



Installing new lights

There are many different types of energy efficient lighting available. For indoor use, typical choices involve replacing incandescent bulbs with compact fluorescent lights (CFL) or old fluorescent tubes (T12) with newer ones (T8 or T5). LED lighting is available for some uses such as holiday and closet lighting, exit signs, work lights, etc., but for general illumination they are still somewhat expensive and limited in availability.

Replacing incandescent bulbs with CFLs is as easy as unscrewing the old bulb and replacing it with a CFL of comparable light output, usually measured in lumens. The energy savings can be 50-80% and most bulb types are readily available. This is a classic no-brainer, although there are some limitations—they don't work very well at low temperatures, if at all, and switching the light off and on many times per day can significantly shorten the bulb life. They are perfect for locations where they are likely to be on for several hours a day such as kitchens, living rooms, play or work areas, and bedrooms.

Replacing old T12 fluorescent tubes with the newer T8 ones is another matter. To use the new tubes in the old fixtures and get the maximum value in energy savings and light quality you must replace the old magnetic ballast with a new electronic ballast. The electronic ballasts are more energy efficient; eliminate the hum and flicker associated with the old magnetic versions; they have instant, rapid, and programmed start options; and some are dimmable.

A difficulty is that they are wired differently in the fixture, so replacing the ballast requires some electrical acumen.

If you don't have the skills yourself or don't want to hire an electrician, you can simply buy a new fixture that has the ballast installed in it. The rewiring is not hard (it takes about 20 minutes to revamp a 4-tube fixture), and ballasts for 2- and 4-tube fixtures are readily available in local electrical stores at a cost ranging from about \$18 to \$40. For the project in our kitchen, replacing four T12 tubes with four T8 tubes, I figure that we will recoup our cost for the ballasts in about one year, a 100% return on our investment! Not bad.

In some applications, T5 tubes are a better choice. They are slightly more energy efficient, generally brighter and well suited for indirect or diffused lighting or very high ceilings. You will need to buy new fixtures as the T5 tubes are shorter than the comparable T12/T8 standard lengths.

You can find tons of resources about lighting technology online. Some good sources include the EPA Energy Star Program at http://www.energystar.gov/index.cfm?c=lighting.pr_lighting and the DOE Building Technologies Program at <http://www.eere.energy.gov/buildings/info/components/lighting>. Almost any choice that you make in replacing old lighting with newer options will reduce your electric bill. Plus you can feel good about also reducing air pollution and greenhouse gas emissions.

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