



Energy Conservation Tip Sheet

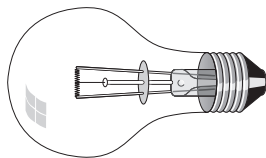
IMPROVING YOUR LIGHTING EFFICIENCY

The average Montana family spends \$200 to \$400 per year for lighting. Fortunately, lighting retrofits are easy to perform, and you can cut this expense by up to two-thirds.

A good place to start is by reducing the use of incandescent light bulbs. These are the least efficient type of lighting, and are increasingly prohibited by both building codes and government bodies. You can reduce your electrical consumption substantially by avoiding the use of this old-fashioned technology.

Incandescent light bulbs use one-quarter to one-third the energy of fluorescent lights. They last up to ten times longer than incandescent bulbs and they screw into a standard light socket.

Incandescent Light Bulb



Incandescent light is produced by a white-hot coil of tungsten wire that glows when heated by electrical current. Of all the electricity these lamps consume, 90 percent goes to producing heat, and only 10 percent to producing light!

COMPACT FLUORESCENT LIGHTS

Compact fluorescent lights (CFLs) use one-quarter to one-third the energy of incandescent lights. They last up to ten times longer than incandescent bulbs and they screw into a standard light socket.

Install CFLs in light fixtures that you use the most. Start by replacing incandescent lights that are on four hours a day or more, such as those in your kitchen, bathrooms, and living room.

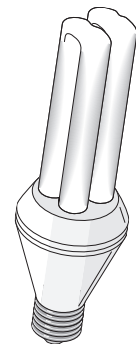
If you plan to replace an entire light fixture, or are choosing fixtures for a new home, select fixtures that are designed for CFLs. CFL fixtures have plug-in replaceable CFL bulbs rather than screw-in bases. They include improved reflectors that distribute light more

efficiently, and they come in a wide range of designs. Many energy codes require dedicated fluorescent fixtures in high-use areas such as kitchens.

Compact Fluorescent Lamps



15 to 18-watt CFL
Replaces 60-watt incandescent



25 to 28-watt CFL
Replaces 100-watt incandescent

Replacing standard bulbs with compact fluorescent lamps is easy, and your savings will begin immediately.

STANDARD-TUBE FLUORESCENT LIGHTING

Standard-tube fluorescent lights have dramatically improved in the past ten years. The newer one-inch diameter T-8 tubes are more efficient than the older T-12 tubes, and they produce a warmer color of light. They fit in standard fixtures and improve fluorescent lighting efficiency 10 to 15 percent. New T-8 fluorescent fixtures feature electronic ballasts, which eliminate flicker and increase efficiency. Some electronic ballasts also allow dimming.

Many models of new T-8 fixtures provide a pleasing color similar to daylight. These provide a great replacement option for the inefficient multi-bulb fixtures found above many bathroom mirrors. Dimmable fluorescent fixtures also work well for indirect lighting when installed in a wall-mounted valance, which bounces light off the ceiling.

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HALOGEN LAMPS

Halogen lamps are a specialized type of incandescent bulb. They are filled with halogen gas that allows them to burn hotter and somewhat more efficiently. But they still run at an efficacy that is scarcely higher than standard incandescent lamps. Halogen lamps are not an energy-efficient alternative to standard incandescent lamps.

Comparison Among Types of Lamps

Type of Lamp	Efficiency (lumens/watt)	Typical lifespan (hours)
Incandescent	10–17	750–2500
Halogen	12–22	2000–4000
Compact fluorescent lamp (CFL)	50–70	8000–10,000
Fluorescent tube lamp	30–100	7000–24,000
To save energy, choose lamps with high efficiencies.		

OUTDOOR LIGHTS

Many of us use lights outside our homes for safety and security. But leaving exterior lights on all night uses a lot of energy, and there are several ways to get the same benefits for less expense.

The first step is to change any outdoor incandescent bulbs to fluorescent lamps. Be sure to check the minimum service temperature of the CFL, since some CFLs operate poorly in temperatures below 15°F. Or choose fluorescent “wall packs,” complete fixtures that are designed for outdoor use.

Solar-powered lights are another good option for reducing outdoor energy consumption. These stand-alone units are simply pushed into the ground or fastened to a fence where you need light. They utilize a small solar panel to charge a built-in battery during the day. Though not as bright as line-powered lights, solar-powered yard lights provide enough light for outdoor entertaining, or for safe night-time navigation around your yard.

INSTALLING LIGHTING CONTROLS

Adding additional controls beyond the traditional on-off switch to your lighting can save both energy and effort. Making the change is also fairly simple. The most common residential lighting controls are occupancy sensors and photocells that turn lights on and off, and dimmers that allow you to operate lamps at a lower wattage.

Occupancy sensors sense heat or motion and activate lights when a person enters the area and shut the lights off after detecting no human presence for a period of time. Outdoor occupancy sensors offer security advantages over continuous lighting—the abruptly switched lights startle intruders and alert residents and neighbors to activity in the area. The savings can total \$20 to \$40 per year if these are installed where lights would otherwise operate all night. Most hardware stores sell exterior fixtures with built-in occupancy sensors.

Photocells can switch outdoor lights on at dusk and off at dawn. This often results in increased consumption if the lights were not previously on through the night, and so these controls should be used only where outdoor lights must absolutely be operated all night. Most outdoor fixtures that utilize motion detectors also have integrated photocells so the lights operate only at night *and* when someone is present.

Timers are used to automatically control lights that might otherwise be left on. Timers might be appropriate in children’s rooms or rarely used rooms such as basements. Timers come in two general types: the simple wind-up timer that you twist to a selected period of time, and digital timers that allow you to select a fixed period of time such as 10 or 20 minutes.

Dimmers save energy by reducing the consumption of fixtures when a low output of light is acceptable. They allow you to use the same fixture to illuminate activities that require high light levels, such as cleaning and cooking, and those that require only minimal illumination such as night-time navigation.

The best choice of lamps for fixtures with dimmers is CFLs. Buy CFLs that are designed to be dimmed— read the fine print on the box or in the manufacturer’s literature.

For more energy-saving tips, visit the NCC website at www.savemobile.org

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