

Lighting Retrofit Guide

What is Certifiably Green Denver?

The Certifiably Green Denver Program provides education and recognition for environmental achievement. Our free services are available to any business in the City and County of Denver.

Certifiably Green Denver offers:

- Assessments to identify water conservation and energy-efficiency options
- Information and assistance to meet your business needs
- Public recognition for your environmental efforts

Why Participate?

Compliance - Proper management practices help minimize wastes, reduce downtime, and keep you in compliance with regulations.

Cost Savings - Less waste means lower disposal and operating costs. Efficient use of materials, water, and energy saves money.

Public Image - Superior environmental practices affect your image with customers, the community, and regulatory agencies.

Public Recognition!

Certifiably Green Denver publicly recognizes certified businesses through free advertising. This includes Internet listings and advertising in the newspaper, magazines, radio, and water bill inserts. Certified businesses receive a framed certificate and window decal.

LED Bulbs Make \$ense



LEDs are long-lasting, low-energy, high-quality and dimmable. Replace one incandescent bulb with an LED, and save up to \$34 annually in energy costs (for lights with 24/7 use). Use this resource sheet as a guide to help you save money and benefit the environment.

What about Ambiance?

LED lighting has vastly improved in quality and price in recent years. Lighting is a crucial element in creating a comfortable, functional environment for staff and guests. Dimmable, decorative LED and Cold Cathode CFL bulbs create a brighter, more natural and appealing atmosphere than previous models.



Cold Cathode



LED

Advanced technology enables CFLs and LEDs to use 75% less energy than a standard incandescent or halogen bulb and last up to 10 times longer. This means that over the life of one new bulb, you can avoid replacing up to 10 incandescent bulbs!

Tips on choosing LEDs:



- Not all LEDs are created equal: look for the ENERGY STAR label to choose the most reliable LED.
- Don't rely on wattage to compare brightness; instead check the lumens listed on the package.
- Check for a warranty; most reputable LEDs will carry a 3 or 5-year warranty.
- Check the color temperature: 2700K = 'Warm White' and 4100K = 'Cool White'.
- Rebates are available from Xcel Energy.

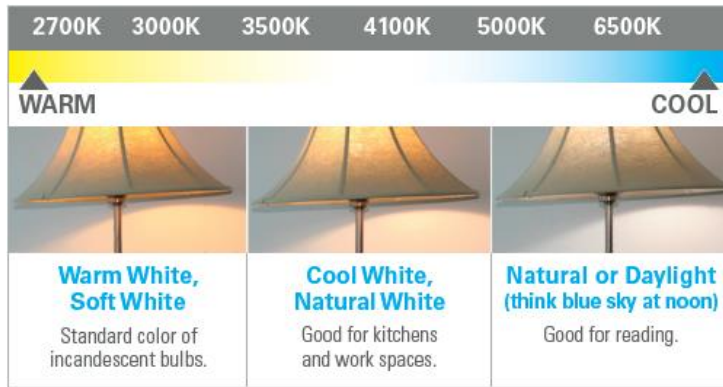
Keep it Up!

"In 2007, Americans saved \$1.5 billion by switching to ENERGY STAR qualified CFLs. The energy saved could light all the households in a city the size of Washington, DC for over 30 years. Put another way, changing these bulbs removes as much greenhouse gas pollution as planting 2,850,000 acres of trees or taking 2 million cars off the road each year."

EnergyStar.gov



Switch to LEDs for nearly any lighting application, indoor or outdoor.



Don't Forget to Upgrade Fluorescent Tubes!

Replacing four T12 lamps and two standard magnetic ballasts with four T8 lamps and one electronic ballast can yield energy savings of as much as 40 percent with little or no reduction in light output.

The term "T8" refers to the diameter of the tube in eighths of an inch. A standard T12 is therefore one-and one half inches (3.82 cm) in diameter. A T8 is one inch in diameter.

All major manufacturers market T8 lamps, and they are readily available in the common 4-foot length, as well as 2, 3, 5, and 8 foot lengths and in several U-shaped sizes. Both T12 and T8 lamps use the medium bi-pin base, which allows T8 to fit into the same fixture as T12 lamps of the same length.

T8 lamps require electronic ballasts which offer many advantages, such as reduced flicker, less heat, less noise and the ability to operate as many as four lamps on a single ballast; some offer dimming and better quality characteristics. T8 lamps also have improved color characteristics compared to those of standard T12 lamps.

For the same amount of light output (lumens), consider the different lighting options:



4-Lamp T12
175 watts



3-Lamp T8
96 watts



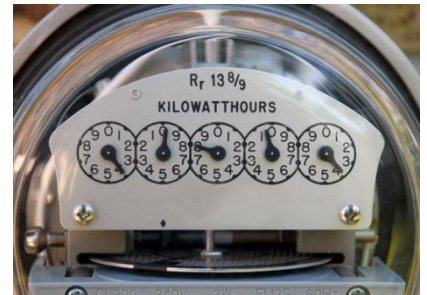
LED Fixture
45 watts

Helpful Resources

See the Certifiably Green Denver website for more helpful resource sheets:
www.denvergov.org/CGD

EnergyStar
www.energystar.gov

Xcel Energy Rebates
www.xcelenergy.com/Energy_Solutions/Rebate_Finder_Tool



Slow the Spin:
Switching to high efficiency lighting remains the most cost-effective energy efficiency measure.

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<https://facebook.com/cgdenver>

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