



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

OFFICE OF
AIR AND RADIATION

August 4, 2014

Dear ENERGY STAR[®] Partners and other Stakeholders:

The U.S. Environmental Protection Agency (EPA) is pleased to share both an update on ENERGY STAR Most Efficient 2014 and the proposed ENERGY STAR Most Efficient 2015 recognition criteria across 12 product categories, which includes residential Dishwashers for the first time. Stakeholders are invited to provide written comments on these proposed requirements by no later than **Thursday, September 11, 2014** to mostefficient@energystar.gov.

ENERGY STAR Most Efficient 2014

While still a new element of the ENERGY STAR Products program, ENERGY STAR Most Efficient is being leveraged by a growing number of energy efficiency program sponsors. In the first half of this year, twelve utility efficiency program sponsors serving approximately 37 million residential customers featured ENERGY STAR Most Efficient 2014 in their residential program offerings, reflecting a tripling in efficiency program sponsor participation since the beginning of the recognition in 2011 and a doubling in participation from 2012. These programs feature one or more of the product categories covered by ENERGY STAR Most Efficient 2014 and reflect a diverse geographic spread. In addition, twelve more program sponsors from different regions have expressed interest in using the recognition levels and graphic in programs where they promote products at various efficiency levels.

In the fall of 2013, the Consortium for Energy Efficiency's annual ENERGY STAR household survey found that 57% of households who had seen or heard about ENERGY STAR Most Efficient would buy a product because it had been recognized. This year, the Agency, in collaboration with utility partners, will roll out geo-targeted, spot market promotions to raise awareness of ENERGY STAR Most Efficient among target consumers. EPA will also enhance the ENERGY STAR Most Efficient website with price and locator information.

As of July 2014, 1598 models from 122 ENERGY STAR partners meet the ENERGY STAR Most Efficient 2014 recognition criteria. Most of these categories have experienced growth in 2014. The number of models and manufacturers per category is noted in the following table.

Product Category	Models	ENERGY STAR Partners
Boilers	122	17
Ceiling Fans	47	15
Central Air Conditioners and Air Source Heat Pumps	55	8
Clothes Washers	119	9
Computer Monitors	82	22
Furnaces	94	6
Geothermal Heat Pumps	236	7
Refrigerators-Freezers	116	12
Televisions	135	16
Ventilating Fans	212	11
Windows	380	43
Total	1598	122

2015 Product Categories and Recognition Criteria

For 2015, EPA intends to maintain the current 11 product categories currently eligible for ENERGY STAR Most Efficient recognition and add one new category, residential Dishwashers.

The proposed recognition criteria for 2015 were developed in consultation with the Department of Energy (DOE) based on an analysis of currently certified ENERGY STAR models, which indicates that for most categories, existing recognition criteria continue to reflect the “best of the best.” As a result, EPA proposes to extend the 2014 efficiency criteria into 2015 for most categories including Refrigerators-Freezers, standard sized Clothes Washers, Ceiling and Ventilating Fans, Boilers, and residential Windows. EPA has maintained the efficiency criteria for other heating and cooling equipment but proposes changes to the system status and messaging criteria. A summary of the proposed changes along with the rationale is outlined below.

Clothes Washers

EPA proposes to maintain the ENERGY STAR Most Efficient recognition criteria for standard sized washers for 2015. A reference has been added to the ENERGY STAR V7.0 Integrated Modified Energy Factor (IMEF)/Integrated Water Factor (IWF) criteria that take effect in March 2015. For products certified to V7.0, we have converted the ENERGY STAR Most Efficient level into the equivalent: a) top loading IMEF/IWF and b) front loading IMEF/IWF using the respective top loading and front loading crosswalk calculations developed by DOE. EPA’s analysis of small volume washer data revealed that there are currently no products on the market with efficiencies exceeding those outlined in the forthcoming ENERGY STAR V7.0 specification, which is more stringent than the current ENERGY STAR Most Efficient level. In light of the need for ENERGY STAR Most Efficient 2015 to exceed ENERGY STAR requirements in effect next year, EPA is proposing to temporarily suspend recognition of standard small volume (1.6 to 2.5 cu-ft) clothes washers. The Agency will re-establish ENERGY STAR Most Efficient recognition criteria for small volume clothes washers as products with higher efficiency become available.

Computer Monitors

When the ENERGY STAR Most Efficient 2014 computer monitors criteria were finalized, approximately 35 unique models could meet them, representing about 2% of the market. Currently, that number has grown, and 9% of the models available on the market can meet today’s ENERGY STAR Most Efficient 2014 criteria. The proposed 2015 criteria would recognize approximately 50 unique models across various sizes, representing approximately 5% of the current market.

ENERGY STAR certified computer monitors data shows that today’s monitors can deliver higher resolution with a lower power budget than they previously required. As such, EPA’s proposal provides a 2.0 watts per megapixel allowance, rather than the 6.0 watts per megapixel allotted under the 2014 recognition criteria. EPA also plans to factor in these data and proposed approach into its forthcoming draft of the displays specification currently under revision.

Dishwashers

As proposed, the ENERGY STAR Most Efficient 2015 criteria for dishwashers reflect energy and water savings over the Federal Standard of 22% and 36%, respectively. In light of the higher risk of trade-offs between energy savings and performance at these high efficiency levels, the criteria include a minimum per cycle Cleaning Index of 70 for the heavy test cycle as assessed under the ENERGY STAR Test Method for Determining Residential Dishwasher Cleaning Performance (Rev. Feb – 2014). The proposed cleaning performance threshold is intended to help avoid recognizing poor performers rather than differentiate among high performing models e.g. a dishwasher scoring below the threshold of 70 might have one quarter of the dishes rated the dirtiest possible score (9 out of 9). EPA proposes consideration of results from the heavy test cycle as cleaning performance data shows that this is the test cycle most likely to identify issues with cleaning performance. For purposes of ENERGY STAR Most Efficient, cleaning Index will need to be reported through an EPA-recognized certification body for each test cycle (heavy, medium, and light) but will not be provided to consumers. In recognition of the fact that EPA has limited cleaning performance data at this time, EPA will review medium and light test cycle data to confirm the appropriateness of the use of the heavy test cycle for purposes of ENERGY STAR Most Efficient recognition.

Heating and Cooling Products

EPA released a [preliminary proposal in June 2014](#) of updated system status and messaging requirements for most ENERGY STAR Most Efficient HVAC products, in recognition that significant stakeholder discussion was needed to refine those requirements before the release of this proposal. As a result of feedback on that preliminary proposal, EPA proposes to eliminate the requirement that the system provide a signal from which refrigerant charge can be estimated. In discussion with stakeholders, it became clear that ENERGY STAR Most Efficient systems are resilient against the charge errors that cause inefficiency in standard air conditioners and heat pumps. For GHPs (and other packaged systems), the systems are factory charged instead of field charged, which greatly reduces the likelihood of errors or leaks. For split CAC and ASHP systems (ducted and ductless), meeting the SEER and HSPF requirements ensures products have electronic expansion valves (EXVs) and modulating compressors. These measures help to guard against significant reduction in efficiency due to charge errors. Thus, EPA concludes that a requirement to monitor refrigerant charge will not lead to additional energy savings for these systems. EPA notes, however, that while not eligible for ENERGY STAR Most Efficient recognition, standard single speed systems with fixed or thermostatically controlled expansion valves may realize significant energy savings from refrigerant monitoring.

EPA has retained the vast majority of other requirements proposed in the preliminary proposal distributed in June, though the requirement to estimate static pressure for GHPs has been dropped, as this requirement is unduly difficult to implement for systems that do not typically use modulating blowers. In addition, EPA is proposing the use of the current (2014) version of the automatic setup requirement instead of the preliminary proposal version. EPA has responded to comments on the preliminary proposal in a comment response document that is also being shared today.

Refrigerators-Freezers

While no substantive changes are being proposed for the refrigerator-freezer recognition criteria, EPA has removed references to ENERGY STAR Version 4.1, as ENERGY STAR Version 5.0 will take effect in September 2014

Televisions

When the ENERGY STAR Most Efficient 2014 television criteria were finalized, approximately 30 unique models could meet these criteria, representing about 2% of the market. At this time, that model count has grown to 82 unique models, representing approximately 8% of the models available on the market today. The proposed criteria for 2015 would recognize 26 unique models across various sizes, representing 3% of the market.

Windows

No substantive changes are being proposed for the 2015 residential Windows recognition criteria. However, as of January 2015, to be eligible, products must be certified under ENERGY STAR Version 6.0 including air leakage testing, installation instruction requirements, and verification testing.

The proposed ENERGY STAR Most Efficient 2015 criteria for the full suite of products are summarized on the next page. 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 requirements documents accompanying this letter.

Category	Requirements															
Boilers*	Gas Powered Boilers: 95 AFUE or higher; Oil Powered Boilers: 90 AFUE or higher															
Ceiling Fans*	Efficiency cfm/W ≥170 high speed, ≥270 medium speed, ≥400 low speed															
Residential Clothes Washers	<p>For clothes washers above 2.5 cu-ft:</p> <p>Version 6.1:</p> <table border="1"> <thead> <tr> <th>Clothes Washer Volume</th> <th>MEF</th> <th>WF</th> </tr> </thead> <tbody> <tr> <td>Top-loading and Front-loading</td> <td>≥ 3.2</td> <td>≤ 3.0</td> </tr> </tbody> </table> <p>Version 7.0:</p> <table border="1"> <thead> <tr> <th>Product Type</th> <th>IMEF</th> <th>IWF</th> </tr> </thead> <tbody> <tr> <td>Top-loading</td> <td>≥2.76</td> <td>≤3.5</td> </tr> <tr> <td>Front-loading</td> <td>≥2.74</td> <td>≤3.2</td> </tr> </tbody> </table>	Clothes Washer Volume	MEF	WF	Top-loading and Front-loading	≥ 3.2	≤ 3.0	Product Type	IMEF	IWF	Top-loading	≥2.76	≤3.5	Front-loading	≥2.74	≤3.2
Clothes Washer Volume	MEF	WF														
Top-loading and Front-loading	≥ 3.2	≤ 3.0														
Product Type	IMEF	IWF														
Top-loading	≥2.76	≤3.5														
Front-loading	≥2.74	≤3.2														
Central Air Conditioners	≥18 SEER & 13.0 EER for split CAC, 16 SEER & 12 EER for packaged CAC; system status and messaging capabilities															
Air-Source Heat Pumps	≥18 SEER, 12.5 EER, & 9.6 HSPF for split systems; 16 SEER, 12 EER & 8 HSPF for packaged systems; system status and messaging capabilities															
Ductless AC and Heat Pumps	≥20 SEER & 12.5 EER and (for heat pumps) 9.6 HSPF; system status and messaging capabilities															
Computer Monitors	$P_{ON_MAX} = (2 \times r) + (0.04 \times A) + 1.5$ Where: P_{ON_MAX} = maximum allowable On Mode Power consumption in W. r = screen resolution in megapixels A = viewable screen area of the product in square inches															
Residential Dishwashers	<table border="1"> <thead> <tr> <th>Product Type</th> <th>Annual Energy Use (kWh/yr)</th> <th>Water (gallons/cycle)</th> </tr> </thead> <tbody> <tr> <td>Standard Dishwasher</td> <td>≤240</td> <td>≤3.2</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Test Cycle Type</th> <th>Cleaning Index</th> </tr> </thead> <tbody> <tr> <td>Heavy</td> <td>70</td> </tr> </tbody> </table>	Product Type	Annual Energy Use (kWh/yr)	Water (gallons/cycle)	Standard Dishwasher	≤240	≤3.2	Test Cycle Type	Cleaning Index	Heavy	70					
Product Type	Annual Energy Use (kWh/yr)	Water (gallons/cycle)														
Standard Dishwasher	≤240	≤3.2														
Test Cycle Type	Cleaning Index															
Heavy	70															
Furnaces	≥97% AFUE; system status and messaging capabilities															
Geothermal Heat Pumps	Equivalent to Tier 3 levels established in the ENERGY STAR Program Requirements; system status and messaging capabilities															
Residential Refrigerator-Freezers*	V5.0: ≤637 kWh per year; at least 15% better than the amended Sept 15, 2014 Federal standard															
Televisions	$P_{max} = 67 \times \text{TANH}(0.00047(A - 140) + 0.015) + 12$ P_{max} = maximum allowable On Mode Power consumption in W A = viewable screen area of the product in square inches TANH = hyperbolic tangent function															
Ventilating Fans*	Bathroom/utility fans only; Efficacy cfm/W 7.5 cfm/W high speed for 10-89 cfm fans 6.8 cfm/W high speed for ≥90 cfm fans															
Residential Windows*	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															

*Proposed criteria carried over from 2014 for these categories.

HVAC Recognition Process

EPA received feedback during 2014 that the ENERGY STAR Most Efficient HVAC equipment recognition process warrants revision. One significant difficulty cited was the requirement to submit manuals for EPA review, as manuals are often not yet available at the time partners would like to assure a model in development will be recognized. In addition, reviewing manuals did not consistently produce the information EPA sought despite significant investment of review time.

Therefore, EPA proposes a modification to the application process for ENERGY STAR Most Efficient HVAC with system status and messaging capabilities. Instead of submitting manuals, partners would submit a description of how their system meets the requirements. Since the manuals are sometimes an important element of ensuring system status and messaging capabilities are effective, partners would be expected to submit manuals at a later date, which EPA will check to ensure they reflect the described system. EPA would publish a guide for the submission of information; a draft of this document is enclosed. EPA welcomes stakeholder comments on this change to the process, and on the guide.

EPA will provide additional information regarding the roll out of ENERGY STAR Most Efficient 2015 recognition with the finalization of these criteria. Products recognized in 2014 that meet the ENERGY STAR Most Efficient 2015 criteria will automatically receive recognition.

EPA will hold a stakeholder webinar on **Thursday, September 4, from 11 AM to 1 PM Eastern Time** to discuss the proposed 2015 recognition criteria. To participate in this webinar, please register at the [link here](#) by **Thursday, August 21**. Please share written comments no later than **Thursday, September 11, 2014** with mostefficient@energystar.gov. EPA plans to finalize these recognition criteria in September.

Thank you for your support of the ENERGY STAR program.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ann Bailey', is positioned above the typed name and title.

Ann Bailey, Director
ENERGY STAR Product Labeling

Enclosures:

Proposed ENERGY STAR Most Efficient 2015 Recognition Criteria for 12 Product Categories
DRAFT ENERGY STAR Most Efficient HVAC Guide 2015
ENERGY STAR Most Efficient HVAC Systems Comment Summary and Response