

Buyer's Guide: The Most Efficient Refrigerators

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Your refrigerator is one of the hardest working appliances in the house. Refrigerators [generate about 4%](#) of the average American household's carbon emissions. That's not the [biggest part](#) of your carbon footprint, but it's a lot for a single household item. This buyer's guide can help you decide if you're due for an [appliance upgrade](#) and identifies the greenest refrigerators available to help you make the best choice for your kitchen.

Shopping Guidelines

Refrigerators over 15 years old can cost more than \$80 per year to run. On average, an old refrigerator uses about 33% more energy than a current Energy Star fridge. The EPA website suggests replacing most appliances after 10 years, but a [calculator for refrigerators](#) will help you figure out if the savings justify the cost of replacement in your case.

A common rule of thumb for refrigerator sizing is 6 cubic feet per person in the household. Generally, the larger the refrigerator, the greater the total energy consumption, but the per-cubic-foot efficiency also increases with size. Add-ons like an ice-dispenser also add to the unit's energy use. Finally, make sure that the refrigerator has an LED light inside — a few still use wasteful, heat-producing incandescent bulbs.

Refrigerant

Although refrigerators only use a very small amount of refrigerant compared to other uses, the [impact of the refrigerant](#) on the ozone layer is a consideration. This is measured as [Global Warming Potential](#) (GWP) relative to CO₂, which is assigned a value of 1. Before 1995, the refrigerant used in refrigerators was CFC R-12, with GWP 10,900. Since the Montreal Protocol took effect, refrigerators have typically [used R-134a, an HFC](#), as a refrigerant. HFCs are far less damaging to the [ozone layer](#) than CFCs, but they are not harmless. The Global Warming Potential of R-134a is 1,430.

In 2016, the Montreal Protocol was amended to accelerate the elimination of HCFCs and HFCs. In 2017, [Samsung introduced](#) new refrigerator models using an innovative R-600a refrigerant system with a GWP of only 5. Although the U.S. has yet to [ratify the Montreal Protocol amendment](#), it has scheduled the elimination of many HFCs. As of [January 1, 2021](#), refrigerators will no longer be manufactured with R-134a. However, a new refrigerator may sit in a warehouse or on the sales floor for months or even years before being sold.

For now, the only way to be sure your new fridge uses the new refrigerant is to confirm at the point of purchase. The sticker inside the refrigerator that provides the model and serial number should also identify the refrigerant.

Comparison Criteria

Energy efficiency is the primary environmental concern for refrigerators. Under the National Appliance Energy Conservation Act, the U.S. Department of Energy (DOE) establishes maximum [energy consumption standards](#) for refrigerators that vary depending on the size, configuration, and functionality of the refrigerator.

If all refrigerators sold in the United States were [Energy Star](#) certified, the energy cost savings would grow to nearly \$700 million each year and 9 billion pounds of annual greenhouse gas emissions would be prevented, equivalent to the emissions from more than 870,000 vehicles.

There are more than 300 refrigerators on Energy Star's 2021 Most Efficient list. The list is littered with discontinued models, and dominated by minifridges and narrow, smaller-capacity models. Our list has pulled out the most efficient [standard-sized](#) options from Energy Star's 2021 Most Efficient list that are currently available for purchase. All of these are top freezer, single-door designs.

Devilish Details

An asterisk in the model number can be replaced by any digit without changing the Energy Star performance rating. Since Energy Star ratings include multiple models, always check the details for the specific unit are you looking at to make sure it uses LED lights and the newer refrigerant. Also, check that optional features are included in the energy rating. If you purchase an Energy Star refrigerator, you may be eligible for a rebate; check the [Energy Star rebate finder](#) to find out.

Comparison Chart

Click the image below for a larger version of the comparison chart.

