



ENERGY E-TIPS

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Refrigerators

The majority of United States citizens have a refrigerator in their kitchen, with many having a second or third refrigerator elsewhere in their homes. This edition of Energy E-Tips will focus on the basics of refrigeration, installation, refrigerator energy-saving tips and refrigerator recycling.

Refrigerators are the biggest energy consumers in the home – accounting for as much as 15% of a home's total energy usage per year. Depending on the type of refrigerator and the cost of electricity in your area, ENERGY STAR®-labeled models may save more than \$35 per year on your utility bill. Most of the energy used by a refrigerator is used to pump heat out of the cabinet. A small amount of energy is used to keep the cabinet from sweating, to defrost the refrigerator and to illuminate the interior.



Refrigeration Basics

Refrigerators use the process of evaporative cooling to maintain a cool temperature that slows the growth of bacteria on food and drinks, preserving them for longer than at room temperature. Today's refrigerators use a refrigerant called tetrafluoroethane (HFC-134a).

Refrigerators have several parts to them, and some of the most common features are: (a) Automatic defrost – with a defrost timer, defrost heater, and defrost thermostat, (b) Cooling – including a compressor, a condenser, a metering device (capillary tube), and an evaporator, (c) Temperature control, (d) Lighting, (E) Ice maker, (F) Ice and water dispenser and (G) Door seals and hinges.

Installation

Proper installation of a refrigerator is simple and important. The primary concern is that the unit has sufficient clearance from the walls for proper ventilation, that it is not pinching any electrical cords or water lines, and that it is level. Many refrigerators must be tilted back slightly so that the doors self-close. Consult your owner's manual for further installation instructions.

Placement of the refrigerator is very important. Direct sunlight and close contact with heat sources such as heating vents, the range, or dishwasher need to be avoided as possible. More importantly, heat from the compressor and condensing coil must be able to escape freely, because most refrigerators reject heat from the bottom and/or the back. Therefore, refrigerators need adequate clearance to allow sufficient airflow.

Refrigerator Energy-Saving Tips

- Refrigerator temperatures should be set between 37°F and 40°F. To check the temperature of your refrigerator, place an appliance thermometer in a glass of water and set the glass in the center of the refrigerator. Read it after 24 hours.

- Try to minimize the number of times the refrigerator door is opened. Opening the refrigerator door causes cold (heavier) air to spill out, to be replaced by warm (lighter) air. Poor habits can waste up to 120 kWh per year.
- Unless you have a no-clean condenser model, regularly vacuum dust and lint from the cooling coils, located on the back or the bottom of the refrigerator. To work efficiently, air needs to move freely around clean coils.
- If you have a manual-defrost model, defrost it regularly; don't allow frost to build up thicker than ¼ inch. Frost build-up increases the amount of energy needed to keep the motor running.
- Door gaskets should seal tightly. Move your hand slowly around the outside of the door gasket to check for leaks.
- Cover liquids and wrap foods; uncovered foods release moisture, which makes the compressor work harder.
- Look for models with heavy door hinges that create a good door seal.

Refrigerator Replacement

The most energy efficient models are in the 16 to 20 cubic foot sizes. In general, the large size refrigerator consumes more energy. Too large a model will waste space and energy; too small a model could mean extra trips to the supermarket.

Keep in mind that automatic icemakers and through-the-door dispensers increase energy use (14 to 20 percent) and purchase price (\$75 to \$250).

Because of the high appliance cost of refrigerators, many consumers only consider replacement once the refrigerator has failed and unable to work properly. With the average usage expectancy of 17 years for them, it is important to consider if replacement with a new energy-efficient model may be a better choice.

Your 2nd and 3rd Refrigerator in your home

It is estimated that ¼ of all households have a second refrigerator in their home. Many times, this second refrigerator used to be the main refrigerator for the household, and is older and a high energy consumer. It may be recommended that you consider not using this old refrigerator, as it will not help with energy efficiency. Consider recycling this refrigerator and help the environment.

Refrigerator Recycling

You may consider recycling your old refrigerator if it is aged more than 10 years.

- Recycle your old fridge when you buy a new ENERGY STAR[®] model.
- Check with your state energy office (Arkansas energy office is here: <http://arkansasenergy.org/>) or local electric utility.
- Ask about municipal pick-up of appliances.
- Talk to your local scrap metal recycler. Your refrigerator contains more than 120 pounds of recyclable steel.

References

- <http://aaa-applianceparts.com/refrigerator.htm>
- http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=RF
- http://www.energystar.gov/index.cfm?c=recycle.pr_refrigerator_rec

Samy Sadaka ssadaka@uaex.edu

Rachel Lipsey rlipsey@uaex.edu