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

OFFICE OF
AIR AND RADIATION

July 15, 2020

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 2020 and proposed recognition criteria for 2021. The proposed criteria for dishwashers will be shared with stakeholders this fall. EPA will also communicate with stakeholders regarding recognition for televisions at a later date. Stakeholders are invited to provide written comments on these criteria no later than **August 7, 2020** to MostEfficient@energystar.gov.

ENERGY STAR Most Efficient 2020

As of June 2020, 3320 models from 212 ENERGY STAR partners meet the ENERGY STAR Most Efficient 2020 recognition criteria. The number of models and partners per category is noted in the following table:

Product Category	Models	ENERGY STAR Partners
Boilers	546	32
Ceiling Fans	184	14
Central Air Conditioners and Air Source Heat Pumps and Ductless Air Conditioners and Heat Pumps	195	10
Clothes Dryers	23	6
Clothes Washers	41	4
Compact Freezers (new)	11	5
Compact Refrigerators (new)	69	20
Computer Monitors	271	18
Dehumidifiers	3	3
Dishwashers	101	8
Freezers (new)	3	1
Furnaces	141	7
Geothermal Heat Pumps	611	10
Refrigerators	466	38
Room Air Conditioners (new)	10	2
Sliding Glass Doors (new)	5	3
Televisions	6	5
Ventilating Fans	157	17
Windows	477	43
Total*	**3320**	**212**

*Total ENERGY STAR partners that meet the ENERGY STAR Most Efficient 2020 recognition criteria is calculated by removing duplicate partners that may appear in more than one product category. Therefore, unlike the Total Models count, the total ENERGY STAR Partners count does not represent the sum of its column.

ENERGY STAR Most Efficient enjoys robust utility support and is leveraged by 30 energy efficiency program sponsors, serving over 8 million households (or roughly 21 million consumers). These rebate

programs feature one or more product categories covered by ENERGY STAR Most Efficient 2020 and reflect a diverse geographic spread, including two water utilities in California.

ENERGY STAR Most Efficient is also being leveraged for retailer incentives as part of the ENERGY STAR Retail Products Platform (ESRPP), an innovative, nationally coordinated, market transformation initiative. ESRPP retailers now represent more than 75% of the appliance market, with more than 1,000 stores in current program sponsors' service areas. In 2020, there are 16 efficiency program sponsors participating in ESRPP currently serving more than 18% of U.S. households. The ESRPP is striving for large-scale market participation – serving more than 30% of the US population – a key milestone in the ESRPP vision to transform the market for energy efficient consumer products.

EPA arms consumers with the information they need about recognized products. In addition to highlighting ENERGY STAR Most Efficient 2020 products, our website includes images of models, as well as real-time information on retail pricing and where to locate and buy these models. In May 2020, EPA's ENERGY STAR program placed a native article with BobVila.com in combination with a product giveaway from a sponsoring partner. The native article titled, "3 Easy Ways Laundry Day Can Be More Efficient and Eco-Friendly" featured ENERGY STAR Most Efficient dryers and clothes washers, specifically heat-pump dryers and front-load clothes washers, as offering top performance and energy efficiency. The article drew 1.8 million pageviews. In June, super-efficient compressors, already available in ENERGY STAR Most Efficient refrigerators, were selected for the ENERGY STAR Emerging Technology award. The award and ENERGY STAR Most Efficient refrigerators were promoted through a press release and a soon-to-be published Ask the Experts @ENERGY STAR blog.

2021 Product Categories and Recognition Criteria

The proposed recognition criteria for 2021 are based on an analysis of currently certified ENERGY STAR models and the engineering analysis the Department of Energy (DOE) conducts for covered products. This analysis indicates that for many categories, existing recognition criteria remain reflective of the "best of the best." As a result, EPA is extending the 2020 efficiency criteria into 2021 for ceiling fans, clothes washers, computer monitors, dehumidifiers, dryers, furnaces, central air conditioners and air source heat pumps, ductless air conditioner and heat pumps, geothermal heat pumps (GHP), refrigerators/freezers, room air conditioners, vent fan, and windows. EPA has proposed expansions to the recognized types of geothermal heat pumps and clothes washers. EPA will not recognize boilers in 2021. The Agency anticipates releasing proposals for dishwashers as well as televisions once ongoing ENERGY STAR specification development efforts for those products are complete.

Ceiling Fans: EPA proposes to maintain the 2020 criteria for all ceiling fans types. A small percentage of total ceiling fans are recognized (5%) and currently recognized fans deliver more than 60% in energy savings over conventional fans.

Clothes Washers: EPA proposes a modest change for clothes washers-allowing recognition of laundry centers. Similar to how EPA allows laundry centers to participate in ENERGY STAR, EPA proposes allowing laundry center models to be recognized as Most Efficient if the models meet the Most Efficient criteria for clothes washers and the Most Efficient criteria for dryers.

EPA does not propose changes to standard or compact washers' energy and water criteria. The ENERGY STAR Most Efficient list now includes 19 models from 4 brands, providing consumers with a good selection of models with superior energy and water efficiency.

Computer Monitors: EPA proposes to maintain the current Most Efficient criteria for a second year. EPA increased the stringency of the monitor criteria in 2020. While just less than 25% of models are recognized as Most Efficient, setting more rigorous levels delivers little additional savings to the consumer.

Dehumidifiers: EPA proposes to maintain the current Most Efficient recognition criteria into 2021. Two portable models meet these rigorous criteria, offering consumers significant savings over conventional models-31%. EPA anticipates that the number of recognized models will grow in 2021 as the market continues to respond to the change in federal metric and ENERGY STAR specification in late 2019.

Dishwashers: EPA expects to take comment on proposed recognition criteria for 2021 after the ENERGY STAR specification revision has completed.

Dryers: EPA proposes to maintain the Most Efficient 2020 criteria into 2021. Seventeen base models from 7 brands or 5% of models representing both heat pump and hybrid heat pump technologies are recognized as ENERGY STAR Most Efficient. EPA encourages partners to complete optional fields for technology type and refrigerant when certifying products to make it easier for utilities to incentivize these technologies in the market.

Central Air Conditioners and Heat Pumps, Ductless Air Conditioners and Heat Pumps, Furnaces, Geothermal Heat Pumps, and Boilers:
EPA proposes to maintain the current criteria for central air conditioners and air source heat pumps and for ductless air conditioners and heat pumps. These criteria continue to recognize a select group - less than 1% of the AHRI listings - of extremely efficient products with features facilitating quality installation and maintenance. Further, recognizing the ongoing ENERGY STAR specification revision for central air conditioners and air source heat pumps, the variety of efforts in the market to identify cold climate air source heat pumps, and currently unknown market response to the changes to the DOE minimum efficiency standards in 2023, EPA has determined it best to maintain this year's criteria into 2021.

EPA also proposes to maintain the current requirements for **furnaces** as the AFUE requirement offers great differentiation, is aligned with CEE Tier 3, and a small subset of products are recognized - just 1.9% of AHRI's list.

EPA proposes to make a modest adjustment to the types of **geothermal heat pumps** eligible for recognition. As proposed for the ENERGY STAR specification, EPA proposes to add DGX-to-water heat pumps to the Most Efficient portfolio. As with other GHP products, the proposed level for DGX-to-water matches the ENERGY STAR level, with system status and messaging criteria providing additional differentiation. No other changes are proposed as the current criteria continue to recognize a select group of extremely efficient products (3.8% of the AHRI list) with features facilitating quality installation and maintenance.

EPA will not recognize **boilers** as ENERGY STAR Most Efficient in 2021. EPA bases this decision on the fact that a large number - 38% - of gas-fired boilers meet the Most Efficient level at present and the Agency understands that there is little technical difference between the current criterion of 95 and the next possible criterion of 96 AFUE. As we have for several years, EPA continues to be interested in additional differentiation based on controls that could deliver savings in real installations.

Lastly, EPA proposes to continue unchanged, for the recognized HVAC products, the **suite of system status and messaging criteria** which include unit setup information, fault history, and resident alerts in plain text.

Refrigerators-Freezers: EPA proposes to maintain the 2020 Most Efficient criteria for all refrigerator and freezer types including standard and compact sizes. Recognized products remain a select group with 1% of side-by-sides, 5% of each bottom freezers and compact refrigerators, and 4% of compact freezers. While 41% of all top freezers are recognized as ENERGY STAR Most Efficient, these products continue to represent the least consumptive models available to consumers consuming significantly less than recognized models in other configurations.

Room Air Conditioners: New to ENERGY STAR Most Efficient in 2020, EPA proposes to maintain the recognition criteria unchanged in 2021. Most Efficient room air conditioners represent just 1% of the market at present and EPA hopes the selection will grow in 2021.

Televisions: In the coming months, as the revision of the ENERGY STAR specification for televisions is completed, EPA will consider possible ENERGY STAR Most Efficient criteria for 2021.

Ventilating Fans: EPA has maintained the 2020 criteria for ventilating fans. The current efficiency criteria are met by an appropriate subset of ENERGY STAR products; however, a very small number of those fans are currently recognized as ENERGY STAR Most Efficient. This is due to a lack of reported data for the

noise criteria as measured at 0.25 in wtg. static pressure for bathroom/utility fans. EPA encourages partners to submit these data and contact EPA with questions regarding how to do so. EPA continues to monitor range hoods but has not seen sufficient differentiation to propose Most Efficient recognition for them.

Windows: No changes are proposed for the 2021 residential window or sliding door recognition criteria. While high performance Most Efficient window products are widely available, they are still a relatively small slice of total market with 477 window product lines and 5 new sliding glass door product lines recognized.

Stakeholders have expressed interest in knowing the type of refrigerant used in ENERGY STAR certified products. As such, EPA strongly encourages partners to make use of the opportunity to report this information, as relevant, at the time of certification or in the case of central air conditioners and heat pumps and ductless air conditioners and heat pumps when completing the HVAC application for Most Efficient recognition. Similarly, EPA will highlight products that meet the optional connected criteria in their relevant ENERGY STAR specification. This information will be shown on the ENERGY STAR Most Efficient product lists.

The proposed ENERGY STAR Most Efficient 2021 criteria for the full suite of products are summarized below. In addition to meeting these recognition criteria, 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 accompanying this letter.

<table>
<tr><th>Category</th><th>ENERGY STAR Most Efficient 2021 Recognition Criteria</th></tr>
<tr><td>Ceiling Fans*</td><td>Efficiency as per 10 CFR 430 Subpart B, Appendix U (cfm/W)
<table>
<tr><th>Ceiling Fan Type</th><th>Blade Span (D)* (inches)</th><th>Ceiling Fan Efficiency (CFM/W)**</th></tr>
<tr><td rowspan="2">Standard and Hugger Ceiling Fans</td><td>19” ≤ D ≤ 36”</td><td>≥ 1.03D + 60.43</td></tr>
<tr><td>> 36”</td><td>≥ 3.88D - 42.17</td></tr>
<tr><td>Low-Mount HSSD Ceiling Fans</td><td>All Blade Spans</td><td>≥ 4.16D + 0.02</td></tr>
</table>
*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</td></tr>
<tr><td>Clothes Washers</td><td>
<table>
<tr><th>Clothes Washer Capacity</th><th>Integrated Modified Energy Factor (IMEF)</th><th>Integrated Water Factor (IWF)</th></tr>
<tr><td>≤ 2.5 cu-ft</td><td>≥ 2.2</td><td>≤ 3.7</td></tr>
<tr><td>> 2.5 cu-ft</td><td>≥ 2.92</td><td>≤ 3.2</td></tr>
</table>
<table>
<tr><td>Total Cleaning Score (CE_{ST})</td><td>≥ 85.0</td></tr>
</table>
To be recognized, laundry centers must meet the Most Efficient washer and dryer criteria.</td></tr>
<tr><td>Ducted Central Air Conditioners</td><td>System status and messaging capabilities, variable capacity
<table>
<tr><th>Product type</th><th>SEER</th><th>EER</th><th>HSPF</th></tr>
<tr><td>Split AC</td><td>18</td><td>13.0</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><td>and Air Source Heat Pumps*</td><td>
<table>
<tr><td>Packaged AC</td><td>16</td><td>12.0</td><td></td></tr>
<tr><td>Split HP</td><td>18</td><td>12.5</td><td>9.6</td></tr>
<tr><td>Packaged HP</td><td>16</td><td>12.0</td><td>8.2</td></tr>
</table>
</td></tr>
<tr><td>Dehumidifiers*</td><td>Product must meet the following applicable minimum Integrated Energy Factor (IEF)[2]:
<table>
<tr><th>Type, Size</th><th>Integrated Energy Factor (IEF)[2]</th></tr>
<tr><td>Portable, capacity ≤ 25.00 pints/day</td><td>≥ 1.70</td></tr>
<tr><td>Portable, capacity 25.01 to 50.00 pints/day</td><td>≥ 1.90</td></tr>
<tr><td>Portable, capacity > 50.00 pints/day</td><td>≥ 3.40</td></tr>
<tr><td>Whole Home, case volume ≤ 8.0 ft3</td><td>≥ 2.22</td></tr>
<tr><td>Whole Home, case volume > 8.0 ft3</td><td>≥ 3.40</td></tr>
</table>
</td></tr>
<tr><td>Ductless AC and Heat Pumps*</td><td>Products must meet the following cooling and heating performance levels: 20 SEER, 12.5 EER, 10 HSPF (Heat pumps only); system status and messaging capabilities, variable capacity.</td></tr>
<tr><td>Geothermal Heat Pumps</td><td>System status and messaging capabilities; variable capacity except water-to-water models.
<table>
<tr><th>Product type</th><th>EER</th><th>COP</th></tr>
<tr><td>Closed Loop Water-to-Air/GHP</td><td>17.1</td><td>3.6</td></tr>
<tr><td>Open Loop Water-to-Air GHP</td><td>21.1</td><td>4.1</td></tr>
<tr><td>Closed Loop Water-to-Water GHP</td><td>16.1</td><td>3.1</td></tr>
<tr><td>Open Loop Water-to-Water GHP</td><td>20.1</td><td>3.5</td></tr>
<tr><td>DGX</td><td>16.0</td><td>3.6</td></tr>
<tr><td>DGX-to-Water</td><td>15</td><td>3.1</td></tr>
</table>
</td></tr>
<tr><td>Computer Monitors*</td><td>Total Energy Consumption (E_{TEC}) in kilowatt-hours per year shall be calculated as follows:
$$E_{TEC} = 8.76 \times (0.35 \times P_{ON} + 0.65 \times P_{SLEEP})$$
Where:
P_{ON} = measured On Mode power in watts; P_{SLEEP} = measured Sleep Mode power in watts;
$$E_{TEC_{MAX}} = (1.9 + (0.12 \times A) + [3.1 \times (r + C)]) \times eff_{AC\_DC}$$
Where:
eff_{AC_DC} = 1.00 for AC-powered monitors; 0.85 for DC-powered monitors
A= viewable screen area in square inches;
r = Total Native Resolution in megapixels; and
$C = 1.2$ if $A < 180$ in^2; 2 if $180 \le A < 220$ in^2; 1.2 if $A \ge 220$ in^2</td></tr>
</table>

<table>
<tr><td>Dryers*</td><td>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.

<table>
<tr><th>Cycle Setting</th><th>Product Type</th><th>CEF_{BASE} (lbs/kWh)</th></tr>
<tr><td rowspan="3">Normal</td><td>Compact Ventless Electric (240 V)</td><td>≥ 3.70</td></tr>
<tr><td>Electric</td><td>≥ 4.30</td></tr>
<tr><td>Gas</td><td>≥ 3.80</td></tr>
<tr><td rowspan="3">Normal, Maximum Dryness[1]</td><td>Compact Ventless Electric (240 V)</td><td>≥ 2.68</td></tr>
<tr><td>Electric</td><td>≥ 3.93</td></tr>
<tr><td>Gas</td><td>≥ 3.48</td></tr>
</table></td></tr>
<tr><td>Furnaces*</td><td>AFUE 97% or higher; system status and messaging capabilities.</td></tr>
<tr><td>Refrigerator-Freezers and Freezers*</td><td>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 20% 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 25% more efficient than federal requirements.</td></tr>
<tr><td>Room Air Conditioners*</td><td>Product must have a Combined Energy Efficiency Ratio (CEER) that outperforms the U.S. Department of Energy (DOE) Federal Minimum Standard by the percentages in the table below.

<table>
<tr><th>Cooling Capacity (BTU/hour)</th><th>Percent Better than the Federal Standard (%)</th></tr>
<tr><td>< 14,000</td><td>25%</td></tr>
<tr><td>≥ 14,000</td><td>35%</td></tr>
</table>
Products must also be at or below a maximum sound level of 45 dB(A) for the lowest operational setting.</td></tr>
<tr><td>Ventilating Fans*</td><td>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≤MERV<13): ≥4.7
In-line Ventilating Fan tested with a filter in place (MERV≥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.</td></tr>
</table>

[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).

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

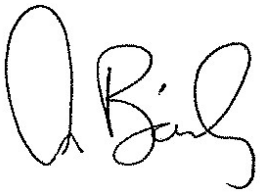
**Proposed criteria carried over from 2020 for these categories.*

EPA will provide additional information regarding the roll out of ENERGY STAR Most Efficient 2021 recognition with the finalization of these criteria. Products recognized in 2020 that meet the ENERGY STAR Most Efficient 2021 criteria will automatically receive recognition.

EPA will hold a stakeholder webinar on **July 15th from 1pm to 3pm Eastern Time** to discuss the proposed 2021 recognition criteria. To participate in this webinar, please register here by July 13th. Please share written comments no later than **August 7, 2020** with MostEfficient@energystar.gov. EPA plans to finalize these recognition requirements in August.

Thank you for your support of the ENERGY STAR program.

Sincerely,



Ann Bailey, Director
ENERGY STAR Product Labeling