



ENERGY STAR® Program Requirements Product Specification for Clothes Washers

Eligibility Criteria Draft 1 Version 9.0

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8 Following is the **Draft 1 Version 9.0** product specification for ENERGY STAR certified clothes washers. A product shall meet
9 all the identified required criteria if it is to earn the ENERGY STAR.

10 11 1) **Definitions:**

12 Below are the definitions of the relevant terms in this document. Where noted below, definitions are identical to the
13 definitions in the U.S. Department of Energy (DOE) test procedure at Title 10 Code of Federal Regulations (CFR) 430,
14 Subpart B, Appendix J2, or in 10 CFR 430.2 and 10 CFR 431.152. When in conflict, the definitions in the CFR take
15 precedence.

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17 A. Residential Clothes Washer¹: A consumer product designed to clean clothes, utilizing a water solution of soap
18 and/or detergent and mechanical agitation or other movement, and must be one of the following classes: automatic
19 clothes washers, semi-automatic clothes washers, and other clothes washers.
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21 1. Compact Residential Clothes Washer: A Residential Clothes Washer that has a clothes container capacity of less
22 than 1.6 ft³ (45 L).
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24 2. Residential Clothes Washer with Heated Drying Functionality: A Residential Clothes Washer that cleans and
25 dries clothes in a single tumble-type drum; a drying cycle cannot be performed without first performing a wash
26 cycle. Drying is accomplished in the wash drum through use of a heat source and forced air circulation.
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28 B. Commercial Clothes Washer²: A soft-mounted front-loading or soft-mounted top-loading clothes washer that is
29 designed for use in applications in which the occupants of more than one household will be using the clothes washer,
30 such as multi-family housing common areas and coin laundries.
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32 C. Combination All-in-One Washer-Dryer: A consumer product that meets the definition of a Residential Clothes Washer
33 and Electric Clothes Dryer or Gas Clothes Dryer, which cleans and dries clothes in a single tumble-type drum; a drying
34 cycle can be performed independently without first performing a wash cycle.
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36 1. Combination All-in-One Washer-Dryer with Air-Only Drying: A Combination All-in-One Washer-Dryer that uses
37 circulated air (without the use of water) to cool and condense moisture from the dryer process air, during the dry
38 cycle.
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40 2. Combination All-in-One Washer-Dryer with Water-Cooled Drying: A Combination All-in-One Washer-Dryer that
41 consumes water to cool and condense moisture from the dryer process air, during the dry cycle.
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43 D. Laundry Center: A consumer product that meets the definition of a Residential Clothes Washer and Electric Clothes
44 Dryer or Gas Clothes Dryer, which cleans and dries clothes in separate, stacked drums.
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¹ 10 CFR 430 Subpart A, Section 430.2

² The ENERGY STAR definition of a commercial clothes washer differs from the DOE commercial clothes washer definition by: 1) not specifying a maximum capacity; and 2) not covering "other commercial applications."

- 46 E. Modified Energy Factor (MEF J2)³: The quotient of the cubic foot (or liter) capacity of the clothes container divided
47 by the total clothes washer energy consumption per cycle, with such energy consumption expressed as the sum of
48 the machine electrical energy consumption, the hot water energy consumption, and the energy required for removal
49 of the remaining moisture in the wash load.
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- 51 F. Integrated Modified Energy Factor (IMEF)³: The quotient of the cubic foot (or liter) capacity of the clothes container
52 divided by the total clothes washer energy consumption per cycle, with such energy consumption expressed as the
53 sum of the machine electrical energy consumption, the hot water energy consumption, the energy required for
54 removal of the remaining moisture in the wash load, and the combined low-power mode energy consumption.
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- 56 G. Integrated Water Factor (IWF)³: The quotient of the total weighted per-cycle water consumption for all wash cycles in
57 gallons divided by the cubic foot (or liter) capacity of the clothes washer.
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- 59 H. Basic Model⁴: All units of a given type of covered product (or class thereof) manufactured by one manufacturer,
60 having the same primary energy source, and which have essentially identical electrical, physical, and functional (or
61 hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency.

62 **Note:** The EPA proposes removing the definition for Residential Clothes Washer with Supplementary Wash System since
63 they have been removed from scope.

64 2) Scope:

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- 66 A. Included Products: Products that meet the definition of a Residential Clothes Washer or Commercial Clothes
67 Washer as specified herein are eligible for ENERGY STAR certification, with the exception of products listed in
68 Section 2)B.
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- 70 B. Excluded Products: The following products are not eligible for ENERGY STAR certification:
71 1. Products with a clothes washer drum volume of less than 1.6 cubic feet
72 2. Products configured in any way other than a front- or top-loading design
73 3. Combination All-in-One Washer-Dryers⁵
74 4. Laundry Centers⁵
75 5. Residential Clothes Washers with Heated Drying Functionality
76 6. Commercial Clothes Washers with a clothes container volume larger than 8.0 cubic feet
77 7. Commercial Clothes Washer with top-loading design

78 **Note:** Combination all-in-one washer-dryers are currently included in the ENERGY STAR Clothes Washers Specification and
79 are also listed on the ENERGY STAR Clothes Washer Certified Products List if they are ENERGY STAR certified. To address
80 confusion and facilitate certifications and listings, the EPA is proposing to move combination all-in-one washer-dryers and
81 laundry centers to a different, new specification for combined laundry products. Once final, combination all-in-one washer-
82 dryers and laundry centers would be covered under this new specification. This will reduce burden for rebate programs and for
83 the EPA in collecting and posting information on these products. EPA will plan to continue to include models certified to the
84 new combined laundry products specification in the certified products list.

85 3) Certification Criteria:

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- 87 A. Modified Energy Factor (MEF J2) or Integrated Modified Energy Factor (IMEF) and Integrated Water Factor (IWF):
88 As displayed in Table 1 and Table 2, the MEF J2 shall be greater than or equal to the Minimum MEF J2 (MEF J2_{MIN}),
89 the IMEF shall be greater than or equal to the Minimum IMEF, and the IWF shall be less than or equal to the
90 Maximum IWF.

³ 10 CFR 430, Subpart B, Appendix J2

⁴ 10 CFR 430, Subpart A, Section 430.2

⁵ Combination all-in-one washer-dryers and laundry centers are covered in the ENERGY STAR combined laundry products specification.

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Table 1: Residential Clothes Washer IMEF and IWF Levels

Product Type	Minimum IMEF (cu.ft./kWh/cycle)	Maximum IWF (gal./cycle/cu.ft.)
Residential Clothes Washers, Front-loading (> 2.5 cu-ft)	2.92	3.0
Residential Clothes Washers, Top-loading (> 2.5 cu-ft)	2.20	3.7
Residential Clothes Washers (≤ 2.5 cu-ft)	2.20	3.7

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Table 2: Commercial Clothes Washer MEF J2 and IWF Levels

Product Type	Minimum MEF J2	Maximum IWF
Commercial Clothes Washers	2.2	4.0

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Note The ENERGY STAR clothes washer market share has grown to 59% in 2023 based on shipment data.

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For Draft 1 of Version 9.0, the EPA is proposing ENERGY STAR residential clothes washers perform between 18 and 45% more efficient than the current DOE standard, depending on product class. There are currently models available in the most popular product classes from a range of manufacturers that would meet the proposed levels. We estimate that 20% of residential models currently on the market can meet the new requirements.

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The EPA expects a reasonable payback for certified clothes washers based on an assessment of a limited set of products with similar features – between 0.7 and 3.6 years depending on the product class.

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The EPA has also removed the note under Table 1 that allowed a path for Residential Clothes Washer with Supplementary Wash System products to meet ENERGY STAR criteria, since the products meeting these criteria are no longer in production.

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For commercial clothes washers, based upon existing market data which indicates ENERGY STAR market share below 30%, Draft 1 of Version 9.0 proposes maintaining the current levels for commercial clothes washers which is 10% better than the DOE standard. The EPA welcomes more data on the market of commercial clothes washers to aid in the development of future specifications.

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Model Numbers: Report the model numbers used for ENERGY STAR certified product submissions which shall be consistent with DOE (as specified in 10 CFR 429.20(b) for residential clothes washers or 10 CFR 429.46(b) for commercial clothes washers) submissions.

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B. Additional Reporting Requirements:

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1. Report whether the clothes washer conforms to CTA-2045 or (when connected to a network) to OpenADR, or to a similar protocol for grid service requests.

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Note: The EPA proposes to change the reference for the Model Numbers reporting requirement to align with other ENERGY STAR specifications for products that are federally regulated.

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Additionally, the EPA removed the Optional Connected Criteria but will collect information on the capability to connect to a network and the connected features along with other product information through the certification body. The EPA is making this adjustment to simplify the process for sharing information about connected features. Because the DR Protocol is not necessarily available along with other product information, the EPA is calling this out as a separate reporting requirement since it is valuable information for utilities.

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122 **4) Test Requirements:**

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124 A. One of the following sampling plans shall be used to test for certification to ENERGY STAR:

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126 1. A single unit is selected, obtained, and tested. The measured performance of this unit and of each subsequent
127 unit manufactured must be equal to or better than the ENERGY STAR specification requirements. Note that to
128 determine the represented value per 10 CFR 429.20 for residential clothes washers or 10 CFR 429.46 for
129 commercial clothes washers, additional testing outside of ENERGY STAR is required. The represented value
130 must also be equal to or better than the ENERGY STAR specification requirements; or
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132 2. At least two units are selected, obtained and tested. The represented value is calculated from the test results
133 according to the sampling requirements defined in 10 CFR 429.20 for residential clothes washers or 10 CFR
134 429.46 for commercial clothes washers. The represented value must be equal to or better than the ENERGY
135 STAR specification requirements.
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137 Results of the tested unit(s) may be used to certify additional individual model variations within a Basic Model as long as the
138 definition for Basic Model provided in Section 1, above, and in 10 CFR 430.2 is met.

139 B. When testing the energy and water efficiency of clothes washers, the following test method shall be used to
140 determine ENERGY STAR certification:

141 **Table 3: Test Methods for ENERGY STAR Certification**

Efficiency Requirement	Test Method Reference
Residential Clothes Washers: IMEF and IWF	10 CFR 430, Subpart B, Appendix J2*
Commercial Clothes Washers: MEF J2 and IWF	OR DOE-approved test procedure waiver pursuant to 10 CFR 430.27

* And in accordance with any applicable DOE issued test procedure guidance, listed here:
<http://www1.eere.energy.gov/guidance/default.aspx?pid=2&spid=1>

142 C. Significant Digits and Rounding: All calculations shall be carried out as specified in 10 CFR 430, Subpart B,
143 Appendix J2, 10 CFR Part 430.23(j), and 10 CFR Part 429.20. Do not round individual test results. Rounding is
144 specified in 10 CFR Part 429 for the represented value.

145 **Note:** The EPA updated the testing requirements language, which was last modified in 2018, to match that of more recently
146 revised appliance specifications. The EPA also removed a table for test load sizes for commercial clothes washers since it is
147 now part of the DOE test procedure.

148 **5) Effective Date:**

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150 A. The ENERGY STAR Clothes Washer specification shall take effect on **TBD**. To certify for ENERGY STAR, a product
151 model shall meet the ENERGY STAR specification in effect on the model's date of manufacture. The date of
152 manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

153 **Note:** The EPA intends to finalize this Version 9.0 specification in 2025 and anticipates it would take effect 9 months later.
154 Once this specification is finalized, brand owners will be free to certify products to it immediately. Products that are currently
155 certified will remain on the list of certified products until the effective date of the specification.

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6) Future Criteria Revisions:

- A. ENERGY STAR reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that the ENERGY STAR certification is not automatically granted for the life of a product model.