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DEPARTMENT OF
GENERAL SERVICES

OFFICE OF THE DIRECTOR

CITY OF SACRAMENTO
CALIFORNIA

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DIVISIONS:

COMMUNICATIONS
FACILITY MANAGEMENT
FLEET MANAGEMENT
RISK MANAGEMENT
AND INSURANCE
SUPPORT SERVICES

CITY MANAGER'S OFFICE

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MAR 10 1987

March 10, 1987

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: Annual Energy Report

SUMMARY

The 1985-86 Annual Energy Report is submitted for your information.

BACKGROUND

The attached document provides an overview of the City's annual energy consumption and energy conservation projects implemented to control the spiraling energy costs.

FY1985-86 City-wide consumption reflects an increase of 3.3% over 1984-85. The specific reasons for this increase is identified within the report. This increase is less than half of the increase reported for FY1984-85. The majority of this increase can be directly attributed to energy required to pump storm water from last winter's storms and the 13th and I leased facility.

The ongoing energy conservation projects over the past five years have resulted in mitigation of \$1.9 million of energy costs. For each \$1.00 invested into conservation, the return has been \$1.23. This savings plus the improved level of safety for both the public and City employees, the significant reduction in maintenance cost and the extended lamp life are the important benefits gained from the efforts of conservation throughout the City.

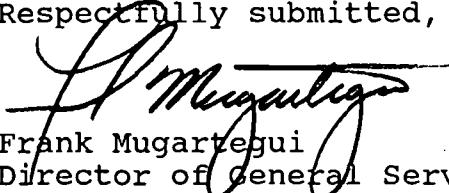
We are extremely pleased with the energy conservation program to date, and dedicated to continue this cost effective conservation program and investigate new methods of conservation.

City Council
Annual Energy Report
March 10, 1987
Page 2

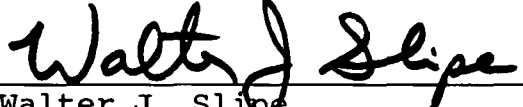
RECOMMENDATION

This report is for Council information, no action is required.

Respectfully submitted,


Frank Mugartegui
Director of General Services

FOR CITY COUNCIL INFORMATION:


Walter J. Slips
City Manager

B:ADM2.050

March 17, 1987
All Districts

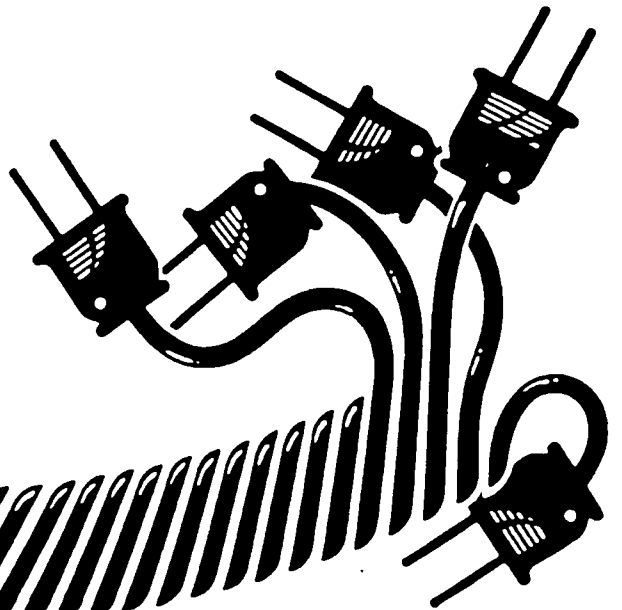


City of Sacramento

E Annual Report r g y

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MAR 17 1987
BY THE CITY COUNCIL
OFFICE OF THE CITY CLERK

1985/1986



City of Sacramento - 1985/1986 - Energy Report

ANNUAL ENERGY REPORT 1985-86

Table of Contents

	<u>Page</u>
Executive Summary.....	ii
I. Introduction.....	1
II. Background/Discussion of Energy Usage.....	2
III. Energy Consumption by Activity.....	4
IV. Fleet Vehicle Operations.....	24
V. Energy Conservation Activities.....	27
VI. Conclusions.....	34
Appendices.....	35
A. Utility Cost by Function/Energy Cost by Type.....	36
B. Vehicle Fuel Cost by Vehicle Type/Total Gallons of Fuel Consumed.....	37
C. Charts of Energy Usage Detail by Function.....	38
D. Fleet Management Summary of Vehicles by Type, Consumption, Mileage and Miles per Gallon.....	45
E. City Parking Structures, Lots E and R, Itemization of Savings on Lighting Conversion Program.....	46

City of Sacramento - 1985/1986 - Energy Report

EXECUTIVE SUMMARY

The 1985-86 Annual Energy Report addresses the goals, objectives, usage highlights, major completed projects, and outstanding projects of the City's energy program.

Goal

- To mitigate spiraling energy costs through the implementation of energy conservation measures and practices while meeting the needs of the City, thereby freeing up funding for vitally needed public services.

Objectives

- To improve the energy efficiency of existing facilities through any practical means available.
- To design necessary remodels, expansions or new facilities in an energy efficient manner.

Usage Highlights

- **Consumption of energy increased by 3.3%:** Electrical usage increased by 6.6% while natural gas use decreased by 13.4%. The increase was attributable to the following factors:
 - o Climatic conditions
 - o System expansion
 - o Additional facilities such as the 13th & "I" building
 - o Increases in the use of desktop computers and printers
- **Electricity and natural gas rates increased overall by 23.9%.** Sacramento Municipal Utility District (SMUD) rates increased by 28% although Pacific Gas and Electric (PG&E) rates decreased by .08%.
- **Fleet operations fuel consumption increased 1.5% as the result of a 4.6% increase in miles driven;** this increase is attributable to Sacramento's growth and the continuing demand for refuse, police and fire vehicles. An additional 60 vehicles were added during this same time period.

City of Sacramento - 19. 1986 - Energy Report

Executive Summary (Continued)

COST MITIGATION

- Energy conservation projects over the past five years have resulted in mitigation of \$1.9 million of energy costs. For each \$1.00 invested into conservation, the return on investment has been \$1.23.

Major Projects Completed During Fiscal Year 1985-86

- Fluorescent lighting fixtures were converted to high pressure sodium (HPS) lights and modified switching controls were installed in parking lots E and R, which will result in an annual savings of \$59,970 and a payback on the investment within 1.7 years.
- Corporation Yard Building 5 was converted from five large space heaters to an energy efficient infra-red heater. The payback on this investment is expected in one year.
- City Hall and Corporation Yard exterior lighting was converted to HPS at a cost of \$5,360, with payback expected within 3.4 years.

Upcoming Projects for FY 1986-87

- Parking Lots K, K1 and K2 will be converted to HPS at an estimated cost of \$295,000. The estimated savings from this effort is \$69,346 with payback to be realized within 4.25 years.
- The HPS conversion of Parking Lot P will be completed within the next year.
- Space heaters at the Landfill Maintenance Building and Corporation Yard Buildings 6 & 16 will be replaced with energy efficient infra-red heaters.
- The Hagginwood, Johnston, Northgate and Redwood Parks ballfields will be retrofitted with HPS and vandalism shields will be installed. This will save energy and reduce costly repairs caused by vandalism.

Recognition

- On June 3, 1986, the City received SMUD's Executive Award. This is the highest recognition award granted in their service area. The award was based on the 10th and L Street parking lot lighting conversion to HPS and modification of the electrical switching controls.

City of Sacramento - 1985/1986 - Energy Report

I. INTRODUCTION

The goal of the City's energy programs is to mitigate spiraling energy costs through implementation of energy conservation measures and practices, while meeting the needs of the City, freeing funds for other public services. Three consistent factors appear throughout the following presentation of the City's energy consumption and conservation activities for 1985-86. These factors include the application of common sense, available technology, and vigilance toward energy issues and problems. By seeking out new opportunities to conserve and encouraging good energy consumption habits, the City has established a viable energy program.

In light of the long-term upward trend in energy rates, a commitment to prudent energy usage is essential. Energy prices have increased 300 to 400% in the last 10 years according to "The Professional Energy Manager" (Newsletter of Association of Professional Energy Managers, November/December, 1985). In the last year, Sacramento Municipal Utility District (SMUD) rates have increased 28% while Pacific Gas and Electric (PG&E) rates have experienced a short-term decrease of .08%. Forecasts indicate utility costs will continue to climb.

II. BACKGROUND/DISCUSSION OF ENERGY USAGE

A. Climate Factor

Climatic conditions in Sacramento during 1985-86 as compared to 1984-85 were as follows:

- Rainfall increased 222%
- Heating degree days, based on 65 degrees--an indicator measuring the need for winter space heating--decreased 43.5%
- Cooling degree days, based on 65 degrees--an indicator measuring the need for summer air conditioning--decreased 32.1%

Local climatic conditions have a definite effect on energy consumption. Heavy rainfall and hot summers normally increase consumption of electricity to run pumps and air conditioning units, while colder days normally increase consumption of natural gas for space heating. In 1985-86, the large increase in rainfall was partially attributable to increased energy consumption.

B. Facility Design Factor

Many of the City's facilities are older structures and inefficient users of energy. That being the case, the first objective of the energy program is to improve the energy efficiency of existing facilities through any practical means available. The second objective is to design any remodeled, expanded or new facility in a manner which enhances its energy efficiency.

Improving the energy efficiency of existing structures requires determination and creativity. The starting point is a reasonable building temperature policy. The City's policy is to set thermostats no higher than 68 degrees in the winter and no lower than 76 degrees in the summer.

The next step is requesting SMUD and PG&E energy audits, followed by implementation of suggested corrective action. City facilities have been audited and modified to comply with audit suggestions. In the process, improvements have been identified which could be made in energy efficiency beyond required audit items, utilizing new energy technology based on the payback and an effective preventive maintenance program. For example, a successful pilot project which tested a new electronic energy management system has been completed in the activity building at the Community Center. In addition, an annual amount is being budgeted for corrective action on upcoming energy conservation projects. Finally, preventive

City of Sacramento -- 1985/1986 -- Energy Report

Background/Discussion of Energy Usage (Continued)

maintenance has been successfully applied to numerous problem areas including heating, ventilating, and air conditioning systems, which reduces energy consumption when units are being properly maintained.

Whenever a remodeled, expanded, or new facility is designed, energy efficient equipment is incorporated wherever practical. It is the City's practice to routinely include efficient insulation, heating systems, lights and timers as design features.

Throughout these activities, the City's Energy Coordinator continues to provide ongoing leadership and coordination of the City's many-faceted energy program.

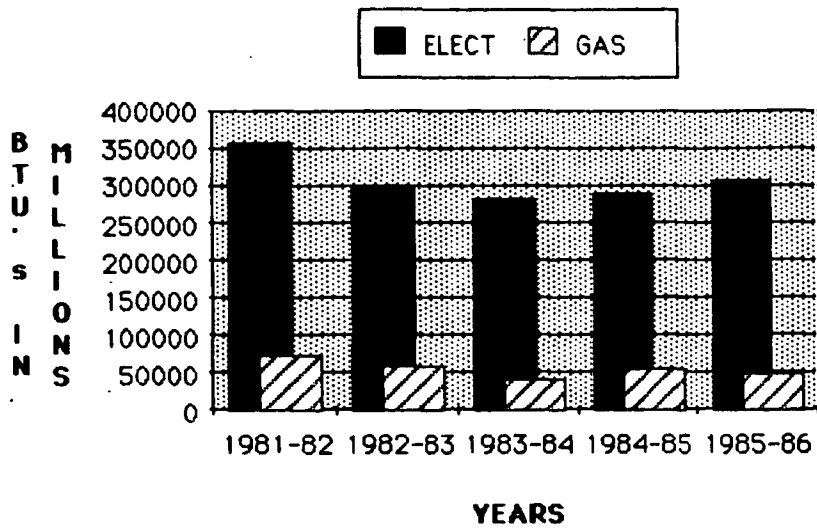
City of Sacramento — 1985/1986 — Energy Report

III. ENERGY CONSUMPTION BY ACTIVITY

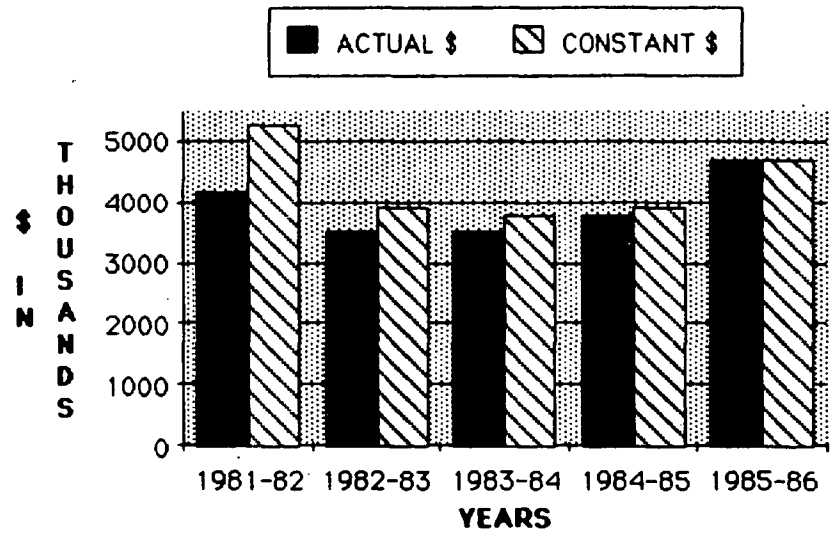
City of Sacramento - 1985/1986 - Energy Report

A. Summary of Operations

ANNUAL BTU'S



ANNUAL COST



Consumption Measurements

Period	Total BTU's (Billions)	% Change
FY 1985-86	360,694,488.4	+ 3.3
FY 1984-85	349,265,282.7	+ 7.9
FY 1983-84	326,359,585.6	- 9.7
FY 1982-83	361,335,056.7	-16.4

FY 1985-86 versus FY 1984-85:

Electricity usage up 6.58%
 Natural gas usage down 13.37%
 Total energy cost up 23.88%

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Summary of Operations (Continued)

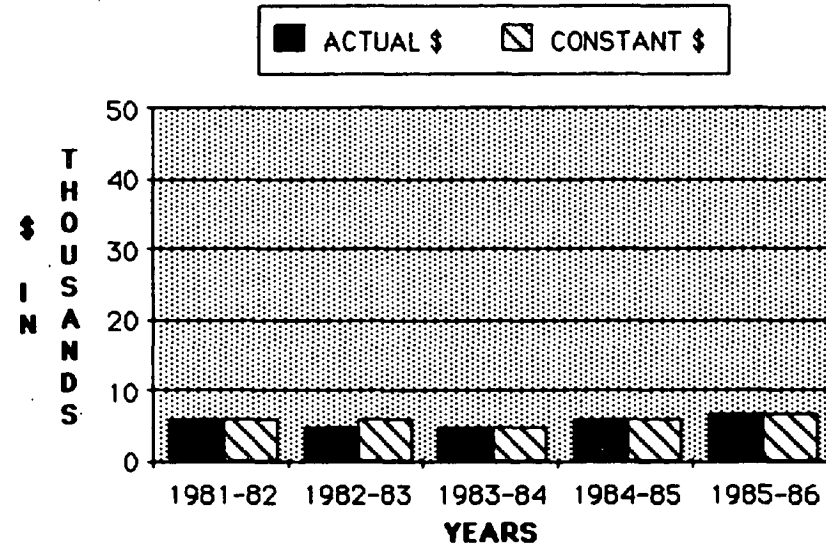
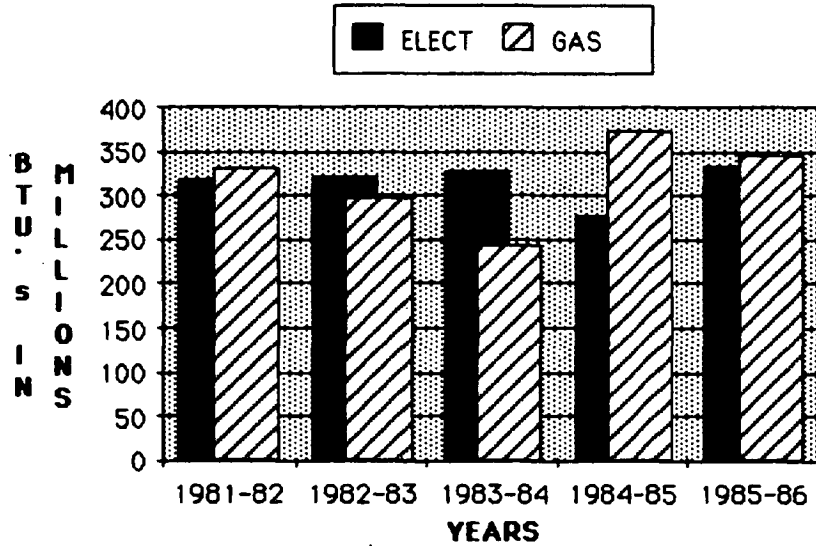
Highlights

- Consumption overall increased 3.3% for 1985-86 while the total cost of energy increased \$904,992 or 23.88%.
- The increased electrical consumption of 6.58% (5,620,072 KWH) is primarily attributable to the pumping of winter storm water - 4.8% (4,079,342 KWH). The remaining 1.8% (1,540,730 KWH) is mainly associated with the 13th and I Street building.
- The decreased natural gas consumption or 13.37% is attributable to the milder temperatures during the winter months and conservation measures implemented (ie: setting thermostats, installation of time clocks, insulating water heaters and water pipes, etc.).
- Energy Conservation measures over the past 5 years have resulted in mitigation of \$1.9 million of energy costs. For each \$1.00 invested into conservation, the return on the investment has been \$1.23.

City of Sacramento - 1985/1986 - Energy Report

ANNUAL BTU'S B. Animal Control

ANNUAL COST



Consumption Measurements

<u>Period</u>	<u>TOTAL BTU'S/ Sq. Ft.</u>	<u>% Change</u>
1985-86	683,189.7	+ 4.5
1984-85	653,723.3	+13.9
1983-84	574,073.3	- 7.7
1982-83	622,256.8	- 4.8

FY 1985-86 versus FY 1984-85:

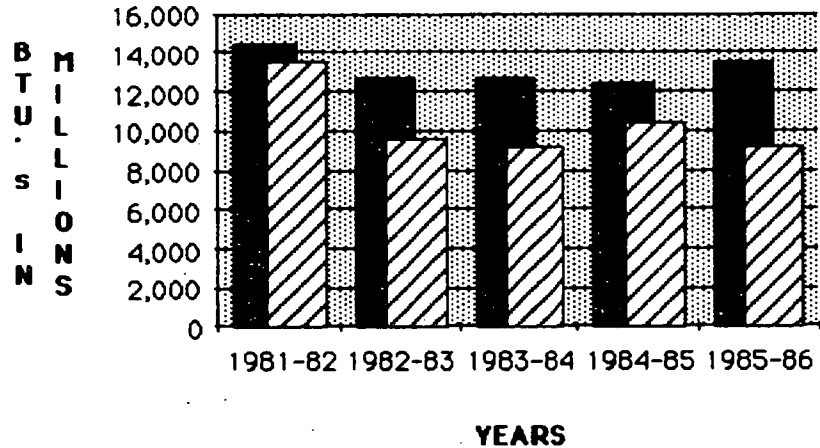
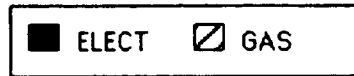
Electricity usage up 20.54%
 Natural Gas usage down 7.31%
 Total energy cost up 8.58%

Highlights

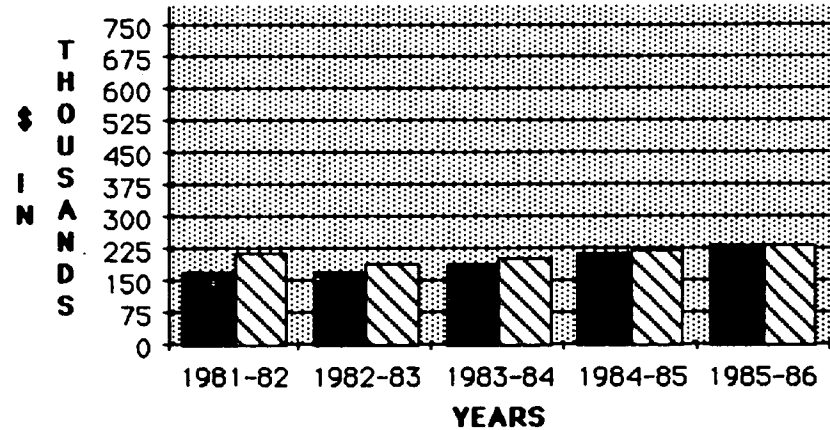
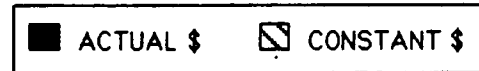
- Energy consumption overall increased by 4.5%. There has been no change in the operation of the Animal Control Facility to justify the increased electrical usage of 20.54%. An audit will be conducted to determine what occurred and identify conservation measures required to prevent this situation from recurring.

C. Community Center

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

<u>Period</u>	<u>TOTAL BTU's/ Billions</u>	<u>% Change</u>
1985-86	22,794,870.3	- .6
1984-85	22,941,431.4	+ 4.6
1983-84	21,928,867.7	- 2.1
1982-83	22,403,107.5	-20.2

FY 1985-86 versus FY 1984-85:

Electricity usage up 8.39%
 Natural gas usage down 11.49%
 Total energy cost up 8.4%

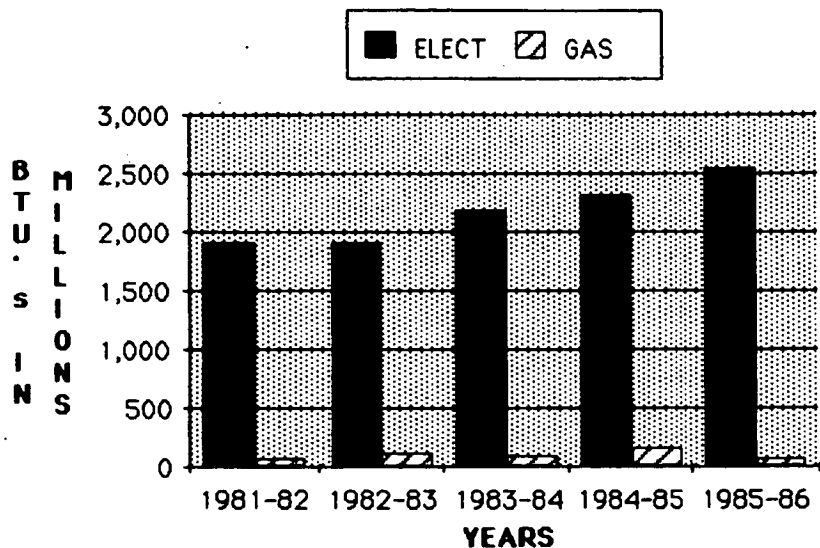
Highlights

- The total energy consumption dropped .6% from last year. The decrease was mainly due to lower natural gas consumption, attributable to the closing of the Memorial Auditorium. The electrical consumption increase was due to increased utilization of the Community Center.

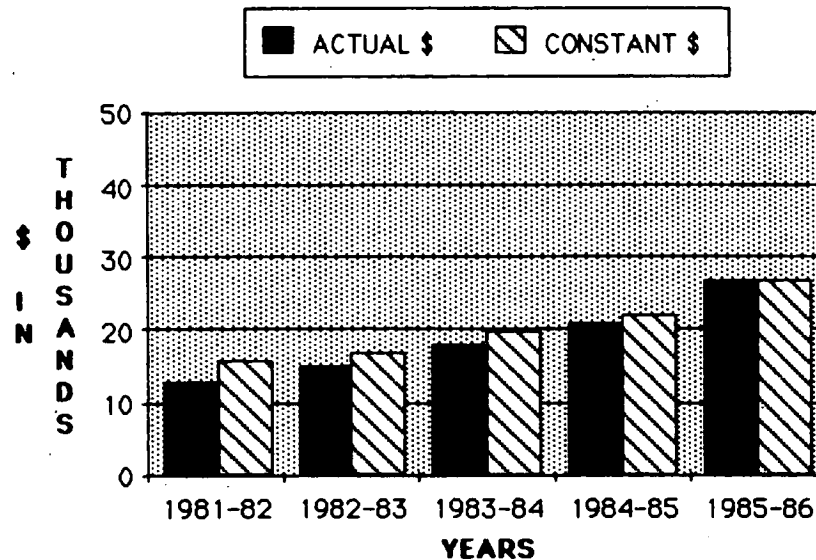
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D. Data Processing

ANNUAL BTU'S



ANNUAL COST



Consumption Measurements

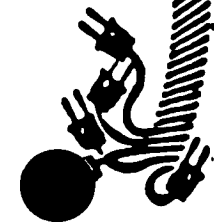
Period	TOTAL BTU's/ %	
	Millions	Change
1985-86	2,624,871.3	+ 5.0
1984-85	2,500,374.6	+ 9.7
1983-84	2,278,719.0	+11.4
1982-83	2,045,301.3	+ 3.0

FY 1985-86 versus FY 1984-85:

Electricity usage up 9.0%
 Natural gas usage down 50.24%
 Total energy cost up 29.5%

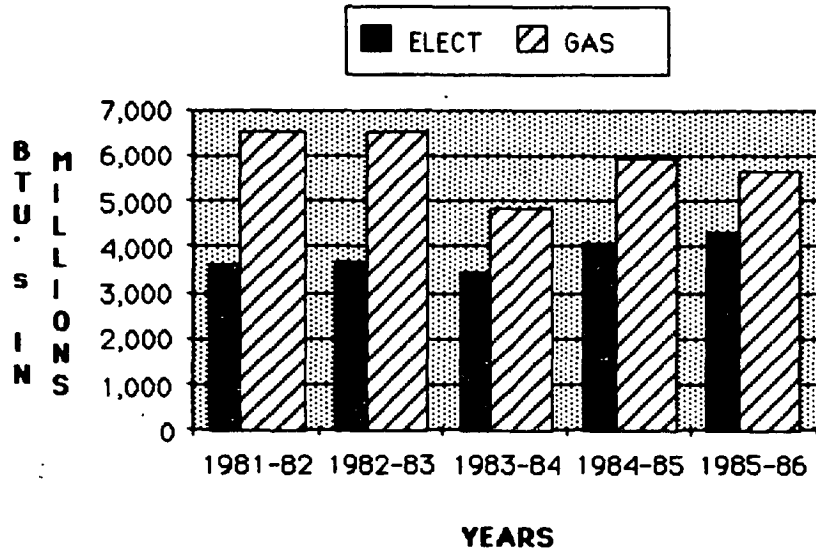
Highlights

Electrical consumption increased 9% due to the addition of the IBM main frame computer. The significant natural gas decrease of 50.24% is attributable to a reduction in use of space heating.

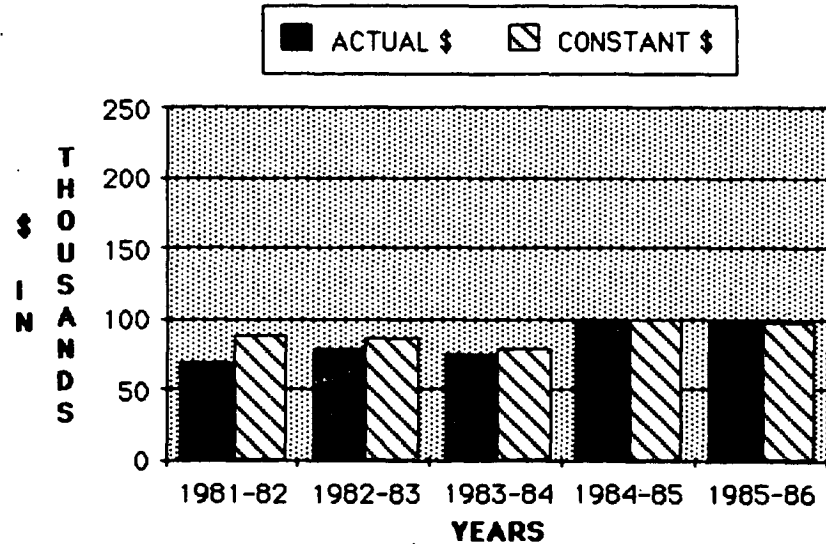


E. Fire Department

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

<u>Period</u>	<u>TOTAL BTU/S</u> <u>(Billions)</u>	<u>%</u> <u>Change</u>
1985-86	10,000,508.8	- .7
1984-85	10,066,881.7	+23.0
1983-84	8,361,520.1	-25.2
1982-83	10,231,582.9	+ .7

FY 1095-86 versus FY 1984-85:

Electricity usage up 5.71%
 Natural gas usage down 5.06%
 Total energy cost up .05%

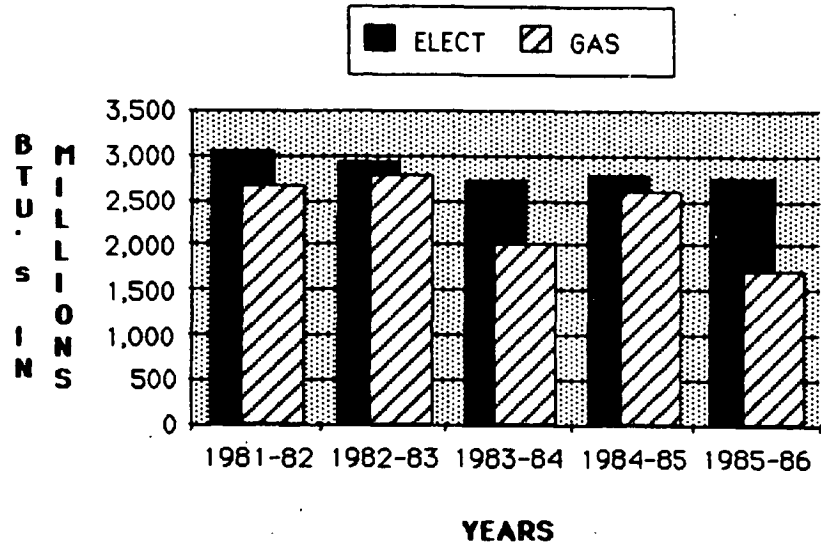
Highlights

- Electricity usage increased due to the addition of 11,000 square feet at the Fire Training Center.
- The reduction in natural gas usage was partially attributable to the installation of controls on large space heaters in the apparatus room in fire houses that turns off the heating when the doors are opened.

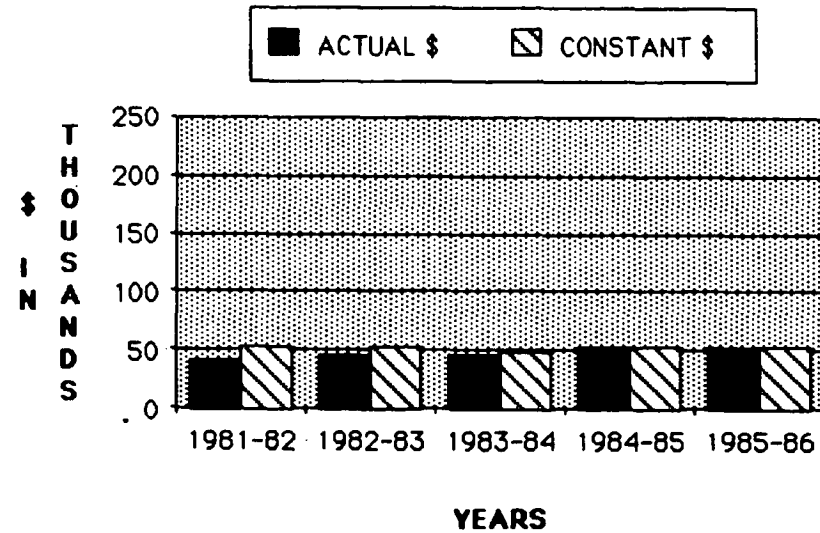
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F. Libraries

ANNUAL BTU'S



ANNUAL COST



Consumption Measurements

Period	TOTAL BTU's/ (Billions)	% Change
1985-86	4,521,596.3	- 16.6
1984-85	5,422,959.6	+ 14.0
1983-84	4,757,036.8	- 17.6
1982-83	5,771,184.6	+ .7

FY 1985-86 versus FY 1984-85:

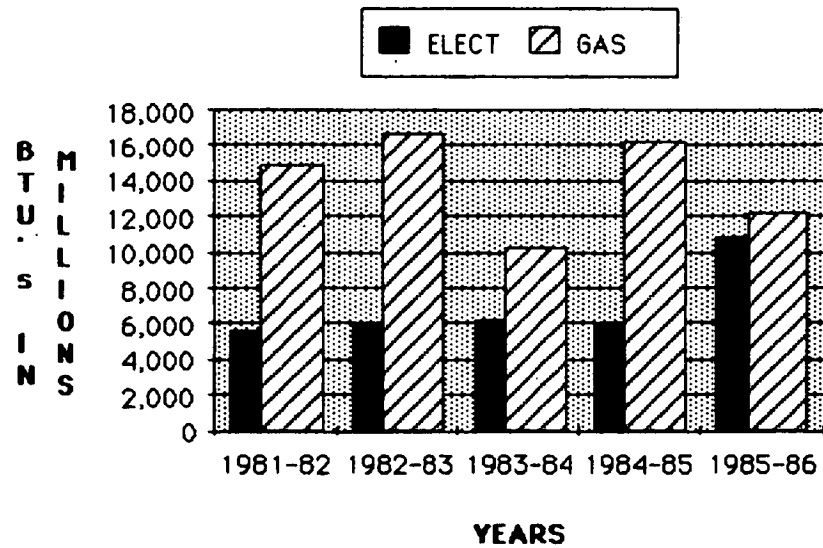
Electricity usage down .70%
 Natural gas usage down 33.57%
 Total energy cost down 1.1%

Highlights

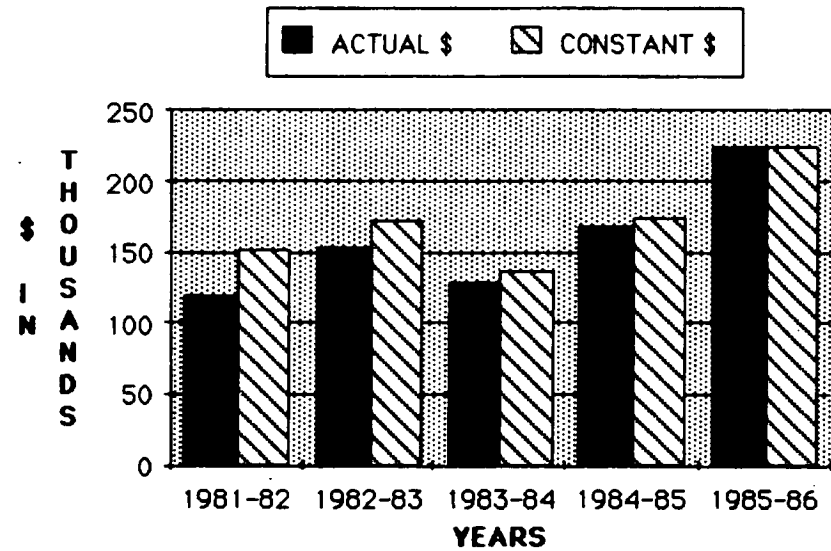
- Energy consumption decreased 16.6%, which was attributable to the September 1985 relocation of the book storage and administrative function from a 10,500 sq. ft. uninsulated warehouse into a facility where utilities are paid by facility owner.

City of Sacramento - 1986 - Energy Report

G. Office Buildings & 24th Street Corporation Yard ANNUAL BTU'S



ANNUAL COST



Consumption Measurements

Period	TOTAL BTU's Billions	% Change
1985-86	23,101,892.3	+ 2.6
1984-85	22,522,848.7	+ 32.8
1983-84	16,529,518.3	- 27.4
1982-83	22,773,054.1	+ 9.7

FY 1985-86 versus FY 1984-85:

Electricity usage up 76.61%
 Natural gas usage down 25.37%
 Total energy cost up 33.37%

City of Sacramento - 1985/1986 - Energy Report

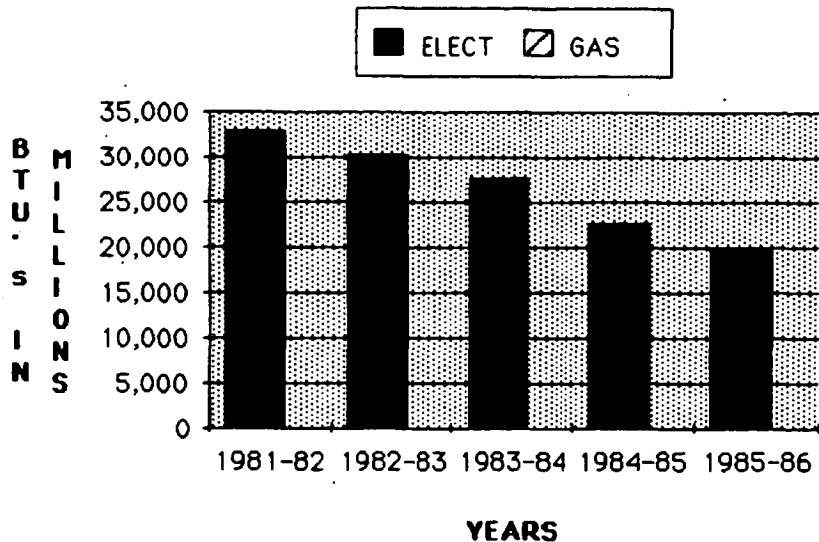
Office Buildings & 24th Street Corporation Yard (Continued)

Highlights

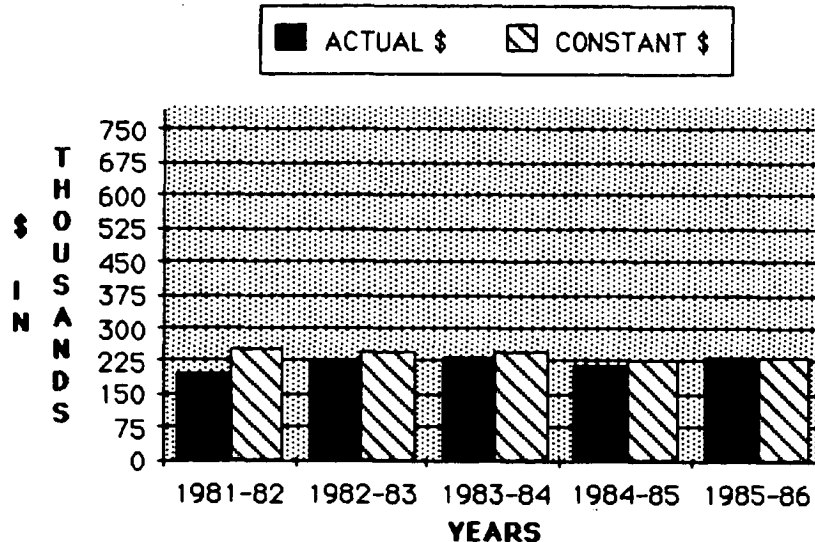
- Consumption in this category increased 2.6%.
- Electricity consumption increased by 1.38 million KWH or 76.6%. The first full year of the 13th & I Street office buildings which consumed 1.43 million KWH is the cause of this significant increase.
- The natural gas consumption decrease of 25.4% is due to milder temperatures during the winter months and conservation measures implemented (i.e. setting thermostats, installation of time clocks, insulating water heaters and water pipes, etc.).

H. Parking Lots

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

Period	Total BTU's (billions)	% Change
1985-86	20,040,684.8	-12.5
1984-85	22,894,116.4	-17.6
1983-84	27,790,562.0	- 8.8
1982-83	30,463,535.5	- 7.7

FY 1985-86 versus FY 1984-85:

Electricity usage down 12.40%
 Natural gas usage down 77.67%
 Total energy cost up 28.52%

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Parking Lots (Continued)

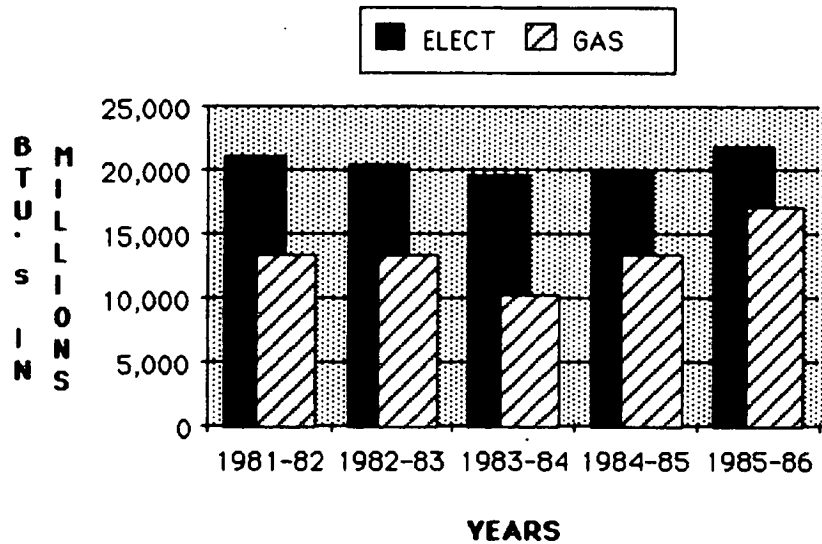
Highlights

- Energy consumption decreased 12.5% for the fourth consecutive year, in large part due to the conversion of parking lot fluorescent lamps to high pressure sodium lamps. In 1995-86, Parking Lots P and R were converted. In addition, all parking lot lights were placed on automatic time clocks.
- The Parking Division has also worked with Facility Maintenance to reduce the use of electric heaters.
- The air ventilation system in Parking Lot K has been replaced and is now activated based upon the level of carbon monoxide present in the air, as opposed to continuously operating. This will result in an energy consumption reduction.

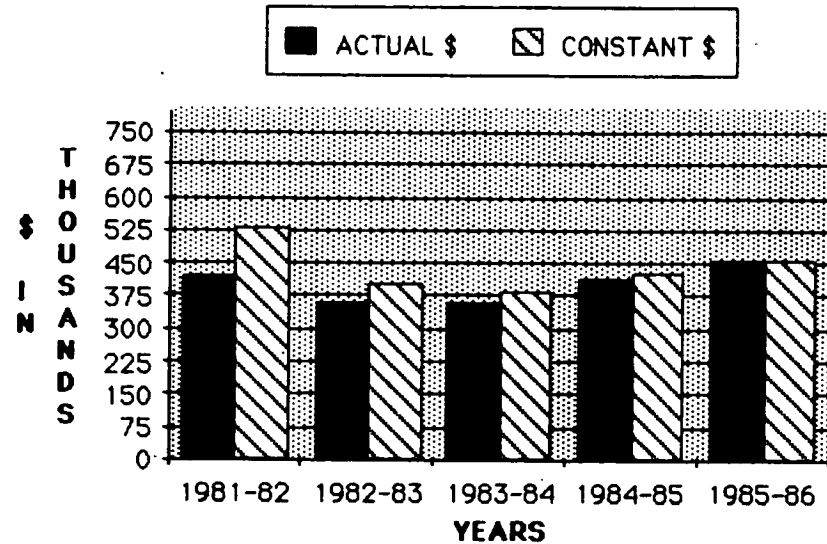
City of Sacramento - 1985/1986 - Energy Report

L. Parks and Community Services

ANNUAL BTU'S



ANNUAL COST



Consumption Measurements

<u>Period</u>	<u>TOTAL BTU/S (Billions)</u>	<u>% Change</u>
1985-86	33,864,997.7	+ 1.5
1984-85	33,368,765.8	+ 10.7
1983-84	30,134,140.5	- 11.6
1982-83	34,093,425.3	- 1.5

FY 1985-86 versus FY 1984-85:

Electricity usage up 11.30%
 Natural gas usage down 13.16%
 Total energy cost up 9.25%

City of Sacramento - 1985/1986 - Energy Report

Parks and Community Services (Continued)

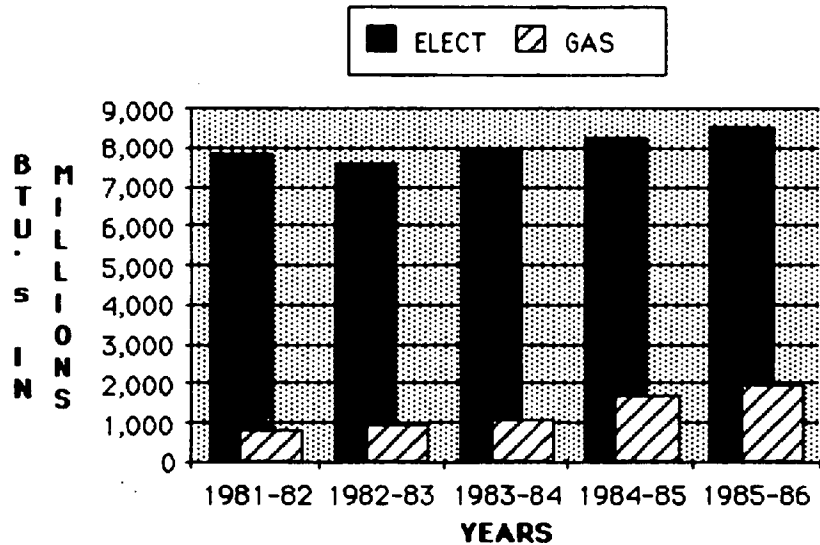
Highlights

- Energy consumption overall increased 1.5%. Natural gas usage decreased by 13.16%, although this was offset by an increase in electricity usage of 11.3%. The electrical increase is attributed to program augmentations at the Zoo, Crocker Art Museum, Museum and History and the addition of the Old Sacramento office. The Museum and History Division experienced the most significant increase (196%). This was caused partially by an erratic mechanical system, which the Facility Management Division is working to correct.
- The lighting conversion program has been very successful, both in reducing electricity consumption and improving lighting levels for the safety of patrons. The Garden and Arts Building and Tahoe Pool have been converted to date. The return on this program is approximately 1.7 years on the dollars which have been invested.

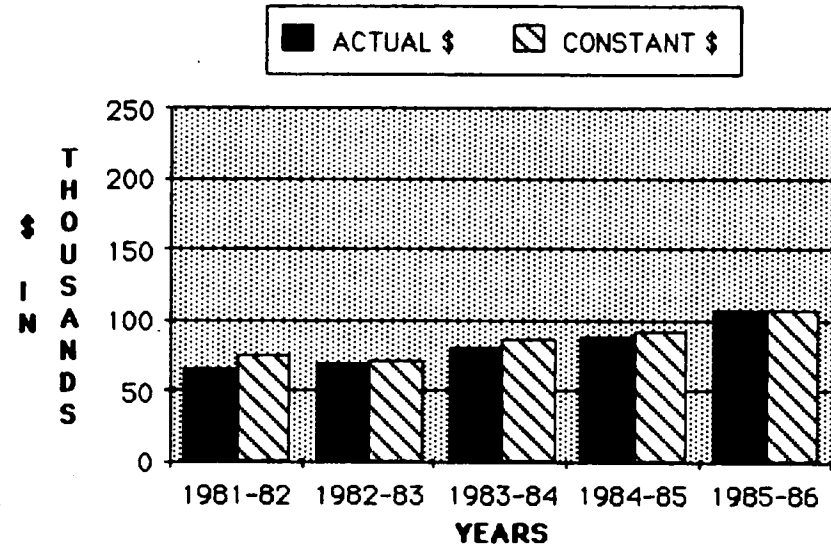
City of Sacramento - 1986 - Energy Report

J. Police Department

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

Period	TOTAL BTU's/ (billions)	% Change
1985-86	10,563,285.4	+ 5.7
1984-85	9,993,036.0	+ 9.9
1983-84	9,096,871.0	- 6.1
1982-83	8,578,013.0	- 2.3

FY 1985-86 versus FY 1984-85:

Electricity usage up 3.61%
 Natural gas usage down 15.82%
 Total energy costs up 21.40%

Highlights

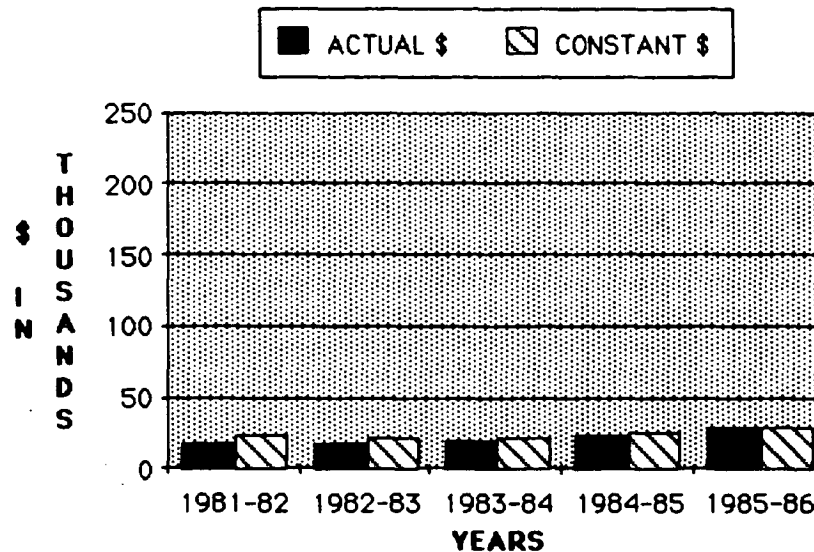
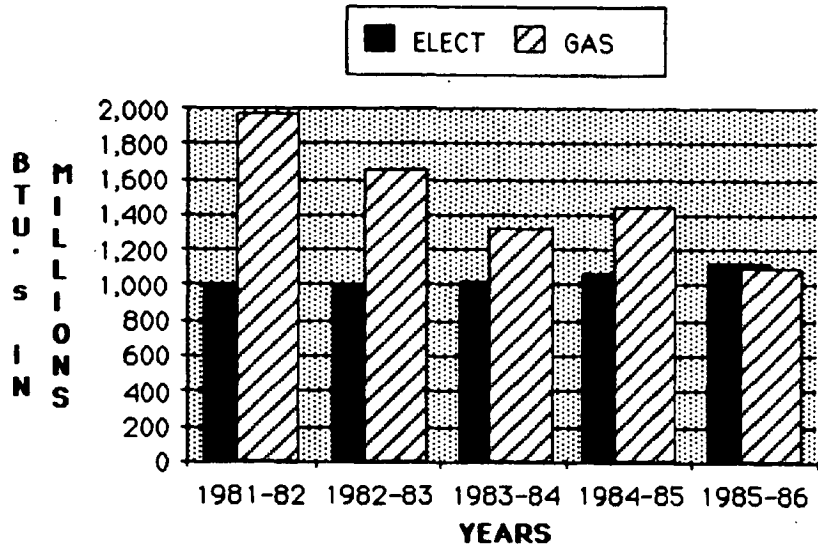
- The 15.8% increase in natural gas usage is attributable to an erratic heating and air conditioning system at 625 H Street. The Facility Management Division is aware of the problem and is working to correct it.
- Time clocks were installed on all Department thermostats.

City of Sacramento - 1985/1986 - Energy Report

ANNUAL BTU's

K. Solid Waste

ANNUAL COST



Consumption Measurements

Period	Total BTU's (Millions)	% Change
1985-86	2,226,938.8	- 11.8
1984-85	2,523,985.7	+ 6.9
1983-84	2,360,317.2	- 11.5
1982-83	2,667,822.1	- 10.4

FY 1985-86 versus FY 1984-85:

Electricity usage up 5.54%
 Natural gas usage down 24.49%
 Total energy costs up 13.72%

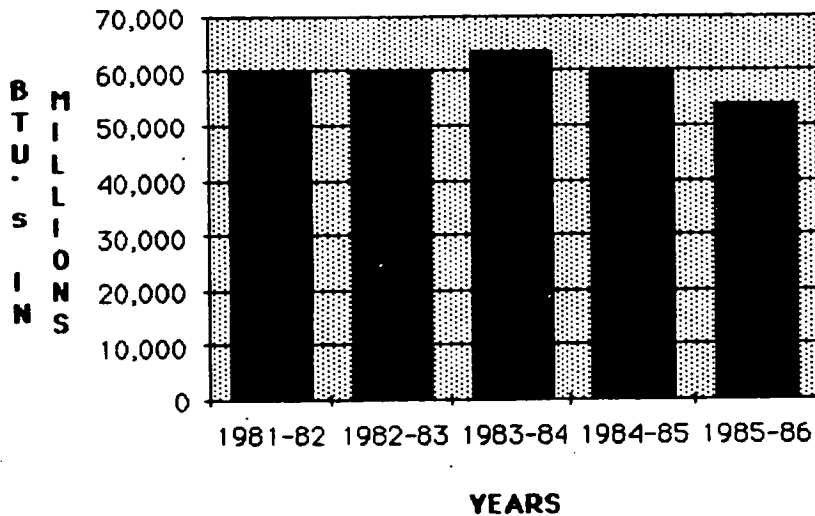
Highlights

- Total energy consumption dropped 11.8% due to a decrease in gas usage. This was attributed to the elimination of the gas fired steam washer at 28th Street Maintenance Yard. The increase in the electric consumption can be attributed to the first full year of using security lights at the 28th Street Landfill location.

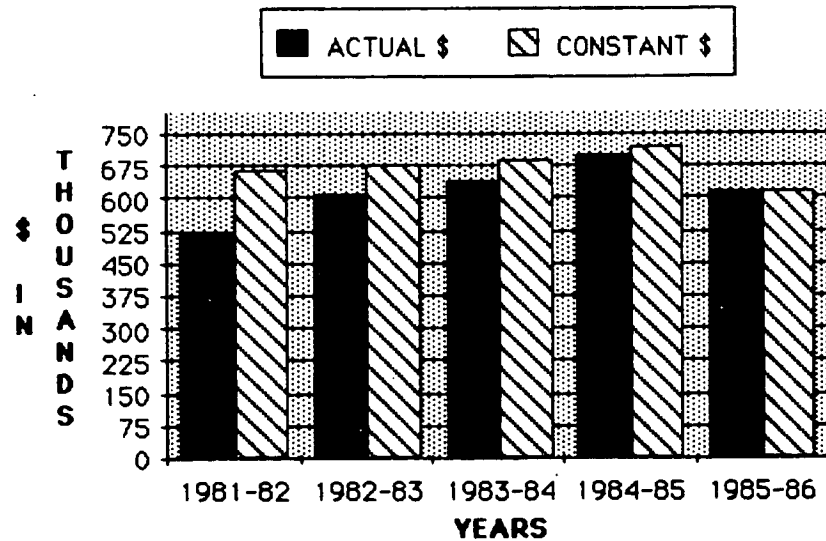
City of Sacramento - 1986 - Energy Report

L. Street Lighting

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

<u>Period</u>	<u># of Street Lights</u>	<u>BTU's/Unit (millions)</u>	<u>% Change</u>
1985-86	22,008	53,993,339.2	-10.2
1984-85	21,356	60,140,637.0	- 5.7
1983-84	20,706	63,787,345.4	+ 5.4
1982-83	19,717	60,538,950.9	- 1.2

FY 1985-86 versus FY 1984-85:

Electricity usage down 10.22%
Total energy cost down 12.55%

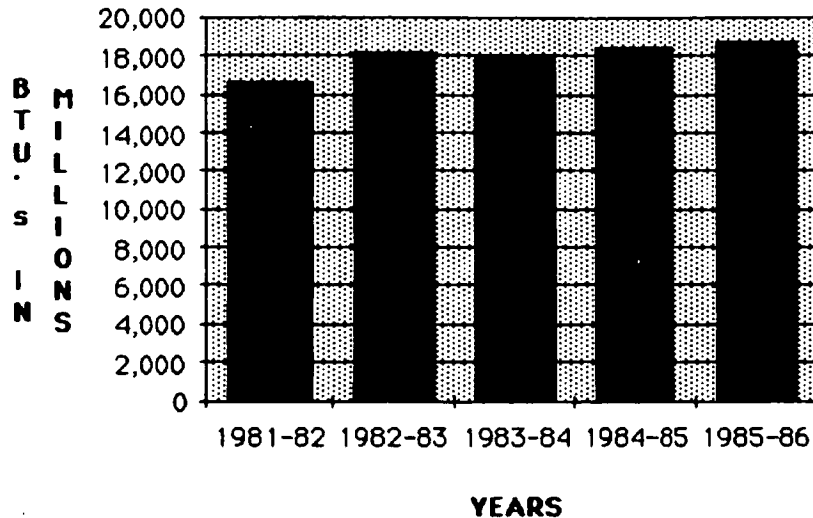
Highlights

- The City's system increased by 652 additional street lights, yet electricity consumption decreased 10.2%. This consumption reduction is attributable to the ongoing street light conversion program of changing from mercury vapor to high pressure sodium luminaries. During this reporting year, approximately 2,500 lights were converted.

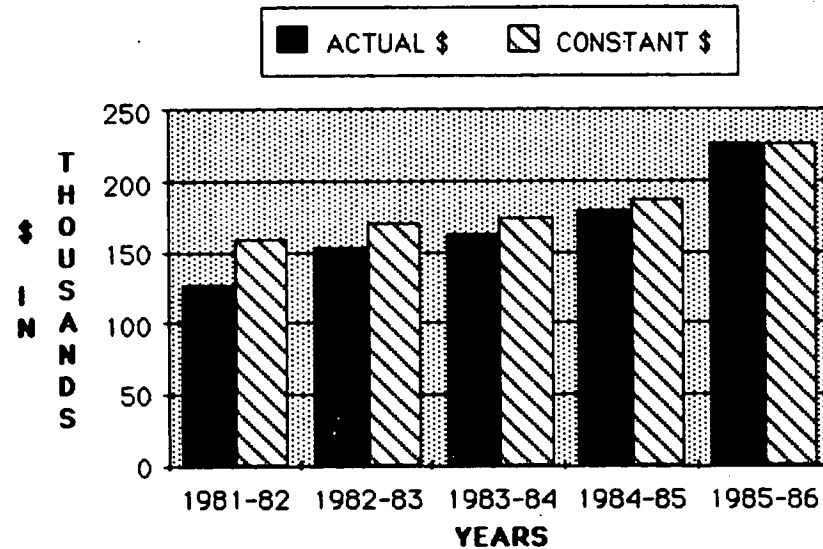
City of Sacramento — 1985/1986 — Energy Report

M. Traffic Signals

ANNUAL BTU's



ANNUAL COST



Consumption Measurements

<u>Period</u>	<u># of Signalized Intersections</u>	<u>BTU/ Inter-section (billions)</u>	<u>% Change</u>
1985-86	500	18,789,094.0	+ 1.5
1984-85	453	18,518,764.0	+ 2.8
1983-84	444	18,015,998.3	- .1
1982-83	436	18,194,447.0	+ 9.0

FY 1985-86 versus FY 1984-85

Electricity usage up 1.46%
Total energy cost up 25.77%

Highlights

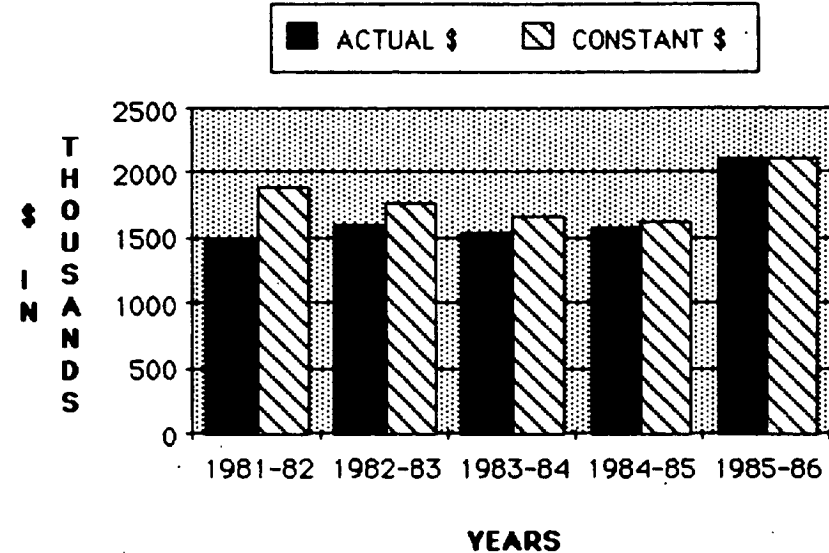
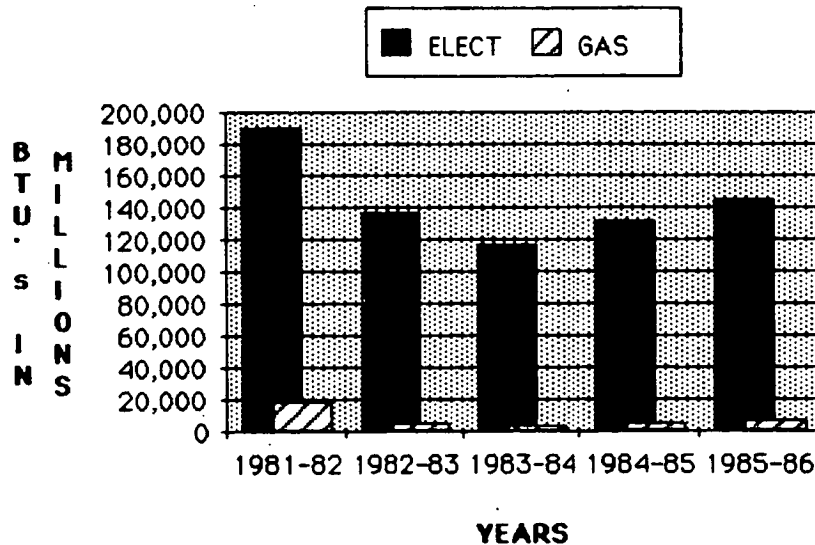
- Forty-seven new signalized intersections were added to the system during this reporting period, contributing to the 1.46% increase in electrical consumption.

City of Sacramento - 19. 1986 - Energy Report

N. Water and Sewer

ANNUAL BTU's

ANNUAL COST



FY 1985-86 versus FY 1984-85:

Electricity usage up 10.53%
 Natural gas usage up 16.77%
 Total energy cost up 34.50%

Consumption Measurements

<u>Period</u>	<u>Total Gallons Pumped in (billions)</u>		<u>Total BTU's (billions)</u>	<u>% Change</u>
	<u>Waste Water Sewer</u>	<u>Water Production</u>		
FY 1985-86	11.33	34.6	152,562,470.9	+10.8
FY 1984-85	9.98	34.7	137,717,776.7	+14.0
FY 1983-84	8.81	32.8	120,743,781.9	-15.6
FY 1982-83	14.89	28.6	142,986,505.5	-31.6

City of Sacramento -- 1985/1986 -- Energy Report

Water and Sewer Operations (Continued)

Highlights

- The 10.8% increase in electrical consumption is attributed to the 122% increase in rainfall which caused additional storm water and sewer pumping. This also increased gas consumption because Florin Reservoir Pump is operated by natural gas.

IV. FLEET VEHICLE OPERATIONS

Fuel Consumption and Costs

Year	Gallons Consumed			Cost			Average Cost/ Gal.
	Gas (000)	Diesel (000)	Total (000)	Gas (000)	Diesel (000)	Total (000)	
1986	1,097.2	459.0	1,556.2	\$ 972.2	\$325.9	\$1,298.1	\$0.83
1985	1,081.1	451.9	1,533.0	1,052.2	370.1	1,422.3	0.93
1984	1,094.7	378.1	1,472.8	1,084.5	327.0	1,411.4	0.96
1983	1,141.3	329.4	1,470.7	1,132.3	315.2	1,447.5	0.98
1982	1,160.8	316.7	1,477.5	1,325.6	320.3	1,645.9	1.11
1981	1,263.1	263.5	1,526.5	1,540.4	265.7	1,806.1	1.18

- 1.5% increase in consumption this year
- 1.9% increase in consumption. (29,700 gallons) over a six year period while mileage increased 9%.
- 11% decrease in cost this year
- 29.7% decline in cost over a six year period

<u>Current Fuel Cost/Gallon</u>	
Gasoline	\$0.89/Gallon
Diesel	0.71/Gallon

Highlights

The City of Sacramento's vehicle fuel consumption increased 1.5% in 1985-86. During this period, total mileage used increased by more than 500,000 miles (a 4.6% increase). Significant increases in usage were recorded by police and fire sedans (8.6%), refuse trucks (11.7%) and fire trucks (8.9%). These are attributed to Sacramento's growth and the continuing demand for services.

City of Sacramento - 1985/1986 - Energy Report

Fleet Management Operations (Continued)

Fleet Management's commitment to energy conservation and minimizing its energy costs is demonstrated by:

- Sizing vehicles to meet needs based on planned utilization;
- Replacing older cars and trucks with more fuel efficient vehicles;
- Converting the fleet to radial tires;
- Improving its preventive maintenance program;
- Participating in a joint City/County fuel purchasing program.

Fleet Management continues to replace its older vehicles with more fuel efficient units when possible. During 1985-86, several departments reached an efficiency saturation point: downsized vehicles would not handle the required loads and/or personnel. This required the Fleet Management Division, for the first time in several years, to purchase a number of full size pickups and vans. However, the division was still able to purchase approximately 40 small pickups in 1985-86, many of which replaced older sedans. Fleet Management also added a number of mini-vans and replaced Fire Department station wagons with diesel powered suburbans.

Over the last two years, Fleet Management has replaced a number of large gasoline powered trucks with diesel powered units. These units are holding up very well in City service. Fuel mileage among these trucks has increased 40 to 60% over similar gasoline powered trucks. In addition to this conversion, the division continues to replace bias ply tires with radial tires. By 1989, the tire conversion should be 98% complete.

In the Spring of 1986, fuel prices began to soften. The Fleet Management and Support Services Divisions, working together with their counterparts in Sacramento County, developed and implemented a program that allowed the City to purchase fuel on the spot market. The program has taken advantage of the current fuel surplus and enabled the City and County to further stretch their fuel dollars.

Fleet Management Operations (Continued)

ITEMS OF NOTE

In 1985-86, more than 60 vehicles were added to the fleet. Police and Fire car usage was up 8.6% over the previous year. This increase is largely attributed to the addition of 14 black and white patrol units and 25 officers. In 1984-85, the Fire Department assumed responsibility for the Fruitridge and Natomas Fire Districts. In the last two years, the usage of the department's fire trucks increased by almost 36%.

Finally, the Solid Waste Division's vehicles ran a great many more miles, which is attributed to the continued growth of the City. Usage may hold steady or decline as the infill of the 90 gallon super can program is completed.

V. ENERGY CONSERVATION ACTIVITIES

A. Energy Audits

It is the City's policy to take full advantage of SMUD and PG&E energy audits in identifying and correcting areas where energy consumption can be reasonably reduced.

During 1984-85, 40 facilities were audited and all of the identified work has been completed with the exception of particular PG&E projects for the City Corporation Yard. Within the Corporation Yard, all recommendations have been completed, with the exception of the radiant heater installation in Buildings 6 and 16, which will result in an estimated \$25,000 annual savings when completed.

In fiscal year 1985-86, audit efforts were focused on the History Center and 13th and "I" Building. Both have unique concerns, which are yet to be resolved. The History Center HVAC is currently being evaluated by a Design Engineer and City staff for hot and cold spots, air distribution, excessive energy usage. Corrective measures and related costs have not been established at this time. In addition, the lighting dimming system will be modified to prevent system failures, which have taken place in the past. The estimated cost for these improvements is \$6,500.

The 13th and "I" Street Building has been a constant source of concern due to hot and cold areas, drafts, and high energy usage. The City is working with a mechanical engineer in order to arrive at corrective measures.

Energy use reports (by SMUD) were conducted at Parking Lots A, B, and H in order to track current energy usage as compared to usage prior to lighting conversion. The results of this analysis will be incorporated into next year's report.

B. Grants and Incentives

The City received an energy conservation assistance loan from the State of California's Energy Commission for \$76,765. The loan was to be used at Parking Lots K-1 and K-2 for lighting conversions from fluorescent to high pressure sodium. The loan is to be paid back through energy savings within a five year period. This loan will enable the City to complete its parking lot conversion program one year ahead of schedule.

City of Sacramento - 1985/1986 - Energy Report

Energy Conservation Activities (Continued)

C. Energy Management Award

At the CSUS Energy Fair Program Energy Awards Ceremony on Tuesday, June 3, 1986, the City of Sacramento and Bel Air Markets received an Executive Award, SMUD's highest recognition in their service area. The City's award was based on the 10th and "L" Street Parking Lot lighting conversion (fluorescent to high pressure sodium) and modification of electrical switching controls. The return on the \$71,552 investment is 1.5 years.

D. ENERGY CONSERVATION PROJECTS

1. COMMUNICATION CENTER LIGHTING

Replaced all incandescent fixtures in the dispatch area with Peerless indirect fluorescent lighting in order to eliminate glare on computer screens, reduce strain on the operators, and conserve energy.

Cost: \$16,234

Payback period: 3.5 years

2. PARKING LOTS E & R

Both of these facilities were converted from fluorescent to high pressure sodium lighting. Through time clocks and switching, the new system provides various levels of lighting throughout the parking areas for day and night operation, plus after-hour security lighting.

Due to superior efficiency, there are fewer high pressure sodium fixtures than the originally installed fluorescent lamps they replaced. For comparison purposes, Lot E was originally constructed with 2,043 fluorescent lamps. The new high pressure sodium system has 238 lamps, an 88% reduction. The lamp life of HPS is twice that of fluorescent (24,000 versus 12,000 hours), which reduces maintenance costs drastically and still provides higher levels of lighting for public safety.

City of Sacramento - 1985/1986 - Energy Report

Energy Conservation Activities (Continued)

7. PROM, PERSONNEL, AND RICHARDSON BUILDINGS

Replaced all exterior inefficient lighting for employee safety and security.

Cost: \$1,200

Savings: \$58.50 per year

8. TAHOE POOL LIGHTING

Replacement of pool lighting was necessary due to obsolete fixtures and inadequate lighting for normal operation and security.

Cost: \$2,950

Savings: \$90 per year

9. CORPORATION YARD EXTERIOR BUILDING LIGHTING

Replaced 52 incandescent fixtures with 33 HPS fixtures for safety, labor maintenance and energy savings.

Cost: \$5,000 Savings: \$1,844 Payback period: 2.7 years

10. CITY DUMP STEAM RACK LIGHTING

Replaced all defective fluorescent fixtures with HPS in order to reduce maintenance labor, increase lighting and conserve energy.

Cost: \$600

Payback period: 1.9 years

11. MANGAN, TAHOE, CABRILLO, CLUNE, GLEN HALL & JOHNSTON PARKS

Installed temperature controlling devices which will prevent heating when facility is not used.

12. CITY DUMP MAINTENANCE BUILDING

Replaced all defective fluorescent fixtures with HPS fixtures to reduce energy.

Cost: \$8,143 Savings: \$4,135 Payback period: 1.9 years

City of Sacramento - 1985/1986 - Energy Report

Energy Conservation Activities (Continued)

UPCOMING PROJECTS

1. LOT K, K1, & K2

Two limited term employees are currently working on fixture conversion from fluorescent to high pressure sodium lighting. This will result in increased lighting required by current codes, greater public safety, lower maintenance labor costs, lower lamp replacement costs, and reduced energy usage.

Estimated cost: \$295,000
Savings: \$69,346

Payback period: 4.25 years

2. LOT P

Installation of 44 fixtures will complete the conversion from fluorescent to high pressure sodium lighting. This will increase the lighting levels to comply with current codes (lighting will be increased approximately 51%), increase public safety and reduce maintenance costs. This project was designed by the City Electrical Engineering Section. 130 fixtures were installed in 1985-86, at an estimated cost of \$36,165. Utility costs will increase \$933.12 per year, however, labor and maintenance costs will be reduced.

3. LOT G

Parking Lot G lighting conversion from fluorescent to HPS is currently being designed by the City Electrical Engineering Section. Preliminary construction estimates are \$63,230, with an energy savings of \$8,715 per year. There will be a 50% lighting level increase for public safety and as a result of the reduced number of light fixtures, there will also be a maintenance savings.

4. GLEN HALL, MANGAN, SOUTH SIDE & CABRILLO SWIMMING POOLS

All pool and building exterior incandescent fixtures which provide insufficient lighting for safety, security and normal operation will be replaced.

City of Sacramento - 1985/1986 - Energy Report

Energy Conversation Activities (Continued)

5. BALL DIAMONDS LIGHTING - HAGGINWOOD, JOHNSTON, NORTHGATE & REDWOOD

Ball diamonds have been repeatedly vandalized, resulting in many fixtures being damaged beyond repair. Hagginwood Park's fields will be retrofitted from mercury vapor to a more energy efficient and vandal resistant HPS fixtures. Johnston, Northgate, and Redwood Parks' fields will be repaired and a vandal shield added in order to reduce costly repairs due to vandalism.

6. LANDFILL EQUIPMENT MAINTENANCE BUILDING AND CORPORATION YARD BUILDING 6 AND 16

Inefficient and obsolete gas space heaters will be replaced with infra-red heaters at the City Landfill Equipment Maintenance Building and Corporation Yard Buildings 6 & 16. The new heaters will provide superior heating and comfort while reducing gas consumption.

7. NURSERY

New exterior HPS lighting will be added to reduce vandalism of City equipment on the west side of the building.

8. COUNCIL CHAMBERS

Modifications will be made in the City Council Chamber lighting to be permit cable tapping and televising meetings.

9. FIRE STATION 18

Inefficient lighting and heating in the apparatus room will be replaced.

City of Sacramento - 1985/1986 - Energy Report

Energy Conservation Activities (Continued)

E. ENERGY CONSERVATION PROJECT EXPENDITURES AND COMMITMENTS

Commitments and expenditures by project are as follows:

1.	General Government Energy Conservation Program--C.C. 4381:	
-	Previously reported as of June 30, 1985	\$256,948
-	Expenditures for FY 1985-86 (See Section V C for additional information)	<u>82,390</u>
	Total expenditures through June 30, 1986	\$339,338
-	Projects in progress:	
	24th Street Corporation Yard--Implement final half of PG&E audit recommendations	
-	Schedule most cost effective (shortest payback on investment) energy conservation measures identified and estimated to cost in excess of \$500,000 available funding for FY 1985-86.	<u>\$150,951</u>
	Total Commitments and Expenditures--C.C. 4381	\$490,289 =====

(Note: Appropriations through June 30, 1986 \$490,289)

2.	Parking Lot Lighting Replacement Program--C.C. 4378:	
-	Previously reporting as of June 30, 1985	\$112,839
-	Expenditures for FY 1985-86 (See section V-C for additional information)	<u>118,962</u>
	Total Expenditures through June 30, 1986	\$231,801

City of Sacramento - 1985/1986 - Energy Report

Energy Conservation Activities (Continued)

-	Projects in progress for FY 1986-87 conversion of Parking Lots K, K-1, & K-2.	\$295,000
-	Planned Projects:	
	FY 1987-88 -- Lot G	<u>94,000</u>
	Total Commitments and Expenditures - C.C. 4378	\$620,801 =====

(Note: Appropriations through June 30, 1986, \$225,000)

VI. CONCLUSION

A. Recap

The overall energy consumption increase of 6.58% in 1985-86 was attributable to the following factors:

- o Climatic conditions
- o System expansion
- o Increased storm water and sewer pumping
- o The addition of the 13th and "I" facility

Progress continued in reducing or maintaining energy usage levels in controllable areas. Notable successes were achieved in exterior lighting, with ongoing street light and parking lot conversion programs reducing energy consumption through the phased use of high pressure sodium lights. Audit compliance action addressed a diverse group of energy improvements which were made at 41 various City locations, ranging from relamping interior fluorescent lights to installing time clocks and insulation.

With regard to energy costs, SMUD rates continued to increase, however, the City benefited from a slight decrease in PG&E rates in 1985-86 as well as an 11% decrease in the average cost of vehicle fuel per gallon.

B. Focus for 1987-88

In 1987-88, the Department of General Services will continue its efforts to mitigate spiraling energy costs through the implementaion of energy conservation measures and practices, using the following methods:

- Applying common sense and creativity in identifying and implementing energy conservation measures.
- Seeking out and taking advantage of available energy audits, grants and incentives.
- Implementing life-cycle procurement practices (i.e., vehicles, electrical, and mechanical).

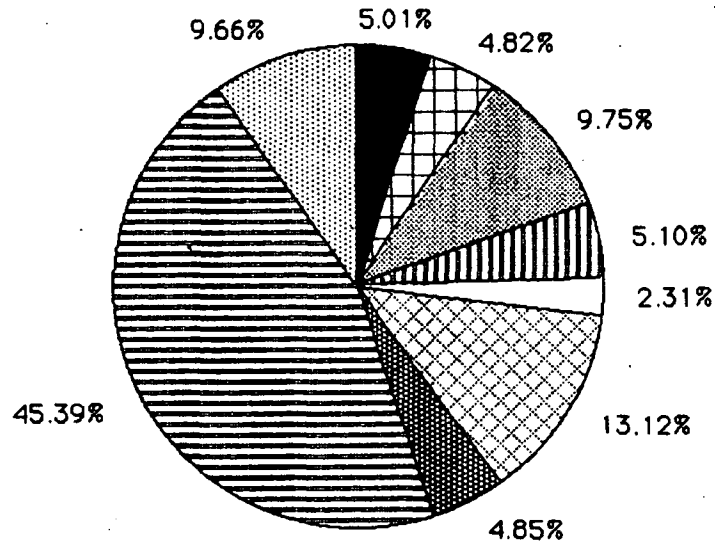
Encouraging use of common sense conservation practices by all City employees.

Seeking out and testing new technologies to assist in cost avoidance, with emphasis on electronic control systems.

APPENDICES

	<u>Page</u>
A. Utility Cost by Function/Energy Cost by Type.....	36
B. Vehicle Fuel Cost by Vehicle Type/Total Gallons of Fuel Consumed.....	37
C. Charts of Energy Usage Detail by Function.....	38
D. Fleet Management Summary of Vehicles by Type Consumption, Mileage and Miles per Gallon.....	45
E. City Parking Structures, Lot E and R, Itemization of Savings on Lighting Conversion Program...	46

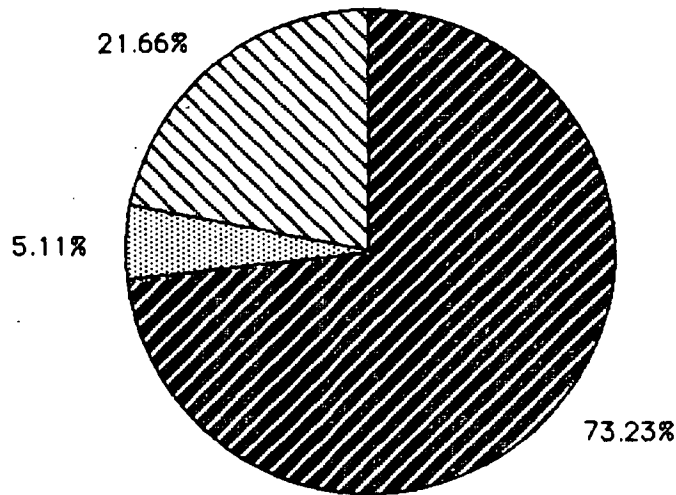
UTILITY COST BY FUNCTION



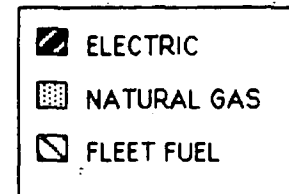
ELECTRICITY AND NATURAL GAS
AS A % OF TOTAL
UTILITY COST, \$4,695,135



ENERGY COST BY TYPE

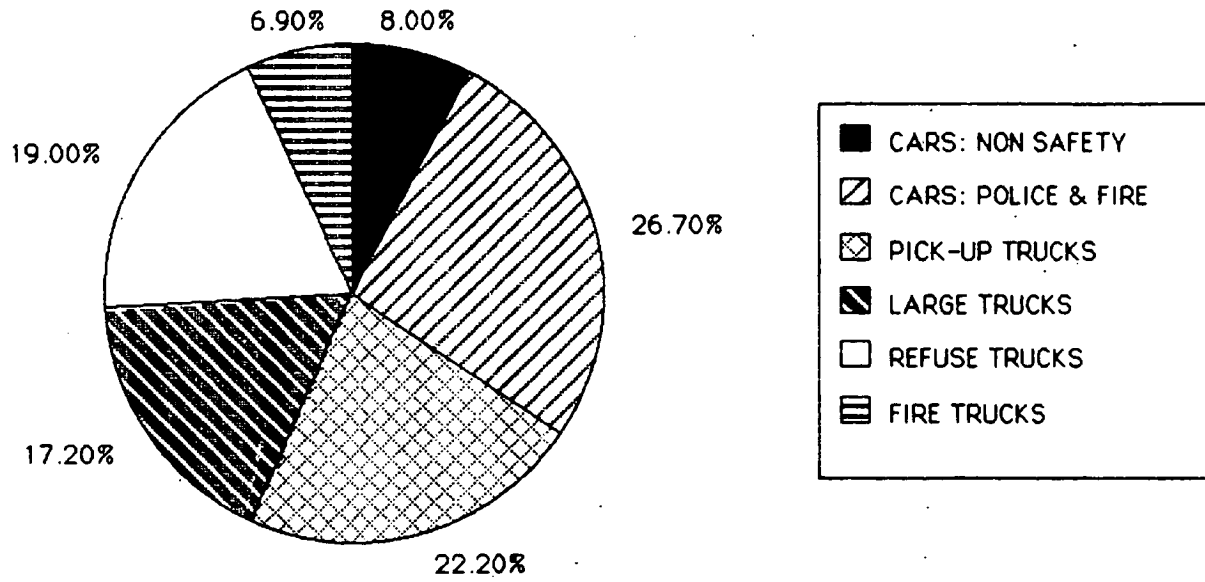


AS % OF TOTAL ENERGY
COST, \$5,993,246

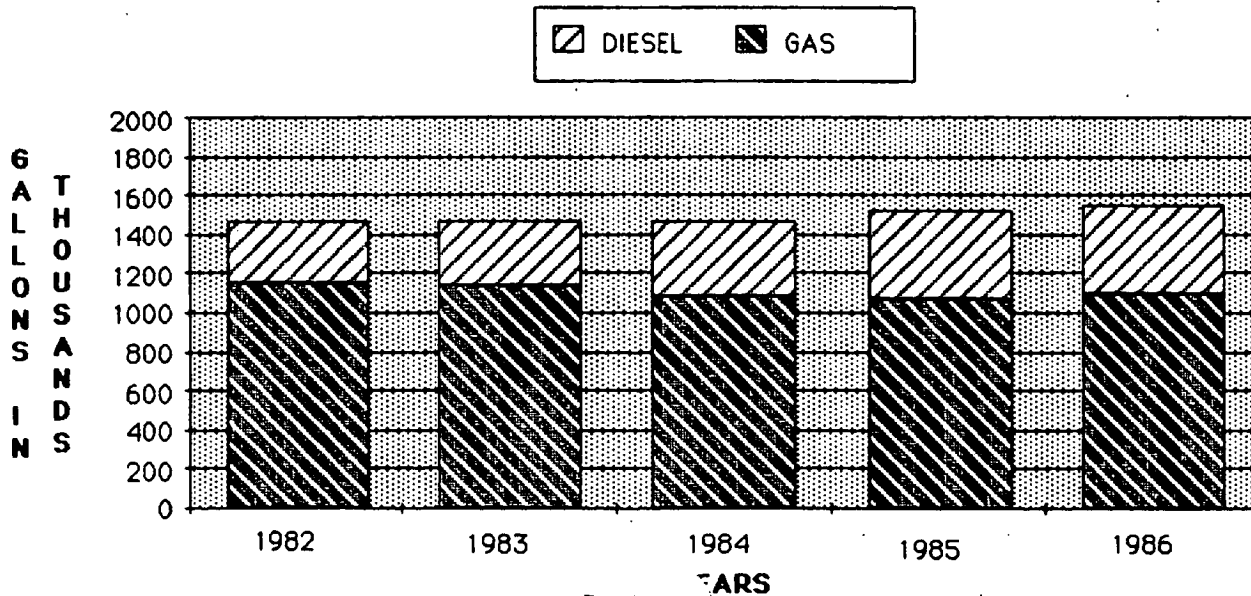


VEHICLE FUEL COSTS BY TYPE OF VEHICLE

APPENDIX B



TOTAL GALLONS OF FUEL CONSUMED



City of Sacramento - 1985-1986 - Energy Report

APPENDIX C

ACTIVITY: SUMMARY OF OPERATIONS

YEAR	ELECTRICITY					NATURAL GAS				
	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	838	90,968,285	6.58%	\$4,389,103	28.85%	93	502,198	-13.37%	\$306,032	-20.27%
FY 1984-85	823	85,348,193	2.96%	\$3,406,323	4.86%	98	579,719	33.49%	\$383,820	38.88%
FY 1983-84	807	82,898,355	-6.53%	\$3,248,511	2.33%	96	434,265	-25.94%	\$276,363	-19.22%
FY 1982-83	815	86,688,912	-15.63%	\$3,174,590	-16.96%	97	586,398	-20.28%	\$342,117	-4.70%
FY 1981-82	782	105,121,413	N/A	\$3,823,078	N/A	97	735,604	N/A	\$359,007	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	TOTAL COST	CONSTANT \$ COST
310,474,688,445	50,219,800,000	360,694,488,445	\$4,695,135	\$4,695,135
291,293,382,709	57,971,900,000	349,265,282,709	\$3,790,143	\$3,508,513
282,932,085,815	43,426,500,000	326,358,585,815	\$3,524,874	\$3,475,907
302,695,256,656	58,639,800,000	361,335,056,656	\$3,516,707	\$3,523,795
358,779,382,569	73,560,400,000	432,339,782,569	\$4,182,085	\$5,269,427

ACTIVITY: ANIMAL CONTROL

YEAR	ELECTRICITY					NATURAL GAS				
	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	1	97,946	20.54%	\$4,679	23.57%	1	3,489	-7.31%	\$2,043	-15.04%
FY 1984-85	1	81,255	-15.67%	\$3,786	6.88%	1	3,764	53.51%	\$2,405	57.19%
FY 1983-84	1	96,359	1.67%	\$3,549	5.22%	1	2,452	-17.94%	\$1,530	-8.77%
FY 1982-83	1	94,772	0.79%	\$3,373	10.84%	1	2,988	-10.24%	\$1,877	3.84%
FY 1981-82	1	94,030	N/A	\$3,043	N/A	1	3,329	N/A	\$1,615	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGE	TOTAL COST	CONSTANT \$ COST
334,289,698	348,900,000	683,189,698	4.51%	\$6,722	\$6,722
277,323,315	376,400,000	653,723,315	13.87%	\$6,191	\$6,377
328,873,267	245,200,000	574,073,267	-7.74%	\$5,079	\$5,435
323,456,836	298,800,000	622,256,836	-4.83%	\$5,050	\$5,606
320,924,390	332,900,000	653,824,390	N/A	\$4,658	\$5,869

City of Sacramento - 1985/1986 - Energy Report

APPENDIX C

ACTIVITY: COMMUNITY CENTER

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	3	3,977,284	8.39%	\$180,843	19.94%	3	92,204	-11.49%	\$54,478	-17.84%
FY 1984-85	2	3,669,415	-1.85%	\$150,775	14.11%	3	104,177	13.62%	\$66,306	15.20%
FY 1983-84	2	3,738,549	0.45%	\$132,137	10.82%	3	91,692	-5.47%	\$57,555	5.28%
FY 1982-83	2	3,721,977	-12.42%	\$119,238	10.86%	3	97,000	-28.51%	\$54,669	-17.40%
FY 1981-82	2	4,249,998	N/A	\$107,561	N/A	3	135,682	N/A	\$66,185	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGE	TOTAL COST	CONSTANT \$ COST
13,574,470,292	9,220,400,000	22,794,870,292	-0.84%	\$235,321	\$235,321
12,523,713,395	10,417,700,000	22,941,413,395	4.62%	\$217,081	\$223,593
12,759,667,737	9,169,200,000	21,928,867,737	-2.12%	\$189,692	\$202,970
12,703,107,501	9,700,000,000	22,403,107,501	-20.20%	\$173,907	\$193,037
14,505,243,174	13,588,200,000	28,093,443,174	N/A	\$173,746	\$218,920

ACTIVITY: DATA PROCESSING

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY-1985-86	1	744,410	8.99%	\$26,708	33.98%	1	842	-50.24%	\$508	-53.23%
FY 1984-85	1	683,028	6.87%	\$19,934	12.03%	1	1,692	81.35%	\$1,082	86.55%
FY 1983-84	1	640,322	13.71%	\$17,793	20.65%	1	933	-24.39%	\$580	-16.43%
FY 1982-83	1	583,112	0.68%	\$14,748	17.80%	1	1,234	60.05%	\$694	83.11%
FY 1981-82	1	559,314	N/A	\$12,519	N/A	1	771	N/A	\$379	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGE	TOTAL COST	CONSTANT \$ COST
2,540,871,330	84,200,000	2,624,871,330	4.98%	\$27,214	\$27,214
2,331,174,564	169,200,000	2,500,374,564	9.73%	\$21,016	\$21,646
2,185,418,986	93,300,000	2,278,718,986	11.41%	\$18,373	\$19,659
1,921,901,256	123,400,000	2,045,301,256	2.98%	\$15,442	\$17,141
1,908,938,682	77,100,000	1,986,038,682	N/A	\$12,898	\$16,251

City of Sacramento - 1985/1986 - Energy Report

APPENDIX C

ACTIVITY: FIRE DEPARTMENT

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	26	1,274,338	5.71%	\$68,329	26.90%	23	58,512	-5.06%	\$29,995	-32.49%
FY 1984-85	26	1,205,503	17.89%	\$53,844	25.82%	23	59,525	22.19%	\$44,430	37.00%
FY 1983-84	23	1,022,598	-8.19%	\$42,795	4.73%	20	48,714	-25.18%	\$32,430	-15.97%
FY 1982-83	26	1,090,121	2.23%	\$40,881	12.37%	19	65,110	-0.23%	\$38,593	12.58%
FY 1981-82	25	1,066,368	N/A	\$38,363	N/A	20	65,259	N/A	\$34,279	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST
4,349,308,788	5,851,200,000	10,000,508,788	-0.66%	\$98,324	\$98,324
4,114,381,739	5,952,500,000	10,066,881,739	20.40%	\$98,274	\$101,222
3,490,120,148	4,871,400,000	8,361,520,148	-18.28%	\$75,225	\$80,491
3,720,882,973	6,511,000,000	10,231,882,973	0.65%	\$79,454	\$88,194
3,639,513,984	6,525,900,000	10,165,413,984	N/A	\$70,642	\$89,009

ACTIVITY: LIBRARY DEPARTMENT

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	11	813,594	-0.70%	\$42,408	15.60%	8	17,448	-33.57%	\$10,481	-37.58%
FY 1984-85	11	819,328	2.47%	\$36,686	6.50%	9	26,266	29.50%	\$16,791	32.49%
FY 1983-84	11	799,542	-7.75%	\$34,445	8.29%	9	20,282	-27.90%	\$12,673	-21.20%
FY 1982-83	11	866,711	-3.10%	\$32,408	12.17%	9	28,131	5.04%	\$16,083	25.45%
FY 1981-82	11	894,408	N/A	\$28,892	N/A	9	26,782	N/A	\$12,820	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST
2,776,796,322	1,744,800,000	4,521,596,322	-16.62%	\$52,889	\$52,889
2,796,359,838	2,628,600,000	5,422,959,838	14.00%	\$53,478	\$55,080
2,728,836,848	2,028,200,000	4,757,036,848	-17.57%	\$47,118	\$50,416
2,958,084,643	2,813,100,000	5,771,184,643	0.70%	\$48,491	\$53,825
3,052,607,678	2,878,200,000	5,930,807,678	N/A	\$41,712	\$52,557

City of Sacramento - 1985/1986 - Energy Report

APPENDIX C

ACTIVITY: OFFICE BUILDINGS AND 24TH STREET CORPORATION YARD

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	6	3,192,790	76.61%	\$141,984	101.07%	7	122,049	-25.37%	\$84,132	-14.95%
FY 1984-85	5	1,807,808	-1.10%	\$70,615	9.84%	6	163,528	58.91%	\$98,921	53.55%
FY 1983-84	4	1,827,928	2.45%	\$84,288	12.51%	6	102,908	-38.32%	\$64,422	-33.88%
FY 1982-83	4	1,784,194	5.64%	\$57,142	18.47%	4	166,836	11.28%	\$97,438	34.22%
FY 1981-82	4	1,688,925	N/A	\$48,235	N/A	5	149,929	N/A	\$72,594	N/A

TOTALS						
ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST	
10,896,992,270	12,204,900,000	23,101,892,270	2.57%	\$226,116	\$226,116	
6,170,046,704	16,352,800,000	22,522,848,704	36.26%	\$169,536	\$174,622	
6,238,718,264	10,290,800,000	16,529,518,264	-27.42%	\$128,710	\$137,720	
6,089,454,122	16,683,600,000	22,773,054,122	9.71%	\$154,580	\$171,584	
5,764,301,025	14,992,900,000	20,757,201,025	N/A	\$120,829	\$152,245	

ACTIVITY: PARKING LOTS

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	16	5,870,520	-12.40%	\$239,273	8.28%	1	46	-77.67%	\$27	-79.55%
FY 1984-85	15	6,701,880	-17.68%	\$220,971	-5.93%	1	208	255.17%	\$132	266.67%
FY 1983-84	19	8,140,862	-8.77%	\$234,904	4.06%	2	58	-19.44%	\$36	-16.28%
FY 1982-83	23	8,923,626	-7.74%	\$225,729	13.01%	2	72	24.14%	\$43	-4.44%
FY 1981-82	25	9,671,805	N/A	\$199,747	N/A	2	58	N/A	\$45	N/A

TOTALS						
ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST	
20,038,084,760	4,600,000	20,040,684,760	-12.46%	\$239,300	\$239,300	
22,873,516,440	20,600,000	22,894,116,440	-17.62%	\$221,103	\$227,736	
27,784,762,006	5,800,000	27,790,562,006	-8.77%	\$234,940	\$251,386	
30,456,335,538	7,200,000	30,463,535,538	-7.73%	\$225,772	\$250,607	
33,009,870,485	5,800,000	33,015,670,485	N/A	\$199,792	\$251,738	

City of Sacramento - 1986 - Energy Report

APPENDIX C

ACTIVITY: PARKS AND COMMUNITY SER

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	226	6,515,411	11.30%	\$401,304	25.22%	31	116,279	-13.16%	\$56,421	-42.72%
FY 1984-85	228	5,853,755	0.99%	\$320,478	9.22%	31	133,899	29.35%	\$98,504	47.49%
FY 1983-84	229	5,796,115	-3.58%	\$293,411	3.81%	32	103,520	-23.76%	\$66,788	-16.99%
FY 1982-83	227	6,011,112	-3.29%	\$282,648	-20.40%	36	135,775	1.38%	\$80,459	22.89%
FY 1981-82	223	6,215,538	N/A	\$355,080	N/A	33	133,929	N/A	\$65,474	N/A

TOTALS					
ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST
22,237,097,743	11,627,900,000	33,864,997,743	1.49%	\$457,725	\$457,725
19,978,865,815	13,389,900,000	33,368,765,815	10.73%	\$418,982	\$431,551
19,782,140,495	10,352,000,000	30,134,140,495	-11.61%	\$360,199	\$385,413
20,815,925,256	13,577,500,000	34,093,425,256	-1.48%	\$363,107	\$403,049
21,213,631,194	13,392,900,000	34,606,531,194	N/A	\$420,554	\$529,898

ACTIVITY: POLICE DEPARTMENT

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	7	2,513,415	3.61%	\$96,445	22.85%	5	19,850	15.82%	\$11,994	10.66%
FY 1984-85	7	2,425,765	4.02%	\$78,504	6.17%	5	17,139	50.69%	\$10,817	41.53%
FY 1983-84	6	2,332,104	4.40%	\$73,940	22.93%	4	11,374	19.24%	\$7,643	32.85%
FY 1982-83	8	2,233,845	-3.73%	\$60,147	12.62%	3	9,539	10.82%	\$5,753	-8.90%
FY 1981-82	7	2,320,376	N/A	\$53,408	N/A	3	8,608	N/A	\$6,315	N/A

TOTALS					
ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGED	TOTAL COST	CONSTANT \$ COST
8,578,285,395	1,985,000,000	10,563,285,395	5.71%	108,439	108,439
8,279,135,945	1,713,900,000	9,993,035,945	9.65%	89,321	92,001
7,959,470,952	1,137,400,000	9,096,870,952	6.05%	81,583	87,294
7,624,112,985	953,900,000	8,578,012,985	-2.30%	71,172	73,149
7,919,443,288	860,800,000	8,780,243,288	N/A	66,690	75,251

City of Sacramento - 1985/1986 - Energy Report

APPENDIX C

ACTIVITY: SOLID WASTE

ELECTRICITY						NATURAL GAS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	# OF ACCOUNTS	THERMS	% CHANGE	COST	% CHANGE
FY 1985-86	11	330,571	5.54%	\$21,954	37.31%	2	10,987	-24.49%	\$6,802	-26.83%
FY 1984-85	10	313,210	3.39%	\$15,989	21.90%	2	14,550	9.70%	\$9,296	12.41%
FY 1983-84	9	302,935	2.33%	\$13,116	28.82%	2	13,284	-19.97%	\$8,270	-11.14%
FY 1982-83	8	296,051	1.29%	\$10,182	11.76%	3	16,574	-16.22%	\$9,307	-3.34%
FY 1981-82	8	292,269	N/A	\$9,111	N/A	3	19,783	N/A	\$9,629	N/A

TOTALS

ELECTRICITY IN BTU'S	NATURAL GAS IN BTU'S	TOTAL BTU	PERCENT CHANGE	TOTAL COST	CONSTANT \$ COST
1,128,238,823	1,098,700,000	2,226,938,823	-11.77%	\$28,756	\$28,756
1,068,985,730	1,455,000,000	2,523,985,730	6.93%	\$25,285	\$26,044
1,033,917,155	1,326,400,000	2,360,317,155	-11.53%	\$21,386	\$22,883
1,010,422,063	1,657,400,000	2,667,822,063	-10.35%	\$19,489	\$21,633
997,514,097	1,978,300,000	2,975,814,097	N/A	\$18,740	\$23,612

ACTIVITY: STREET LIGHTING

ELECTRICITY						TOTALS				
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENT CHANGE	TOTAL COST	CONSTANT \$ COST
FY 1985-86	9	15,819,906	-10.22%	\$615,897	-12.55%	53,993,339,178	53,993,339,178	-10.22%	\$615,897	\$615,897
FY 1984-85	11	17,821,048	-5.72%	\$704,263	9.39%	60,140,636,824	60,140,636,824	-5.72%	\$704,263	\$725,391
FY 1983-84	7	18,689,524	5.37%	\$643,795	5.25%	63,787,345,412	63,787,345,412	5.37%	\$643,795	\$688,861
FY 1982-83	7	17,737,753	1.19%	\$611,706	16.08%	60,538,950,989	60,538,950,989	1.19%	\$611,706	\$678,994
FY 1981-82	7	17,529,995	N/A	\$526,961	N/A	59,829,872,935	59,829,872,935	N/A	\$526,961	\$663,971

City of Sacramento - 1985/1986 - Energy Report

APPENDIX C

ACTIVITY: TRAFFIC SIGNALS										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST
FY 1985-86	342	5,505,155	1.46%	\$227,734	25.77%	18,789,094,015	18,789,094,015	1.46%	\$227,734	\$227,734
FY 1984-85	329	5,425,949	2.79%	\$181,078	10.96%	18,518,763,937	18,518,763,937	2.79%	\$181,078	\$186,510
FY 1983-84	322	5,278,640	-0.98%	\$163,159	6.17%	18,015,998,320	18,015,998,320	-0.98%	\$163,159	\$174,580
FY 1982-83	315	5,330,925	9.01%	\$153,683	21.02%	18,194,447,025	18,194,447,025	9.01%	\$153,683	\$170,586
FY 1981-82	288	4,890,130	N/A	\$126,986	N/A	16,690,013,680	16,690,013,680	N/A	\$126,986	\$160,002
ACTIVITY: WATER AND SEWER										
FY 1985-86	180	42,819,593	10.53%	\$2,092,431	35.05%	64,192	64,192	16.77%	\$38,800	\$38,800
FY 1984-85	180	38,740,251	13.17%	\$1,649,401	1.19%	54,873	54,873	40.70%	\$38,136	\$37,79%
FY 1983-84	180	34,232,869	-14.51%	\$1,531,179	-2.02%	39,070	39,070	-38.12%	\$24,436	\$24,66%
FY 1982-83	180	40,044,713	-28.04%	\$1,562,725	10.45%	63,139	63,139	-67.04%	\$37,401	\$37,29%
FY 1981-82	180	55,648,259	N/A	\$1,415,172	N/A	191,554	191,554	N/A	\$68,672	N/A
TOTALS										
ELECTRICITY										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST

ACTIVITY: WATER AND SEWER										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST
FY 1985-86	180	42,819,593	10.53%	\$2,092,431	35.05%	64,192	64,192	16.77%	\$38,800	\$38,800
FY 1984-85	180	38,740,251	13.17%	\$1,649,401	1.19%	54,873	54,873	40.70%	\$38,136	\$37,79%
FY 1983-84	180	34,232,869	-14.51%	\$1,531,179	-2.02%	39,070	39,070	-38.12%	\$24,436	\$24,66%
FY 1982-83	180	40,044,713	-28.04%	\$1,562,725	10.45%	63,139	63,139	-67.04%	\$37,401	\$37,29%
FY 1981-82	180	55,648,259	N/A	\$1,415,172	N/A	191,554	191,554	N/A	\$68,672	N/A
TOTALS										
ELECTRICITY										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST

YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST
FY 1985-86	180	42,819,593	10.53%	\$2,092,431	35.05%	64,192	64,192	16.77%	\$38,800	\$38,800
FY 1984-85	180	38,740,251	13.17%	\$1,649,401	1.19%	54,873	54,873	40.70%	\$38,136	\$37,79%
FY 1983-84	180	34,232,869	-14.51%	\$1,531,179	-2.02%	39,070	39,070	-38.12%	\$24,436	\$24,66%
FY 1982-83	180	40,044,713	-28.04%	\$1,562,725	10.45%	63,139	63,139	-67.04%	\$37,401	\$37,29%
FY 1981-82	180	55,648,259	N/A	\$1,415,172	N/A	191,554	191,554	N/A	\$68,672	N/A
TOTALS										
ELECTRICITY										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST

FY 1985-86	180	42,819,593	10.53%	\$2,092,431	35.05%	64,192	64,192	16.77%	\$38,800	\$38,800
FY 1984-85	180	38,740,251	13.17%	\$1,649,401	1.19%	54,873	54,873	40.70%	\$38,136	\$37,79%
FY 1983-84	180	34,232,869	-14.51%	\$1,531,179	-2.02%	39,070	39,070	-38.12%	\$24,436	\$24,66%
FY 1982-83	180	40,044,713	-28.04%	\$1,562,725	10.45%	63,139	63,139	-67.04%	\$37,401	\$37,29%
FY 1981-82	180	55,648,259	N/A	\$1,415,172	N/A	191,554	191,554	N/A	\$68,672	N/A
TOTALS										
ELECTRICITY										
YEAR	# OF ACCOUNTS	KWH	% CHANGE	COST	% CHANGE	ELECTRICITY IN BTU'S	TOTAL BTU	PERCENTAGE CHANGE	TOTAL COST	CONSTANT \$ COST

City of Sacramento - 1985/1986 - Energy Report

APPENDIX D

CITY OF SACRAMENTO

Fleet Management Division

SUMMARY OF VEHICLES BY TYPE, CONSUMPTION, MILEAGE & MPG

Type of Vehicle	No. of Vehicles			Gallons Used			Total Mileage			Miles/Gallon		
	83-84	84-85	85-86	83-84	84-85	85-86	83-84	84-85	85-86	83-84	84-85	85-86
Cars: Non-Safety												
Sub-compact	55	57	51	24,672	30,127	23,285	605,065	630,980	499,864	24.5	20.9	21.5
Compact	123	132	134	83,255	66,234	69,964	1,218,288	1,080,249	1,147,043	14.6	16.3	16.4
Intermediate	16	14	9	18,046	13,956	8,606	153,745	146,700	82,313	8.5	10.5	9.6
Standard	6	6	12	4,309	5,482	3,929	77,562	66,657	54,469	18.0	12.2	13.8
Sub-total	<u>200</u>	<u>209</u>	<u>206</u>	<u>130,282</u>	<u>115,799</u>	<u>105,784</u>	<u>2,054,660</u>	<u>1,924,586</u>	<u>1,733,689</u>	<u>15.8</u>	<u>16.6</u>	<u>16.4</u>
Cars: Police & Fire												
Compact	4	4	6	2,759	5,091	7,902	36,905	66,596	98,026	13.4	13.1	12.4
Standard	122	116	135	321,494	325,282	346,500	3,179,321	3,105,360	3,348,162	9.9	9.5	9.7
Sub-total	<u>126</u>	<u>120</u>	<u>141</u>	<u>324,253</u>	<u>330,373</u>	<u>354,402</u>	<u>3,216,226</u>	<u>3,171,956</u>	<u>3,446,188</u>	<u>9.9</u>	<u>9.6</u>	<u>9.7</u>
Pick-Ups												
Sub-compact	135	185	226	70,390	80,256	97,169	1,433,210	1,654,572	1,900,175	20.4	20.6	19.5
Standard	215	201	204	183,826	189,839	196,285	1,851,751	1,823,054	1,872,848	10.1	9.6	9.5
Sub-total	<u>350</u>	<u>386</u>	<u>430</u>	<u>254,216</u>	<u>270,095</u>	<u>293,454</u>	<u>3,284,961</u>	<u>3,477,626</u>	<u>3,773,023</u>	<u>12.9</u>	<u>12.9</u>	<u>12.8</u>
Trucks												
	181	166	164	219,473	234,155	228,357	1,034,899	1,070,615	1,061,970	4.7	4.6	4.6
Refuse Trucks												
Gas	-0-	2	-0-	-0-	1,309	-0-	-0-	2,225	-0-	0	1.7	0
Diesel	101	106	111	235,857	221,589	251,023	852,916	894,298	1,001,261	3.6	4.0	4.0
Sub-total	<u>101</u>	<u>108</u>	<u>111</u>	<u>235,857</u>	<u>222,898</u>	<u>251,023</u>	<u>852,916</u>	<u>896,523</u>	<u>1,001,261</u>	<u>3.6</u>	<u>4.0</u>	<u>4.0</u>
Fire Trucks												
Gas	30	29	26	35,102	41,203	48,151	129,194	156,573	155,207	3.7	3.8	3.2
Diesel	29	26	29	28,577	37,082	43,478	118,151	152,035	180,684	4.1	4.1	4.1
Sub-total	<u>59</u>	<u>55</u>	<u>55</u>	<u>63,679</u>	<u>78,285</u>	<u>91,629</u>	<u>247,345</u>	<u>308,608</u>	<u>335,891</u>	<u>3.9</u>	<u>3.9</u>	<u>3.7</u>
Totals	<u>1,017</u>	<u>1,044</u>	<u>1,107</u>	<u>1,227,760</u>	<u>1,251,605</u>	<u>1,324,649</u>	<u>10,691,007</u>	<u>10,849,914</u>	<u>11,352,022</u>	<u>8.7</u>	<u>8.7</u>	<u>8.6</u>

1/87

City of Sacramento - 1985/1986 - Energy Report

Appendix E
Savings on Light
Conversion Program

RECAP OF SMUD DATA
CITY PARKING STRUCTURES
CONVERTED DURING FY 1985-86.

Lot E - 1233 J STREET

	<u>DATE</u>	<u>KWH</u>	<u>DEMAND</u>	<u>CURRENT \$</u>
Highest Bill	01/03/86	105,120	150	\$ 3,537.18
Most Recent Bill	07/02/86	<u>57,120</u>	<u>140</u>	<u>2,514.43</u>
Monthly Savings		48,000	-10	\$ 1,022.75

LOT R - 1225 EMBARCADERO

Highest Bill	07/31/85	38,520	66	\$ 1,328.00
Most Recent Bill	07/01/86	<u>17,040</u>	<u>41</u>	<u>830.64</u>
Monthly Savings		21,480	-25	\$ 497.36

SUMMARY OF ABOVE

Highest Bill		143,640	216	\$ 4,865.18
Most Recent Bill		<u>74,160</u>	<u>181</u>	<u>3,345.07</u>
Estimated Monthly Savings		69,480	-35	\$ 1,520.11
		48.4%	16.2%	68.8%
Estimated Annual Savings		833,760	420	\$18,241.32