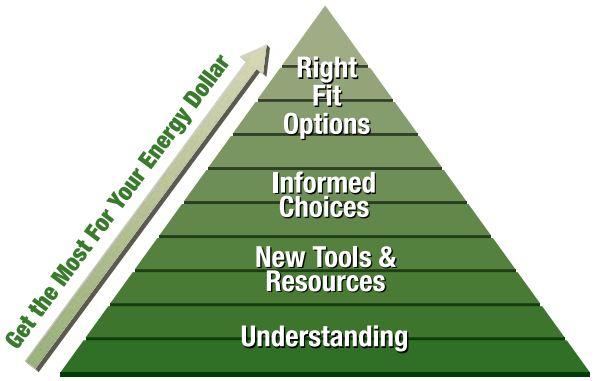
Energy-Saving Tips and Tools for Your Home

Climb the Pyramid of Conservation to achieve your savings goals.

You have the power to decide how you use energy and Minnesota Power has the tools to help.

Visit **www.mnpower.com/actionplan** to understand how you use energy and learn more about options available to you. Minnesota Power provides a variety of tools, references, and incentives to help you develop an energy-saving action plan that's right for you. One change, one choice is all it takes. Power of One® ... it begins with you.



Unlock the power of the pyramid to make effective energy choices.
***Visit us at* www.mnpower.com/po1home**

Lighting

Identify areas in your home where an incandescent bulb is on three or four hours a day. These are ideal locations to install compact fluorescent lights (CFLs). They come in a wide variety of styles and wattages, and new technology makes the light quality warmer. They are slightly more expensive than regular bulbs, but these energy-saving bulbs use 75 percent less electricity and last five to ten times longer.

LED (Light Emitting Diode) Lighting may be the next generation of energy-efficient lighting. Currently, LEDs are predominantly used in commercial applications. The most viable current application in your home is using LED holiday lights. LED holiday lights stay cool and use approximately 90 percent less energy than standard incandescent holiday lights.

Space and Water Heating

When you purchase an electric water heater, you will receive a FREE energy-saving SmartPak. The SmartPak includes a water-saving showerhead, foam pipe insulation, two faucet aerators, temperature gauge and instructions. Install an efficient electric water heater, and the SmartPak materials, and you could save 15 to 20 percent on your water heating costs. You can also reduce the water usage and sewage bills.

Measure the temperature of your hot water. When you lower the temperature to 120 degrees, you will save energy and reduce the risk of scalding. Each 10 degree reduction in temperature will save about 3 to 5 percent on your water heating costs. If you have a dishwasher without a separate heating unit, you should keep the temperature of the water at 140 degrees.

Caution: Be sure to turn off the power to the electric water heater before adjusting the thermostat.

Wrap your water heater with an insulated blanket and apply pipe wrap insulation on all hot and cold pipes. You can help reduce water heating costs another 5 to 8 percent. New high-efficiency water heaters insulated with foam do not need a blanket.* If you install a water-saving showerhead and wash and rinse your clothes in cold water, you can save yet another 3 to 5 percent on water heating costs.

Change air filters regularly on furnaces, air conditioners, and heat pumps. Check your filter every month, especially during months of heavy use (winter and summer). If the filter looks dirty after a month, change it. At a minimum, change the filter every three months. A dirty filter slows down air flow and makes the system work harder to keep you warm or cool, thus wasting energy. A clean filter will also prevent dust and dirt from building up on the system, which ultimately leads to expensive maintenance and/or early system failure.

Clean and maintain your furnace annually for efficient operation. Fossil fuel heating systems should be cleaned and serviced on an annual basis to ensure optimum efficiency and safe operation.

A new high-efficiency furnace can dramatically reduce your annual heating cost. When you are in the market for a new, highly efficient, forced-air gas furnace, consider installing a unit with an AFUE rating of 90 percent or higher, with multi-stage firing, and an Electronically Commutated Motor (ECM) fan blower motor. New high-efficient furnaces can cut heating costs up to 30 percent.

Use a programmable thermostat. If you adjust your thermostat one degree (down in winter, up in summer) for 15 hours a day, you could save 2 percent on your fuel bill. Easy to install, a programmable thermostat will pay for itself in less than a year, and it can control your furnace and air conditioner.

*By putting a water heater blanket on a standard efficiency water heater that is 15 years old or older, you can reduce your water heating bill by about $20 per year.

Appliances

Use the energy-saving setting on refrigerators, dishwashers, and other appliances where applicable. Set refrigerators and freezers at recommended temperature levels. Refrigerators should be set at 36 to 38 degrees, and freezers at 0 to 5 degrees. Keeping temperatures 10 degrees lower than recommended can increase operating costs by 25 percent.

Clean refrigerator coils and make sure you have at least a one-inch clearance on the sides and on top of the refrigerator. This increases the life of the appliance and saves energy. Also, check the seals; if worn or ripped, have them replaced.

The hose that vents your clothes dryer outside should have a minimum number of turns or bends in it to help reduce drying time and lower the moisture level in your home. We recommend using rigid type ducting on all dryers to improve operation efficiency and to reduce the risk of fires. Also, check to see if the outside vent hood closes properly. This is a major source of heat loss in the laundry room. Clean the filter after drying each load. This will improve the efficiency of your dryer and add years to its life.

Appliances like dehumidifiers, pumps, toilet mixing valves, engine heaters, waterbed heaters, furnace fans, and hot tubs can add 15 to 50 percent to your energy bill, and more if they are defective or running improperly. Minnesota Power has teamed up with 30 service territory libraries to make available to their patrons the **Kill-A-Watt electric consumption meter**. These easy-to-use devices can monitor the electrical consumption of 120-volt appliances such as refrigerators, microwave ovens, and televisions, and give the user an idea of the appliance's energy consumption.

Insulation

Attic insulation can save 20 to 35 percent in heating costs and up to 15 percent in air conditioning costs.

Insulation is measured by its R-value—resistance to heat flow. In this part of the country, the recommendation is R-44 for insulation in an attic, R-13 for walls in existing homes, and R-21 for new homes.

Infiltration—Seal Air Leaks

Even in a well-insulated home, considerable heat loss in the winter and cool air loss in the summer is caused by infiltration of outside air into the home. Infiltration represents 35 percent of the heat loss in a typical home. You can reduce infiltration by caulking and weather-stripping around doors and windows, corners formed by siding, sills where wood structure meets the foundation, and areas where pipes and wires penetrate the ceiling below an unheated attic. Any place where two different materials or parts of the house meet is a potential infiltration point. Consider participating in the Minnesota Power **Home Energy Analysis with Building Diagnostics** to have an air leakage performance test and infrared thermal scan completed on your home.

Doors and Windows

More heat is lost through doors and windows than through walls or ceilings in a typical home. Also, energy-efficient windows can reduce your space cooling costs. When adding or replacing windows in your home, consider new low-E and gas-filled multipane windows.

The most energy-efficient doors are fiberglass or metal skinned with a polyurethane foam core. They are six times more energy efficient than a standard two-inch wood door. Be sure to add a storm door and weather stripping to improve the energy efficiency of an existing door.

Ventilation

If there is excess condensation on windows, your moisture level may be too high. Excess moisture may be caused by: drying firewood inside, hanging clothes indoors, venting dryers indoors, inadequate ventilation in the home based on your lifestyle, or improperly landscaped yards that allow water to drain along foundation walls. Increasing ventilation reduces moisture and improves the comfort/durability of your home.

Kitchen and bathroom fans, if used consistently, reduce moisture and improve air quality in your home. At a minimum, bathroom fans should be capable of 50 CFM (cubic feet per minute) and kitchen fans, 100 CFM, intermittent. The fan must be vented outside with a minimum number of 90 degree turns. We recommend fans approved by the Heating Ventilation Institute (HVI) with a sone rating of less than two (which keeps the noise down). Homes with excessive moisture problems may require a whole house system, such as an air-to-air heat exchanger or central exhaust-only system.

If You Are Building a New Home

Contact Minnesota Power and ask about the **Triple E New Construction Program**. We have established construction and ventilation standards that result in an average 30 percent reduction in your annual space heating energy costs, and at the same time, add to the comfort, quality, and durability of your home.

Ask for a copy of the "Triple E Builders Guide" and other resource materials on energy-efficient construction or visit **www.mnpower.com/triplee**

Home Energy Audits

Contact Minnesota Power to request either a free basic walk-through, free energy audit or a fee-based comprehensive audit, which includes a blower door test and an infrared thermal scan. Energy specialists will identify cost-effective energy improvements that will result in a comfortable home that uses less energy.

We hope these tips help you make positive energy choices!

Check out the current federal tax incentives for a variety of energy-efficient improvements at: ***www.energystar.gov***