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CITY OF SACRAMENTO

CITY MANAGER'S OFFICE
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DEC 29 1980

DEPARTMENT OF ENGINEERING
915 I STREET SACRAMENTO, CALIFORNIA 95814
CITY HALL ROOM 207 TELEPHONE (916) 449-5281

R. H. PARKER
CITY ENGINEER
J. F. VAROZZA
ASSISTANT CITY ENGINEER

December 26, 1980

APPROVED
BY THE CITY COUNCIL
JAN 6 1981
OFFICE OF THE
CITY CLERK

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: Operational Energy Conservation

SUMMARY:

Attached is a report and resolution approved by the Budget and Finance Committee on December 23, 1980 authorizing the deletion of a Junior Engineer position from the City Engineer's Budget, adding a Building Operations Supervisor position to the Facility Maintenance Budget and transferring $21,070 from the City Engineer's Budget to the Facility Maintenance Budget. The Committee approved staff's recommendation as follows:

AYES = 2
NOES = 0

RECOMMENDATION:

It is recommended that:

1. A Junior Engineer position be deleted from the City Engineer's Budget, and

2. A Building Operations Supervisor position be added to the Facility Maintenance Budget, and

3. $21,070 be transferred from the City Engineer's Budget - Employee Services to the Facility Maintenance Budget - Employee Services for a Building Operations Supervisor position

by passage of the attached resolution.

Respectfully submitted,

R. H. PARKER
City Engineer

Recommendation Approved:

Walter J. Slipe

Walter J. Slipe, City Manager

January 6, 1981
Various Districts

12-9-80
49

CITY OF SACRAMENTO

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DEPARTMENT OF ENGINEERING
915 I STREET SACRAMENTO, CALIFORNIA 95814
CITY HALL ROOM 207 TELEPHONE (916) 449-5281

December 3, 1980

R. H. PARKER
CITY ENGINEER
J. F. VAROZZA
ASSISTANT CITY ENGINEER

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: Operational Energy Conservation

SUMMARY:

Submitted is the annual City operational energy conservation report. Last year, Council set a goal of using no more energy in fiscal year 1979/80 than was used in 1978/79. During 1979/80, electricity consumption increased and natural gas consumption decreased resulting in a total energy usage (in BTU's) of 3.5% less than used in fiscal year 1978/79. This reduction resulted even though City services increased during this time. Gasoline consumption decreased slightly and diesel consumption increased in 1980. Overall fleet miles per gallon increased by 6.5%. This report recommends exchanging the engineer position (energy conservaton) for a Building Operations Supervisor and assigning it to the Facility Maintenance Division.

DISCUSSION:

I. FACILITY OPERATIONS

A. GENERAL

	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 1977/78	87,396,995	$1,623,358	827,981	$199,669
FY 1978/79	90,464,812	1,822,388	893,638	224,480
FY 1979/80	92,424,027	2,052,209	678,526	226,634

The above total energy consumption and cost figures reveal a steady growth in electrical energy useage and a fluctuation of natural gas comsumption. Some of the reduction in natural gas consumption is a result of climatic conditions and consequent reduction in space heating requirements, however, conservation measures have resulted in a portion of this decrease. The growth in electricity usage is tied directly to an increase in City services primarily due to development, parking lot construction and operation, new fire stations, and expanded Community Service activities. Some of the growth in electricity usage has been mitigated by conservation measures and by emphasizing energy efficiency in the selection of new equipment. Examples of this are the street light conversion program, replacement

of inefficient heating and air conditioning equipment and the purchasing of energy efficient fluorescent lamps where applicable. Also, on site evalutaion of energy use patterns and identification of equipment inefficiencies (energy audits) began in FY 1979/80 and this report reflects some savings.

In existing facilities, there is still a great potential for reduced energy consumption without sacrificing comfort or services. There are generally two approaches used in building energy conservation: (1.) end use restrictions and (2.) a systems analysis. The first approach requires, for example, adjustment of thermostats to specific levels to use less heating and cooling energy, (e.g., federal temperature restrictions), or removal of electric lamps and luminaries to reduce consumption of energy used for lighting. Ease of initial implementation is the primary advantage of such an approach. It requires very little education or effort to adjust a thermostat setting or remove a lightbulb. Unfortunately, the end-use restriction method has numerous drawbacks. One such drawback is that the extent to which a system is used has no bearing on its efficiency. If for whatever reason a system is inefficient, it will waste energy every time it is used. End-use restrictions fail to take into consideration the systems which produce the end-use product, be it heating, cooling or lighting. In other words, end-use restrictions tend to ignore the significant energy savings which can be realized by making systems operate as efficiently as possible. End-use restrictions fail to consider the fact that every building and energy consuming system is a unique system where many elements interrelate. As a result, raising a thermostat in summer can sometimes cause consumption of more energy. Such was the case with the type of heating and air conditioning system at Martin Luther King Library. To correct the problem at this library, it was necessary to apply the second approach.

The second energy conservation approach considers every building and energy using system as a unique complex system. To conserve energy, one must first understand how the building consumes energy, how users needs are met, how the systems and their elements interrelate, and how the external environment affects the system. By understanding how a specific building or system consumes energy, conservation improvements can be made which can be integrated into the system itself. Then when the system is used, it runs efficiently and uses the least amount of energy to get the job done.

An excellent example of how the latter approach has been applied to result in a significant energy saving is at the Community Center Complex. That entity is the only facility in which dollar savings were realized in both electricity and natural gas expenditures. These costs were approximately $32,000 less in 1979/80 than 1978/79 even with rate increases. If energy savings had not been made, the cost of energy would have been approximately $68,000 greater in 1979/80 than 1978/79 due to rate increases. The energy usage at the Community Center complex is managed by a Building Operations Supervisor. These are the only buildings in the City where the heating and air conditioning systems are managed by an individual with stationary engineering experience, and the positive results of this are self evident. The City Hall complex, corporation yard, Hall of Justice, fire stations, libraries, etc., use more energy than the Community Center Complex; and it makes sense to assign a Building Operations Supervisor to, in fact, supervise the operation of these buildings. Therefore, staff is of the opinion that the engineering position assigned to the energy conservation program be re-designated as a Building Operations Supervisor and reassigned to the Facility Maintenance Division.

The City maintains and operates equipment that is many years old and by today's standards is obsolete and inefficient. Therefore, as pointed out in last year's report, in order for significant energy savings to be realized, capital expenditures must be made. Consequently, in the fiscal year 1981/82 budget, it will be recommended that (5%) of the total funds expended for energy in fiscal year 1979/80 (approximately $120,000) be budgeted for "low cost" and equipment upgrading conservation improvements. Examples of "low cost" conservation devices are night set-back thermostats, hot water heater insulating blankets, weather stripping, solar window screens/shading devices, and water flow restricters. The above items could be installed by in-house maintenance personnel or by contract. With this proposal, no economic analysis is necessary because these devices have been tried and proved cost effective in numerous conservation studies and programs. Equipment up-grading can include equipment retrofiting which enhances the overall system efficiency and replacement of obsolete equipment. Submitted with each proposal for retrofit or replacement equipment will be a life-cycle cost analysis to demonstrate cost effectiveness of each capital expenditure.

B. WATER AND SEWER

	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	45,270,849	$774,292	212,610	$51.370
FY 78/79	45,345,135	910,594	221,190	54,023
FY 79/80	46,216,755	963,612	195,550	63,646

Water and Sewer used 50% of the total electrical energy used by the City in fiscal year 79/80. Electrical usage increased by about 2% in 79/80 as compared to 78/79. The 2% increase in usage is reasonable in view of the growth in City Water and Sewer services and increased rainfall. Natural gas consumption in this department accounts for 29% of the total natural gas used in fiscal year 79/80. There was a 12% decrease in natural gas use this year. The bulk of the natural gas is used to power engine driven pumps that supplement summer water demands at North area ground water wells. The remainder is used for space heating.

The largest energy users in the Water and Sewer Department are pumps, the three filtration plants and North area wells. Pumps are used to distribute treated water to the community and return sewage back for treatment. They are also used for storm drainage during the winter months. Filtration plants treat river water for the distribution system. Ground water wells are used primarily to service North area communities during the summer months.

In general, basic indoor domestic and commercial water use stays about the same year round with only a slight increase during the summer months. It is yard irrigation during the summer, and growth in City services that increases the demand for water and thus the energy required to treat and distribute the water. The summer water use varies considerably with temperature, humidity, solar radiation and wind. The water use pattern works against the City in that summer energy rates are higher than winter energy rates. In this regard, the City should continue to have a water waste inspector during the summer months and to support the local program which encourages homeowners to restrict yard irrigation during summer afternoons when the demand for electricity is at its peak.

In order to meet the community water and sewer needs, it is necessary to have equipment that is only operational on a part-time basis. For instance, storm drainage pumps operate during the rainy season and stand idle the remainder of the year. Likewise, electrically driven ground water wells supply water to meet summer water demands and remain idle during the winter months. Although the equipment is necessary to meet year-round water and sewer needs, the situation arises where the City pays utility costs regardless of equipment status. These costs are referred to as minimum demand charges. In an attempt to limit demand charges, certain operational changes have been made such as limiting the period of time that equipment is on the line during operational and maintenance checks.

C. STREET LIGHTS	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	15,916,747	$336,759	46,930	$13,366
FY 78/79	17,871,236	341,300		
FY 79/80	16,330,985	399,641		

Street lights accounted for about 18% of the total electricity used in fiscal year 79/80. Previous energy reports gave flat rate costs which did not reflect the actual electricity used. This year we have compiled KWH figures in order to monitor the effectiveness of the City's street light conversion plan. In fiscal year 79/80, the total kilowatt-hour consumption decreased by about 9% as compared to kilowatt hour consumption in fiscal year 78/79. This is a significant reduction, particularly when considering that many street lights have been added to the system, and reflects the effectiveness of the conversion program. The total cost of electricity used in fiscal year 79/80 increased by 17% as compared to fiscal year 78/79. It is clear that utility rates increased and thus costs increased. In fiscal year 78/79, the average cost per KWH was 1.9c and increased to 2.5c in fiscal year 79/80. In order to offset utility cost increases, it would have been necessary to reduce KWH consumption by 22%.

D. TRAFFIC SIGNALS	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	3,354,819	$ 78,948		
FY 78/79	4,549,162	90,768		
FY 79/80	4,546,475	106,638		

For fiscal year 79/80, there was a slight decrease in KWH consumption as compared to fiscal year 78/79. However, the cost of electricity increased by almost 18% in fiscal year 79/80 as compared to fiscal year 78/79. Savings in this area are not very promising due to the anticipated growth and development of the City. Usage and costs are expected to increase as more traffic signals are added to accommodate increased traffic flows, and cost increases will be compounded by increases in utility rates.

E. PARKING LOTS	ELECTRICITY (KWH)	ELECTRICITY COST ($)	NATURAL GAS THERMS	NATURAL GAS COST ($)
FY 77/78	5,848,307	$ 88,021	835	208
FY 78/79	5,984,420	100,369	7	18
FY 79/80	8,801,828	140,542	63	51

Total electricity consumption increased by 47% in fiscal year 79/80 as compared to fiscal year 78/79. The corresponding costs increased by 40%. The marked increase can be attributed to the opening of two new lots located at 4th and L Street, 6th and L Street, and the addition of parking control equipment in various other City operated lots.

Parking lot illumination is the major energy expenditure, thus a lighting survey of all lots is currently under way. Three (3) lots have been completed with an average lighting reduction of 30%. This has been accomplished, at no cost, through revised lighting schedules which decrease lighting levels during certain periods of the day. Further savings can be realized by the addition of various lighting control equipment i.e., timeclocks, photocells, and rewiring panels to facilitate a uniform lighting pattern at reduced illumination levels. To accomplish further effective lighting control, a lot-by-lot study must be performed on the remaining lots to evaluate the existing lighting system flexibility and the feasibility of electrical panel rewiring to produce an energy conserving lighting schedule. Once the feasibility of modification has been determined, cost estimates will follow with a request for funding to complete the work.

F. COMMUNITY SERVICES	ELECTRICITY (KWH)	ELECTRICITY COST ($)	NATURAL GAS THERMS	NATURAL GAS COST ($)
FY 77/78	5,001,981	$150,909	83,703	$26,197
FY 78/79	5,093,956	159,923	105,889	35,619
FY 79/80	5,316,167	214,710	102,568	36,466

Of the total electrical energy used by the City, Community Services used about 6% in fiscal year 79/80. Included in this department in order of largest user are Recreation and Parks, Crocker Art Gallery, Zoo, Museum, Boat Harbor, Camp Sacramento and Fairytale Town. The overall electrical comsumption increased by 4% in fiscal year 79/80 as compared to fiscal year 78/79, whereas natural gas usage decreased by 3% as a result of mild winter conditions. The increase in electrical consumption occurred in Recreation and Parks and the Crocker Art Gallery.

Within Recreation and Parks there are two hundred and three (203) electrical accounts which meter energy usage for City parks, park lights, irrigation pumps, sprinkler controls, tennis court lights, pool equipment and various community center buildings. Thus, an increase in activities will substantially effect energy use in Recreation and Parks. For example, Robertson Center, which is a new facility, increased electrical consumption in fiscal year 79/80 by nine (9) times what was used in fiscal year 78/79 after a full year of operation. The Coloma School and Oak Park Community Center accounts have also been added this year. When the new swiming pools are opened, an additional increase in energy consumption will result. Also, these latter facilities will be using energy at peak hours during the summer months when demand is greatest.

Crocker Art Gallery underwent extensive heating, ventilation and air conditioning equipment modernization which results in better environmental control at the expense of higher energy consumption. The equipment change was deemed necessary in view of the valuable art objects on display and their sensitivity to changes in temperature and humidity. It is for this reason the Art Gallery is exempt from the Federal Temperature Restrictions.

G. COMMUNITY CENTER	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	5,890,320	$ 83,260	190,681	$41,841
FY 78/79	5,041,811	88,311	209,145	52,355
FY 79/80	4,120,360	80,779	68,649	28,112

The Community Center and Memorial Auditorium are excellent examples of energy conservation in buildings without reduced services or comfort. Each year this facility has realized reduced electrical consumption. In fiscal year 79/80 they also reduced costs and consumption for both natural gas and electricity. In the last three (3) fiscal years, this facility has decreased electricity usage by 30% and natural gas consumption decreased 64% for the same period.

Under the direction of the Building Operation Supervisor, Frank Puccinelli, many operational changes have occurred in order to achieve the above energy savings. The Community Center has a well trained staff of stationary engineers that operate and perform maintenance on facility equipment. It is interesting to note that this facility is the only one in the City with a Building Operation Supervisor and emphasizes the need for this type of personnel in an energy conservation program. The importance of full-time building attendants cannot be overstated as it relates to energy conservation. A well trained building attendant that understands the proper operation of the building's equipment can identify and resolve equipment deficiencies in much less time than building occupants and general maintenance personnel. It is the familiarity with equipment idiosyncrisies that allows attendants to keep equipment operating at its peak efficiency.

H. OFFICE BUILDINGS	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	1,919,264	$ 35,588	155,446	$35,770
FY 78/79	1,957,612	39,108	187,347	47,392
Fy 79/80	1,914,394	41,096	172,578	60,711

Overall electrical energy consumption for office buildings decreased by 2%, and natural gas usage decreased by almost 8% in fiscal year 79/80 as compared to fiscal year 78/79. The main contributing factor to reduced energy consumption was the mild weather conditions that occurred this last fiscal year.

Additional building energy audits will be performed this fiscal year to evaluate the existing condition of heating, ventilation, air conditioning equipment and controls, lighting systems, and building envelope thermal characteristics in order to identify first no cost then low cost measures that will reduce the overall energy consumption of the buildings.

I. DATA PROCESSING	ELECTRICITY (KWH)	ELECTRICITY COST ($)	NATURAL GAS THERMS	NATURAL GAS COST ($)
FY 77/78	214,872	$ 3,500	306	$ 70.83
FY 78/79	501,408	8,375	1,274	335
FY 79/80	507,240	8,872	942	338

There was a slight increase in electricity usage in the computer facility which can be attributed to a negligible increase in computer services. Natural gas consumption decreased by a significant 26% due in part to mild winter conditions and to conservation efforts on behalf of the building's occupants. Natural gas is used for domestic hot water and space heating.

J. ANIMAL CONTROL	ELECTRICITY (KWH)	ELECTRICITY COST ($)	NATURAL GAS THERMS	NATURAL GAS COST ($)
FY 77/78	75,277	$ 1,627	2,262	509
FY 78/79	87,391	2,065	3,269	837
FY 79/80	104,216	2,557	2,534	895

Animal Control increased electrical energy usage by 19% while natural gas consumption decreased by 23% for fiscal year 79/80 as compared to fiscal year 78/79. A walk-in freezer has been added which is exposed to the sun and is poorly insulated, thus energy required to maintain operating temperatures is a significant portion of the said increase. Natural gas consumption was reduced due to mild weather conditions and conservation efforts.

K. LIBRARIES	ELECTRICITY (KWH)	ELECTRICITY COST ($)	NATURAL GAS THERMS	NATURAL GAS COST ($)
FY 77/78	1,021,541	$ 19,667	36,449	$ 8,096
FY 78/79	1,035,929	22,443	38,736	9,846
FY 79/80	998,306	23,819	42,001	14,233

The library buildings experienced a 3.6% decrease in electrical consumption and increased natural gas usage by 8% during fiscal year 79/80 as compared to fiscal year 78/79. Natural gas consumption increased because the City now pays the bill for the Administration Warehouse. Prior to 1979, the leasor paid the bill.

Electricity usage decreased as a result of conservation efforts and a building energy audit performed on Martin Luther King Library. The audit identified equipment control deficiencies which were corrected at low cost by building maintenance personnel. Utility billing information has been monitored since the changes have occurred, and compared to pre-modification bills for the same period, the bills reflect an actual decrease in electricity usage of 35 to 40% and a 90% decrease in natural gas usage. Further energy savings may be achieved by converting to energy saving florescent lamps at an estimated cost of two thousand four hundred and fifty dollars ($2,450) which includes labor and materials. Building comfort may be improved drastically by balancing the HVAC system to achieve a uniform temperature distribution throughout the building. System balancing is estimated at approximately one thousand dollars. This is an example of how an end-use approach has saved a significant amount of energy; however, further savings can be realized with capital expenditure.

A building energy audit was also performed on Del Paso Heights Library. Again, equipment control deficiencies were found and corrected at minimal cost. Based upon limited billing information, it appears the changes reduced electricity usage by approximately 30%. There is insufficient data for estimated natural gas savings. Energy saving florescent lamp conversion is estimated to cost nine hundred and fifty-seven dollars ($957).

L. FIRE DEPARTMENT	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	800,353	$ 19,666	65,573	$15,582
FY 78/79	913,827	23,131	78,209	20,273
FY 79/80	1,130,191	29,668	62,889	23,344

Electricity consumption increased 24% while natural gas consumption decreased by 20% in fiscal year 79/80 as compared to fiscal year 78/79. Engine number nine (9) and Engine number twelve (12) just completed a full year of operation which accounts for the increased electrical usage because these facilities are all electric. The reduced gas usage is a result of conservation and mild winter conditions.

M. POLICE DEPARTMENT	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	1,826,641	$ 26,140	21,306	$ 4,101
FY 78/79	1,804,229	30,053	33,981	8,541
FY 79/80	2,150,007	37,742	14,358	5,253

The Police Department consumed 19% more electricity and used 58% less natural gas in fiscal year 79/80 than it did in fiscal year 78/79.

The electricity usage increased due to the addition of a new police garage. An upgraded heating system resulted in the large decrease in natural gas consumption.

N. WASTE REMOVAL	ELECTRICITY		NATURAL GAS	
	(KWH)	COST ($)	THERMS	COST ($)
FY 77/78	256,024	$ 5,150	11,880	$ 2,558
FY 78/79	278,718	5,948	14,591	3,687
FY 79/80	287,103	6,403	16,393	5,659

Waste Removal increased electrical consumption 3% and natural gas usage increased 12% in fiscal year 79/80 as compared to fiscal year 78/79. The waste removal operation has increased normal work load approximately 40% by the addition of a night shift. A second domestic hot water system has been added and the steam cleaner is utilized more than ever which accounts for the increase in natural gas consumption.

II. Vehicle Fleet Operations

An energy consumption study was also done for the City's vehicle fleet operation. The following table shows the amount of fuel purchased and total gallons consumed from 1972 to 1980. The 1979 estimated figures were revised to reflect actual totals and the 1980 figures are estimates based on 9 months usage. The table shows that fuel consumption is decreasing slightly each year, but the cost is rising quite rapidly. Our cost in 1978 was approximately $.52 per gallon as compared to $1.03 per gallon as of September 1980.

Gasoline Consumption and Cost

Year	Gallons	Cost
1972	1,280,102	$ 237.377.14
1973	1,352,719	300,838.52
1974	1,479,169	501,502.74
1975	1,547,598	626,817.64
1976	1,549,674	679,565.12
1977	1,547,020	741,435.17
1978	1,521,503	790,821.47
1979	1,497,827	1,080,237.92
1980*	1,421,926	1,458,026.76

Diesel Consumption and Cost**

Year	Gallons	Cost
1977	147,716	$ 55,098.06
1978	155,862	60,786.18
1979	165,819	102,201.61
1980*	219,056	201,942.48

*Projected cost and gallons based on partial records
Current gasoline price is $1.03 per gallon.
Current diesel price is $.92 per gallon

**Prior to 1977 diesel was purchased by the Street Maintenance Division.

Table 1 and Table 2 (attached) show the comparative makeup of the City fleet in 1973/74, 1978/79, 1979/80, and the mileage obtained by the various types of vehicles during 1978/79 and 1979/80. (Note: 1979/80 figures based on 6 months data.)

The chart shows that the City has made significant progress in reducing the size of the vehicles in the fleet. For instance, the fleet currently has 50 sub-compact cars (16.4 MPG) as opposed to 10 in 1974. The number of compacts has increased to 184, (13.0 MPG) as opposed to 59 in 1974. Standard vehicles decreased from 177, (9.7 MPG) to 46 in 1980. Sub-compact pickups have increased to 79 (18.3 MPG) in 1980 as opposed to 17 in 1974. Other areas of improvement are in the Refuse and Fire Departments. The miles per gallon has increased due to the use of diesel equipment and has shown a 50% to 100% increase. In addition, the overall miles per gallon increased from 6.85 to 7.30 in 1979/80.

The City intends to improve mileage and fuel economy by developing energy savings programs and purchasing the most energy efficient vehicles to meet the City's need. This is currently being accomplished by initiating the following.

1. Purchasing and utilizing sub-compacts and compacts whenever possible in the fleet. The purchase of 31 replacement compact marked police cars, 31 sub-compact cars for police and City fleet, 16 sub-compact pickups, and several 6 cylinder police cars and fleet vehicles should further our reduction in fuel consumption once they are all placed in service.

2. The purchase of the replacement vehicles for 1980/81 will also add 22 fuel efficient cars and pickups fo the fleet and an additional 16 compact marked police cars and 16 undercover cars will be replaced.

3. The purchase whenever economically feasible of diesel equipment is also helping increase our miles per gallon of fuel. The purchase of 14 diesel powered loaders in street cleaning should result in a doubling of the miles per gallon of fuel over the current gas loaders.

4. An Energy Conservation Program stressing driving practices that will improve fuel economy should be continued and reinforced often.

5. We are exploring many areas to improve the fuel economy of the present fleet by testing various fuel and oil additives but as yet have found nothing cost effective.

6. We have tested Methanol (alcohol) powered vehicles as an alternative to gasoline but the cost to modify the vehicle and the reduction of miles per gallon make this change too costly at this time. In addition to Methanol we have contacted the Government Energy Office of Hybird and Electric Vehicles to explore grants available to us so we can test electric powered vehicles in our fleet.

7. We will endeavor to purchase the most fuel efficient vehicle that will do the job required with the lowest maintenance cost.

With our continuing effort to puchase additional compacts, sub-compacts, and fuel efficient larger equipment to further increase in miles per gallon should be realized.

FINANCIAL:

The City Council approved a professional engineering position in the City Engineer's 1980/81 budget for the operational energy conservation program. Professional engineering positions are "flexibly staffed" and consequently can be filled by the Department Head at the junior, assistant or associate level. When discussing this matter during the budget hearings, this position was designated as an associate position. However, due to the exceptional qualifications of a candidate eligible only at the junior level, the position was filled accordingly. This position was vacated by this individual on December 1, 1980, and if refilled by a professional engineer, it would be at the associate level (salary range $2,215 - $2,697). The salary range for a Building Operations Supervisor is $2,205 - $2,685, consequently, the approval of the herein continued recommendation will not result in an increase cost for this position. As stated during the budget hearings, it is staff's opinion that this position will more than pay for itself in energy cost savings.

RECOMMENDATION:

It is recommended that the operational energy conservation position in the City Engineer's Office be redesignated as a Building Operations Supervisor and reassigned to the Facility Maintenance Division by adoption of the attached resolution.

Respectfuly submitted,

R. H. PARKER
City Engineer

Recommendation Approved:

Walter J. Slipe, City Manager

RHP/MHJ:ls

Table 1

TYPE AND NUMBER OF CITY VEHICLES SURVEYED

Type of Vehicles	1973/74 No. of Vehicles	1973/74 % of Fleet	1978/79 No. of Vehicles	1978/79 % of Fleet	1979/80 No. of Vehicles	1979/80 % of Fleet
Sub-compact Cars*	10	1%	23	2%	50	4%
Compact Cars*	59	6%	161	16%	184	16%
Intermediate Cars*	0	0%	40	4%	42	3%
Standard Cars*	177	18%	43	4%	46	4%
Police & Fire Compact	0	0%	34	3%	54	5%
Police & Fire Intermediate	0	0%	70	7%	70	6%
Police & Fire Standard	95	10%	21	2%	21	2%
Sub-Compact Pickups	17	2%	58	6%	79	7%
Pickups	332	34%	260	25%	269	22%
Trucks	160	16%	173	17%	180	16%
Refuse Trucks (gas)	86	9%	53	5%	52	5%
Refuse Trucks (diesel)	0	0%	36	4%	53	5%
Fire trucks (gas)	32	3%	20	2%	29	3%
Fire Trucks (diesel)	6	1%	28	3%	22	2%
Total	974	100%	1020	100%	1151	100%

*Includes undercover police vehicles.

Table 2

MILEAGE OF VEHICLES DURING 1978/79, 1979/80 FISCAL YEAR

TYPE OF VEHICLE	NUMBER		GALLONS		MILEAGE		MILES PER GALLON	
FISCAL YEAR	'78/'79	'79/'80	'78/'79	'79/'80	'78/'79	'79/'80	'78/'79	'79/'80
Sub-compact Cars	23	50	12,603.5	26,744	178,510	437,496	14.1	16.4
Compact	161	184	88,879.5	139,527	1,228,348	1,814,536	13.8	13.0
Intermediate Cars	40	42	31,676.1	25,080	372,180	269,852	11.7	10.8
Standard Cars	43	46	59,465.3	18,582	644,986	179,852	10.8	9.7
Police & Fire Compact	34	54	7,581.6	189,581	65,168	1,642,188	8.6	8.7
Police & Fire Intermediate	70	70	236,414.1	173,187	1,959,643	1,253,744	8.2	7.3
Police & Fire Standard	21	21	64,630.8	8,903	477,872	82,108	7.4	9.2
Sub-compact Pickups	58	79	24,581.1	42,650	389,097	781,768	15.8	18.3
Pickups	260	269	263,989.4	265,140	2,366,470	2,403,396	8.9	9.1
Trucks	173	180	239,576,3	251,056	986,801	1,049,776	4.1	4.2
Refuse Trucks (gas)	53	52	194,954.5	137,296	311,134	254,264	1.6	1.9
Refuse Trucks (diesel)	36	53	101,594	139,840	292,877	450,240	2.9	3.2
Fire Trucks (gas)	20	29	34,766.3	43,416	101,564	114,812	2.9	2.6
Fire Trucks (diesel)	28	22	17,213.4	22,820	60,680	94,684	3.5	4.1
			1,377,921	1,483,822	9,435,330	10,828,716	6.85	7.30

Note: All records used to project charts above are based on partial information due to loss of EDP historical file.

RESOLUTION No. CC 81-011

Adopted by The Sacramento City Council on date of

December 9, 1980

RESOLUTION DELETING A JUNIOR ENGINEER POSITION FROM THE CITY ENGINEER'S BUDGET, ADDING A BUILDING OPERATIONS SUPERVISOR POSITION TO THE FACILITY MAINTENANCE BUDGET AND TRANSFERRING $21,070 FROM THE CITY ENGINEER'S BUDGET TO THE FACILITY MAINTENANCE BUDGET FOR THIS POSITION

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO:

1. That a Junior Engineer position be deleted from the City Engineer's Budget, and

2. That a Building Operations Supervisor position be added to the Facility Maintenance Budget, and

3. That $21,070 be transferred from the City Engineer's Budget - Employee Services to the Facility Maintenance Budget - Employee Services for a Building Operations Supervisor position as follows:

$16,110	From 1-01-2600-0000-4101	To	1-01-2701-0000-4101
1,548	From 1-01-2600-0000-4133	To	1-01-2701-0000-4133
1,072	From 1-01-2600-0000-4122	To	1-01-2701-0000-4122
880	From 1-01-2600-0000-4123	To	1-01-2701-0000-4123
323	From 1-01-2600-0000-4125	To	1-01-2701-0000-4125
227	From 1-01-2600-0000-4126	To	1-01-2701-0000-4126
910	From 1-01-2600-0000-4132	To	1-01-2701-0000-4132

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MAYOR

ATTEST:

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CITY CLERK

APPROVED
BY THE CITY COUNCIL
JAN 6 1981
OFFICE OF THE
CITY CLERK