

A GUIDE TO ENERGY-EFFICIENT COOLING

**TIME
FOR A
CHANGE?**

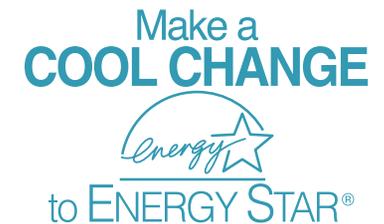


IF ONE HOUSEHOLD IN TEN BOUGHT ENERGY STAR
HEATING AND COOLING PRODUCTS, THE CHANGE WOULD KEEP
17 BILLION POUNDS OF POLLUTION OUT OF THE AIR THIS YEAR.

JOIN MILLIONS OF AMERICANS WHO ARE
HELPING TO REDUCE POLLUTION BY KEEPING COOL
THE ENVIRONMENTALLY FRIENDLY WAY.

Looking for better ways to be cool this summer? Now is the time to take a look at the cooling system in your home and make a change to ENERGY STAR®. This guide will help you with all your cooling decisions, from your whole system to individual products, and will also help you keep the cool air in with home improvements such as insulation and sealing. Also, visit www.energystar.gov/coolchange to see if there are special deals or financing on ENERGY STAR labeled products available from retailers, utilities, or manufacturers in your area.

Make the change to ENERGY STAR. You'll be glad you did. In addition to saving energy and money, you'll be doing your part to help protect the environment for many seasons to come.



ENERGY STAR is the government-backed symbol for energy efficiency. It identifies products in more than 30 product categories that use less energy without sacrificing performance. ENERGY STAR also provides important recommendations for product installation and home improvement so that you get the most from the products you purchase. Since using less energy reduces greenhouse gas emissions and improves the air quality, choosing ENERGY STAR is one way you can do your part to protect our planet for future generations.



WHEN IS IT TIME FOR A CHANGE?



As much as half of the energy you use during the summer months goes to cool your home. But paying to be cool does not have to burn through your bank account. Find out if you should consider a cool change this season by reviewing the checklist on the next page.

ENERGY-EFFICIENT COOLING CHECKLIST



Certain telltale signs indicate it's time to consider replacing cooling equipment, or improving parts of your system to enhance performance. It may be time to call a professional contractor to help you make a change if:

- ✓ Your cooling equipment is 10 years old or more. New ENERGY STAR labeled equipment uses 25 to 40 percent less energy than typical 10-year-old models.
- ✓ Your equipment needs frequent repairs and your bills are increasing. It could mean your cooling equipment is becoming less efficient and needs a thorough checkup or replacement.
- ✓ Your system turns on and off frequently. This can indicate that your cooling system is not the right size, leading to poor dehumidification and less comfort.
- ✓ Some of your rooms are too hot or too cold. Improper equipment operation or duct problems could be the cause.
- ✓ No one is home for long periods of the day. ENERGY STAR labeled programmable thermostats can help you avoid wasting energy while you're away. Call a professional contractor to help you install your thermostat and instruct you on its use.
- ✓ Your home has humidity problems. Poor equipment operation, inadequate equipment, and leaky ductwork can cause the air to be too dry in the winter or too humid in the summer.
- ✓ Your home has excessive dust. Leaky ducts can pull particles and air in from attics, crawlspaces, and basements and distribute them through the house. Sealing your ducts may be a solution.
- ✓ Your cooling system is noisy. You could have an undersized duct system or insufficient air through the indoor coil of your cooling equipment.
- ✓ Your score on the ENERGY STAR Home Energy Yardstick is below five. That means your home uses more energy than similar homes in your area. Improvements to your home and/or cooling system can offer significant savings. You can find the Home Energy Yardstick at www.energystar.gov/coolchange.



CENTRAL AIR CONDITIONING

Make cool changes in your home by purchasing cooling equipment that has earned the ENERGY STAR. Here's a look at some ENERGY STAR labeled products that help to keep you cool.

Central Air Conditioners and Heat Pumps

Central air conditioners that have earned the ENERGY STAR have a higher SEER than standard models. SEER, the Seasonal Energy Efficiency Ratio, measures energy efficiency. The higher the SEER, the greater the level of efficiency. ENERGY STAR labeled central air conditioning can save you 20 percent on your heating and cooling bills compared to today's standard equipment, and is 25 to 40 percent more efficient compared to a typical 10-year-old unit. Since sizing and proper installation of a central air conditioning system are critical to energy efficiency, it is important to hire a qualified technician.

Electric air-source heat pumps, often used in moderate climates, use the difference between the outdoor air temperature and the indoor air temperature to cool and heat your home. Heat pumps remove excess heat from indoor air and release it outdoors. ENERGY STAR labeled heat pumps have a higher SEER than standard models and use 15 to 30 percent less energy than a conventional model.

Geothermal heat pumps (GHPs) take advantage of stable temperature conditions in the ground and the nearly limitless supply of renewable heating and cooling energy stored there. In addition to producing radically lower heating bills, ENERGY STAR labeled geothermal heat pumps are quieter than conventional systems and include water-heating capabilities. Although initially expensive, they quickly pay back the homeowner with significant cost savings. GHPs are most often installed in new homes. Ask your contractor whether a GHP might be right for your home.

SIZING AND INSTALLATION



When purchasing cooling products, pay close attention to several things: getting the right-size equipment, getting the right professional to work with you, and asking the right questions.

Sizing

Size pertains to cooling output. Larger-size equipment cools a larger area. However, if the size of the equipment is too large for your home, you will experience increased costs and less comfort. Bigger is not better.

Don't assume that the size of your new system will be the same as your old equipment. Your old equipment may have been too large for your house, you may have added an addition since the equipment was last replaced, or you may have improved your insulation and sealed air leaks in your home. Your contractor can calculate the right size for your cooling equipment with the "Manual J" procedure.

Installation

Once you have purchased the right-size equipment, get a contractor to install it. Make sure your contractor follows these steps:

- Replace the indoor coil of the equipment when replacing the outdoor unit. You should have a matched set. An old coil will not work efficiently with a new outdoor unit.
- Check proper level of refrigerant charge and airflow through the registers that deliver cool air to your rooms. Ask your contractor whether the level of refrigerant charge and the airflow across the coils meets the manufacturer's recommendation.
- Place the condenser in an area that can be protected from rain, snow, or vegetation, as recommended by the manufacturer. Use a cover over your outside equipment during the winter to protect it from snow and ice.
- Provide adequate room around the equipment for service and maintenance.



MAINTENANCE

You should maintain your equipment to prevent problems before they occur. To keep your system at peak performance, maintenance should be done annually by a professional.

Make sure your contractor completes the following 10-point maintenance checklist:

- Check thermostat settings to ensure the cooling system turns on and off at the right temperature.
- Clean evaporator and condenser air conditioning coils. Dirty coils reduce the system's ability to cool your home and cause the system to run longer, costing you more energy dollars and decreasing the life of the equipment.
- Check refrigerant pressures and adjust charge if necessary. Too much or too little refrigerant charge can damage the compressor in your air conditioner, reducing the life of your equipment and increasing costs.
- Clean and adjust blower components to provide greater comfort levels.
- Measure airflow over the coils. Adequate airflow will improve equipment efficiency and reliability. With inadequate airflow, your system can lose up to 15 percent of its efficiency.
- Tighten all electrical connections and measure voltage and current on motors. Faulty electrical connections can cause unsafe operation of your system and reduce the life of major components.
- Lubricate all moving parts. Parts that lack lubrication cause friction in motors and increase electrical energy consumption.
- Check and inspect the condensate drain. If plugged, it can cause water damage in the house, affect indoor humidity levels, and breed bacteria.
- Check controls of the system to ensure proper and safe operation. Check the starting cycle of the equipment to assure the system starts, operates, and shuts off properly.
- Inspect, clean, or change air filters once a year. A dirty filter causes energy costs to be greater than they should be and can damage your equipment, leading to early failures.

ROOM AIR CONDITIONERS



ENERGY STAR labeled room air conditioners have high-efficiency air compressors, fan motors, and heat transfer surfaces. They exceed minimum federal standards for energy consumption by at least 10 percent and are often the quietest models on the market.



Choosing the right-size air conditioner for the space you want to cool is critical for energy efficiency. An oversized unit wastes energy and money. When deciding which size to buy, consider the amount of space to be cooled, the height of the room, how many people are frequently in the room, and window size. See the chart below to best size your air conditioner.

AREA TO BE COOLED (SQ. FT.)	ROOM AIR CONDITIONER SIZE (BTU/HR)
100 to 150	5,000
150 to 250	6,000
250 to 300	7,000
300 to 350	8,000
350 to 400	9,000
400 to 450	10,000
450 to 500	12,000
500 to 700	14,000
700 to 1,000	18,000

Here are some adjustments you may need to make to the chart above:

- If your room is heavily shaded, reduce the size by 10 percent.
- If your room is very sunny, increase the size by 10 percent.
- If more than two people are regularly in the room, add 600 Btu/Hr for each additional person.
- If the room air conditioner is for your kitchen, increase the capacity by 4,000 Btu/Hr.



OTHER ENERGY STAR LABELED PRODUCTS



Make more cool changes this season with other ENERGY STAR labeled cooling products that work with your air conditioning system to keep you cool and lower energy bills.

PROGRAMMABLE THERMOSTATS



Programmable thermostats save money by consistently turning up the thermostat while you're away. You may set different temperatures for your home depending on whether you're at work, at home, or in bed at night.

Easy to install and use, ENERGY STAR programmable thermostats provide you with more flexibility than standard models. Remember to install your thermostat control away from naturally cool or hot spots so it can accurately read the temperature in the house.





CEILING FANS

Ceiling fans circulate air in the room, and most provide overhead lighting as well. Fans don't actually cool a room—they just cool you—so be sure to switch the fan and light off when you're not in the room to save energy and money.

ENERGY STAR labeled ceiling fan/light combination units are about 40 percent more efficient than a typical fan and can save you from \$13-\$24 per year (individual savings will vary according to region, electricity rates, and fan use).

When operated properly, a fan can provide even greater savings. About 80 percent of the dollar savings come from the ENERGY STAR qualified lighting on the fan. If your fan doesn't include lighting, purchase a qualified light kit, with either pin-based or screw-based CFLs (compact fluorescent lamps). This lighting is compact, attractive, and long lasting, reducing your need for frequent bulb changes.

Reversing the fan motor can keep you comfortable in cooler months by forcing the warmer air from your ceiling into your living space. Make sure the fan's blades are at least one foot below the ceiling, seven feet above the floor, and two feet from the nearest wall.



DEHUMIDIFIERS



Often used in the damp areas of your home, such as basements, dehumidifiers remove humidity and moisture from the air to maintain comfort and to limit the growth of mold and mildew. A more comfortable basement can greatly increase the amount of living space available to you.

Dehumidifiers that have earned the ENERGY STAR are 10 percent more efficient than conventional models and provide many desired features, including moisture removal, quiet operation, reliability, and durability.

A clean, well-maintained dehumidifier will give you good performance and energy efficiency. Here are some important ENERGY STAR recommendations:

- Position the dehumidifier according to manufacturer recommendations.
- Make sure hose connections are secure and water is draining properly into a floor drain.
- Vacuum the dehumidifier's evaporation coils every six to twelve months according to the manufacturer's instructions.
- Wash or replace the air filter once a year.
- Follow the manufacturer's service instructions.





ENERGY STAR HOME IMPROVEMENTS



Make home improvements that add to the energy efficiency and comfort of your home, including sealing and insulating the ductwork that distributes air throughout your home, as well as sealing and insulating the exterior of your home.

Ducts

Ducts are usually found in your attic, basement, and within the walls of your home. They are the sheet metal or flex tubes that carry the cooled air from your air conditioner to the rooms of your house. You can see the duct outlets, covered by grills or registers, from your living area.

To maintain comfort and good air quality, it's important to have the proper balance between the air being supplied to your rooms through your ducts and the air returning back through your ducts to your cooling equipment.

Seal your home's ducts to improve indoor air quality and help ensure that all of your rooms are equally cooled or heated. Poorly sealed ducts can allow pollutants like insulation particles, mold, dust, or chemicals to enter the room. By sealing your home's ducts, you can increase the efficiency of your heating and cooling system by up to 20 percent—saving up to several hundred dollars every year. For information, visit www.energystar.gov/coolchange.

To improve your ducts, make sure your contractor:

- Inspects your duct system to identify any leaks with diagnostic equipment such as a duct blaster or flow hood.
- Seals your ducts with mastic, metal-backed tape, or Aeroseal. Duct tape should not be used; it will not last.
- Insulates your ducts to keep the air cool as it moves through the system. The contractor should use duct insulation material rated at R-6 if the ducts are located in unconditioned spaces.
- Tests airflow out of the registers after ducts are sealed.
- Conducts a combustion safety test after ducts are sealed.

Home Sealing

The holes, cracks, and gaps in an average home can let in as much airflow as an open window. Proper sealing will stop this as well as help reduce moisture problems and increase indoor air quality. Follow these ENERGY STAR recommendations:

- If the flame of a candle flickers when you're standing near a window, the window needs to be weatherstripped and caulked. Before adding insulation, check for air leaks.
- Add insulation to your house. This will help keep you cool even in extreme heat and also reduce noise. The most effective place to add insulation is your attic. Since the appropriate level of insulation for your house depends on your climate, visit www.energystar.gov/coolchange to learn more.
- Look for ENERGY STAR labeled windows. Twice as efficient as standard windows, they can help you save up to 15 percent on your heating and cooling bill.



WORKING WITH YOUR CONTRACTOR

Although you can do some home improvements yourself, you may want to hire a contractor. A good contractor will ensure that recommendations outlined in this guide are followed. Refer to these checklists when choosing and working with a contractor.

1. Find the Right Contractor

The key to a proper installation is to find a reputable contractor. Here are some recommendations to help you choose a quality contractor. A contractor should:

- Perform an on-site inspection of the job you want done and provide a detailed bid in a timely manner.
- Demonstrate to you that they are licensed and insured.
- Be licensed to repair or install cooling equipment (many states require this). Quality technicians will also carry insurance.
- Be able to provide their certification for refrigerant handling, required since 1992.
- Have several years in business in your community.
- Provide examples of other quality installation work, such as names of customers that you can contact.
- Ask whether the technician is certified by North American Technician Excellence (NATE). For a list of NATE-certified technicians in your state, visit www.energystar.gov/coolchange.



2. Get the Most out of the Home Visit

Both you and your contractor should sign a written proposal prior to the initiation of work. The agreement or proposal should:

- List in detail all the work that is being contracted.
- Specify all products by quantity, name, model number, and energy ratings.
- Name the insurance that the contractor will provide.
- Provide manufacturer's warranty and documents for products and contractor installation warranty information.
- Give the payment schedule.
- State the scheduled start and completion date of the project.
- Describe how disputes will be resolved.
- Outline paperwork and permits needed for the project.

3. Get the Most out of the Installation

Also ask the contractor to:

- Show you a layout of where the equipment is going to be installed.
- Size and select your new equipment using a procedure called "Manual J."
- Show calculations of savings for installing high-efficiency, ENERGY STAR labeled equipment.
- Explain the financial benefit of your newly installed equipment.
- Diagnose and repair your duct system, if needed.
- Provide financing for the purchase, if necessary.
- Explain the warranty on equipment and parts and labor.



MAKE COOL CHANGES YEAR ROUND

If you've decided to make changes to your cooling system, it may be more cost-effective to make changes to the heating system at the same time. Look for furnaces, boilers, electric air-source heat pumps, and geothermal heat pumps that have earned the ENERGY STAR.

Also, remember to look for the ENERGY STAR label in other product categories, including lighting, appliances, home office equipment, and consumer electronics. Even new homes and commercial buildings can earn the ENERGY STAR label. For information and store locations, visit www.energystar.gov or call 1-888-STAR-YES (1-888-782-7937).

Make a
COOL CHANGE

to ENERGY STAR®