



ENERGY STAR® Program Requirements Product Specification for Clothes Washers

Eligibility Criteria Draft Version 8.1

Following is the Draft **Version 8.1** product specification for ENERGY STAR certified clothes washers. A product shall meet all the identified required criteria if it is to earn the ENERGY STAR.

Note: With this amendment, the Environmental Protection Agency (EPA) is proposing to revise the definition of Combination All-in-One Washer-Dryer and expand the scope of eligibility to include a new subset of this product type. EPA welcomes feedback on this amendment; please send comments via email to appliances@energystar.gov no later than April 2, 2021.

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

- A. Residential Clothes Washer¹: A consumer product designed to clean clothes, utilizing a water solution of soap and/or detergent and mechanical agitation or other movement, and must be one of the following classes: automatic clothes washers, semi-automatic clothes washers, and other clothes washers.
- Compact Residential Clothes Washer: A Residential Clothes Washer that has a clothes container capacity of less than 1.6 ft³ (45 L).
 - Residential Clothes Washer with Heated Drying Functionality: A Residential Clothes Washer that cleans and dries clothes in a single tumble-type drum; a drying cycle cannot be performed without first performing a wash cycle. Drying is accomplished in the wash drum through use of a heat source and forced air circulation.
 - Residential Clothes Washer with Supplementary Wash System: A consumer product that meets the definition of a Residential Clothes Washer and includes a supplementary wash system that cleans clothes in an integrated, separate drum and also meets the definition of a Compact Residential Clothes Washer. The primary clothes washer and the supplementary wash system are powered by a single electric power source.
- B. Commercial Clothes Washer²: A soft-mounted front-loading or soft-mounted top-loading clothes washer that is designed for use in applications in which the occupants of more than one household will be using the clothes washer, such as multi-family housing common areas and coin laundries.
- C. Combination All-in-One Washer-Dryer: A consumer product that meets the definition of a Residential Clothes Washer and Electric Clothes Dryer or Gas Clothes Dryer, which cleans and dries clothes in a single tumble-type drum; a drying cycle can be performed independently without first performing a wash cycle.
- Combination All-in-One Washer-Dryer with Air-Only Drying: A Combination All-in-One Washer-Dryer that uses circulated air (without the use of water) to cool and condense moisture from the dryer process air, during the dry cycle.
 - Combination All-in-One Washer-Dryer with Water-Cooled Drying: A Combination All-in-One Washer-

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.”

53 Dryer that consumes water to cool and condense moisture from the dryer process air, during the dry
54 cycle.
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- 56 D. Laundry Center: A consumer product that meets the definition of a Residential Clothes Washer and
57 Electric Clothes Dryer or Gas Clothes Dryer, which cleans and dries clothes in separate, stacked drums.
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- 59 E. Modified Energy Factor (MEF J2)³: The quotient of the cubic foot (or liter) capacity of the clothes
60 container divided by the total clothes washer energy consumption per cycle, with such energy
61 consumption expressed as the sum of the machine electrical energy consumption, the hot water energy
62 consumption, and the energy required for removal of the remaining moisture in the wash load.
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- 64 F. Integrated Modified Energy Factor (IMEF)³: The quotient of the cubic foot (or liter) capacity of the clothes
65 container divided by the total clothes washer energy consumption per cycle, with such energy
66 consumption expressed as the sum of the machine electrical energy consumption, the hot water energy
67 consumption, the energy required for removal of the remaining moisture in the wash load, and the
68 combined low-power mode energy consumption.
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- 70 G. Integrated Water Factor (IWF)³: The quotient of the total weighted per-cycle water consumption for all
71 wash cycles in gallons divided by the cubic foot (or liter) capacity of the clothes washer.
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- 73 H. Basic Model⁴: All units of a given type of covered product (or class thereof) manufactured by one
74 manufacturer, having the same primary energy source, and which have essentially identical electrical,
75 physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency,
76 water consumption, or water efficiency.
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78 **Note:** EPA is proposing to amend the definition for Combination All-in-One Washer-Dryers, adding subset
79 definitions to help distinguish air-only and water-cooled products. EPA also proposes adding dryer definitions and
80 efficiency criteria necessary for Combination All-in-One Washer-Dryer products.

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82 **2. Scope:**
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- 84 A. Included Products: Products that meet the definition of a Residential Clothes Washer or Commercial
85 Clothes Washer as specified herein are eligible for ENERGY STAR certification, with the exception of
86 products listed in Section 2.B.
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- 88 B. Excluded Products: The following products are not eligible for ENERGY STAR certification:
89 1. Products with a primary clothes washer drum volume of less than 1.6 cubic feet
90 2. Products configured in any way other than a front- or top-loading design
91 3. Combination All-in-One Washer-Dryers with Water-Cooled Drying
92 4. Residential Clothes Washers with Heated Drying Functionality
93 5. Commercial Clothes Washers with a clothes container volume larger than 8.0 cubic feet
94 6. Commercial Clothes Washer with top-loading design
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96 **Note:** During Version 6.0 revision process, EPA excluded combination all-in-one washer-dryers from eligibility
97 resulting from stakeholder concerns over the water use during the dry cycle from these combination units.
98 Recently, EPA has learned of new combination all-in-one washer-dryers that are air-cooled and do not use water
99 during the drying cycle. As such, EPA is proposing to allow combination all-in-in one washer-dryers with air-only
100 drying within the scope of eligibility in Version 8.1.

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102 Furthermore, EPA is proposing to include combination all-in-one washer-dryer products within scope of the
103 ENERGY STAR Clothes Washer specification with the requirement that these combination products must also
104 meet the ENERGY STAR Clothes Dryer specification criteria. EPA proposes to cover combination all-in-one
105 washer-dryer products solely within the ENERGY STAR Clothes Washer specification. As such, combination all-
106 in-one washer-dryer products will continue to be listed as an excluded product category under the ENERGY
107 STAR Clothes Dryer specification. During the next revision of the ENERGY STAR Clothes Dryer specification,

³ 10 CFR 430, Subpart B, Appendix J2

⁴ 10 CFR 430, Subpart A, Section 430.2

EPA plans to exclude laundry center products from the dryer specification and to amend the ENERGY STAR Clothes Washer specification to fully include the dryers of laundry centers within scope. The goal is for combination all-in-one washer-dryer products and laundry centers to be certified for both the washer and dryer under one specification, the clothes washer specification.

Also, EPA agrees the water consumption during the drying cycle of the combination all-in-one washer-dryer with water-cooled drying should be measured and reported. Because a test method to appropriately test and report the water consumption during the drying cycle has not been developed, EPA proposes that combination all-in-one washer-dryers with water-cooled drying remain on the excluded products list in Version 8.1. EPA solicits feedback from stakeholders regarding how water consumption during the drying cycle of a water-cooled combination product may be tested and measured.

3. Certification Criteria:

A. Modified Energy Factor (MEF J2) or Integrated Modified Energy Factor (IMEF):

MEF J2 shall be greater than or equal to the Minimum MEF J2 ($MEF J2_{MIN}$), as calculated per Equation 1.

Alternatively, IMEF shall be greater than or equal to the Minimum IMEF ($IMEF_{MIN}$), as calculated per Equation 2.

Equation 1. Calculation of Minimum MEF J2

$$MEF J2_{MIN} = MEF J2_{BASE}$$

where,

$MEF J2_{BASE}$ is the base MEF J2, per Table 1

Equation 2. Calculation of Minimum IMEF

$$IMEF_{MIN} = IMEF_{BASE} - IMEF_{Adder_Connected}$$

where,

$IMEF_{BASE}$ is the base IMEF, per Table 1

$IMEF_{Adder_Connected}$ is the IMEF connected allowance, per Table 2

Table 1: Base IMEF/MEF J2

| Product Type ^{*,**,***} | IMEF _{BASE} | MEF J2 _{BASE} |
|--|----------------------|------------------------|
| Residential Clothes Washers, Front-loading (> 2.5 cu-ft) | 2.76 | NA |
| Residential Clothes Washers, Top-loading (> 2.5 cu-ft) | 2.06 | NA |
| Residential Clothes Washers (≤ 2.5 cu-ft) | 2.07 | NA |
| Commercial Clothes Washers | NA | 2.20 |

* Those products meeting the definition of a laundry center must meet the appropriate IMEF and IWF, as outlined in Table 1 and Table 3, as well as the current ENERGY STAR criteria for clothes dryers.

** Those products meeting the definition of a combination all-in-one washer-dryer must meet the appropriate IMEF and IWF, as outlined in Table 1 and Table 3, as well as the current ENERGY STAR criteria for clothes dryers (except the cycle time requirement) when evaluated as a stand-alone dryer.

*** Those products meeting the definition of a Residential Clothes Washer with Supplementary Wash System: The primary washer must meet the appropriate IMEF and IWF to certify for ENERGY STAR as if it were a stand-alone product, as outlined in Table 1 and Table 3. The supplementary washer must meet the relevant minimum efficiency standard.

Table 2: Connected Allowance

| Description | Product Type | IMEF _{Adder_Connected} * |
|-------------|-------------------------------|-----------------------------------|
| Connected | Residential Clothes Washers** | 0.05 x IMEF _{BASE} |

* Calculated allowance shall be rounded down to the nearest hundredth before being applied in Equation 2.

** Product must be certified using the final and validated ENERGY STAR Clothes Washer Test Method to Validate Demand Response (TBD) to use the allowance.

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B. Integrated Water Factor (IWF):

Table 3: IWF

| Product Type | Maximum IWF |
|--|-------------|
| Residential Clothes Washers, Front-loading (> 2.5 cu-ft) | 3.2 |
| Residential Clothes Washers, Top-loading (> 2.5 cu-ft) | 4.3 |
| Residential Clothes Washers (≤ 2.5 cu-ft) | 4.2 |
| Commercial Clothes Washers | 4.0 |

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C. Additional Criteria for Combination All-In-One Washer-Dryers:

- 150 1. Product shall meet the requirements in this specification and also meet the requirements in Sections 3
151 and 5 of the ENERGY STAR Eligibility Criteria for Clothes Dryers applicable for the product type it
152 best matches if it were a stand-alone dryer. Combination All-in-One Washer-Dryers are exempt from
153 the 80-minute maximum cycle time requirement in Section 3.A of the ENERGY STAR dryer
154 specification.
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156 **Note:** EPA is proposing combination all-in-one washer-dryer products have a CEF greater than or equal to the
157 minimum CEF for the product type it best matches if it were a stand-alone dryer and meet the requirements in
158 Section 3 and 5 of the dryer specification. EPA is also proposing to provide an exemption to the cycle time
159 requirement for combination all-in-one washer-dryer products. Unlike standalone clothes washers and dryers,
160 combination all-in-one washer-dryers use one tub to both wash and dry, which may lead to longer washing and
161 drying cycles compared to standalone products that are optimized to wash or dry. Additionally, combination all-in-
162 one washer-dryer products may also be ventless with 15Amp/120V electricity supply – features that give
163 consumers flexibility to install these products in a location of their choosing but may result in longer drying times
164 beyond the 80-min ENERGY STAR Clothes Dryer limit. It is EPA's understanding that consumers of combination
165 all-in-one washer dryers purchase these products for convenience purposes and expect longer dry times
166 compared to other residential dryers.

167 D. Significant Digits and Rounding: All calculations shall be carried out as specified in 10 CFR 430, Subpart
168 B, Appendix J2, 10 CFR Part 430.23(j), and 10 CFR Part 429.20.

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170 E. Model Numbers: Model numbers used for ENERGY STAR certified product submissions shall be
171 consistent with Federal Trade Commission (FTC) and DOE submissions.
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4. Connected Criteria:

The following optional connected criteria are applicable to Included Products, Section 2.A., that meet the definition of a Residential Clothes Washer or a Combination All-in-One Washer-Dryer.

A. Connected Appliance System

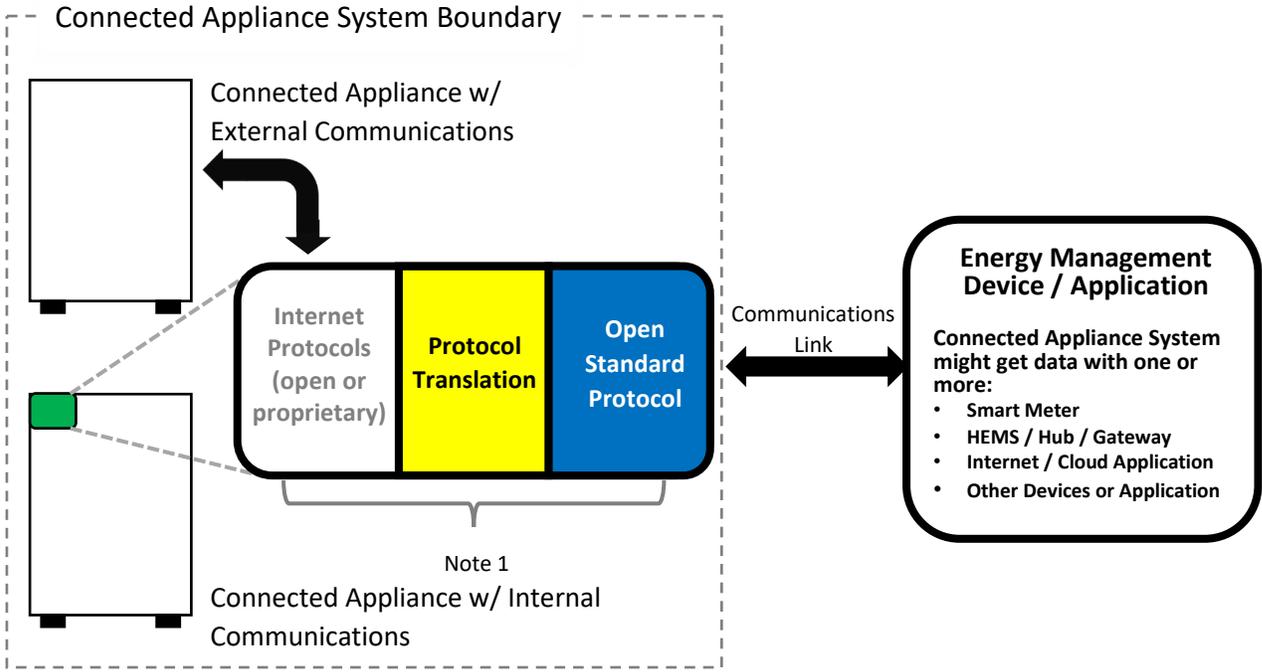
To be recognized as connected and to be eligible for the connected allowance, a “connected appliance system” (Connected Appliance System, as shown in Figure 1) shall include the base appliance plus all elements (hardware, software) required to enable communication in response to consumer-authorized energy related commands (*not including third-party remote management which may be made available solely at the discretion of the manufacturer*). These elements may be resident inside or outside of the base appliance. This capability shall be supported through one or more means, as identified in section 4.B.2.

The specific design and implementation of the Connected Appliance System is at the manufacturer’s discretion provided it is interoperable with other devices via open communications protocol and enables economical consumer-authorized third party access to the functionalities provided for in sections 4.D, 4.F, and 4.G. The capabilities shall be supported through one or more means, as identified in section 4.B.2. A product that enables economical and direct, on-premises, open-standards based interconnection is the preferred option for meeting this requirement, but alternative approaches are also acceptable.

The product must continue to comply with the applicable product safety standards – the addition of the functionality described below shall not override existing safety protections and functions. The appliance must meet manufacturer’s internal minimum performance guidelines, e.g., cleaning performance.

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Figure 1. Connected Appliance System Boundary – Illustrative Example



Note 1: Communication device(s), link(s) and/or processing that enables open standards-based communication between the Connected Appliance System and Energy Management Device/Application(s). These elements could be within the base appliance, and/or an external communication module, a hub/gateway, or in the Internet/cloud.

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1. Additional Requirements Criteria for Combination All-In-One Washer-Dryers
 - a. A product meeting the definition of a clothes washer and the definition of a clothes dryer may only apply a Connected Allowance if:
 - i. the product meets the criteria in Section 4 of this specification,
 - ii. the product meets the criteria in Section 4 of the ENERGY STAR Eligibility Criteria for Clothes Dryers,
 - iii. is certified using the ENERGY STAR Clothes Washer Test Method to Validate Demand Response (TBD), and
 - iv. is certified using the ENERGY STAR Clothes Dryer Test Method to Validate Demand Response (TBD).
 - b. Any connected allowance may be applied only once (i.e., either $IMEF_{Adder_Connected}$ in Equation 2 of this specification or $CEF_{Adder_Connected}$ in Equation 1 of the ENERGY STAR Eligibility Criteria for Clothes Dryers must be set to zero).

Note: EPA proposes to clarify the requirements for combination all-in-one washer-dryer products to receive a connected allowance.

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B. Communications

1. Open Standards – Communication with entities outside the Connected Appliance System that enables connected functionality (sections 4.D, 4.F, 4.G) must use, for all communication layers, standards:
 - a. Included in the Smart Grid Interoperability Panel (SGIP) Catalog of Standards,⁵ and/or
 - b. Included in the NIST Smart Grid framework⁶ Tables 4.1 and 4.2, and/or
 - c. Adopted by the American National Standards Institute (ANSI) or another well-established international standards organization such as the International Organization for Standardization

⁵ http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PMO#Catalog_of_Standards_Processes

⁶ <http://www.nist.gov/smartgrid/upload/NIST-SP-1108r3.pdf>

(ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE), or Internet Engineering Task Force (IETF).

Notes:

- i. The Association of Home Appliance Manufacturers (AHAM) published a study in September 2010, AHAM Assessment of Communication Standards for Smart Appliances⁷, which evaluates existing communication protocols designed for the smart grid. All standards listed in this document would be considered open standards.
- ii. EPA recognizes that standardized messages to enable requisite connected functionality may not be available. In such cases, manufacturer-specific messaging is unavoidable, and is permitted by certain open standards. In cases where proprietary messaging is necessary, the API or similar documents must ensure open access to the connected functionalities outlined in Section 4.C.

2. Communications Hardware Architecture – Communication with entities outside the Connected Clothes Washer System that enables connected functionality shall be enabled by any of the following means, according to the manufacturer’s preference:

- a. Built-in communication technology
- b. Manufacturer-specific external communication module(s) and/or device(s)
- c. Open standards-based communication port on the appliance combined with open standards-based communications module
- d. Open standards-based communication port(s) on the appliance in addition to a, b or c, above

If option b or c is used, the communication module/device(s) must be easy for a consumer to install and shipped with the appliance, provided to the consumer at the time of sale, or provided to the consumer in a reasonable amount of time after the sale.

C. Open Access

To enable interconnection with the product, in addition to section 4.B.1 that requires open-standards, an interface specification, Application Programming Interface (API) or similar documentation shall be made available to interested parties that at a minimum, allows transmission, reception and interpretation of the following information:

1. Energy Consumption Reporting specified in section 4.D (must include accuracy, units and measurement interval);
2. Operational Status, User Settings & Messages specified in section 4.F (if transmitted via a communication link);
3. Demand Response specified in section 4.G.

D. Energy Consumption Reporting

In order to enable simple, actionable energy use feedback to consumers and consumer authorized energy use reporting to 3rd parties, the product shall be capable of transmitting energy consumption data via a communication link to energy management systems and other consumer authorized devices, services, or applications. This data shall be representative of the product’s interval energy consumption. It is recommended that data be reported in watt-hours for intervals of 15 minutes or less, however, representative data may also be reported in alternate units and intervals as specified in the product manufacturer’s interface specification or API detailed in section 4.C.

The product may provide additional types of energy use feedback, such as:

- energy use feedback on the product itself, or
- energy use associated with the previous cycle

This additional reporting, if provided, may be in units and format chosen by the manufacturer (e.g., \$/month or KWh/cycle).

⁷ https://www.smartgrid.gov/document/assessment_communication_standards_smart_appliances_home_appliance_industrys_technical_eval

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E. Remote Management

The product shall be capable of receiving and responding to consumer authorized remote requests (*not including third-party remote management which may be made available solely at the discretion of the manufacturer*), via a communication link, similar to consumer controllable functions on the product. The product is not required to respond to remote requests that would compromise performance and/or product safety as determined by the product manufacturer.

F. Operational Status, User Settings & Messages

1. The product shall be capable of providing the following information to energy management systems and other consumer authorized devices, services or applications via a communication link:
 - Operational / Demand Response (DR) status (e.g., off/standby, cycle in process, delay appliance load, temporary appliance load reduction).
2. The product shall be capable of providing the following information on the product and/or to energy management systems and other consumer authorized devices, services or applications via communication link:
 - At least two types of messages relevant to the energy consumption of the product. For example, messages for clothes washers might address performance issues or report of energy consumption that is outside the product's normal range.

G. Demand Response

A connected appliance shall have the capability to receive, interpret and act upon consumer-authorized signals by automatically adjusting its operation depending on both the signal's contents and settings from consumers. At a minimum, the product shall be capable of providing the following capabilities for all cycle and setting combinations, except where otherwise noted (see Section 4.G.2):

1. *Delay Appliance Load (DAL) Capability*: The capability of the product to respond to a signal in accordance with consumer settings, except as permitted below, by delaying the start of an operating cycle beyond the delay period.
 - a. Default settings –The product shall ship with default settings that enable a response for at least 4 hours.
 - b. Consumer override – The consumer shall be able to override the product's Delay Appliance Load response at any time after the requesting signal has been received. If the consumer elects to override, the product is not required to respond to subsequent DR signals requesting a response in the current operational cycle. However, responses in subsequent operational cycles shall not be automatically overridden.
 - c. The product shall be able to provide at least one Delay Appliance Load response per consumer initiated operating cycle.
2. *Temporary Appliance Load Reduction (TALR) Capability*: The capability of the product to respond to a signal by providing load reduction for a short time period, typically 10 minutes. Upon receipt of signal and in accordance with consumer settings, except as permitted below, the product shall restrict its average power draw during the load reduction period to no more than 50 watts.
 - a. Default settings – The product shall ship with default settings that enable a response period of at least 10 minutes.
 - b. The product is not required to provide a response if the consumer selected wash cycle, as indicated in the product user documentation and/or on the product itself, is explicitly designed or primarily intended for:
 - sanitization, such as those in cycles compliance with NSF Protocol P172 "Sanitization Performance of Residential and Commercial, Family-Sized Clothes Washers," or

- allergen reduction, such as those cycles in compliance with NSF Protocol P351 “Allergen Reduction Performance of Residential and Commercial, Family-Sized Clothes Washers,” or
- laundering of hand-wash wool articles, such as those cycles in compliance with Woolmark Blue (formerly Gold) or Woolmark Green (formerly Platinum)

Note: EPA encourages products to provide Temporary Appliance Load Reduction responses in these cycles whenever consumer expectations would not be impacted.

- c. Consumer override – The consumer shall be able to override the product’s Temporary Appliance Load Reduction response at any time after the requesting signal has been received. If the consumer elects to override, the product is not required to respond to subsequent DR signals requesting a response in the current operational cycle.
- d. The product shall be able to provide at least one Temporary Appliance Load Reduction response per consumer initiated operating cycle.

Illustrative DR Examples:

- i. The product receives a DAL signal with a 10-hour delay period. The consumer overrides and starts a load. The product need not respond to subsequent DAL or TALR signals during that cycle. However, after this cycle completes, the consumer must initiate a 2nd override in order to start a second cycle without delay.
- ii. While running a cycle, the product receives and responds to a TALR signal. During its response, the product receives a DAL signal with a 4-hour delay period. Because the cycle has already started, the product does not need to respond to the DAL signal in the current cycle. However, after this cycle completes, if within the DAL delay period; the consumer must initiate an override in order to start a subsequent cycle without delay.
- iii. While running a cycle, the product receives and responds to a TALR signal. After its response and within the same operational cycle, the product receives a second TALR signal. Since the product is required to provide one TALR response per operating cycle, it does not need to respond to the second signal.

H. Information to Consumers

If additional modules, devices, services and/or infrastructure are part of the configuration required to activate the product’s communications capabilities, prominent labels or other forms of consumer notifications with instructions shall be displayed at the point of purchase and in the product literature. These shall provide specific information on what consumers must do to activate these capabilities (e.g. *“This product has Wi-Fi capability and requires Internet connectivity and a wireless router to enable interconnection with an Energy Management System, and/or with other external devices, systems or applications.”*).

5. **Test Requirements:**

- A. One of the following sampling plans shall be used to test for certification to ENERGY STAR:
 1. A representative unit shall be selected for testing based on the definition for Basic Model provided in Section 1 above; or
 2. Units shall be selected for testing per the sampling requirements as defined in Table 4:

Table 4: ENERGY STAR Sampling Requirements for Clothes Washers

| Product | Sampling Requirements References |
|-----------------------------|---|
| Residential Clothes Washers | 10 CFR § 429.20, which references 10 CFR § 429.11 |
| Commercial Clothes Washers | 10 CFR § 429.46, which references 10 CFR § 429.11 |

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

Table 5: 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 | |

* 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>

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Table 6: Test Load Sizes for Commercial Clothes Washers with Capacities >6.0 cubic feet*

| Container Volume | | Minimum Load | | Maximum Load | | Average Load | |
|------------------|--------------|--------------|------|--------------|-------|--------------|------|
| cu. ft. ≥ < | liter ≥ < | lb | kg | lb | kg | lb | kg |
| 6.00-6.10 | 169.9-172.7 | 3.00 | 1.36 | 24.80 | 11.25 | 13.90 | 6.30 |
| 6.10-6.20 | 172.7-175.6 | 3.00 | 1.36 | 25.20 | 11.43 | 14.10 | 6.40 |
| 6.20-6.30 | 175.6-178.4 | 3.00 | 1.36 | 25.60 | 11.61 | 14.30 | 6.49 |
| 6.30-6.40 | 178.4-181.2 | 3.00 | 1.36 | 26.00 | 11.79 | 14.50 | 6.58 |
| 6.40-6.50 | 181.2-184.1 | 3.00 | 1.36 | 26.40 | 11.97 | 14.70 | 6.67 |
| 6.50-6.60 | 184.1-186.9 | 3.00 | 1.36 | 26.90 | 12.20 | 14.95 | 6.78 |
| 6.60-6.70 | 186.9-189.7 | 3.00 | 1.36 | 27.30 | 12.38 | 15.15 | 6.87 |
| 6.70-6.80 | 189.7-192.6 | 3.00 | 1.36 | 27.70 | 12.56 | 15.35 | 6.96 |
| 6.80-6.90 | 192.6-195.4 | 3.00 | 1.36 | 28.10 | 12.75 | 15.55 | 7.05 |
| 6.90-7.00 | 195.4-198.2 | 3.00 | 1.36 | 28.50 | 12.93 | 15.75 | 7.14 |
| 7.00-7.10 | 198.2-201.0 | 3.00 | 1.36 | 28.90 | 13.11 | 15.95 | 7.23 |
| 7.10-7.20 | 201.0-203.9 | 3.00 | 1.36 | 29.30 | 13.29 | 16.15 | 7.33 |
| 7.20-7.30 | 203.9-206.7 | 3.00 | 1.36 | 29.70 | 13.47 | 16.35 | 7.42 |
| 7.30-7.40 | 206.7-209.5 | 3.00 | 1.36 | 30.10 | 13.65 | 16.55 | 7.51 |
| 7.40-7.50 | 209.5-212.4 | 3.00 | 1.36 | 30.60 | 13.88 | 16.80 | 7.62 |
| 7.50-7.60 | 212.4-215.2 | 3.00 | 1.36 | 31.00 | 14.06 | 17.00 | 7.71 |
| 7.60-7.70 | 215.2-218.0 | 3.00 | 1.36 | 31.40 | 14.24 | 17.20 | 7.80 |
| 7.70-7.80 | 218.0-220.9 | 3.00 | 1.36 | 31.80 | 14.42 | 17.40 | 7.89 |
| 7.80-7.90 | 220.9-223.7 | 3.00 | 1.36 | 32.20 | 14.61 | 17.60 | 7.98 |
| 7.90-8.00 | 223.7-226.5 | 3.00 | 1.36 | 32.60 | 14.79 | 17.80 | 8.07 |

* And in accordance with any applicable DOE issued test procedure guidance. Full DOE Test Waiver can be found here:
<https://www.regulations.gov/document?D=EERE-2015-BT-WAV-0020-0005>

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- 383 C. Compliance with Connected functionality, as specified in Section 4, shall be through examination of
384 product and/or product documentation. In addition, upon publication of a final test method, demand
385 response functionality shall be tested using the ENERGY STAR Test Method for Clothes Washers to
386 Validate Demand Response. Combination All-in-One Washer-Dryer products shall also be tested using
387 the ENERGY STAR Clothes Dryers Test Method to Validate Demand Response upon publication of a
388 final test method. Once the final Test Methods are published, they must be used to certify demand
389 response functionality in order for a product to remain listed as having connected functionality on the
390 Qualified Product List, and to be eligible for a connected allowance.
391

392 **Note:** EPA proposes to include clothes dryer sampling and test procedure references for combination all-in-one
393 washer-dryer products. EPA also proposes that when the final test methods for demand response functionality
394 are published for washers and dryers, they must be used to certify demand response functionality for a product to
395 remain listed as having connected functionality on the Qualified Product List, and to be eligible for a connected
396 allowance.

397
398 **6. Effective Date:**
399

- 400 A. The ENERGY STAR Clothes Washer specification shall take effect on **February 5, 2018**. To certify for
401 ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the model's
402 date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is
403 considered to be completely assembled.
404

405 **Note:** This specification as amended will be available for use immediately upon publication.
406

407 **7. Future Criteria Revisions:**
408

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