

HOME ENERGY GUIDE

REFRIGERATORS AND FREEZERS

Appliances are the most common labor-saving devices in our homes. Whether helping us keep clean, comfortable, or nourished, appliances are an essential part of daily life. And although they can save us a lot of time and effort, their use comes with an energy cost.

Refrigerators use a lot of energy in a typical home. In fact, in most Minnesota homes a refrigerator is the second largest user of electricity, after air conditioners.

Maintenance & repairs

If you are not ready to replace your refrigerator or freezer, there are a few things you can do to keep your existing equipment operating as efficiently as possible.

- **Cleaning and clearance.** Although the benefits of keeping the coils on the back or bottom dust-free may be minimal, large accumulations or blockages can interfere with efficient operation. Additionally, there must be clearance between the appliance, walls, and cabinets so that air can circulate freely, allowing the coils to give off heat. Spilled food or liquids may also harden and keep doors and drawers from closing or sealing tightly.
- **Gaskets and seals.** Over time, the gaskets that seal the doors can become worn or loose and may no longer do a good job of keeping the cold inside. If the unit itself is still operating well and is not too old, these can be replaced or tightened.

When is it time to replace?

Many refrigerators and freezers will continue to operate for 15-20 years or even longer: food stays cold and the light comes on when the door opens. Whether or not these appliances are really working *efficiently*, however, is another question. Opportunities for replacement include:

- **Costly repairs.** If an estimate for repairs exceeds several hundred dollars, it might make sense to look at replacement instead—depending on the age and condition of the rest of the appliance.

- **Remodeling project.** A kitchen remodel often includes an upgrade of appliances, in order to accommodate a different space or additional features.
- **High energy usage.** Depending on the model, a 20-year-old refrigerator could use 1,700 kWh of electricity every year—compared with about 450 kWh for a similarly sized new ENERGY STAR® model. At an electrical cost of 11¢ per kWh, that represents a potential savings of \$140 per year—and a potential payback of 7-9 years.

What has changed?

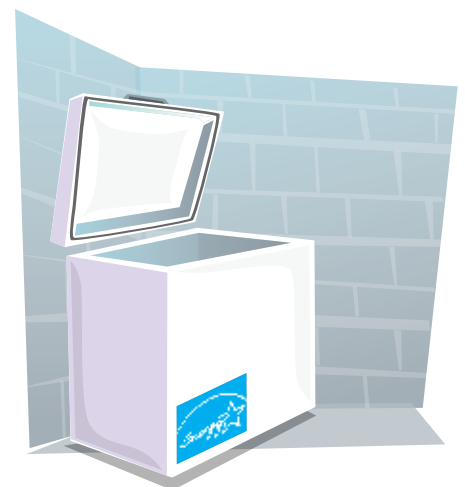
Refrigerators and freezers have benefited from recent advances in manufacturing methods and efficient technology, including:

- **Better insulation.** The metal boxes that enclose refrigerators and freezers have higher quality insulating materials than in the past, and reduced thermal bridges (the direct, uninsulated connections between inside and outside).
- **Tighter seals.** The gaskets and seals around doors are designed to fit better and have increased durability. Additionally, they are generally easier to replace when worn.
- **More efficient.** The compressors, motors, heat exchangers, and other components are considerably more efficient than previously.

Shopping tips

When choosing a new refrigerator or freezer, consider:

- **Proper sizing.** Appliances that are too large waste energy and space. Ones that are too small require more frequent trips to the grocery store. A typical family of four requires a refrigerator capacity of 12-16 cubic feet and another 6-8 cubic feet for freezer capacity.



Freezers

Chest freezers are generally more energy-efficient than vertical freezers. Wire racks and bins can make organization and access easier in a chest freezer.

(over)

- **Styles.** The most efficient refrigerator designs usually have the freezer compartment on the bottom. The least efficient are usually the side-by-side models. Chest freezers are generally more efficient than vertical models (less cold air spills out of a chest freezer). Other factors such as compartment dimensions or easy access may be important as well.
- **Features.** Manual defrost typically uses less energy than auto-defrost models, but they may be difficult to find in all sizes—and they must be defrosted manually to properly operate. Although “through-the-door” water and ice dispensers can reduce frequent door opening, they can also add to the energy consumption.
- **Efficiency.** As major users of electricity, the selection of refrigerators and freezers will affect your utility bills—for 10-15 years. Buying efficiency today means lower operating costs for the future. The best way to compare efficiency of different models is through the ENERGY STAR® website (energystar.gov), which contains tools to help you calculate savings on specific models and compare them with models with similar features.
- **Keep refrigerators and freezers relatively full.** This will reduce the temperature swings that result from opening the doors. Jugs of water can also be used.
- **Set temperatures.** Refrigerators should be set to 38 to 40 degrees F and freezers to 0 to 5 degrees—any colder is not necessary for food safety and uses more electricity than needed. In fact, a refrigerator set 10 degrees colder (and a freezer set 5 degrees colder) may use up to 25% more electricity. Test with a thermometer and adjust accordingly.
- **Unplug** unused refrigerators and freezers or those in an unheated space—they may not work properly at temperatures below 55 to 60 degrees.

What *not* to do with your old refrigerator

Many people spend a good deal of time considering the energy efficiency of a new refrigerator and when their new model arrives, take the old, energy-wasting one and move it to the garage or basement—where it continues to waste energy!

Others, in an attempt to recoup some of the expense of a new unit, sell the old one. Instead of saving energy with their purchase, these folks have actually added to the overall electrical use.

Refrigerators that are 15 years old or older should be taken out of service and recycled. The cost of operating these older models (in both dollars and environmental effects) exceeds the perceived benefits of continued operation.

Efficient use

Follow these suggestions to keep energy usage to the minimum:

- **Limit the time that doors are open.** Open doors allow cold air to escape and warm air to enter.

