

A circular graphic with a glowing blue border. Inside the circle is a dark globe with white outlines of continents. Overlaid on the globe are several white, jagged, lightning-bolt-like lines, suggesting energy or electrical activity.

Energy efficiency

 **BASF**
The Chemical Company

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Saving Energy and Money

- Step 1 find out where or what in your house you are using the most energy.
- Have a home audit or survey done by a trained professional or use a self audit tool.
- Energy Audit Resource tools can be found at:
 - www.energysavers.gov or www.natresnet.org

Formulating Your Plan

- After you have identified where your home is losing energy, assign priorities by asking yourself a few important questions:
 - How much money do you spend on energy?
 - Where are your **greatest energy losses**?
 - How long will it take for an investment in energy efficiency to pay for itself in energy cost savings?
 - Do the **energy-saving measures** provide additional benefits that are important to you (for example, increased comfort from installing double-paned, efficient windows)?
 - How long do you plan to own your current home?
 - Can you do the job yourself or will you need to hire a contractor?
 - What is **your budget** and how much time do you have to spend on maintenance and repair?



Energy Savings Tips

- Insulation and Sealing Air Leak Tips
- Cooling Your Home/Business Efficiently Tips
- Water Saving and Heating
- Solar Water Heating
- Warm Climate Window
- Lighting
- Appliances
- Questions

Insulation and Sealing Air Leaks

- **Should I Insulate My Home ?**
- Insulate your home when:
- You have an older home and haven't added insulation.
Only 20% of homes built before 1980 are well insulated.
- You are uncomfortably cold in the winter or hot in the summer—**adding insulation creates a more uniform temperature** and increases comfort.
- You pay high energy bills.
- You are bothered by noise from outside—insulation muffles sound.

Insulation and Sealing Air Leaks

- Insulation is measured in **R-values**—the higher the R-value, the better your walls and roof will resist the transfer of **heat**. DOE recommends ranges of R-values based on local heating and cooling costs and climate conditions in different areas of the nation.



Insulation Tips

- Consider factors such as your climate, building design, and budget when selecting insulation **R-values** for your home.
- Use higher density insulation on exterior walls, such as rigid foam boards, in cathedral ceilings and on exterior walls.
- Ventilation helps with **moisture control** and reducing summer cooling bills. Attic vents can be installed along the entire ceiling cavity to help ensure proper airflow from the soffit to the attic to make a home more comfortable and energy efficient. **Do not ventilate your attic if you have insulation on the underside of the roof.** Check with a qualified contractor.
- Recessed light fixtures can be a major source of heat loss, but you need to be careful how close you place insulation next to a fixture unless it is marked IC—designed for direct insulation contact. Check your local building codes for recommendations. See Lighting for more about recessed cans.
- As specified on the product packaging, **follow the product instructions on installation and wear the proper protective gear** when installing insulation.



Sealing Air Leaks

- Warm air leaking into your home during the summer and out of your home during the winter can waste a lot of your energy dollars. One of the quickest dollar-saving tasks you can do **is caulk, seal, and weatherstrip all seams, cracks, and openings to the outside.** You can save on your heating and cooling bill by reducing the air leaks in your home.

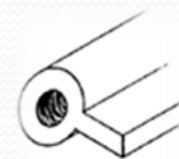




Closed-cell foam



Ribbed



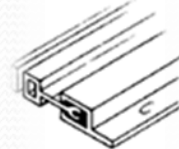
Tubular



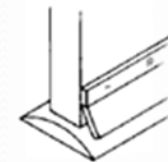
Spring vinyl



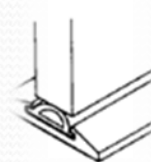
Spring metal



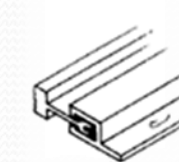
Magnetic strip



Door extension



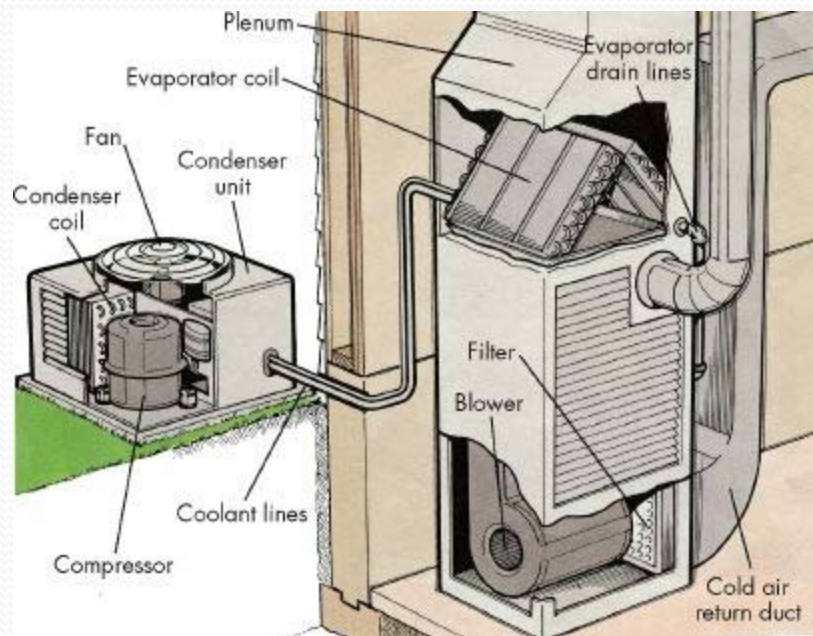
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Cooling Your Home/Business Efficiently

- No matter what kind of heating, ventilation, and air-conditioning system you have in your house, you can save money and increase your comfort by properly maintaining and upgrading your equipment. But remember, an energy-efficient furnace alone will not have as great an impact on your energy bills as using the whole-house approach. By **combining proper equipment maintenance and upgrades** with appropriate insulation, air sealing, and thermostat settings, you can cut your energy use for heating and cooling, and **reduce environmental emissions, from 20% to 50%.**



Cooling Tips

- Set your thermostat as low as is comfortable in the winter and as high as is comfortable in the summer.
- Schedule a Maintenance Service Visit at least once a year
- Turn off kitchen, bath, and other exhaust fans within 20 minutes after you are done cooking or bathing; when replacing exhaust fans, consider installing high-efficiency, low-noise models.
- During the cooling season, keep the window coverings closed during the day to prevent solar gain.

Cooling Tips

- **Whole-house fans** help cool your home by pulling cool air through the house and exhausting warm air through the attic.
- Set your thermostat as **high as comfortably** possible in the summer. The smaller the difference between the indoor and outdoor temperatures, the lower your overall cooling bill will be.
- **Avoid setting your thermostat at a colder setting** than normal when you turn on your air conditioner. It will not cool your home any faster and could result in excessive cooling and, therefore, unnecessary expense.
- Consider using an **interior fan** in conjunction with your window air conditioner to spread the cooled air more effectively through your home without greatly increasing your power use.
- **Avoid placing lamps or TV sets near your air-conditioning thermostat.** The thermostat senses heat from these appliances, which can cause the air conditioner to run longer than necessary.

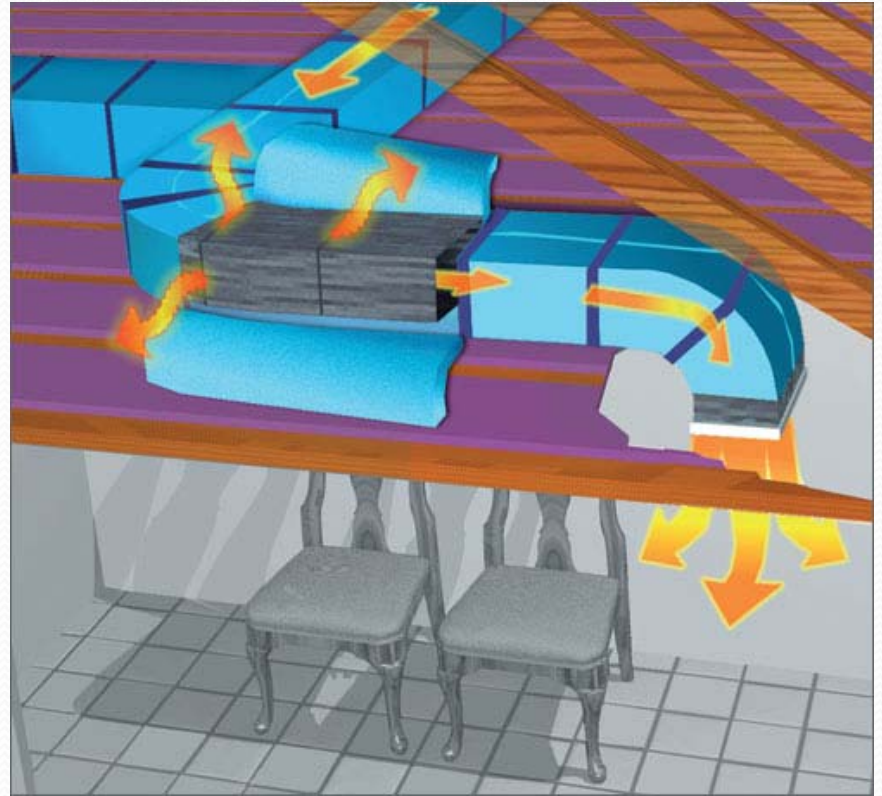


Long-Term Savings Tips

- For air conditioners, look for a high Seasonal Energy Efficiency Ratio (SEER). The current minimum is 13 SEER for central air conditioners. ENERGY STAR models are 14 SEER or more.

Ducts Efficiency Tips

- One of the most important systems in your home, though it's hidden **beneath your feet and over your head, may be wasting a lot of your energy dollars.** Your home's duct system, a branching network of tubes in the walls, floors, and ceilings, carries the air from your home's furnace and central air conditioner to each room. Ducts are made of sheet metal, fiberglass, or other materials.



Duct Tips

- Check your ducts for air leaks. First, look for sections that should be joined but have separated and then look for obvious holes.
- If you use tape to seal your ducts, avoid cloth-backed, rubber adhesive duct tape, which tends to fail quickly. Researchers recommend other products to seal ducts: **mastic, butyl tape, foil tape, or other heat-approved tapes**. Look for tape with the Underwriters Laboratories logo.





Programmable Thermostats

Cool Summer Tip

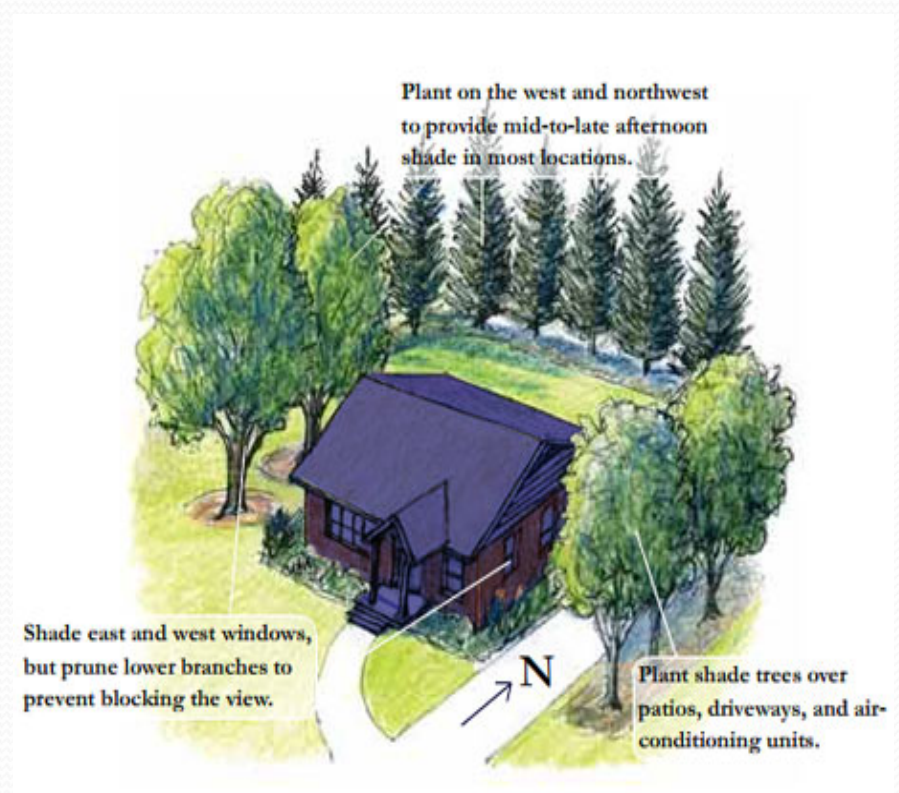
In the summer, you can save money by automatically turning your air-conditioning up at night or when you are at work.

- You can save as much as 10% a year on your heating and cooling bills by simply turning your thermostat back 10% to 15% for 8 hours. You can do this automatically by installing an **automatic setback or programmable thermostat**.



Landscaping and Shading

- Landscaping is a natural and beautiful way to keep your home cool in summer and reduce your energy bills. A well-placed tree, shrub, or vine can deliver effective shade, act as a windbreak, and reduce your energy bills. Carefully positioned trees can **save up to 25% of the energy a typical household uses for energy**. Research shows that summer daytime air temperatures can be **3° to 6° cooler in tree-shaded neighborhoods than in treeless areas**.



Tips: Water Heating

- **Keep Your Energy Bills Out of Hot Water**
Look for the **ENERGY STAR** label.
- Water heating is the second or third largest energy expense in your home. It **typically accounts for about 12%** of your utility bill. There are four ways to cut your water heating bills: use less hot water, turn down the thermostat on your water heater, insulate your water heater, or buy a new, more efficient model.



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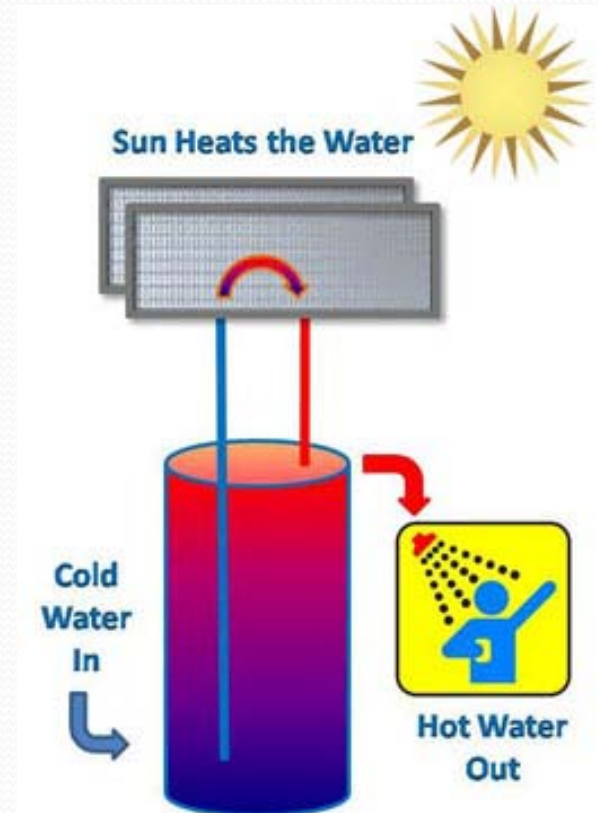
Water Savings Heating Tips

- Install aerating, **low-flow faucets and showerheads**.
- Repair leaky faucets promptly; a leaky faucet wastes gallons of water in a short period of time.
- **Lower the thermostat on your water heater**; water heaters sometimes come from the factory with high temperature settings, but a setting of 120°F provides comfortable hot water for most uses.
- **Insulate your electric hot-water storage tank**, but be careful not to cover the thermostat. Follow the manufacturer's recommendations.
- Drain a quart of water from your water tank every 3 months to **remove sediment** that impedes heat transfer and lowers the efficiency of your heater. The type of water tank you have determines the steps to take, so follow the manufacturer's advice.



Solar Water Heaters

- If you heat water with electricity, have high electric rates, and have an unshaded, south-facing location (such as a roof) on your property, consider installing an ENERGY STAR qualified solar water heater.
- More than 1.5 million homes and businesses in the United States have invested in solar water heating systems, and surveys indicate that more than **94% of these customers consider the systems a good investment**. Solar water heating systems are also good for the environment. Solar water heaters **avoid the greenhouse gas emissions** associated with electricity production.



Warm-Climate Window Tips

- Install white window shades, drapes, or blinds to reflect heat away from the house.
- **Close curtains on south-** and west-facing windows during the day.
- Install awnings on south- and west-facing windows.
- Apply sun-control or other reflective films on south-facing windows to reduce solar gain.
- **Long-Term Savings Tip**
- Installing, **high-performance windows** will improve your home's energy performance. While it may take many years for new windows to pay off in energy savings, the benefits of added comfort and improved aesthetics and functionality may make the investment worth it to you. Many window technologies are available that are worth considering.
- **Efficient windows** may have two or more panes of glass, warm-edge spacers between the window panes, improved framing materials, and low-e coating(s), which are microscopically thin coatings that help keep heat inside during the winter and outside during the summer.

Tips: Lighting

- **Compact Fluorescent Bulbs—A Bright Idea!**
ENERGY STAR qualified lighting provides bright, warm light and uses about **75% less energy** than standard lighting, produces 75% less heat, and lasts up to 10 times longer.
- Making improvements to your lighting is one of the fastest ways to **cut your energy bills**. An average household dedicates 11% of its energy budget to lighting. Using new lighting technologies can reduce lighting energy use in your home by 50% to 75%. Advances in **lighting controls** offer further energy savings by reducing the amount of time lights are on but not being used.

Indoor and Outdoor Lighting Tips

- ENERGY STAR qualified CFLs are available in sizes and shapes to fit in almost any fixture.
- Be sure to buy ENERGY STAR qualified CFLs.
 - They will save you about \$30 or more in electricity costs over each bulb's lifetime.
 - Producing about 75% less heat, they are safer to operate and can cut home cooling costs.
 - Visit www.energystar.gov to find the **right light bulbs** for your fixtures. They are available in sizes and shapes to fit in almost any fixture.
 - They provide the greatest savings in fixtures that are on for a long time each day. The best fixtures to use qualified CFLs in are usually found in your family and living rooms, kitchen, dining room, bedrooms, and outdoors.
- **The next generation of lighting to be strongly considered is LED's**

All Different Types and Sizes of Bulbs





Tips: Appliances

- **What's the Real Cost?**

Every appliance has two price tags—the purchase price and the operating cost. Consider both when buying a new appliance.

- **Appliances account for about 17%** of your household's energy consumption, with refrigerators, clothes washers, and clothes dryers at the top of the consumption list.
- When you're shopping for appliances, think of two price tags. The first one covers the purchase price—think of it as a down payment. **The second price tag is the cost of operating the appliance during its lifetime.** You'll be paying on that second price tag every month with your utility bill for the next 10 to 20 years, depending on the appliance. Refrigerators last an average of 14 years; clothes washers about 11 years; dishwashers about 10 years; and room air conditioners last 9 years.

Dishwasher Tips

- Check the manual that came with your dishwasher for the manufacturer's **recommendations on water temperature**; many have internal heating elements that allow you to set the water heater in your home to a lower temperature (120°F).
- **Scrape, don't rinse**, off large food pieces and bones. Soaking or prewashing is generally only recommended in cases of burned-on or dried-on food.
- Be sure your **dishwasher is full**, but not overloaded, when you run it.
- **Avoid using the "rinse hold"** on your machine for just a few soiled dishes. It uses 3 to 7 gallons of hot water each time you use it.
- **Let your dishes air dry**; if you don't have an automatic air-dry switch, turn off the control knob after the final rinse and prop the door open slightly so the dishes will dry faster.

Refrigerator/Freezer Energy Tips

- Look for a refrigerator with automatic moisture control. Models with this feature have been engineered to prevent moisture accumulation on the cabinet exterior without the addition of a heater.
- **Don't keep your refrigerator or freezer too cold.** Recommended temperatures are 37° to 40°F for the fresh food compartment of the refrigerator and 5°F for the freezer section. If you have a separate freezer for long-term storage, it should be kept at 0°F.
- To **check refrigerator temperature**, place an appliance thermometer in a glass of water in the center of the refrigerator. Read it after 24 hours. To **check the freezer temperature**, place a thermometer between frozen packages. Read it after 24 hours.
- **Regularly defrost** manual-defrost refrigerators and freezers; frost buildup decreases the energy efficiency of the unit. Don't allow frost to build up more than one-quarter of an inch.
- Make sure your **refrigerator door seals** are airtight. Test them by closing the door over a piece of paper or a dollar bill so it is half in and half out of the refrigerator. If you can pull the paper or bill out easily, the latch may need adjustment, the seal may need replacing, or you might consider buying a new unit.
- Cover liquids and wrap foods stored in the refrigerator. Uncovered foods release moisture and make the compressor work harder.
- **ENERGY STAR Refrigerators Are Cool!**
Refrigerators with the freezer on the top are more efficient than those with freezers on the side.

Kitchen Tips

- Be sure to place the faucet lever on the kitchen sink in the cold position when using small amounts of water; placing the lever in the hot position uses energy to heat the water even though it may never reach the faucet.
- In natural gas appliances, look for blue flames; yellow flames indicate the gas is burning inefficiently and an adjustment may be needed. Consult the manufacturer or your local utility.
- Keep range-top **burners and reflectors clean**; they will reflect the heat better, and you will save energy.
- Use a covered kettle or pan to boil water; it's faster and it uses less energy.
- Match the **size of the pan** to the heating element.
- Use small electric pans or toaster ovens for small meals rather than your large stove or oven. A **toaster oven uses a third to half as much energy** as a full-sized oven.
- **Use pressure cookers** and microwave ovens whenever it is convenient to do so. They will save energy by significantly reducing cooking time.

Laundry Tips

- Wash your clothes in cold water using **cold-water detergents** whenever possible.
- Wash and dry full loads. If you are washing a small load, use the appropriate water-level setting.
- **Dry towels and heavier cottons in a separate load** from lighter-weight clothes.
- Don't over-dry your clothes. If your machine has a moisture sensor, use it.
- Clean the lint filter in the dryer after every load to improve air circulation.
- Use the cool-down cycle to allow the clothes to finish drying with the residual heat in the dryer.
- **Periodically inspect your dryer vent to** ensure it is not blocked. This will save energy and may prevent a fire. Manufacturers recommend using rigid venting material, not plastic vents that may collapse and cause blockages.
- **Consider air-drying clothes** on clothes lines or drying racks. Air-drying is recommended by clothing manufacturers for some fabrics.





QUESTIONS