



ENERGY STAR® Program Requirements Product Specification for Clothes Washers

Partner Commitments

Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacture and labeling of ENERGY STAR qualified products. The ENERGY STAR Partner must adhere to the following partner commitments:

Qualifying Products

1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and test procedures for clothes washers. A list of eligible products and their corresponding Eligibility Criteria can be found at www.energystar.gov/specifications.
2. **Prior to associating the ENERGY STAR name or mark with any product**, obtain written certification of ENERGY STAR qualification from a Certification Body recognized by EPA for clothes washers. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform clothes washer testing. A list of EPA-recognized laboratories and Certification Bodies can be found at www.energystar.gov/testingandverification.

Using the ENERGY STAR Name and Marks

3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
4. Use the ENERGY STAR name and marks only in association with qualified products. Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is qualified and offered for sale in the U.S. and/or ENERGY STAR partner countries.
5. Provide clear and consistent labeling of ENERGY STAR qualified clothes washers.
 - 5.1. The ENERGY STAR mark must be clearly displayed on the top/front of the product (by placement of the ENERGY STAR logo on the FTC's EnergyGuide label, on product labels, and/or as a permanent mark), in product literature (i.e., user manuals, spec sheets, etc.), and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed.
 - 5.2. It is also recommended that the mark appear on the product packaging.

Verifying Ongoing Product Qualification

6. Participate in third-party verification testing through a Certification Body recognized by EPA for clothes washers, providing full cooperation and timely responses. EPA/DOE may also, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at the government's request.

Providing Information to EPA

7. Provide unit shipment data or other market indicators to EPA annually to assist with creation of ENERGY STAR market penetration estimates, as follows:

- 7.1. Partner must submit the total number of ENERGY STAR qualified clothes washers shipped in the calendar year or an equivalent measurement as agreed to in advance by EPA and Partner. Partner shall exclude shipments to organizations that rebrand and resell the shipments (unaffiliated private labelers).
- 7.2. Partner must provide unit shipment data segmented by meaningful product characteristics (e.g., type, capacity, presence of additional functions) as prescribed by EPA.
- 7.3. Partner must submit unit shipment data for each calendar year to EPA or an EPA-authorized third party, preferably in electronic format, no later than March 1 of the following year.

Submitted unit shipment data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner.

8. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence testing or certification results or to engage in discriminatory practices.
9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed on the progress of these efforts:

- Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program.
- Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If information concerning ENERGY STAR is provided on the Partner website as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR website), EPA may provide links where appropriate to the Partner website.
- Ensure the power management feature is enabled on all ENERGY STAR qualified displays and computers in use in company facilities, particularly upon installation and after service is performed.
- Provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified products.
- Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, and communicate Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list of planned activities or milestones of which Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR qualified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) providing information to users (via the website and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.

- Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune 500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.



ENERGY STAR® Program Requirements Product Specification for Clothes Washers

Eligibility Criteria Version 8.1

Following is the **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.

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.
 1. Compact Residential Clothes Washer: A Residential Clothes Washer that has a clothes container capacity of less than 1.6 ft³ (45 L).
 2. 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.
 3. 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.
 1. 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.
 2. Combination All-in-One Washer-Dryer with Water-Cooled Drying: A Combination All-in-One Washer-Dryer that consumes water to cool and condense moisture from the dryer process air, during the dry cycle.
 - D. Laundry Center: 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 separate, stacked drums.

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."

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

2. Scope:

- A. Included Products: Products that meet the definition of a Residential Clothes Washer or Commercial Clothes Washer as specified herein are eligible for ENERGY STAR certification, with the exception of products listed in Section 2.B.
- B. Excluded Products: The following products are not eligible for ENERGY STAR certification:
 1. Products with a primary clothes washer drum volume of less than 1.6 cubic feet
 2. Products configured in any way other than a front- or top-loading design
 3. Combination All-in-One Washer-Dryers with Water-Cooled Drying
 4. Residential Clothes Washers with Heated Drying Functionality
 5. Commercial Clothes Washers with a clothes container volume larger than 8.0 cubic feet
 6. Commercial Clothes Washer with top-loading design

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

³ 10 CFR 430, Subpart B, Appendix J2
⁴ 10 CFR 430, Subpart A, Section 430.2

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.

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

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

1. Product shall meet the requirements in this specification and also meet the requirements in Sections 3 and 5 of the ENERGY STAR Eligibility Criteria for Clothes Dryers applicable for the product type it best matches if it were a stand-alone dryer. Combination all-in-one washer-dryers are exempt from the 80-minute maximum cycle time requirement in Section 3.A of the ENERGY STAR Clothes Dryer specification.

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

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

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.

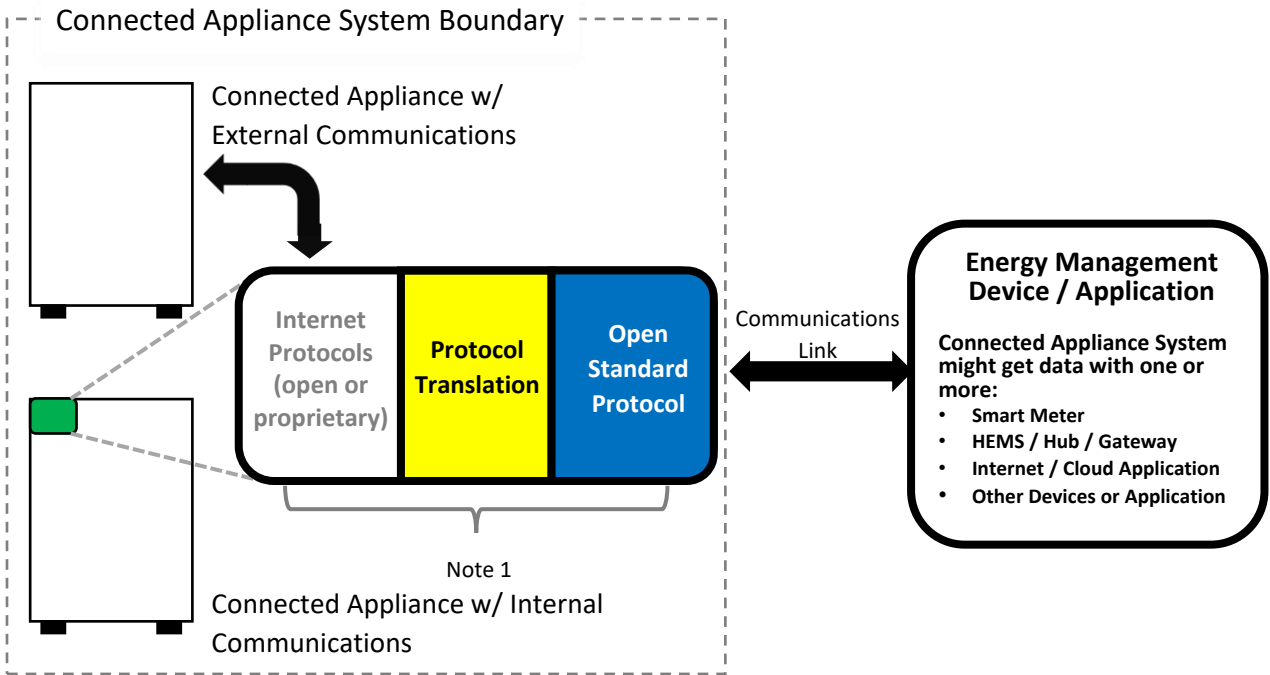
A. Connected Appliance System

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.

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.

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 (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.

⁵ <https://www.nist.gov/programs-projects/smart-grid-national-coordination/catalog-standards>

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

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

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).

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."*).

I. Additional Requirements Criteria for Combination All-In-One Washer-Dryers

1. A product meeting the definition of a clothes washer and the definition of a clothes dryer may only apply a Connected Allowance if:
 - a. the product meets the criteria in A above through H above of this specification,
 - b. the product meets the criteria in A above through H above of the ENERGY STAR Eligibility Criteria for Clothes Dryers,
 - c. the product is certified using the ENERGY STAR Clothes Washer Test Method to Validate Demand Response (TBD), and
 - d. the product is certified using the ENERGY STAR Clothes Dryer Test Method to Validate Demand Response (TBD).
2. 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).

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

- 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>

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>

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

6. Effective Date:

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

7. 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.