Canaday Library

Floor B
Initial Count

T8 32W		T8 25W	
# of fixtures	# of bulbs	# of fixtures	# of bulbs
7	105	7	21
21	252	21	63
2	24	2	6
2	4		
2	4		
1	2		
2	2		
6	6		
1	2		
1	2		
1	2		
1	2		
Totals			
47	407	30	90

Floor A
Initial Count

T8 32W		T8 25W		PAR 38s	Coils
# of fixtures	# of bulbs	# of fixtures	# of bulbs		
20	420	20	80	0	3
3	9	3	9	1	20
1	3	1	6		8
4	72	1	4		
1	24	1	2		
6	36	6	12		
3	3	1	1		
9	27	1	1		
8	24				
5	10				
1	1				
10	20				
1	1				
1	1				
1	2				
10	20				
4	16				
2	8				
Totals					
90	697	34	115	1	31

Floor 1
Initial Count

T8 32W		T8 25W		PAR 38s	Coils
# of fixtures	# of bulbs	# of fixtures	# of bulbs	0	70
13	52	1	2	46	4
11	44	1	2	0	4
11	44	1	6	10	5
11	44	1	10	0	4
96	96	2	8		2
1	2	1	18		3
2	4	2	12		5
1	1				
1	2				
11	22				
4	8				
1	2				
1	2				
34	102				
12	24				
2	6				
2	6				
2	6				
1	3				
3	6				
3	6				
2	4				
5	20				
1	4				
1	2				
1	4				
2	24				
Totals					
235	540	9	58	56	97

Custom T5s

# of fixtures	# of bulbs
20	40
8	16

Total

28	56

Floor 3
Initial Count

T8 32W		T8 25W		PAR 38s	Coils
# of fixtures	# of bulbs	# of fixtures	# of bulbs	0	1
2	2	6	12	0	
3	3	1	2	0	
10	20	1	1		
3	3	1	1		
6	36	6	12		
1	1	20	20		
8	32	1	2		
2	12	3	9		
1	2				
1	1				
1	1				
1	2				
1	6				
1	1				
5	30				
6	36				
6	36				
4	8				
20	540				
1	3				
3	15				
1	22				
3	60				
Totals					
90	872	39	59	0	1

TOTALS

T8 32W		**T8 25W**		**PAR 38s**	**Coils**
# of fixtures	**# of bulbs**	**# of fixtures**	**# of bulbs**		
90	872	39	59	0	1
235	540	9	58	56	97
90	697	34	115	1	31
47	407	30	90		
462	**2516**	**112**	**322**	**57**	**129**

Custom T5

# of fixtures	# of bulbs
28	56

Model:	PAR38				
# of PAR 38	57		time needed to change each unit w/ <= 4 bulbs (min)	25	
Cost of LED($)	$4,682.55	Price of LED:	82.15		
# of fixtures w/ bulbs <=4:	57	Watts: PAR38	100		
# of fixtures w/ bulbs >4, <=8:	0	Watts: LED1660	13		
# of fixtures w/ bulbs >8, <=12:	0				
Time taken to change bulbs(mins):	1425				
in hr:	23.75				
Cost of Labor($)	$831.25				
	Total Cost	$5,513.80			
Return					
Return on Energy Saving:		change in kW	4.96		
		change in kW-hr (kWh)	21383.21		
Hours of operation		Return on Energy Saving/Yr ($):	$1,924.49		
Total Hour of operation	4312	Return on Energy Saving every 3 yrs ($):	$5,773.47		
Return on Labor Cost Saving:					
Frequency of chaning PAR38/Yr:	1.078				
Frequency of changing LED/Yr:	0.08624			Life of PAR 38 (hr):	4000
Labor Cost every 3 Yrs: PAR38 ($)	$957.60			Life of LED 1666 (hr):	50000
Labor Cost every 3 Yrs: LED ($)	0				
Change in Labor Cost/3 Yr	$957.60				
		Return on Labor Saving/3 Yr ($):	$957.60		
		Return on Labor Saving/Yr ($):	$319.20		
		Total Return every 3 yrs ($):	$6,731.07		
		Total Return/ yr ($):	$2,243.69		
		Payback Years:	2.46		

Smart Ideas Incentive:Prescriptive

Removal of 4-ft Lamp ($):	**0**
Installation of LED (<18W) ($):	**15**
Total Incentive ($):	**855**
Total Cost-Incentive:	**$4,658.80**
Payback Years:	**2.08**

Model:	T8 32W				
# of T8	2516			time needed to change each unit w/ <= 4 bulbs (min)	25
Cost of LED($)	$215,747.00	Price of LED:	$85.75		
# of fixtures w/ bulbs <=4:	346	Watts: T8	32		
# of fixtures w/ bulbs >4, <=8:	35	Watts: LED6114	19		
# of fixtures w/ bulbs >8, <=12:	23				
# of fixtures w/ bulbs >12, <=16:	8				
# of fixtures w/ bulbs >16, <=20:	8				
# of fixtures w/ bulbs >20, <=25:	22				
# of fixtures w/ bulbs >25,	20				
Time taken to change bulbs(mins):	20725				
in hr:	345.42				
Cost of Labor($)	$12,089.58				
	Total Cost	$227,836.58			
Return					
Return on Energy Saving:		change in kW	32.708		
		change in kW-hr (kWh)	141036.90		
Hours of operation		Return on Energy Saving/Yr ($):	$12,693.32		
Total Hour of operation	4312	Return on Energy Saving every 3 yrs ($):	$38,079.96		
Return on Labor Cost Saving:					
				Life of T8 (hr):	6000
Labor Cost every 3 Yrs: T8 ($)	$42,268.80			Life of LED 6114 (hr):	50000
Labor Cost every 3 Yrs: LED ($)	0				
Change in Labor Cost/3 Yr	$42,268.80				
		Return on Labor Saving/3 Yr ($):	$42,268.80		
		Return on Labor Saving/Yr ($):	$14,089.60		
		Total Return every 3 yrs ($):	$80,348.76		
		Total Return/ yr ($):	$26,782.92		
		Payback Years:	8.51		
Smart Ideas Incentives: Custom					
on peak hours		on peak incentive			
653		$2,563.00			
off peak hours		off peak incentive			
3659		$9,574.29			
		total incentive			
		$12,137.28			
Total Cost less Total Incentive					
$215,699.30					
Payback period w/ Incentive					
8.05					

Carbon Footprint Reduction

Model	Count	Watts	Hrs/Year	kW-h
LED 1660	186	13	4312	10426.416
LED 6114	2516	19	4312	206130.848
TOTAL				216557.264
PAR38	57	100	4312	24578.4
T8	2516	32	4312	347167.744
Coils	129	24	4312	13349.952
TOTAL				385096.096

REDUCTION

Total change in kW-h	168538.832		Total BTUs:	575223033.6
% from fossil	21%		Total bil BTUs from fossil:	0.120796837
btus/kw-h	3413			
% from coal	50%		bil BTUs from coal:	0.060398419
% from oil	50%		bil BTUs from oil:	0.060398419
Coal:	lbs CO2/billion btus	208000	CO2 (lbs):	12562.87105
	lbs CO/billion btus	208	CO (lbs):	12.56287105
	lbs Nox/billion btus	457	NOx (lbs):	27.60207727
	lbs SO2/billion btus	2591	SO2 (lbs):	156.4923024
	lbs Particulates/billion btus	2744	Particulates (lbs):	165.7332604
Oil:	lbs CO2/billion btus	164000	CO2 (lbs):	9905.340639
	lbs CO/billion btus	33	CO (lbs):	1.993147811
	lbs Nox/billion btus	448	NOx (lbs):	27.0584915
	lbs SO2/billion btus	1122	SO2 (lbs):	67.76702559
	lbs Particulates/billion btus	84	Particulates (lbs):	5.073467156
			TOTAL REDUCTION CO2 (lbs):	22468.21169
			CO (lbs):	14.55601887
			NOx (lbs):	54.66056877
			SO2 (lbs):	224.259328
			Particulates (lbs):	170.8067276

Model:	Coils				
# of Coils	129		time needed to change each unit w/ <= 4 bulbs (min)		25
Cost of LED($)	$10,597.35	Price of LED:	$82.15		
# of fixtures w/ bulbs <=4:	113	Watts: T8	24		
# of fixtures w/ bulbs >4, <=8:		Watts: LED6114	13		
# of fixtures w/ bulbs >8, <=12:					
Time taken to change bulbs(mins):	2825				
in hr:	47.08				
Cost of Labor($)	$1,647.92				
	Total Cost	$12,245.27			
Return					
Return on Energy Saving:		change in kW	1.419		
		change in kW-hr (kWh)		6118.73	
Hours of operation		Return on Energy Saving/Yr ($):		$550.69	
Total Hour of operation	4312	Return on Energy Saving every 3 yrs ($):		$1,652.06	
Return on Labor Cost Saving:					
			Life of T8 (hr):	8000	
Labor Cost every 3 Yrs: T8 ($)	$2,167.20		Life of LED 6114 (hr):	50000	
Labor Cost every 3 Yrs: LED ($)	0				
Change in Labor Cost/3 Yr	$2,167.20				
		Return on Labor Saving/3 Yr ($):		$2,167.20	
		Return on Labor Saving/Yr ($):		$722.40	
		Total Return every 3 yrs ($):		$3,819.26	
		Total Return/ yr ($):		$1,273.09	
		Payback Years:		9.62	

Smart Ideas Incentive:Prescriptive

Removal of 4-ft Lamp ($):	**0**
Installation of LED (<18W) ($):	**15**
Total Incentive ($):	**1935**
Total Cost-Incentive:	**$10,310.27**
Payback Years:	**8.10**

total investment
$245,595.65
total investment less incentive
$230,668.37
total return per year
$30,299.69
payback period
6.08