

MAJOR HOME APPLIANCES



How to Run Your Home's Appliances to Save Money and Energy

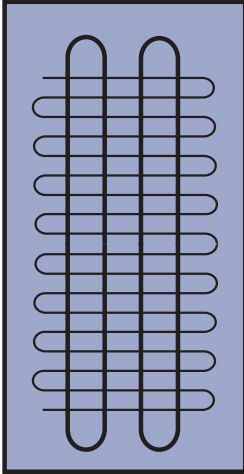
INSIDE

REFRIGERATORS AND FREEZERS	2
RANGES AND OVENS	7
MICROWAVES	10
DISHWASHERS.	11
CLOTHES WASHERS AND DRYERS.	13

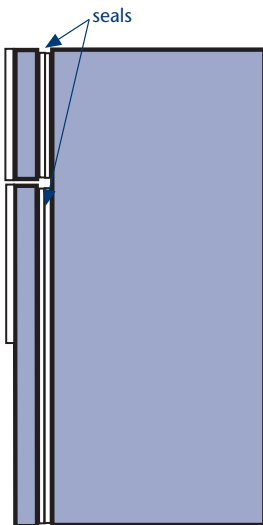
REFRIGERATORS AND FREEZERS

Since the first modern household refrigerator was developed and manufactured in 1916, its design has steadily improved in efficiency and effectiveness. In fact, due to recent federal standards, a refrigerator built in the 1990s uses half as much energy as a comparable model built in the 1970s.

There are a lot of fairly simple things you can do to improve the overall efficiency of your refrigerator or freezer. By following the steps in this section, you will be saving money as well as conserving energy and natural resources.



One way to save energy is to keep your refrigerator's condenser coils clean. Condenser coils are found on the back or underneath of your unit.



Be sure the door seals on your refrigerator are working properly. If they aren't, replacing them can improve your unit's efficiency and save you money.

Keep it Clean...

It's a good idea to clean your refrigerator at least every other month. If you look behind and underneath your refrigerator, you'll see some metal coils, usually black in color. These are the heat-condenser coils that transfer heat from the inside of the unit to the outside air. Because dust acts as an insulator, dusty heat exchange coils can't get rid of heat as easily and the refrigerator has to work harder to keep your food cool. These coils should be kept clean with a vacuum or dust broom. Consult your owner's manual for specific cleaning instructions.

...And Defrosted

Moisture from stored foods and liquids evaporates inside the refrigerator. This moisture condenses and builds up a frost layer on the inside walls of your freezer. This frost prevents the cold from the refrigerant coils from circulating properly. Unless you have a frost-free unit, some condensation should be expected.

You should defrost your freezer compartment before the ice gets $\frac{1}{4}$ -inch thick. You may need to adjust your thermostat after defrosting (see next section on settings). It's also a good idea to keep lids on any liquids stored in the refrigerator, such as juices or soups. Leaving them uncovered speeds the evaporation process and quickly adds to the frost buildup. Additionally, let hot foods cool before storing them. This will save your refrigerator a lot of extra work. If you do need to put hot food into your refrigerator, first pack it into smaller, shallow containers. This speeds up the cooling time and reduces the evaporation.

Thermostat Settings

If your refrigerator has an energy-saver setting, use it. If it doesn't, keep your thermostat between 37°F and 42°F in your refrigerator and 0°F in the freezer. If your temperature dial only has numbers on it, consult your owner's manual, or better yet, use a thermometer to determine the temperature for each number setting. If you're going to be out of town for an extended time, set the thermostat a few degrees warmer than usual. Your food should be safe and the unit's compressor won't have to run as often.

It's also important to leave a little room between items on the shelves so the cold air can circulate properly. If you pack food together too closely on the shelf, the cold air may not be able to reach some of it enough to prevent spoiling.

Good Habits

Standing in front of an open refrigerator is a waste of energy. Though it's not always possible, try to decide what you want in your refrigerator *before* you open the door. The interior temperature of the unit can shoot up 10° F to 20° F each time you open the door. The longer the door is left open, the more cool air will be lost and the longer the compressor will have to run to lower the temperature.

Of course, you should always make sure that the door has closed and sealed properly. Get in the habit of checking the door after you use it. Often, especially on older units, the door won't swing completely closed and will hang open until someone notices and pushes it completely shut. An open refrigerator can't cool properly and you run the risk of spoiling the food inside, which can be a costly and unpleasant experience.

Checking for Leaks

Even when the door is closed, cold air can leak out from your refrigerator. Check the magnetic door gaskets periodically and replace them if they're worn or leaking. Over time, vinyl or rubber seals tend to harden or become twisted out of shape. To find air leaks, pass the back of your hand around the closed seal to detect escaping cool air. Or better yet, insert a piece of paper, such as a dollar bill, at various points between the seal and the edge of the door when you close it. If the paper can be easily pulled out with two fingers, or worse yet, if it slips down or falls out by itself, it's time to replace the seal. Replacement seals are fairly inexpensive and can be purchased at your local hardware store or appliance dealer. Make sure you check your owner's manual for the correct size and type of replacement seal.

One vs. Two Refrigerators

To store large amounts of food, use a single large refrigerator. It is much more efficient than using two or more smaller ones.

Location Counts

Don't place your refrigerator or freezer in direct sunlight or near any heat source, such as an oven or a furnace register. The cooler the surrounding temperature, the easier it is for the unit to maintain a cold temperature inside.

Also, avoid wedging your refrigerator into a tight space between walls, cabinets or other appliances. There should be at least 3 inches of space around the outside of the unit for air to circulate freely. Otherwise, there may be excessive heat and dust buildup that can cause the unit to run more often and thereby shorten its life span. Most new



Refrigerator Tips

- Clean your refrigerator's condenser coils at least every other month.
- Defrost when the frost gets ¼-inch thick. The frost prevents the cold air from circulating properly.
- Always make sure that the door is closed and sealed.
- Check the door seals periodically and replace them if they are worn or leaking.
- Keep your thermostat between 37°F and 42°F. If you're going to be out of town for an extended time, set the thermostat a few degrees higher.
- Keep your refrigerator as full as possible.
- Leave space between items on the shelves for proper air circulation.
- Keep lids on any liquid containers stored in the refrigerator.
- Don't place the unit in direct sunlight or near a heat source such as an oven or a furnace register. Keep at least 3 inches of space around the unit for air to circulate freely.

Tips for Buying a New Refrigerator

- Top freezer models are more efficient (use 7-13% less energy) than side-by-side models.
- Manual defrost models use half the energy of automatic defrost models but must be defrosted periodically to remain energy-efficient.
- Automatic ice-makers and through-the-door dispensers will increase energy use by 14% to 20% and increase the purchase price by about \$75 to \$250.
- Models with an anti-sweat heater will consume 5% to 10% more energy. Look for a model that has an "energy saver" switch that allows you to turn off or turn down the heating coils (which prevent condensation).
- The most energy-efficient models are in the 16 to 20 cubic foot sizes. Generally, the larger the refrigerator, the greater the energy consumption. Too large a model will waste space and energy; too small a model could mean extra trips to the supermarket.
- It is usually less costly to run one larger refrigerator than two smaller ones.
- If two different sized refrigerators use the same amount of energy, the larger model can be considered more efficient because it keeps more space cold with the same amount of electricity.

Questions to Ask When Shopping

- Are rebates or financing available from local utilities or government agencies for the purchase of this refrigerator?
- What is the energy rating? (Be sure to check the EnergyGuide label).
- What makes this model more energy efficient than other similar models?
- What do I need to know about the refrigerator in order to use it most effectively? (e.g., allow 2 inches air flow around refrigerators).
- When buying a contractor-supplied refrigerator, specify an estimated annual energy use.

refrigerators are built to last for 15 to 20 years, but to give you those years of trouble-free service, they'll need a little breathing room.

Replacement

Of course, no machine lasts forever. If you decide to retire your old refrigerator, evaluate your needs before you invest in another one. Ask yourself, how well did your old refrigerator meet your needs? Do you need more room, or could you easily get by with less? How much freezer space will you need? Knowing the answers to these types of questions before going shopping will help you choose a refrigerator that's best for you.

Buying a refrigerator that's larger than you need is probably a waste of money, because you'll be spending extra money to cool unused space. Generally speaking, two people need 8 to 10 cubic feet of storage space in the refrigerator compartment. One cubic foot should be added to the unit's size for each additional person. For freezer compartments, 3 cubic feet is adequate for two people, and again, add 1 cubic foot of space for each additional person.

Energy Efficiency is Crucial

The refrigerator is the only appliance in your home that works continuously, day after day, month after month, year after year. One tool you can use to help you make an energy-wise investment is the yellow EnergyGuide label found on all new refrigerators. These labels show the annual operating cost of a new appliance based on the national average electrical cost. While your local electricity costs may differ from this figure, it is still a useful guide for comparing models.

By using the information on the EnergyGuide label, you can easily determine which appliance is the most economical. To do this, first compare two refrigerators, each having the same capacity and features, but different purchase prices and operating costs. See the sample EnergyGuide label (page 15) and steps below to learn how energy-efficient products can save you money.

	Model A	Model B
Purchase Price	\$746	\$580
Yearly Operating Cost	\$47	\$87

Step 1: Subtract the purchase price of the less expensive model from the price of the more expensive model. In the above example: $\$746 - \$580 = \$166$.

Step 2: Subtract the lower yearly operating cost from the higher yearly operating cost. In the above example: $\$87 - \$47 = \$40$.

Step 3: Divide the difference in initial purchase price by the difference in yearly operating cost. In the example above: $\$166 \div \$40 = 4.15$ years.

The answer to Step 3 is 4.15 years. Therefore, you have learned that it will take a little over 4 years for the lower operating cost of the more energy-efficient model to offset its higher initial purchase price. At \$40 savings in energy costs per year, you would save \$600 in yearly operating costs over the expected 15-year lifetime of the refrigerator. This formula can also be used to help you determine the most cost-effective and energy-efficient model when purchasing other appliances.

It's important to remember that EnergyGuide labels tell us how efficiently a product is *capable* of running. In other words, your personal operating habits can greatly impact a unit's efficiency.

Other Things to Look for

Size and style The cheapest, most efficient design is the common two-door, overhead freezer (top-mount) style. It's also the most common design, which means that it provides the most options in terms of extra features. Units with side-by-side configurations are advantageous in that both the refrigerator and freezer compartments are at eye level, but you lose space. Also, side-by-side models are more energy-hungry than top-mount models, using up to 35% more electricity per year. Other configurations have the freezer on the bottom and the refrigerator compartment on top. Again, there's an advantage in having easy access to the refrigerator shelves, but you pay for it. These models are more expensive, both to purchase and to run.

"Built-in" refrigerators are the most expensive models of all. These are usually custom-designed to match the decor of your kitchen and to fit seamlessly into the surrounding kitchen cabinets. This design may hinder air circulation around the coils and inhibit cleaning.

On the opposite end of the scale are compact units, such as those found in offices and dorm rooms. These are usually inexpensive, but unless space is your primary consideration, you're better off with a full-sized unit. The freezers in compact models are often ineffective.

Thermostat controls Separate temperature controls for the freezer and refrigerator will help you save energy. Some models come with *energy-saving settings* that enable you to turn off features, such as heaters or refrigerant loops that prevent moisture from building up on the outer surface. Use these settings to maximize the efficiency of the unit and reduce its operating cost.

Automatic defrost This system uses heaters to melt frost and evaporate the water after the compressor has run for a certain number of hours. Automatic defrost is a common feature in new refrigerators, and saves you the trouble of defrosting a unit yourself.

Shelf spacing and ease of rearrangement This is something that many shoppers don't consider when comparing models. Try to find a model with easy-to-arrange shelves. This will come in handy if you ever need to store larger items, such as a turkey or tall bottles. Removable shelves are also easier to clean. Some models feature



ENERGY STAR[®] labeled refrigerators can help save money on utility bills through superior designs that require less money and less energy to keep your food cold.



The American Council for an Energy Efficient Economy has a list of the current "best of the best" energy efficient models and brands of appliances including refrigerators, dish washers, water heaters, clothes washers and dryers as well as heating and cooling equipment. The web site is: www.aceee.org/consumerguide/.



ENERGY STAR[®] labeled refrigerators incorporate a number of advanced features to save energy while keeping your food fresh. To make a better refrigerator, manufacturers use:

- Better insulation.
- More efficient compressors.
- Improved heat transfer surfaces.
- More precise temperature and defrost mechanisms.

Your refrigerator's compressor generates heat. ENERGY STAR[®] labeled refrigerators use improved insulation so the compressor needs to run less often. This keeps your kitchen cooler, reducing the need to air condition.

ENERGY STAR[®] refrigerators must exceed the July 1, 2001, minimum federal standards for energy consumption by at least 10%.

To find more information on ENERGY STAR[®] labeled refrigerators, go to <http://www.energystar.gov/products/refrigerators>.

tempered glass shelves, which confine spills to a single level. However, these shelves may inhibit air flow within the unit.

Insulation and seals Check the level of the unit's insulation in the manufacturer's specifications. This will likely be a number preceded by an "R-" which indicates the resistance to heat transfer (ex: "R-9"). In other words, the higher the number, the better insulated the unit is, and the less its compressor will have to run to keep it cold. Also check the door seals carefully to make sure they seal all the way around the door once it's closed.

Extra features Icemakers and water dispensers may be more trouble than they're worth. Not only do they increase the purchase price of your refrigerator, but often they require special installation by a plumber or service technician.

Environmental Friendly Products

One final consideration you may want to keep in mind as you shop for a new refrigerator is the *recyclability* and *environmental friendliness* of various models. Ask your dealer or service representative about the availability of environmentally-safe appliance models.

A number of states are passing legislation to limit appliance disposal in public landfills, and in response to public pressure, some appliance manufacturers are planning to design their products so they can be recycled and disposed of more easily. Aside from the extra space they take up, discarded appliances often contain toxic substances, such as the paint or insulation, that can contaminate the ground water. Also, the refrigerants in the coolant coils of discarded refrigerators contain ozone-depleting chlorofluorocarbons (CFCs) which can escape through punctures and expand to 200 times their volume in the open air.

CFC refrigerants have now been banned throughout most of the world, and in the United States, the law requires that all refrigerators produced after January 1, 1996, must have non-CFC refrigerants. Most appliance manufacturers will be using a refrigerant compound called HFC-134A to replace the old industry standard R-12 refrigerant. As a result, the retail price of new refrigerators is expected to rise slightly.

Recycling Appliances

The opportunity to recycle appliances has existed for a long time. However, the more common way to dispose of appliances or "white goods" has been to compact them and send them to the landfill. It is also not uncommon to see them in ditches and creeks. Now there are laws that determine how appliances that contain hazardous materials (such as CFCs) should be collected and disposed.

If your old appliance still has some useful life left, then consider calling a local used appliance company that might be interested in repairing it for resale. To properly dispose of any large appliance in Arkansas, check with your city or county solid waste director or local elected official. Arrangements can be made to pick up the appliance. This will ensure that the appliance will be properly recycled.

RANGES/OVENS

When you use your range or oven, there are a lot of things you can do to maximize both its efficiency and your savings. Here are a few energy saving tips:

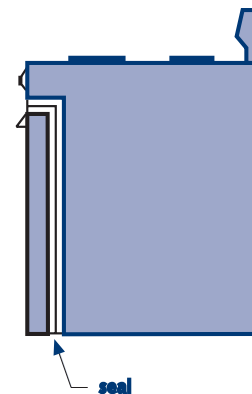
- Get into the habit of turning your oven off immediately after you use it. If you're using a cooktop with electric heating elements, you can turn it off a few moments ahead of time and the hot element will continue to cook the food.
- Thaw frozen foods in your refrigerator. This requires a little planning, but it can cut the cooking time by as much as a third. For faster thawing, use the low power setting on your microwave oven.
- Most foods don't require a preheated oven. If you do preheat, limit the time to 10 minutes. To further reduce heat loss and the risk of a nasty burn, rearrange the oven racks *before* starting to preheat your oven.
- Use only as much liquid as necessary while cooking. The more water you add to your food, the longer it will take to heat it. Adding less water will enable you to use lower temperatures and shorten cooking times. Also, use lids to cover pots and pans while they're cooking. This retains heat and allows foods to be cooked faster and more efficiently.

Aside from microwave ovens, there are two common types of ranges and ovens: gas and electric. Gas ranges use ignited jets of natural gas or liquid propane for heat, while electric ranges use electrically powered heating elements.

The average cooking range will last anywhere from 15 to 20 years. However, if the range you now have is old and inefficient, you may want to consider replacing it with a newer, more efficient model. New ranges are not required to carry EnergyGuide or ENERGY STAR® labels, due to the wide range of operating costs among different brands and models. Check the manufacturers' literature for energy-saving features and ask the dealer for details about each model. Additionally, most libraries have independent consumer publications that objectively compare different brands of appliances, listing the pros and cons of each. However you get your information, a careful comparison of models now can yield big energy savings in the long run.

The Choices

Your choice between a new gas or electric range will depend on your budget, personal cooking habits, and most importantly, the utility hookups and space available in your kitchen. Electric ranges generally require a 208- or 240-volt line, while gas ranges require a gas line, along with a 115-volt outlet to run the lights, clock and spark igniter for the burners. Both types of ranges have their pros and cons which you



Keep seal around oven door clean and in good working order.



Energy Wise Cooking Tips

- Use the right sized pans. The base of the pot or pan you're using should completely cover the heating element; otherwise, up to 40% of the radiated heat will be absorbed by the surrounding air instead of the pan and the food inside it. With standard electric cooktops, pots and pans should have flat bottoms for the heat to conduct properly.
- If your oven is equipped with one, look through its window to check on foods instead of opening the door. The interior temperature is reduced 25° F to 30° F every time you open the door.
- Keep your oven and cooktop clean. Baked-on spills can inhibit the heating of the elements, as well as shorten their lifespan. Cleanliness enhances energy-efficiency.
- Thaw frozen foods in your refrigerator first; they'll cook faster. A defrosted roast requires about 33% less cooking time than a frozen one.

should consider before buying. The biggest difference is between the cooktops of gas and electric ranges.

Gas burners turn off and on instantly and let you see and control the heat levels directly. Unlike electric burners, you can easily see when a gas burner is on or off, thereby reducing the risk of accidental burns. Many gas ranges also can be used during power outages, which might be an advantage if the power in your area is subject to periodic blackouts. Sealed burner units are relatively easy to clean, and any shaped pan bottom will work on a gas stovetop. Gas ranges and cooktops are typically more expensive to buy, due to the added piping inside, but may be less expensive to operate, especially now that automatic spark igniters have virtually replaced standing pilots.

Electric cooktops, especially smoothtops, are much easier to clean than conventional gas cooktops. Newer cooktop elements (radiant, halogen and magnetic-induction which are described later) have many characteristics that improve their operation, maintenance and safety compared to common electric coils.

Elements and Burners

Look for easy-to-clean features such as a glass or porcelain backguard instead of a painted one. Also look for seamless corners (easier to clean) especially where the cooktop joins the backguard, and raised edges (to contain spills). The following is a list of the several types of burners and heating elements available.

Electric coils are the most common and inexpensive of the electric heating elements. These are typically arranged in a spiral shape and glow red when hot. Cleaning isn't always easy, as spills can seep down between the coils, but they usually burn off the coils themselves. They generally plug in, which makes replacement of broken or malfunctioning coils a simple task.

Solid elements are usually gray in color, disk-shaped and affixed directly to the cooktop, so there are no openings into which spills can seep. This type does have some drawbacks. You must use flat-bottomed pots and pans with these burners, and the elements also take more time to heat up and cool down. Furthermore, the elements don't change color when they're hot, as do electric coils, which increases the likelihood of their being left on and causing accidental burns.

Smooth cooktops have concealed heating elements beneath a flat ceramic glass surface, usually black or grayish white. These are easy to clean. Smooth cooktops come with any of the three following types of heating elements:

Radiant elements are basically electric coils below a ceramic glass top. For efficient heating, they require the use of flat-bottomed pots and pans with bases of the same diameter as the element. Since the coils themselves can't be seen, an indicator light is usually provided to signal a hot surface. They heat up faster than solid disk elements, though not as quickly as conventional coil

elements. Radiant elements are more energy-efficient than coil or solid elements.

Halogen elements are fairly new in the U.S. They use halogen lamps under a glass surface as a heat source. These elements deliver instant heat and respond quickly to changes in the temperature setting. They require flat-bottomed pans for maximum heating efficiency.

Magnetic-induction elements are available on some models. These are the most expensive of the three, and heat pots or pans directly, via magnetic induction, instead of heating the cooktop surface. The pots and pans need not be flat-bottomed, but they must be made of a magnetic metal, such as steel or iron. They are very energy-efficient — using less than half as much energy as standard electric coil elements. Currently, induction elements are available only on the highest priced cooktops.

Gas cooktops have removable metal grates that hold pots or pans just above the burners. For ease of cleaning, some have sealed burners which have no space between them and the cooktop, thus stopping spills from seeping below.

Gas smoothtops will soon be available from some manufacturers.

Styles and Configurations

Freestanding ranges are the most common, as well as the least expensive to buy. These stand alone, either between or at the end of your kitchen counters. **Dual** or **combination ranges** (also called over-and-under ranges) usually have one cooktop and two ovens vertically configured in various ways. Sometimes the second oven is a microwave or convection oven. There are also **“built-in” models** that either slide in or drop into your kitchen counters. These look good, but are generally the most expensive models to buy and install.

Self-cleaning ovens, whether standard gas or electric units, are very energy-efficient because they have more insulation. However, if you use the self-cleaning feature more than once a month, you’ll end up using more energy with this feature than you save from the extra insulation.

Convection ovens are more energy-efficient than standard ovens because the heated air is continuously circulated around the cooking food. You get more even heat distribution, and as a result the temperatures and cooking time can be decreased. On average, convection ovens will use about one-third less energy.

Oven capacity. Though different range models may appear to be about the same size on the outside, there are often differences in cavity sizes due to shelf support designs and other features. For example, convection-type ovens usually have a slightly smaller capacity due to the fan. Other ovens limit the number of items you can cook simultaneously on different shelves.



More Cooking Tips

- It’s not necessary to preheat your broiler.
- Only 10 minutes are needed to preheat an oven. Also, meals like meats and casseroles don’t require preheating.
- Gas ranges should always have a blue flame. A yellow flame indicates improper combustion and results in wasted energy. If the flame is mostly yellow, have it checked.
- Never leave water boiling on a high setting. After water reaches a rolling boil, save energy by reducing the heat to the low or “simmer” setting.
- Don’t leave your exhaust fan on longer, or at a higher speed, than necessary. In just one hour, these fans can blow away a house full of warmed or cooled air. Food odors and oven or range heat usually can be removed within 15 minutes or less.
- Consider cooking meals with small appliances. Microwaves, electric skillets, grills or toaster/broilers use less energy than the range and are an energy-wise choice, especially for small or individual items.



Extra Features

- Self-cleaning ovens save cleaning time. Also, because of their extra insulation, they are very energy-efficient.
- Convection-type ovens are energy-efficient and eliminate hot and cold spots by circulating the heat. With these ovens you can lower the cooking temperatures and shorten cooking times.
- An automatic spark igniter is an excellent feature if you're buying a gas range. They can cut gas consumption by about 40%.
- An oven window and light makes it easier to check on the progress of baking items without having to open the door.

Range Hoods and Down Draft Ventilation

Proper ventilation for cooking appliances is very important. The range hood should ventilate to the outside and not simply recirculate and filter the cooking fumes. This is especially important with gas ranges. Also, be careful to use the right size fan. A fan that is too large can waste energy.

Some stoves have built-in down draft ventilation systems that draw out so much air that they depressurize, or create a slight vacuum in the house. To balance that pressure difference, outside air is pulled in through cracks in the walls and around windows. This makes your heating and cooling systems work harder and as a result waste energy. In some situations, this negative pressure can even prevent an oil or gas heating system from venting properly, causing backdrafting of dangerous gases into the house.

Microwave vs. Full-sized Ovens

For small cooking jobs, it's a good idea to use a microwave or toaster oven instead of your full-sized oven or cooktop. Microwave ovens heat foods very quickly and efficiently, using only ½ to ⅓ the energy that a conventional oven uses. A microwave oven also won't heat up your kitchen the way a full-sized range will—an added benefit during the summer. While few people would use a microwave oven to roast a turkey or bake breads and pastries, there is an enormous variety of foods that can be prepared using a microwave oven and many cookbooks now provide microwave recipes.

Contrary to what some believe, microwave ovens are also safe to use. The U.S. Food and Drug Administration requires all microwave ovens to be equipped with at least two independent safety systems that insulate the outside against microwave radiation and instantly stop the generation of microwaves once the door is unlatched or opened.

New Models

There are a wide variety of microwave ovens currently on the market, including combination microwave/convection ovens for baking and broiling. Before you buy a new unit, consider your needs and cooking habits. If you only use a microwave to heat small meals and thaw frozen foods, a smaller countertop model will probably do the job. Larger ovens typically operate at a higher wattage and consume more electricity. EnergyGuide labels are not required on new microwave ovens, so check the manufacturer's specifications carefully and direct any questions to the salesperson. Here are some more tips to keep in mind:

- Buy a model that has a range of power settings instead of a single full-power setting. Frozen foods thaw better at lower settings, whereas foods like popcorn generally require higher levels. The more control you have over power settings, the more efficiently you can use the unit.

- Models with rotating turntables cook food more efficiently by ensuring a uniform penetration of microwaves. This feature will enable you to cut cooking times and save electricity; however, you may not be able to use larger rectangular or square containers with a turntable.
- Digital timers allow you to control cooking times better than rotary “dial” timers, which are often inaccurate. Digital timers are also less likely to wear out or malfunction.
- Make sure you plug your microwave into a grounded, polarized outlet.

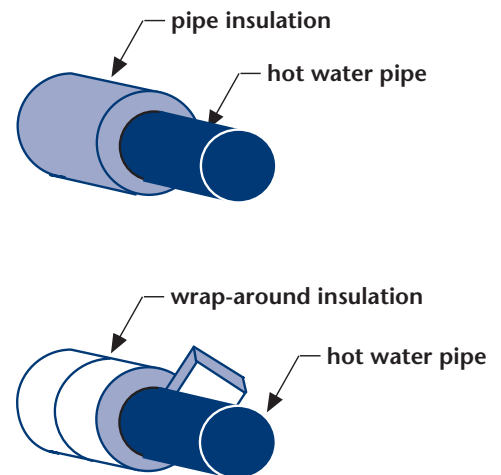
DISHWASHERS



Dishwashers and clothes washers are the two major water-consuming appliances used in American homes. In fact, the typical dishwasher uses anywhere from 10 to 16 gallons of water *per load*. However, there are now super-efficient dishwashers on the market that use as little as 5 gallons per load. If you want to save energy and money but aren’t ready to trade in your old dishwasher quite yet, there are ways you can improve its efficiency and reduce water use and energy costs.

Use It Wisely

- Washing only full loads of dishes in your dishwasher will save you money and time.
- Scrape most of the food off your dishes before placing them in the dishwasher. You needn’t rinse them first, unless they’re extremely dirty or greasy. Getting out of this habit will decrease your water waste and increase your savings.
- Don’t overload your machine. Doing so may prevent the spray-arms from rotating properly, and at the very least, will prevent the water jets from reaching all the dishes. Follow the guidelines in your owner’s manual for the best results.
- Reduce the water temperature to the minimum required to dissolve grease and activate your dish detergent. Usually this is around 140° F.
- Use the booster heater on your dishwasher if it has one. This will enable you to lower your water heater’s temperature to 120° F and further reduce your water-heating costs. Each 10° F reduction in the water heater’s temperature will cut its energy consumption by 3% to 5%.
- If your unit has an auto wash/rinse cycle, use it.
- Instead of using the drying cycle, open the door and pull out the racks to air-dry the dishes.
- Keep the racks and interior walls of the unit clean.
- Remove any food particles caught in the food filter and drain hose.
- Scrub the spray-arm nozzles periodically with a toothbrush. Hard water can leave deposits that weaken or completely cut off the water jets.



Wrapping your hot water pipes with insulation will help reduce heat loss.



Replacement

Shop around for a model that uses both water and energy efficiently. New dishwashers on the dealer's floor are required by law to have EnergyGuide labels. Study these carefully and compare models. Models that have a very inexpensive purchase price are likely to be inefficient and costly to run. It's important to keep in mind that you'll be paying the energy cost to run this appliance for approximately 11 years (the projected lifespan of a dishwasher). See pages 4 and 5 for more details on how to find the most economical and energy-efficient products.

ENERGY STAR[®] labeled dishwashers save by using both improved technology for the primary wash cycle, and by using less hot water to clean. Construction includes more effective washing action, energy-efficient motors and other advanced technology such as sensors that determine the length of the wash cycle and the temperature of the water necessary to clean the dishes.

Significant savings can be realized by minimizing the amount of hot water needed. The water temperature in a dishwasher should be at least 140° Fahrenheit to clean your dishes. The ENERGY STAR[®] qualified models with internal water heaters boost the water temperature inside the dishwasher. This allows you to turn down the thermostat on your household water heater to 120°, reducing your water-heating costs by up to 10%.

Using your dishwasher's heater to dry dishes consumes a significant amount of energy. Federal law requires that all new dishwashers have a no-heat drying option, this is often called the "energy saver" feature. This takes a little longer, but dries the dishes as well as the energy-guzzling heat drying operation.

The most common types of dishwashers in the U.S. are built-in, under-the-counter models. They're permanently connected to an electrical line, a hot water pipe and a drain, and generally require professional installation. There are also portable models available that move on wheels. These have a hose assembly that attaches to your kitchen sink and a plug-in power cord.

To find more information on ENERGY STAR[®] labeled dishwashers, go to: <http://www.energystar.gov/products/dishwashers>.

Things to Look for

Heat Booster

It's a good idea to buy a model that comes with a booster heater system, since most of the energy a dishwasher uses is for operating your water heater. This feature generally adds about \$30 to the purchase cost, but will pay for itself in about a year by allowing you to reduce the temperature of your water heater.

Wash Cycles All you really need are the basics: a light cycle for one wash, a regular cycle for two washes and two rinses, a heavy cycle that has more or longer wash cycles, and hotter water. Extra cycles, such as “pot-scrubbing” or “soak and scrub” cycles don’t usually work as well as you would expect. No machine can scrub dirty dishes the way you can by hand, no matter what the name implies.

Energy- and Water-Saving Settings Water-saving models can cut water consumption by 6 to 10 gallons per load and can cut your electricity bills by \$10 to \$15 per year.

Hand Washing Dishes

A lot of water can be wasted when you hand wash dishes. Here are some efficiency tips to maximize your water savings:

- Use a small pan to catch the soapy water instead of filling the sink to the rim.
- Use only as much dish soap as you need. The less soap you use, the less water you’ll have to use rinsing it away.
- Only greasy dishes, pots and pans absolutely require hot water. The rest will easily come clean with soap and cool water.
- Remember, the idea is to save on hot water costs by using only what you need.

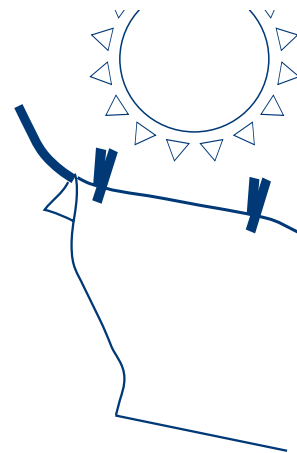
CLOTHES WASHERS AND DRYERS

Get Smart with Your Washer

85% to 90% of the energy used by the average washing machine goes to heating water. Most washing machines use 25 gallons of water for every load, and large machines can use up to 40 gallons per load. Most of your clothes can be washed using a cold- or warm-wash setting with a cold-water rinse. These settings can save up to 65% of the energy used for hot-wash warm-rinse loads, which adds up quickly, and will save you a lot of money in a year’s time.

Keep It Clean

Your washer should always be kept clean, both inside and out. Dust, dirt and spilled detergent tend to collect on top of your machine. This could get on your clean clothes as you pull them out and may even



Line drying clothes is not only energy-efficient, but your clothes will smell nice and have no static buildup.



Washer Tips

- Wash full loads, but don’t overload the machine. If your machine has a water-level setting, lower it for small loads.
- Use less hot water. Most loads can use a cold- or warm-wash setting with a cold-water rinse.
- Wash only full loads of like or similar fabrics (whites and colorfast cottons together, jeans and bright colors together, etc.).
- Follow the instructions on your detergent.
- Pretreat stains with an appropriate cleaner before washing.
- Locate the washing machine as close as possible to the water heater, or insulate the hot water pipes.
- Keep the machine clean, inside and out. Check the hoses and drains periodically.

necessitate rewashing certain items. Also, it's a good idea to check the hoses and electrical connections periodically to make sure they are clean and securely attached.

Location Counts

Locate your washing machine as close as possible to your water heater. Heat is lost through the pipes as hot water travels to your machine, so keeping the two units close together cuts down on heat loss.

More Energy Savings Ideas

Here are some other easy energy-saving steps you can take:

- Wash full loads, but don't overload the machine. Stuffing 50 pounds of dirty clothing into a washing machine is a waste of time, energy and money.
- Wash only full loads of like or similar fabrics. This will cut down on color bleeding and fading. If your machine has a water-level setting, lower it for small loads.
- Follow the instructions on your detergent carefully. Using too much detergent will deteriorate your clothing and cause colors to fade. The excess detergent also creates extra suds, which your washer may not be able to rinse away in a regular cycle.
- Liquid detergents can usually be added to a load already in the washer, but powdered detergents should be dissolved in the washer *before* you add the clothes. Undissolved detergent crystals often result in rewashing the entire load, which, again, is a waste of time, energy and money.
- By pretreating tough or greasy stains with an appropriate cleaner before washing, you'll only have to wash them once.



Dryer Tips

- Don't use your dryer if you don't have to. Hang clothes outside to line dry whenever possible.
- Dry full loads, but don't overload the machine.
- Never overdry your clothes. Always use the correct settings, and if your machine is equipped with a moisture sensor, use it.
- Always clean the lint screen between loads.
- Check the exhaust vent periodically to make sure it's clean and clear of obstructions.
- If your machine has a cool-down cycle, use it.
- Drying clothes on hangers can prevent shrinking and some ironing.
- Vent the dryer to the outside.

Dryers

The Solar Option: The best way to save money is to refrain from using your dryer whenever you can. On nice days, you can hang your wet clothes outside to line dry. Sunlight is free-of-charge, the clothes smell nice and fresh, and there's no static buildup.

Wise Use

Unfortunately, sunny days for line drying clothes are not always available and during these times machine drying is a necessity. However, you can do a great deal to cut the cost of running your dryer by using it more efficiently. Here are some energy-saving steps:

- You should dry only full loads, but don't overload the machine. As with washers, dryers have a limited capacity, and stuffing them full of wet clothes is a waste of time. The air won't be able to circulate between items and evaporate the water caught in the fabric; all you'll end up with after half an hour is a big pile of warm, soggy clothes.
- Heavier fabrics, such as towels and denim jeans, may require extra room (and time) to dry, so consider drying smaller loads of these items or hanging them up to dry.

- Never overdry your clothes. This wastes energy and harms the fabrics.
- Always use the correct settings, and if your machine is equipped with a moisture sensor, use it. This can cut energy use by 10% to 15% and save wear and tear on your clothes.
- If your machine has a cool-down cycle, use it. This saves energy and substantially reduces wrinkling, which in turn will cut down on your ironing time.
- Always clean the lint screen between loads. Your clothes won't dry if the air can't circulate and vent properly.
- Check the exhaust vent periodically to make sure it's clean and clear of obstructions. This is extremely important for gas dryers.

Replacing Your Washer or Dryer

ENERGY STAR[®] labeled clothes washers use superior designs that require less water to get clothes thoroughly clean. These machines use sensors to match the hot water needs to the load, preventing energy waste.

- ENERGY STAR[®] qualified washers use 50% less water and 50% less energy per load.
- The washer design causes less wear and tear and fewer wrinkles on clothes.
- Bulky items such as blankets fit in the super capacity basket.
- Better water extractions means less dryer time.

There are two designs . . . front-loading, and top-loading:

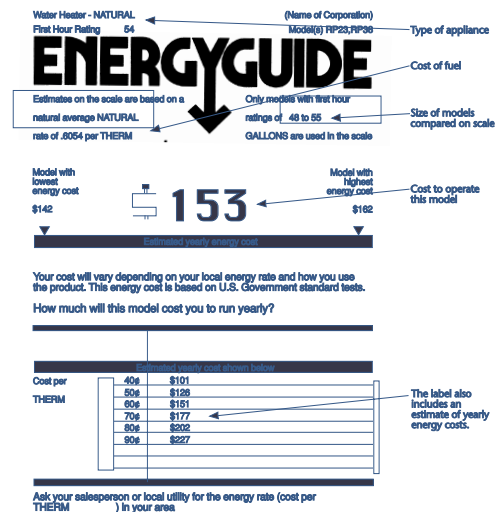
ENERGY STAR[®] qualified models are similar in design to washers used in laundromats. These horizontal-axis or tumble action machines repeatedly lift and drop clothes, instead of moving clothes around a central axis.

Some of these ENERGY STAR[®] qualified washers use sensor technology to closely control the incoming water temperature to reduce energy and water consumption

ENERGY STAR[®] labeled top-loading clothes washers spray clothes with repeated high-pressure rinses to remove soap residues rather than soaking them in a full tub of rinse water.

To find more information on ENERGY STAR[®] labeled clothes washers, go to <http://www.energystar.gov/products/clotheswasher>.

EnergyGuide labels can be found on new washing machines, but not on new dryers. If you're in the market for a new washer, study the EnergyGuide labels carefully and compare the costs of operating the appliance over its lifetime. See pages 4 and 5 for more details on how to find the most economical and energy-efficient products. It pays to use energy-efficient products, and spending a bit more money initially on a super-efficient model will probably save you hundreds of dollars in the long run.



Sample EnergyGuide Label

If you're in the market for a new dryer, look carefully at the information provided by the manufacturer regarding energy efficiency and eco-friendliness. Don't be fooled by a look-alike energy guide label—look for the real thing (see sample EnergyGuide label on page 15).

There are two common types of dryers: electric and gas (natural gas or liquid propane). Each type has its advantages and disadvantages. An electric dryer is easy to hook up and requires only a 208- or 240-volt line. Gas dryers require a gas line, plus a 115-volt outlet. While gas dryers are often less expensive to operate, you need to make sure they are properly vented to the outside.

Your washer and dryer needn't come from the same manufacturer, but it's a good idea to have a washer and dryer that have the same load capacities. In other words, one washer load should equal one dryer load. If you have a large capacity washer, but a regular capacity dryer, you won't be able to dry the entire load at once and will therefore have to run your dryer again to dry the leftover clothes.

INFORMATION SOURCES



- Bergstrom, Robin. "What's Ahead for Appliances." *Production*, February 1992: 28-34.
- Consumers Buying Guide: 1993 Edition*. Lincolnwood, IL: Publications International Ltd., 1993.
- Consumer Reports 1994 Buying Guide*. Yonkers, NY: Consumer's Union of the United States, 1993.
- "Dishwashers." *Consumer's Digest*, November/December 1992: 113-114.
- Energy Management in the Home*. Washington, D.C.: Edison Electric Institute.
- Geller, Howard and Nadel Steve. *Saving Energy and Money with Home Appliances*. Rhode Island: Rhode Island Governor's Office of Energy Assistance, 1985.
- Meyerink, George. *Appliance Service Handbook*, Second edition. Englewood Cliffs, NJ: Prentice-Hall, 1988.
- Morrill, John and Wilson, Alex. *Consumer Guide to Home Energy Savings*. Berkeley, CA: American Council for an Energy Efficient Economy, 1995.
- Shepard, Michael. "Appliance Efficiency on the Fast Track." *EPRI Journal*, March 1987: 33-41.
- U.S. Department of Energy. Energy Efficiency and Renewable Energy Clearinghouse. *Appliance Labeling*, Second edition, April 1992. Washington, D.C.: GPO.
- "What it Costs to Run Electric Appliances." *Consumers' Research*, May 1993: 34-35.
- William, Gene B. *Chilton's Guide to Large Appliances Repair and Maintenance*. Radnor, PA: Chilton Book Company, 1986.
- "White Goods." In *Iowa Recycling Directory*. DesMoines, IA: Department of Natural Resources, June 1994.

ADDITIONAL RESOURCES



Consumers Union publishes *Consumer Reports* magazine and the *Consumer Reports Annual Buying Guide*, which rate appliances for reliability, convenience and efficiency. 800-500-9760; www.consumerreports.org

Home Energy magazine provides energy conservation tips as well as an archive of energy consumption data of old refrigerators. 510-524-5405; www.home-energy.org/homeenergy.html

American Council for an Energy Efficient Economy (ACEEE) publishes the *Consumer Guide to Home Energy Savings*. 202-429-0063; www.aceee.org

DOE and EPA have appliance model listing as part of their ENERGY STAR[®] program. 800-363-3732; www.energystar.gov

E Source Technology Atlas Series Volume 5 Residential Appliances provides information on appliance specifications and efficiency standards. 729-548-5000; www.esource.com/public/products/prosp_atla.asp

This is an Iowa Energy Center publication.



2521 ELWOOD DRIVE, SUITE 124
AMES, IOWA 50010-8263
515-294-8819 • FAX 515-294-9912

This publication has been updated and modified for use in Arkansas by the
Arkansas Department of Economic Development – Energy Unit.



ONE CAPITOL MALL
LITTLE ROCK, AR 72201
501-682-7319 • FAX 501-682-2703
WWW.1800ARKANSAS.COM/ENERGY/

This publication is distributed by:



Arkansas Department of
Economic Development
Energy Unit
One Capitol Mall
Little Rock, AR 72201

