

2016 ENERGY STAR® EMERGING TECHNOLOGY AWARD: Innovative Refrigerant Systems

What is the ENERGY STAR Emerging Technology Award?

An annual designation recognizing innovative technologies that meet rigorous performance criteria and have the potential to significantly reduce greenhouse gas emissions. The U.S. Environmental Protection Agency (EPA) is pleased to recognize **Innovative Refrigerant Systems** used in ENERGY STAR certified residential and commercial products with the ENERGY STAR Emerging Technology Award for 2016. EPA's goal is to advance products that are more energy-efficient and sustainable.

Benefits of ENERGY STAR Emerging Technology Award-Winning Systems:

The Award differentiates forward-thinking manufacturers and system designers by distinguishing promising technologies that offer savings and sustainability.

For existing

ENERGY STAR certified residential and commercial products, the use of low-Global Warming Potential (GWP) refrigerant systems can offer customers and end-users **additional energy savings** along with the **superior product performance** that they already expect from ENERGY STAR certified equipment.

Winning technologies must demonstrate the following:

1. Contain a climate-friendly refrigerant with a GWP < 15¹
2. Demonstrate an energy efficiency gain of 5% or greater
3. Establish that efficiency gains are isolated to the refrigerant or components needed to support the refrigerant system²
4. Utilize a refrigerant that has been approved for use in the U. S. market, and listed as acceptable by EPA's Significant New Use Alternatives Policy (SNAP) Program

The Climate-Friendly Refrigerant Advantage

EPA anticipates broader availability of alternative refrigerants for use in a range of products in accordance with the Significant New Alternatives Policy (SNAP) Program, and is encouraging their use in ENERGY STAR products as a path toward energy efficiency and greater greenhouse gas reductions.

Over the past several decades, significant advances in refrigerant technology have enabled the U.S. market to transition away from ozone-depleting and high-GWP refrigerants to alternatives that are both ozone and climate-friendly. The subset of alternatives (<15 GWP and 5% more efficient) that would meet the 2016 Emerging Technology Award criteria (e.g., hydrocarbons) are not yet widely used in the U.S., but they are currently available in the international marketplace. Refrigerants have broad uses in the residential and commercial sectors, including refrigeration equipment and heating and cooling products. Due to the extensive use of refrigerant systems in existing residential and commercial products, the adoption of environmentally-friendly alternatives is an essential step in reducing national greenhouse gas emissions. Research indicates that non-ozone-depleting, low-GWP refrigerants, can be successfully incorporated into optimized systems to improve product performance.



¹ 100-year GWP as listed in the IPCC 2007 Fourth Assessment Report or EPA SNAP Federal Register determination of acceptability or final rule.

² All components or design elements other than those needed to operate the refrigerant system should remain the same, and data should reflect performance using the test method and metric(s) referenced in the relevant ENERGY STAR specification.

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ENERGY STAR: The Simple Choice for Energy Efficiency

EPA believes the potential for energy savings associated with this emerging technology is substantial, and hopes this award will help drive broader adoption, enabling wholesale efficiency gains.

The typical household spends over \$2,000 a year on energy bills. The biggest share (about 42%) of the energy used in your home goes to heating and cooling. Appliances can amount to \$250 or more per year to operate, with old, inefficient refrigerators accounting for a sizeable chunk of that total. Using ENERGY STAR products in your home can save you approximately 35% or more than \$760 on your household energy bills, while saving more than 8,000 pounds of greenhouse gas emissions.

The foodservice industry has some of the highest energy consuming buildings at approximately 350,000 BTU per square foot. Refrigeration is often a large part of that energy consumption. EPA estimates that ENERGY STAR commercial refrigerators are approximately 40% more efficient than other models. Furthermore, outfitting a commercial kitchen with ENERGY STAR products could save operators about \$5,000 per year. Annually, this is roughly equivalent to 42,000 pounds of greenhouse gas emissions.

Products Potentially Eligible for this Award Include:

- Residential Refrigerators
- Residential Freezers
- Room Air Conditioners
- Commercial Refrigeration
- Commercial Ice Machines
- Vending Machines
- Heat Pump Water Heaters
- Heat Pump Clothes Dryers

Utility Rebates and Incentives

EPA will work with utilities across the nation to identify and encourage rebate offerings for the use of innovative refrigerant systems. Utility and product manufacturer stakeholders interested in more information on establishing a rebate program, or about existing incentives should contact Adam.Spitz@icfi.com.

Other EPA Resources

- **Questions about acceptable refrigerant alternatives for specific products?** Please contact EPA's SNAP Program. For more information visit: <https://www.epa.gov/snap>.
- **Questions about proper refrigerant recovery or appliance recycling?** Please contact EPA's Responsible Appliance Disposal Program. For more information visit: <https://www.epa.gov/rad>.
- **Questions about the type of refrigerants or refrigeration systems in food retail locations?** Please contact EPA's GreenChill Program. For more information visit: <https://www.epa.gov/greenchill>.

