

In summary:

Choosing Electrical Components

Use the 2VA / bulb figure to determine the rating of all electrical components such as wire gauge, receptacle size and circuit breaker rating. The power figure will have to be converted to current for almost every electrical device.

For example:

$$800 \text{ bulbs} \times 2 \text{ VA/bulb} = 1600 \text{ VA}$$

$$\text{Current} = \text{Power/voltage} = 1600 \text{ VA} / 120 \text{ V} = 13.3 \text{ Amps}$$

Note: Wire can carry it's maximum rated current but circuit breaker manufacturers recommend that breakers be loaded to no more 80% of maximum rating to prevent nuisance tripping. For example, a 15 Amp breaker should be loaded to 12 Amps. The lower the ambient temperature, the less breaker nuisance tripping will be an issue.

Calculating Power Costs

Use the 0.50W / bulb figure to calculate power cost

$$800 \text{ bulbs} \times 0.50\text{W} / \text{bulb} = 400 \text{ W}$$

$$\begin{aligned} \text{Cost} &= \text{power consumption} \times \text{time} \\ &= 400\text{W} \times 1 \text{ hour} = 400 \text{ Watt hours} = 0.4 \text{ KWh} \end{aligned}$$

e.g. assuming a cost of \$0.06 / KWh

$$\text{Operating cost} \quad 0.4\text{KWh} = \$0.06/\text{KWh} = \$0.024 \text{ per hour}$$

Specifications

Lamp Style	Real Power Watts/Lamp	Apparent Power Volt-Amps/Lamp
C7 LED	0.35	2
C9 LED	0.4	2
S14 LED	0.5	2
S14 LED Premium	0.7	2