

**California Energy Commission
Public Benefits Program**

**Staff Paper on Public Funding for
Energy Efficiency Programs in California: 1988 to 1999**

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This paper describes the trends in funding for energy efficiency programs over the last decade, and provides historical perspective for future recommendations on energy efficiency program funding. It examines the ebb and flow of demand side management funding by the major investor-owned utilities in California. In support of the mandate contained in Assembly Bill 1105, the information contained in this paper will be discussed at the October 12, 1999, Efficiency Committee workshop, and used as one of the many factors that feed into staff recommendations on proposed program funding levels beyond the year 2001 for energy efficiency programs.

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Public Funding for Energy Efficiency Programs in California: 1988 to 1998

September 29, 1999

Introduction

This report describes the ebb and flow of demand side management funding by the major investor-owned utilities in California: Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric, and Southern California Gas. It provides some background on historical trends in funding spending by program type, by utility administrator, and by program sector. The paper further describes how the overall level of funding is correlated to total revenues collected by the current program administrators. This information will then be used as one of many factors that feeds into a staff recommendation on proposed program funding levels beyond the year 2001 for energy efficiency programs.

The utilities provided the data used for this review in their annual demand side management reports to the California Public Utilities Commission.¹ The types of demand side management programs included in this funding review are:

- energy efficiency incentives and conservation programs (divided into residential and nonresidential customer sectors),
- new construction programs,
- information programs, and
- market assessment and evaluation and regulatory oversight.

Utilities funded the market assessment studies to investigate the energy impacts of the various demand side management projects. This review does not include funding for residential direct assistance or low income assistance programs, electricity load management, fuel substitution programs, or load retention and load building programs or shareholder performance incentives.

This report first considers the general trend in statewide funding for different types of programs, and then for electricity and natural gas programs. Next, trends in funding for each of the major electricity and natural gas programs is reviewed. Finally, the report looks at the total amount of funds spent, then reviews the funding as a percentage of investor-owned utility revenues collected. The period investigated in this report is from 1988 to 1998.

The analysis of funding trends is complicated by a change in accounting procedures between 1997 and 1998. Investor-owned utilities in California operated demand side

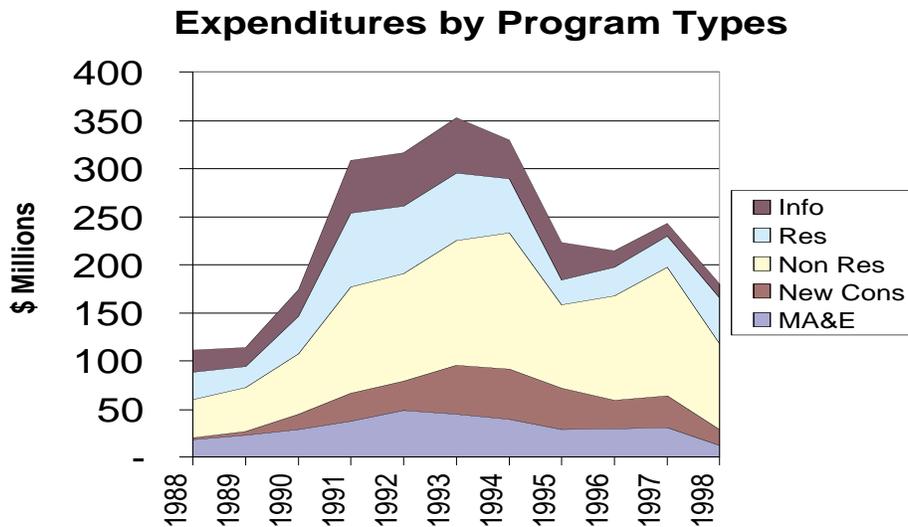
¹ The four utilities annually submit reports to the California Public Utilities Commission on Demand Side Management activities. The Office of Ratepayer Advocates of the California Public Utilities Commission publishes summaries of these reports; the most recent summary was published in 1996 as "Demand Side Management: Expenditures and Cost Effectiveness: Trends and Patters: 1988 – Current."

management programs before 1998 that committed to the expenditure of funds into later years. In 1999, the investor owned utilities reported these expenditures for “pre-1998” programs during calendar year 1998. Because the previous reporting convention was to report expenditures as occurring in the year in which funds were committed, this report shows these “pre-1998” expenditures as part of 1997 expenditures. These funds account for approximately \$50 million, or 21 percent of the total funding for 1997. This leads to a slight bump up in most of the spending curves for 1997 programs compared to 1996 and 1998.

Statewide Funding for Demand Side Management Programs by Investor-Owned Utilities

Figure 1 shows changes in actual expenditures for programs administered over the last decade. Note funding for electric and gas programs is combined. Expenditures are broken out for informational, residential and nonresidential energy efficiency programs, new construction programs, and market assessment and evaluation programs. Spending began at \$112 million for both electricity and natural gas energy efficiency programs in 1988, rose to a high of \$352 million in 1993 and fell since the announcement of restructuring in mid-1995 to \$180 million in 1998. The increase in program year 1997 includes \$50 million in carryover spending that was actually paid out in 1998.

Figure 1



A series of regulatory and market changes contributed to these trends in funding. The most important regulatory changes that contributed to increased funding included:

- the California Collaborative decisions by the California Public Utilities Commission in 1991, which presaged a rapid increase in authorized funding levels from 1992 to 1994; and
- the shareholder incentive mechanism for program administrators, adopted in mid-1993.

Regulatory changes that contributed to lower funding levels included:

- the announcement of restructuring and a transition to a competitive generation market in 1995. This change led to increased pressures at all level of the utility to reduce operating costs which extended to public goods programs;
- passage of Assembly Bill 1890 in 1996 which reduced the level of minimum funding to roughly \$226 million from the 1994 level of \$364 million for electric programs, and
- the rate freeze from the same bill which presented utilities with more incentives to ensure funding did not exceed the minimum levels mandated in the bill.

Other important changes that may have had an effect on recent funding levels include:

- the California Public Utilities Commission's series of decisions in mid-1997 announcing that utility administrators should be phased out of their administrative role in favor of open competition, followed by
- a reversal of this decision in mid-1998 allowing former utilities to be administrators until mid-2001.

Market trends have also affected customers' willingness to participate in these programs. These included rising electricity prices for most customer classes during the first three to four years, with flat or declining energy prices during the latter part of the decade. In addition, utilities began to report declines in the benefit cost ratios for some programs between 1993 and 1996. This declining trend has continued into the year 1998.

Three key factors may have contributed to the decline in reported benefit cost ratios trend:

1. A decline in the forecast of avoided energy and peak values over the next twenty years.
2. Increased usage of cash rebate programs which drove up total program costs but gave the utility an incentive to minimize administrative costs.
3. Increasingly sophisticated techniques used to measure the net savings from a program by subtracting out the naturally occurring savings that might have occurred in the absence of the program.

There are countervailing factors that suggest these trends in benefit cost ratios may not reflect reduced program effectiveness but rather a switch in program goals, strategies or objectives. These included a switch to a market transformation strategy for most energy efficiency programs which encouraged utilities to spend less time and money estimating program benefits and more time developing new programs that would lead to lasting changes in energy efficiency markets. This shift in measurement priorities is confirmed by the decline in spending on market assessment and evaluation projects in 1997 and 1998.

Many argue that this programmatic shift to market transformation has led to the creation of a new class of "free riders" that have voluntarily saved energy without any direct program expenses. Indeed, the goal of market transformation programs is to create

sustainable changes such that current and future customers voluntarily purchase more efficient products without the need for program funding support. These free riders and the savings produced by them are generally not being accounted for by the more traditional utility evaluation methods.

In sum, many potential factors have influenced the observed trend in program expenditures, and it is unlikely that one factor can be singled out as the primary determinant.

Figure 2

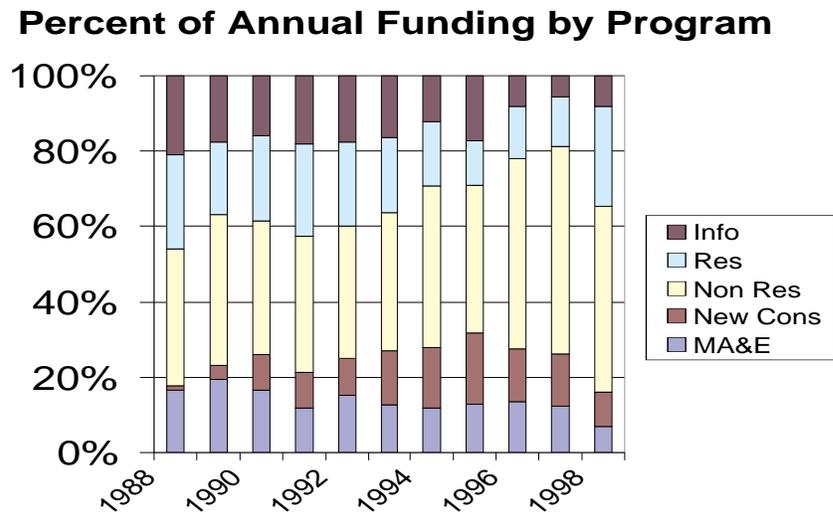


Figure 2, above, shows the funding for four types of programs from 1988 to 1998, as a percent of annual funding. Since 1993 the share of total annual funding directed to nonresidential programs has generally increased. The share of funds for information programs has declined markedly since 1995.

Figure 3, below, shows the relative funding levels for natural gas and electric energy efficiency programs. Over the period from 1988 to 1998, the average split of total funding was approximately 24 percent for gas and 76 percent for electricity, however, since 1994, gas has averaged only 17 percent of the total.

Figure 3

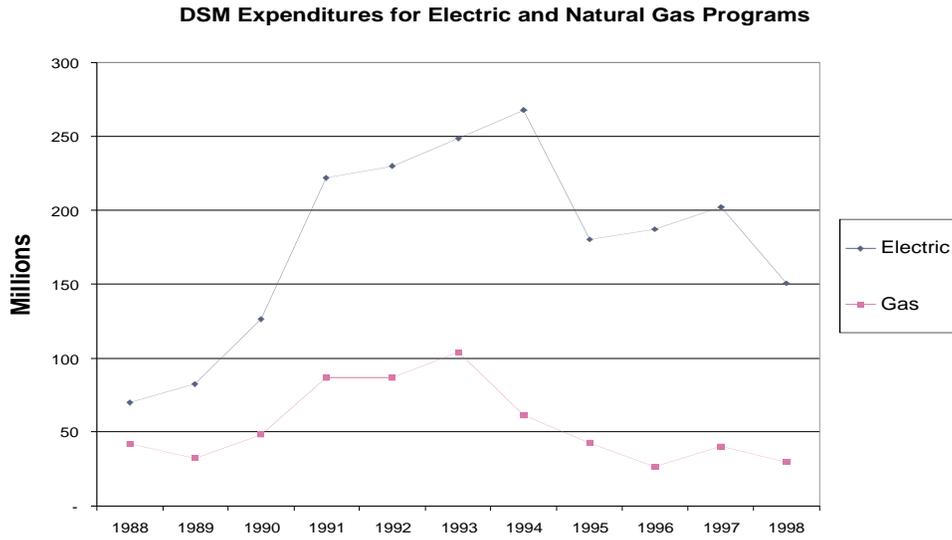
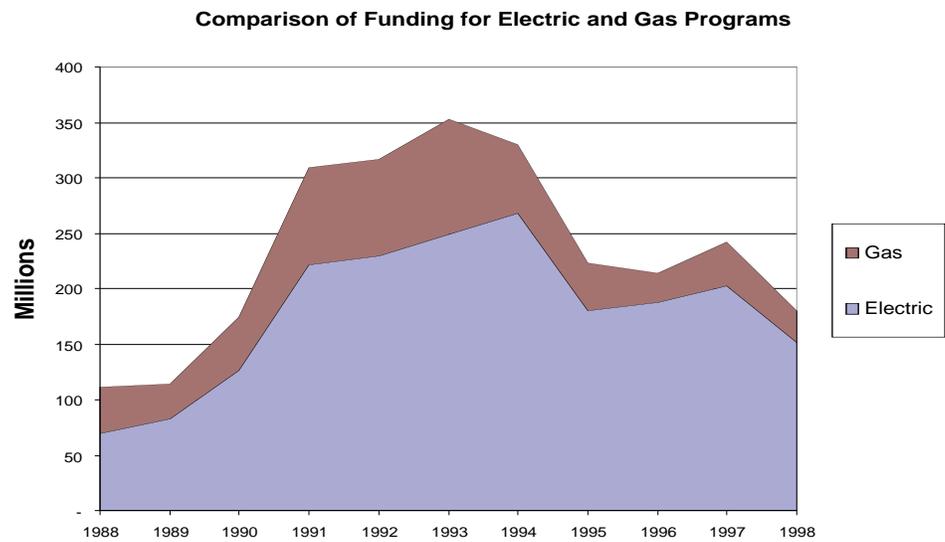


Figure 4, below shows the share of total expenditures for programs split into electric and gas program components.

Figure 4

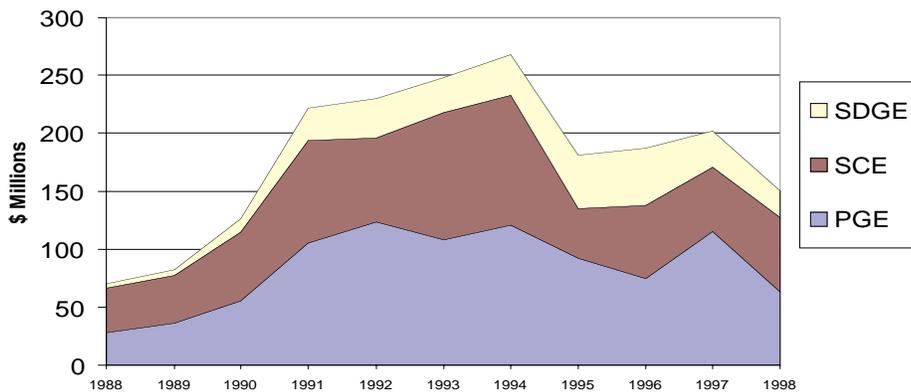


Trends in Investor-Owned Utility Funding for Electric Programs

Figure 5, below, shows expenditures by California's three major investor-owned utilities for energy programs relating to electricity. Total expenditures grew from 1988, reaching a maximum level of \$268 million in 1994. Expenditures then declined dramatically. In 1997 expenditures increased by \$15 million, but \$45 million of the total funding increase in 1997 reflects spending in 1998 from previous contractual commitments made prior to initiation of the Public Goods Charge. Over the years from 1988 to 1998, the shares of total funding for these programs for the three utilities, Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric, averaged 47, 38, and 15 percent, respectively. However, San Diego Gas and Electric's share and Pacific Gas and Electric's share has increased, while Southern California Edison's has decreased during the period.

Figure 5

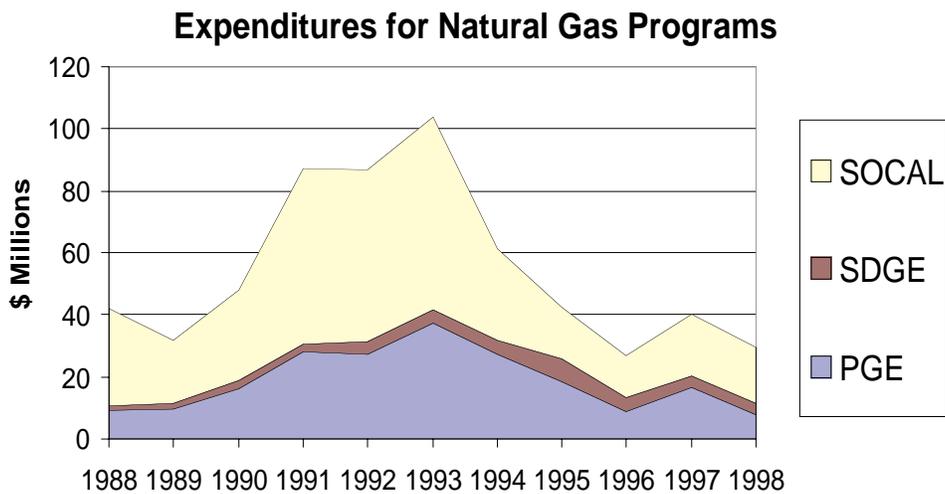
Expenditures for Electric Programs



Trends in Investor-Owned Utility Funding for Natural Gas Programs

Figure 6, below, shows California's three major investor-owned utility expenditures for programs relating to natural gas. Total expenditures peaked in 1993, then dropped rapidly from 1994 to 1996, when spending was only 26 percent of the 1993 peak. From 1988 to 1998, the relative share of total expenditures for these programs by Southern California Gas, Pacific Gas and Electric and San Diego Gas and Electric, was 59 percent, 34 percent, and 7 percent, respectively. Since 1994, San Diego Gas and Electric and Pacific Gas and Electric shares of funding have tended to increase, while those of Southern California Gas declined.

Figure 6



Program Funding as a Percent of Revenue

Figure 7, below, shows the trends in revenues received by utilities from gas and electric sales to ultimate customers (i.e., sales for resale are excluded).² Note that gas revenues “dipped” in 1996 and are now approximately 17 percent lower than in 1988, while revenues for electric utilities are approximately 27 percent higher in 1998 than in 1988.

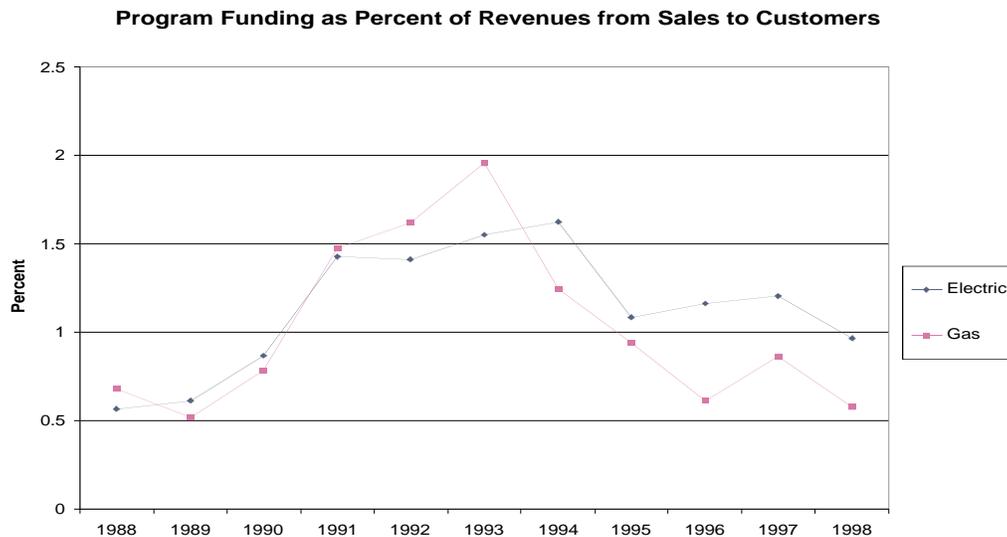
Figure 7



² Source: U.S. Department of Energy , FERC Form 1 (Electric) and 2(Gas) and CEC,QFER Form 7 (Gas Sales for 1998)

Figure 8 shows the investor-owned utilities' expenditures for electric and natural gas programs expressed as a percent of sales to ultimate customers. Since 1988, utility distribution companies have collected an average 1.1% of their total revenues to support electric and gas programs.

Figure 8



Summary

This paper describes the trends in funding for energy efficiency programs over the last decade in order to provide some historical perspective for future recommendations on program funding. Actual expenditures for these programs ranged from \$112 million at the beginning of the period to \$352 million at the program peak in 1993. Ratepayers from investor owned utilities have paid an average of 1.1 percent of their annual energy costs to fund these programs. Overall levels of funding for the program have been primarily driven by customer participation levels in the programs, shareholder incentive mechanisms adopted by the California Public Utilities Commission, and the restructuring of the electricity market between 1994 and 1999. The current trend in actual expenditures (allowing for carryover funding from earlier program years into 1997), is downward, in part due to uncertainties in the role and future of current program administrators. This uncertainty may have led to lower levels of staff support and subsequent program funding during 1998 and 1999.