

Power, Lumen, Cost and Lifetime Comparison for Various Lighting Options					
Type of Light	Power per Unit/Bulb (watts)	Lumens per Unit/Bulb	Lumens per Watt of Power	Unit/Bulb Lifetime (Hours)	Cost per Unit/Bulb
T12 Fluorescent (Shop Lights)	40	3000	75	20000	\$10
T8 Fluorescent	32	2750	85.94	24000	\$10
T5 Fluorescent	28	2700	96.43	30000	\$10
T5 HO Fluorescent	54	4750	87.96	30000	\$6 - \$25
Luxeon Rebel LED (Low Power)	.95	80	84.21	50000	\$4.53
Luxeon Rebel LED (High Power)	2.4	145	60.42	50000	\$4.53
Luxeon Rebel Star (3 LEDs) (Low Power)	2.85	240	84.21	50000	\$18.49
Luxeon Rebel Star (3 LEDs)	7.2	435	60.42	50000	\$18.49

Notes:

1) All fluorescent lights are with modern electronic ballasts except the T12 lamps which are assumed to be old fashioned shop lights with magnetic ballasts.

2) Fluorescent costs are do-it-yourself materials prices. Complete fixtures are available at higher prices, obviously.

3) All lumen values are for 6500K color temperature units/bulbs. Different color temperatures will yield different lumen values even given equivalent light energy output. Lumens do not equal light energy, but they sort of snuggle up near it.

4) The single LED prices are just for the LED and not for a surrounding Luxeon Star assembly. Star assemblies with single LEDs (instead of 3) are available from Luxeon

5) The prices of the Luxeon products are for a single unit. Prices decrease somewhat with quantity.

6) The LED costs do not include the cost of mounting/heat sinking and power supplies.

7) Fluorescent bulb lifetimes are from GE's data. 50% of bulbs survive to 30000 hours with 3 hour duty cycle. 50% of bulbs survive to 36000 hours with 12 hour duty cycle. In either case significant bulb failure begins at about 18000 hours of use. Luxeon provides no detail on LED failure statistics.

Power, Lumens, and Cost for Light Output Equivalent to Two T5HO 54 watt Bulbs					
Type of Light	Power	Lumens	Number of Units/Bulbs	Surface Area Covered (sq. in.)	Cost for Fixture and Bulbs
T12 Fluorescent (Shop Lights)	120	9000	3	540	\$30
T8 Fluorescent	112	9625	3.5	420	\$100
T5 Fluorescent	98	9450	3.5	252	\$100
T5 HO Fluorescent	108	9500	2	144	\$100
Luxeon Rebel Star (3 LEDs) (Low Power)	114	9600	40	40	\$665.60
Luxeon Rebel Star (3 LEDs)	158.4	9570	22	22	\$386.32

Notes:

- 1) Fluorescent costs are do-it-yourself materials prices and include cost of bulbs. Complete fixtures are available at higher prices, obviously.
- 2) The surface area of the Fluorescent lights includes the area occupied by an approximately parabolic reflector.
- 3) The LED costs do not include the cost of mounting/heat sinking and power supplies.
- 4) Notice that if you run the LEDs at higher powers, the equipment cost (per unit light) goes down significantly, but the energy efficiency also goes down significantly.