



CITY OF SACRAMENTO

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DEPARTMENT OF GENERAL SERVICES

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RISK MANAGEMENT & INS. DIVISION
SUPPORT SERVICES DIVISION

February 12, 1982
GS:81164:FM:RP

FILED
By the City Council
Office of the City Clerk

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: FY 1980-81 ANNUAL ENERGY CONSUMPTION REPORT

MAR 2 1982

SUMMARY

Submitted herewith is the third annual City Energy Consumption Report. During 1980-81, total electricity and natural gas energy usage increased an equivalent of 2.4% (in BTU's) while costs increased \$330,495, or 14.5% compared to FY 1979-80. Fleet consumption of gasoline and diesel fuel decreased (9.3%) while costs increased \$130,908 or 7.8%. The overall fleet miles per gallon increased .5 mpg or 6.9%.

DISCUSSION

I. Facility Operations

<u>Total</u>	<u>Electricity</u>			<u>Natural Gas</u>		
	<u># of Accts</u>	<u>KWH</u>	<u>Cost</u>	<u># of Accts</u>	<u>Therms</u>	<u>Cost</u>
FY 1980-81	784	96,502,894	\$2,326,927	98	631,057	\$282,411
FY 1979-80	776	92,424,027	2,052,209	108	678,526	226,634
FY 1978-79	750	90,464,812	1,822,388	104	893,638	224,480
FY 1977-78	---	87,396,995	1,623,358	---	827,981	199,669

The above table reflects a steady growth in electricity energy consumption and a decrease in the City's reliance on natural gas, yet the increased cost for the energy consumed outpaces increased utilization.

Climatic conditions for FY 1980-81, as compared to FY 1979-80, were generally comparable except that rainfall decreased 48% from 23.73 inches to 12.51 inches.

The increased electricity consumption is primarily attributable to increased City services due to development (i.e., water, sewer, street lighting, traffic signals), expanded parking lot operation, and expanded Community Services activities. Some of the growth in electricity consumption is being mitigated by conservation measures (i.e., street lighting conversion program, replacement of inefficient heating and air conditioning equipment, purchasing energy efficient fluorescent lamps, etc.

Yet, we haven't scratched the surface; there is a great potential for increased energy efficiency with an aggressive energy management program.

A. Water & Sewer:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	185	47,677,249	\$1,128,203	17	187,727	\$83,930
FY 1979-80	182	46,216,755	963,612	17	195,550	63,646
FY 1978-79	178	45,345,135	910,594	17	221,190	54,023
FY 1977-78	---	45,270,849	774,292	--	212,190	51,370

Water and Sewer activities accounted for 49.5% of the total electricity and 29.8% of the natural gas consumed city-wide in FY 1980-81. The total kilowatt hour consumption increased 3.2% and natural gas consumed decreased (4.0%), yet costs increased 18.0% as compared to FY 1979-80.

The increased electricity consumption is mainly attributable to an 8.5% increase in water production and increased services. The decrease in natural gas consumption was noted in the wells, sumps, and Florin reservoir.

B. Street Lights:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	9	17,766,150	\$457,576			
FY 1979-80	10	16,330,985	399,641			
FY 1978-79	4	17,871,236	341,300			
FY 1977-78	---	15,916,747	336,759	2	46,930	\$13,366

Street lights accounted for 18.4% of the total electricity consumed City-wide in FY 1980-81. The total kilowatt-hour consumption increased 8.8%, while the cost increased 14.5%, as compared to FY 1979-80. The increased consumption is primarily attributable to 1,245 street lights being added to the system, an expansion of the system of 7.2%.

The Community Services Department's activities accounted for 6.3% of the total electricity and 16.9% of the natural gas consumed City-wide in FY 1980-81. The net consumption for this category, after adjusting the FY 1979-80 figures by adding Community Services administrative offices, reflects energy consumption increases for both electricity and natural gas of 10.7% and 1.7% respectively, as well as a cost increase of 4.2%, as compared to FY 1979-80.

The Oak Park Community Center and Coloma School, which were added to the system in FY 1979-80, reflected the first completed full year of operation in FY 1980-81 and accounted for the majority of the increased electrical consumption. However, the Robertson Community Center had a significant increase in electrical consumption of 55,595 KWH or 30.7%, as compared to FY 1979-80.

F. Community Center:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	2	4,099,666	\$82,617	3	78,738	\$35,072
FY 1979-80	2	4,120,360	80,311	3	68,649	28,112
FY 1978-79	2	5,041,811	88,311	3	209,145	52,355
FY 1977-78	--	5,890,320	83,260	--	190,681	41,841

Community Center and Memorial Auditorium operations accounted for 4.2% of the total electricity and 10.6% of the natural gas consumed City-wide in FY 1980-81. The total kilowatt-hour consumption decreased (1%) and natural gas consumed increased 14.7%, while the costs increased 8.5%; as compared to FY 1979-80. Although FY 1980-81 reflects an overall increase, over the past four fiscal years energy conservation efforts have been extremely effective as reflected in the table above.

The increased natural gas consumption is attributable to the increased usage of the Exhibit Hall (+82% show days), the theatre (+17.2%) and the Auditorium (sports shows +137.5%), as compared to FY 1979-80.

G. Office Buildings:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	6	1,781,359	\$43,246	7	143,228	\$65,200
FY 1979-80	9	1,914,394	41,096	9	172,578	60,711
FY 1978-79	10	1,957,610	39,108	9	187,347	47,392
FY 1977-78	--	1,919,264	35,588	--	155,446	35,770

Administrative Offices and the City's three Corporation Yards are included under this category that accounts for 1.8% of the total electricity and 15.6% of the natural gas

consumed City-wide in FY 1980-81. The net consumption for this category, after adjusting the FY 1979-80 figures by deducting the Community Services Administrative Offices, reflects an increased electrical consumption of 1.8% and natural gas consumption decrease of (16.1%), yet costs increased 6.5%.

The decreased natural gas consumption is primarily attributable to the following items: 1) Main Corporation Yard - 24,280 therms, or 22.4%, reduction; and 2) transfer of Police Squad Room usage for FY 1980-81 to Police category.

The items affecting the Corporation Yard decrease were: 1) replacement of leaking gas pipes; 2) reduction of heat in storage areas; and 3) reduction in the amount of steam cleaning performed at 24th Street.

H. Data Processing:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	1	558,428	\$10,845	1	871	\$402
FY 1979-80	1	507,240	8,872	1	942	338
FY 1978-79	1	501,408	8,375	1	1,274	335
FY 1977-78	--	214,872	3,500	--	306	71

Data Processing operations accounted for .6% of the total electricity and a negligible amount of the natural gas consumed City-wide in FY 1980-81. The total kilowatt-hour consumption increased 10%, which is attributable to additional computer equipment (1 - Disc Controller and 2 - Disc Drives) added to the system. Costs increased 22.1%.

I. Animal Control:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	1	87,630	\$2,790	1	1,780	\$806
FY 1979-80	1	104,216	2,557	1	2,534	895
FY 1978-79	1	87,391	2,065	1	3,269	837
FY 1977-78	--	75,277	1,627	--	2,262	509

Animal Control accounted for less than 1/10th of a percent of the total electricity and .3% of the natural gas consumed City-wide in FY 1980-81. The total kilowatt-hour consumption decreased (16%), and natural gas consumed decreased (30%), while costs increased 4.2%.

The decreased kilowatt-hour and natural gas consumption is attributable to the following factors: 1) change in method of euthanasia; and 2) change in operations from a 7-day to a 5-day week.

J. Libraries:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	11	913,587	\$25,317	9	25,767	\$11,656
FY 1979-80	11	998,306	23,819	9	42,001	14,233
FY 1978-79	12	1,035,929	22,443	8	38,736	9,846
FY 1977-78	--	1,021,541	19,662	--	36,449	8,096

Library facilities accounted for 1.0% of the total electricity and 4.1% of the natural gas consumed City-wide in FY 1980-81. The total kilowatt-hour consumption decreased (8.5%), natural gas consumption decreased (39%), and costs also reflected a decrease of 2.9%, compared to FY 1979-80.

The decreased kilowatt-hour and natural gas consumption is primarily attributable to the Martin Luther King Branch reduction of 79,512 KWH or (22.1%) and 16,716 therms or (228.5%), as compared to FY 1979-80 consumption. This reduction was achieved by balancing the HVAC system at a cost of approximately \$1,000, resulting in first year energy cost savings of \$4,450.

K. Fire Department:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	24	1,094,675	\$31,617	19	59,167	\$26,620
FY 1979-80	25	1,130,191	29,668	22	62,889	23,344
FY 1978-79	26	913,827	23,131	22	78,209	20,273
FY 1977-78	--	804,353	19,666	--	65,573	15,582

Fire Department facilities accounted for 1.1% of the total electricity and 9.4% of the natural gas consumed City-wide in FY 1980-81. While consumption of both energy sources reflects a decrease - electricity (3.1%) and natural gas (6.0%) - costs increased 9.9% as compared to FY 1979-80.

The net decrease of kilowatt-hour consumption is primarily attributable to a 39.5% reduction at Engine #9, resulting from modification of the heating/cooling system of this all-electric station.

L. Police Department:

	Electricity			Natural Gas		
	# of Accts	KWH	Cost	# of Accts	Therms	Cost
FY 1980-81	24	2,209,587	\$44,905	19	13,970	\$6,241
FY 1979-80	25	2,150,007	37,742	22	14,358	5,253

CITY OF SACRAMENTO
 FUNCTIONAL ENERGY UTILIZATION
 AS A % OF TOTAL CONSUMPTION AND COST

	<u>Electricity</u>		<u>Natural Gas</u>	
	<u>KWH</u>	<u>\$</u>	<u>Therms</u>	<u>\$</u>
Water & Sewer	49.5%	48.4%	29.8%	29.8%
Street Lighting	18.4%	19.7%	N/A	N/A
Traffic Signals	4.8%	4.6%	N/A	N/A
Parking Lots	9.7%	7.1%	--	--
Community Services	6.3%	9.4%	16.9%	16.7%
Community Center	4.2%	3.6%	12.6%	12.4%
Office Buildings	1.8%	1.9%	22.7%	23.1%
Data Processing	.6%	.5%	.1%	.1%
Animal Control	---	.1%	.3%	.3%
Libraries	1.0%	1.1%	4.1%	4.1%
Fire	1.1%	1.4%	9.4%	9.4%
Police	2.3%	1.9%	2.0%	2.0%
Waste Removal	<u>.3%</u>	<u>.3%</u>	<u>2.1%</u>	<u>2.1%</u>
Total	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

CITY OF SACRAMENTO
3-YEAR VEHICLE MILEAGE COMPARISON

79	GALLONS USED		78/79	TOTAL MILEAGE		78/79	MILES/GALLON	
	79/80	80/81		79/80	80/81		79/80	80/81
,604	26,744	23,272	178,510	437,496	433,410	14.1	16.4	18.6
,880	139,527	119,964	1,228,348	1,814,536	1,628,370	13.8	13.0	13.6
,676	25,080	26,862	372,180	269,852	278,630	11.7	10.8	10.4
,465	18,582	11,920	644,986	179,852	174,308	10.8	9.7	14.6
,582	189,581	223,276	65,168	1,642,188	2,048,190	8.6	8.7	9.2
,414	173,187	77,830	1,959,643	1,253,744	622,748	8.2	7.3	8.0
,631	8,903	7,270	477,872	82,108	66,126	7.4	9.2	9.0
,581	42,650	42,410	389,097	781,768	784,170	15.8	18.3	18.5
,989	265,140	228,698	2,366,470	2,403,396	2,131,460	8.9	9.1	9.3
,576	251,056	203,846	986,801	1,049,776	866,282	4.1	4.2	4.2
,955	137,296	91,802	311,134	254,264	153,958	1.6	1.9	1.7
,594	139,840	142,714	292,877	450,240	429,024	2.9	3.2	3.0
,766	43,416	38,974	101,564	114,812	120,706	2.9	2.6	3.1
17,213	22,820	23,556	60,680	94,684	91,636	3.5	4.1	3.9
<u>1,377,926</u>	<u>1,483,822</u>	<u>1,262,396</u>	<u>9,435,330</u>	<u>10,828,716</u>	<u>9,829,018</u>	<u>6.85</u>	<u>7.30</u>	<u>7.8</u>

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CITY OF SACRAMENTO
CHANGES IN COMPOSITION OF FLEET

Type of Vehicle	1973-1974		1979-1980		Dec. 1981	
	No. of Vehicles	% of Fleet	No. of Vehicles	% of Fleet	No. of Vehicles	% of Fleet
Sub-compact Cars*	10	1%	50	4%	53	5%
Compact Cars*	59	6%	184	16%	164	16%
Intermediate Cars*	0	0%	42	3%	30	3%
Standard Cars*	177	18%	46	4%	21	2%
Police & Fire Compact	0	0%	54	5%	90	8%
Police & Fire Intermediate	0	0%	70	6%	35	3%
Police & Fire Standard	95	10%	21	2%	6	1%
Sub-Compact Pickups	17	2%	79	7%	95	9%
Pickups	332	34%	269	22%	234	22%
Trucks	160	16%	180	16%	171	16%
Refuse Trucks (gas)	86	9%	52	5%	33	3%
Refuse Trucks (diesel)	0	0%	53	5%	72	7%
Fire Trucks (gas)	32	3%	29	3%	29	3%
Fire Trucks (diesel)	<u>6</u>	<u>1%</u>	<u>22</u>	<u>2%</u>	<u>22</u>	<u>2%</u>
TOTAL	<u>974</u>	<u>100%</u>	<u>1,151</u>	<u>100%</u>	<u>1,055</u>	<u>100%</u>

*Includes undercover police vehicles-
10 sub-compact autos in yard for police.