	16,134
Summer Initiative Programs			
Statewide			
Ecos: Halogen floor lamps	3,226	0	0
ARCA: Refrigerator recycling	148,175	15	0
Utilities: Pool efficiency	17,692	79	0
UC/CSU: Campus	20,224	6	0
Res-Team: Residential hard to reach	23,686	11	448

Program Type	Electricity (MWh)	Peak Dmd (MW)	Natural Gas (Mtherms)
Utilities: LED traffic signals	73,263	12	0
Third party initiatives	14,579	30	0
Subtotal Statewide	300,845	154	448
Local Programs			
City of Oakland: EE design assist.	360	0	0
City of Oakland: Museum Chiller	300	1	0
SDG&E: Whole house fans	149	2	0
SDG&E: Floor lamp turn-in	281	0	0
Humboldt Creamery	417	0	0
Presidio Trust	712	0	0
COPE: Pumping efficiency	36,623	6	0
Subtotal Local	38,842	9	0
Summer Initiative Total	339,687	162	448
Senate Bill 5 Programs			
Residential Appliances	4,537	1	119
Residential Contractor	0	0	0
Residential Lighting	25,839	3	0
Residential Appliance Recycling	30,830	3	0
Small Commercial Lighting (Express Efficiency)	6,063	1	0
Small Commercial Lighting (Pilot)	169	0	0
SBX1 5 Total	67,438	8	119
GRAND TOTAL	1,558,712	452	16,701

2001 Program Highlights

In this section, we highlight the seven most important program efforts during 2001. In some cases these are programs were so successful as to obviate the need for further funding (such as rebates for LED traffic signals). In other cases, these programs represent creative approaches to energy efficiency that may well become the next generation of program offerings (such as the Oakland energy efficiency design assistance program or the Berkeley/San Francisco small commercial lighting pilot). These seven important efforts are summarized below.

1. **Compact Fluorescent Lighting.** Utility program administrators, partnering with manufacturers and retailers, have helped truly transform the market for these high-efficiency lighting technologies, such that nearly all consumers know how much those light bulbs can contribute to lowering their electricity bills.
2. **LED Traffic Signals.** 2001 was the year of the LED traffic light. Throughout California, these bright new LED bulbs have replaced dull, flat incandescent bulbs in intersections. These bulbs will save local governments millions of dollars annually on their electricity bills.
3. **Whole House Fans.** A year ago, whole house fans were boring. Today, they are among the most popular items in home improvement stores. They help

cool homes, lowering costly air-conditioning bills.

4. **ENERGY STAR Appliances.** In 2001, appliance programs were so successful, many retailers report two- and three-fold increases in the percentages of Energy Star products they sell. *Flex Your Power* and mass media coverage helped make the Energy Star brand known to virtually every consumer in the State.
5. **Home Improvement Programs.** This year, building on synergies with appliance rebate programs and successful utility-manufacturer-distributor-retailer partnerships, home improvement programs have truly begun to motivate the do-it-yourself consumer. Unlike in previous years, financial incentives were made available directly to consumers, in addition to contractors and installers.
6. **Oakland Energy Efficiency Design Assistance.** Through the Summer Initiative, Oakland is experimenting with one of the most innovative program designs in recent years. This program provides assistance to developers and designers during the building permitting process for new residential single and multi-family buildings, as well as for new commercial buildings, to help ensure opportunities for achieving energy savings are not lost.
7. **Neighborhood Approach to Small Business Lighting.** The Cities of Berkeley and San

Francisco, using SBX1 5 funds, are developing novel ways to penetrate the small business market with program offerings. Historically, these businesses have been very difficult to convince to make investments in energy efficiency, but rate increases have encouraged these consumers to find ways to improve their energy efficiency.

LOOKING AHEAD: 2002 AND BEYOND

The year 2002 begins another ten-year cycle of authorization for the electric public goods charge funds. In addition, we now have a permanent gas surcharge in place to fund gas energy efficiency programs.

Given the State's economy, the events of September 11, 2001, and the prognosis for the State's general fund over the next several years, it is likely that the electric and gas PGC funds will be the primary vehicles for funding energy efficiency in the State.

Thus, the Commission is focused on maximizing the effectiveness of the expenditure of these ratepayers funds on the most effective and cost-effective programs and initiatives.

To that end, in August 2001 the Commission initiated a rulemaking proceeding to examine its policies and rules governing energy efficiency programs, giving guidance to the next ten years' worth of efforts. This proceeding is undertaking the following actions:

- Evaluating the success of the utilities' and Commission's ongoing energy efficiency programs
- Setting forth a process for development and continuous improvement to the Commission's rules governing energy efficiency programs
- Designing the future administrative structure for energy efficiency programs overseen by the Commission

- Selecting programs to begin in early 2002.

As part of its efforts to encourage continuous improvement in energy efficiency programs, the Commission is seeking proposals for programs beginning in early 2002 from multiple providers of energy efficiency services (utilities and others), with special emphasis on opportunities for local governments to build infrastructure to deliver energy efficiency services to their residents.

The Commission will encourage continuation of successful approaches to energy efficiency, while providing an avenue for new infrastructures or new program ideas to be tested.

In addition, the Commission has adopted a new Energy Efficiency Policy Manual that delineates a set of policy priorities for the Commission's oversight and selection of energy efficiency programs for 2002 and beyond.

The Commission also recognizes the need for certainty in program planning, and therefore will authorize some multi-year programs beginning in 2002 to minimize program disruption.

Finally, on November 29, 2001, the Commission adopted a decision which sets forth the goals for future CPUC energy efficiency investments, as well as the detailed selection criteria to be used to select among program proposals due between December 14, 2001 and January 15, 2002.

APPENDIX

This appendix contains tables with more detail on CPUC energy efficiency expenditures and energy savings for 2001.

Tables are organized in the following order:

- State spending on energy efficiency: 2000 and 2001
- Historical CPUC data on expenditures and energy savings
- 2001 CPUC energy efficiency expenditures
- 2001 CPUC electricity savings
- 2001 CPUC peak demand savings
- 2001 CPUC natural gas savings