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Buyer's Guide: Refrigerators

Gemma Alexander Jan 25, 2021



Your refrigerator is one of the hardest working appliances in the house. Refrigerators generate about 4% (<https://www.ucsusa.org/resources/cooler-smarter-geek-out-data>) of the average American household's carbon emissions. That's not the biggest part (<https://earth911.com/eco-tech/transportation/good-better-best-reduce-transportation-carbon-footprint/>) 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 (<https://earth911.com/how-and-buy/home-economics-should-you-buy-new-appliances/>) 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 \(https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator\)](https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator) 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 \(https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants\)](https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants) on the ozone layer is a consideration. This is measured as [Global Warming Potential \(https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants\)](https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants) (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 \(https://www.hunker.com/12001800/how-to-recharge-freon-to-repair-a-refrigerator\)](https://www.hunker.com/12001800/how-to-recharge-freon-to-repair-a-refrigerator), as a refrigerant. HFCs are far less damaging to the [ozone layer \(https://earth911.com/living-well-being/ozone-layer-preservation/\)](https://earth911.com/living-well-being/ozone-layer-preservation/) 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 \(https://news.samsung.com/us/samsung-earns-energy-star-emerging-technology-award-for-20-refrigeration-models-in-2017/\)](https://news.samsung.com/us/samsung-earns-energy-star-emerging-technology-award-for-20-refrigeration-models-in-2017/) 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 \(http://www.alliancepolicy.org/campaigns/kigali\)](http://www.alliancepolicy.org/campaigns/kigali), it has scheduled the elimination of many HFCs. As of [January 1, 2021 \(https://www.coolingpost.com/world-news/us-places-bans-on-r404a-and-r134a/\)](https://www.coolingpost.com/world-news/us-places-bans-on-r404a-and-r134a/), 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](https://www.ecfr.gov/cgi-bin/text-idx?SID=48f64e166fe3561666f871e521996e13&mc=true&node=se10.3.430_132&rtn=div8) (https://www.ecfr.gov/cgi-bin/text-idx?SID=48f64e166fe3561666f871e521996e13&mc=true&node=se10.3.430_132&rtn=div8) 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](https://www.energystar.gov/products/what_makes_product_energy_star) (https://www.energystar.gov/products/what_makes_product_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](https://homeguides.sfgate.com/dimensions-standard-size-refrigerator-82262.html) (<https://homeguides.sfgate.com/dimensions-standard-size-refrigerator-82262.html>) 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 you are 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](http://www.energystar.gov/rebate-finder) (<http://www.energystar.gov/rebate-finder>) to find out.

Comparison Chart

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

Earth911 Refrigerator Comparison Chart

Brand	Model	Capacity (cu. ft.)	Energy Use (kWh/yr.)	Energy Standard
GE	GTE16GTH****	15.5	344	384
Hotpoint	HPE16BTN****	15.6	345	385
GE	GTE16DTN**** GTE16GTN****	15.6	345	385
GE	GTE17GSN****	16.6	352	393
Ascoli	ATFR1801EWE ATFR1801ESE ATFR1801EBE	18.3	358	410
ChiQ	CQRT18Y1GD1S CQRT18Y1GD1W	18.3	358	410
GE	GTE18DCN**** GTE18DTN****	17.5	359	400
Midea	HD-663FWE(SZ)	18	362	405
Frigidaire	FFHT1824U*	18	362	403
LG	LTCS20020*	20.2	387	431



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(<https://23pxcp3u31lgybw92v8rma1-wpengine.netdna-ssl.com/wp-content/uploads/2021/01/Earth911-refrigerator-comparison-chart.png>)

Most Efficient Standard-Sized Refrigerators

GE GTE16GTH****

At 15.5 cubic feet of storage capacity, GE models that begin with GTE16GTH

(<https://www.geappliances.com/appliance/GE-ENERGY-STAR-15-5-Cu-Ft-Top-Freezer-Refrigerator-GTE16GTHWW>) are on the small side for many households, but they use less energy than any other full-size refrigerator – a mere 344 kilowatt-hour/year on average.

Hotpoint

Hotpoint was founded in the early 1900s to make electric toasters and clothes irons. Today it is a subsidiary brand of GE (GE itself is owned by Chinese company Haier since 2016) making a wide range of appliances. Refrigerators with model numbers HPE16BTN****

(https://products.geappliances.com/appliance/hotpoint-specs/HPE16BTNRWW#tab1_) offer a tiny bit more space than the top-ranked GE with a similarly tiny increase in energy use.

GE GTE16DTN** and GTE16GTN******

These two GE model groups have identical Energy Star performance to each other and to the Hotpoint. In fact, the only difference between the two GE styles appears to be that the GTN (<https://www.geappliances.com/appliance/GE-ENERGY-STAR-15-6-Cu-Ft-Top-Freezer-Refrigerator-GTE16GTNLWW>) has a sliding deli drawer while the DTN (<https://www.geappliances.com/appliance/GE-ENERGY-STAR-15-6-Cu-Ft-Top-Freezer-Refrigerator-GTE16DTNLWW>) has wire shelves.

GE GTE17GSN****

This is the first model on the list with a significant difference in either capacity or energy use. At 16.6 cubic feet, it offers a full cubic foot more space than the higher ranking refrigerators, which will make GE's GTE17GSN**** (<https://www.geappliances.com/appliance/GE-ENERGY-STAR-16-6-Cu-Ft-Top-Freezer-Refrigerator-GTE17GSNRSS>) models many consumers' first choice, even at 352 kWh/year.

Ascoli

Ascoli is an international Italian brand that specializes in built-ins and RV appliances. However, three of their standard refrigerator models (<https://ascoliamerica.com/free-standing-appliances/>) use only 358 kWh/year. Providing 18.3 cubic feet of food storage, these have the largest capacity among the Most Efficient options.

ChiQ

This relatively new Chinese brand (pronounced like the French word chic, meaning stylish) is still hard to find in most of the U.S. But their largest-capacity model (<https://www.chiqamerica.com/product/cqrt18y1gd1s-no-frost-515l-18cu-ft-115v/>) with 18.3 cubic feet of capacity matches the Ascoli for efficiency and size and lives up to its name with a sleek, minimalist style.

GE GTE18DCN**** and GTE18DTN****

Virtually indistinguishable from one another, the [GTE18DCN****](https://www.geappliances.com/appliance/GE-ENERGY-STAR-17-5-Cu-Ft-Top-Freezer-Refrigerator-GTE18DCNRSA) (<https://www.geappliances.com/appliance/GE-ENERGY-STAR-17-5-Cu-Ft-Top-Freezer-Refrigerator-GTE18DCNRSA>) and [GTE18DTN****](https://www.geappliances.com/appliance/GE-ENERGY-STAR-17-5-Cu-Ft-Top-Freezer-Refrigerator-GTE18DTNRBB) (<https://www.geappliances.com/appliance/GE-ENERGY-STAR-17-5-Cu-Ft-Top-Freezer-Refrigerator-GTE18DTNRBB>) refrigerators – with 17.5 cubic feet – fall between the higher-ranked GEs and the foreign brands for capacity. However, they use more energy than both.

Midea

The Energy Star Most Efficient list includes nine Midea models with a capacity of 18 cubic feet and annual energy use of 362 kWh/year whose model numbers do not quite match up with those on Midea's website. However, three [currently available models](https://www.midea.com/us/Refrigerators/Full-Size-Refrigerators) (<https://www.midea.com/us/Refrigerators/Full-Size-Refrigerators>) numbered WHD-663FWE*** do meet the Energy Star description. With 18 cubic foot-capacity, they provide almost as much storage as the other foreign brands but use a bit more energy. Inexplicably, they appear to use an [incandescent light bulb](https://www.appliancesconnection.com/midea-whd663fwess1.html) (<https://www.appliancesconnection.com/midea-whd663fwess1.html>).

Frigidaire FFHT1824U*

The [Frigidaire FFHT1824U*](https://www.frigidaire.com/Owner-Center/Product-Support/FFHT1824US) (<https://www.frigidaire.com/Owner-Center/Product-Support/FFHT1824US>) offers the same volume and efficiency as the Mideas. Also like the Mideas, it appears not to have LED (<https://www.appliancesconnection.com/frigidaire-ffht1824u.html>) lighting, which probably knocks them down a step in the rankings. If one of these refrigerators works best for you, you might be able to switch out the lightbulb with an LED for slightly improved efficiency.

LG

Using 387 kWh/year on average, the [LG LTCS20020*](https://www.lg.com/us/refrigerators/lg-ltcs20020s-top-freezer-refrigerator) (<https://www.lg.com/us/refrigerators/lg-ltcs20020s-top-freezer-refrigerator>) has a capacity of 20.2 cubic feet. It holds more food than any other refrigerator in the top 10 list – a bonus to most shoppers. Despite using the most energy on the list, it is the most efficient refrigerator per cubic foot of food storage capacity. So if you need a big refrigerator, don't feel guilty buying this one.

Your Old Fridge

If you are considering keeping your old refrigerator in the basement or garage, you might reconsider. One large Energy Star appliance is less expensive to operate and less wasteful than two smaller refrigerators, especially if one of them is old.

No matter what refrigerator you buy, try to [recycle \(https://search.earth911.com/?utm_source=earth911-header&what=Refrigerators\)](https://search.earth911.com/?utm_source=earth911-header&what=Refrigerators) your old one. Many appliance retailers will pick up your old refrigerator when you purchase a new one, but make sure they are not just throwing it away before you accept the service. Even if you can't recycle your old fridge, you need to make sure the [refrigerant \(https://earth911.com/business-policy/do-your-appliances-use-refrigerants-the-unwants-to-ban/\)](https://earth911.com/business-policy/do-your-appliances-use-refrigerants-the-unwants-to-ban/) is removed and disposed of properly. The [Responsible Appliance Disposal program \(https://www.epa.gov/rad/consumers\)](https://www.epa.gov/rad/consumers) has created a [searchable map \(https://www.epa.gov/rad/find-rad-partner-programs\)](https://www.epa.gov/rad/find-rad-partner-programs) to find service providers who will make sure the HFCs are captured and disposed of safely.

Refrigeration Best Practices

How you use your refrigerator affects its efficiency. Refrigerators should be set to 35-38 degrees Fahrenheit and freezers to 0 F. If your kitchen layout permits it, the refrigerator should be positioned away from heat sources such as ovens, dishwashers, or direct sunlight from a window. Position the fridge a few inches from the wall to allow air circulation, don't store stuff on top of the fridge, and clean the condenser coils a few times a year. If the door seals lose their airtightness, replace them.

Turn off extra features like the icemaker and anti-sweat heater. Only store food in closed containers to keep the moisture levels low. Keep the refrigerator three-quarters full but organized and so you don't waste time looking for things with the door open. And of course, try not to stand in front of an open refrigerator door while you decide what to eat.

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