

# Energy Efficiency for Your Home



*Housing New Mexico*

Inside Cover

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# Introduction

The cost of energy can take a huge bite out of your family's budget. Fortunately, you can reduce your energy footprint without sacrificing comfort, and you don't have to spend a lot of money! Small but important changes in how you use your appliances and electronics can put a big dent in your costs, and there are also some inexpensive devices available to help you cut back on your energy use as well. And if you're ready to replace any of your old appliances, you'll find the new generation of energy-efficient washers, refrigerators, and dishwashers can save you even more money in the long term.

By following the simple steps outlined here, you'll be on your way to having an energy-efficient home that is safe, comfortable, and less expensive to maintain.

# Thermostats

We'll start at your thermostat. Heating can account for as much as 40 percent of a home's annual energy bill. In winter, one easy way to lower your heating costs is to simply turn your thermostat back by 8 to 10 degrees for eight hours—overnight while you sleep, and during the day when you're away at work or school. This works best on homes with air leaks, or those that do not store heat well. Homes with

If you set your thermostat to 68°F while you're awake and turn it back 8 to 10 degrees while you're asleep or away at work, you'll save anywhere from 5 to 15 percent on your annual heating bill. For example, you can set the temperature lower overnight, then program the heat to come on shortly before you get up in the morning, then lower the temperature again during the day while your family is at work or



high thermal mass, like older adobe houses, may cool off too much, so you'll need to balance energy savings with comfort and make the adjustments that work for you.

The easiest way to adjust the temperature is to install a programmable thermostat. This lets you set the times you turn on and shut off your heat—or air conditioning in summer—according to a pre-set schedule, and then forget about it. These thermostats can store six or more temperature settings for a single day, and they also let you manually override them without affecting the rest of the programmed schedule.

school, and warm it up again just before you get home in the evening. Of course, you'll want to adjust the settings according to your own family's needs and schedule. These thermostats also work with air conditioning and evaporative coolers. Be sure to install the thermostat on an interior wall, away from vents or any other sources of drafts or heat.

# Lighting

Lighting is one of the easiest areas to save money and energy. With traditional incandescent bulbs, 90 percent of their energy is given off as heat. That's just throwing away money! But new lighting standards that went into effect in 2012 mean that common light bulbs now sold in the U.S. use from 30 percent to 80 percent less energy than the old kind.



- First, there are the new halogen bulbs, which use 30 percent less energy than the traditional incandescents and last up to three times longer. They come in a wide range of shapes and colors, and can be used with dimmers.

- Next, we have compact fluorescent lamps, or CFLs. These are the curly-looking bulbs you see in the stores, and they use about 75 percent less energy than incandescents and last about ten times longer. If you tried them when they first came out and didn't like the bluish light they produced, you may want to take another look. The latest generation of CFL bulbs comes in a range of colors, including warmer tones that more closely resemble the light from incandescents. Some can be used with dimmer switches as well, so check the package to make sure you buy the ones that have that feature.

- The most energy-efficient are the light-emitting diodes, or LEDs, which also offer dimmable options, and these can save you 75 to 80

percent in energy use. They are now available in screw-in models so they can be used in existing fixtures. Don't let the high price tag scare you off: LEDs last up to 25 times longer than incandescents, so you can go many years without having to change one, and you're actually paying less for the same amount of lighting, while also saving money on your energy bills.

If you want to maximize your energy savings still more, you'll need to pay attention to how you use your lights, regardless of the type of bulb you select. Incandescent lights should be turned off whenever they're not needed, since only about 10 to 15 percent of the electricity they consume actually results in light—the rest is turned into heat.

With fluorescent lighting, you only need to turn the light off if you're leaving the room for more than 15 minutes. Otherwise, it's more cost-effective to leave them on, as the operating life of these lights is affected by the number of times they're switched on and off.

Automatic timers can be useful for controlling energy use. By installing timers or motion sensors to set CFLs to stay on for 15 minutes or more, you'll extend the life of the bulb. A motion sensor will turn on the light whenever it detects motion, like someone entering a room. This device is useful in living rooms, kitchens, home offices, bedrooms, or porches—rooms that you tend to use for extended periods of time. Rooms that are occupied for shorter periods, like bathrooms, closets, and garages, should be lit with LED or halogen bulbs rather than CFLs. Of course, you can always keep costs and usage down simply by remembering to turn off the light when you're leaving the room.

# Proper Light Bulb Disposal is a Safety Issue!

It's important to know how to dispose of these new kinds of bulbs when they break or reach the end of their lifespan. Unlike traditional incandescent bulbs, which can be tossed in the trash, CFLs require more careful handling

this material. If not, put it in your trash, or dispose of it during those times when household hazardous waste is collected. The same disposal method is advised for burned-out CFL bulbs.



because they contain small amounts of mercury, which is a toxin. The bulbs are perfectly safe while in use, but if you break one, here are the steps to take:

- Open a window and leave the room for 15 minutes or more.
- Use a wet rag to clean up the pieces and put the pieces as well as the rag into a plastic bag, then put that inside another plastic bag and seal it.
- Check with your local recycling center or home improvement store to see if they accept

- Wash your hands when finished.

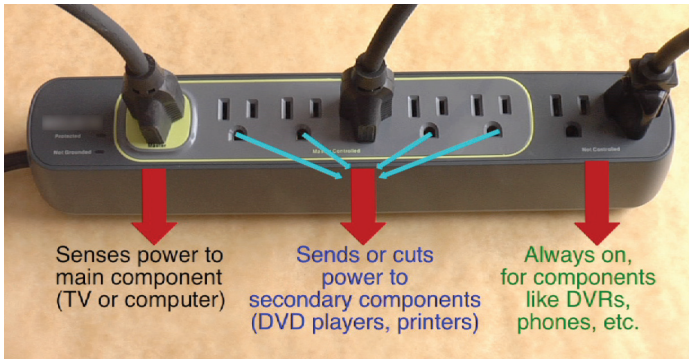
LEDs contain no mercury, so broken and burned-out LED bulbs can usually be recycled along with glass and paper. Some stores have recycling programs for them, so check with your retailer or with your local transfer station.



# “Smart” Power Strips and Home Energy Monitors

Did you know that many of your electrical devices draw power whenever they're plugged in, even when they're not in use? A large HDTV in standby mode could use more electricity than your refrigerator! Audio systems, computers, and other devices can also use up a lot of power,

Some power strips also have one or two outlets that stay on all the time even if they detect a standby mode; these are the ones you use for devices that you need to have on all the time, like a cordless phone, a clock, or an alarm system.



Some power strips are equipped with motion detectors, which will shut off power if you leave the room. This can be very handy because you don't have to turn devices on and off, but it's important to understand how the shutoff feature affects your own needs. For

but there are some simple ways to reduce this unnecessary power drain. You may already be using a power strip, which allows you to plug in multiple devices, and many come with a surge protector to prevent damage to your electronics.

example, if your computer is plugged into one of these, you must remember to always save any project you're working on before leaving the room or you might lose your unsaved work.

Power strips have been improved in recent years, leading to the “smart” power strip, which is an easy and inexpensive way to reduce your energy consumption. These come with a large variety of features, but there are two basic components: electrical outlets and circuitry that monitors and controls the outlets.

These motion-detecting smart strips work best with lights and other devices that won't be adversely affected by sudden shutdowns. An abrupt loss of power can damage some devices, such as inkjet and laser printers that have a controlled shutdown sequence. You're better off turning them off via their own power switches to avoid problems, and using the motion-sensor strips for less sensitive devices.

For example, a computer printer, if you don't use it for a while, will go into standby mode and its power consumption will drop. A smart power strip will detect this change and cut the power to that particular outlet, saving electricity. The rest of the outlets on the strip will stay on.

If you'd rather not spend the money for one of these smart power strips, you can simply make it a point to unplug devices or flip the master turnoff on your regular power strips to avoid using electricity unnecessarily.



# Water Heating

Water heating is the second-largest energy user in your home, amounting to about 18 percent of your bill. Fortunately, there are several easy ways to reduce your costs.

a lot of built-in insulation. Older water heaters, however, usually do not. You can reduce heat loss by 25 to 45 percent by insulating it, and save 4 to 9 percent in heating costs. It's simple



The most obvious? Use less water. You'll be surprised at how much you can save just by limiting showers to about 10 minutes and running your washing machine and dishwasher only when they're full. And if you set the thermostat on your water heater to 120 degrees, your water should be comfortably hot for most uses. To measure the temperature, use a simple cooking thermometer to test the hot water from the faucet nearest the water heater. If the water is hotter than 120 degrees at the tap, you should turn it down at your water heater and retest a few hours later.

To save still more energy, you can use the cold-water setting on your washing machine. Many detergents are formulated to work in cold water. The next step is to insulate your water heater. If you have a newer water heater, it probably has

and inexpensive to do, and will pay for itself in about a year. You can find pre-cut jackets or blankets at your home improvement store for around \$10 to \$20. Choose one with an insulating value of at least R-8. Before you buy, check with your electric or gas utility, depending on whether your heater is electric or gas-powered, as they frequently offer rebates on these items. When installing the insulating blanket, start by reading the instructions thoroughly. There are a couple of vital steps you must pay attention to:

- Before you start, thoroughly clean the top of the heater with detergent and warm water. Do not use a solvent-based cleaner. Make sure the top of the water heater is completely dry before continuing.
- You'll need to keep the jacket or blanket away from the drain at the bottom and the flue at the

top, and make sure the airflow to the burner isn't obstructed. Leave the thermostat uncovered, and don't insulate the top of a gas water heater tank—the insulation is combustible and can interfere with the draft diverter.

Be sure that you're not installing the blanket on a leaking tank. A leaky tank means you need a new water heater. If that's the case, consider a solar-thermal water heating system or an on-demand tankless unit, as these can save energy as well.

You can also save money by insulating your hot water pipes if the heater or pipes are in unheated places like the garage or the crawlspace. This can reduce heat loss and raise water temperature by two to four degrees, which lets you keep your water temperature at a lower setting. You also won't have to wait as long for the water to get hot when you turn on a faucet or showerhead, which helps conserve water. You should insulate all accessible hot water pipes, especially those within three feet of the water heater. It's also a good idea to insulate the cold-water inlet pipes for the first three feet.

Use quality pipe insulation wrap. Pipe sleeves made with polyethylene or neoprene foam are the most commonly used insulation. Match the pipe sleeve's inside diameter to the pipe's outside diameter for a snug fit. Place the pipe sleeve so the seam will be face down on the pipe. Tape, wire, or clamp it with a cable tie every foot or two to secure it to the pipe. If you use tape, some recommend using acrylic tape instead of duct tape. For gas water heaters, keep insulation at least six inches from the flue. If pipes are within eight inches of the flue, your safest choice is to use fiberglass pipe-wrap (at least 1-inch thick) without a facing. You can use either wire or aluminum foil tape to secure it to the pipe. Don't compress insulation, as this reduces its effectiveness.

## Low-Flow Showerheads and Faucet Aerators

In New Mexico's dry climate, most of us are already careful about our water usage, but there are some easy ways to reduce it even more, lowering our water bills and conserving this precious resource.

Showers alone account for approximately 22 percent of individual water use! Low-flow showerheads and faucet aerators are inexpensive and simple to install, and these can reduce your water usage by as much as 50 percent. They'll also reduce the energy cost of heating water by about 50 percent, so they'll pay for themselves in just a few months.

With your faucet, you can check to see if an aerator is already installed by looking for the rated flow imprinted on the side. The rate of flow for a kitchen faucet should be 2.2 gallons per minute or lower, and for a bathroom faucet it should be 1.0 or lower. If they register more than that, you need to replace them with one of the newer, more efficient aerators. If you don't have an aerator at all, be sure to check to see if there are threads just inside the tip of the faucet. Most modern faucets are threaded to accept aerators, but you may need to update your faucet as well if it's an older model. Here's how you install or replace the faucet aerator:

- If you already have one, unscrew it carefully. This can usually be done by hand. But if you need a little more force, you can use channel-lock pliers vise grips, or a pipe wrench.

Unscrew the aerator slowly and smoothly. Don't jerk or pull hard, as you might damage the threads.

- Put the rubber washer inside the end and screw the new aerator by hand onto the faucet. Run the water to test for leaks. If it leaks out the side, try tightening it a bit more by hand and test it again. If it still leaks, use pliers to tighten it. Put a damp cloth around the aerator first to protect the finish. Don't use a pipe wrench because it could bite through the cloth and damage the finish. Be careful not to over-tighten the aerator.

Now for your showerhead. Place a two-quart saucepan or other receptacle on the floor of the shower in the middle of the shower stream. Turn

the shower on full blast, and count how many seconds it takes to fill the pan. If it takes fewer than 12 seconds, you need a low-flow showerhead. If you already have one installed, it should read 2.5 gallons per minute or less. If it's more than that, it's time to replace it with a more efficient one.

There are two kinds of low-flow showerheads: aerating and non-aerating. The aerating showerhead mixes air into the water stream to maintain a steady pressure and a full, even spray. These are the most popular kind. Some models come with a shut-off valve that allows you to turn off the water while soaping up, then turn it back on without having to readjust the temperature when you're ready to rinse.

With a non-aerating showerhead, the water flow pulses, giving more of a massaging effect.

Choosing the right shower fitting is important, and some models are better than others. Ask your retailer for recommendations, or read the online reviews of the various models before selecting one.

Here's how to replace your showerhead:

- Use an adjustable wrench to unscrew the old one, then check the pipe to see if you'll need one with the threads on the inside, or on the outside. If you're not sure, you can take your old one with you to the store and ask the sales-

person to help you pick out the appropriate type.

- Wrap a single layer of white Teflon pipe tape around the threads if they're on the outside. Make sure you check all the pieces in your

kit and that it has clear instructions included in the packaging. Basically, the filter screen goes in the neck of the showerhead. The washer sits on the screen. The tightening nut goes over the pipe on the wall. Using your adjustable wrench, screw the new showerhead onto the pipe.

That's all there is to it!

And if you haven't already done so, you should replace your old toilet with a low-flow model. Look for the WaterSense label on toilets and faucets, and select a toilet that uses no more than 1.28 gallons per flush. The State of New Mexico sometimes offers rebates on these, so your cost will be minimized. For information on this rebate, visit this website: [http://www.toiletrebate.com/toilet\\_rebates\\_in\\_new\\_mexico.php](http://www.toiletrebate.com/toilet_rebates_in_new_mexico.php).



# Window Treatments

Nowadays builders are paying more attention to the energy efficiency of windows, installing double-paned varieties as standard in most new homes. But you don't have to replace your windows to make them more energy efficient. Several types of window shades, when properly installed, can be very effective in saving energy.

Shades should be mounted as close to the glass as possible, with the sides of the shade close to the wall to create a sealed air space. In

Honeycomb shades, for example, are made with "cells" that trap air in their pockets, which helps prevent extreme temperature changes. The more cells there are, the more energy-efficient the shade is. Double-celled shades that are three-eighths of an inch in size gently filter natural light and offer privacy, while their double pleats trap air and repel the summer heat and winter cold. The material is treated to resist stains and minimize dust buildup, and can usually be cleaned with a damp cloth.



summer, it's best to keep your shades lowered on windows that get a lot of sun. In winter, shades on south-facing windows should be left open to benefit from the heat of sunlight during the day, then closed again at night.

What kind of shade is best? That will vary with the type and size of your windows as well as your personal taste, of course, but there are several kinds that offer insulating and/or reflective properties.

The basic ones work from the top down, but there are also models that work from both the top and the bottom.

Dual shades are another option, and can be reversed with the seasons. These have a highly reflective white side and a heat-absorbing dark side. The reflective side should always face the warmest side of the window: facing outward during warm weather and inward during colder weather. To be effective, they need to be drawn during the day in summer and at night in winter.

Quilted roller shades and some types of Roman shades, the ones that hang in broad pleats, use several layers of fiber batting with sealed edges that provide both insulation and an air barrier.

Blinds with slats are helpful in summer by offering flexibility in controlling the amount of light that enters. They are not particularly effective in winter, however, as they don't allow you to control heat loss.

Contrary to popular belief, replacing your old windows rarely results in significant energy savings. Storm windows are cheaper and will usually provide the same savings. Storm windows are available for most types of windows, and they range from inexpensive plastic sheets or films that will last one heating season to tripletrack glass units that can be used for many years.

Storm windows come in interior and exterior models, but interior storm windows generally are more convenient because they're easier to install and remove, require less maintenance, and are more effective at reducing air filtration because they seal tightly to the primary window. Should you get glass panes or plastic ones? Glass panes provide better visibility and last longer than plastic panes, but they're heavier and can break. Plastic panes tend to be most economical and are easy to install, but they're also easier to damage and may scratch easily. Also, some plastic films may degrade over time when exposed to sunlight.

No matter which type you choose, be sure that the storm window frame is hung square with the primary window and sealed to the opening. It's important that the storm windows be easy to remove to allow for cleaning and ventilation.

## Small Air Leaks

Did you know that as much as 25 to 30 percent of our winter heat can be lost through escaping air? Many air leaks in the home are obvious, like a draft that comes in under the door, through a window, or through your fireplace. To deal with these obvious leaks, there are a few things you can do yourself.

For drafty doors, the first thing to do is weather-strip them. This will prevent most air leaks. To determine how much you'll need, measure the perimeters of all doors and windows to be weather-stripped, and then add 5 to 10 percent to allow for waste.



But even with weather-stripping, uneven thresholds or floors may still leak air. There are a couple of products that work well to seal the leaks. One is a simple door shoe, which fits under an exterior door and seals the leak between the floor and the door. A door sweep is great for uneven floors because it has a soft, flexible brush on the bottom that swings gently across the floor. For doors that aren't used very often, you can place a draft stopper against the bottom to block the flow of air.

Fireplaces are another common source of air leaks. You should keep your flue damper tightly closed when not in use. But flue dampers are



made from metal, and over time the repeated heating and cooling can cause the metal to warp or break, causing air loss. To seal it when it's not in use, you can use an inflatable chimney balloon. These fit beneath the flue and can be removed easily and reused hundreds of times. They also work well for fireplaces that have no flue damper, such as the ones in older adobe homes.

For a more permanent fix, consider a flue-top chimney damper that sits on top of the chimney. It can be activated from within, and provides a good seal when the fireplace is not in use.

There frequently are other, less easily detected air leaks that can be addressed as well. By far the best way to find out about any air leaks in your home is to hire a qualified technician to conduct an energy assessment and seal any leaks. It is not advisable to try to do this yourself, as air-sealing can adversely affect indoor air quality if it's not done properly, which has health and safety consequences for the residents and can affect the home's durability.

## Heating and Cooling

Regular maintenance of your heating system can reduce your heating and cooling costs by 5 to 10 percent, and will prolong the life of your equipment.

It's worth it to invest in a preventative checkup by a professional technician to make sure your system is functioning properly. Heating units should be inspected in the fall, and air conditioners should be checked in the spring.

In the meantime, your owner's manual provides information on how to maintain your system, so it's a good idea to review that regularly.

The simplest way to keep your heating system running efficiently is to clean or replace the filters on a monthly basis during peak use time. It's a matter of health as well as efficiency—a dirty filter can contribute to poor indoor air quality. Your owner's manual can tell you the type and size of filter to use, or you can take out the existing one and use that as a guide. You'll find it either behind the return register grill or in the furnace at the return plenum. Simply remove it and replace it. Some filters are designed to be washed and replaced. High-efficiency filters will have arrows indicating the direction of the airflow, so follow arrows accordingly.

Filters are rated according to the efficiency and range of sizes of particulates they can remove from the air. If you are interested in higher-rated filters, you should consult a professional to ensure that your furnace and blower can handle the added resistance.

The next important step is to address the duct system. Homes more than five years old will most likely have duct leakage, and even older homes will have still more. The duct system should be examined prior to installation of new insulation.

Also, keep the area around outdoor air conditioners and heat pumps clean by clearing away any weeds or debris so that air can circulate freely.

Staying cool in the warmer seasons can be as



Be sure to check for improperly connected or crushed ductwork that can restrict flow, and have these repaired if necessary. Leaky ducts will heat or cool any unconditioned space, requiring the unit to work harder to condition the living space. They can also change the airflow into and out of the home, potentially drawing unwanted air from crawlspaces and garages that brings in moisture or pollutants.

Ducts should be sealed with fiberglass mesh and mastic, a waterproof paste that works as a sealer. Typical areas to be addressed are at the air handler where the ducts take off, at the joints in the duct work, and at the register boot. Sealing should be done by a professional technician, since changing how the air flows through the ducts can create health and safety problems if it's not done correctly.

simple as opening a window. In a climate like ours with wide temperature swings between day and night, it's best to keep your windows shut during the heat of the day, then open them once the sun goes down. Keep in mind that air flows from areas of high pressure to low pressure, so cooler air can't come in if the warm air inside the home isn't given a way to get out. Open windows on opposite sides of the house, or if you've got two stories, open windows low and high in the home. Window-mounted fans can also help draw air in or pull air out.

To cool things off further, circulating fans—such as ceiling fans, table fans, floor fans, and fans mounted to poles or walls—are very effective. They create a kind of wind-chill effect inside your home. Ceiling fans are your best bet, as they can circulate all of the air in the room. The room must have at least an 8-foot ceiling, and

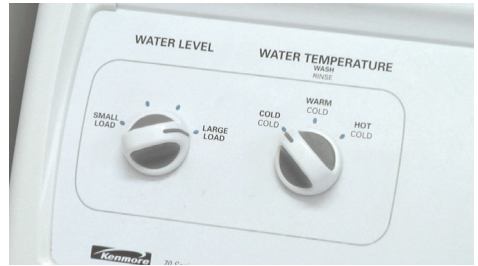


the fans work best when the blades are 7 to 9 feet above the floor and 10 to 12 inches below the ceiling—never closer than 8 inches from the ceiling or 18 inches from the walls. Fans with an Energy Star label move air 20 percent more efficiently than standard models. Blades should rotate counter-clockwise to cool the air; in winter, they can be reversed to circulate the warm air.

Only use your fan when you're actually in the room, as its cooling effect results from the air blowing against your skin. You'll waste energy if you leave it running when you're not in the room.

Many people in hot, dry climates such as ours use swamp coolers to lower the temperature indoors because they humidify the air, unlike air conditioners, which dehumidify it. They use 75 percent less energy than air conditioners, but it's important to note that they do use large amounts of water—anywhere from 3 to 15 gallons a day—so you might want to limit their use to those times when fans just aren't enough. Swamp coolers chill outdoor air by passing it over water-saturated pads, which causes the water to evaporate into the cooler. The cooler air is then directed into the home, pushing the warmer air out through open windows, so it's important to keep your windows open when using one. You can set the evaporative cooler to the fan-only mode during the night, bringing in the cool night air. Be sure to change the pads yearly and clean out debris and mineral deposits that collect in the water reservoir. Also, some motors require oil, and will burn out without it. Check the lines for leaks.

# Appliances



In a typical home, appliances and electronics account for about 20 percent of the energy bill. These include everything from washers, dryers, and dishwashers to home audio equipment, televisions, DVD players, and refrigerators.

To help people save money and reduce their energy footprint, Energy Star ratings for computers were introduced in 1992. The designation was expanded in the next few years to cover home appliances as well. And as technology changes over time, the Energy Star program continues to update its standards. That means that an appliance purchased in, say, 2000, may have been state-of-the-art at the time, but newer models will likely have increased in energy efficiency since then.

Today's Energy Star refrigerators, for example, are required to use 20 percent less energy than non-Energy Star models. The Energy Star website has a savings calculator that lets you find out how much money you'll save by replacing your existing refrigerator, as well as other appliances, based on when they were purchased. The good news is that your utility company will often haul away your old refrigerator and give you a rebate for switching.

Energy Star clothes washers are designed with larger tub capacities to let you wash fewer

loads, and they use about 30 percent less energy and half the amount of water of regular models. You'll also wash fewer loads if you wash only full loads. Front-load washers use less water than the top-load kind and also get clothes dryer in the spin cycle, so you'll save on drying time as well.

Clothes dryers do not have Energy Star ratings because most dryers use similar amounts of energy. You can still save energy, though, by air-drying clothes whenever practical, and opting for your washer's highest spin speed or extended spin options to reduce the moisture before starting to dry. Another good way to save is to separate fast-drying items from slow-drying ones, which helps you use the dryer only as long as you need to. And be sure to keep the lint filter cleaned.

Energy Star dishwashers save an average of 1,300 gallons of water over their lifetimes, and use less energy than conventional models. As with your laundry, wash only full loads, and use the air-dry option to avoid using the heating element to bake your dishes dry.

Chest freezers are more efficient than stand-up freezers, and a fuller freezer will operate more efficiently than an empty one. Again, look for the Energy Star label.

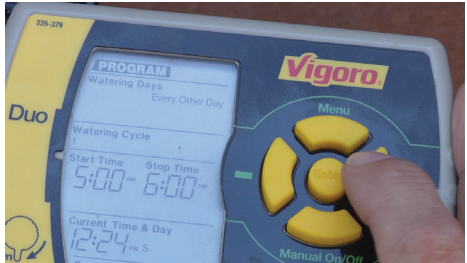


# Outside Your Home

Outside your home, you'll find a number of opportunities to lower your energy consumption.

One way is to plant drought-tolerant flowers and shrubs, paying attention to native plants that are accustomed to thriving in the local climate. Water more deeply and less often. Install drip irrigation on a timer, and be sure to water early in the morning or after sunset, never during the heat of the day when you'll lose water to evaporation.

Another way is to site your plantings to provide



maximum shade to your home. If you use deciduous trees and plants, which lose their leaves in winter, you can enjoy summer shade while letting the sun's heat come through in winter. You'll want to keep plantings away from your home's foundation and walls.

Ensure that you have positive drainage away from the perimeter of the home, particularly if you don't have gutters. If you have downspouts, be sure they direct water away from the home. Keep your gutters clean! Water collecting in gutters can get into places you don't want it. Rainwater barrels are a great way to store and reuse rainwater, but be sure you account for overflow. It can rain fast and hard here, and

that 55-gallon drum will fill in no time. You don't want the additional water to soak in around your foundation. If it rains a quarter-inch on a 1,000-square-foot roof, you will collect 156 gallons of water!

Solar-powered outdoor lights, which use no electricity, absorb energy from the sun during the day and emit that energy as light after sundown, offering a cost-effective and attractive way to light up your driveway, walkway, and garden.

Install a motion sensor on your porch light so that it only lights up when needed.

Keep a check on the general condition of your home, and be sure to have cracks in stucco dealt with by a professional. Maintain wood trim at soffits or windows, and seal any cracks around window with a silicone-based sealant.

## Health and Safety

An efficient home must also be a safe home! A simple smoke alarm can save lives, and is inexpensive and easy to install. To be sure that the batteries are always working, it's a good idea to replace them every time you change



your clocks for daylight savings time. That way you'll always remember the last time you changed them. Your alarm will beep when the battery is low, but you should also test them once a month by pressing the test button to make sure they're still working.

Another important device is a carbon monoxide monitor. Carbon monoxide is a colorless, tasteless, odorless gas that is also deadly. It can come from a variety of household sources, such as ovens, fireplaces, furnaces, gas appliances, clogged chimneys, or improper venting in a garage. Symptoms of carbon monoxide poisoning include dizziness, nausea, sleepiness, headaches, and pink or reddish skin. A carbon monoxide detector can alert you when the level of this gas has become dangerous, so you can leave your home and contact the fire department before it reaches levels that are poisonous.

In the bathroom, exhaust fans do more than just dissipate unpleasant odors. They also help with moisture control, which minimizes the growth of mold. It's recommended that you turn

on your bath fan for 15 minutes after a shower or bath to dry out the air completely. Be sure it is vented to the outside and not into the attic.

Kitchen exhaust fans are also important, as they get rid of moisture as well as dangerous combustion gas and chemicals that can accumulate during cooking. They should also be vented to the outside.

## Energy Audits

Have you noticed a change of temperature from one room to the next in your home? Are your energy bills high even after trying to reduce your energy use? Do you have mold in a room other than the bathroom, where shower curtains often mildew? An energy audit of your home,



conducted by a professional, will tell you where you're losing energy and money, allowing you to address problem areas safely.

An energy audit can help you evaluate insulation levels and needs and the potential for air sealing, appliance and heating/cooling upgrades, as well as ductwork. An energy

auditor can provide a holistic review of the condition of your home, which is a valuable overview that a specific trade is unlikely to provide. An insulation specialist, for example, might not talk with you about ductwork, even though it makes more sense to address ductwork before blowing insulation into the attic. The auditor can help you prioritize improvements and explain why certain improvements are best done before or in conjunction with other improvements, such as insulation and air sealing or sealing ductwork before investing in a high-efficiency furnace.

Two organizations have developed standards and certification for energy auditors, the Building Performance Institute, or BPI, and RESNET. Technicians certified by either of these can perform an energy audit on your home and determine your priorities. They can undertake tasks like air sealing and heater servicing, or refer you to a qualified contractor.

Low-income households can take advantage of the government's Weatherization Assistance Program, which provides low- or no-cost energy audits and weatherization services to qualifying individuals to help them save money. If you think you might qualify, contact the New Mexico

Weatherization Assistance Program at this website:  
<http://www.housingnm.org/nm-energysmart>.

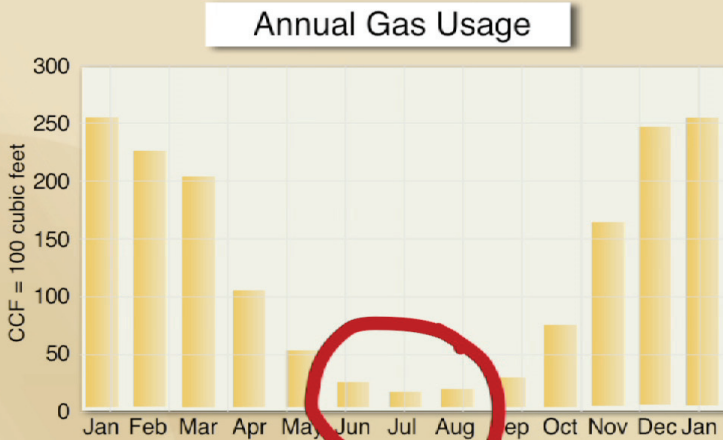
If you're planning a large remodel, have an auditor do energy modeling of your home. Both BPI and RESNET certified auditors can provide this service.

# How to Read Your Bill

It's a good idea to learn how to read your utility bill. It only takes a few minutes, but it will help you pinpoint areas of large energy consumption. Each bill provides you with information on your current month's usage, as well as last month's and the same month the last year. You can visit New Mexico Gas Company's website at [www.nmgco.com](http://www.nmgco.com) to view a year's worth of bills to make a broader comparison. You can do the same with your electric bill by visiting your utility company's website.

lowest electrical use will give you your electrical baseload.

Calculate the average by adding these figures together and dividing by three. This will give you a rough idea of your monthly baseload consumption. You can figure your annual baseload cost by multiplying this number by 12. You can then calculate your seasonal cost by subtracting this number from your total annual cost. Do this for both your gas bill and your



For an even more in-depth understanding of your energy usage, you can calculate your seasonal energy use, which includes heating and cooling, as well as your baseload use, which is the energy used by appliances operated all year, such as your water heater, refrigerator, stove, television, and computer. To do this, just look at the three months where your costs are lowest—usually June, July, and August if you don't use an air conditioner. The months with the lowest gas usage will give you baseload for cooking and water heating. The months of the

electric bill. This will help you determine your priorities in reducing your energy footprint, and will also give you a basis for comparison once the improvements are made.

# Renewable Energy Sources

If you'd like to go beyond these energy-saving suggestions, you can enlist the help of professionals to convert your home to renewable energy sources like solar photovoltaic, solar thermal for water heating, or geothermal energy. Although your initial expenses may seem pretty high, the extremely low energy bills that result will make your investment pay off over the long term.

Addressing all of the energy-saving steps we've discussed so far can make a real dent in your energy bills, and they're important steps toward reducing your energy footprint and dependency on fossil fuels. As simple as these suggestions may seem, their impact will be significant.

## For More Information

As we've demonstrated, there are many ways to reduce your energy use at very little cost. To learn even more about improving energy efficiency in your home, you can visit these websites:

[www.energysavers.gov](http://www.energysavers.gov)

[www.housingnm.org/](http://www.housingnm.org/)

[www.greenbuildingadvisor.com](http://www.greenbuildingadvisor.com)

[www.nature.org/greenliving/carboncalculator/  
index.htm](http://www.nature.org/greenliving/carboncalculator/index.htm)

[www.greenhomeguide.com](http://www.greenhomeguide.com)

[www.bpi.org](http://www.bpi.org)

[www.resnet.us/](http://www.resnet.us/)

[www.energystar.org](http://www.energystar.org)

[www.epa.gov/watersense/](http://www.epa.gov/watersense/)

# Energy Efficiency Checklist

Even simple changes can make a difference in your energy bills. Here's a convenient checklist to help you keep track of your progress toward energy efficiency.

## **Thermostats**

- ☐ Turn down your thermostat 8 to 10 degrees at night while you sleep and during the day while away at work or school.
- ☐ Purchase a programmable thermostat to do this automatically.

## **Lighting**

- ☐ Switch from incandescent light bulbs to halogen, compact fluorescent (CFLs), or LEDs.

## **“Smart” Power Strips**

- ☐ Cut power to electronics when they're not in use by using “smart” power strips.

## **Water heating**

- ☐ Limit showers to 10 minutes.
- ☐ Run your dishwasher and clothes washer only when full.
- ☐ Turn down the temperature at your water heater.
- ☐ Insulate your water heater.
- ☐ Insulate your water pipes.

## **Showerheads and faucets**

- ☐ Install low-flow showerheads.
- ☐ Install faucet aerators.



## **Window Treatments**

- ☐ Mount window shades close to the glass and sides of the wall to create a sealed air space.
- ☐ Use honeycomb shades, dual shades, or quilted shades to prevent extreme temperature changes.
- ☐ Install storm windows in winter to prevent heat loss.

## **Small Air Leaks**

- ☐ Weatherstrip doors and windows to prevent drafts.
- ☐ Use a door shoe, door sweep, or draft stopper to block airflow at the bottom of doors.
- ☐ Keep your fireplace flue damper tightly closed when the fireplace is not in use.
- ☐ If you don't have a flue damper, use an inflatable chimney balloon to seal the fireplace.
- ☐ Install a flue-top chimney damper for a more permanent fix.

## **Heating and Cooling**

- ☐ Have your heating and cooling system inspected by a professional to ensure proper functioning.
- ☐ Check your heater in the fall and your air conditioner in the spring.
- ☐ Clean or replace your heater's filters on a monthly basis during peak use time.
- ☐ Have improperly connected or crushed ductwork repaired by a professional.
- ☐ Keep the area around outdoor air conditioners and heat pumps clean of weeds and debris.
- ☐ In warm weather, keep windows shut during the day to keep out the heat and open them at night to let in cool air.
- ☐ Use circulating fans to cool rooms when they are in use.
- ☐ Clean your swamp cooler regularly to prevent mold, and keep a window open when it's in use.
- ☐ Turn your swamp cooler to the fan-only mode at night when the air is cooler.

## **Appliances**

- ☐ When replacing old appliances like refrigerators, washing machines, dishwashers, and freezers, look for new ones with the Energy Star label.

- ☐ Full freezers are more efficient than emptier ones, so keep yours filled when possible.
- ☐ Air-dry your laundry whenever practical.

## **Outside Your Home**

- ☐ Plant drought-tolerant and native flowers and shrubs.
- ☐ Install drip irrigation to save water.
- ☐ Water more deeply, but less often.
- ☐ Water early in the morning or after sunset.
- ☐ Keep gutters clean and make sure water drains away from your home.
- ☐ Use solar-powered outdoor lights to save electricity.
- ☐ Install a motion sensor on your porch light to save electricity.

## **Health and Safety**

- ☐ Install a smoke alarm, and remember to change the batteries twice a year.
- ☐ Install a carbon monoxide alarm to monitor levels of this dangerous gas.
- ☐ Use an exhaust fan in the bathroom for 15 minutes after a shower or bath.
- ☐ Use an exhaust fan in the kitchen to get rid of dangerous combustion gases and chemicals.

## **Energy Audits**

- ☐ Hire an energy auditor certified by BPI or RESNET to review your home's needs and priorities.
- ☐ Check to see if you qualify for the government's Weatherization Assistance Program at:  
"<http://www.housingnm.org/nm-energysmart>" <http://www.housingnm.org/nm-energysmart>.

## **Reading Your Energy Bills**

- ☐ Find the chart that compares your current month's energy use to the previous month and the same month last year.
- ☐ Calculate your baseload energy use to pinpoint areas of large consumption.
- ☐ Calculate your seasonal energy use.