

Lighting Upgrade Worksheet

Info required from church				This information should be provided by church		
Location	Hours used per month	# of bulbs	Type (Incandescent, Fluorescent)	Total Cost	Old Monthly Kilowatt hours	New Monthly Kilowatt hours
Fellowship hall	80	100	F	\$ 2,601.00	256.0	96.0
Stage	80	12	F	\$ 312.12	30.7	11.5
Stairwell-1	40	3	In	\$ 7.59	12.0	1.7
Stairwell-2	20	2	In	\$ 63.48	4.0	0.8
Sanctuary-center	20	36	F	\$ 91.08	16.6	10.1
Sanctuary Sides	20	22	F	\$ 55.66	10.1	6.2
Rest Rooms	80	8	F	\$ 208.08	20.5	7.7
Sacristy & Library	40	4	F	\$ 104.04	5.1	1.9
Outdoor Lights	10	8	In	\$ 20.24	8.0	1.1
Office	60	4	F	\$ 104.04	7.7	2.9
Narthex/lift	80	10	In	\$ 15.18	11.0	6.7

					Old Monthly Kilowatt hours	New Monthly Kilowatt hours
Whole project				\$ 3,582.51	381.7	146.5
This information should be provided by church						

Monthly Kilowatt hours 381.7 146.5
 Monthly Cost \$ 57.26 \$ 21.98
 Annual Kilowatt hours saved
 Annual Savings
 Overall Payback period (years)
 Pounds of CO2 saved per year
 Total electricity usage of church (kWh/yr)
 Percentage electrical savings

Parameters

Tube-Led Replacement efficiency	50%
Tube LED lifetime	30000
Kilowatt hour cost (\$/kWh)	0.15
CO2 lb per kilowatt hour	0.5947

Terminology

Incandescent	In	
Floursecent (F)	T5	1" diameter
	T8	1.5" diameter
Led	Type A	Requires ballast
	Type B	Remove Ballast

If hiring an electrician to remove a ballast, estimate about \$80 per fixture

ded by the free quote from utility energy rep

Monthly Kilowatt Hour Savings	Hours usage/yr	rated hours of bulb	Monthly cost savings	Annual savings	Payback period (years)	Usage hours until payback	Is bulb life longer than payback time?
-160.0	960.0	30000	\$ (24.00)	\$ (288.00)	9.0	8670	Yes
-19.2	960.0	30000	\$ (2.88)	\$ (34.56)	9.0	8670	Yes
-10.3	480.0	30000	\$ (1.55)	\$ (18.58)	0.4	196	Yes
-3.2	240.0	30000	\$ (0.49)	\$ (5.83)	10.9	2612	Yes
-6.5	240.0	30000	\$ (0.97)	\$ (11.66)	7.8	1874	Yes
-4.0	240.0	30000	\$ (0.59)	\$ (7.13)	7.8	1874	Yes
-12.8	960.0	30000	\$ (1.92)	\$ (23.04)	9.0	8670	Yes
-3.2	480.0	30000	\$ (0.48)	\$ (5.76)	18.1	8670	Yes
-6.9	120.0	30000	\$ (1.03)	\$ (12.38)	1.6	196	Yes
-4.8	720.0	30000	\$ (0.72)	\$ (8.64)	12.0	8670	Yes
-4.3	960.0	30000	\$ (0.65)	\$ (7.78)	2.0	1874	Yes

Monthly Kilowatt Hour Savings				Annual savings
-235.2				\$ (423.36)

provided by the free quote from utility energy rep

-235.2
\$ (35.28)
(2,822) -141.12
\$ (423.36)
8.46
(1,678)
20,000
-14%

Utility Company Worksheet

	Info required from church			This information should		
Location	Hours used per month	# of bulbs	Type (Incandescent, Fluorescent)	Bulb Type (A4, Mogul, Tube)	Bulb watts	Proposed replacement
Fellowship hall	80	100	F	T8	32	T8-4ft-B
Stage	80	12	F	T8	32	T8-4ft-B
Stairwell-1	40	3	In	A19	100	A19
Stairwell-2	20	2	In	Flood	100	Flood
Sanctuary-center	20	36	F	A19	23	A19
Sanctuary Sides	20	22	F	A19	23	A19
Rest Rooms	80	8	F	T8	32	T8-4ft-B
Sacristy & Library	40	4	F	T8	32	T8-4ft-B
Outdoor Lights	10	8	In	A19	100	A19
Office	60	4	F	T8	32	T8-4ft-B
Narthex/lift	80	6	F	A19	23	a19

Parameters

Tube-Led Replacement efficiency	50%
Tube LED lifetime	30000
Kilowatt hour cost (\$/kWh)	0.15
CO2 lb per kilowatt hour	0.5947

Terminology

Incandescent	In	
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Led	Type A	Requires ballast
	Type B	Remove Ballast

If hiring an electrician to remove a ballast, estimate about \$80 per fixture

be provided by the free quote from utility energy rep					
Replacement wattage	Bulb Cost	Installation cost	Total Cost	Old Monthly Kilowatt hours	New Monthly Kilowatt hours
12.0	\$ 601.00	\$ 2,000.00	\$ 2,601.00	256.0	96.0
12.0	\$ 72.12	\$ 240.00	\$ 312.12	30.7	11.5
14.0	\$ 7.59	\$ -	\$ 7.59	12.0	1.7
19.0	\$ 63.48	\$ -	\$ 63.48	4.0	0.8
14.0	\$ 91.08	\$ -	\$ 91.08	16.6	10.1
14.0	\$ 55.66	\$ -	\$ 55.66	10.1	6.2
12.0	\$ 48.08	\$ 160.00	\$ 208.08	20.5	7.7
12.0	\$ 24.04	\$ 80.00	\$ 104.04	5.1	1.9
14.0	\$ 20.24	\$ -	\$ 20.24	8.0	1.1
12.0	\$ 24.04	\$ 80.00	\$ 104.04	7.7	2.9
14.0	\$ 15.18	\$ -	\$ 15.18	11.0	6.7

Total	\$ 1,022.51	\$ 2,560.00	\$ 3,582.51
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Bulb conversion reference

BRIGHTNESS		450 lumens	800 lumens
BULB			
 LED		6W	9-10W
 CFL		8-9W	13-14W
 Regular Incandescent		40W	60W
 Halogen		29W	43W

Led Replacement cost lookup		All bulbs are 3000 Kelvin		
Type	Watts	Cost	Case quantity	Lumens
A19	14	2.53	50	1500
A19	18.5	11.17	12	2610
A19	18	11.72	48	2000
A19	24	9.96	24	3200
Flood	10	5.38	12	900
Flood	19	31.74	6	1800
Flood	14	32.99	20	1230
T8-4ft-A	12	2.92	25	1900

T8-4ft-A	14	4.46	25	2200
T8-4ft-A	24	14.24	24	3450
T8-4ft-B	12	6.01	25	1700
T8-4ft-B	15	10.12	25	2260
T8-4ft-B	25	13.7	25	3300
T9-FC-12in-A/B	13	18.98	24	1900
T9-FC-12in-B	13	27.84	6	1950
T9-FC-8in-A/B	13	18.98	24	1900
T9-FC-8in-B	13	27.84	6	1950

0 lumens	1100 lumens	1600 lumens	2600 lumens	5800 lumens
0W	13W	16-18W	24W special high voltage lamps	45W
4W	18-19W	23W	40W	85W
W	75W	100W	150W	300W
W	53W	72W	150W	300W

Notes

Normal household light bulb 100 Watt equivalent

Normal household light bulb

Normal household light bulb

Normal household light bulb

Flood Light - Exterior grade

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Flourescent 4' long x 1" diameter - Keep Ballast

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Flourescent 4' long x 1" diameter - Keep Ballast

Flourescent 4' long x 1" diameter - Remove Ballast

Flourescent 4' long x 1" diameter - Remove Ballast

Flourescent 4' long x 1" diameter - Remove Ballast

Flourescent Circular 12" diameter - Keep Ballast

Flourescent Circular 12" diameter -Replace Fixture

Flourescent Circular 8" diameter - Keep Ballast

Flourescent Circular 8" diameter -Replace Fixture

Parameters

Tube-Led Replacement efficiency	50%
Tube LED lifetime (hours)	30000
Kilowatt hour cost	0.15
Co2 lb per kilowatt	0.81

Terminology

Flourescent	T5	1" diameter
	T8	1.5" diameter
Led	Type A	Requires ballast
	Type B	Remove Ballast

If hiring an electrician to remove a ballast, estimate about \$80 per fixture