



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

September 26, 2022

Dear ENERGY STAR® Partners and Stakeholders:

The U.S. Environmental Protection Agency (EPA) is pleased to announce final recognition criteria for ENERGY STAR Most Efficient 2023. This letter outlines the final criteria.

These criteria will recognize the most efficient ENERGY STAR products in 2023 across 13 product categories: Air Source Heat Pumps and Central Air Conditioners, Ceiling Fans, Clothes Dryers, Clothes Washers, Computer Monitors, Consumer Refrigeration Products, Dehumidifiers, Dishwashers, Ductless Heat Pumps and AC, Geothermal Heat Pumps, Residential Windows and Sliding Glass Doors, Room Air Cleaners, Room Air Conditioners, and Ventilation Fans. Products that meet the 2023 criteria will deliver significant savings over a conventional product as noted below:

<p>Air Source Heat Pumps and Central AC: 10-20% in annual energy savings over the Federal Minimum.</p>	<p>Ceiling Fans: 84 kWh/yr in annual energy savings, 67% over the Federal Minimum.</p>	<p>Clothes Dryers: 170-213 kWh/yr in annual energy savings, 28%-43% over the Federal Minimum.</p>
<p>Clothes Washers: ≤ 2.5 cu-ft: 107 kWh/yr in annual energy savings, 24% over the Federal Minimum and 1,534 gal/year in annual water savings, 37% over the Federal Minimum. > 2.5 cu-ft: 466 kWh/yr in annual energy savings, 43% over the Federal Minimum and 3,509 gal/yr in annual water savings, 46% over the Federal Minimum.</p>	<p>Computer Monitors: 15.0 kWh/yr in annual energy savings, 27% over a standard model.</p>	<p>Consumer Refrigeration Products: Standard Refrigerators: 40-181 kWh/yr in annual energy savings, 10-27% over the Federal Minimum Standard Freezers: 36-73 kWh/yr in annual energy savings, 10-20% over the Federal Minimum. Compact Refrigerators and Freezers: 34-109 kWh/yr in annual energy savings, 20-30% over the Federal Minimum.</p>
<p>Dehumidifiers: Portable Dehumidifiers: 100 kWh/yr in annual energy savings, 19% above the Federal Minimum. Whole-home Dehumidifiers: 177 kWh/yr in annual energy savings, 23% above the Federal Minimum.</p>	<p>Dishwashers: 67 kWh/yr in annual energy savings, 22% over the Federal Minimum. 387 gal/yr in annual water savings, 36% over the Federal Minimum.</p>	<p>Ductless Heat Pumps and AC: Annual savings will vary based on climate and housing characteristics, 17-26% savings over the Federal Minimum.</p>

Geothermal Heat Pumps: 1027-1614 kWh/yr in annual energy savings, 15-40% over the Federal Minimum.	Residential Windows and Sliding Glass Doors: Savings vary by climate, house construction, and number and type of windows replaced.	Room Air Cleaners: 75-515 kWh/yr, depending on size. 65% to more than 70% annual energy savings over numerous state standards.
Room Air Conditioners: 178-496 kWh/yr in annual energy savings, 35% over the Federal Minimum (25-35% over DOE CEER Standard).	Ventilating Fans: Bathroom/utility: 17 kWh/yr in annual energy savings, 85% over the Federal Minimum In-line: 7 kWh/yr in annual energy savings, 44% over the Federal Minimum.	

**Note: In the case of appliances and HVAC equipment, energy use of a product that meets ENERGY STAR Most Efficient 2023 criteria is compared to the federal standard.*

Overview of Comments on the ENERGY STAR Most Efficient 2023 Proposals

In light of an unexpected budget cut, EPA is finalizing limited updates to the ENERGY STAR Most Efficient criteria for 2023. Stakeholders shared feedback with EPA through 6 sets of written comments from 13 commenters. Commenters offered support for the proposed recognition criteria, as well as a select set of proposed adjustments that EPA summarizes and responds to in the [comment response document](#).

The Inflation Reduction Act (IRA) amends Section 25C federal income tax credits to allow credit for purchasing a skylight that meets the ENERGY STAR Most Efficient requirements, starting in 2023. EPA plans to issue a separate proposal to add ENERGY STAR Most Efficient skylight criteria in the next 60 days.

ENERGY STAR Most Efficient 2023 Categories and Recognition Criteria

Final criteria for ENERGY STAR Most Efficient 2023 are summarized below. In addition to meeting these performance requirements, products must be certified as ENERGY STAR by an EPA-recognized certification body. Additional detail for each product category is included in the recognition criteria documents available at www.energystar.gov/moste efficient.

Category	ENERGY STAR Most Efficient 2023 Recognition Criteria			
Air Source Heat Pumps and Ducted Central AC	Installation benefits, multiple capacities			
	Product type	SEER2	EER2	HSPF2
	Split System CAC	16.9	12.4	
	Split System HP	16.9	12.0	8.2
	Single-Package CAC	15.2	11.5	
	Single-Package HP	15.2	11.5	7.2
	Cold Climate HP	15.2	11.0	8.5
Cold climate heat pumps must also meet a COP of 1.75 at 5 degrees F, and provide 70% capacity maintenance at 5 degrees F.				

Ceiling Fans*	<p>Efficiency as per 10 CFR 430 Subpart B, Appendix U (cfm/W)</p> <table border="1"> <thead> <tr> <th>Ceiling Fan Type</th> <th>Blade Span (D)* (inches)</th> <th>Ceiling Fan Efficiency (CFM/W)**</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Standard, Hugger, and Low-Mount HSSD Ceiling Fans</td> <td>D ≤ 36"</td> <td>≥ 1.44D + 83.86</td> </tr> <tr> <td>D > 36"</td> <td>≥ 5.26D - 53.66</td> </tr> </tbody> </table> <p style="text-align: center;">*D is the ceiling fan blade span in inches **This is a weighted average efficiency in different modes, according to 10 CFR 430 Subpart B, Appendix U</p>	Ceiling Fan Type	Blade Span (D)* (inches)	Ceiling Fan Efficiency (CFM/W)**	Standard, Hugger, and Low-Mount HSSD Ceiling Fans	D ≤ 36"	≥ 1.44D + 83.86	D > 36"	≥ 5.26D - 53.66					
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Standard, Hugger, and Low-Mount HSSD Ceiling Fans	D ≤ 36"	≥ 1.44D + 83.86												
	D > 36"	≥ 5.26D - 53.66												
Clothes Dryers*	<p>Products must meet the applicable energy performance requirements shown in the table below, as determined by 10 CFR Part 430 Subpart B Appendix D2, unless noted otherwise.</p> <table border="1"> <thead> <tr> <th>Cycle Setting</th> <th>Product Type</th> <th>CEFBASE (lbs/kWh)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal</td> <td>Compact Ventless Electric (240 V)</td> <td>≥ 3.70</td> </tr> <tr> <td>Electric (All Other)</td> <td>≥ 4.30</td> </tr> <tr> <td rowspan="2">Normal, Maximum Dryness¹</td> <td>Compact Ventless Electric (240 V)</td> <td>≥ 2.68</td> </tr> <tr> <td>Electric (All Other)</td> <td>≥ 3.93</td> </tr> </tbody> </table>	Cycle Setting	Product Type	CEFBASE (lbs/kWh)	Normal	Compact Ventless Electric (240 V)	≥ 3.70	Electric (All Other)	≥ 4.30	Normal, Maximum Dryness ¹	Compact Ventless Electric (240 V)	≥ 2.68	Electric (All Other)	≥ 3.93
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Computer Monitors*	<p>Total Energy Consumption (E_{TEC}) in kilowatt-hours per year shall be calculated as follows:</p> $E_{TEC} = 8.76 \times (0.35 \times P_{ON} + 0.65 \times P_{SLEEP})$ <p>Where: P_{ON} = measured On Mode power in watts; P_{SLEEP} = measured Sleep Mode power in Watts;</p> $E_{TEC_{MAX}} = (1.9 + (0.12 \times A) + [3.1 \times (r + C)]) \times eff_{AC_DC}$ <p>Where: $eff_{AC_DC} = 1.00$ for AC-powered monitors</p>													

¹ For purposes of this requirement, the manufacturer shall test the dryer according to the provisions in the DOE test procedure in 10 CFR 430, Subpart B, Appendix D2, but where the drying temperature setting can be chosen independently of the program, it shall be set to the maximum. At the time of certification, for each basic model the manufacturer shall report per this criteria section the energy performance (CEF), the cycle program name, the temperature setting, the dryness setting, as well as any settings enabled by default, and the time taken to complete the energy test cycle (as defined in the ENERGY STAR Version 1.1 specification, Section 5C).

0.85 for DC-powered monitors
 A= viewable screen area in square inches;
 r = Total Native Resolution in megapixels; and

$$C = \begin{cases} 0 & \text{if } A < 180 \text{ in}^2 \\ -0.2 & \text{if } 180 \text{ in}^2 \leq A < 220 \text{ in}^2 \\ -1.0 & \text{if } A \geq 220 \text{ in}^2 \end{cases}$$

Consumer Refrigeration Products*

Product must have an Annual Energy Consumption (AEC) of less than or equal to 637 kWh per year.

Side-by-side and bottom freezer product types must be at least 27% more efficient than federal requirements. **Top freezers** must be at least 10% more efficient than federal requirements. **Standard-size freezer product types** must be at least 15% more efficient than federal requirements. **Compact freezer product types** must be at least 20% more efficient than federal requirements. **Compact refrigerator or refrigerator-freezer product types** must be at least 30% more efficient than federal requirements.

Dehumidifiers*

Type, Size	Integrated Energy Factor (IEF) ²
Portable, capacity ≤ 25.00 pints/day	≥ 1.70
Portable, capacity 25.01 to 50.00 pints/day	≥ 1.90
Portable, capacity > 50.00 pints/day	≥ 3.40
Whole Home, case volume ≤ 8.0 ft ³	≥ 2.22
Whole Home, case volume > 8.0 ft ³	≥ 3.40

Product must meet the following applicable minimum Integrated Energy Factor (IEF)²:

Dishwashers*

Product Type	Annual Energy Use (kWh/yr)	Water Consumption (gallons/cycle)
Standard Dishwasher	≤ 240	≤ 3.2

Test Cycle	Cleaning Index
Heavy	≥ 65
Medium	≥ 65
Light	≥ 65

Ductless Heat Pumps and AC

Installation benefits, multiple capacities.

Product type	SEER2	EER2	HSPF2
Ductless CAC	18.7	12.0	
Ductless HP	18.7	12.0	8.5
Ductless Cold Climate HP	16.9	11.0	8.5

Ductless cold climate heat pumps must also meet a COP of 1.75 at 5 degrees F, and provide 70% capacity maintenance at 5 degrees F.

² Capacity and Integrated Energy Factor determined per Appendix X1 to 10 CFR Part 430, Subpart B.

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Residential Windows and Sliding Glass Doors*	<p>U-factor ≤ 0.20 in all Zones SHGC in Northern Zone ≥ 0.20 SHGC in North-Central Zone ≤ 0.40 SHGC in South-Central and Southern Zones ≤ 0.25 North American Fenestration Standard/Specification (NAFS) Performance Grade ≥ 15</p>																					
NEW Room Air Cleaners	<p>Product must meet the minimum Smoke Clean Air Delivery Rate per Watt (Smoke CADR/W) requirements shown in the table below, as determined by ANSI/AHAM AC-1-2020: Method of Measuring the Performance of Portable Household Electric Room Air Cleaners.</p> <table border="1"> <thead> <tr> <th>Smoke CADR Bins</th> <th>Minimum Smoke CADR/W</th> </tr> </thead> <tbody> <tr> <td>$30 \leq \text{Smoke CADR} < 100$</td> <td>5.4</td> </tr> <tr> <td>$100 \leq \text{Smoke CADR} < 150$</td> <td>6.6</td> </tr> <tr> <td>$150 \leq \text{Smoke CADR}$</td> <td>7.6</td> </tr> </tbody> </table>	Smoke CADR Bins	Minimum Smoke CADR/W	$30 \leq \text{Smoke CADR} < 100$	5.4	$100 \leq \text{Smoke CADR} < 150$	6.6	$150 \leq \text{Smoke CADR}$	7.6													
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Room Air Conditioners*	<p>Product must have a Combined Energy Efficiency Ratio (CEER) that is greater than or equal to 35% better than the DOE Federal Minimum Standard.</p> <p>Products must also be at or below a maximum sound level of 45 dB(A) for the lowest operational setting.</p>																					
Ventilating Fans*	<p>Bathroom/utility fans: Efficacy at high speed (cfm/W): ≥ 10 In line fans: Efficacy at high speed (cfm/W): ≥ 5 In-line Ventilating Fan tested with a filter in place ($6 \leq \text{MERV} < 13$): ≥ 4.7 In-line Ventilating Fan tested with a filter in place ($\text{MERV} \geq 13$): ≥ 3.8 Bathroom and Utility Room Fans must provide a sound level ≤ 4.0 sones at 0.25 inches of water gauge external static pressure at high speed.</p>																					

*Proposed criteria carried over from 2022 for these categories with no changes.

ENERGY STAR Most Efficient 2023 Recognition

ENERGY STAR certified products meeting these requirements will be highlighted as ENERGY STAR Most Efficient for 2023 at: www.energystar.gov/mostefficient beginning January 1, 2023. Shortly, EPA will begin distributing the 2023 ENERGY STAR Most Efficient designation to brand owners of eligible products. As a reminder, usage guidelines are available at [Guidelines for Using the ENERGY STAR Most Efficient Mark](#).

To ensure the greatest utility of the ENERGY STAR Most Efficient webpage to consumers, EPA will only highlight products that are currently available for sale in the U.S. As such, EPA reminds partners that it is critical that they keep product availability information with their certification bodies current.

EPA will identify ENERGY STAR Most Efficient HVAC using certification data, thus applications are no longer required. For window products, partners will need to apply for recognition for all products new to ENERGY STAR Most Efficient in order for the Agency to verify that a product meets the recognition criteria outlined above. Since the recognition criteria have not changed, window products recognized in 2022 need not be resubmitted. EPA will distribute the ENERGY STAR Most Efficient 2023 graphic along with instructions for obtaining it prior to January 1, 2023.

The ENERGY STAR Most Efficient 2023 designation is intended for use at point-of-sale on point-of-purchase materials, product literature, and websites. It may not be factory-applied to products or product packaging. Failure to abide by these guidelines may result in loss of recognition. EPA will highlight recognized products on the ENERGY STAR Most Efficient 2023 web page through December 31, 2023.



We look forward to working with you to market ENERGY STAR Most Efficient products in 2023. Please e-mail mostefficient@energystar.gov with any questions.

Thank you for your support of the ENERGY STAR program.

Sincerely,

A handwritten signature in black ink, appearing to read "Ann Bailey".

Ann Bailey, Director
ENERGY STAR Product Labeling