MOORPARK CITY COUNCIL
AGENDA REPORT

TO: Honorable City Council

FROM: Jeremy Laurentowski, Landscape and Parks Manager JL

DATE: July 8, 2011 (CC Meeting of July 20, 2011)

SUBJECT: Consider Retrofitting the Existing Lighting at the Active Adult Center, Community Center, City Hall Administration Building, Development Services Building, Civic Center Parking Lot and Library Parking Lot; Award Contract to Sylvania Lighting Services Corporation and Authorize City Manager to Execute Agreement; and Resolution Amending the Fiscal Year 2011/12 Budget

BACKGROUND

In 2009, the City obtained an Energy Efficiency and Conservation Block Grant (EECBG), as a part of the American Recovery and Reinvestment Act (ARRA), in the amount of $148,600 for energy efficiency upgrades to the existing facilities Heating, Ventilation and Air Conditioning (HVAC) and Lighting Systems. During the June 16, 2010 City Council meeting, staff recommended two (2) phases to expend these grant monies which would yield the highest energy savings for the least amount of investment. Phase 1 included the replacement of seven (7) HVAC units that serve the Community Center and the Active Adult Center and was completed in December, 2010. Staff anticipates approximately 25% a year in direct energy savings due to the replacement of the HVAC units. Phase 2 included retrofitting the interior and exterior lighting of several City facilities. Staff has obtained an inventory and audit of all existing lighting systems at the City facilities and has solicited a fee proposal from Sylvania Lighting Services (Sylvania) to complete this work.

DISCUSSION

The City Council is being asked to approve retrofitting the existing lighting systems that serve the Active Adult Center, Community Center, City Hall Administration Building, the Development Services Building, Civic Center parking lot and the Library parking lot. According to the Lighting Upgrade Proposal and analysis prepared by Sylvania, retrofitting the existing lighting with new energy efficient lighting systems would result in substantial energy savings. In addition, it will help the City comply with current Title 24 lighting standards, the new Federal Minimum Energy Standards, reduce carbon emissions and reduce annual maintenance costs.

Staff is proposing to replace the interior and exterior lighting of several City facilities with a variety of energy efficient lighting upgrades. A major part of this project will include the change from traditional fluorescent T12 bulbs to low wattage fluorescent T8 bulbs. The fluorescent bulb identification terms, T'12' and T'8', refer to the diameter of the fluorescent tube in eighths of an inch. T12's are $12/8^{th}$ of an inch, or 1 ½" diameter, and T8's are $8/8^{th}$ of an inch, or 1" in diameter. T12's use 40 watts of energy per bulb, as compared to 32 watts for each T8, ultimately reducing carbon emissions as the overall energy requirement at each facility will be reduced. Carbon is a byproduct of energy production. In addition, T8's have a life span of approximately 36,000 hours, compared to 20,000 hours for T12's, reducing overall product costs, maintenance costs and the staff time required to replace bulbs. However, staff has discovered that there are substantial challenges that exist with office lighting, specifically as it relates to lighting where employees are working on a computer, as well as referencing documents. According to the Illuminating Engineering Society of North America (IESNA), working at a computer requires light levels in the range of 10 footcandles, while referencing a document can require as much as 100 footcandles. In addition to varying light levels, individuals require different light levels based on distinct visual systems and comfort levels.

In October, 2010, staff enlisted the services of Humanscale, a manufacturer of ergonomic office tools designed to solve functional problems in the workplace. Humanscale provided a lighting audit of the City Hall Administration Building. Their analysis confirms that most of the individual offices are currently too bright to comfortably work at a computer monitor, but not bright enough where employees need to reference documents. The light output within individual work stations and offices averaged between 27.1 and 36.4 footcandles. In addition, the Humanscale audit confirms that the common spaces and walkways between private offices and cubicles are over-illuminated. The Occupational Safety and Health Administration (OSHA) recommends light levels in the range of 30 footcandles for general use areas. Much of the common spaces in the Administration Building were illuminated between 50 and 61 footcandles. It has also been suggested that lower light levels increase productivity, alertness, comfort and may reduce headaches due to reduced eyestrain and frowning associated with ambient glare. In an effort to provide appropriate lighting levels, staff is recommending removing the existing four (4) lamp prismatic fixtures and replacing the fixtures with two (2) lamp fixtures with reflective lenses. Staff is confident that acceptable lighting levels will be obtained as the T8's emit higher lumens per bulb and loose only 10% of their initial brightness after approximately 7,000 hours of use, compared to T12's that loose approximately 20% over the same time frame. Staff is proposing to provide overhead task lighting to staff members that require increased illumination at their workspace.

Staff is also proposing to replace the existing Metal Halide and High Pressure Sodium parking lot lights and exterior building lights with Light Emitting Diode (LED) lighting. LED lighting has a lifespan of approximately 50,000 hours with an estimated energy savings between 50% and 75% compared to traditional high wattage bulbs, such as Metal Halide and High Pressure Sodium. LED lighting has a high initial cost. However,

substantial savings in direct energy cost savings makes this product a viable solution for energy conservation. The Community Development Department will review any exterior lighting plans for glare reduction compliance.

Staff has also obtained a proposal to retrofit the interior lighting of each City facility with LED lighting. However, the high initial cost due to the quantity of the fixtures and the relatively low wattage requirement of each facility makes LED interior lighting cost prohibitive. Staff has determined that the average cost recovery for interior LED lighting is between 15 and 20 years. LED interior lighting is also a relatively new product and several lighting professionals have cautioned staff on moving forward with these products at this time. As mentioned previously, most manufacturers claim that LED lighting has a 50,000 hour lifespan. These products have not been in production long enough to substantiate 15 years of performance.

A summary of each facility follows (See Attachment 2, Lighting Upgrade Proposals):

Active Adult Center		
Annual kWh (kilowatt-hour) Reduction		11,433 kWh
Annual Direct Energy Cost Reduction @ $0.15/kWh	$	1,715
Annual Lamp Maintenance Savings	$	726
Annual Air Conditioning Savings	$	529
Sub-Total Annual Savings	**$**	**2,970**
Project Investment	$	9,350
Estimated SCE Rebate	$	1,301
Net Project Investment	**$**	**8,049**
Project Payback Period (years)		**2.71**

Community Center		
Annual kWh (kilowatt-hour) Reduction		22,245 kWh
Annual Direct Energy Cost Reduction @ $0.15/kWh	$	3,337
Annual Lamp Maintenance Savings	$	761
Annual Air Conditioning Savings	$	759
Sub-Total Annual Savings	**$**	**4,857**
Project Investment	$	15,245
Estimated SCE Rebate	$	2,334
Net Project Investment	**$**	**12,911**
Project Payback Period (years)		**2.66**

City Hall Administration Building and Civic Center Parking Lot		
Annual kWh (kilowatt-hour) Reduction		44,493 kWh
Annual Direct Energy Cost Reduction @ $0.15/kWh	$	6,674
Annual Lamp Maintenance Savings	$	678
Annual Air Conditioning Savings	$	1,162
Sub-Total Annual Savings	**$**	**8,514**
Project Investment	$	41,851
Estimated SCE Rebate	$	4,538
Net Project Investment	**$**	**37,313**
Project Payback Period (years)		**4.38**

City Hall Development Services Building		
Annual kWh (kilowatt-hour) Reduction		17,304 kWh
Annual Direct Energy Cost Reduction @ $0.15/kWh	$	2,596
Annual Lamp Maintenance Savings	$	532
Annual Air Conditioning Savings	$	531
Sub-Total Annual Savings	**$**	**3,659**
Project Investment	$	13,637
Estimated SCE Rebate	$	2,395
Net Project Investment	**$**	**11,242**
Project Payback Period (years)		**3.07**

Library Parking Lot		
Annual kWh (kilowatt-hour) Reduction		10,770 kWh
Annual Direct Energy Cost Reduction @ $0.15/kWh	$	1,616
Annual Lamp Maintenance Savings	$	88
Annual Air Conditioning Savings	$	-
Sub-Total Annual Savings	**$**	**1,704**
Project Investment	$	12,445
Estimated SCE Rebate	$	700
Net Project Investment	**$**	**11,745**
Project Payback Period (years)		**6.9**

In 2010, the County of Ventura, in collaboration with the Ventura County Regional Energy Alliance (VCREA), developed a Request for Proposals (RFP), County of Ventura Request for Proposals No. 5554, for lighting services, in anticipation of the ARRA project funding. The 2010 RFP and contract (Contract No. 6293) superseded an earlier RFP and contract developed in 2004. The "heart" of the RFP is a unit pricing schedule listing a large number of commonly performed lighting efficiency tasks. These tasks include everything from simple retrofits of existing fluorescent fixtures, to new technology replacement fixtures. The successful bidder committed themselves to the specific unit price for the life of the contract, with a stipulated annual cost-of-living adjustment. The unit price included all labor and materials associated with completing the task in each unit price description. All labor costs are based on Federal and State prevailing wage requirements.

In the 2004, and the subsequent 2010 RFP, provisions were made for other public agencies to utilize the competitively bid RFP for their own lighting projects. Each city or other public agency could reference and "piggyback" the County's bidding process and solicit proposals from the County's contracted vendor, without having to repeat the bidding process. The contractor (Sylvania) must adhere to the same pricing as defined in the County contract.

Piggybacking is a practice accepted in the California Public Contract Code, as long as it can be demonstrated that:

1. The work being undertaken is clearly consistent with the work defined in the original RFP.
2. The RFP is of recent origin (interpreted by most agencies as three (3) years or less).
3. The pricing is consistent with the original RFP.

The 2010 RFP clearly requires the successful bidder to make unit pricing available to any public agency that chooses to piggyback on the agreement.

The following is a list of public agencies that have taken advantage of the piggyback options of the 2004 and 2010 lighting services agreement:

- City of Ventura
- City of Oxnard
- Ojai Unified School District
- Ventura County Office of Education
- Gold Coast Transit District
- City of Thousand Oaks
- Conejo Park and Recreation District
- City of Santa Paula
- City of Fillmore
- City of Port Hueneme
- City of Ojai

The current contract has a term from January, 2011 to January, 2013, with three 1-year extensions, if mutually agreed upon by the County and Sylvania.

Staff recommends 'piggybacking' the County of Ventura Request for Proposals No. 5554, for Lighting Efficiency Services, Issued September 09, 2010, and Contract No. 6293 between the County of Ventura and Sylvania Lighting Services Corporation, entered on January 20, 2011.

FISCAL IMPACT

The City of Moorpark obtained $148,600 from the EECBG in 2009. Phase I, which included the replacement of seven (7) HVAC units, was completed in 2010 at a total cost of $76,746. $71,854 is available for the proposed lighting retrofit project. A cost summary follows:

Cost Summary:	
Energy Efficiency and Conservation Block Grant (EECBG)	148,600
Phase I (HVAC replacement project 2010)	76,746
EECBG Remaining Balance	**71,854**
Active Adult Center	9,350
Community Center	15,245
City Hall Administration Building	41,851
Development Services Building	13,637
Library	12,445
Project Investment	92,528
(35) task lights @ $150 ea.	5,250
10% Contingency	9,778
Sub-total Project Investment	**107,556**
EECBG Remaining Balance	(71,854)
Total Project Investment	**35,702**
Total Estimated SCE Rebates	(11,268)
Total Net Project Investment	**24,434**

The total project cost was excluded from the fiscal year 2011/12 spending plan and a budget amendment of $107,556 is required in the Facilities Division (7620). $71,854 will be appropriated from the Other State/Federal Grant Fund (2609), the $13,690 from the Library Services Fund (1010) and the remaining $22,012 will come from the General Fund (1000). Staff anticipates $11,268 in Southern California Edison (SCE) rebates to partially offset this initial investment.

STAFF RECOMMENDATION (ROLL CALL VOTE)

1. Approve retrofitting the existing lighting at the Active Adult Center, Community Center, City Hall Administration Building, Development Services Building, Civic Center Parking Lot and Library Parking Lot; and

2. Award a contract to Sylvania Lighting Corporation and authorize the City Manager to execute an Agreement at a cost of $92,528 with approval for a contingency not to exceed $9,252, subject to final language approval by City Manager and City Attorney; and

3. Adopt Resolution No. 2011-____ amending the FY 2011/12 budget to appropriate $107,556 from various funds for the Lighting Retrofit.

Attachments:
1. Resolution No. 2011 - ____.
2. Sylvania Lighting Upgrade Proposals
3. Humanscale Lighting Audit Summary

RESOLUTION NO. 2011-____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MOORPARK, CALIFORNIA, AMENDING THE FISCAL YEAR 2011/12 BUDGET TO APPROPRIATE $107,556 FROM VARIOUS FUNDS FOR THE RETROFIT OF EXISTING LIGHTING SYSTEMS AT THE ACTIVE ADULT CENTER, COMMUNITY CENTER, CITY HALL ADMINISTRATION BUILDING, DEVELOPMENT SERVICES BUILDING, CIVIC CENTER PARKING LOT AND LIBRARY PARKING LOT

WHEREAS, a staff report has been presented to City Council discussing the need to retrofit the existing lighting systems at the Active Adult Center, Community Center, City Hall Administration Building, Development Services Building, Civic Center Parking Lot and Library Parking Lot in the amount of $107,556; and

WHEREAS, On September 18, 2009 the City was awarded $148,600 from the Energy Efficiency and Conservation Block Grant Programs (EECBG) under the American Recovery and Reinvestment Act of 2009 and $76,746 has been expended for the replacement of seven (7) Heating, Ventilation and Air Conditioning units at the Active Adult and Community Center facilities, with a remaining balance of $71,854 available to partially fund this project; and

WHEREAS, on June 15, 2011 the City Council adopted the Operating and Capital Improvement Projects Budget for fiscal year 2011/12, which did not include any funding for the project; and

WHEREAS, staff is requesting an aggregate budget amendment of $107,556 in the Facilities Division (7620) to fully finance the project, which includes the budget increase of $71,854 from the Other State/Federal Grants Fund (2609), $13,690 from the Library Services Fund (1010), and $22,012 from the General Fund (1000); and

WHEREAS, Exhibit "A" hereof describes said budget amendment and its resultant impact to the budget line items.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MOORPARK DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. That an aggregate expenditure budget increase of $107,556 for the retrofitting of existing lighting systems at the Active Adult Center, Community Center, City Hall Administration Building, Development Services Building, Civic Center Parking Lot and Library Parking Lot more particularly described in Exhibit "A" attached hereto is hereby approved.

SECTION 2. The City Clerk shall certify to the adoption of this resolution and shall cause a certified resolution to be filed in the book of original resolutions.

PASSED AND ADOPTED this 20th day of July, 2011.

Janice S. Parvin, Mayor

ATTEST:

Maureen Benson, City Clerk

Attachment: Exhibit A – Budget Amendment

EXHIBIT A

BUDGET AMENDMENT FOR VARIOUS FUNDS FOR THE RETROFITTING OF EXISTING LIGHTING SYSTEMS AT THE ACTIVE ADULT CENTER, COMMUNITY CENTER, CITY HALL ADMINISTRATION BUILDING, DEVELOPMENT SERVICES BUILDING, CIVIC CENTER PARKING LOT AND LIBRARY PARKING LOT

FY 2011/12

FUND ALLOCATION FROM:

FUND TITLE	FUND ACCOUNT NUMBER	AMOUNT
Other State/Federal Grant	2609-5500	$71,854
General Fund	1000-5000	$22,012
Library Fund	1010-5500	$13,690
Total		$107,556

DISTRIBUTION OF APPROPRIATION TO EXPENSE ACCOUNTS:

BUDGET NUMBER	CURRENT BUDGET	REVISION	ADJUSTED BUDGET
2609-7620-0000-9252	$ -	$62,806	$62,806
2609-7620-7704-9252	$ -	$9,048	$9,048
1000-7620-7704-9252	$ 4,000	$1,237	$5,237
1000-7620-0000-9252	$ -	$5,775	$5,775
1000-7620-2012-9252	$ -	$15,000	$15,000
1010-7620-0000-9252	$ 12,500	$13,690	$26,190
Total	$ 16,500	$107,556	$124,056

Finance approval: Bon Ahlers

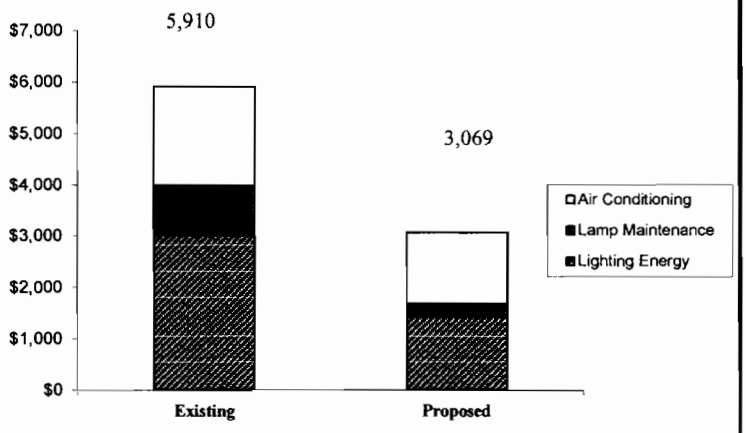
Lighting Upgrade Proposal
PROJECT OVERVIEW

City of Moorpark
Senior Center

Financial Summary

Annual Lighting Energy Savings	$	1,715
Annual Lamp Maintenance Savings		726
Annual Air Conditioning Savings		529
Total Annual Savings	**$**	**2,969**
Project Investment	$	9,350
Estimated VCREA Rebate	$	1,301
Net Project Investment	**$**	**8,049**
Project Payback Period (Years)		**2.71**
Return on Investment		**37%**

Annual Lighting Costs



SYLVANIA LIGHTING SERVICES
An EPA Green Lights Lighting Management Company Ally

Lighting Upgrade Proposal
ENERGY SAVINGS CALCULATIONS

Senior Center

		EXISTING					PROPOSED								
Fixture Code	Hrs / Year	Existing Fixture Description	Ex. Watts	Ex. kw	Existing Kwh	Ex. Qty.	Proposed Retrofit Description	Pro. Watts	Pro. kw	Proposed Kwh	Pro. Qty.	Current Annual Operating Costs	Proposed Annual Operating Costs	Estimated Annual Sensor savings	Unit Price	Extended Price
B	2,340	2x4-4 lamp T12 Prismatic	144	1	2,359	7	Retrofit to 2 lamp Supersaver T8 and PSH ballast with reflector	62	0	1,016	7	$ 354	$ 152	$ 23	$ 91	$ 640
C	2,340	Miscellaneous 2 lamp 4' T12 fixtures	72	1	1,685	10	Retrofit to 2 lamp Supersaver T8 and PSX ballast	40	0	936	10	$ 253	$ 140	$ 21	$ 63	$ 633
D	2,340	Miscellaneous 2x2 - U lamp T12 Fixtures	72	2	4,044	24	Retrofit to 3-2' T8 lamps with reflector and electronic ballasts	37	1	2,078	24	$ 607	$ 312	$ 47	$ 86	$ 2,064
E	2,340	Miscellaneous 6 lamp T12 Fixtures	171	3	6,402	16	Retrofit to 4 lamp Supersaver T8 and PSH ballast	124	2	4,643	16	$ 960	$ 696	$ 104	$ 82	$ 1,320
F	2,340	Miscellaneous 60 Watt Incandescent Fixtures	60	2	5,195	37	Retrofit to 14 watt LED	14	1	1,212	37	$ 779	$ 182	$ -	$ 76	$ 2,812
G	8,760	2-20 watt Incandescent Exit Signs	40	0	350	1	Replace with LED Exit sign with battery backup	2	0	18	1	$ 53	$ 3	$ -	$ 103	$ 103
H	2,340	Small enclosed offices and areas	0	-	-	5	Install Dual switching Occupancy Sensor	0	-	-	5	$ -	$ -	$ -	$ 161	$ 804
I	2,340	Larger Areas	0	-	-	4	Install Dual Technology Ceiling Occupancy Sensors	0	-	-	4	$ -	$ -	$ -	$ 243	$ 974
				8.45	20,034	104			4.23	9,902	104	$ 3,005	$ 1,485	$ 195		$ 9,360

Energy Savings Summary				
		kW:	4.23	
		kWh:	11,433.61	1300.81
Cost per kWh:	$0.150	Total Savings:	$ 1,716.04	

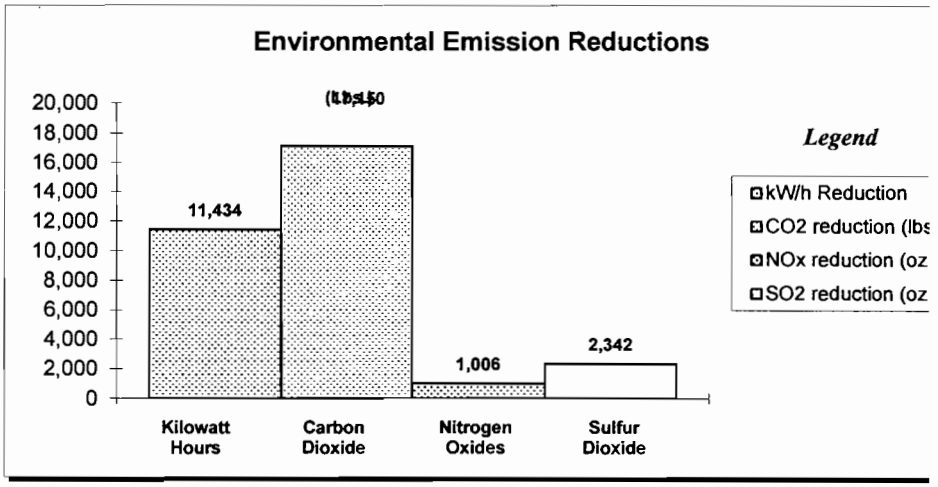
Lighting Upgrade Proposal
AC SAVINGS CALCULATIONS

Fluorescent Lamps transform only about 30% of the energy they draw into light. The rest is converted to heat -- wh places a burden on a facility's cooling system. By using fewer and more efficient lamps and ballasts, excess hea removed, making cooling a facility easier and cheaper. This is an estimate of how much energy will be saved by reduc air conditioning operation based on a formula developed by ASHRAE. It is accepted by most utilities as the stand formula for quantifying A/C savings.

	Lighting KW removed	3.86
	BTU per KW	3,413
X	A/C KW per Ton	1.07
	Subtotal	14,096
/	BTU per Ton	12,000
	Subtotal	1.17
	Average Burn Hours per Year	3,000
	A/C Utilization Factor	1.00
X	Cost per kW/h	0.15
	ANNUAL A/C SAVINGS	**$529**

Environmental Impact Analysis

Reducing energy consumption directly reduces harmful emissions from power plants. As a Manufacturing Ally in the E Green Lights program, Parke Industries, Inc. supports the promotion of energy-efficient lighting technologies in the against the proliferation of pollution. This analysis estimates the amounts of harmful emissions that would be preve through the implementation of this project. It is based on figures supplied by the Environmental Protection Agency.



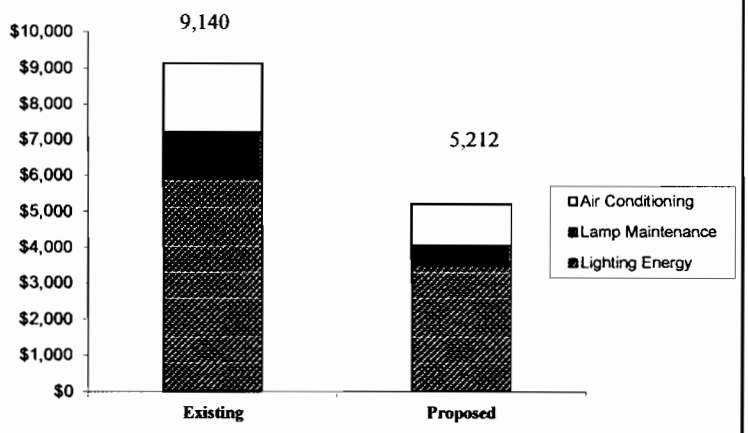
Lighting Upgrade Proposal
PROJECT OVERVIEW

City of Moorpark
Community Center
Revised

Financial Summary

Annual Lighting Energy Savings	$	3,337
Annual Lamp Maintenance Savings		761
Annual Air Conditioning Savings		759
Total Annual Savings	**$**	**4,856**
Project Investment	$	15,245
Estimated VCREA Rebate	$	2,334
Net Project Investment	**$**	**12,912**
Project Payback Period (Years)		**2.66**
Return on Investment		**38%**

Annual Lighting Costs



Lighting Upgrade Proposal
ENERGY SAVINGS CALCULATIONS

Community Center

		EXISTING					PROPOSED									
Fixture Code	Hrs / Year	Existing Fixture Description	Ex. Watts	Ex. kw	Existing Kwh	Ex. Qty.	Proposed Retrofit Description	Pro. Watts	Pro. kw	Proposed Kwh	Pro. Qty.	Current Annual Operating Costs	Proposed Annual Operating Costs	Estimated Annual Sensor savings	Unit Price	Extended Price
A	2,960	2x4-3 lamp T12 Prismatic	115	3	10,212	30	Retrofit to 2 lamp Supersaver T8 and PSN ballast with reflector	50	2	4,440	30	$ 1,532	$ 666	$ -	$ 91	$ 2,744
B	2,960	2x4-4 lamp T12 Prismatic	144	3	9,377	22	Retrofit to 2 lamp Supersaver T8 and PSH ballast with reflector	62	1	4,037	22	$ 1,407	$ 606	$ -	$ 91	$ 2,012
C	2,960	Miscellaneous 2 lamp 4' T12 fixtures	72	1	2,557	12	Retrofit to 2 lamp Supersaver T8 and PSX ballast	40	0	1,421	12	$ 384	$ 213	$ -	$ 63	$ 760
D	2,960	Miscellaneous 2x2 - U lamp T12 Fixtures	72	1	2,344	11	Retrofit to 3-2'T8 lamps with reflector and electronic ballasts	37	0	1,205	11	$ 352	$ 181	$ -	$ 86	$ 946
E	2,960	Miscellaneous 6 lamp T12 Fixtures	171	2	6,074	12	Retrofit to 4 lamp Supersaver T8 and PSH ballast	124	1	4,404	12	$ 911	$ 661	$ -	$ 82	$ 990
F	8,760	2-20 watt Incandescent Exit Signs	40	0	3,154	9	Replace with LED Exit sign with battery backup	2	0	158	9	$ 473	$ 24	$ -	$ 103	$ 929
G	4,380	50 watt HPS Wallpacks	66	1	3,180	11	Replace with 21 watt LED Wallpack	21	0	1,012	11	$ 477	$ 152	$ -	$ 467	$ 5,137
H	4,380	Exterior 250 watt HPS Wallpack Fixtures	295	1	2,584	2	Replace with 112 Watt LED Wallpak	64	0	561	2	$ 388	$ 84	$ -	$ 864	$ 1,728
				12.00	**39,483**	**109**			**5.62**	**17,238**	**109**	**$ 5,922**	**$ 2,586**	$ -		**$ 15,245**

Energy Savings Summary			
		kW:	6.39
		kWh:	22,245.10
Cost per kWh:	$0.150	Total Savings: $	3,336.77

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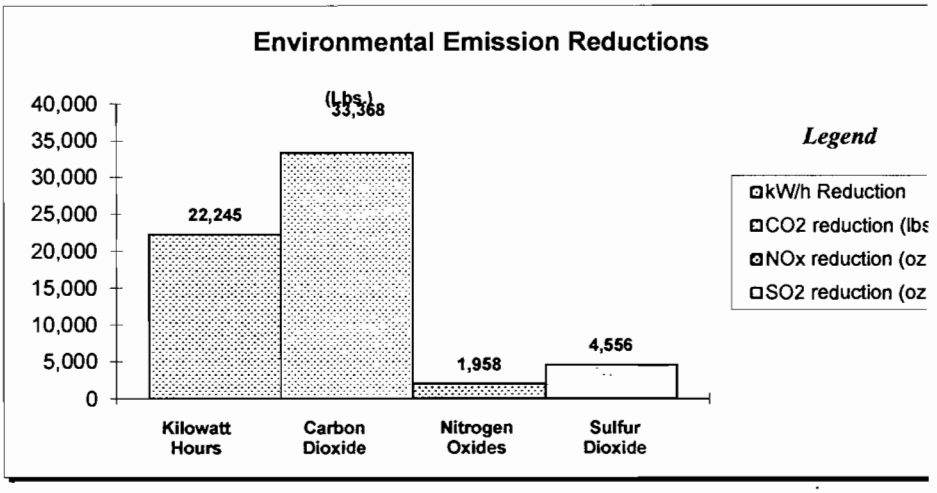
Lighting Upgrade Proposal
AC SAVINGS CALCULATIONS

Fluorescent Lamps transform only about 30% of the energy they draw into light. The rest is converted to heat -- wh places a burden on a facility's cooling system. By using fewer and more efficient lamps and ballasts, excess hea removed, making cooling a facility easier and cheaper. This is an estimate of how much energy will be saved by redu air conditioning operation based on a formula developed by ASHRAE. It is accepted by most utilities as the stand formula for quantifying A/C savings.

	Lighting KW removed	5.54
	BTU per KW	3,413
X	A/C KW per Ton	1.07
	Subtotal	20,232
/	BTU per Ton	12,000
	Subtotal	1.69
	Average Burn Hours per Year	3,000
	A/C Utilization Factor	1.00
X	Cost per kW/h	0.15
	ANNUAL A/C SAVINGS	**$759**

Environmental Impact Analysis

Reducing energy consumption directly reduces harmful emissions from power plants. As a Manufacturing Ally in the E Green Lights program, Parke Industries, Inc. supports the promotion of energy-efficient lighting technologies in the against the proliferation of pollution. This analysis estimates the amounts of harmful emissions that would be preve through the implementation of this project. It is based on figures supplied by the Environmental Protection Agency.



Lighting Upgrade Proposal
PROJECT OVERVIEW

City of Moorpark
City Hall-Administrative Services
Revised

Financial Summary

Annual Lighting Energy Savings	$	6,674
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Annual Air Conditioning Savings		1,162
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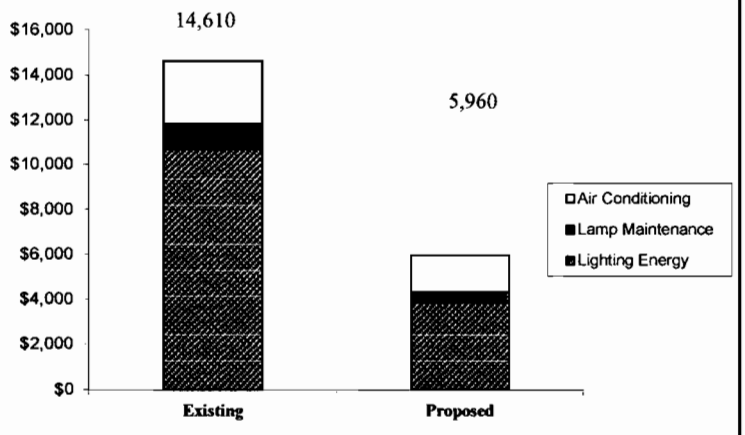
Estimated VCREA Rebate	$	4,538
Net Project Investment	**$**	**37,313**
Project Payback Period (Years)		**4.38**
Return on Investment		**23%**

Annual Lighting Costs



Lighting Upgrade Proposal
ENERGY SAVINGS CALCULATIONS

City Hall-Administrative Services

		EXISTING					PROPOSED								
Fixture Code	Hrs / Year	Existing Fixture Description	Ex. Watts	Ex. kw	Existing Kwh	Ex. Qty.	Proposed Retrofit Description	Pro. Watts	Pro. kw	Proposed Kwh	Pro. Qty.	Current Annual Operating Costs	Proposed Annual Operating Costs	Estimated Annual Sensor savings	Unit Price	Extended Price
A	2,665	2x4-4 lamp T12 Prismatic	144	4	10,362	27	Retrofit to 2 lamp Supersaver T8 with PSH program start ballast and reflector	62	2	4,461	27	$ 1,554	$ 669	$ 167	$ 91	$ 2,469
B	2,665	2x4-3 lamp T12 Prismatic	112	2	6,567	22	Retrofit to 2 lamp Supersaver T8 with PSN program start ballast and reflector	50	1	2,932	22	$ 985	$ 440	$ 110	$ 91	$ 2,012
C	2,665	2x2-2 U lamp Fluorescents Fixtures	72	1	1,535	8	Retrofit to 3-2' T8 lamps with reflector and electronic ballast	37	0	789	8	$ 230	$ 118	$ 30	$ 86	$ 688
D	2,665	2 lamp 8' T12 Pendant Fixtures	134	2	5,714	16	Retrofit to 4 lamp Supersaver T8 and PSX ballast	80	1	3,411	16	$ 857	$ 512	$ -	$ 99	$ 1,592
E	4,380	50 Watt HPS Wallpacks	63	0	828	3	Replace with LED Wallpacks	21	0	276	3	$ 124	$ 41	$ -	$ 467	$ 1,401
F	4,380	175 watt Metal Halide Poles	215	1	3,767	4	Retrofit to LED Kits	55	0	964	4	$ 565	$ 145	$ -	$ 565	$ 2,260
G	4,380	175 watt Metal Halide Fixtures	215	0	1,883	2	Retrofit to LED Kits	55	0	482	2	$ 283	$ 72		$ 565	$ 1,130
H	4,380	400 watt Metal Hailde Exterior Poles fixtures	458	9	40,121	20	Replace with 175 watt LED Fixtures	175	4	15,330	20	$ 6,018	$ 2,300		$ 1,228	$ 24,554
I	1,000	100 watt Incandescent Wallpacks	100	0	400	4	Replace with LED Wallpacks	21	0	84	4	$ 60	$ 13	$ -	$ 467	$ 1,868
J	2,184	Office Areas	0	-	-	0	Install Ceiling Occupancy Sensors	0	-	-	8	$ -	$ -	$ -	$ 243	$ 1,948
K	2,184	Office Areas	0	-	-	0	Install Wall Occupancy Sensors	0	-	-	12	$ -	$ -	$ -	$ 161	$ 1,929
				20.11	**71,176**	**106**			**8.33**	**28,728**	**126**	**$ 10,676**	**$ 4,309**	$ 307		**$ 41,851**

Energy Savings Summary			
		kW:	11.78
		kWh:	44,493.00
Cost per kWh:	$0.150	Total Savings: $	6,673.95

2045.39

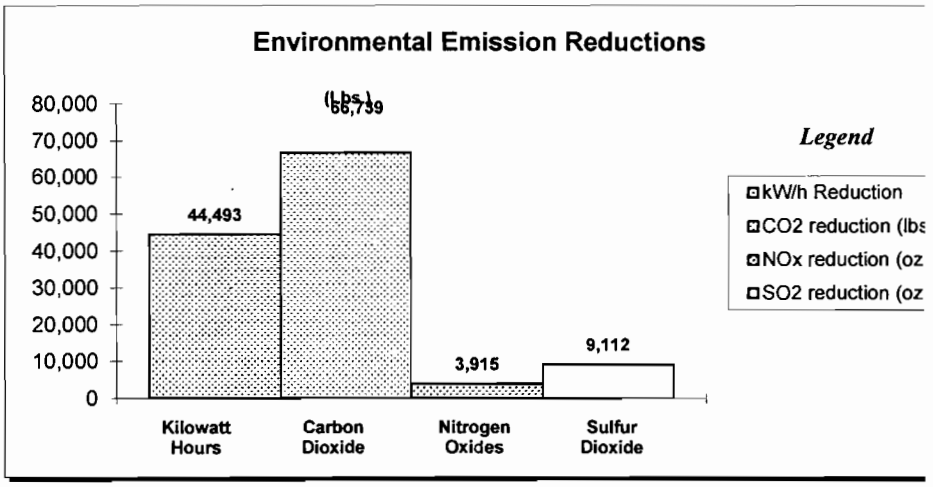
Lighting Upgrade Proposal
AC SAVINGS CALCULATIONS

Fluorescent Lamps transform only about 30% of the energy they draw into light. The rest is converted to heat – wh places a burden on a facility's cooling system. By using fewer and more efficient lamps and ballasts, excess hea removed, making cooling a facility easier and cheaper. This is an estimate of how much energy will be saved by redu air conditioning operation based on a formula developed by ASHRAE. It is accepted by most utilities as the stand formula for quantifying A/C savings.

	Lighting KW removed	9.79
	BTU per KW	3,413
X	A/C KW per Ton	1.07
	Subtotal	35,752
/	BTU per Ton	12,000
	Subtotal	2.98
	Average Burn Hours per Year	2,600
	A/C Utilization Factor	1.00
X	Cost per kW/h	0.15
	ANNUAL A/C SAVINGS	**$1,162**

Environmental Impact Analysis

Reducing energy consumption directly reduces harmful emissions from power plants. As a Manufacturing Ally in the E Green Lights program, Parke Industries, Inc. supports the promotion of energy-efficient lighting technologies in the against the proliferation of pollution. This analysis estimates the amounts of harmful emissions that would be preve through the implementation of this project. It is based on figures supplied by the Environmental Protection Agency.



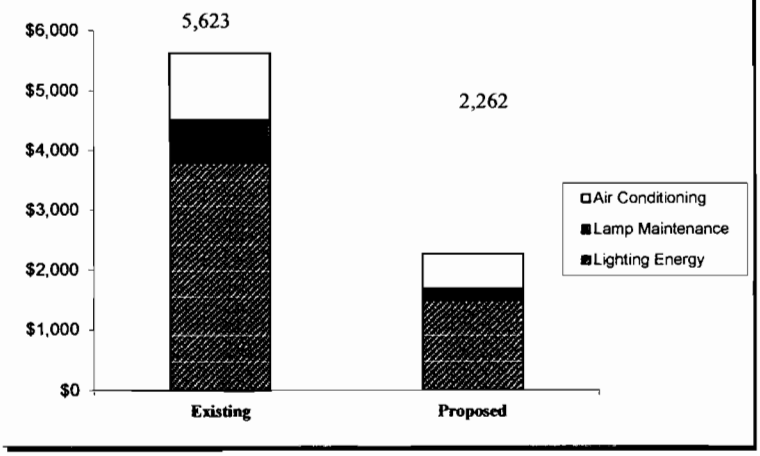
Lighting Upgrade Proposal
PROJECT OVERVIEW

City of Moorpark
City Hall-Development Services

Financial Summary

Annual Lighting Energy Savings	$	2,596
Annual Lamp Maintenance Savings		532
Annual Air Conditioning Savings		531
Total Annual Savings	**$**	**3,658**
Project Investment	$	13,637
Estimated VCREA Rebate	$	2,395
Net Project Investment	**$**	**11,242**
Project Payback Period (Years)		**3.07**
Return on Investment		**33%**

Annual Lighting Costs



Lighting Upgrade Proposal
ENERGY SAVINGS CALCULATIONS

City Hall-Development Services

		EXISTING					PROPOSED								
Fixture Code	Hrs / Year	Existing Fixture Description	Ex. Watts	Ex. kw	Existing Kwh	Ex. Qty.	Proposed Retrofit Description	Pro. Watts	Pro. kw	Proposed Kwh	Pro. Qty.	Current Annual Operating Costs	Proposed Annual Operating Costs	Estimated Annual Sensor savings	Unit Price	Extended Price
A	2,665	2x4-4 lamp T12 Prismatic	144	8	21,107	55	Retrofit to 2 lamp Supersaver T8 and PSH ballast and reflector	62	3	9,088	55	$ 3,166	$ 1,363	$ 341	$ 91	$ 5,030
B	2,665	Miscellaneous 2 lamp 4' T12 fixtures	72	0	192	1	Retrofit to 2 lamp Supersaver T8 and PSX ballast	40	0	107	1	$ 29	$ 16	$ 4	$ 63	$ 63
C	2,665	2x2-2 U lamp Fluorescents Fixtures	72	0	959	5	Retrofit to 3 lamp 2' Supersaver T8 and PSX ballast with reflector	37	0	493	5	$ 144	$ 74	$ 18	$ 86	$ 430
D	4,380	100 Watt Incandescent Wallpacks	100	0	1,314	3	Replace with 21 watt LED Wall pack	32	0	420	3	$ 197	$ 63	$ -	$ 467	$ 1,401
E	8,760	2-20 watt Incandescent Exit Signs	40	0	1,051	3	Replace with new LED Exit Sign with battery backup	2	0	53	3	$ 158	$ 8	$ -	$ 103	$ 310
F	1,000	100 watt Metal Halide Wallpacks	126	1	630	5	Replace with 42 watt LED Wall pack	42	0	210	5	$ 95	$ 32	$ -	$ 559	$ 2,795
G	2,184	Office Areas	0	-	-	0	Install Ceiling Occupancy Sensors	0	-	-	4	$ -	$ -	$ -	$ 286	$ 1,144
H	2,184	Office Areas	0	-	-	0	Install Wall Occupancy Sensors	0	-	-	16	$ -	$ -	$ -	$ 154	$ 2,464
				9.40	26,253	72			3.95	10,370	92	$ 3,788	$ 1,556	$ 363		$ 13,637

Energy Savings Summary				
		kW:	5.46	
		kWh:	17,304.78	2421.82
Cost per kWh:	$0.150	Total Savings:	$ 2,595.72	

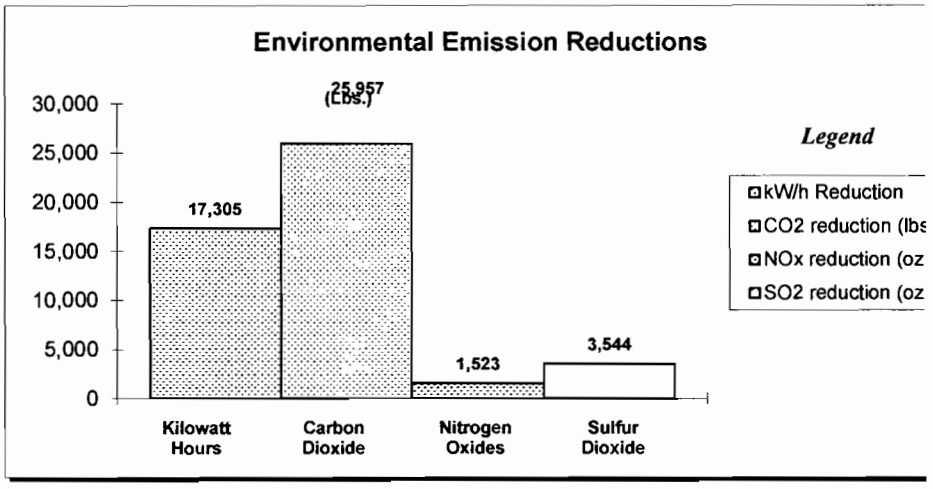
Lighting Upgrade Proposal
AC SAVINGS CALCULATIONS

Fluorescent Lamps transform only about 30% of the energy they draw into light. The rest is converted to heat -- wh places a burden on a facility's cooling system. By using fewer and more efficient lamps and ballasts, excess hea removed, making cooling a facility easier and cheaper. This is an estimate of how much energy will be saved by redu air conditioning operation based on a formula developed by ASHRAE. It is accepted by most utilities as the stand formula for quantifying A/C savings.

Lighting KW removed	4.47
BTU per KW	3,413
X A/C KW per Ton	1.07
Subtotal	16,324
/ BTU per Ton	12,000
Subtotal	1.36
Average Burn Hours per Year	2,600
A/C Utilization Factor	1.00
X Cost per kW/h	0.15
ANNUAL A/C SAVINGS	**$531**

Environmental Impact Analysis

Reducing energy consumption directly reduces harmful emissions from power plants. As a Manufacturing Ally in the E Green Lights program, Parke Industries, Inc. supports the promotion of energy-efficient lighting technologies in the against the proliferation of pollution. This analysis estimates the amounts of harmful emissions that would be preve through the implementation of this project. It is based on figures supplied by the Environmental Protection Agency.



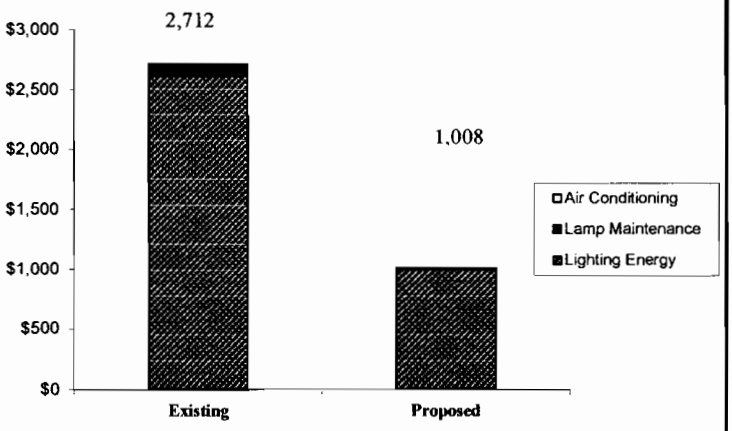
Lighting Upgrade Proposal
PROJECT OVERVIEW

City of Moorpark
Library

Financial Summary

Annual Lighting Energy Savings	$	1,616
Annual Lamp Maintenance Savings		88
Annual Air Conditioning Savings		-
Total Annual Savings	**$**	**1,703**
Project Investment	$	12,445
Estimated VCREA Rebate	$	700
Net Project Investment	**$**	**11,745**
Project Payback Period (Years)		**6.90**
Return on Investment		**15%**

Annual Lighting Costs



Lighting Upgrade Proposal
ENERGY SAVINGS CALCULATIONS

Library

		EXISTING					PROPOSED								
Fixture Code	Hrs / Year	Existing Fixture Description	Ex. Watts	Ex. kw	Existing Kwh	Ex. Qty.	Proposed Retrofit Description	Pro. Watts	Pro. kw	Proposed Kwh	Pro. Qty.	Current Annual Operating Costs	Proposed Annual Operating Costs	Estimated Annual Sensor savings	Unit Price	Extended Price
H	4,380	400 Watt HPS Exterior Fixture	460	3	12,089	6	Replace with 175 watt LED Fixture	175	1	4,599	6	$ 1,813	$ 690	$ -	$ 1,227	$ 7,363
I	4,380	250 Watt HPS Exterior Fixture	295	1	3,876	3	Replace with 100 watt LED Fixture	100	0	1,314	3	$ 581	$ 197	$ -	$ 963	$ 2,890
J	4,380	70 watt HPS Wallpacks	83	0	1,454	4	Replace with 42 LED wallpack	42	0	736	4	$ 218	$ 110	$ -	$ 548	$ 2,192
				3.98	**17,419**	**13**			**1.52**	**6,649**	**13**	**$ 2,613**	**$ 997**	**$ -**		**$ 12,445**

Energy Savings Summary			
		kW:	2.46
		kWh:	10,770.42
Cost per kWh:	$0.150	Total Savings: $	1,615.56

0.00

Lighting Upgrade Proposal
AC SAVINGS CALCULATIONS

Fluorescent Lamps transform only about 30% of the energy they draw into light. The rest is converted to heat -- wh places a burden on a facility's cooling system. By using fewer and more efficient lamps and ballasts, excess hea removed, making cooling a facility easier and cheaper. This is an estimate of how much energy will be saved by reduc air conditioning operation based on a formula developed by ASHRAE. It is accepted by most utilities as the stand formula for quantifying A/C savings.

	Lighting KW removed	0.00
	BTU per KW	3,413
X	A/C KW per Ton	1.07
	Subtotal	0
/	BTU per Ton	12,000
	Subtotal	0.00
	Average Burn Hours per Year	3,000
	A/C Utilization Factor	1.00
X	Cost per kW/h	0.15
	ANNUAL A/C SAVINGS	**$0**

Environmental Impact Analysis

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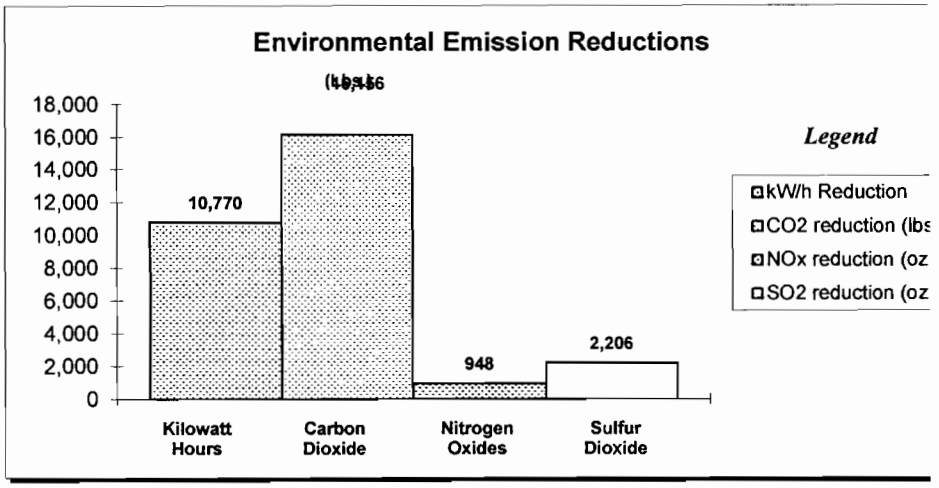

ATTACHMENT 3

City of Moorpark

Lighting Audit Summary

Performed by:

Patrick McDonald
Humanscale

Summary: Humanscale was tasked with auditing the lighting levels for the employees at the City of Moorpark. Specifically, we were to evaluate the lighting levels at each workstation as well as general office areas to identify opportunities to decrease energy usage while increasing employee comfort and productivity.

There are challenges that exist with office lighting, specifically as it relates to lighting where employees are working on a computer as well as referencing documents.

As supported by the Illuminating Engineering Society of North America (IESNA), working at a computer requires light levels in the range of 10 footcandles, while referencing a document can require as much as 100 footcandles. In addition to those varying light levels, people require different light levels based on their individual visual systems.

Findings:

There are significant opportunities to decrease energy usage in two areas.
First are the private offices. All of the offices, as documented below, are too bright to comfortably work on a computer monitor and not bright enough where the employees reference documents. At full power, or three illuminated 32 watt bulbs, the average footcandles on the computer were 27.1. Average footcandles on the documents where employees work were at 36.4.

You can decrease the energy usage in these private offices by using two bulbs rather than three and adding adjustable task lights.

With two bulbs illuminated the average light levels at the computer drop to 24.6 and drop to 28.8 at the documents. When you add an adjustable task light, you can keep the 24.6 footcandles at the monitor and increase the light levels at the document by an additional 100 footcandles.

This decrease in overhead lighting can represent up to a 33.3% decrease in the energy used by the fixture, going from 3 bulbs at 32 watts to 2 bulbs at 32 watts. Further savings can be realized by decreasing the wattage from 32 watt bulbs to 25 watt bulbs.

The second area of opportunity to save on energy usage is in the general office area, which includes walkways as well as cubicles. Generally speaking, this area is significantly over-illuminated in some areas and under-illuminated in others.

The over-illuminated areas include the walkway between the private offices and the row of cubicle walls. OSHA recommends light levels of approximately 30 footcandles for general office areas. Much of the space is illuminated to 50 footcandles, with one area as high as 61 footcandles.

There are two different fixtures in the drop-down ceiling of the general office space. Some of the fixtures have three 32 watt bulbs and some have four 32 watt bulbs.

The city of Moorpark may be able to decrease their overall energy usage by removing the center bulb in the fixtures with three bulbs, and the two middle bulbs in the fixtures with four bulbs. Doing so will not only decrease the energy usage, but will cut down on costs to purchase new bulbs as well as shrink the maintenance costs associated with replacing bulbs.

However, if the City of Moorpark decreases the amount of light from the overhead fixtures, they will need to increase the level of light on employee workstations by providing adjustable task lights which enable an employee to put the light on their documents when they need to illuminate the documents.

Financial impact:

Decreasing the energy usage in the building will have a positive financial impact on the City of Moorpark. While there will be a one-time cost associated with purchasing adjustable task lights, the cost of the task light investment will be recouped over time.

Annual financial savings from decreasing energy usage (assumes removing 1 32 watt bulb in three bulb fixtures and 2 32 watt bulbs in four bulb fixtures): $2,141.60.

There is a one-time cost associated with purchasing adjustable task lights. When selecting any task light, a specific criterion should be followed to ensure that the light works the way an employee needs it to work. Failure to follow a criteria will likely lead to selecting a light that does not work as required, and will cause the employee to be forced to read documents without the proper level of illumination.

The following criteria should be applied to all task lights that are being evaluated:

1. Able to adjust the position of the light with one hand. This needs to be accomplished without the light falling over.
2. Remain cool to the touch. If a light gives off too much heat, it causes a safety and comfort problem.
3. Needs to have a large enough footprint of light that allows it to illuminate the documents without having to constantly move the light.
4. Provide a neutral white light temperature. According to IESNA, this temperature is 3500 Kelvin.
5. Use only one light source or bulb. This is specific to LED lights. Any LED task light needs to illuminate the documents using only one light source as opposed to multiple light sources.
6. Be sustainable, in terms of energy usage, life span, and recyclability.

The one -time cost for the adjustable task lights may be approximately $3,000.00

Recommendations:

1. Remove the center bulb from the fixtures which use three bulbs.

2. Remove the two middle bulbs from the fixtures which use four bulbs.

3. Provide adjustable task lighting to the employees who work on computers and reference documents. Ensure that the criterion set above is followed when selecting an adjustable task light.