

Replace Your Old Refrigerator and Slash Your Utility Bill

Refrigerators operate 24 hours a day and consume about one-sixth of all the electricity used in the typical home--much more than any other household appliance. Did you know that a 10-year-old refrigerator uses twice as much electricity as a new ENERGY STAR[®] refrigerator? One of the best ways to reduce the amount of money you spend on electricity each month is to update your refrigerator, to an ENERGY STAR[®] model.

Table 1 illustrates average electrical consumption levels of typical automatic defrost, top-freezer-style refrigerators, manufactured between 1972 and 2001.

Table 1: Comparison of Energy Consumption of Old and New Refrigerators

Year Refrigerator Manufactured	Annual Electrical Consumption	Annual Cost of Electricity*
1972	2000 kWh	\$270.00
1990	900 kWh	\$121.50
1993	690 kWh	\$93.15
After 2001	485 kWh	\$65.47
2003 ENERGY STAR Refrigerator	436 kWh	\$58.86

* Cost of Electricity is calculated at \$0.135 per kilowatt-hour, the average cost of electricity in New York State for residential consumers. Electrical consumption levels for 1972 – 1993 refrigerators obtained from Lawrence Berkeley Labs Summer 1995 Newsletter.

Why are newer refrigerators so much more efficient than older ones? It is primarily due to 1987 federal legislation that established energy-efficiency standards for 11 types of consumer products, including refrigerator/freezers. These efficiency standards are updated at regular intervals. The first set of efficiency standards took effect for refrigerators manufactured in 1990. Standards were updated and efficiency levels increased in 1993 and 2001. Figure 1 illustrates the effect these standards have had on energy efficiency over the past 30 years.

Should you spend \$400 or more to replace your current refrigerator with a new, more energy-efficient model even before it's worn out? Maybe you should. If your current refrigerator was manufactured before the energy efficiency guidelines went into effect, it may be costing you hundreds of dollars per year for electricity. Replacing it with a new ENERGY STAR® model could pay you back in a very short time, perhaps just two to three years. Once the new refrigerator has paid back the initial investment of the purchase price, annual savings on electricity costs go into your pocket, similar to the return on any financial investment (see the sidebar to learn how to determine the amount of energy your current refrigerator consumes).

Shopping for a New Refrigerator

Modern-day home refrigerators come in three basic configurations, the most common being with a top freezer compartment. The side-by-side is the next most common; gaining popularity quickly is the bottom freezer with the refrigeration section on top. Top freezer models use 10 to 25% less electricity than side-by-side models¹. Bottom freezer models consume about the same amount of electricity as top-freezer models and tend to be more convenient to use².

Determining your Refrigerator's Electricity Consumption

To determine the annual electricity requirements of your current refrigerator write down the model and serial number. These are found on the refrigerator name plate which is usually inside the food storage space near the floor on the front frame.

When you have that information, go to the following website.

http://www.waptac.org/sp.asp?mc=techaid_s_refrigerator_replacement

Look up the make and model number to learn how much electricity your current refrigerator consumes. To estimate the cost of electricity required to operate the refrigerator simply multiply annual kWh by the rate you pay your local utility for electricity.

¹ According to information at www.energystar.gov

² Consumer Reports, February, 1999, pg. 47-50.

Other Purchasing Tips

Purchasing an ENERGY STAR® refrigerator assures that it meets strict energy efficiency guidelines set by the EPA and U.S. DOE. ENERGY STAR is a government-backed program helping businesses and individuals save energy and protect the environment through superior energy efficiency. The ENERGY STAR label (see Figure 1) alerts you that the refrigerator will use at least 10% less energy than a conventional model.



Figure 1: ENERGY STAR certification label

Federally mandated efficiency standards set *minimum* requirements for energy efficiency. Some manufacturers produce models that just meet the standards, while others produce refrigerators that far exceed the minimum standards. The best way to compare the energy efficiency of various brands and models when shopping is to read the yellow ENERGYGUIDE label attached to each appliance. See Figure 2 (page 4) for more information about how to read this label.

Select the right refrigerator for your needs. Larger models use more energy, as do refrigerators that are under-utilized. James Cavallo of *Home Energy* magazine, suggests choosing a refrigerator that has 10 cubic feet of storage for a family of two and then adding an extra one (1) cubic foot for each additional person in the family. The freezer compartment should be 40%-45% as large as the refrigerator section. So a family of four would choose a model between 16.5 and 17.5 cubic feet.

Select only those features your family needs. Automatic ice makers and through-the-door dispensers increase energy use by 14% to 20% and also increase initial purchase price of the unit.

Models with an anti-sweat heater consume five to 10% more energy. If this is a feature you want, then be sure to purchase a model with an energy saver switch.

How to Read The Energy Guide Label

- Manufacturer, model number and appliance type
- Information about features, capacity, and size so you can compare brands
- Estimate of appliance's annual energy use. The lower the number, the more energy efficient the appliance, and the less it costs to run it.
- If the refrigerator is an ENERGY STAR appliance the ENERGY STAR symbol will appear on the ENERGYGUIDE label
- The range of energy use for similar models. Use this scale to see how a particular model measures up to the competition.
- Estimate of how much it can cost to run this model for a year. Note that the estimated yearly operating cost is based on the national average cost of electricity (\$0.0824 per kWh). The average cost for electricity in N.Y. State is \$0.139 per kWh.

Figure 2: How To Read The Yellow Energy Guide Label

Just a few generations ago, in-home cold storage for food consisted of a wooden ice-box lined with metal which required large blocks of ice. Modern-day refrigerators require little attention, using electricity to keep our food cool and the freezer frost-free however, many older refrigerators use excessive amounts of electricity. Use the information in this article to find out if your current refrigerator is an energy hog. If it is,

replace it with the most energy-efficient refrigerator you can afford. Doing so will save you money, reduce energy use, and help protect the environment.

To locate stores near you that sell ENERGY STAR appliances and lighting products, and to learn about programs that can help you reduce home energy costs visit the **New York Energy SmartSM** website at www.GetEnergySmart.org, or call toll free 1-877-NY-SMART. If you would like to learn more about other home energy issues contact your local Cornell Cooperative Extension.