

For More Information Contact
Marianne DiMascio at
781-293-6309 or
mdimascio@standardsasap.org

www.standardsasap.org

Q & A APPLIANCE STANDARDS QUESTIONS AND ANSWERS

Refrigerator and Freezer Standards

August 2011

“
The new standards will cut energy use by 25% for the most common refrigerator types.
”

On August 25, 2011, DOE issued updated efficiency standards for refrigerators and freezers, writing the next chapter in the long and successful story of refrigerator appliance efficiency standards. Learn more below:

What is an efficiency standard and who sets it?

The Congress established initial minimum efficiency standards for many residential and commercial products and charged the U.S. Department of Energy (DOE) with periodically updating them. These standards apply to new products manufactured for sale in the United States.

Which products are covered?

Residential refrigerators, refrigerator-freezers, and freezers are covered under the latest DOE rulemaking.

How were the new standards determined?

DOE based the standards on levels agreed to by a coalition of energy efficiency proponents and home appliance manufacturers,

the latter represented by the Association of Home Appliance Manufacturers (AHAM). The parties completed a negotiated agreement in July, 2010, submitting it to both Congress and DOE. Similar agreements produced the original national refrigerator standard enacted by Congress in 1987 and previous DOE updates effective in 1993 and 2001.

Is it true that average refrigerators today use a fraction of the energy that refrigerators from the mid-1970s used?

Yes. Typical fridges that exactly meet the 2014 standards will use 404 to 624 kilowatt hours (kwh) per year. Comparable units just meeting the first state standard which was effective in 1978 would have used 2,248 to 2,951. For consumers, these improvements mean annual bill savings of \$215 to \$270 per year (based on current national average electricity prices.) *See table below.*

Yet refrigerators are larger, have more features and are more affordable. How is that possible?

Manufacturers improved the efficiency by making many incremental design, materials and component changes: thicker and better insulation

| Comparison of Refrigerator Energy Use and Electricity Cost (1978-2014) | | | | | | | |
|--|---------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Volume (cubic feet) | 1978 | | 1990 | | 2014 | |
| | | Energy Use (kWh/yr) | Electricity Bill (\$/yr) | Energy Use (kWh/yr) | Electricity Bill (\$/yr) | Energy Use (kWh/yr) | Electricity Bill (\$/yr) |
| Top-Mount | 18.1 | 2,248 | \$260 | 1,076 | \$125 | 404 | \$45 |
| Bottom-Mount | 21.9 | 2,742 | \$315 | 1,432 | \$165 | 550 | \$65 |
| Side-by-Side | 25.1 | 2,951 | \$340 | 1,755 | \$200 | 624 | \$70 |

For More Information Contact
Marianne DiMascio at
781-293-6309 or
mdimascio@standardsasap.org

www.standardsasap.org



For the first time, refrigerator/freezer standards will include energy usage for icemakers.



and more efficient compressors, for example, which allowed them to continue to innovate to provide even greater consumer amenities. Today's more efficient refrigerators are larger (about 20% larger than the average 1970s model), have more features such as automatic defrost and through-the-door ice, and are cheaper than earlier models. The average price charged by manufacturers for a new fridge has dropped by 60% since the 1970s.

[Here's a graph that shows average energy use, volume and price over time.](#)

And the latest standards improve the efficiency even more?

Yes, the new standards will cut energy use by 25% for the most common refrigerator types. The precise savings for major categories are as follows:

- 25% for top-mount (i.e. freezer on top) and side-by-side refrigerator-freezers; and
- 20% for bottom-mount refrigerator-freezers.
- 30% for automatic defrost freezers;

Categories with lower sales volumes will require 10-25% savings. What technologies will be used to achieve the savings?



High-efficiency single-speed and variable-speed compressors and further insulation improvements, including vacuum insulation panels (VIPs), will contribute to the energy savings. VIPs use technology similar to a thermos where space between the two walls is evacuated, limiting the transfer of heat. VIPs are already in use in refrigerated trucks, commercial refrigeration and some residential refrigerators and freezers.

What's new about this standard?

For the first time, the standards will include energy usage for icemakers. For now, the standards simply assume that refrigerators with ice makers use 84 kWh per year more than those without. Consumers will have better information because energy labels will now reflect that units with automatic ice makers use more energy than those without. Once the DOE finalizes a method for testing icemaker energy use, the placeholder value of 84 kWh will be replaced by actual measured energy use. This will encourage manufacturers to improve efficiency of automatic ice makers, just as other aspects of refrigerators have been improved.

What are the national savings and benefit from the latest standards?

According to DOE, the new standards over 30 years would save 4.84 quads of energy, or roughly enough to meet the total energy needs of more than one-fifth of all U.S. households for a year. Over the same 30-year period, and taking into account up-front costs, consumers will save between \$28 billion to \$36 billion (at a 3% discount rate). DOE also estimates CO2 emissions will be cut by 344 million metric tons over 30 years, an amount equal to the annual emissions of about 67 million cars. Smog-forming NOx emissions and toxic mercury emissions would also be reduced by 277,000 short tons and 1.45 tons respectively.

When will the standards take effect?

New refrigerator/freezer standards will take effect in fall 2014.