2001

Informational Hearing on Energy Conservation Tax Policy

Assembly Committee on Revenue and Taxation

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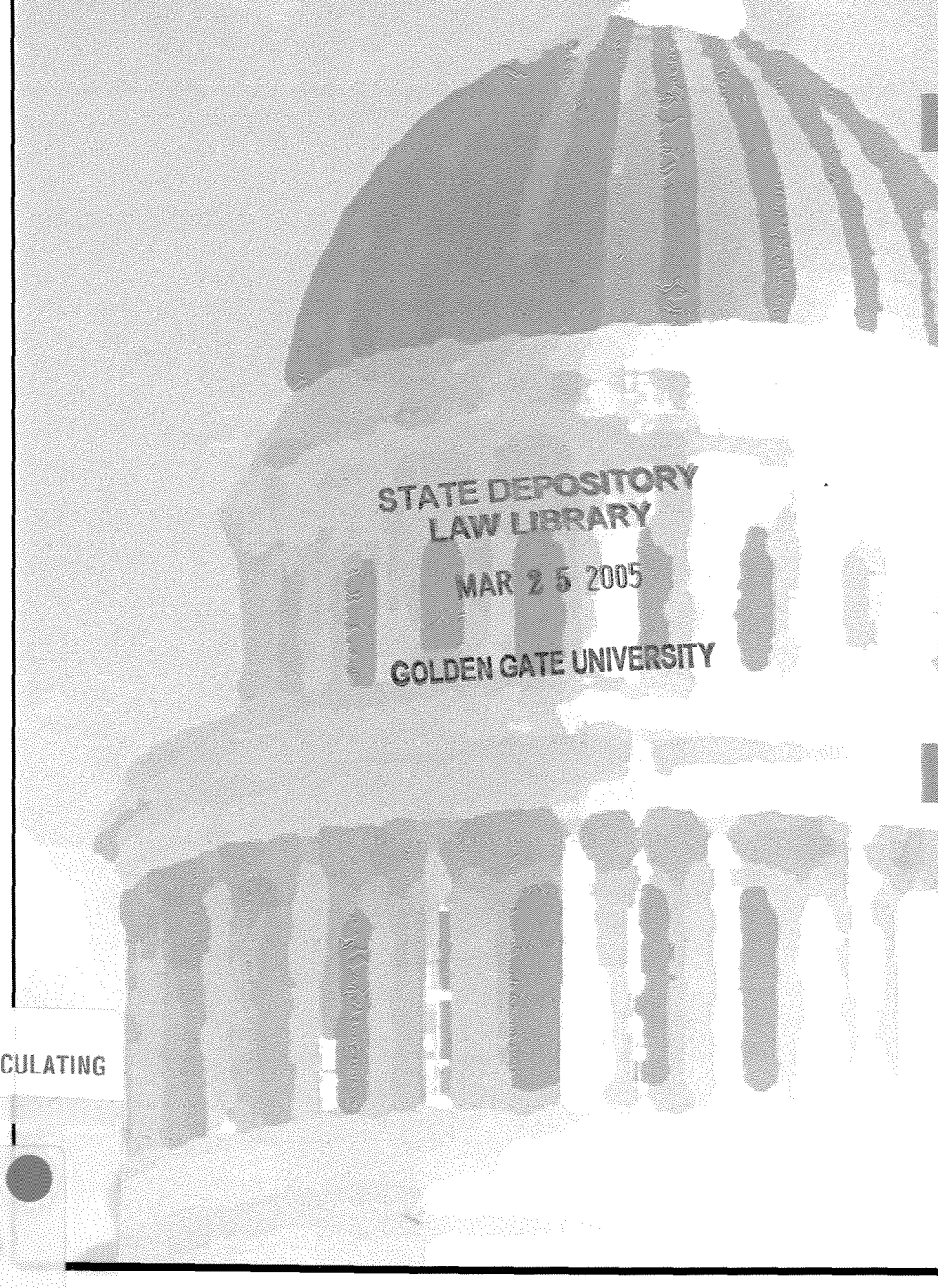

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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR
EIGHTEENTH ASSEMBLY DISTRICT

Summary Report
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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR
EIGHTEENTH ASSEMBLY DISTRICT

ENERGY CONSERVATION TAX POLICY

Summary Report for the Informational Hearing

Monday, January 29, 2001
State Capitol, Room 126
Sacramento, California

INTRODUCTION

On Monday afternoon, January 29, 2001, the Assembly Revenue and Taxation Committee held an informational hearing on Energy Conservation Tax Policy. The hearing was held in Room 126 of the State Capitol from approximately 1:30 PM until 5PM. It was attended by approximately 75 people. Seven Committee members heard testimony from seventeen witnesses. Invited witnesses included state energy commission representatives, municipal utilities, tax agencies, the Legislative Analyst's Office, business groups, consumer groups, and environmental groups. Members who participated in the hearing included:

Assemblymember Ellen Corbett, Committee Chair
Assemblymember Tom Harman, Committee Vice-Chair
Assemblymember Elaine Alquist
Assemblymember Gil Cedillo
Assemblymember Paul Koretz
Assemblymember Barbara Matthews
Assemblymember Mark Wyland

This final report contains the Committee staff's summary of the witnesses' testimony and a list of findings and recommendations distilled from that testimony (refer to the white pages). The report also reprints the background paper written by staff before the hearing (refer to the blue pages), and reproduces written testimony submitted by the witnesses (refer to the yellow pages).

THE WITNESSES

Mr. William Keese, Chairman of the California Energy Commission (CEC)*
Mr. Scott Matthews, Deputy Director of CEC's Energy Division

Mr. Mike Weedall, Manager of Energy Services and Electric Transportation Department*
Sacramento Municipal Utility District

Mr. Stu Wilson, Assistant Executive Director
California Municipal Utilities Association

Ms. Carrie-Lee Coke, General Counsel*
California Manufacturers and Technology Association

Mr. Brian Putler, Legislative Bureau Director*
California Franchise Tax Board

Mr. Mark Ibele, Senior Fiscal and Policy Analyst*
Legislative Analyst's Office

Ms. Jean Ross, Executive Director*

California Budget Project

Mr. Lenny Goldberg, Executive Director*
California Tax Reform Association (also representing Toward Utility Rate Normalization)

Ms. Susannah Churchill, Energy Associate*
California Public Interest Research Group

Fred Main, Senior Vice President and General Counsel*
California Chamber of Commerce

Mr. Greg Turner, General Counsel and Legislative Director
California Taxpayers Association

Mr. Robert Raymer, Technical Director*
California Building Industry Association

Mr. Robert Hammon, Principal Consultant*
ConSol, Inc. Energy Consultants

Mr. Peter Miller, Senior Scientist*
Natural Resources Defense Council

Mr. Dan Kirshner, Economic Analyst*
Environmental Defense

Mr. Pete Price, Owner*
Price Consulting – Appliance Recycling Centers of America

*Written material submitted by this individual is contained in the yellow pages at the end of this report.

The Silicon Valley Manufacturing Group was invited to testify but unable to attend the hearing. Written testimony submitted by this organization is contained in the yellow pages at the end of this report.

STAFF FINDINGS

In the section immediately below, staff used testimony from all of the witnesses who spoke at the hearing to summarize the views expressed by different groups and develop a list of findings and recommendations that reflect the comments of those in attendance. Given the length of the hearing, the information presented below is not intended to provide a comprehensive review of all that was said. It is, however, intended to organize and summarize the comments of the witnesses and present broadly-held beliefs shared by

many involved in energy conservation and efficiency issues. It is also intended to provide a framework into which the hearing's contributions may be considered.

General Views

It should be noted that the categories of speakers cited immediately below are not intended to lend the impression that all members of a given group hold identical views, nor that each organization represented at the hearing belongs to only one group. The categories of speakers cited below are offered only to provide the readers of this report with a general sense for the different perspectives held by different groups in attendance. Written testimony contained in the yellow pages toward the back of this report contain additional information not reflected below.

California Energy Commission: Mandated standards for both buildings and appliances are likely to be more effective than tax incentives for improving energy conservation and efficiency. Policies targeted toward high-use (i.e., the commercial and industrial) sectors offer the greatest opportunity for cost-effective energy efficiency improvements. One option for increasing the sale of energy efficient appliances and equipment could be achieved by eliminating the state sales tax on purchases of Energy Star equipment. Existing buildings are a large source of inefficient energy use but can be difficult (from both a cost and a cost-effectiveness standpoint) to retrofit for greater efficiency. In addition to its responsibilities for establishing building and appliance standards, the Energy Commission currently administers a variety of efficiency programs. Some examples of these include its Public Interest Energy Research Program, which focuses on innovative gas cooling technology, more efficient commercial refrigerators, combination lamps that include both task lights and general lighting, and heat pump water heaters; the Bright Schools program, which provides school facilities audits and assistance with new school construction; and a local government program that provides technical assistance and energy audits. The Energy Commission also offers technical assistance to builders, building officials, and energy professionals.

Municipal Utilities: Thought should be given to statewide expansion of some of the energy efficiency programs that are currently administered by municipal utilities on a regional level. The two utilities whose programs were cited most often during the hearing are the Sacramento Municipal Utility District (www.smud.com) and the Los Angeles Department of Water and Power (www.greenla.com). Both utilities have several successful programs that target all customer sectors, including single-family and multi-family dwellings; low-income and other "hard-to-reach" customers; small, medium, and large businesses, including manufacturers; government, public, and school buildings; agriculture irrigation pumps; and new homes and commercial buildings. Programs cover air conditioning; heating; lighting; motors; and compressed air and offer a wide variety of approaches, including low-interest loans; grants; appliance replacement; energy audits; rebates; special events and promotions; and partnerships with trade allies, retailers, distributors, community organizations, and other utilities and agencies. Experience has shown that short-term success can be achieved through rebates, loans, marketing, and tax incentives. Long-term success can be achieved through tax incentives, appliance

replacement, good customer/utility relations, education, long-term program commitment, and partnerships. Lack of success can result from start-and-stop programming and marketing; insufficient incentives; insufficient public education and product marketing; and lack of coordination and common goals among utilities, retailers and trade allies, and manufacturers and distributors.

Business Groups: Many companies have voluntarily undertaken conservation and efficiency efforts. The state should use all of the tools at its disposal for helping to encourage energy conservation and efficiency (including but not limited to tax incentives). However, tax incentives, particularly those to encourage distributed (i.e., onsite) generation would help offset the cost barrier that many companies face when considering large-scale energy efficiency measures. In order to be most effective, any tax incentives offered by the state should be large enough to trigger rapid changes in taxpayer behavior, simple enough for taxpayers to understand and for the Franchise Tax Board and Board of Equalization to administer, and should be based on a certain percentage of costs rather than capped at a maximum value. Tax incentives that target behavior are preferable to those that target specific groups of taxpayers. Thought should also be given to expediting the permit process for distributed generation, which can currently last over a year.

Building Community: The state should use a mix of incentives to encourage energy conservation and efficiency. In the short-term, grants, loans, and other forms of direct assistance are preferable. When targeting the longer-term, tax incentives may have a role to play. Much has already been achieved through the implementation of more stringent building standards, but there is a need for more state inspectors to help monitor and certify new construction. Additional funding for residential new construction would help increase the number of energy efficient structures in existence.

Environmental Groups: The state should use a comprehensive approach toward attaining conservation and efficiency that includes all of the tools at its disposal (grants, loans, public education, rebates, tax incentives, etc.). Taxing inefficient power plants and high energy use may be part of the solution. There should be measurable goals established for each type of incentive and standards put into place to ensure the quality of any subsidized retrofits that are conducted. Thought should be given to expanding existing programs that are known to work. State agencies and other entities releasing conservation and efficiency funds should have flexibility to retarget funds as necessary based on initial results. The state should explore demand-responsive buildings, in which building owners and operators could use financial incentives to reduce peak electricity demand. Demand-responsive buildings would either automatically reduce power requirements of ventilation and lighting systems in response to price or emergency signals from electric distribution companies or allow building managers to reduce load with manual controls based on site-specific priorities and market prices. Distributed generation (provided it is performed in an environmentally friendly manner), air conditioner replacement, and residential home retrofits should also be incentivized. The California Energy Commission's attempts to gain federal approval for its appliance standards are commendable.

Public Interest and Consumer Groups: Tax incentives that are capped and allocated by a central authority are preferable to uncapped credits distributed to any taxpayer who meets certain criteria. Capping the value of credits not only gives the state fiscal certainty over the amount of money that will be spent on a particular tax program but also allows the credits to be allocated in priority order to reward taxpayers who achieve the greatest efficiency. Tax credits are worth the same amount to taxpayers at all income levels; tax deductions preferentially assist higher-income taxpayers, because the value of a deduction increases as one's tax liability increases. Care should be taken to design tax incentives that will not reward taxpayers for behavior they would otherwise undertake in the absence of the incentive. Consideration should also be given to the fact that at least 40% of Californians do not pay taxes because their incomes are below the state's taxability threshold. For that reason, direct assistance programs may be preferable to the tax code for assisting those at the lower end of the income scale. Thought should be given to expanding the state's existing energy conservation and efficiency programs (e.g., the Low Income Home Energy Assistance Program, existing weatherization programs, and programs offered through the utilities). Tax incentives should have sunset dates and should be evaluated for their effectiveness at targeting the groups whose behavior they are intended to influence.

Findings And Recommendations

- There is still a great deal of improvement that can be achieved in the area of energy efficiency. We are only about one third of the way toward achieving the energy efficiency we are capable of achieving.

- A significant portion of the energy efficiency we have already achieved (about 50%) has come through the adoption of building standards, and more can be achieved by implementing appliance standards. There is currently an effort underway to obtain federal approval for new California appliance standards.

- Although building standards have been very helpful in helping achieve energy efficiency, these standards only affect new homes; schools are not required to meet the standards, nor are existing buildings required to meet the current standards when they are sold. Because a significant amount of inefficiency can be found in existing buildings, programs that encourage retrofitting to improve energy efficiency hold promise..

- Achieving energy efficiency is quicker than building new power plants. It is more cost-effective, better for the environment, and avoids the bureaucratic and regulatory challenges usually faced when siting and building new plants. Programs to foster energy efficiency can be targeted to low- and very-low income groups, who pay a disproportionate share of income on energy costs.

- The commercial and industrial sectors provide the greatest opportunities for implementing cost-effective energy efficiency measures. Time of use meters can be effective tools for helping reduce energy consumption in commercial and industrial

sectors.

- Distributed generation (i.e., use of onsite electricity generation) should be considered for its ability to reduce demand on the statewide grid and improve the availability and reliable supply of electricity. However, care should be taken to consider the environmental impact of the facilities that are used.

- Programs currently implemented by selected utilities on a regional level have been extremely effective at encouraging energy efficiency and conservation. Thought should be given to identifying a few of the most successful programs and implementing them on a statewide level.

- When seeking to encourage energy efficiency, we should make use of all the tools at our disposal and try to build on existing programs that are known to work. Among the tools we have at our disposal are loans, grants, rebates, appliance replacements, energy audits, public education, time metering (basing the cost of electricity on the time of day during which it is used), building standards, appliance standards, and tax incentives.

- Regardless of what approach is used, there is a need to track and report on the utilization of the incentives.

- The price tag of tools to encourage energy conservation and efficiency should be consistent with the energy savings we expect to achieve from implementing the measures (i.e., we should be careful to avoid spending unreasonable amounts of money achieving small energy savings). We should seek to implement the most cost-effective programs first.

- While a valuable tool for helping leverage private money for conservation and efficiency efforts, tax incentives fail to help the 40% of households whose incomes are below the state's taxability thresholds.

- Many appliance replacement programs may be targeted to help low-income individuals replace their inefficient appliances with newer, more efficient models. However, many of these are not accessible to those that are targeted. Programs that give a rebate to those who purchase Energy Star (i.e., certified energy efficient) appliances are targeting people who have already decided to buy an appliance and can afford one. The most effective way to target the low-income segment of the community is for government to purchase new appliances, install them in peoples' homes and apartments, remove the old appliances, disassemble them in an environmentally sound manner, and then destroy them to ensure they get taken out of the system rather than reused.

- Tax incentives are most effective when they target behavior rather than specific taxpayers. The larger the tax benefit, the more quickly it will change taxpayer behavior. However, tax incentives are generally much slower at influencing taxpayer

behavior than forms of direct assistance such as grants, loans, and rebates.

- The simpler the provisions of the tax benefit, the easier it will be for taxpayers to comply with and for the tax agencies to administer. When trying to influence the long-term behavior of large business taxpayers, care should be taken to consider the long-term nature of business planning horizons. A tax break provides less of an incentive if a business is uncertain whether its actions will qualify once planning is complete and the business actually undertakes the activity being incentivized.

- When considering tax incentives, there are two general approaches. One approach involves setting the total dollar amount of tax benefits to be distributed and placing the responsibility for allocating the tax benefits in the hands of an oversight authority. Another approach involves setting the criteria which must be met in order for an incentive to be claimed. The first approach allows the state to establish the maximum amount of money that will be spent on the tax benefits and to allocate the credits to applicants in a prioritized order. The second approach requires less bureaucracy to administer and tends to establish fewer barriers for taxpayers who wish to claim the benefits.

- The solar and wind tax credits offered during the 1970s and 1980s identified the types of systems that worked and the types that didn't work. However, anecdotal reports suggest that they also spawned abuse by many solar and wind energy system installers and resulted in a great deal of money being spent on very little energy savings. Changing the credits from refundable to nonrefundable and reducing the size of credits that could be claimed helped reduce some of the abuse and helped bring the cost of the credits more in line with the energy savings that resulted.

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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR
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ENERGY CONSERVATION TAX POLICY

Background Paper for the Informational Hearing

Monday, January 29, 2001
State Capitol, Room 126
Sacramento, California

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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR

BACKGROUND PAPER

INFORMATIONAL HEARING
ON
ENERGY CONSERVATION TAX POLICY

Monday, January 29, 2001
1:30p.m. - 4:00p.m.
State Capitol, Room 126

INTRODUCTION TO THE HEARING

The energy crisis with which California is currently struggling is at the forefront of the State's policy debate, and nearly everyone has some idea about how best to approach the multitude of problems with which every California resident and business is now confronted. This hearing seeks to focus on two small, yet two very important pieces of the puzzle – energy conservation and energy efficiency.

We begin by defining both terms, summarizing the importance of conservation and efficiency programs and their ability to help provide long-term solutions, discussing the multitude of programs currently offered by the State to encourage conservation and efficient energy usage, and reviewing some of what the State has learned regarding the cost-effectiveness of different energy conservation and efficiency techniques. After hearing from the State's energy department, we turn to both businesses and the municipal utilities to tell us about their energy conservation and efficiency efforts.

We then look closely at both state and federal tax policy as it relates to energy conservation and energy efficiency. With the help of the Franchise Tax Board and the Legislative Analyst's Office, we examine the tax expenditures that were part of the tax codes and those that are currently available under the codes. Further, we look at how other states are using their tax laws to help encourage conservation and efficiency. We also expand the tax discussion by examining ways of targeting conservation and energy-related incentives to those who are most in need of assistance.

We conclude the hearing by looking forward to options for the future. We hear from consumers, the business community, and environmental groups about their recommendations for cost-effective solutions to our current situation.

Throughout the hearing, several key questions will repeat themselves.

- Where are the greatest energy savings to be found?
- What conservation and efficiency measures are most cost-effective?
- Are there any measures that can be put into place immediately at little to no cost?
- Who should administer conservation and efficiency programs?
- What is the State's role in encouraging energy conservation and efficiency?
- How well are our existing programs working?
- Should any existing programs be expanded? Should any be eliminated in favor of a different approach?
- How should the State best focus its assistance on the neediest segment of society?
- How heavily should the State rely on the tax code to encourage energy efficiency and conservation?
- What new technologies can help us use energy more efficiently? To what extent should these technologies be subsidized by the state? To what extent should these technologies rise or fall on their marketability in the current economy?
- To what extent are additional incentives necessary for individual and business customers to conserve and move to more efficient energy usage? Should the cost of electricity be the sole driver of conservation and efficiency?

The background paper that follows seeks to present a context in which the presentations of the many witnesses can be better understood. It does not purport to provide a comprehensive summary of all issues, programs, and tax expenditures related to energy conservation and efficiency. A summary report to be published after the conclusion of the hearing will provide a more comprehensive look at the hearing's facts, findings, and recommendations.

DEFINING TERMS: WHAT'S THE DIFFERENCE BETWEEN CONSERVATION AND EFFICIENCY?

Two phrases will be repeated often during the hearing – "energy conservation" and "energy efficiency". Because the distinction is a subtle one, a brief description of each is helpful. "Energy conservation" involves cutting back on one's energy usage without changing one's

appliances or fixtures. The devices we use remain unchanged – we just use them less. "Energy efficiency" involves getting more energy from the devices we use at the same or lower cost. For that reason, it typically involves replacing an older, less efficient energy device with a newer, more energy-efficient one.

The following examples best illustrate the difference between conservation and efficiency: Turning the lights off in an unused room or working in a partially lit room are two examples of energy conservation. Replacing an incandescent light bulb with a more energy-efficient compact fluorescent bulb represents an equivalent example of energy efficiency.

THE IMPORTANCE OF CONSERVATION AND EFFICIENCY

The importance of encouraging both conservation and efficiency cannot be underestimated. Conserving energy and using it more efficiently will allow consumers to save money without sacrificing their comfort, lower utility bills, allow businesses to operate less expensively and more competitively, reduce the need for new electricity generation and transmission capacity, help protect the environment, and reduce the energy demands of the state's infrastructure. Conservation and efficiency efforts also have the potential to help bring today's skyrocketing wholesale electricity costs more in line with historical levels.

A BRIEF HISTORY OF CONSERVATION AND EFFICIENCY PROGRAMS

Encouraging energy conservation and energy efficiency through formal programs is not new. The first set of efforts began during the 1970s in direct response to the Organization of Petroleum Exporting Countries (OPEC) oil embargo and coincident steep increases in the price of electricity. By the late 1970s, customer complaints about high electric bills led the Public Utilities Commission (PUC) to order California's investor-owned utilities (IOUs) to offer energy efficiency programs. The early programs focused on providing residential customers with suggestions for energy conservation (e.g., turning off the lights in unoccupied rooms and turning down the thermostat a few degrees). By the early 1980s, these measures gave way to so-called demand-side management programs. In California, these programs were of four types: 1) energy efficiency, 2) load management, 3) fuel substitution, and 4) load building. Although these programs were popular with the utilities at first, falling oil and gas prices in 1985 triggered a downturn in program funding and a loss of interest.

In the early 1990s, in an effort to rekindle the utilities' interest in funding energy conservation and efficiency, a collaboration of government, utility, and public interest groups developed an idea that was subsequently embraced by the PUC. Under the collaborative's plan, ratepayer funds were used to pay the utilities for every unit of energy saved. This plan remained in effect until the advent of utility deregulation, when the legislature overhauled the utilities' role in energy conservation and efficiency programs by creating a so-called "public goods charge" to promote energy efficiency, energy research, and alternative energy programs.

Beginning in 1998, pursuant to the provisions of Assembly Bill 1890 (Brulte), Chapter 854, Statutes of 1996, California's landmark deregulation legislation, a nonbypassable public benefits charge was added to all customer bills in California. In accordance with the legislation, all utilities – both investor-owned and municipal – must charge their customers a small amount each month to fund energy efficiency and conservation programs. The specific dollar amount that

must be paid by each of the IOUs is established in law. Publicly owned (i.e., municipal) utilities are required to pay an amount equivalent on a percentage basis to the amounts paid by the IOUs. The public goods charge represents approximately three percent of each utility bill.

EXISTING UTILITY-ADMINISTERED CONSERVATION AND EFFICIENCY PROGRAMS

Tools available to individuals and businesses under the existing utility-run programs are as varied as the entities that offer them but can be segregated into four different categories: 1) energy efficiency, 2) low-income assistance, 3) renewables, and 4) research and development. Examples of some of the many types of benefits available under these programs include loans, grants, rebates, contracting assistance, residential retrofits, appliance replacement, and home energy audits.

A March 2000 report prepared by the RAND Corporation on the public benefit of California's investment in energy efficiency helps quantify the value of the state's conservation and efficiency efforts. According to the RAND study, improvements in energy efficiency between 1977 and the present have increased the size of the state's economy by three percent over what it would have been in the absence of those efforts. While appearing small, that growth corresponds to per capita benefits in the range of $1,000. Improvements in energy efficiency are also estimated to have reduced air pollution emissions from stationary sources by approximately 40% and reduced the energy burden on low-income households.

THE ROLE OF PUBLIC FUNDS IN ENCOURAGING CONSERVATION AND EFFICIENCY

Yet, even with the historic contributions of energy conservation and efficiency programs, it is clear that far more can be done. In a review of its existing Energy Efficiency Program, the California Energy Commission found that opportunities for cost-effective energy efficiency investments exist far beyond those we are likely to achieve at current levels of program funding. A basic premise of the Commission's findings is that market participants will not capture a significant portion of the cost-effective energy savings that are both economic and currently available. Factors contributing to this failure include lack of information, tools, and correct incentives to identify and implement energy-saving choices. Investing more money in energy conservation and efficiency will help remove these barriers and lead to efficiency gains in excess of those already realized.

THE BURDEN OF ELECTRICITY COSTS ON LOW-INCOME HOUSEHOLDS

An example of the economic and societal gains that can be realized by focusing more resources on conservation and efficiency can be found in RAND's March 2000 report on California's investments in energy efficiency. According to the RAND study, low-income households spend eight percent of their income on electricity, compared with the two percent spent by median-income households. Yet, in extremely poor households (ones whose incomes are less than half the federal poverty level), close to one-quarter of household income is spent on electricity. Because low-income households may contain low quality, inefficient appliances, the potential benefits of improving energy efficiency in these households can be great.

In recognition of the great benefits that can be realized by helping improve the energy efficiency of low-income households, the federal government funds the low-income home energy assistance program (LIHEAP). Administered by the Department of Health and Human Services, the LIHEAP program provides energy assistance block grants to states for the purpose of helping low-income households address their energy needs. The program includes three components: a) weatherization, b) home energy assistance (which provides financial assistance to help meet heating and cooling energy costs), and c) energy crisis intervention (which provides financial assistance for weather or energy-related emergencies). In California, households must have incomes at or below 60% of the state's median in order to qualify for assistance under LIHEAP. According to the National Center for Appropriate Technology (http://www.ncat.org/liheap/), California received $63 million in LIHEAP assistance during the most recent federal fiscal year. The average cooling benefit was $182, and the average heating benefit was $217.

ENERGY CONSERVATION TAX POLICY (The Past and the Present)

State and federal efforts to encourage energy conservation and efficiency have also been undertaken using the tax code. Although very few incentives currently remain (see discussion below), two of the most significant examples of prior tax incentives include the solar energy and energy conservation tax credits available from the late 1970s through the early 1990s.

Solar Energy Tax Credits: From 1976 through 1987, California offered a tax credit to individuals and businesses that installed solar energy and/or wind energy systems for personal or commercial purposes. Although the level of the credit was modified several times during the credit's history (see chart below), it was generally set at a percentage of the cost of systems installed in single-family dwellings and commercial establishments (including multiple family dwellings). Qualifying systems included those used to heat water, provide space conditioning, process heat, produce electricity, produce solar mechanical energy, and produce wind energy. Builders and developers who earned the credits for their new construction projects were allowed to transfer the credits to homebuyers. Similar federal credits were also available at this time.

Time Period	Credit Amount/Cap (residential)	Credit Amount/Cap (commercial)	Interaction with Federal Credit
1/1/76 through 7/31/83 (refundable through 12/31/80, nonrefundable beginning 1/1/81)	55%, no cap	25%, no cap	On the residential side, state credits must be reduced by the allowable federal credit
8/1/83 through 7/31/85	50%, $3,000 per system	25%, no cap	On the residential side, state credits must be reduced by the allowable federal credit
8/1/85 through 12/31/87	10%, $1,000 per system	25%, no cap; 15%, no cap for wind systems installed after 1/1/86	No limitations

From 1990 through 1993, California offered a nonrefundable commercial solar electric system credit similar to but narrower than the one in effect during the 1980s. The commercial solar electric system credit was intended to be used by businesses that installed systems capable of producing at least 30 watts per device. The credit equaled 10% of the cost of eligible systems that were installed in commercial and/or multiple family dwellings. Any system with a generating capacity of over 100 kilowatts had to be precertified by the California Energy Commission in order for the owner of that system to claim a credit. Unlike the credit available during the 1980s, the commercial solar electric system credit could not be used for wind energy systems. The credit also contained a limitation tied to a similar federal credit. Under the limitation provisions, the California credit could not be claimed for any system with a generating capacity of over 30 megawatts unless the federal government also offered a 10% credit for the purchase and installation of the same system.

Neither the federal nor the California tax code currently provide any credits for the installation of solar or wind energy systems.

Energy Conservation Tax Credits: From 1981 through 1986, California also offered a nonrefundable energy conservation tax credit to individuals and businesses that undertook specified energy conservation measures in their homes or businesses. Although the level of the credit was modified several times during the credit's history (see chart below), it was generally set at a percentage of the cost of the energy conservation measures installed in single-family dwellings and commercial establishments (including multiple family dwellings). Qualifying measures included swimming pool and hot tub insulating covers; ceiling insulation; weatherstripping; water heater insulation blankets; low-flow shower head devices; caulking and sealing; insulation of uninsulated ducts; installation of thermal windows and doors and some storm windows;

duty cyclers; clock thermostats; evaporative coolers; whole house fans; exterior shading devices; controls or automatic switching devices intended to reduce energy usage by replacing interior electric lighting with natural lighting; and thermal energy storage devices containing control systems. The conservation installations were required to comply with local building codes in order to be eligible for the credit. Similar federal credits were also available at this time.

Time Period	Credit Amount/Cap (residential)	Credit Amount/Cap (commercial)	Interaction with Federal Credit
1/1/81 through 7/31/83	40%, no cap	25%, no cap	On the residential side, state credits must be reduced by the allowable federal credit
8/1/83 through 7/31/85	35%, $1,500 per year	25%, no cap	On the residential side, state credits must be reduced by the allowable federal credit
8/1/85 through 12/31/86	10%, $750 per year	25%, no cap up to 12/31/85; 20%, no cap from 1/1/86 through 12/31/86	No limitations

Neither the federal nor the California tax code currently provide any credits for the installation of energy conservation measures.

Existing Tax Incentives For Energy Conservation And Efficiency: Very little is available in today's federal and California tax codes to encourage energy conservation and efficiency. Examples of some of the limited benefits include the following:

- California offers an exemption from reappraisal for any property that is modified to include an active solar energy system. "Active solar energy system" does not include solar swimming pool heaters or hot tub heaters but does include any system used for domestic, recreational, therapeutic, or service water heating; space conditioning; electricity production; process heat; or solar mechanical energy.

- The federal government does not tax business taxpayers on the value of subsidies they receive from public utilities for the purchase or installation of any conservation measure.

- The federal government offers a credit for producing electricity using certain types of renewable resources, including wind energy and closed-loop biomass energy. The credit equals 1.5 cents per kilowatt hour during the first ten years a qualified facility is in business. Taxpayers must sell the electricity to unrelated persons in order to qualify. The value of the credit is reduced somewhat when the price of the electricity generated using wind or biomass exceeds certain amounts. The value of the credit is also limited by any grants, tax-exempt bonds, subsidized energy financing, and other credits a taxpayer might earn for undertaking the same energy generation activities.

- The federal government also offers both a credit and an accelerated depreciation schedule for investments in "energy property". For the purpose of this beneficial treatment, energy property is generally defined as solar and geothermal electricity generation property that is not owned by a public utility.

PRINCIPLES OF SOUND TAX POLICY

Given the relative scarcity of energy conservation and efficiency incentives in California's tax code, many of the witnesses who testify during the hearing are expected to promote tax cuts as a means of increasing available conservation and efficiency incentives. In light of that probability, it is important to conclude this paper with input for those who are proposing conservation and efficiency-related tax measures.

- Every conservation-related and efficiency-related tax proposal should include a statement regarding what the proposal is intended to achieve.

- Every proposal should contain quantitative measurement criteria and reporting requirements intended to help the Legislature evaluate whether the tax break had its intended effect.

- The Franchise Tax Board is the state's expert in the area of income taxes, and the California Energy Commission is the state's expert in the area of energy conservation and efficiency. For that reason, they should serve as valuable resources for preparing reports on the effectiveness of conservation and efficiency tax measures.

- Adding a sunset date to every tax proposal is a prudent way of ensuring that the proposal will be periodically reevaluated by the Legislature and modified as necessary (or eliminated if appropriate) based on the quantitative measurements and reports referenced above.

- Effort should be made in each proposal to incentivize new behavior rather than rewarding behavior that would have been undertaken even in the absence of the tax break.

- The size of the tax break (i.e., the credit, exemption, deduction, or exclusion) should be set at a level large enough to incentivize a significant number of taxpayers but small enough to ensure fiscal prudence.

- Tax incentives should be cost-effective. No tax break should cost more than the economic benefits it is intended to achieve.

- Attempts should be made to coordinate tax proposals with other forms of assistance such as loans, grants, and rebate programs. Because of California's relatively high taxability thresholds ($13,000 for single taxpayers with no dependents, $38,000 for a single mother with two children, and $40,000 for a married couple with two children), many of the poorest Californians remain unaided if the tax code is used to help offset conservation and efficiency efforts.

Equity-related tax measures intended to help return money to certain ratepayers in recognition of the hardship that they will face when paying their utility bills represent another type of suggestion some may advocate. Generally speaking, the tax code is an inefficient way of returning money to people, especially those in need; grants, loans, rebates, and other forms of direct assistance can be more carefully targeted and can often be implemented more quickly than tax code provisions. However, those considering equity measures are urged to include sunset dates in their proposals to ensure that public subsidies do not continue beyond recipients' need for them. Coordinating tax relief with other forms of state and federal assistance would also be beneficial.

REFERENCES

LAWS

Internal Revenue Code, Title 26 USC Sections 45, 48, 136, 168

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California Revenue and Taxation Code, Section 73

NEWSPAPER ARTICLES

Financial Desk, "Taxing Matters: Qualifications for Energy Tax Credits Change", Los Angeles Times Business Section, Part 4, Page 2, Column 3, April 7, 1986.

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Bernstein, Mark, R. Lempert, D. Loughran, and D. Ortiz, "The Public Benefit of California's Investments in Energy Efficiency", RAND Corporation Science and Technology Division, prepared for the California Energy Commission, March 2000, MR-1212.0-CEC, 72 pp.

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Wm. Nesbit & Associates, Inc., "Director of Public Benefits Programs", The California Municipal Utilities Association, June 1999, 158 pp.

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ACKNOWLEDGEMENTS

This paper was prepared by Eileen Roush, Senior Consultant to the Assembly Revenue and Taxation Committee, with assistance from staff of the California Energy Commission, Franchise Tax Board, and Legislative Analyst's Office. Committee staff wish to thank the many people who patiently answered questions, provided background information, and reviewed early drafts of this paper. Any errors or omissions remain the responsibility of the author.

Assembly
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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR
EIGHTEENTH ASSEMBLY DISTRICT

ENERGY CONSERVATION TAX POLICY

Written Materials Submitted to Committee

Monday, January 29, 2001
State Capitol, Room 126
Sacramento, California

Assembly California Legislature

STAFF

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ASSEMBLY COMMITTEE ON REVENUE AND TAXATION
ELLEN M. CORBETT, CHAIR
EIGHTEENTH ASSEMBLY DISTRICT

AGENDA

ASSEMBLY REVENUE AND TAXATION COMMITTEE
INFORMATIONAL HEARING
ENERGY CONSERVATION TAX POLICY

Monday, January 29th, 2001
1:30p.m. - 4:00p.m.
State Capitol, Room 126

I. OPENING REMARKS
Assemblymember Ellen M. Corbett, Chair
Assembly Committee on Revenue and Taxation

II. Moving Toward Energy Efficiency and Energy Conservation
An Overview (15 minutes)

Mr. Bill Keese, Chairman
California Energy Commission

III. Existing Energy Conservation Efforts (35 minutes)

Municipal Utilities (20 minutes)

Mr. Mike Weedall, Manager
Sacramento Municipal Utilities

Los Angeles Department of Water and Power

The Business Perspective (15 minutes)

Silicon Valley Manufacturing Group
Ms. Carrie-Lee Coke, General Counsel
California Manufacturers and Technology Association

IV. Using the Tax Code To Incentivize Efficiency and Conservation (20 minutes)

From the Past to the Present (15 minutes)

Mr. Brian Putler, Bureau Director
Franchise Tax Board - prior tax incentives
Mr. Mark Ibele, Sr. Fiscal & Policy Analyst
Legislative Analyst's Office - current tax incentives (California, other states, the U.S.)

Targeting Those With the Greatest Burdens (5 minutes)

Ms. Jean Ross, Executive Director
California Budget Project

V. Moving Forward: The Options (60 minutes)

Consumer Perspective (20 minutes)

Mr. Lenny Goldberg, Executive Director
California Tax Reform Association; also representing
Toward Utility Rate Normalization
Ms. Susannah Churchill, Energy Associate
California Public Interest Research Group

Business Perspective (20 minutes)

Fred Main, Sr.Vice President & General Counsel
Chamber of Commerce
Mr. Greg Turner, General Counsel & Legislative Director
California Taxpayers Association
Mr. Robert Raymer, Technical Director
California Building Industry Association
Mr. Robert Hammond, Principal Consultant
ConSol, Inc., Energy Consultants

Environmental Perspective (20 minutes)

Mr. Peter Miller, Sr. Scientist
Natural Resources Defense Council
Mr. Dan Kirschner, Economic Analyst
Environmental Defense
Mr. Pete Price, Owner
Price Consulting - Appliance Recycling Centers of America

VI. Public Comment

VII. CLOSING REMARKS

Moving Toward Energy Efficiency and Energy Conservation An Overview

William J. Keese
Chairman, California Energy Commission

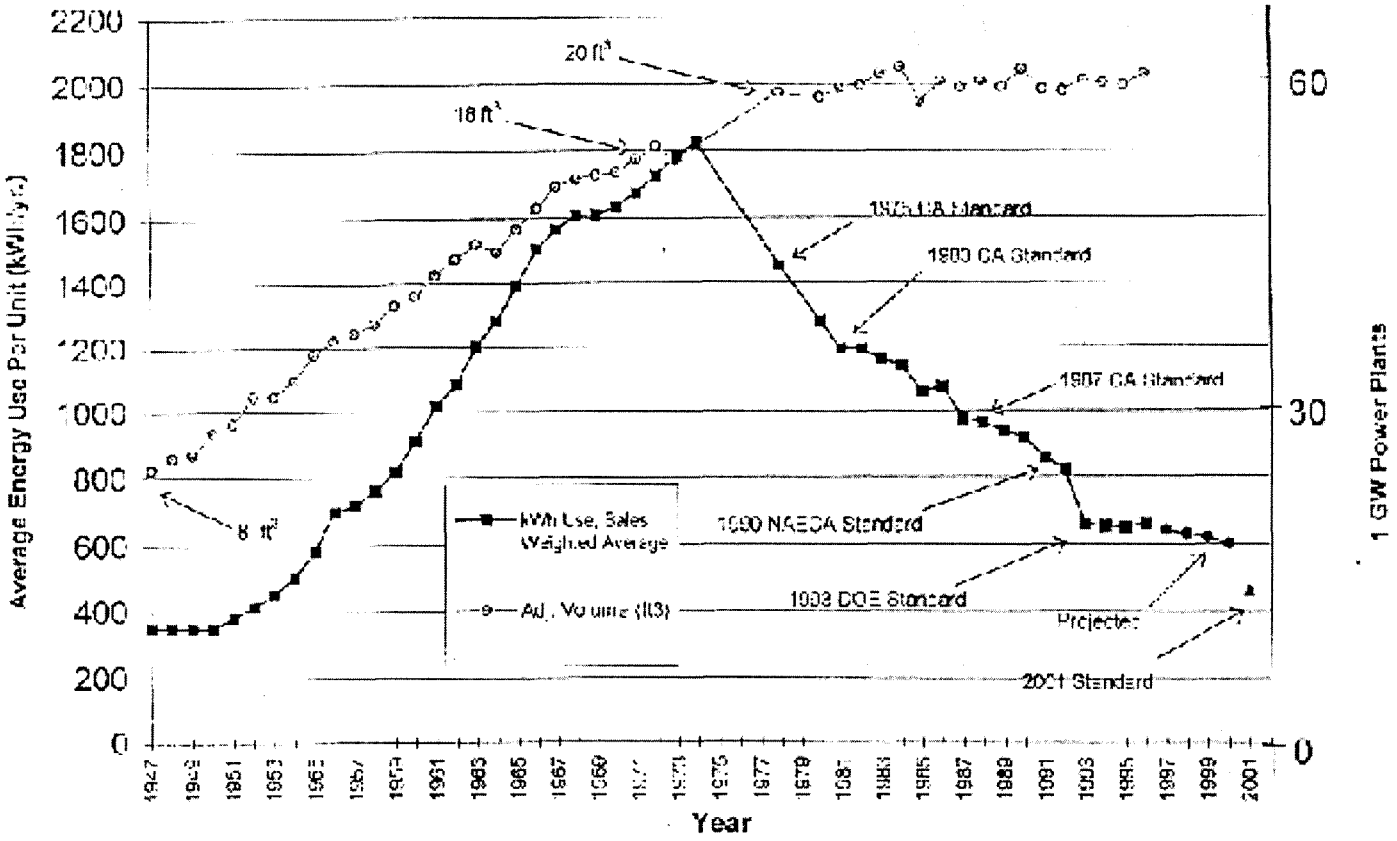
January 29, 2001

for
Assembly Committee on Revenue and Taxation

Terminology

- Energy Conservation - turning off lights when they are not being used
- Energy Efficiency - using compact florescent bulbs instead of incandescent bulbs for lights
- Sound Energy Practice - use task lighting where appropriate instead of general lights
- Combination - Compact florescent bulb task lights turned off when not in use

U.S. Refrigerator Energy Use vs. Time



Source: Geller-Goldstein Szilard Lecture, Physics and Society 28 No. 2, 1999, American Physical Society, College Park MD 20740

Need for Energy Efficiency and Conservation

- Help correct existing energy supply/demand imbalance
- Give consumers a way of controlling their rising energy bills
- Realize additional efficiency potential

Help Correct Existing Supply/Demand Imbalance

- Demand currently equal to or exceeding supply. Reserve margins at less than 1.5%
- Supply will be inadequate in short-term
- Peak demand critical (see graph of needle peak)

Realize Additional Efficiency Potential

- RAND report finds that energy efficiency in California has benefited the state economy, lowered air pollution emissions from stationary sources, and reduced the energy burden on low-income house holds.

- People need to think about the consequences of their choices when using energy

State Energy Conservation & Efficiency Programs

- Building Standards
- Appliance Standards
- AB 970
- Public Interest Energy Research Program
- Continuing Energy Commission Programs

- Building Standards

  - Existing building and appliance standards save roughly 4,000MW and 20,000 GWh each year.

  - Under AB 970, additional energy savings of 200 MW/year. Standards will become effective in June 1, 2001. Standards include new window products (low-e glass) and reducing duct leakage.

  - Next round of standards effective January 1, 2005. Another 200 MW/year

- Appliance Standards

  - Currently air conditioners are available that exceed Federal Standards.

  - Under AB 970, 50 MW/year will be saved by air conditioning standards. New standards should be adopted in February, 2001. (NOTE: These new California standards are preempted by federal standards and would need a federal exemption to go into effect.)

- AB 970 Programs

  - $50 million in contracts and grants to reduce critical peak demand. The goal is to save 192 MW. (see graph)

- Public Interest Energy Research Program
  - Innovative gas cooling technology (gas ACs for homes)
  - Heat pump water heaters
  - Combination task lights and general lighting lamps
  - More efficient commercial refrigerators (grocery stores)

- Continuing Energy Commission Programs

  - Collaborative for High Performance Schools (CHIPS)
  - Bright Schools Programs - audits of school facility and assistance with new construction - school design guide (new and renovated)
  - Local Government Program - technical assistance and energy audits. Financing for local governments, schools, special district (air pollution control district, etc.), non-profit schools and hospitals
  - Technical assistance for builders, building officials, and energy professionals

Previous Commission Experience with Tax Credits

- Tax Credits in affect from 1979-1985
- Analysis, Continued until 1992. Review and administration of tax credits
- Conservation tax credit residential and commercial buildings
  - Residential 35% of cost of measure. Measures include window films and extra insulation.
  - Commercial 25% of cost of measure. Measures include control systems.
- Solar Tax Credit
  - 50% directed for solar water heating, could also be used for space heaters.
- Both conservation and solar tax credit could be taken in conjunction with federal tax credits

Problems:

- Fraud
- Fly-by-night business
- Poor quality equipment
- Administrative difficulties

Possible Remedies:

- Greater consumer awareness and information
- Better quality control of equipment
- On-site inspections of equipment
- Yearly call-back inspections
- Certification of contractors

Energy Star

Possible Incentive Approach:

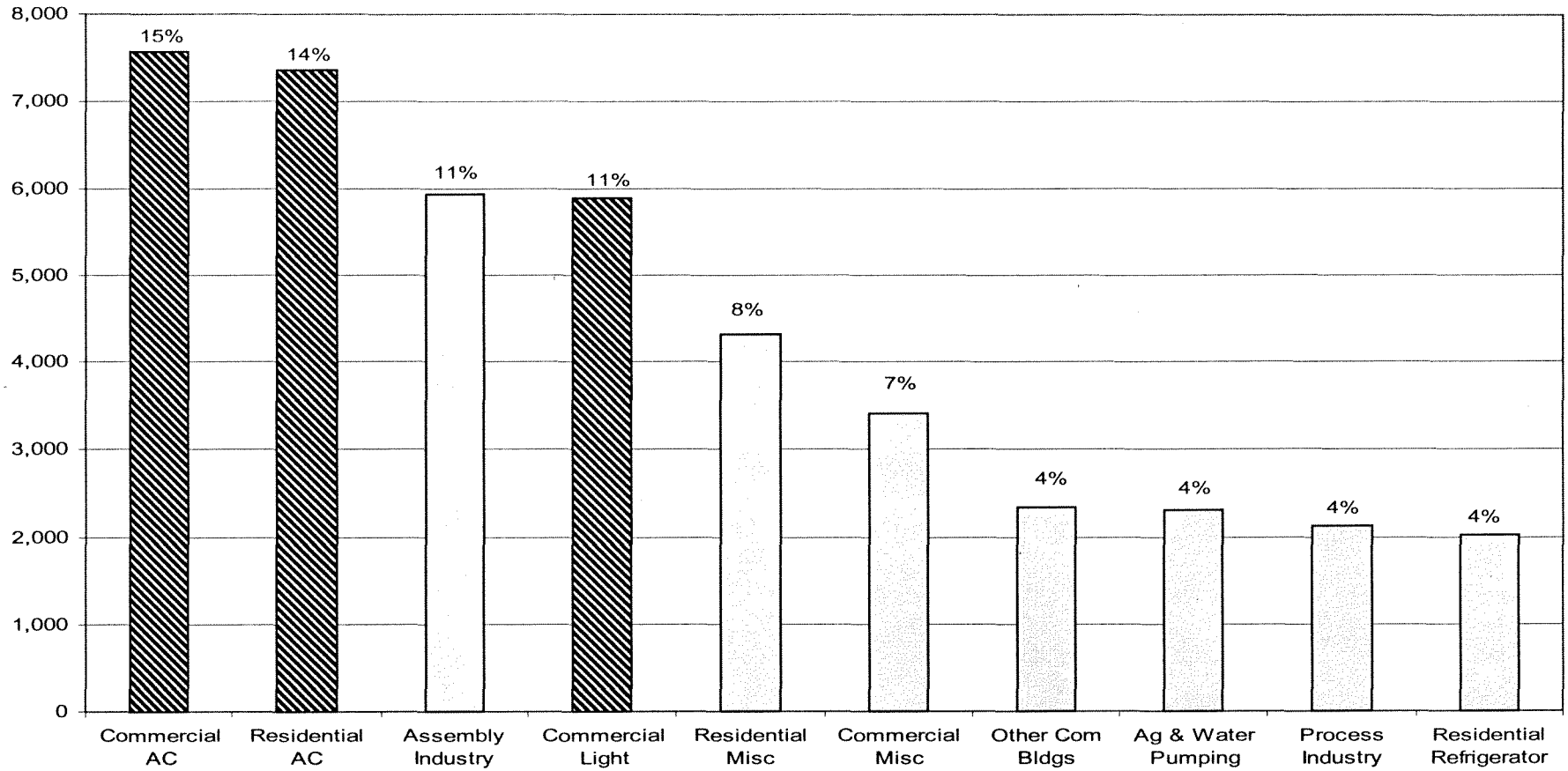
- One way to increase the sale of energy efficient appliances and equipment would be to produce or eliminate the state sales tax on all purchases of Energy Star equipment.

Benefits:

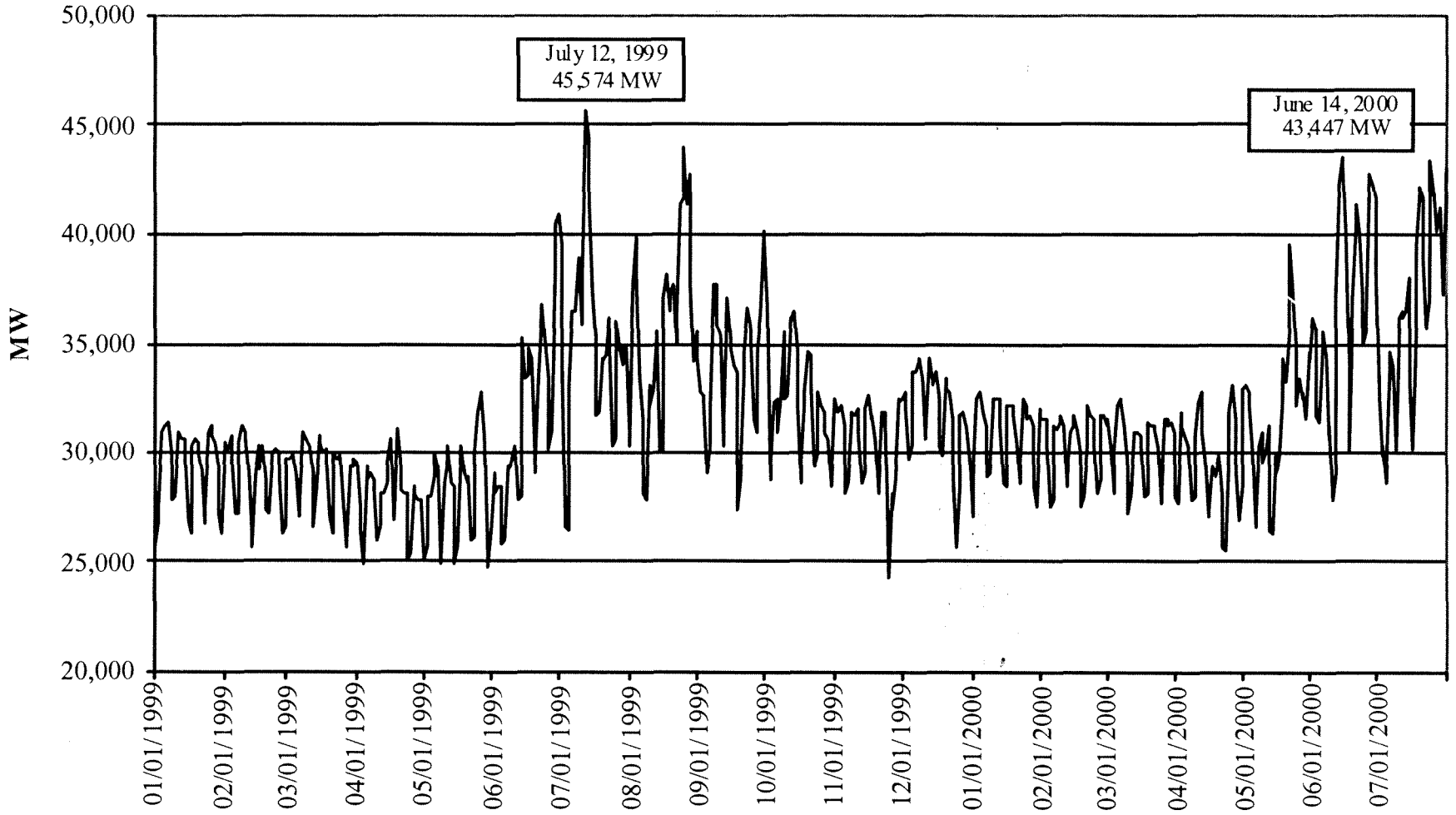
- Energy Star equipment is equipment rated and labeled by the federal government as energy efficient.
- Removing sales tax from this equipment would encourage sales and local marketing promotion
- Eliminate many of the problems experienced with incentive programs in the past.

Background Material

Statewide Peak Demand (MW) by Sector and End-Use



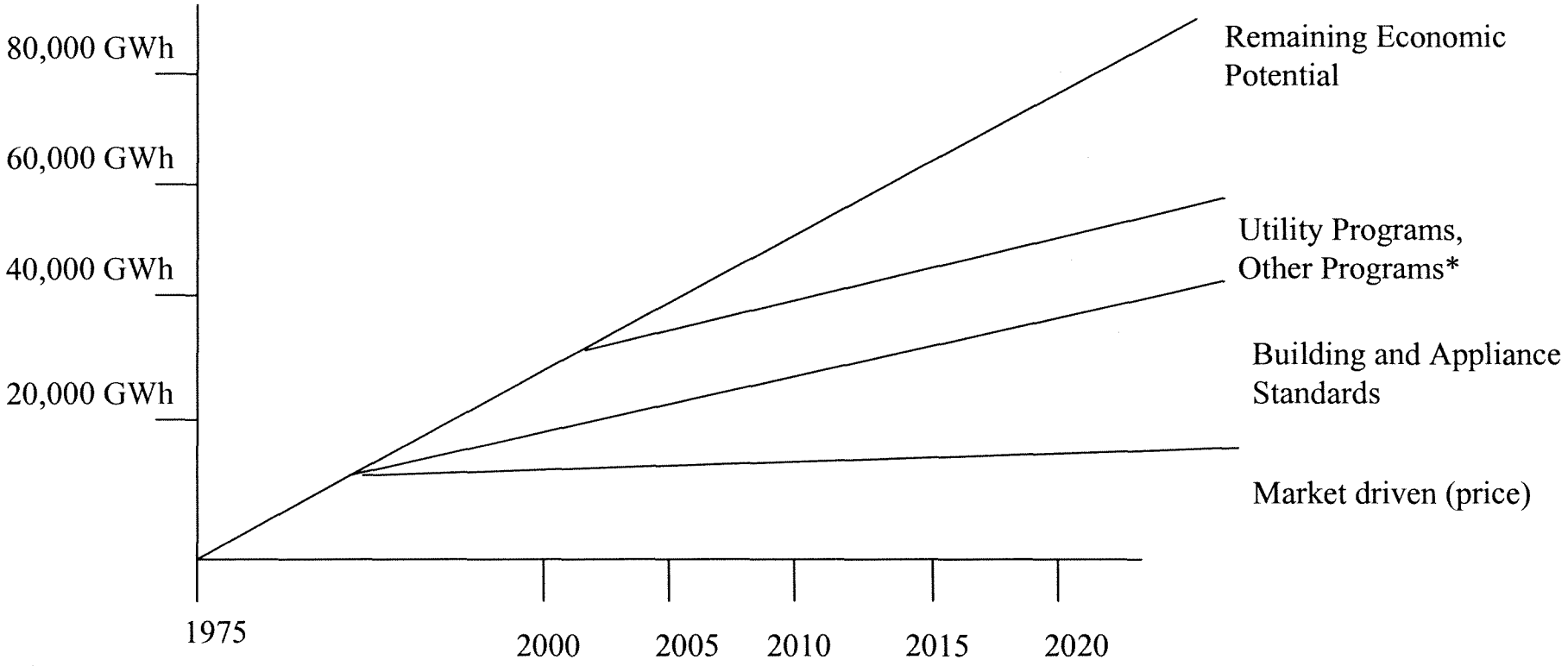
Daily Peak Loads
California ISO Control Area
January 1999 - July 2000



CALIFORNIA ENERGY COMMISSION

Additional Achievable Efficiency Saving

Annual Savings in Giga Watt hours (GWh)



*assumes continued funding

1GWh can cupply the energy to 1 million homes for 1 hour

AB 970 PEAK LOAD REDUCTION PROGRAM SOLICITATION AWARDS
SUMMARY OF GRANT PROGRAM ACTIVITY
as of January 29, 2001

FUNDING ALLOCATION: $50,000,000			PROGRAM GOAL: 192 MW			
Program Element	Funds Allocated	Goal in MW	#Grants/Contracts Awarded and/or Pending Approval	AB 970 Funds Committed	Estimated MW Peak Load Reduction	Average $/Peak kW Reduction (1MW = 1,000kW)
Light Emitting Diode (LED) Traffic Signals	$10,000,000	10	44 Grants	$10,000,000	6	$1,669
Innovative Efficiency and Renewables	$8,553,500	32	11 Grants	$8,553,500	48	$178
Demand Responsive HVAC and Lighting Building Systems	$10,000,000	50	1 Interagency Agrmt, 7 Contracts	$8,219,391	84	$98
Cool Roofs	$9,446,500	30	4 Contracts for Cool Roofs and 2 Supporting Services Contracts	$8,019,940	21	$382
State Buildings and Public Universities	$5,500,000	50	4 Interagency Agrmts 1 Contract	$5,500,000	80	$69
Water and Wastewater Treatment Pump and Related Equipment Retrofit	$5,000,000	20	16 Grants	$2,294,000	42	$55
Evaluation Contract	$1,500,000		1 Contract	$1,000,000		
TOTALS	**$50,000,000**	**192**		**$43,586,831**	**281**	**$155**

Presentation to

Information Hearing

Energy-Conservation Tax Policy

ASSEMBLY REVENUE AND TAXATION COMMITTEE

Ellen M. Corbett, Chair

January 29, 2001

Mike Weedall, Manager

Energy Services & Electric Transportation Department

Sacramento Municipal Utility District

INTRODUCTION

- SMUD has been offering energy-efficiency programs to its customer-owners continuously for nearly 25 years.

- In 1990, we began a rapid buildup of a "conservation power plant" as our "resource of choice."

- At under 3½ cents per kWh, this was less costly than building new power plants or purchasing power.

- Energy efficiency provided Sacramento with other important advantages as well:

  1. Direct investments in energy-efficiency improvements, and the resulting saved-energy costs – reinvested in the local economy – has *multiplier effects*, creating new jobs and new business opportunities and increasing productivity.

     For example, a study of our programs in 1993 found that regional income increased $2.11 for every dollar spent on efficiency improvements. Nearly 900 jobs were created.

  2. Also, productivity of Sacramento's businesses increased.

     The Chinet Company, for example – with help from SMUD – reduced its energy cost *per-unit-produced* by 20%, increasing productivity by more than 50%.

     And, its raw material costs dropped from $200 to $80 per ton. Chinet now produces the same product amount with one-third fewer machines.

  3. Energy efficiency avoids power-plant emissions. Since 1990, energy saved through our programs reduced CO_2 – the greenhouse gas – by 2 million tons.

  4. Along with economic and environmental benefits are social benefits:

     - We have helped over 10,000 low-income households reduce their monthly bills.

     - We have been helping the Sacramento City Unified School District modernize and upgrade 28 schools – and eventually over 100 schools – with high-efficiency lighting, heating, and air conditioning, and energy-management controls.

- And in 5 community events, Sacramentans traded-in over 7,300 fire-hazardous, energy-burning halogen-torchiere lamps for new, cool, energy-efficient and safe compact-fluorescent torchiere lamps.

- In 1999, our customers' energy savings reduced Sacramento's:
  - energy needs by 7½% (732,000 MWh)
  - summer peak demand by 8% (240 MW)
- Emergency load management can reduce summer peak load another 12% (330 MW).
- Through SMUD's energy-efficiency programs, customers have saved a total of approx. $350 million in electricity bills since 1990 (in 1999 $s).
- Today, energy efficiency continues to a be a top priority of the District. Our Public-Goods spending is 30% higher than that required by AB 1890.

CURRENT SMUD PROGRAMS

- This year, SMUD will be offering about 20 different programs.

- Programs cover all customer sectors, including:

  - Single-family and multi-family dwellings
  - Low-income and other "hard-to-reach" customers (e.g., language, cultural barriers)
  - Small, medium, and large businesses
  - Government, public, and school buildings
  - Public facilities (e.g., pumping plants)
  - Agriculture-irrigation pumps
  - Manufacturers
  - New homes and commercial buildings

- Programs cover major end uses:

  - Air conditioning
  - Heating
  - Lighting
  - Motors
  - Compressed air

- Programs offer a variety of approaches:

  - Rebates
  - Loans
  - Partnerships with trade allies, retailers, distributors, community organizations, other utilities and agencies
  - Marketing and advertising
  - Special events and promotions

- Some examples of current programs:
  - Consumer loans for ENERGY STAR®-qualified high-efficiency air conditioners and windows, and distributor rebates for super-efficient air conditioners.
  - Low-income weatherization measures at no cost to qualified customers.
  - Rebates for high-efficiency commercial air conditioning, compressed air, and motors systems.
  - Support for resource conservation managers in public-school systems.
  - Rebates for new homes and commercial buildings significantly exceeding the State's Title 24 building-efficiency requirements.
  - Free shade trees through a partnership with the Sacramento Tree Foundation.
  - Rebates for "cool" roofs on commercial buildings.
  - Rebates for residential duct sealing.

REASONS FOR THE DISTRICT'S ENERGY EFFICIENCY SUCCESSES

1. Community support and expectations.
2. Commitment of Board and Management.
3. Experienced staff.
4. Adequate resources.
5. Continuity of programs.
6. Program flexibility to adapt to differing needs and new technologies.
7. Willingness to invest in new technologies and try new approaches.
8. Leveraging other utilities and organizations' programs.

WHY SMUD'S SUCCESS CAN BE REPLICATED ELSEWHERE

1. *Commitment, experience, resources* are not unique to SMUD.

    - For example, our Resource Conservation Manager program for schools, just started here, was borrowed from a successful program in the Pacific NW.

2. Potential for energy efficiency is just as great – or greater – elsewhere.

3. Most energy-efficiency technologies are applicable to most areas.

4. Many other areas are capacity/energy-constrained.

5. Other California utilities and utilities in other states and regions have successful programs.

    - The saved energy from California utilities' energy-efficiency programs is equivalent to roughly seven 700-MW power plants [CEC].

    - Utilities in the Pacific Northwest, New England, New York, and Wisconsin have had energy-efficiency programs for years.

6. Many utilities are coordinating and leveraging their programs with those of other utilities within regions and nationally.

    - California IOUs' Statewide Residential Lighting and Appliances
    - Northwest Energy Efficiency Alliance
    - Northeast Energy Efficiency Partnership
    - Consortium for Energy Efficiency

WHAT WORKS AND WHAT DOESN'T

- What works and doesn't work is *relative to degree of desired outcome*:
  - Education-only will have only slight impact.
  - Rebates covering the entire incremental cost will have a large impact when a new efficiency product is being introduced. As the product becomes more available, large rebates are no longer necessary.
- What works for short-term success:
  - Rebates
  - Consumer loans
  - Tax incentives
  - Heavy marketing
- What works for long-term success:
  - Tax incentives
  - Market transformation (e.g., ENERGY STAR®)
  - Good customer/utility relations
  - Education
  - Partnerships with community organizations, other utilities, trade allies, etc.
  - Program continuity/long-term program commitment
- What doesn't work:
  - Start-and-stop programming and marketing
  - Insufficient incentives
  - Insufficient public education and product marketing
  - Lack of coordination and common goals among providers (i.e., utility program, retailer/trade allies, manufacturers/distributors)

THE CONTINUED NEED FOR ENERGY EFFICIENCY

- Continued load growth/need for new resources.
  - Environmental impacts of power generation.
- Still significant opportunities for cost-effective energy savings we are missing.
  - For example, many new government and public buildings are still built to only minimum efficiency standards, yet existing cost-effective measures and design changes can increase efficiency 35-50%.
  - New technologies and high-potential markets:
    - *Commercial building retro-commissioning:* A recent study suggests that existing buildings can be commissioned for 5-40¢ per sq.ft. with 5-15% energy savings and paybacks of 2 years or less.
    - *Air conditioning/heating duct-sealing technology:* The majority of homes in America have leaky ducts, wasting 13-24% of heated and cooled air.
    - *Improved air conditioning/heating installations:* Proper installations have as much energy-saving potential as technical improvements in the equipment itself.
    - *Schools:* Most schools in California operate with inefficient lighting, heating, and cooling. Most heating/cooling systems are poorly maintained and have malfunctioning controls or no controls at all.
    - *Government procurement:* State and local government spending on energy-related products estimated at $50 billion/yr, with energy bills of $12 billion/yr. Most government-agency purchasing staff are unfamiliar with energy-efficient products and are not accountable for the energy bills.
- Significant barriers remain.
  - In Sacramento, dozens of languages and diverse cultures hinder our message of energy efficiency's life-cycle economic benefits.
  - Most energy users still look at quick payback and up-front costs rather than life-cycle costs.
  - Classic example: Spec builders and rental/lease property owners don't pay the energy bills – renters won't make improvements to the buildings they don't own.

Attachment A

AN INTRODUCTION TO SMUD

- Independent district created by the Legislature (MUD Act).
- Seven elected board members serving four-year (staggered) terms.
- Service area population: 1.2 million
- Total operating revenues (1999): $775 million

Other Facts

- Began delivering electrical service on December 31, 1946.
- Service area: 900 square miles – Sacramento County (approx.)
- All-time record peak load: 2,759 Megawatts (July 12, 1999)
- Electric sales (1999): 9.3 billion kilowatt-hours
- Power supply (1999):

Hydroelectric	688 MW
Thermal (natural gas)	430 MW
Photovoltaic, Wind	12 MW
Long-term purchased power	653 MW
TOTAL	1,783 MW

- Customers (1999):

Residential	451,000
Nonresidential	58,000

- Average rates (1999):

Residential	8.48¢/kWh
Nonresidential	7.26¢/kWh

Attachment B

2001 ENERGY EFFICIENCY PROGRAMS

Program Name	Budget	Program Summary
Energy Efficiency Loans	*	Offers competitively priced financing to residential and commercial customers who purchase and install energy-efficiency measures.
Residential Advisory Services	$ 1,374,000	Provides information and technical advice to help customers improve the efficiency of their single-family homes.
Low-Income Weatherization & Assistance	859,000	Provides weatherization measures at no cost to qualified low-income customers.
Multifamily	172,000	Provides energy-efficiency services to tenants, property managers, and owners of multifamily residential housing.
Equipment Efficiency	1,064,000	Provides educational services and financial incentives to encourage customers to purchase and install energy-efficient heating and cooling equipment and building-shell improvements.
Appliance Efficiency	611,000	Offers financial incentives to residential customers to purchase household appliances that are more energy-efficient than federal standards.
Residential Retail Lighting	507,000	Works with lighting manufacturers, retailers, and other utilities to sell reduced-cost energy-efficient compact-florescent lighting products to residential customers.
Shade Trees & Cool Roofs	1,658,000	Promotes tree planting to directly shade buildings and reduce summer air-conditioning loads. Provides rebates for reflective coatings on commercial-building roofs.
Solar Domestic Water Heating	287,000	Promotes solar water heating as a replacement for electric water heating in single-family homes.
Swimming Pools/Spas	39,000	Encourages residential customers owning swimming pools/ spas to install energy-efficient pumps and to operate filter pumps and sweeps during off-peak hours.
Commercial and Industrial Retrofit	5,706,000	Provides a wide variety of assistance, including energy surveys, incentives, financing, education, project management, and installation support, to commercial, industrial, and agricultural customers.
Residential New Construction	762,000	Encourages the design and construction of energy-efficient homes and increased consumer demand for these homes; markets the *SMUD Advantage Home, SMUD Advantage Plus Home,* and *ENERGY STAR® Home.*
Commercial New Construction	955,000	Encourages energy-efficiency improvements in new commercial buildings during design and construction; markets the *SMUD Advantage Building.*
Budget Total	$13,944,000	

* *The Energy Efficiency Loan Program manages a total portfolio of approx. $80 million. In 2001, the program expects to loan approximately $24 million and receive approximately $27 million in repaid principal.*

Attachment C

HISTORICAL PERSPECTIVE OF SMUD'S ENERGY-EFFICIENCY PROGRAMS

Early Commitment (late 1970s – early 1980s):

- Community voiced its interest in energy conservation and elected Board members who promoted energy conservation.
- Basic conservation programs started in 1976 – customer education, attic insulation, home energy audits.

Early Success and Expansion (1980s):

- Programs were popular in the community – thousands of energy audits, tens of thousands of attics insulated.
- New programs added – commercial/industrial-sector lighting, customer financing, load management, low-income assistance.

"Resource of Choice" (1990s):

- Board of Directors declared energy efficiency a top priority (1990).
- Critical need for new resources – Rancho Seco closed, projected growth.
- Enormous potential for cost-effective energy efficiency – less costly than supply-side alternatives.
- "Conservation Power Plant" would meet future growth needs.

Current Commitment:

- General Manager's 1996 Competitive Business Strategy reaffirmed priority of energy efficiency.
- Continued public interest in SMUD energy-efficiency programs.
- Board directed Public-Goods spending of at 3.7% of (1994) revenues – 30% higher than required by A.B. 1890.
- Continued potential for cost-effective energy-efficiency improvements and emergence of new energy-efficiency technologies.
- Greater recognition of significant economic, environmental, and social benefits.

Attachment D

ENERGY EFFICIENCY ACHIEVEMENTS

- In 1999:

Annual energy savings (approx. 7.4% reduction in total 1999 energy sales)	732 million kWh
Summer peak-demand savings (approx. 8% of 1999 peak demand)	240 MW
Emergency dispatchable load management (approx. 12% of 1999 peak demand)	330 MW

- Total through 1999:

Number of energy-efficiency loans	94,000
Amount loaned	$246 million
High-efficiency air conditioners	42,000
Attic and wall insulation retrofits	43,000
Shade screen installations	37,000
High-efficiency refrigerators	107,000
Solar water heaters	3,200
Shade trees	250,000
Residential energy audits	44,000
Commercial/industrial retrofit projects	6,000
Energy-efficient new homes	16,000
Energy-efficient new office space (sq. ft.)	13 million

Silicon Valley Manufacturing Group

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http://www.svmg.org

January 31, 2001

To: The Assembly Revenue and Taxation Committee
Re: Energy Efficiency and Distributed Generation

The Energy Committee of the Silicon Valley Manufacturing Group is grateful for the opportunity to provide information to the Assembly Revenue and Taxation Committee, regarding incentives for energy conservation.

The Manufacturing Group regrets that our organization is unable to provide personal representation at this time. We hope to be able to better respond for future opportunities to collaborate on this extremely critical issue for all residents of California. The following points express our main concerns.

1) **No tax incentives to invest in onsite generation as real estate improvement** – At this time there are no tax incentives for companies to make investments in real estate capitol, using onsite (distributed) generation, because of current laws. The goal of many companies is to become more self-sufficient in their energy use, while also leaving more electrons on the grid for residents. However, combining the lack of tax breaks for this type investment with other "hurdles," mentioned below, companies have chosen not to heavily invest in onsite generation.

2) **Unreasonably high interconnection charges** – The current system does not encourage onsite (distributed) generation because of the unreasonably high cost to interconnect with the electricity grid. Currently governed by the California Public Utility Commission, the Pacific Gas & Electric Company estimated costs to one company for interconnection to be $3 million for installation of a 10-megawatts system. Meanwhile a private contractor estimated the interconnection costs at $100,000. The answer in lowering this hurdle lies in creating flexibility to use approved contractors, rather than exclusive business with utilities. The response time for utilities to interconnect is also hindering these investments. Utilities need to expedite interconnections for the benefit of grid stability.

3) **Permitting process for onsite generation is far too lengthy** – At this time it takes at least 12 months to obtain a permit for a on-site generation facility. The California Energy Commission is responsible for reviewing all permits, however their process must be flexible and timely during a crisis. If a project meets all applicable criteria, it should be quickly approved.

4) **Incent better energy management practices through equipment upgrades** – Companies can and want to conserve power, however current tax codes do not provide necessary incentives for these types of energy efficiency investments. Purchasing equipment that better manages the environment of a building should also be considered real estate upgrades, and subject to a similar tax code benefit. Programs in AB970 and existing energy efficiency programs through the utilities are too complicated and expensive to participate in as to render them ineffective for wide use.

Once again, the Silicon Valley Manufacturing Group is honored to provide our comments to this committee and is glad to provide any additional information.

Respectfully submitted,

Justin D. Bradley
Director of Energy Programs
Silicon Valley Manufacturing Groups

Good Afternoon, Madam Chairwoman, members of the Committee, I am Carrie-Lee Coke, General Counsel for the California Manufacturers & Technology Association.

Thank you for your invitation to describe some of the measures that manufacturers have been taking to reduce their energy consumption. Even before the current crisis, California's industrial companies aggressively invested in energy conservation measures. This has always made good economic sense because energy costs in California historically were among the highest in the nation and because energy is a significant cost in virtually every manufacturing process.

When shortages became apparent this summer, most CMTA companies began energy savings programs focusing on reducing consumption used on light and HVAC systems, and to the extent possible, on changing their load cycles: shifting their consumption to non-peak periods.

The following are a few examples of steps our companies have taken:

1. **Smurfit-Stone Container Corporation**, manufacturer of paper and paperboard-based packaging has 28 facilities in California including three 100% recycled content paper mills. In addition to turning off unused equipment and changing temperature settings, SSCC plants have:
   a) changed office lighting to more efficient fixtures, including fluorescent lighting motion detectors.
   b) introduced more efficient motors and power saver devices which turn off equipment when no loads are on the assembly line, or new designs in the mechanical use of energy so that energy is not wasted on unnecessary motion.

   An example of the latter is the power saver style cut-off knife at the corrigator. This unit uses a bank of capacitors to hold the return energy created as the knife stops every revolution and uses that power to start it again instead of wasting it.

   Another example is the replacement of compressed air systems for scrap removal with energy efficient vacuum systems. The list of Smurfit-Stone energy reduction measures is long and has entailed significant investment in equipment designed to use less energy.

2. **The Boeing Company**: For many years Boeing has sought methods to reduce energy consumption: through equipment changes and systemic usage innovations.
   Examples include:
   1) Use of "smart" controls on motors, pumps and valves to increase operating efficiency.
   2) Use of thermal storage systems to minimize electrical loads during peak periods.
   3) Installation of sky lighting where practical.
   4) Installation of reflective (white) roofing material where possible.

5) Implementation of smart buildings so that operating schedules match occupancy patterns, central lighting controls and motion sensors in offices, programmable thermostats.

6) An Energy Awareness Campaign for employee involvement.

3. **Lockheed Martin**: has, for a number of years, spent considerable efforts on employee awareness and the importance of conserving energy. These programs are in place throughout facilities in Sunnyvale (Lockheed Martin Missiles & Space Operators) and Palo Alto (Lockheed Martin Advanced Technology Center) and focus on work area lighting systems, computers, monitors and HVAC systems. These systems account for nearly ¾ of total energy use. Last year Lockheed began notifying employees with a 2 minute video on an internal Employee Television System informing them of ways to reduce their consumption. They audit their electricity programs' usage to insure that conservation measurers are working.

4. **Dow Chemical Company** operates a major plant in Pittsburg, California. With regard to long-term energy efficiency, Dow's commitment to change from self-generation to co-generation (a Cal Pine plant) efficiencies of scale will make energy unit production cheaper. Furthermore, there will be an increase in available power as the co-generation plant will sell into the grid.

   In response to our immediate crisis the Pittsburg site has recently curtailed its operations and reduced its consumption by an enormous 55%.

5. **Raytheon Manufacturing Operations** (El Segundo) conservation efforts reduced consumption between 2000 and 1999. Raytheon focused on conserving energy used for lighting, HVAC and enhanced employee awareness, and invested in energy efficient industrial equipment including variable speed drives and digital control systems.

6. **California Steel** (Fontana) has recently reduced its consumption 13 megawatts during Stage 2 alerts. To solve its "interruptible" problem, but at great cost and inconvenience to employees, California Steel rescheduled and extended production hours to non-peak periods.

7. **Pacific Bell**. Is an example of a communications technology company that has a history of energy conservation. Particularly useful to Pac Bell have been rebate programs offered by PG&E which provide guidance for investing in equipment incorporating more efficient mechanical designs. Pac Bell has revamped internal standards to target vendors selling energy efficient designs.

In response to the current crisis, Pac Bell has successfully reduced consumption through measures taken to increase employees' awareness and by turning off unnecessary lighting and equipment that is not being used.

Conclusion:

I think that concludes my presentation today, unless the committee has any questions . . .

California Manufacturers and Technology Association

Key Actions to Address the Electricity Crisis: January 16, 2001

Until new and re-powered generation comes on line in three to five years to improve reliability and stabilize prices, we should take all the following actions to see us through the immediate crisis:

PRICE: All customers should retain the option to purchase electricity from a utility supply portfolio that includes utility-owned generation. Small consumer groups would rather throw business customers to the market for all their electricity needs. This so-called "solution" to high prices for small customers would double, or even triple, the price business pays for power - a devastating blow to California companies already reeling from high natural gas prices and a 15% increase in electric rates. Because all customers, large and small, have paid the costs for utility plants, there is simply no justification for discriminatory treatment based on the size of the customer load.

SUPPLY: We should do the following to avoid Stage 3 rolling blackouts in the next two to three years:

- **Site plants that generate during peak periods.** This will put downward pressure on energy prices on peak, and could help prevent statewide or local area blackouts if plants are located in transmission constrained areas. These may be ISO, state, utility-owned or private generators under contract for services at reasonable prices.

- **Aggressively promote voluntary conservation during peak periods.** The state should embark on a campaign to emphasize the cost and reliability benefits of energy efficiency and demand reduction on peak. Because California has traditionally been a high-priced state, manufacturers here are already very energy efficient. But we can and should do more. The attached examples show how our members have freed up megawatts on peak by moving more hours of production to off peak periods. We should create programs to encourage more load shifting to reduce peak demand.

- **Encourage installation and operation of small customer owned generators.** We must remove the barriers to distributed generation such as onerous utility standby fees. Customers installing these units can protect themselves from outages and free up supply for customers who do not install on-site power. The latest technologies for producing electricity on-site are clean, efficient and could be installed before the summer of 2001. We should also allow emergency back-up generators to operate prior to stage three blackouts to prevent outages.

- **Create new demand-relief programs.** When voluntary measures are not enough to reduce demand, we need the current interruptible program and other new programs to pay customers for curtailing electric use. These can both reduce the price of energy on-peak and reduce the chance of stage three blackouts.

Note: The Commission has not held workshops nor issued a report on demand reduction programs for 2001, yet the Commission closed the November opt-out window for interruptible customers and has not allowed interruptible customers to participate in ISO load programs. Bids into the ISO program are due in February. We need rapid consideration of this issue in order to accumulate enough customer load in demand reduction programs to see us safely through the summer of 2001.

We don't have many options for the immediate supply crisis. We should pursue them all to avoid even one stage three rolling black-out. Such a drastic event would jeopardize public health and safety and seriously harm the California economy.

For more information, contact Dorothy Rothrock at (916) 498-3319

Electricity Conservation by California Manufacturers

Contact: Dorothy Rothrock 916-498-3319.

Even before the current crisis, California's industrial companies aggressively invested in energy conservation measures. This has always made good economic sense because energy costs in California have traditionally been among the highest in the nation and because energy is a significant cost in virtually every manufacturing process.

When the shortages became apparent this summer, most CMTA companies began energy saving programs in their offices similar to the California Grocers Association program. For example, Intel Corporation was able to reduce 3 MW of electricity demand during last year's stage 2 emergencies by adjusting HVAC settings and by turning off non-essential lighting and equipment.

It is more challenging to reduce electricity use in industrial processes. The following are some examples of how CMTA member companies have stepped up to the plate to respond to the energy crisis by reducing overall demand and by curtailing power in their facilities during system emergencies.

We hope you find these examples enlightening. CMTA members are committed to finding solutions to the crisis and remaining profitable in California. I look forward to working with you this year on the many complex issues before us.

California Steel Industries (Fontana, CA)

Contact: Brett Guge - 909/350-6208

Energy Reduction: 13 Megawatts during stage 2 alerts

California Steel Industries (CSI) is on an interruptible contract with SCE. The numerous stage 2 interruptions during December, coupled with the high cost of natural gas made CSI's production costly and unprofitable.

To solve the interruption problem, **CSI rescheduled and extended production hours to non-peak periods and was able to avoid using 13 megawatts of electricity during stage 2 emergencies.**

The cost to the workers was inconvenience. The cost to CSI was overtime paid to workers during the hours of extended production.

The Dow Chemical Company (Pittsburg, CA)

Contact: John Ulrich - 916/989-9692

Energy Reduction: 6 Megawatts per hour for a two week period

The Dow Chemical Company will curtail operations at it's Pittsburg, California site during the last two weeks of January 2001 in order to conserve electrical power while at the same time minimizing the premium cost currently being incurred for that power. By modifying production schedules and inventory levels, electrical consumption will be reduced by 55% during this period. Additionally, premium electrical costs in excess of $1 million will be avoided.

An estimated 6 megawatts/hr of industrial use will be continuously curtailed throughout the two week period; enough to light 6,000 – 7,000 average homes or service the electrical needs of 20,000 – 22,000 Californians during that same period.

During the two-week curtailment of operations, Dow personnel will continue to monitor equipment thereby assuring safe and environmentally compliant operations. **Personnel will also be assigned minor maintenance, housekeeping, training, and safety activities. No loss of employee wages will result from this short term scheduling change.**

Lockheed Martin (Sunnyvale and Palo Alto)

Contact: Bob Coats – 408/743-1236

Energy Reduction: 5 Megawatts during stage 2 alerts

Lockheed Martin has had established energy conservation programs in place for a number of years, and has refocused employee attention on the issue as it came to the forefront mid-year 2000. Programs in place throughout facilities in Sunnyvale (Lockheed Martin Missiles & Space Operations) and Palo Alto (Lockheed Martin Advanced Technology Center) are focused on work area lighting systems, computers and monitors, and facility heating and air conditioning systems.

Lockheed began notifying employees last year with a 2 minute video on an internal Employee Television (ETV) system, informing employees of the issues and reminding them to turn off unnecessary lighting, computing resources, and environmental (heating/air conditioning) systems. These systems account for nearly three-quarters of total energy usage.

To monitor usage, audit programs insure conservation programs are working. More than 70% of lighting systems are controlled by motion sensors to minimize usage. Computer controlled HVAC equipment has software routines to set time schedules, reset temperatures on centrifugal chillers and boilers to use the least amount of energy while allowing no heat above 70 degrees and no cooling below 75 degrees inside of buildings. In addition, Lockheed uses outside air economizers to cool buildings instead of electrically driven chillers where applicable.

Lockheed has been working closely with the Silicon Valley Manufacturing Group (SVMG) to lower the demand in Silicon Valley by starting facility generators and reducing further the cooling in the plant. **This has allowed them to shed 5 Megawatts of power at each event, which typically occur at stage 2 alerts from the California ISO.**

Raytheon (El Segundo, CA)

Contact: Miles Keefe 310/647-9337

Energy Reduction: 7% overall reduction in 2000 vs. 1999

Raytheon conservation activities:

- Hallway lighting in office and manufacturing buildings has been at 'night lighting' levels since early in December.

- Energy conservation messages are published to all CA employees weekly. During Stage 1 and Stage 2 emergencies the conservation messages are posted one or more times daily. Raytheon essentially has

different levels of conservation messages ranging from turning off unneeded lights to turning off everything but critical equipment.

- During the last 14 months Raytheon has initiated seven discrete major energy efficiency projects in the El Segundo area. Six of the projects are currently in the SCD 'rebate' pipeline. The projects vary from installing new more energy efficient chillers to repiping chilled water systems, installing variable speed drives on large electric motors and installing digital control systems on heating and air conditioning systems. They estimate that **the improvements will reduce consumption by 15,000 - 20,000 MWh annually.**

- During Stage 2 emergencies they take the following actions:

  - Shut down 16 escalators.

  - Reduce office lighting to an absolute minimum.

  - Turn off all electrical equipment except that needed for the critical conduct of business.

  - Allow building temperatures to rise while maintaining standards required for health and safety and manufacturing operations.

During 2000 Raytheon achieved a 7% overall consumption reduction (vs. 1999) at the major campus facility in El Segundo, CA.

Smurfit-Stone Container Corp.

Smurfit-Stone Container Corporation (SSCC) is the premier manufacturer of paper- and paperboard-based packaging. SSCC has 28 facilities in California including two 100% recycled content paper mills, the only newsprint mill in California which also uses 100% recovered paper as feedstock, and employs approximately 3400 individuals.

Several of the SSCC facilities are interruptible customers and have reduced load or shutdown whenever called upon by the ISO/utilities. In addition to turning off unused equipment, changing the temperature settings for heat and air conditioning, the following are examples of how our facilities have met this directive:

City of Industry, Container:
Contact: Dan Devicaris 909/594-2741

- Changed office lighting to higher efficient T8 fluorescent fixtures with electronic ballets with a 30% reduction of energy usage
- Changed to super efficient AC motors and power saver style cut-off knife at corrugator. This unit uses a bank of capacitors to hold the return energy created as the knife stops every revolution and uses that power to start it again instead of wasting that power.
- Replaced scrap air- conveyors with belt type and installed inter-locks on them to turn the system off when machines do not operate
- Use timers and photocells to correlate turn off the scrap blower motors and unnecessary lighting with brake time and dawn to dusk time

Corona Container:
Contact: Robert Uribe 909/736-2519

- Upgraded lighting system which saves approximately 785,000KWh per year
- Installed up-dated conveyor systems which turn off when no loads are on line
- Installed scrap blower inter-locks on converting equipment which turns off when machines do not operate

- Utilizing energy efficient motors - as motors are replaced have converted to AG inverters drives on various equipment

Fresno Container:
Contact: Steve Johnson, 559/ 498-3232

- In process of replacing 10 diaphragm pumps with energy efficient pumps.
- Replaced compressed air systems for clean up and scrap removal with more energy efficient vacuum systems. The goal is to minimize use of compressed air through training, equipment and process improvement.
- Scrap system timers were installed to replace energy usage when machinery is not operating.
- Installing motion detectors for lights in office and other areas

Los Angels Bag:
Contact Mac Moorer 323/722-4600 x 130

- Reprogrammed outside light timers to only come on at dusk and off at dawn.
- Utilize 125HP air compressor instead of 150HP air compressor on the weekends.
- Changed lighting to low energy tubes

Pomona Newsprint Mill
Contact: Clark Spyker 909/623-6601

- Reduced electrical consumption by 1,750,000 KWh/year through the installation of more efficient air compressors.

Sacramento East & West - Recycling Facilities
Contact: Rich McNeese 916/381-3340

- Replaced outdoor light fixtures with energy efficient fixtures - photo cells
- Replaced 110v lighting to more energy efficient 277v lighting

Santa Clara Carton:
Contact: Eric Forbes 408/496-5200

- Delay energy intense activities until evening hours (after 6pm) when possible
- Reduce set points on process chillers
- Shut down unused sections of conveyors when possible
- Reduce compressed air demand and plant vacuum

Santa Fe Springs Sheetfeeder (Marquardt)
Contact: Bob Simonds, 562/404-8313

- Rescheduled production to non-peak hours when possible - saves approximately 20,000 KWh per month.

Vernon Mill:
Contact: Jim Sorenson, 323/ 583 3421

- Changed from a 24/7 operation on one paper machine to a 10/4 (10day running, 4 days off) which has saved approximately 1MW of power or 10% of Mills annual load.
- Reduced production on other paper machine by shutting down .75 mw worth of vacuum pumps.

Historical California Income and Franchise Tax Benefits Relating to Energy

Conservation Incentives

Energy Conservation Credit 1981 - 1986
(former R&TC Sections 17052.4, 17052.8, and 23601.5)

What is eligible?

Energy conservation measures installed on California properties owned by the taxpayer.

What is an energy conservation measure?

An energy conservation measure includes attic insulation, weather-stripping, caulking, water-heater blanket installation, low-flow shower heads and duct insulation, wall insulation, pool and hot tub covers, floor insulation in premises with electrical resistance heating, ventilation cooling fans, attic ventilators, storm windows, furnace ignition systems, exterior shading devices, economizer systems and heat pumps that replace electric resistance heaters.

What years was this credit allowed?

The energy conservation credit began in **1981 and ended in 1986**.

How did the credit work?

For **residential and small nonresidential projects** (less than $6,000), the credit was 35% of the cost, not to exceed $1,500 per system. The credit applied to new and existing owner-occupied and rental units, as well as mobilehomes.

For **large nonresidential projects** ($6,000 and over), the credit was 25% of cost, with no upper limit. Any property and existing or new buildings were eligible. The state credit was reduced to the extent of any federal credit allowed.

Accelerated (**three year**) depreciation of these measures was allowed **as an alternative to claiming the credit or** for costs in excess of the credit.

Production Incentives

Solar Energy Credit 1976 - 1988
(former R&TC Sections 17052.5 and 23601)

What is eligible?

Expenditures eligible for the credit included the cost of materials and installation for solar energy systems that **produce** domestic or service **water heating**, **space conditioning**, **process heat**, **electricity**, **mechanical energy**

and **wind energy systems** for the production of electricity or mechanical work. In addition, the credit covers costs of purchasing **solar easements** and the cost of energy conservation measures **applied in conjunction with solar energy systems**, including insulation, water heating jackets, and faucet flow reduction devices.

What is a solar energy system?

Solar energy systems include **passive**, **semi-passive**, **active** and **photovoltaic** systems such as:

- Roof solar panels containing circulating water used for house space heating or house water heating.
- Solar panels that convert sunlight to electricity.
- Solar glazing systems that consist of transparent or translucent material used to transmit solar energy and to reduce the loss of thermal energy from the structure.
- Windmills to produce electricity from wind.

What years was this credit allowed?

The solar energy tax credit was established in **1976 and ended in 1988**.

How did the credit work?

The credit was allowed as a **percentage of** the purchase and **installation costs** of solar energy systems on premises owned by the taxpayer. If the credit exceeded the net tax, the unused portion was allowed to be carried over to succeeding years. Accelerated (three year) depreciation of these measures and systems was allowed as an alternative to claiming the credit or for costs in excess of the credit.

Example - 1984

a. For **all residential projects and small nonresidential projects** (less than $12,000), the credit was 50% of the system cost, not to exceed $3,000 per system. The credit applied to new and existing owner-occupied and rental units, as well as mobilehomes. To the extent state and federal credits are claimed for the same costs, the state credit for residential investments had to be reduced, so that combined credits did not exceed 50% of the cost.

b. For **large nonresidential projects** ($12,000 and over), the credit was 25% of cost, with no upper limit. Both existing and new buildings are eligible. The state credit for nonresidential investments may be claimed in addition to the federal credit.

By 1987, the percentages allowed as a credit had been **reduced to 10%** of the eligible costs for **single-family dwellings**, **not to exceed** a credit of $1,000, while for **commercial property** the percentages allowed as a credit remained **25%** of the eligible costs. However, a **smaller percentage (15%)** was allowed in

that year for **wind energy systems** installed on or after January 1, 1986, and on or before June 30, 1987.

Rapid Amortization ("Write-off") of Cogeneration and Alternative Energy Equipment - 1977 to 1985
(former R&TC Section 17251)

What is eligible?

Expenditures eligible for the deduction included the acquisition and installation costs of **cogeneration and alternative energy equipment.**

What is cogeneration or alternative energy equipment?

Cogeneration equipment, was defined as electricity-generating equipment that uses exhaust steam, waste steam, heat, or resultant energy from an industrial, commercial or manufacturing plant or process or a thermal powerplant for an industrial, commercial, or manufacturing plant or process.

Alternative energy equipment, was defined as equipment used to produce or convert energy from cogeneration, solar energy, geothermal energy, biomass energy, and small hydroelectric energy. It **does not include** equipment for projects begun before January 1, 1980, or equipment that uses **fossil or nuclear fuel**.

What years was this rapid amortization deduction allowed?

From **1977 through 1985**.

How did the deduction work?

California allowed the cost of cogeneration and alternative energy equipment to be amortized ("written-off") over 12 or 60 months, at the option of the taxpayer.

Solar Pump Credit 1981 - 1986
(former R&TC Sections 17052.1, 17052.4, 17052.8, and 23607)

What is eligible?

Expenditures eligible for the credit included the acquisition and installation costs of **solar pumping systems** used in **agricultural irrigation**.

What is a solar pumping system?

Solar pumping systems include **active thermal** systems, **photovoltaic** systems, and any other system that converts solar energy into electrical or mechanical energy for **purposes of driving an irrigation pump**, as well as ancillary components necessary for the installation and operation of the system.

What years was this credit allowed?

The solar pump credit was established in **1976 and ended in 1988.**

How did the credit work?

The amount of the credit was **50% of the cost (not to exceed $75,000 per system)** for the acquisition and installation costs of **solar pumping systems** used in **agricultural irrigation.** If the credit exceeded the net tax for the year, the unused portion could be carried over to succeeding years. This credit could not be claimed in addition to the solar tax credit for the same system.

Commercial Solar Energy Credit 1987 - 1988
(former R&TC Sections 17052.4 and 23601.4)

What is eligible?

Expenditures eligible for the credit included the cost of materials and installation for solar energy systems that **produce** domestic or service **water heating, space conditioning, process heat,** and **electricity installed on commercial premises,** cooperatives, apartment buildings, or other similar multiple dwellings, including buildings and any other common areas of a condominium maintained by a homeowners' association. **Windmills were not eligible for this credit.**

What is a solar energy system?

Solar energy systems include **passive, semi-passive, active** and **photovoltaic** systems such as:

- Roof solar panels containing circulating water used for house space heating or house water heating.
- Thermal mass (stone or liquid) that absorbs solar energy and releases that energy for house space heating or house water heating when the sun is not shining.
- Solar panels that convert sunlight to electricity.
- Solar glazing systems that consist of transparent or translucent material used to transmit solar energy and to reduce the loss of thermal energy from the structure.

What years was this credit allowed?

For taxable years **1987 through 1988.**

How did the credit work?

The commercial solar energy credit was 12% of the cost of commercial solar energy systems **installed on commercial premises,** cooperatives, apartment buildings, or other similar multiple dwellings, including buildings and any other common areas of a condominium maintained by a homeowners' association.

Special rules were provided for **lessees** of solar energy systems. The installation date was required to be on or after January 1, 1987, and on or before January 1, 1988. If the credit exceeded the net tax, the unused portion was allowed to be carried over to succeeding years.

Commercial Solar Electric System Credit 1990 - 1993
(former R&TC Sections 17052.5 and 23601.5)

What is eligible?

Expenditures eligible for the credit included the cost of materials and installation for solar energy systems installed on premises, **used for commercial purposes**, that are **located in California. Windmills were not eligible for this credit.**

What is a solar energy system?

Solar energy systems include **thermal electric** and **photovoltaic** systems such as:

- Solar panels that convert sunlight to electricity.
- Solar devices that use solar heating of a liquid to generate steam power to generate electricity.

What years was this credit allowed?

For taxable years **1990 through 1993**.

How did the credit work?

A tax credit of **10% of the cost of a solar energy system** installed on premises, **used for commercial purposes**, that are **located in California** and owned or leased by the taxpayer was allowed.

The credit could not be claimed for any solar energy system with a generating capacity in excess of 30 megawatts for any taxable year unless the federal government provided at least a 10% federal credit for that solar energy system.

Special rules were provided for **lessees** of solar energy systems; reduction in the credit for **grants** received from public entities, utility or public agency; allocation of credit among **multiple owners** and **partners** of a partnership; **guidelines and criteria** established by the State Energy Resources Conservation and Development Commission; and carryover of **excess** credits.

ENERGY CREDITS CLAIMED

Year	Solar Energy		Energy Conservation		Commercial Solar	
	# of returns	Credit Claimed	# of returns	Credit Claimed	# of returns	Credit Claimed
1976	5,434	$ 633,593	-	-	-	-
1977	13,462	7,755,850	-	-	-	-
1978	28,520	16,380,573	-	-	-	-
1979	57,508	33,724,464	-	-	-	-
1980	101,358	57,533,919	-	-	-	-
1981	91,584	45,259,920	217,691	37,592,952	-	-
1982	80,135	56,084,087	283,353	46,520,674	-	-
1983	83,015	72,956,089	198,892	38,780,328	-	-
1984	*1	*1	*1		-	-
1985	*1	*2	*1		-	-
1986	8,363	25,817,000	*1		-	-
1987	19,360	25,225,000	*1		-	-
1988	9,380	23,730,000	7,606	2,511,000	1,082	21,090,000
1989*3	3,743	12,813,000	3,977	1,545,000	813	6,880,000
1990*3	1,975	4,620,000	2,095	1,426,000	626	41,194,000
1991*3	1,267	3,632,000	1,134	347,000	476	1,930,000
1992*3	889	2,162,000	769	271,000	352	1,521,000
1993*3	654	887,000	613	156,000	317	2,906,000
1994*4	478	920,000	510	147,000	341	646,000
1995*4	404	2,470,000	508	184,000	194	909,000
1996*4	345	2,088,000	446	468,000	173	1,066,000
1997*4	302	2,507,000	356	250,000	133	860,000
1998*4	240	4,122,000	321	254,000	89	649,000

*1 Data is not available as this credit was not broken out separately.

*2 In 1981 an increasing trend of non-taxed returns with income over $200,000 was noted. These increases have been attributed to the number of taxpayers who claimed windmills as a solar energy credit. In 1985 there were significant changes in that provision that reduced the amount of allowable credits that could be claimed per tax year. This change was primarily responsible for the 1985 reduction (from 355 to 146) of non-taxed returns with income over $200,000.

*3 Data for the Solar Credit and Energy Conservation Credit is only for carryovers from prior years.

*4 Data for the Solar Credit, Energy Conservation Credit and Commercial Solar Credit is only for carryovers from prior years.

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Energy Conservation Tax Policy

Presented To
Assembly Committee on Revenue and Taxation
Hon. Ellen M. Corbett, Chair

January 29, 2001 LEGISLATIVE ANALYST'S OFFICE

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California's Energy Conservation Tax Measures

Currently, California has a limited number of tax incentives designed to encourage energy efficiency and energy. Each of these measures is estimated to result in relatively small revenue losses.

☑ Personal Income Tax

- ***Exclusion for Employee Ridesharing Benefits.*** Allows employees to exclude from income the compensation they receive from their employer for costs of participating in a ridesharing program (RTC Section 17090 and Section 17149).

☑ Corporate Income Tax

- ***Deduction for Employer-Provided Ridesharing Costs.*** Grants employers an immediate deduction as a business expense the costs they incur in providing a ridesharing program for their employees (RTC Section 17090, Section 17149, and Section 24343.5).

☑ Sales and Use Tax

- ***Exemption for Organic Products Grown for Fuel Purposes.*** Exempts the sale of organic products grown expressly for fuel purposes, such as wood and grain (RTC Section 6358.1).
- ***Exemption for Use of Refiner's Gas.*** Exempts the "still" gas produced as a by-product of the refining of crude oil (RTC Section 6358.1[b]).

☑ Property Tax

- ***Exemption for Active Solar Systems.*** Exempts from property assessment certain active solar energy systems that produce heat, electricity, or mechanical energy. The value of such purchases and installations is not included in the value of the property for property tax purposes until resale. This provision is scheduled to sunset in 2006 (Article XIII A California's Constitution Section 2[c][1] and RTC Section 73).

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Federal Energy Conservation Tax Measures

Certain income tax incentives are available at the federal level for energy investments.

☑ ***Deduction and Exclusion for Energy Conservation Subsidies.*** These allow utilities to deduct the cost of subsidies provided to customers for the purchase and installation of any energy conservation or efficiency measures. The subsidies are also excludable from income by the customer for income tax purposes. Eligible conservation measures include those designed to reduce the consumption of natural gas or electricity for a dwelling unit (IRC Section 136).

☑ ***Credit for Energy Property.*** Provides a credit generally equal to 10 percent of the cost of purchase and installation of certain energy property or equipment, such as solar systems or geothermal systems (IRC Section 48).

☑ ***Credit for Producing Fuel from Unconventional Sources.*** Allows a credit for production of energy from certain nontraditional sources, such as oil produced from shale or tar sands; or gas produced from brine, shale, coal seems, and biomass (IRC Section 29).

☑ ***Accelerated Depreciation for Certain Energy Property.*** In certain cases, allows energy investments, such as solar and wind, to benefit from an accelerated depreciation (cost recovery) schedule. This essentially lowers the cost for investing in these types of systems (IRC Section 168).

☑ ***Exclusion of Transportation Fringe Benefit.*** Allows for the exclusion from income, expenses incurred by an employer for employees' ridesharing expenses (IRC Section 132).

Representative Energy Conservation Tax Measures Adopted By Other States

Other states have adopted a variety of measures in order to encourage energy conservation and energy efficiency. A few examples are provided below.

State of Oregon

The State of Oregon has an extensive system of tax credits available for energy conservation and alternative energy systems. These tax incentives are designed to increase consumption or production of certain energy products.

☑ Personal Income Tax

- ***Credits for Consumer Energy Purchases.*** Allows various credits generally ranging from $50 to $1,500 for consumer purchases, including: (1) appliances (dishwashers, clothes washers, refrigerators, and water-heating systems); (2) efficient heating and air-conditioning ducts; (3) geothermal space-heating systems; (4) solar-water heating, solar space-heating systems, and solar-photovoltaic systems; and (5) alternative fuel vehicles.

☑ Corporate Income Tax

- ***Credit for Costs of Energy Projects.*** Provides that businesses are eligible for a credit of 35 percent of the incremental costs (costs in excess of the usual costs) of projects involving energy conservation, recycling, renewable energy resources, and less-polluting transportation fuels. These projects can be associated with office buildings, stores, apartment buildings, manufacturing plants, farms, or transportation.

Representative Energy Conservation Tax Measures Adopted By Other States

Continued

Commonwealth of Massachusetts

Massachusetts has an extensive program of tax exemptions and credits available through the state's tax programs. These programs are designed to encourage the consumption and production of energy efficient and alternative energy systems.

☑ Personal Income Tax

- ***Credit for Renewable Energy Systems.*** Provides that individuals who purchase and install a solar or wind energy system in their residences are eligible for a credit equal to the lesser of 15 percent of the cost of the system, or $1,000.

☑ Corporate Income Tax

- ***Deduction for Renewable Energy Systems.*** Allows businesses which purchase and install a solar or wind energy system for heating, air conditioning, or water heating purposes, a deduction from income equal to the costs of purchase and installation.
- ***Patent Exemption for Alternative Energy and Energy Conservation.*** Provides that any income derived from a patented alternative energy or energy conservation system which is approved by the state Commissioner of Energy, is exempt from personal or corporate income taxes for a period of five years.

☑ Sales and Use Tax

- ***Exemption for Renewable Energy Purchase.*** Provides an exemption to individuals who purchase equipment directly related to a solar, wind, or heat pump system used as a primary or auxiliary system for a primary residence.

☑ Property Tax Exemption

- ***Exemption for Energy Systems.*** Grants homeowners a 20-year exemption (from the date of installation) from the local property tax for the value of solar or wind energy systems. Hydroelectric facilites are eligible for a similar exemption.

Representative Energy Conservation Tax Measures Adopted By Other States

Continued

State of New York

New York has a number of different programs administered through the personal and corporate income taxes. These programs are designed to have an effect on both the consumption and production of energy conservation systems and alternative energy equipment.

☑ Personal Income Tax

- ***Deferral of Gain From Sale of Energy Investments.*** Allows capital gains from the sale of certain emerging technology investments to be subtracted from income, if the proceeds are reinvested in another emerging technology investment.
- ***Credit for Solar Generating Equipment.*** Grants taxpayers a credit equal to 25 percent of certain solar electric generating expenditures. The credit is based on certain system characteristics and is capped at $3,700 per system.
- ***Credit for Alternative Fuel Vehicles.*** Provides that taxpayers may claim a credit equal 50 percent of the incremental cost, up to $5,000 per vehicle, for the purchase of electric and clean-air vehicles.

☑ Corporation Income Tax

- ***Credit for Alternative Fuel Vehicles.*** Allows taxpayers to claim a credit equal to 50 percent of the incremental cost, up to $5,000 per vehicle, for the purchase of electric and clean-air vehicles.
- ***Credit for Emerging Technology Companies.*** Provides tax credits of up to $1,000 per employee for certain emerging technology companies that create new jobs in the state.

Representative Energy Conservation Tax Measures Adopted By Other States

Continued

State of Texas

The State of Texas has a limited number of programs available for energy conservation and alternative energy technologies, directed toward encouraging consumption and production of these types of products.

☑ Sales and Use Tax

- ***Exemption for Repair, Remodeling, Maintenance, or Restoration.*** Exempts purchases related to the remodeling or repair of personal property used to protect the environment or conserve energy if required by a statute, agency, court, or governmental entity.

☑ Corporate Income Tax

- ***Exemption For Energy Businesses.*** Excludes from taxation those businesses engaged exclusively in the business of manufacturing, selling, or installing solar energy devices.
- ***Deduction For Cost For Solar Energy Devices.*** Allows taxpayers to deduct the cost of solar energy equipment installed from the taxable basis of their capital assets, resulting in a decrease in tax liabilities.

State of Michigan

Michigan does not generally structure energy conservation incentives through the tax system, but relies instead on an extensive system of grant and loan incentives to encourage investment in alternative energy and energy conservation. Most of these programs require an application on the part of the energy consumer or producer.

☑ Property Tax

- ***Exemption for Energy Projects.*** Exempts the value of energy conservation devices from the local property tax.

Other Considerations Related to Energy Tax Incentives

The use of tax incentives for the purpose of encouraging energy conservation and energy efficiency raises a number of important issues and considerations for the Legislature.

☑ ***Tax Treatment Typically Has a Minor Effect on Purchase Decisions.*** Investment decisions regarding energy efficiency and energy conservation measures are likely affected much more by cost factors and technological considerations than by state—or federal—tax policy.

☑ ***Most Programs Will Act as Both "Reward" and "Incentive."*** While tax incentives can encourage additional investment in energy efficient and energy conservation systems, a portion of the benefits will go to those who would have undertaken such steps even in the absence of the program.

☑ ***Some Approaches Can Improve the Efficiency of Tax Incentives.*** The incentive aspect of a tax incentive program could be increased by restricting the incentive such that only the "incremental" cost of an energy investment is eligible for favorable tax treatment.

☑ ***Direct Spending Is One Alternative to Tax Incentives.*** A system of grants and loans designed to encourage investment and production of energy efficiency and energy conservation measures might avoid some difficulties inherent in a tax incentive program.

CALIFORNIA
BUDGET PROJECT

January 29, 2001

TAX POLICY AND CALIFORNIA'S ENERGY CRISIS

The search for solutions to California's energy crisis has caused some to look toward California's tax code to provide incentives for energy conservation and production. While conservation is a universally shared goal, there are a number of questions as to how this goal can best be achieved. This paper examines some of the factors that affect the desirability of using the tax code to address the energy crisis.

HOW SHOULD COMPETING ENERGY CONSERVATION PROPOSALS BE EVALUATED?

There are a number of ways to provide incentives for energy conservation and/or assistance to families affected by the rising cost of energy: service programs (i.e., weatherization), direct expenditure programs (i.e., emergency energy assistance programs), discount and rebate programs, low cost loan programs, and tax incentives. Competing proposals should be evaluated against an objective framework that asks:

1. Is the proposed incentive the most cost-effective means of achieving the desired goal?
2. Can the incentive be implemented and begin producing measurable results within the desired period?
3. Who would (and would not) benefit from an incentive? How are the benefits of an incentive distributed among different groups of taxpayers?
4. How much will an incentive cost? Is the cost capped or open-ended?

HOW MUCH DO FAMILIES PAY FOR ELECTRICITY

On average, utilities account for a relatively modest share of families' annual expenditures (2.7 percent). However, this figure masks significant disparities between households at varying income levels. Low-income families spend a greater share of their income on electricity than do higher income households. According to the Consumer Expenditure Survey conducted by the US Bureau of Labor Statistics, the poorest fifth of families spent nearly eight times as much of their income for electricity as did the wealthiest fifth of families. Natural gas costs follow a similar pattern, with families with the poorest fifth of families spending more than six times as large a share of their income on natural gas as families in the top quintile.

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How Much Do Consumers Spend on Utilities (1999)						
Income Group	Pre-Tax Income	Annual Expenditure on Electricity	Annual Expenditure on Natural Gas	Electricity as a Percent of Income	Natural Gas as a Percent of Income	Gas and Electricity as a Percent of Income
Lowest 20%	$7,264	$617	$162	8.5%	2.2%	10.7%
Second 20%	$18,033	$771	$227	4.3%	1.3%	5.5%
Middle 20%	$31,876	$869	$234	2.7%	0.7%	3.5%
Fourth 20%	$52,331	$991	$292	1.9%	0.6%	2.5%
Top 20%	$110,105	$1,193	$394	1.1%	0.4%	1.4%
TOTAL	**$43,951**	**$899**	**$270**	**2.0%**	**0.6%**	**2.7%**

Source: Bureau of Labor Statistics, Consumer Expenditure Survey

Who Would (and Would Not) Benefit from Tax Incentives for Conservation?

Tax credits that are not refundable provide no benefit to families that have no tax liability.[1] California has very high tax thresholds (the income level at which a household becomes subject to tax). The tax threshold for a family of four is $39,790. In contrast, California's median household income - the income of the household exactly at the middle of the income distribution - was $43,744 in 1999. Consequently, tax incentives provide *no* benefit to a large number of California families.

California's Tax Thresholds are High		
	Tax Threshold	Threshold as a Percent of Poverty
Single	$12,290	147%
Married, no children	$24,581	218%
Head of Household, one child	$32,041	285%
Head of household, two children	$37,916	268%
Married, one child	$33,915	240%
Married, two children	$39,790	233%

Note: Assumes families claim standard deduction and the renters' tax credit. Measured as a percent of 2000 poverty guidelines.

Seniors are another group that is likely to suffer from high electricity costs, but receive little benefit from tax incentives for conservation. The tax threshold for seniors is even higher than that for other households, since seniors receive an extra $75 personal credit. Moreover, the state does not tax Social Security income. A married couple over the age of 65 must have $2,175 per month in income in addition to Social Security before they would have a tax liability. A single senior must have $1,087.50 per month in addition to Social Security before they owe state income taxes.

Credits Versus Deductions

Tax credits reduce the amount of taxes that would otherwise be owed on a dollar for dollar basis. Deductions reduce the amount of income that is subject to tax. While credits are worth the same to taxpayers at all income levels - as long as they have sufficient income to have a tax liability -

[1] Refundable tax credits provide cash back to taxpayers to the extent the amount of the credit exceeds the taxpayer's liability. California currently has only one refundable credit, the child care credit enacted as part of last year's budget negotiations.

deductions are worth more to high-income taxpayers. The value of a deduction increases with the marginal rate of a taxpayer. A deduction is worth three times more to a family subject to the state's 6 percent tax rate than it is to a family at the 2 percent rate.

To the extent the committee considers incentives, credits provide the same benefit to all taxpayers with sufficient incomes to claim the incentive. Refundable credits provide assistance to families with incomes too low to claim traditional credits. However, many of these families do not have a filing requirement (and thus are unlikely to learn about the availability of a credit). Moreover, gap between the time an expenditure is made and a credit is claimed and received may limit the effectiveness of credits as an incentive for low-income households.

Rewarding Taxpayers for Doing What They Would Otherwise Do

An incentive only works as an incentive if it encourages behavior that would not otherwise have occurred. Most of the research suggests that most tax credits have minimal, if any, influence on taxpayers' behavior. In his recent confirmation hearing, US Treasury Secretary Paul O'Neill testified that, "As a businessman, I never made an investment decision based on the tax code. If you give money away, I will take it, but good business people don't do things because of inducements."[2]

If higher electricity rates alone would encourage a taxpayer to buy energy-efficient appliances, there is no need for an incentive. To the extent benefits go to reward actions that would have taken place in the absence of the incentive, costs increase relative to the net benefit to society. It is very difficult to limit the availability of a tax credit to those circumstances where it would make the difference between the desired behavior occurring and not occurring.

The "Leakage Factor": The Deductibility of State Taxes

Taxpayers can deduct state income taxes if they itemize deductions on their federal income taxes. Incentives that reduce state income taxes result in higher federal tax bills for taxpayers who itemize their deductions. This is called leakage because a portion of the benefits "leak" out of the state in the form of higher federal income taxes. As much as a quarter of the benefits of state tax incentives are lost in the form of higher federal tax payments.

How Do Tax Incentives Measure Up?

1. ***Are tax incentives the most cost-effective means of energy conservation?*** The cost of tax incentives relative to their benefits is relatively high due to leakage and the fact that persons who would have done the same thing in the absence of the incentive often claim tax credits.
2. ***Can the incentive be implemented and begin producing measurable results within the desired period?*** Good question. The benefits of rebate and discount programs are available immediately, whereas the benefits of tax incentives are not realized until a taxpayer files their tax return in the following year.
3. ***How are the benefits distributed among various groups of taxpayers?*** Tax incentives are of little or no use to lower income families, including many seniors, who have no California income tax liability (unless they are refundable). These same families are suffering the greatest burdens from rising energy prices. Direct rebate, service, and discount programs, on the other hand, can be

[2]Joseph Kahn, "Treasury Choice Varies From Bush on Tax Outlook," *New York* Times (January 18, 2001).

targeted to those most in need of assistance.

4. ***How much will the program cost? Is the cost fixed or open-ended?*** Most tax incentives are available to anyone who engages in the activity that is incentivized. Consequently, costs are open-ended and unpredictable. Direct expenditure programs, including rebate and assistance programs, can be capped resulting in costs that are predictable and controllable.

RECOMMENDATIONS

1. The Legislature should act cautiously. The state's history in using tax incentives as a tool for encouraging conservation and/or alternative power generation has not been particularly positive. If incentives are to be used, they should have sunset dates and provisions for evaluating their cost effectiveness and impact on conservation and/or production.
2. The state has an existing infrastructure of energy conservation and assistance programs. These programs are well positioned to move quickly to implement new and/or expanded programs. Specifically, the state could augment:
   - The Low Income Home Energy Assistance Program's (LIHEAP) Energy Crisis Intervention and Home Energy Assistance Programs to provide immediate relief to families unable to pay higher energy bills, both electric and natural gas.
   - Existing weatherization programs targeted at lower income households and/or expand these programs to include other conservation measures (i.e., assistance toward the purchase of low wattage light bulbs or energy-efficient appliances).
   - Conservation programs currently offered through utility companies.

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Lenny Goldberg
Written summary of testimony delivered at
the Monday January 29th hearing of the
Assembly Revenue and Taxation Committee

In light of the state's current electricity crises, and the governor's allocation in the budget of $1 billion dollars for energy efficiency and conservation incentives, this committee is sure to be inundated with bills addressing the utility crisis, and attempting to encourage conservation, via the tax code. It is the general position of CTRA to be skeptical of the use of tax credits and deductions for this purpose. We maintain this position during the current state of emergency for the following reasons.

First, given the urgency of the current electricity situation, it will be important to encourage conservation and efficiency in a way that will lessen demand for power right away. A tax credit or deduction, available to consumers for the next 5 or ten years, or possibly indefinitely, will not have any effect on the timing of the implementation of the desired energy saving home improvements. Taxpayers will have the option of waiting until the current crises comes to an end before deciding if they want to make improvements, and at this time the tax credits or deductions available to the taxpayer may not be worth the expenditure of state money.

Tax credits and deductions can be overly generous and thus lead to the proliferation of inefficient or poor quality technology and products. For example, during the late 1970's and early 1980's very generous credits were offered to encourage the installation of solar powered water heaters. This led to a rise in demand for this product which, in turn led to an increase in suppliers. As is typical with a boom market, some of these new suppliers were just after a quick profit and produced poor quality water heaters. It appears that today, when the state most needs the power demand offset of these products, that many are no longer functioning.

Albeit a more generic concern, it is still important to recognize that tax credits and deductions will create discrepancies among taxpayers that would otherwise be treated equally under the tax code. An overabundance of tax credits, or any overly generous single credit, could erode the equity and credibility of California's tax code.

Tax credits require a simple majority vote to be added to the tax code but a 2/3-majority vote to be deleted from the code. For this reason it is important to sunset any credits that

may be considered in the near future. Otherwise tax credits that are inefficient, or too costly could become an ongoing drain for General Fund money, and could wind up encouraging conservation and efficiency improvements that would have otherwise taken place.

When it comes to spending money to encourage energy conservation and efficiency the state needs to be able to get the most bang for its buck. So, in as far as a California Power Authority is being considered, we need to make sure that whatever is done to encourage the reduction of power demand is carefully woven into a big picture solution to the energy crisis. A simple sprinkling of the land with tax credits may not be the best way to spend state dollars.

CTRA is not staunchly opposed to any sort of tax credit. We believe that a credit program administered by the Tax Credit Allocation Committee of the treasure's office could have the desired effect of reducing the demand for energy at a higher level per dollar spent. The credits should be capped and allocated through an application process so that only those who can offer the highest amount of energy conservation, and at the best price, would receive the credit. This would eliminate the possibility that state dollars would be spent on poor quality technology and would also help to keep the cost of a tax credit program down.

We also believe that a manufacturer's investment credit for renewable power generation, offered only for a limited period of time, could ease the current power supply situation by providing for more generation that is also more environmentally friendly.

CTRA has examined several of the bills that have outlined tax credit programs for energy efficiency and conservation and they all appear to be very costly and to have many of the problems discussed above. The following is a brief analysis of some such bills.

SB X1 16, authored by Senator Nell Soto, would allow a refundable (upon appropriation by the legislature) credit equal to the expenses incurred by a taxpayer for each generator, providing electric service onsite, at a dairy farm located in this state. This credit will only be allowed in the first taxable year that the generator is first put into operation. "Expenses" will include the purchase price of the generator and all expenses for its installation, upgrade, or expansion. The operation and maintenance of these generators must comply with local and regional air quality standards.

This bill provides for no control over the timing of the purchase and installation of these onsite generators. Taxpayers could wait five years, see how the energy crisis pans out, then decide whether or not to invest in onsite electric generation, and still receive this credit. This bill also carries with it the potential for very high costs. Providing for a 100% credit for the costs of purchasing and installing onsite generation all at once could wipe out significant portions, if not all, of many dairy farm operator's tax liabilities. This bill currently contains no sunset date

SB X1 17, authored by Senator James Brulte, proposes a 75% tax credit for the costs incurred by a taxpayer for the purchase and installation of a solar energy system for the production of electricity installed on property in this state. This credit will sunset January 1st, 2009. If the credit allowed by this section exceeds the "net tax" The excess credit may be carried over to reduce the "net tax" in the following year, and the succeeding seven years, until the credit is exhausted.

This bill too provides for no control over the timing for the purchase and installation of the solar energy systems. Such a large credit could encourage the rapid dissemination of inefficient technology and poor quality systems. This program could prove to be inefficient in meeting its goals, too costly, or a combination of both of these, long before 2009. And again, this bill could prove to be very costly. If just 100,000 people installed $10,000 solar energy systems then $750 million in tax credits could be claimed

AB X1 15, authored by Assemblyman Rod Pacheco, would allow a credit equal to 100% of the costs incurred by a taxpayer for energy conservation measures that result in a 5% reduction in the amount of natural gas and electricity that the taxpayer uses. These energy conservation measures include, but are not limited to, replacing or installing air-conditioners, refrigerators, windows, insulation, weather stripping, low-flow devices, ventilation cooling fans, economizer systems, and heaters with more energy efficient models, devices or designs. When the credit allowed exceeds the tax, the excess credit may be carried over indefinitely until exhausted.

Again, this will have no influence over the timing of these energy saving improvements. Also, the provisions of this bill may be difficult to administer. For example, many inspectors are going to have to verify the decrease in energy consumption. The definition of an "energy conserving measure" could prove to be grounds for argument. This bill would also be extremely costly. If just 100,000 people – and there is no reason why the whole state wouldn't – have $10,000 worth of improvements made on their homes this bill would cost $1 billion dollars. It is more likely that more will claim this credit and this measure could wind up costing several billion. Currently there is no sunset date on this bill.

AB X1 19, authored by Assemblyman Mike Briggs, would create a sales and use tax exemption for diesel fuel until September 1, 2001. The exemption provided by this bill does not apply to local sales or transactions and use taxes.

First, it has not been sufficiently determined that a sales tax exemption will lower fuel prices at the pump. If we're going to encourage alternatives to natural gas, or other types of fuel and power, we should strive to encourage more efficient and environmentally conscious alternatives such as solar, electric and hybrid vehicles and biomass energy plants. If the goal is simply price relief, again, it is not certain that elimination of the sales tax will lower pump prices. Also, under the umbrella concept of polluter pays, making diesel cheaper sends the wrong signals to the consumer. Diesel, and gasoline do not need to be made cheaper, their greener alternatives do.

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Presentation to Assembly Revenues and Taxation Committee
Re. Energy Conservation and Tax Policy
By Susannah Churchill, Energy Associate, CALPIRG
Monday, January 29th, 2001

CALPIRG has launched its statewide Campaign for Clean Affordable Power to help solve the energy crisis now facing the state. We believe the true solutions to our current problems lie in three basic principles: protecting and empowering energy consumers, promoting clean renewable energy and promoting energy efficiency and conservation. We believe some taxes on energy use, financial incentives (in the form of tax credits or direct subsidies), and taxes on inefficient power plants can be key components to encouraging energy efficiency and conservation while also protecting electricity consumers, if done correctly.

We are in support of the current systems benefit charge for efficiency, which requires ratepayers to pay an extra charge on their monthly electricity bills that is funneled into programs to encourage conservation and efficiency. However, we feel that the investor-owned utilities should not be administering these programs because they have not used the money as well as possible in recent years, and that instead the California Energy Commission or a state power authority should administer these funds instead.

In addition, we are in support of a number of new financial incentives which could encourage conservation and efficiency. Below are some ideas:

- Provide tax breaks or grants to residential and business energy consumers for installing clean, efficient distributed generation, such as photovoltaic panels on their roofs. This will increase supply relatively quickly and provide consumers with more control over their power use.

- Provide tax breaks or grants for residences and businesses who want to replace old, inefficient appliances like air conditioners and refrigerators with new, efficient models.

- Provide tax breaks or grants for residences and businesses who improve building energy efficiency, through upgrading of insulation, windows, etc.

- Provide tax breaks or grants for residences and businesses who install real-time meters and other methods of gauging when energy supplies are especially tight and prices high, so they can cut back on their energy use at those times.

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- Provide tax breaks or grants to developers who build more energy efficient houses, commercial buildings, hospitals and schools.

However, we are not favor of approving any and all incentives proposed that claim to conserve energy. There must be measurable goals put in place for the amount of energy saved through the incentives, and there must be standards put in place for the quality of the subsidized upgrades, to ensure that state money is not wasted.

Tax policy can also be designed to encourage power plants in the state to be as efficient as possible in their production of power. We support taxing the oldest, most inefficient power plants heavily, and providing tax breaks to the cleanest, most efficient power producers, so that we can encourage that all plants running in the state are as clean, modern, and efficient as possible.

Testimony to Assembly Revenue and Taxation Committee
January 29, 2001

Thank you, Chair Corbett for the invitation to speak to you today. I am Fred Main, Senior Vice President of the California Chamber of Commerce.

The California Chamber has 13,000 member representing business of all sizes. Two-thirds of the Chamber's members employ less than 100 employees.

We believe that the state can use tax incentives to increase the amount of power, and to conserve electricity. Prior experience with solar and alternative energy credits has shown that additional investment will occur if there are significant incentives.

The Chamber offers the following comments on how to create the appropriate tax policy.

- Tax incentives must be fairly large
- The incentives must be enacted quickly.
- The dollar amount the state wishes to pay should determinate the amount of the credit
- The credit should be available to all businesses

Tax incentives must be fairly large.

Past experience shows that for economic behavior to change quickly the credit should be large. In the 1980's solar and alternative energy credits ranged from twenty-five to fifty percent. This is an appropriate range for a new credit.

The credit should apply to the immediate tax Year.

The urgency of the energy crisis is readily apparent. Businesses are considering whether to invest in new energy sources and conservation. An immediate credit would provide additional reasons to invest now to deal with the urgency of the problem.

The amount the state wishes to allocate would determine level of credit.

The state by determining the amount it wishes to allocate to these credits will insure that all businesses will have access to the credits. The state should determine what the standards for new generation or efficiency will be and then allow taxpayers to meet the standards.

This is contrasted with a bidding or application process, which would have business submit applications to an agency for approval, and a few winners will receive the tax credits.

Finally, a suggestion for conservation credits. As employers use alternative work schedules to conserve energy employers are paying premium wages. Employers should have a wage credit to encourage this move to alternative work schedules.

Testimony of Robert E. Raymer, P.E.
Assembly Committee on Revenue and Taxation
January 29, 2001

Background: B.S., Mechanical Engineering; B.A., Environmental Studies from California State University at Sacramento. Technical Director of the California Building Industry Association (CBIA) and Senior Project Manager for the Building Industry Institute. CBIA represents 5,850 companies that build over 70% of residential new construction in California. In 2000, approximately 146,000 new housing units were built representing a $28,000,000,000 investment in the California economy.

The Building Industry Institute is the private, not-for-profit research and training arm of the CBIA. BII is a leader in creating and delivering innovative energy efficient programs to the market in partnership with local, state and federal agencies and utilities. BII has received national recognition in partnership with the California Energy Commission from the DOE for the Building Energy Code Training (BECT) as the leading program in the nation that ensures energy efficient construction of new homes.

Issues:
Residential new construction is an important delivery vehicle for cost effective energy savings. The subdivision builder decides what features are added to homes based upon first costs at the time of construction. By making the decision to include energy efficiency features for all new homes in a subdivision the builder can exercise volume purchasing power to allow lower acquisition costs. New residential energy efficiency programs need to address first cost issues.

Successful programs use incentives and grants rather than tax credits because the impact of tax credits are not realized for twelve to twenty-four months. In addition, past experience has shown that tax credit rules often change to the detriment of the builder.

The Building Industry Institute has demonstrated its commitment and capabilities to quality, energy efficient new home construction. BII wants to be an active participant in delivering energy efficiency programs to assist the State in solving the energy crisis.

Recommendations:
The building industry requests more funding for residential new construction. The building industry can rapidly deliver peak load reduction and overall energy savings through incentives and training.

The building industry is willing to be a resource and delivery mechanism for cost effective, energy efficiency solutions.

The building industry wants to participate in the active discussions that determine energy policy in California.

Testimony of Robert Hammon, Ph.D
Assembly Committee on Revenue and Taxation
January 29, 2001

Background: B.S., M.S. and Ph.D. from the University of California; Senior Research Scientist at SRI International, now Principal at ConSol, the largest residential energy code compliance and mechanical engineering company in California, and technical consultant to the California Building Industry Association. ConSol has extensive experience developing energy standards and quality construction protocols with the California Energy Commission, (CEC) the national Department of Energy, the Natural Resources Defense Council (NRDC) and the California Institute for Energy Efficiency, as well as planning and designing energy efficiency programs for California's major investor-owned and municipal utilities. ConSol's primary focus is to deliver voluntary, cost-effective, residential energy efficiency programs.

Residential New Construction Market

- California builds approximately 150,000 new homes per year (2001 forecast is 107,000 SF units, 46,000 MF units)
- According to the CEC Peak Demand forecast states that the residential market uses approximately 26 percent of all electricity: 14% for air conditioning, 8% miscellaneous, and 4% for refrigerators. The commercial market uses approximately 41% total electricity, 15% for air conditioning, 11% for lighting, and 11% miscellaneous.
- AB970 recently provided $50 million for peak reduction programs through the CEC, none of which was targeted to the residential new construction market.
- AB970 did require a substantial improvement in the Title-24 residential energy efficiency standards, in some climate zones up to 50% over current levels, but no financial support was made available to implement the new standards.
- Current proposed legislation, Senate Bill 5, proposes $984,010,000 for energy efficiency programs which are directed primarily at the commercial and retrofit markets.
- Numerous, cost-effective programs and delivery mechanisms exist to substantially improve the energy efficiency of the residential new construction market. They include: Energy Star Homes, the nationally recognized EPA program that requires homes to be built 30% over code using improved HVAC design and installation, improved windows, and Home Energy Rating Systems (HERS) inspections. Such programs can save over 2kW per home per year. This cannot be accomplished quickly through standards due to the lack of infrastructure. A blend of incentives, grants and credits can achieve substantial savings in the next two years.
- The energy crisis and proposed responses provide an extraordinary opportunity to create super energy-efficient homes that also provide generating capacity: for example, Shea Homes in San Diego is currently building 100 homes that exceed energy code by 40%, have photovoltaic systems and solar hot water systems saving over 2.5 kW and generating another 2 kW for each home.

Recommendations

- Urge the Legislature to provide funding to address the energy crisis more in line with where energy is used, savings can be achieved most cost-effectively and implemented immediately. Current proposals under fund residential new construction.
- Urge the Legislature to support and encourage existing, well thought out programs that are state and nationally accepted and provide quality, energy efficient new homes

We look forward to discussions with members of this committee to discuss how the building industry and its partners can help solve this energy crisis, and create long term improved building practices.

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

Testimony of the Natural Resources Defense Council

before the

Assembly Revenue and Taxation Committee

Moving Forward: The Options

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I. Energy Efficiency and California's Economy and Environment

A. Overview

California has been promoting energy efficiency as a bipartisan policy for over 20 years. These efforts have increased economic growth and helped protect the environment. As a result of these efforts, California has improved its energy efficiency substantially faster than the rest of the nation. In the mid-'70s, California required 28% less electricity to produce a dollar of gross state product than the rest of the country; by the late-'90s, this had improved to 46% lower: almost a 1% compounded annual improvement compared to the rest of the country. As a result, even with the state's high electricity prices, utility bills overall have been among the lowest in the nation.

Due to the uncertainties regarding utility restructuring, these efforts diminished in the mid-'90s. The energy efficiency promotional budgets of utilities dropped by nearly 50% and have yet to recover. State incentives for renewables also disappeared for several years. As a result of these cutbacks, California is now short about 1,500 megawatts of the capacity availability that it would have had with more continuity of state policy. This can be rectified. However, even though efficiency can be brought on-line significantly faster than new supply, it still requires significant lead times to provide substantial energy efficiency resources to California. The sooner we get started, and the more we keep long-run goals in mind, the more successful we can be.

B. Policy Instruments

Many analysts argue that high electricity prices are part of the solution to shortages, because consumers will cut back their consumption in response to high energy prices. While this assertion may make sense in theory, it does not describe actual behavior very well. Data on price responsiveness show that virtually no improvements in energy efficiency are caused by high prices and there are only relatively small reductions in energy use due almost entirely to cutbacks in amenity. A wide variety of energy efficiency measures and options are available that pay back their initial cost in 1 to 3 years which are not being installed.

What is needed are policies that provide more options to the consumer and that influence all players in the marketplace to work towards mutually beneficial solutions. A variety of policy tools have been used to this end in California including energy efficiency standards, public education and training, and incentive programs primarily administered by utilities. The

most successful energy policy is one that uses an appropriate blend of these policy mechanisms.

II. Moving Forward

A. The Role of New Legislation

Last session, the legislature passed an important series of bills in support of energy efficiency. AB 970 required the California Energy Commission to set a new round of efficiency standards for buildings and appliances. New building standards that will save 200 megawatts every year have already been enacted by the California Energy Commission. Appliance and equipment standards with even greater potential are currently in development.

The legislature also passed AB 995/SB1194, which provided $500 million a year of investments in increased energy efficiency and renewables. The share of these funds targeted to energy efficiency are currently being administered by the state's distribution utilities. Over the years, these utilities have accumulated a solid track record of spending efficiency incentive money effectively, consistently producing at least $2 of societal benefits for every $1 of money invested.

There are substantial opportunities above and beyond those supported by AB970 and AB 995/SB1194. In particular, an additional $1 billion could be productively be invested in renewables and cost-effective energy efficiency and demand reduction over the next few years. In order to maximize the impact of these investments a number of basic principles must be maintained: 1.) New programs must be designed to complement and extend existing efforts. In particular, it is important that new programs do not compete destructively with the existing ones; 2.) Since time is of the essence, administering agencies and entities must be given the flexibility to move quickly and to direct funds to the most promising opportunities.

B. Proposals for New Incentives for Energy Efficiency

Some of the needs for California to balance electric supply and demand will be handled effectively by existing programs, but other critical needs remain unmet. Two special opportunities should be the focus of new initiatives undertaken this year:

- Programs designed specifically to save energy at the peak, either through demand-responsive temporary reductions in energy use or by permanent efficiency measures focused on saving peak power; and

- Programs that require innovative or larger responses by industry or professionals in the building design and construction field, and which thus need long-term assurances of the availability of incentives.

1. Demand Responsiveness

The California Energy Commission has proposed implementing a program for that will allow building owners or operators voluntarily to substantially reduce a building's peak demand whenever electric system conditions reach certain preset levels, for example, high prices on the wholesale market or high stages of electric alert. Lighting and air conditioning in commercial buildings account for about a third of electric peak demand, and both can be cut back substantially on a temporary basis while continuing to operate the building.

Lighting levels in commercial buildings are at least 10 times higher than needed to accomplish basic visual tasks. The 10-fold increase from these "basic" levels is believed by some to provide higher levels of productivity or physical attractiveness in a space. Whatever the merits of these arguments, they aren't as important as keeping the electric system up and running during a few critical hours of the year. Most building owners, would, we believe, be happy to temporarily reduce lighting substantially in response to economic incentives that will be cheaper to the state than acquiring high priced on-peak power and much cheaper than rolling blackouts.

Similarly, temporary set-ups in thermostats will allow air conditioning systems to "take a breather" during the hottest few hours of the year. The temporary increases in indoor temperature are not likely to be noticeable or bothersome, particularly in comparison to what could happen otherwise.

2. Incentivizing Dramatic Improvements in Energy Efficiency at Peak

It is also possible to improve dramatically the efficiency of electrical devices that are on at the peak hour. The key end-uses are commercial lighting in offices and air conditioning in all building types.

Technologies are available that can reduce peak demand by well over 50% in ways that are economic to the owner even without higher prices for peak electricity. But, because of market failures, most building owners do not install these devices. This leads to a classic chicken and egg problem: manufacturers do not offer these very high-efficiency devices because there is no perceived market for them. Design professionals have not learned how to incorporate high-efficiency equipment and designs into their usual business offering because clients won't pay the extra cost to achieve that result. And contractors who could install super-efficient devices or technologies – like leak-free ducts in homes and small commercial buildings – have not yet been trained in how to do this because there is no market.

By offering a package of carefully targeted incentives, training, and marketing, we can transform these markets by making it clear to all participants that there will be a sustained market for high efficiency. For example, if air conditioner manufacturers are confident that incentives will be available they will gear up production of their most efficient units (which are now offered essentially one-at-a-time); design professionals will participate in the training necessary to install and maintain this equipment, and; suppliers will offer more products that can be used in these endeavors. All of these actions require substantial business commitments, which will not be undertaken lightly. Thus, incentives that are available for an extended period of time will be necessary to bring these forth.

NRDC has worked with a number of stakeholders, including all of California's major utilities and the Energy Commission to design proposed federal legislation that will accomplish these objectives for the building sector and for key equipment, such as air conditioners. We believe that adoption of similar measures in California is well justified. We have also proposed two additional incentives appropriate at the state level but not at the federal level: a more ambitious and

more rewarding tier for savings in commercial buildings and an incentive for home retrofits.[1]

C. The Brightest Near-Term Opportunities

All parties will need to move extremely quickly in order to make a significant reduction in peak load by this summer. But, by moving aggressively, we can make a substantial contribution to keeping the lights on this summer and because we will then be prepared to deliver large amounts of savings by the following summer. We believe that the most promising opportunities over the next two years are:

- Demand-responsive buildings.

- Incentives for super-efficient air conditioners. These products exist in the market now, and the lead-time for significant energy savings in California is the lead-time for manufacturers to build up assembly lines that can produce these products in large numbers and ship them to California in time for the air-conditioning season. We can start to make progress on this program in 2001 and make a large impact by 2002.

- Incentives for air-conditioner replacement and home retrofit in residential buildings. There may be a short-term issue of air conditioner availability and of trained duct repair specialists in the short-term, but some progress is likely to be achievable by this summer, with much greater savings by next summer.

- Incentives for more efficient new homes. Residential buildings will have to comply with new CEC standards by June 1st. However, incentives for early compliance with the standards, or better, for energy savings beyond minimum compliance can produce savings by this summer.

- Incentives for energy efficient commercial buildings. In particular, lighting remodeling jobs have relatively short lead-times and more efficient equipment is already widely available in the state.

[1] Home retrofit incentives were not included in national legislation because they require an infrastructure of home inspectors and a regulatory system for quality assurance. While not available at a national level, this infrastructure does exist in California.

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ENVIRONMENTAL DEFENSE

finding the ways that work

ASSEMBLY REVENUE AND TAXATION COMMITTEE
INFORMATIONAL HEARING
ENERGY CONSERVATION TAX POLICY

January 29, 2001

A Common Cents Response to California's Energy Crisis:

Near-term programs to reduce shortages and ameliorate high electricity prices

There is no silver bullet for solving California's energy crisis. Virtually everyone agrees, however, that using energy more efficiently is a critical element of any solution. Efficiency and conservation can be brought on line far more quickly than new power plants. This approach is less expensive than new generating capacity. And it can be targeted to help low-income families and small businesses, in particular. Set out below is a menu of some common sense efficiency measures that would provide significant reductions in demand in the near term.

There are several steps the state can take to maximize the opportunities for conservation in the near-term. These include

- Accelerating replacement of inefficient residential appliances
- Installing controls and meters so customers can reduce demand during peak periods
- Expanding existing emergency initiatives including commercial lighting and ventilation, and efficient traffic lights

1. Accelerated replacement of inefficient residential appliances

Existing programs can be expanded and extended to additional appliances – including refrigerators, freezers, and clothes washers as well as air conditioners – to provide significant near-term energy savings. In fact, *the energy savings are equivalent to or greater than the amount of energy provided by emergency construction of power plants,* ***at lower cost and without air pollution***.

This conservation program would dramatically expand existing programs that are now funded by California electricity customers and that have been widely used throughout the United States to

reduce electric loads. The program would provide attractive financial incentives to consumers to give up old, inefficient appliances and purchase new, more efficient units. Retired appliances would then be collected, hazardous materials removed, and the metals recycled to ensure that the old units never return to service.

Here is one example of just how effective such conservation programs can be: replacing just 15% of the residential air conditioning units in the service areas of California's three private utilities produces ***peak savings of 650 MW***, based on conservative estimates of the average efficiency difference between existing units and new units. ***This is more power than the typical large power plant like those currently planned or under construction.***

A first-year target for this program – including refrigerators, freezers, and clothes washers as well as air conditioners – should be the replacement of one million old appliances. Based on experience from similar but smaller programs, costs per unit are approximately $250, for a total first-year program cost of $250 million.

Legislation should be enacted to:

- Allocate $250 million in the coming year to establish "bounties" for turning in old, inefficient appliances and for rebates on new, energy-saving units.

- Priority targets should include public housing, seniors, and other low and fixed income households. These residents have the highest percentage of older appliances and are hurt most by rising energy prices, especially those residents living in inland areas with the highest summertime temperatures.

- Low cost credit should be provided to lower income families for the purchase of new appliances, in addition to financial incentives to replace retired inefficient but working equipment.

- Community-based organizations should be used to identify households in which old appliances are in use, to assist these households with participation in the program, and to provide additional energy saving advice and devices such as compact fluorescent light bulbs. These programs also produce significant employment and training benefits.

2. Controls and meters to assist reductions in customer peak loads

This program would let California tap the potential of customers to provide demand responses – reducing their demand, and their energy bills, during high-use periods – through new programs being developed by the ISO and PX for Summer 2001. For example, pilot tests last summer of demand responsive building control systems showed that a four-degree thermostat setback saved fully 30% of the electricity used for air conditioning during the period from 1 PM to 5 PM. This program would build on the success of the pilot program to install demand responsive building systems in 25% of all qualified commercial buildings with loads in excess of 50 kW. The total

statewide peak load for all such eligible facilities is approximately 18,000 MW. Reaching 25% of these facilities and installing controls capable of reducing their demand by 20% at peak times would yield ***savings of 800 MW***.

The program would also fund pilot tests of similar demand response capabilities in California residences.

Program funds would be used to reduce the cost of "price responsive" software and hardware (including time-of-day electricity meters) in commercial and industrial office buildings, schools, hotels, and restaurants. These demand responsive systems can either automatically reduce power requirements of ventilation and lighting systems in response to price or "emergency "signals from electric distribution companies or allow building managers to reduce load with manual controls based on site specific priorities and market prices.

There are three significant benefits resulting from this type of program. First, ***the ability to reduce demand within minutes or hours via an alert signal sent to thousands of buildings in response to rising prices is perhaps the most potent tool available to Californians wishing to drive down rising market prices*** because it can short-circuit bidding strategies by generators designed to drive prices up every hour. Second, these reductions will have an important benefit to customers who currently feel helpless in trying to beat back the market power of generators in the current situation. Finally, demand response will significantly reduce the pressure on the ISO to seek out of market purchases from outside sellers during stage 2 and stage 3 emergencies.

Legislation should be enacted to:

- Allocate $80 million to fund the commercial building portion of this program for 2002. Utility distribution companies and/or energy service providers should be used to recruit customers with demands in excess of 50 kW and connect the existing energy management systems to new communications systems.

- Allocate $20 million in funding for pilot tests of remote residential thermostat set up controls for customers willing to set up their temperature setting in return for incentive payments.

3. Expansion of emergency initiatives including innovative efficiency programs, energy-saving roofs, and efficient traffic lights

The California Public Utilities Commission and the California Energy Commission already have underway a series of measures that, if fully implemented, would significantly reduce demand. These programs should be expanded to exploit the opportunities available.

For example, even though the Public Utilities Commission program was implemented on very short notice, the Commission received proposals from 24 different parties, including the investor-owned utilities, manufacturers, vendors, energy service companies, consultants, municipal

corporations, government entities, research and advocacy groups, and electric end users, proposing over 50 different programs. The proposals requested total funding of over $500 million and projected ***demand reduction impacts of approximately 1,800 MW.***

Likewise, the California Energy Commission received proposals for far more savings than it was able to fund. The California Energy Commission received over 20 proposals from firms requesting more than $20 million ***achieve up to 800 MW of load reductions*** but only had sufficient dollars to fund $7 million to achieve 150 MW of peak savings.

The California Energy Commission program for sun-reflective roofing materials could also be cost-effectively expanded. Similarly, expanding the program to replace incandescent traffic signals with light-emitting diodes (LEDs) would reduce demand by at least 10 MW and also help local governments shave their energy bills. Finally, building managers and operators for state and university buildings need better training technical support, energy management software and hardware, and incentives to achieve the goals spelled out by the Governor. At a modest cost these measures could reduce peak demand by as much as 80 MW.

Legislation should be enacted to:

- Allocate $50 million to expand innovative third-party proposals for energy efficiency measures.

- Allocate $50 million to expand the program to reduce the peak electricity demand associated with solar energy absorbed on the surfaces of roofs and rooftop ducts

- Allocate $10 million to the California Energy Commission for additional traffic light replacements with more efficient LED signals.

- Allocate $10 million to enable state and university building managers to achieve an additional 80 MW in reductions in peak demand.

For further information, please contact Dan Kirshner or Jim Martin at 510.658.8008.

Testimony of Pete Price
Price Consulting
on behalf of Appliance Recycling Centers of America Inc.
before the Assembly Revenue and Taxation Committee
January 29, 2001

Appliance Recycling Centers of America Inc. (ARCA) appreciates the opportunity to testify before the Revenue and Taxation Committee today on the issue of financial incentives to encourage energy efficiency and conservation. Given our experience in California working to remove old, inefficient appliances from use, ARCA would like to speak to two points: the effectiveness of tax incentives as a means of increasing energy efficiency in appliances; and what we see as essential components of any program that will actually achieve significant reductions in energy consumption from appliances.

ARCA has worked with utilities in a number of states, including California, to implement programs to replace and retire old inefficient appliances. For seven years ARCA has operated a plant in Compton, working under contract to Southern California Edison, the Los Angeles Department of Water and Power, and other electric utilities to improve appliance efficiency in homes. Our Compton facility is essentially a disassembly plant: we remove old working refrigerators and freezers from customers' homes, both primary units from the kitchen and spare units, typically from the garage). Once the appliance is at the Compton plant, we remove the foam insulation, the CFC or other coolants, the motor oil, PCBs, and any switches or thermostats that contain mercury. State law requires these hazardous materials to be removed from discarded appliances before they are crushed for sale as scrap metal – a fact that should be kept in mind as appliance retirement/energy efficiency programs are designed.

These utility-sponsored appliance early retirement programs typically offer a cash incentive, usually from $50-$75, to owners of old refrigerators and freezers to encourage them to retire the appliance earlier than usual. The incentive funds come from the public goods charge assessed on all ratepayer bills, which is used to fund energy conservation programs and incentives for the purchase of renewable energy.

The Efficacy of Tax Incentives to Improve Appliance Energy Efficiency

There is always a question as to whether tax incentives are a sound expenditure of the state's General Fund. For example, does it actually change behavior or simply provide a windfall for behavior that would've occurred anyway? And is it equitable: are all taxpayers, or at least those you are targeting, able to take advantage of the incentive?

Last October, in a report on appliances and energy efficiency, the Pew Center on Global Climate Change found that "There is little or no evidence that consumer tax credits are effective in influencing a significant number of consumers to change their purchasing power."[1] Although it is dangerous to draw firm conclusions from this, they did cite the experience in Oregon, where there is a state tax credits for consumers who buy Energy Star refrigerators and washers. They found

1. Shorey, Everett and Tom Eckman, Appliances and Global Climate Change, Pew Center on Global Climate Change, 2000, p. iv.

that the share of Energy Star refrigerators and washers in Oregon in 1999 was actually a little bit lower than in Washington, which doesn't offer the credits.[2]

Tax credits and sales tax exemptions are much like cash rebates, which are probably the most common incentive offered to encourage the purchase of energy efficient appliances. They all result in lowering the purchase price of the appliance -- although the credit is deferred and is helpful only to those who have a tax liability.

Point-of-purchase cash rebates certainly have the right goal. But they have some limitations that can be addressed in other ways.

1) First, they focus only on people who have already decided to buy a new appliance. Although public education and advertising can, to some degree, make all ratepayers aware of the opportunity for a rebate for the purchase of an Energy Star appliance, most customers become aware of the program, and decide to participate, only after they are in the store shopping for an appliance. That's why many programs also give a cash incentive to stores to encourage use of the rebate.

2) Energy Star appliances tend to be toward the high end of cost. Even with a cash rebate incentive, many low- and moderate-income customers may conclude they can't afford to buy the most efficient appliance. The individual benefits of purchase rebate programs tend to go to higher income customers, when it is low-income ratepayers who would most benefit from the lower bills that an efficient appliance would deliver.

3) A new energy efficiency standard for room air conditioners went into effect last fall, and a new standard for refrigerators takes effect in July 2001. We therefore now have the fortunate circumstance where all new refrigerators and room air conditioners will be quite energy efficient. In fact, the new refrigerator standard will be the same as the Energy Star standard of only one month ago, and the new Energy Star standard will be only 10 percent above the minimum standard.

4) Whenever new standards are imposed, there is a lag time before new Energy Star appliances are available in large volumes. That's the circumstance we will face as these new standards kick in.

Appliance Early Retirement

What should we do? We face a real crisis that demands that we reduce energy consumption as much as possible and try to give relief to those ratepayers who need it most. Incentives to encourage people to turn in their old working refrigerator have two benefits: 1) all people, including low- and moderate-income, can participate equally, and 2) early retirement programs ensure that we can take those old inefficient appliances out of the system, which purchase rebates rarely do.

The ability to take old appliances out of circulation and "kill" them is important, because in the world of appliances, and particularly in the world of energy conservation, recycling does not mean the resale of used appliances. The last thing we as an energy-short state want to do is to encourage the reuse of grossly inefficient appliances. They not only suck up precious electricity

2. Shorey and Eckman, p. 21.

from the grid; they also end up costing the ratepayer much more in higher electricity bills than they ever save on the purchase price.

The Pew report stated that "In order to produce net savings to society [i.e.: the electrical system], the appliance that is being replaced must also be retired from further service. If it is sold as a 'used' appliance or donated to charity, its electricity use will still generate greenhouse gas emissions."[3]

Southern CA Edison reached this same conclusion while working with ARCA over the last 7 years to retire inefficient refrigerators. ARCA and Edison began by offering customers a cash incentive to get rid of their working spare refrigerators, typically in a garage. Edison rightly targeted spare refrigerators as particularly energy inefficient, not only because they tend to be old, but also because they draw so much electricity in warm seasons trying to stay cool in a hot garage.
After several years, however, Edison expanded the program to have ARCA pick up old replaced *primary* refrigerators when a customer bought a new one. Edison realized that they weren't really "closing the loop" on energy conservation unless they made sure the customer's old refrigerator was retired from service.

In terms of improving energy conservation and reducing ratepayer bills through more efficient appliances, there is a great deal of "low-hanging fruit." There are more than 11 million primary refrigerators in use in California. More than 1.7 million spare refrigerators are laboring in garages and elsewhere, most running inefficiently and under heavy load. Yet the Low Income Energy Efficiency refrigerator programs proposed by Southern California Edison, Pacific Gas and Electric, and San Diego Gas and Electric for 2001 will replace a total of only about 7,500 old refrigerators.

To achieve quick and substantial gains in the residential sector, ARCA believes the state should pursue opportunities for bulk change-outs of old refrigerators and room air conditioners in public housing and private multi-family dwellings as well as single family residences. It is essential that the state's energy conservation programs move aggressively into rental units, whose residents typically are the most in need of lower monthly utility bills. Utilities have cited Public Utilities Commission rules as their reason for not pursuing appliance changeout programs in rental units, based on a concern that they will confer an unwarranted benefit on the owner of the building, who will owns the appliance. But the state already offers other energy conservation programs to building owners and should extend it to include appliance changeouts. If the PUC does not revise its rule, the Legislature should act in the existing Extraordinary Session to allow the installation of energy efficient appliances in rental units. In fact, considering that low income citizens tend to own the oldest, most inefficient appliances, have the least financial ability to buy new appliances, and would benefit the most from reduced electricity bills, we believe it would be cost-effective for the state simply to buy low-income persons a new refrigerator and retire their old replaced units.

3. Shorey and Eckman, p. 9