

## \$\$ Save money in Lighting costs \$\$

According to statistics from the Energy Information Administration if households replaced all incandescent light bulbs that were used more than 4 hours a day with an energy saving compact fluorescent the savings nationally would be approximately 35 billion KWH. That figure is 35% of the total residential lighting consumption annually. In this booklet I will outline how you can save money in your home and your commercial building.

### **Residential Applications**

First lets look at some different types of lighting and how much energy they use.

Bulb Type	Watts	Lumens	Life (hours)	*CRI
Incandescent	100	1700	800	95
Halogen	90	1400	2000	100
*CF	27	1750	10,000	80

\*CRI = Color Rendering Index    \*CRI = Compact Fluorescent

As you can see there is a considerable difference in lumens per watt and bulb life. The CRI for all three types of bulbs is rather insignificant and the compact fluorescents have improved considerably. Most of the better bulbs now have very good color rendering. Color rendering is the measure of how well the light renders colors to the human eye. This scale is based on daylight and the top of the scale or best lighting is daylight and 100 on the scale.

Significant is the wattage and the bulb life. In the time a compact fluorescent lasts, you will change a standard incandescent about 12 times. You may be thinking, well a compact fluorescent bulb costs \$15.00 - \$18.00 and a regular bulb only costs 50 cents.

To illustrate the savings let's take a typical outdoor light like the one beside or above your front door. In most homes this light is on 12 hours a night, 365 days a year for a total of 4380 hours. In most cases there is a side door light as well. So lets take two 100-watt bulbs that are on for 4380 hours a year. Figured at the national average of \$0.10kwh it would cost \$87.60 a year for just those two bulbs. Now lets replace those two bulbs with two 20-watt compact fluorescents. Your cost per year for these two light bulbs is \$17.52 for a savings of about \$70.00. You have already exceeded the cost of the bulbs and they will last 2 more years while you would have already changed the regular bulbs three times or more.

The key to savings as you can see is to cut down on wattage. I'll be the first to agree that compact fluorescents are not good in every application. I personally only use them in certain places like outside, as in my example, basements, garages, and rooms where aesthetics is not of great importance. In rooms where you are dealing with recessed

lighting or track lighting there are still options. Where you have a recessed high hat with a 100-watt incandescent bulb you can replace it with a 75 watt halogen and get the same light with even better color rendering.

In an average home you should be able to change about 10 bulbs to compact fluorescents and about 10 to halogens. Your savings could amount to \$150.00 or more a year, not to mention avoiding the annoyance of changing your light bulbs all the time.

### Commercial Applications

In commercial buildings the potential for savings can be tremendous. Some of the best elements of a building are 24/7 lights such as Exit signs, stairway lighting and hallway lighting. We just recently replaced all the hall lights in a small apartment building. There were a total of 247 light fixtures. The existing fixtures had two 40-watt bulbs in each. The new fixtures had one 24-watt compact fluorescent. The savings in this instance should amount to over \$10,000.00. The cost for the installation including the new fixtures, which were on the fancy side, was about \$22,000.00.

You can see in this example that the savings can be tremendous but there is a pay back time. Actual realized savings won't happen for a little over 2 years. There are some other factors that come into play here. One is maintenance; someone had to change those old bulbs on a regular basis. There we have labor saved for the building owner. Another factor is reduction of heat. Compact fluorescents run at a much cooler temperature than incandescent bulbs thereby reducing cooling costs in the summer. An added bonus is the new fixtures looked great and provided far more light than those old dingy fixtures.

The important consideration if you are a building owner is does the cost weigh good against the payback time. If you are not going to own the building for more than 5 years it is not very cost effective. If however this is a building you intend to be in for a long time it can greatly reduce your energy costs. Many power suppliers give rebates for each fixture you change to an energy efficient light. These can help reduce the payback time.

In office buildings there are a few ways to approach the problem. The most common is to change existing fluorescents to accept electronic ballasts and T-8 bulbs. This is a great solution and can save up to 40% on electrical cost and a bit more on cooling with reduced heat. What is often overlooked because the contractor is looking for a quick in and out job is another 30% in savings that can be achieved. Along with changing the fixtures they can be dimmed and shut completely during certain periods. Accounting for daylight lights can be dimmed to 60% during the day and certain sections completely off during hours of non-operation. In so many cases we find that buildings operate almost all the lighting 24/7.

This will of course add to the overall cost of the project but the payback time is faster and once payback is achieved the huge savings will only benefit the bottom line. Lets face it this is what we are all interested in, the bottom line.

### Summary

In conclusion and the bottom line is you can save money by changing your lighting applications. I have been in the electrical field for over 25 years and this system does work. As a homeowner I can tell you it's nice not to have to change that outside light

bulb on a rainy dark night, which is of course when the bulb decides to go out. A nice feature about the compact fluorescents is they generally get weaker when they are getting to the end of a life cycle. With that in mind you can get a new one and replace it at your convenience rather than on that stormy night I told you about. I would like to hear your feedback on this ebook or if you have any questions please email me at [pforte@fortelectric.com](mailto:pforte@fortelectric.com).

Here are some links that may be helpful:

[Better Design Lighting](#)

[High-efficiency Fluorescent Lighting Cost Savings Calculator](#)

[Lighting and Furniture](#)

[Another savings calculator](#)

<http://www.energystar.gov/>