



TOWN OF FAIRFAX

SUPPLEMENTAL STAFF REPORT

October 7, 2015

TO: Mayor and Town Council

FROM: Garrett Toy, Town Manager *GT*

SUBJECT: Discussion/consideration of retrofitting streetlights with LED fixtures and participating in PG&E programs to manage and finance the retrofit project.

RECOMMENDATION

Discussion/consideration of retrofitting streetlights with LED fixtures and participating in the PG&E LED Street Light Turnkey Replacement Program and the PG&E On-Bill Financing program to finance and manage the retrofit project.

DISCUSSION

To assist in the Council's discussion, attached are two spreadsheets which contain the cost analysis for two scenarios: 1) replace all cobra-head streetlights (approximately 400) and 2) replace all cobra-heads and approximately 70 "top-hat" fixtures. The spreadsheets contain info on the type of light, unit cost, energy savings, and the loan pay-back period.

Under the cobra-head streetlights only scenario, the Town would finance approximately \$70,000 under PG&E's On-Bill financing program. The projected annual energy (approx. \$14,300) and maintenance (\$3,500) savings of approximately \$18,000 would repay the loan in approximately 5 years. The average, annual energy and maintenance savings per LED cobra-head streetlight is approximately \$45 per LED.

Under the second scenario which maximizes participation in the PG&E financing program, the Town would be able to replace an additional (approx.) 70 of the "top-hat" streetlights in downtown. The incremental cost to finance the 70 fixtures is \$85,000 with a corresponding increase of approximately \$2,000 in annual energy (\$1,400) and maintenance (\$600) savings. This equates to an average combined savings of approximately \$29/LED per year. The repayment period is 10 years.

The reason for the longer pay-back period is that the "top-hat" fixtures are approximately 4 times as expensive as the cobra-head LEDs and the energy savings per LED light is significantly less. From a cost benefit analysis, the Town would be paying more and getting less in return for the replacement of the "top-hat" fixtures. However, maximizing the retrofit of the streetlights is consistent with the Town's Climate Action Plan policies and it would be reducing Green House Gases (GHG) which has an environmental value.

Attachments: Two spreadsheets

SUPPLEMENT TO
AGENDA ITEM # **11**

CobraHeads Only

Existing HPS Wattage	Replacement LED Wattage	Voltage	LED Model Used in Est.	Quantity	Contractor Est (9/8/15)	Est Unit Cost	Est Total Cost	Unit Rebate (as of 8/5/15)	Total Rebate	Existing kWh/month/fixture	Existing Annual kWh Total	LED kWh/month/fixture	LED Annual kWh Total	Yearly kWh Savings	Estimated Annual Cost Savings
70	24	120	Leotek Cobra GCJ1-20G-I	383	\$ 208	\$ 208	\$ 79,664	\$ 40	\$ 15,320	29	133,284	7.7	35,389	97,895	\$ 12,726
100	38	120	Leotek Cobra GCJ1-20G-I	8	\$ 208	\$ 208	\$ 1,664	\$ 40	\$ 320	41	3,936	12.8	1,229	2,707	\$ 352
150	57	120	Leotek Cobra GCM1-30G-I	4	\$ 273	\$ 273	\$ 1,092	\$ 50	\$ 200	60	2,880	19.6	941	1,939	\$ 252
200	88	120	Leotek Cobra GCM2-40F-I	11	\$ 328	\$ 328	\$ 3,608	\$ 60	\$ 660	80	10,560	29.9	3,947	6,613	\$ 860
200	88	240	Leotek Cobra GCM2-40F-I	1	\$ 328	\$ 328	\$ 328	\$ 60	\$ 60	81	972	29.9	359	613	\$ 80
70	48	120	GE-EPTCOE314PL2BBLCKP		\$ 1,225	\$ 1,225	\$ -	\$ 40	\$ -	29	-	16.2	-	-	\$ -
70	48	240	GE-EPTCOE314PL2BBLCKP		\$ 1,225	\$ 1,225	\$ -	\$ 40	\$ -	34	-	16.2	-	-	\$ -
100	48	120	GE-EPTCOE314PL2BBLCKP		\$ 1,225	\$ 1,225	\$ -	\$ 40	\$ -	41	-	16.2	-	-	\$ -
70	40	120	Holophane GVDRETRO404KD1		\$ 675	\$ 675	\$ -	\$ 40	\$ -	29	-	12.8	-	-	\$ -
			Install Factory Streetlight Shield		\$ 45	\$ 45	\$ -								\$ -
			Install Custom Streetlight Shield		\$ 100	\$ 100	\$ 0								\$ -
Total				407			\$ 86,356		\$ 16,560		151,632		41,864	109,768	\$ 14,270
					Cost Contingency	0%									Avg kWh Cost \$ 0.130

Summary Loan Est Notes: Used inventory counts

Total Cost	\$ 86,356
Rebates	\$ 16,560
Annual Cost Savings	\$ 14,270
Monthly Cost Savings	\$ 1,189
City Buy-down	\$ -
PG&E Final Loan Amt	\$ 69,796
Loan Simple Payback (yrs)	4.9
Payback in Months (based on Expected Energy Cost Savings)	59
Loan Term (months) (1 month added for bill neutrality)	60
Monthly Payment	\$ 1,163.27
Maintenance Cost Savings (\$/m)	\$ 0.72

PG&E Correction to get to their monthly loan payment amt

Life Cycle Cost Analysis - PG&E Off-Bill Financing

15 year estimated life	Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Payment to Contractor/Loan Service		(\$86,356)	(\$13,959)	(\$13,959)	(\$13,959)	(\$13,959)	(\$13,959)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Number of Loan Payments			12	12	12	12	12										
PG&E Loan Funds Received		\$69,796															
Estimated Energy Cost Savings			\$14,270	\$14,377	\$14,485	\$14,593	\$14,703	\$14,813	\$14,924	\$15,036	\$15,149	\$15,262	\$15,377	\$15,492	\$15,608	\$15,725	\$15,843
- Maintenance Cost Savings			\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516	\$3,516
Rebate		\$16,560															
Current Year Cash Flow		\$0	\$3,827	\$3,934	\$4,042	\$4,151	\$4,260	\$18,329	\$18,441	\$18,553	\$18,665	\$18,779	\$18,893	\$19,009	\$19,125	\$19,242	\$19,360
Cumulative Savings		\$0	\$3,827	\$7,761	\$11,803	\$15,954	\$20,214	\$38,543	\$56,984	\$75,536	\$94,201	\$112,980	\$131,874	\$150,882	\$170,007	\$189,249	\$208,609
Net Present Value		\$156,906															

Notes:
 Estimated costs include equipment and installation
 Assumes maintenance contract cost savings of \$1/fixture/month
 FY13/14 Annual Streetlight Cost:
 Analysis assumes 15 year useful life for the fixtures.

Cash Flow Assumptions	
Annual Maintenance Cost Savir	\$3,516
Discount rate	3.00%
Energy Inflation Rate	0.75%
Maintenance Cost Inflation Rate	
Loan Term	4.9
Interest Rate	0.00%

PartialProject

Existing HPS Wattage	Replacement LED Wattage	Voltage	LED Model Used in Est.	Quantity	Contractor Est (9/8/15)	Est Unit Cost	Est Total Cost	Unit Rebate (as of 8/5/15)	Total Rebate	Existing kWh/month/fixture	Existing Annual kWh Total	LED kWh/month/fixture	LED Annual kWh Total	Yearly kWh Savings	Estimated Annual Cost Savings
70	24	120	Leotek Cobra GCJ1-20G-I	383	\$ 208	\$ 208	\$ 79,664	\$ 40	\$ 15,320	29	133,284	7.7	35,389	97,895	\$ 12,726
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150	57	120	Leotek Cobra GCM1-30G-	4	\$ 273	\$ 273	\$ 1,092	\$ 50	\$ 200	60	2,880	19.6	941	1,939	\$ 252
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200	88	240	Leotek Cobra GCM2-40F-I	1	\$ 328	\$ 328	\$ 328	\$ 60	\$ 60	81	972	29.9	359	613	\$ 80
70	48	120	GE-EPTCOE314PL2BBLC	72	\$ 1,225	\$ 1,225	\$ 88,200	\$ 40	\$ 2,880	29	25,056	16.2	13,997	11,059	\$ 1,438
70	48	240	GE-EPTCOE314PL2BBLCKP		\$ 1,225	\$ 1,225	\$ -	\$ 40	\$ -	34	-	16.2	-	-	\$ -
100	48	120	GE-EPTCOE314PL2BBLCKP		\$ 1,225	\$ 1,225	\$ -	\$ 40	\$ -	41	-	16.2	-	-	\$ -
70	40	120	Holophane GVDRETRO404KD1		\$ 675	\$ 675	\$ -	\$ 40	\$ -	29	-	12.8	-	-	\$ -
Install Factory Streetlight Shield					\$ 45	\$ 45	\$ -								
Install Custom Streetlight Shield					\$ 100	\$ 100	\$ 0								
Total				479			\$ 174,556		\$ 19,440		176,688		55,861	120,827	\$ 15,707
Cost Contingency 0%															Avg kWh Cost \$ 0.130

Summary	Loan Est
Total Cost	\$ 174,556
Rebates	\$ 19,440
Annual Cost Savings	\$ 15,707
Monthly Cost Savings	\$ 1,309
City Buy-down	\$ -
PG&E Final Loan Amt	\$ 155,116
Loan Simple Payback (yrs)	9.9
Payback in Months (based on Expected Energy Cost Savings)	119
Loan Term (months) (1 month added for bill neutrality)	120
Monthly Payment	\$ 1,292.63
Maintenance Cost Savings (\$/m)	\$ 0.72

Notes: If City wants to do a project with no buy-down, they would have to eliminate some of the non-cobra fixtures.

PG&E Correction to get to their monthly loan payment amt

Life Cycle Cost Analysis - PG&E Off-Bill Financing

15 year estimated life	Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Payment to Contractor/Loan Service		(\$174,556)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	(\$15,512)	\$0	\$0	\$0	\$0	\$0
Number of Loan Payments			12	12	12	12	12	12	12	12	12	12					
PG&E Loan Funds Received		\$155,116															
Estimated Energy Cost Savings			\$15,707	\$15,825	\$15,944	\$16,064	\$16,184	\$16,305	\$16,428	\$16,551	\$16,675	\$16,800	\$16,926	\$17,053	\$17,181	\$17,310	\$17,440
Maintenance Cost Savings			\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139	\$4,139
Rebate		\$19,440															
Current Year Cash Flow		\$0	\$4,334	\$4,452	\$4,571	\$4,691	\$4,811	\$4,932	\$5,055	\$5,178	\$5,302	\$5,427	\$21,065	\$21,192	\$21,320	\$21,448	\$21,578
Cumulative Savings		\$0	\$4,334	\$8,787	\$13,358	\$18,048	\$22,859	\$27,792	\$32,846	\$38,024	\$43,326	\$48,753	\$69,818	\$91,009	\$112,329	\$133,777	\$155,356
Net Present Value		\$113,964															

Notes:

Estimated costs include equipment and installation
 Assumes maintenance contract cost savings of \$1/fixture/month
 FY13/14 Annual Streetlight Cost:
 Analysis assumes 15 year useful life for the fixtures.

Cash Flow Assumptions	
Annual Maintenance Cost Savings	\$4,139
Discount rate	3.00%
Energy Inflation Rate	0.75%
Maintenance Cost Inflation Rate	
Loan Term	9.9
Interest Rate	0.00%