

Tighten Up!

ENERGY EFFICIENCY TIPS TO IMPLEMENT NOW AND START SAVING MONEY



Colorado residents can expect about a 35% increase in their home energy bills this year. By implementing simple energy efficiency measures—many of which are no-cost or low-cost—homeowners can help alleviate higher energy bills this winter. These guidelines can help you learn ways to increase your home's energy efficiency and save an average of 10 to 15% on monthly utility bills.

Heating & Cooling:

Space heating and cooling account for about half of a typical home's energy use. Ensuring that your home is heated and cooled as efficiently as possible requires addressing two important factors: 1) building envelope—that is, making sure your home is well-insulated and tightly-constructed to avoid loss of heated or cooled air (see the next section for more tips)—and 2) space heating and cooling equipment.

Heating Efficiency

- Install an Energy Star® programmable thermostat if you don't already have one, and keep it set at the lowest comfortable temperature: 68 to 70 degrees during the day and 55 to 60 at night, and when you're away from home for an extended period. Every degree above 70 will cost an additional 7 to 10 percent on heating bills.
- Routinely maintain your furnace, air conditioner and/or heat pump and clean or replace filters every month or two. This can save you up to 5 percent on the cost to operate the furnace.
- Insulate heating ducts and keep them well maintained. This can reduce your heating up to 30 percent. Exposed ductwork joints should be sealed with mastic (a goeey substance that is applied with a paintbrush) to reduce heat losses.
- Keep areas around heat vents clear of drapes and furniture so that they do not block the flow of air.
- Using a space heater when the thermostat is set low can be an efficient way to heat a small, closed-off area when the heat in the rest of the house can be turned down. But use it sparingly!
- Adjust the fan on your central heating unit to the auto position. Keeping the fan on all the time will add unnecessary costs to your monthly heating bill.



- Consider installing an energy efficient heat pump it can trim the electricity use for heating by 30 to 40 percent.
- If you are using a heat pump, adjust the thermostat in small increments and keep it at a steady temperature. This will avoid activating the less efficient resistant heat strip in the system.
- Heat pumps are most efficient when there is free flow of air; so don't close off more than 10 percent of your home at one time.
- Consider hiring a professional energy auditor to identify leaks and other areas for efficiency savings. If an energy audit isn't in your budget, you can identify many opportunities for efficiency with a Do-It-Yourself Home Energy Audit

Cooling Efficiency

- Never block, cover, or stack anything on an outside heating or A/C unit and keep the unit clean by removing any dirt, leaves, grass, etc. on a regular basis.
- Turn off kitchen, bath and other ventilation fans as soon as they have done their job. These can pull a houseful of warm air outside in just one hour.



- Use ceiling and other fans to provide additional cooling and help air circulation to cut down on air conditioning costs. Ceiling fans use less electricity than AC.
- In Colorado's climate, evaporative coolers are much more efficient and less costly than central AC. They also add moisture to the air, while air conditioning dries the air.
- When purchasing new air conditioning units, look for a Seasonal Energy Efficiency Ratio (SEER) of 13 or higher. These use 20 percent less electricity than a standard unit and can save about \$600 in summer cooling costs over the system's lifetime. For room A/C units, look for the Energy Star® label and be sure it's the right size for the room.
- Plant evergreens and shrubs on the north side of your house to create a windbreak in winter. Plant leafy trees and shrubs on the south, west and east sides of your house to block the summer sun. In the winter, when they lose their leaves, they allow winter sunlight to warm your home. Plant trees or shrubs to shade your outdoor air conditioning unit in summer. Just three trees, properly placed around a house, can save between \$100 and \$250 annually in cooling and heating costs.

Building Envelope:

A home's envelope (walls, windows, doors, foundation, roof, attic, etc.) can account for 25-40 percent of the load on your heating and cooling system. You can reduce these losses by looking for ways to plug holes and seal cracks that allow heated or cooled air to escape.

- Close outside doors and windows when the heat is on.
- Fireplaces are a significant source of heat loss. Add glass doors to prevent excessive heat loss and keep the flu closed when not in use. If your fireplace still feels drafty, block off the chimney with a piece of rigid insulation from the hardware store that fits snugly into the space.

- Consider hiring a professional energy auditor to identify leaks and other areas for efficiency savings. If an energy audit isn't in your budget, you can identify many opportunities for efficiency with a Do-It-Yourself Home Energy Audit.
- Check around your house for air leaks. Look for places that feel drafty on a windy day and check for obvious gaps or cracks around the usual culprits: utility cut-throughs for pipes; around ducts and electrical outlets; gaps around windows, doors, chimneys and recessed lights in insulated ceilings; and unfinished spaces behind cupboards and closets. Seal these leaks with caulk and weather-stripping.
- Install door sweeps or thresholds to doors.
- Install electrical outlet gaskets.
- Install energy efficient windows. Look for double or triple pane windows with a low-emissivity (low-e) coating, which will reflect heat back into a room during winter months and can reduce heating loss at the window by 25-50 percent. In cold climates, low-e windows can reduce heating bills by 34 percent compared to uncoated, single-pane windows. Always look for the Energy Star® label to ensure the highest efficiency windows.
- If new windows aren't in your budget, think about high efficiency window blinds or draperies with insulated linings. These can raise the R-value of single-pane windows from R-1 up to R-6. Look for shades or drapes that fit into tracks to keep the air from passing around the edges. White window shades, drapes or blinds reflect heat away from the house in the summer. A triple cell honeycomb or cellular shade is one of the most energy efficient.
- If frost or water condensation appears on your windows or they feel drafty, install storm windows or tape clear plastic sheeting to the inside of the window frame.
- In winter, utilize the sun's heat by keeping the blinds open during sunny days; then close them at night to reduce heat loss.
- In the summer, keeping the blinds and windows closed during the day and open at night can eliminate the need for air conditioning on all but the hottest summer days! A whole-house fan or window fan will help to circulate night-time breezes.
- Check the insulation in your attic and crawlspaces. If you have less than R-22, or about 6 or 7 inches (bring a tape measure), add more. Homes in Colorado should have between R-38 and R-49 insulation.
- If your attic is under-insulated, your walls, ceiling and/or floors may be as well. Call a contractor to have it checked. Insulation can reduce heating and cooling needs by 30 percent.



Hot Water

After space heating and cooling, water heating is usually the second largest energy user in a home. New water heaters on the market can save significantly on water heating costs, but

there are lots other ways to increase the efficiency of your existing hot water heating system as well as easy ways to cut down on water use and save on your water bill.



- Set your water heater at 120.
- Wrap your water heater with an insulating blanket; it will pay for itself in one year or less!
- Make sure you have adequate insulation on your hot water pipes wherever they are accessible.
- If your gas water heater is more than 12 years old, consider replacing it with a more efficient model or a tankless or on-demand system, which heat the water coming into your house only when it is needed. For low water use homes, they are 8 to 14 percent more efficient and for higher water use home, 24 to 34

percent more efficient than hot water storage tanks.

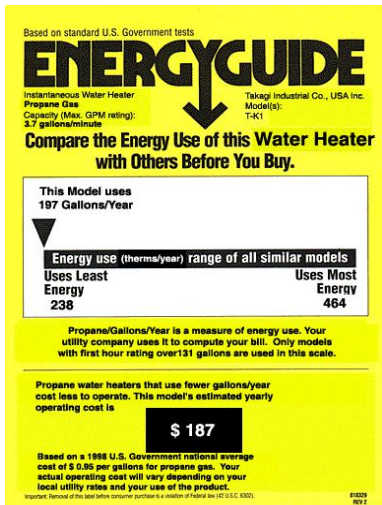
- Install timer controls on your hot water. Turning it off at night can save 5 to 12 percent of water heating energy.
- Turn off the water heater if you'll be away for more than two days.
- Install low-flow showerheads and faucet aerators (3 gallons per minute).
- Take showers instead of baths and keep them short (5 to 10 minutes). Showers generally account for 2/3 of water heating costs.
- When adjusting the temperature in the shower use less cold water instead of adding more hot water.
- Use cold water when washing clothes instead of hot.
- Routinely check pipes for water leaks and seal potentially leaky joints with acrylic tape (not duct tape).
- Consider installing a solar thermal domestic hot water heating system. Federal tax credits beginning in 2006 will help cover 30 percent of the capital cost up to \$2,000.
- Consider an air-source or geothermal heat pump. These are 30 to 50 percent more efficient than using an electric water heater.
- Install a drain-water heat recovery system. These are especially effective with on-demand water heaters and solar thermal systems with paybacks ranging from 2.5 to 7 years.

Appliances & Lighting

About 20 percent of all the energy used in your home goes into running appliances. Refrigerators and freezers run constantly and are a significant energy draw; often they are the third largest electricity end use in homes.



- When it's time to purchase new appliances, always look for the Energy Star® label.
- Give thought to replacing ageing appliances with new energy efficient ones. You might be surprised at how quickly they can pay for themselves in energy savings! For example, a new Energy Star® refrigerator uses about half



as much energy as one made in 1980.

- When you're shopping for appliances, think of two price tags. The first is the purchase price think of it as a down payment. The second price tag is the cost of operating the appliance during its lifetime. You'll be paying on that second price tag every month with your utility bill for the next 10 to 20 years. Carefully review the energy guide label, which estimates the annual energy cost to operate the appliance and helps you to compare it to other models. Choose a model that's as efficient as possible and costs the least to operate.
- Use the energy saving settings on refrigerators, dishwashers, washing machines and clothes dryers.
- Turn everything off when not in use.

Refrigerators & Freezers

Because of advances in the technology, a new refrigerator is much more energy-efficient than models purchased as recently as 2001. A new, energy-efficient refrigerator can save up to two-thirds of the electricity used by 1993-2001 models. If you have an old refrigerator, consider replacing it.



- If you are in the market for a new refrigerator, select the appropriate size and only the features that you need.
- Avoid side by side models and those with through-the-wall ice and water dispensers; they can increase energy use by 14 to 20% and may require more maintenance and repairs.
- Look for a refrigerator with automatic moisture control. This feature prevents moisture accumulation on the cabinet exterior without adding a heater, which can consume 5 to 10% more energy.
- Chest freezers are usually more efficient than upright freezers because they are better insulated and don't spill out cold air when the door is opened.
- Look for a refrigerator with a manual-defrost freezer. This type of fridge consumes 35-40% less electricity than automatic-defrost models. They also keep food fresher, since auto-defrosters remove moisture and can dehydrate food.
- Position your refrigerator away from heat sources like ovens and dishwashers and out of direct sunlight.
- Keep your refrigerator's motor, coils and vents clean and maintained regularly. Use a vacuum or brush to clean coils every six to twelve months. This will improve the efficiency by as much as 30%.
- Keep the top of the fridge clean to maintain circulation that's needed for the compressor to work efficiently.
- Keep your refrigerators temperature between 35 and 38 degrees Fahrenheit. Freezers should be set at zero.

- Check the fridge for leaky gaskets. To test the door, close it on a single sheet of paper and try to pull it out. If it slides out easily, replace the gasket.
- Keep the freezer and the refrigerator full and cover liquids and foods to retain cold. You can put water-filled plastic containers in your freezer if needed. This reduces the need to run the compressor.
- Consider putting a standard programmable timer on your refrigerator and set it to cycle off for a few hours at night when the fridge stays closed. If you put a gallon jug of frozen water in the freezer, you should be able to safely program the timer to turn the fridge off from 10 PM to 1:30 and from 2:30 to 6 AM without impacting your food.
- Many refrigerators have a power-saver switch to turn off heaters in their walls designed to prevent condensation build-up on the outside. Make sure this switch is on if your refrigerator has this feature.
- Defrost regularly if you have a manual defrost or partial automatic defrost. Buildup of ice on the coils makes the compressor run longer.
- Rid yourself of that second fridge! Whether it's in the garage or the basement, you can live (happily) without it.

Cooking

- When cooking, keep the lids on pots to retain heat and don't open the oven door. Or, use the microwave; they use 30 percent less energy than a conventional range or stove.
- Copper bottomed pots and pans use heat more efficiently.
- Using the oven in the summer will increase air conditioning loads and make the house less comfortable. Use an outdoor grill or microwave instead.

Dishwashers

Water heating accounts for more than 80 percent of energy used by a dishwasher. Newer, more efficient models save water and energy and also tend to wash better. Generally dishwashers are a more efficient way to clean dishes than hand-washing.

- If you're in the market for a new dishwasher, choose a model with internal heating elements that function independently of your home's water heater.
- Check the owner's manual for the manufacturer's recommendations on water temperature; lower the temperature of your water heater to 120 degrees, if appropriate.
- Look for a dishwasher with enough cycles to handle loads of varying food soil. This will minimize overuse of water and energy—as long as you use them appropriately!
- Choose a model with metered fill as opposed to timed fill. Using a float to measure the water level inside the dishwasher, a metered fill model fills the unit to the correct water level regardless of the water pressure. A timed fill model may be less efficient due to water pressure variations.
- Select a dishwasher that has an air-dry or overnight-dry feature. Heat drying quickly dries the dishes, but uses more energy.
- Scrape off large food pieces rather than rinsing them off. Soaking or pre-washing is generally only recommended in cases of burned-on or dried-on food.

- Be sure your dishwasher is full, but not overloaded, when you run it.
- Don't use the "rinse hold" function; it uses 3 to 7 gallons of hot water each time it's used.
- Let your dishes air dry. If you don't have an automatic air-dry switch, turn off the control knob after the final rinse and prop the door open a little so the dishes will dry faster.

Laundry

Heating water accounts for 90 percent of the energy used in operating a washing machine.

- The most energy-efficient washing machines are typically horizontal axis (front-loading) machines. They use about one-third the water of a conventional machine to wash the same amount of clothes and reduce drying times because they spin clothes faster.
- Use the cold water settings as much as possible to reduce water heating. Most detergents are designed for cold-water washing.
- Set the washer's automatic water level sensor if you have one, if not remember to adjust the water level accordingly.
- Wash and dry full loads
- Select a gas dryer if possible. On average gas dryers use 50% less energy than electric dryers.
- If you have an electric dryer, install a lint kit (\$5-10) to vent the exhaust heat and humidity into the house in winter.
- Look for a dryer with a moisture sensor in the drum instead of a temperature sensor near the exhaust in order to prevent over-drying.
- Don't over-dry clothes – it wastes energy and causes static and wrinkling. Use the moisture sensor if your dryer has it. If it has a timer, consider shortening the drying time.
- Check hose fittings and screen, water-intake lines, and drain lines for sediment deposits, and lint in exhaust hoses.
- Clean the lint filter after every load to increase air flow and decrease drying time.
- A warm dryer uses less energy, so try to wash and dry several loads in succession.
- Dry heavy clothes such as cotton towels, jeans, or jackets separately from light clothing.
- Make sure the dryer is vented to the outside to avoid heating up the house in the summer and making your air conditioner work extra hard. Better yet, use a clothes line whenever the weather is nice.



Electronics & Lighting

- Set your computer to go to "sleep" when it's not used for 5 minutes. (Note: screen savers do NOT save energy). If you plan to be away from the computer for more than 30 minutes, turn it off. This does not damage the computer.
- Unplug electronic devices and chargers when they are not in use. Alternatively, plug these devices into a power strip with an



on/off switch and turn it off when not in use. Even when they are turned off these devices can collectively and constantly draw 50 watts in a typical household.

- Install motion detectors on outdoor lights instead of leaving them on at night.
- Turn off lights when leaving a room, or install motion detectors on indoor lighting.
- Use energy efficient Compact fluorescent light bulbs (CFLs). CFLs use only one-fourth the energy that incandescent bulbs use and last 10 times longer. They also give off less heat than incandescent bulbs, reducing summer cooling loads. If every household exchanged four 100-watt incandescent bulbs with four 23-watt CFLs it would save the energy consumption equivalent to seven million cars.
- Avoid heat producing halogen torchiere lamps. They are inexpensive to buy but expensive to operate (and a fire hazard too).
- Consider installing a solar photovoltaic system to generate electricity for your home. People in Xcel Energy's service territory are eligible for [rebates](#) that will pay for up to half of the cost of a new PV system. Federal tax credits up to \$2,000 for residential PV will be available in 2006.

Miscellaneous

- Turn off everything not in use.
- Are you buying or refinancing a home? Consider an energy efficiency mortgage to finance home efficiency improvements. The interest is tax deductible in many cases.
- Think about every dollar you spend. Consumers can make a big impact on market forces by directing their dollars toward sustainable, low impact products and services.
- Reduce junk mail: Easily remove your name from mailing lists with this online form: <http://www.dmaconsumers.org/cgi/offmailinglist#regform> and go to this site for 5 easy steps to reduce junk mail: www.nativeforest.org/stop_junk_mail/nfn_junk_mail_guide.htm

Vehicle Use

- Walk or bike when possible. Not only will you save money, save energy and reduce air pollution you'll get some exercise too!
- Carpool and use public transportation whenever possible.
- If your employer allows it, telecommute a couple of times a week.
- Combine errands to minimize vehicle use.
- In the market for a new car? Rule #1: Don't buy an SUV. Rule #2: Look for a vehicle with high gas mileage. Use the same rules when renting a car too. Rule #3: if you can, buy a hybrid, flex fuel or a car that can run on biodiesel. (Federal tax credits may be available for the purchase hybrid cars.) Not only will you save energy and reduce pollution, your purchasing decision lets auto makers and policy makers know that consumers are concerned about energy conservation.



- Keep your vehicle tuned and running properly to improve mileage.
- Have air filters changed regularly.
- Keep tires properly inflated in accordance with elevation and season.
- Use recommended motor oil depending on vehicle and season.
- Drive 60mph, each 5mph over 60 reduces efficiency.
- Use cruise control whenever possible
- If your car is equipped with an overdrive gear, use it when possible to save gas and decrease engine wear.
- Avoid idling.

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The CRC offers assistance to homeowners and businesses on improving the energy efficiency of their homes and buildings, including **classes and training seminars, information resources, a contractor referral network and a low cost residential energy audit program.**

Visit our website www.conservationcenter.org.