



ENERGY SERIES: What about Refrigerators and Freezers?

Quick Facts

- An ENERGY STAR qualified refrigerator uses at least 20 percent less energy than required by current federal standards, 40 percent less than the conventional models sold in 2001, and about 50 percent less than models manufactured before 1993.
- An ENERGY STAR qualified freezer uses at least 10 percent less energy than required by current federal standards.
- An ENERGY STAR qualified compact refrigerator or freezer whose volume is less than 7.75 cubic feet uses at least 20 percent less energy than is required by the current federal standard.

Refrigerators

Your refrigerator is the only appliance that works continuously in your home 24 hours a day. In most households, the refrigerator is the single biggest energy consuming kitchen appliance. According to ENERGY STAR, replacing a refrigerator bought in 1990 with a new ENERGY STAR qualified model can save enough to pay for lighting an average household for nearly four months. ENERGY STAR offers an online calculator to estimate your potential savings, see:

<https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator>

You do not need to compromise on features that you prefer when choosing ENERGY STAR qualified refrigerators. Many ENERGY STAR qualified refrigerators include features such as an automatic ice-maker, a through-the-door ice and water dispenser, or a top-mount, bottom-mount, or side-by-side freezer. However, keep in mind that automatic ice-makers and through-the-door dispensers increase energy use by 14 to 20 percent and raise the purchase price by about \$75 to \$250.

In general, refrigerators with top-mounted freezers use less energy than refrigerators with either side-mounted or bottom-mounted freezers. However, ENERGY STAR indicates that the energy efficiency varies depending on the size, defrost type, and features of each model.

The most energy efficient models are the 16 to 20 cubic foot sizes. In general, the larger the refrigerator, the greater the energy consumption. A model that's too large will waste space and energy; on the other hand, a model that's too small could mean extra trips to the grocery store.

Placement of the refrigerator is very important. Direct sunlight and close contact with heat sources such as heating vents, the stove, or dishwasher will make the compressor work harder. Most important, the compressor and condensing coil must have adequate ventilation. The proper "breathing" space will vary depending on the location of the coils and compressor on each model—something important to know *before* purchasing a unit or remodeling your kitchen. Because most refrigerators give off heat from the bottom and/or back, they need adequate clearance to allow sufficient airflow. While no specific studies have been done to calculate the optimum clearance space, one general rule-of-thumb is to double the space recommended by manufacturers for refrigerator installation. Another rule-of-thumb is to allow two inches of air flow around the refrigerator.

Freezers

Whether or not to own a separate freezer should be based on an evaluation of your needs. The energy efficiency of a freezer depends on the size and type of freezer. To qualify for the ENERGY STAR

label, freezers with a volume of 7.75 cubic feet or greater must be at least 10 percent more efficient than the federal standard.

A chest freezer generally uses 10 to 25 percent less energy than an upright model because it is better insulated and cold air does not spill out when the door is opened. Manual defrost models consume 35 to 40 percent less energy than comparable automatic defrost ones. However, because ice build-up can significantly decrease the efficiency of the freezer, you will need to defrost periodically to ensure that there is never more than a quarter inch of ice (the maximum thickness recommended for the freezer to keep operating efficiently).

Refrigerator and Freezer Purchasing Tips

1. Choose the right size and type for your needs.

You need to choose the size and type of refrigerator or freezer that fits your needs. Generally, the larger the refrigerator or freezer model, the greater the energy consumption. The most energy-efficient refrigerator models are typically 16 to 20 cubic feet. The most energy-efficient freezer models are typically chest freezers.

2. Choose a model with a blue ENERGY STAR label.

As indicated earlier, ENERGY STAR qualified refrigerators and freezers save you money over their lifetime by saving on energy costs.

3. Compare yellow EnergyGuide labels.

A yellow EnergyGuide label includes information on the energy usage of the product, energy usage comparisons with similar models, and estimated annual operating costs.

4. Consider buying a top-mount refrigerator-freezer.

Top-mount refrigerator-freezer models use 10 to 25 percent less energy than side-by-side models.

5. Consider a model without an ice-maker and dispenser.

Automatic ice-makers and through-the-door dispensers increase energy use by 14 to 20 percent and raise the purchase price by about \$75-250.

6. Look for a refrigerator with automatic moisture control, but without an anti-sweat heater.

Models with automatic moisture control have been engineered to prevent moisture accumulation on the cabinet exterior without the addition of a heater. This feature differs from an “anti-sweat” heater that actually produces heat. Models with an anti-sweat heater will consume 5 to 10 percent more energy than models without this feature.

7. Consider a model with manual defrost.

Manual defrost models consume 35 to 40 percent less energy than comparable automatic defrost models.

Refrigerator and Freezer Operation Tips

ENERGY STAR recommends the following tips to operate your refrigerator and freezer for more energy savings.

- Position your refrigerator away from heat sources such as a heating vent, an oven, a range, a dishwasher, or direct sunlight from a window. The extra heat will make the compressor work harder. More importantly, there must be adequate circulation around the compressor and condensing coil so that heat can escape.
- To allow air to circulate around the condenser coils, leave a space between the wall or cabinets and the refrigerator or freezer, and keep the coils clean.
- Make sure the door seals are airtight.
- Keep your refrigerator between 35° F and 38° F and your freezer at 0° F.
- Minimize the amount of time the refrigerator door is open.
- Recycle older refrigerators.

ENERGY STAR Make a Cool Change: Recycle Your Old Fridge (Refrigerator) Campaign

The ENERGY STAR Make a Cool Change: Recycle Your Old Fridge (or Freezer), is a campaign by the U.S. Department of Energy, to encourage proper recycling of old, inefficient refrigerators or freezers in order to save money, energy and the environment. ENERGY STAR recommends the following four ways to recycle old refrigerators and freezers.

1. Recycle your old fridge or freezer when you buy a new ENERGY STAR model.

Many appliance retailers will pick up and recycle your old refrigerator or freezer when you purchase a new one. Some retailers or manufacturers also offer cash rebates when you buy a new refrigerator. You can search the special offers and rebates in your area from https://www.energystar.gov/products/recycle/find_fridge_freezer_recycling_program

2. Check with your local electric utility.

Many local utilities and energy-efficiency organizations support refrigerator and freezer recycling programs. Some programs offer cash

to recycle your old refrigerator; others offer utility bill credits. You can find the special offers and rebates using the previous link.

3. Ask about municipal pick-up of appliances. Your local waste management division may offer heavy trash pick-up and recycling programs for appliances. Contact them directly for information.

4. Talk to your local scrap metal recycler.

Locate recyclers in your area from: <https://search.earth911.com/>

References and Resources

- Portions of this document are modified with permission from *Home Series 4 (Major Home Appliances)*, originally developed by the Iowa Energy Center, 2009. <https://www.iowaeconomicdevelopment.com/userdocs/programs/HomeSeries4.pdf>
- Lee, H., Ruppert, K. C., Porter, W. A., & Prescott, T. (2008). *Energy Efficient Homes: Appliances in General*. Retrieved from <http://edis.ifas.ufl.edu/FY1032>

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