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## *Home Energy Conservation*

The purpose of this fact sheet is to provide consumers, producers, lawmakers, educators, and municipalities with current information about energy conservation for homes in Montana.

Conservation does not mean deprivation! With little effort, you may enhance your quality of life, save money, and protect your air, water, and land. Energy conservation will save you money; right now, right where you live. Let's take a look at how you can make the best of what you've got and/or upgrade to more efficient products. And remember this rule: Start with the jobs that cost the least, and yield the most in energy conservation.

Increasing insulation levels and plugging air leaks produce rapid paybacks in comfort and utility savings. So weatherizing and insulating your home is a great place to start.

**Weatherization**, the plugging and sealing of air leaks, can save 25 percent to 40 percent of heating and cooling bills. Weatherization is the first place for the homeowner to concentrate his/her efforts. A good book on the subject is *Homemade Money* by Richard Heede and the Rocky Mountain Institute.

Adequate **insulation** rewards you with a building that is warmer in winter, cooler in summer, and much less expensive to operate year-round. Three general areas in your home need insulation: attics, basement or crawl space, and exterior walls – including basement walls. Insulation acts as a barrier to the flow of heat from one area to another. Insulation helps your home retain the heat provided by its heating system during the winter season, and limits the penetration of heat into your home during the summer. Insulation works by trapping tiny pockets of air within itself. Since air does not conduct heat or cold very well, these tiny air pockets effectively resist the movement of heat. Insulation makes your home more comfortable, plus reduces energy use and expense.

Recommended insulation levels vary according to climate and geography. Your local building department can give you the locally mandated standards. For Montana the minimum standard is about R-19 in floors, R-19 in walls, and R-38 in ceilings. R-value is a measure of the resistance of a material to heat flow, the higher the number the greater the resistance.

**Windows** are the weakest link in any building's thermal barrier. The R-value of a single pane window is 1. The R-value of a more advanced window is now up to 12. Replacing windows can be costly, but applying three or four of the following ideas may result in substantial savings on your heating/cooling bill: Install clear plastic barriers on the inside of your windows. Repair and weatherize exterior storm windows. Add new exterior or interior storm windows. Install tight-fitting insulating shades. Construct insulated pop-in panels or shutters. Close your curtains or shades at night. Open your curtains during the day. Keep south-facing windows clean for better light and more free heat. By weatherizing and insulating your home, you've reduced the amount of heat escaping in the most cost-effective way. Now look at how efficiently your **heating system** produces and delivers that heat.

There are a range of new energy-efficient furnaces, boilers, and air conditioners on the market today. If that's the option you're choosing, look for a furnace with an AFUE (Annual Fuel Utilization Efficiency) of 90 percent or higher, or boiler with an AFUE of 85 percent or higher. For room air conditioners, look for a SEER (Seasonal Energy Efficiency Ratio) of more than 10. For central units, look for a SEER of 123 or higher. For heat pumps, look for ones with HSPF (Heat Source Performance Factor) ratings of 7 or more, and SEER ratings of 12 or higher.

A heating system professional is the best person to make adjustments, tune-ups, and modifications to your existing heating system. You may improve system performance, however, by insulating ducts and pipes, cleaning registers, replacing filters, and installing programmable thermostats.

**Lighting.** Changing your lights to compact fluorescents is one of the easiest ways to save energy and money. The introduction of compact fluorescent lights (CFLs) in the early 1980s revolutionized lighting. CFLs use one-quarter to one-third the energy of standard incandescent bulbs, and they last up to ten times longer. Replacing incandescent lamps with CFLs throughout your home cannot only make energy sense, it can be a profitable investment, too, since compact fluorescents save several times their purchase price through reduced energy costs and fewer replacement bulbs.

All the new CFLs come with electronic ballasts, which eliminate flicker and hum, and are now warmer in color. Due to this ballast, a CFL is shaped differently from an incandescent. This is the biggest obstacle in retrofitting light fixtures. Nonetheless, as manufacturers become attuned to this relatively new market, more light fixtures suited for CFLs are becoming available. Compact fluorescents have many household applications-table lamps, recessed cans, desk lamps, bathroom vanities, hanging fixtures, track lighting, and more.

**Appliances.** The Energy Star program is one way to select energy-efficient products and supplies for your home. Approved products display the Energy Star logo and must meet the highest energy-efficiency levels set by the EPA and DOE. Also the Energy Guide label (bright yellow with black lettering) compares the appliance you're looking at with the best and worst performing models available.

For the most energy efficient appliances made, contact local solar electric dealers.

**Phantom loads.** Appliances that use power even when they're off create what are called phantom loads. Any device that uses a remote control is a phantom load. Anything with a clock creates a small but constant energy drain 24 hours a day! Put all appliances with phantom loads on plug strips or switched outlets so that they may be completely turned off when not in use.

Have you had an **energy audit** for your home? If not, check with your local utility or energy supplier to see what services they offer. Some utilities offer comprehensive residential energy audits. These in-home visits can show you where to start saving energy and the cost effectiveness of doing so.

Taking steps to increase the energy efficiency of your home saves money. In many areas, electric utilities offer rebates if you buy energy-efficient appliances. Be sure to check with your utility to see what incentives they offer.

**American Council for an Energy-Efficient Economy (ACEEE)** 1001 Connecticut Avenue, Suite 801 Washington, DC 20036. Website: [www.aceee.org/index.htm](http://www.aceee.org/index.htm) Publishes books, papers, yearly guides, and comparisons of appliances and vehicles based on energy efficiency.

**Energy Star.** Environmental Protection Agency (EPA) 401 M Street, SW (6202J) Washington, DC 20460 Toll Free: 888-STAR-YES Fax: 202-564-9569

**Rocky Mountain Institute** 1739 Snowmass Creek Road Snowmass, CO 81654-9199 Website: [www.rmi.org](http://www.rmi.org). A terrific source of books, papers, and research on energy-efficient building design and components.

For a complete copy of Montana's Statewide Energy Code for Residential Buildings, contact the Department of environmental Quality, 1520 East 6<sup>th</sup> Ave, Helena, MT 59620-2301

| Cost Comparison*        |               |                            |
|-------------------------|---------------|----------------------------|
|                         | CFL, 15 watts | Incandescent bulb, 75-Watt |
| Cost of bulb            | \$7           | 5¢                         |
| Product life            | 5 yrs         | 186 days                   |
| Bulbs used in 5 years   | 11            |                            |
| Energy used annually    | 33 kWh        | 164 kWh                    |
| Energy used in 5 years  | 165 kWh       | 820 kWh                    |
| Total cost in 5 years   | \$23.50       | \$82.50                    |
| Savings in 5 years      | \$59.07       |                            |
| Energy saved in 5 years | 656 kWh       |                            |

\*Computed at 6 hours of lamp use a day and electricity cost of 10c per kWh.