



ENERGY STAR® Program Requirements Product Specification for Clothes Washers

Eligibility Criteria Draft 1, Version 8.0

Following is the **Draft 1, Version 8.0** product specification for ENERGY STAR certified clothes washers. A product shall meet all of the identified required criteria if it is to earn the ENERGY STAR.

Note: In the Version 8.0 specification revision, the Environmental Protection Agency (EPA) is proposing to revise the eligibility criteria for residential and commercial clothes washers, clarify definitions for combination products, clarify the status of laundry centers, consider combination washer-dryers, and provide updates on how performance will be considered in the ENERGY STAR clothes washer program. EPA welcomes feedback on this Draft 1 proposal; please send comments via email to appliances@energystar.gov no later than August 12, 2016.

- 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. 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.
 - 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.
 - 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, and is powered by a single electric power source.
 - 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)⁴: The quotient of the cubic foot (or liter) capacity of the clothes

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."

³ 10 CFR 430, Subpart B, Appendix J2

⁴ 10 CFR 430, Subpart B, Appendix J2

container (i.e., clothes washer drum) divided by the total clothes washer energy consumption per cycle, with such clothes washer 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)⁴: 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 Model⁵: 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.

Note: ENERGY STAR has maintained most of the definitions from the Version 7.0 specification in Version 8.0. However, per stakeholder comments, EPA is proposing to amend the definitions for combination all-in-one washer-dryers and residential clothes washers with an optional dry cycle. As part of this edit, EPA has also amended the term for a residential clothes washer with an optional dry cycle to a residential clothes washer with heated drying functionality. EPA has also added a definition for laundry centers. Finally, EPA has removed the definition for water factor as this metric will no longer be in use for residential or commercial clothes washers as of January 1, 2018.

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 2B.
- B. Excluded Products: The following products are not eligible for ENERGY STAR certification:
- i) products with a clothes washer drum volume of less than 1.6 cubic feet,
 - ii) products configured in any way other than a front- or top-loading design,
 - iii) Combination All-in-One Washer-Dryers,
 - iv) Residential Clothes Washers with Heated Drying Functionality, and
 - v) Commercial Clothes Washers with a clothes container volume larger than 6.0 cubic feet.

Note: During the V 6.0 revision, EPA excluded Combination All-in-One Washer-Dryers from eligibility. With the addition of an ENERGY STAR product category for clothes dryers in 2015, and the availability of the Appendix D2 test method to measure dryer energy use, EPA is reconsidering the inclusion of Combination All-in-One Washer-Dryers in the ENERGY STAR scope. EPA has received stakeholder feedback indicating interest in this product category. However, EPA has also received feedback regarding concerns over the water usage of the dryer element. EPA agrees that the water consumption of the dryer should be measured and reported, and solicits feedback from stakeholders as to how this could be achieved in the Version 8.0 specification. If the water consumption of the product could be appropriately tested and reported, EPA anticipates that a Combination All-in-One Washer-Dryer would be required to meet both the ENERGY STAR energy and water criteria for clothes washers and the ENERGY STAR energy criteria for clothes dryers.

3) Qualification 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

$$MEFJ2_{MIN} = MEFJ2_{BASE}$$

⁵ 10 CFR 430, Subpart A, Section 430.2

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) ¹	2.76	NA
Residential Clothes Washers, Top-loading (> 2.5 cu-ft) ¹	2.30	NA
Residential Clothes Washers (≤ 2.5 cu-ft)	2.07	NA
Commercial Clothes Washers	NA	2.20

¹ 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.

Table 2: Connected Allowance

Description	Product Type	IMEF _{Adder_Connected} ²
Connected	Residential Clothes Washers ¹	0.05 x IMEF _{BASE}

¹ Product must be certified using the final and validated ENERGY STAR Clothes Washer Test Method to Validate Demand Response (TBD) to use the allowance.

² Calculated allowance shall be rounded down to the nearest hundredth before being applied in Equation 1.

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)	3.8
Residential Clothes Washers (≤ 2.5 cu-ft)	4.2
Commercial Clothes Washers	4.0

Note:

For Version 8.0, EPA is proposing revisions to the minimum efficiency requirements for residential and commercial clothes washers. In addition, EPA is soliciting comment on the potential inclusion of combination all-in-one washer-dryers and has clarified the status of laundry centers.

The ENERGY STAR criteria for residential clothes washers last changed on March 7, 2015 and for commercial clothes washers the criteria last changed on February 1, 2013. Based on Unit Shipment Data (USD) collected annually, EPA has found that the market responded quickly to the last specification changes and estimates the ENERGY STAR residential clothes washer market share was 50% in 2015. Due to the federal standards changing on January 1, 2018 and the availability of products on the market exceeding the current ENERGY STAR criteria, EPA believes that stronger requirements are necessary to effectively differentiate highly energy-efficient residential and commercial clothes washers.

Residential Clothes Washers

In Draft 1, Version 8.0, EPA is proposing an IMEF of 2.76 and an IWF of 3.2 for front-load washers greater than 2.5 cu-ft., and an IMEF of 2.30 and an IWF of 3.8 for top-load washers greater than 2.5 cu-ft. Currently, EPA estimates that approximately 27 percent of front-load washers and 30 percent of top-load washers meet the proposed criteria. These models are produced by five manufacturers under seven brands. To determine product availability, EPA used a dataset of residential clothes washers developed by combining the current ENERGY STAR certified product list with the U.S. Department of Energy (U.S. DOE) Certification Database of clothes washers. Those products that would not meet the 2018 DOE standards were filtered out. EPA estimates that consumers would save on average \$39 on their utility bills annually; about \$430 over a residential clothes washer's typical 11-year lifetime for those products larger than 2.5 cu-ft. Factoring in pricing data for these higher levels of efficiency, EPA believes that consumers will be able to recoup any additional up-front investment within a reasonable timeframe, in fact for some product types, there may be no additional investment associated with efficiency. Further information on the datasets used may be found in the attached ENERGY STAR Data and Analysis Package.

In Version 7.0, EPA introduced a category for small volume (1.6 to 2.5 cu-ft) washers. For the Version 8.0 revision, EPA has reviewed product availability and technology advances for this product class, and is not proposing to change the criteria at this time. EPA will continue to seek opportunities to drive greater efficiency in small volume washers in future specification revisions.

Commercial Clothes Washers

In Draft 1, Version 8.0, EPA is adopting the new efficiency metrics for commercial washers which will take effect with the January 2018 federal standards: MEF J2 and IWF. EPA is proposing a MEF J2 of 2.20 and an IWF of 4.0 for all commercial clothes washers. The use of one efficiency level for commercial clothes washers across top and front load configurations is a continuation of ENERGY STAR's approach in this product category. The 2018 federal standard for front load commercial clothes washers will exceed the ENERGY STAR V 7.0 commercial clothes washer level. Currently, EPA estimates that approximately 30 percent of all commercial clothes washers meet the proposed V 8.0 criteria. These models are produced by two manufacturers under four brands. EPA developed a dataset by using the same methodology as for residential clothes washers. As in residential clothes washers, those products that did not meet the 2018 federal standard levels were removed. EPA estimates that ENERGY STAR commercial washers in multi-family settings would save on average \$121 annually; about \$1,375 over a multi-family commercial clothes washer's 11.3 year lifetime. ENERGY STAR coin-op commercial washers would save on average \$147 annually and \$1,050 over the estimated 7.1 year lifetime of a washer in a laundromat. Further information on the datasets used, as well as information on the conversion to the new efficiency metrics, may be found in the attached ENERGY STAR Data and Analysis Package.

Laundry Centers

EPA has encountered confusion among stakeholders regarding the eligibility of laundry center products, and seen marketing of laundry center products that may be misleading to consumers, implying that the entire product is ENERGY STAR certified, in cases where only the clothes washer is certified. With the addition of a definition for Laundry Centers, EPA is clarifying that these products are currently eligible for ENERGY STAR certification. Given that an ENERGY STAR category for clothes dryers now exists, in Draft 1, EPA is proposing that laundry centers meet the Version 8.0 ENERGY STAR clothes washer criteria as well as the ENERGY STAR clothes dryer criteria.

Connected Allowance

EPA is not proposing to revisit the connected allowance for residential clothes washers at this time. The ENERGY STAR Test Method for Residential Clothes Washers to Validate Demand Response is still under development. Also, connected clothes washers represent a very small proportion (less than 2%) of the ENERGY STAR certified products list. EPA intends to continue to monitor the market and help promote the adoption of ENERGY STAR connected criteria, and will reconsider the associated credit during the next Residential Clothes Washer specification revision.

C. Optional Reporting for Residential Clothes Washer Cleaning and Rinse Performance:

TBD until the ENERGY STAR Test Method for Determining Residential Clothes Washer Cleaning and Rinse Performance is available. Once completed, optional cleaning and rinse performance reporting is applicable to residential products included under Section 2A.

Note: EPA has continued to monitor performance associated with ENERGY STAR certified residential clothes washers through sources including conversations with manufacturers, Consumer Reports ratings, and reviews on retailer websites. Stakeholders have indicated a variety of performance elements of interest to consumers, such as cleaning, rinsing, cycle time, gentleness and noise. Some of these performance factors are monitored via required reporting and labeling in other countries in the European Union and Australia.

Cleaning and rinsing ability continues to be the most critical performance factor for American consumers. While EPA believes there is room for increasing energy and water efficiency without adversely impacting performance at present, feedback from some stakeholders expressed concern that further efficiency improvements may impact performance. A cleaning and rinse performance test method, tied to products' energy and water use, will be needed in the future to sufficiently and fairly ensure that highly efficient clothes washers continue to deliver on consumer expectations. EPA is aware of industry cleaning and rinse performance test methods such as AHAM HLW-1-2013 and IEC 60456. Since these tests are not currently tied to energy and water use as measured by the DOE test method, they are not ideal for assessing the relationship between cleaning and efficiency.

Understanding that the development of a repeatable and reproducible test method takes time, the Department of Energy (DOE) is launching the development of an ENERGY STAR Cleaning and Rinse Performance Test Method. Test method development will follow its own timeline alongside the development of the Version 8.0 specification. EPA and DOE welcome partners and stakeholders who are interested in informing development of the test method to participate in the process.

EPA has included a placeholder for optional reporting of this data once the test method is available. EPA notes that test data will not be posted publically. Rather, it will be used internally by EPA to develop a minimum floor for cleaning and rinse performance for ENERGY STAR products and inform potential criteria levels for future ENERGY STAR clothes washer specifications. EPA invites stakeholder questions and discussion to help clarify ENERGY STAR's intended use of the cleaning and rinse performance data, and stands ready to offer additional details and guidance as needed.

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 2A, that meet the definition of a Residential Clothes Washer.

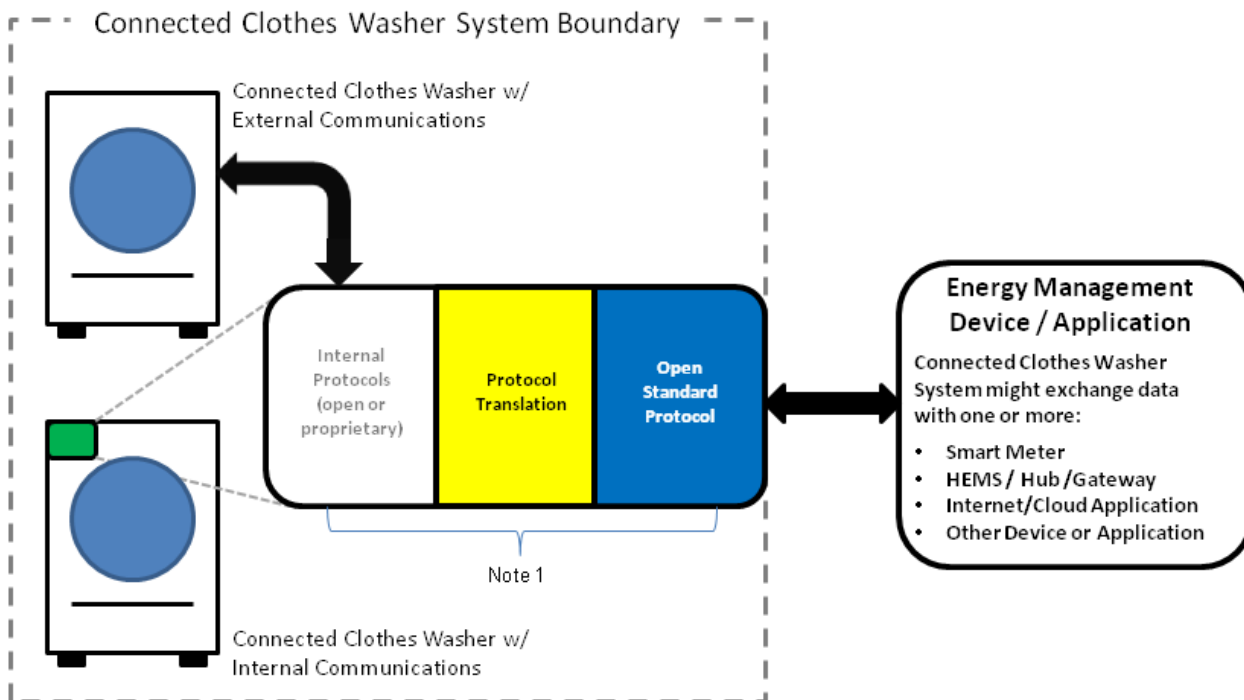
A. Connected Clothes Washer System

To be recognized as connected and to be eligible for the connected allowance, a “connected clothes washer system” (Connected Clothes Washer 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 4B2.

The specific design and implementation of the Connected Clothes Washer 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 4D, 4F, and 4G. The capabilities shall be supported through one or more means, as identified in section 4B2. 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 Clothes Washer System Boundary – Illustrative Example



Note 1: Communication device(s), link(s) and/or processing that enables open standards-based communication between the Connected Clothes Washer 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 Clothes Washer System that enables connected functionality (sections 4D, 4F, 4G) must use, for all communication layers, standards:

- a. Included in the Smart Grid Interoperability Panel (SGIP) Catalog of Standards,⁶ and/or

⁶ http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PMO#Catalog_of_Standards_Processes

- b. Included in the NIST Smart Grid framework⁷ 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:

1. The Association of Home Appliance Manufacturers (AHAM) published a study in September 2010, AHAM Assessment of Communication Standards for Smart Appliances⁸, which evaluates existing communication protocols designed for the smart grid. All standards listed in this document would be considered open standards.
2. 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 all connected functions.
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.

Where modules are not provided at the time of sale, consumers shall be provided a clear and simple process that allows them to obtain a module at no separate cost and with minimal wait time.

C. Open Access

To enable interconnection with the product, in addition to section 4B1 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 4D (must include accuracy, units and measurement interval);
2. Operational Status, User Settings & Messages specified in section 4F (if transmitted via a communication link);
3. Demand Response specified in section 4G.

⁷ <http://www.nist.gov/smartgrid/upload/NIST-SP-1108r3.pdf>

⁸

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

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 4C.

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

Consumers (or consumer authorized 3rd parties) shall be able to remotely manage the product in a manner similar to the consumer controllable functions on the product itself. The product shall be capable of receiving and responding to these 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 clothes washer 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 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 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:

1. 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.
2. 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. Since the consumer has elected to override, 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.
3. 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.”).

Note: EPA is updating the optional connected criteria section to add clarity in response to stakeholder inquiries reflected in the [ENERGY STAR Connected Criteria Q&A document](#), as brand owner partners work to design and implement products with connected capabilities.

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**

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 ¹
Commercial Clothes Washers: MEF J2 and IWF	

¹ 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>

- 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. Once the final Test Method is published, it must be used to certify demand response functionality in order for a product to remain listed as having connected functionality on the Certified Product List, and to be eligible for any connected allowance.

Note: DOE is in the process of developing an ENERGY STAR test method to validate the DR capabilities of residential clothes washers that will be referenced in this specification. DOE’s test method development will be dependent upon working with manufacturers to obtain products for testing. EPA would like to introduce manufacturers with connected clothes washers to DOE to facilitate test method development. Products must be capable of receiving a simulated utility signal.

EPA continues to anticipate that the method. Products would need to be certified using this final and validated ENERGY STAR test method to use the connected allowance.

In the interim (prior to the availability of the ENERGY STAR test method for demand response), certified residential clothes washers with connected features, as specified in Section 4, would be highlighted on the ENERGY STAR certified product list.

- D. Compliance with Cleaning and Rinse Performance reporting requirements, as specified in Section 3C, shall be tested using the ENERGY STAR Test Method for Residential Clothes Washers Cleaning and

Rinse Performance. Once the final Test Method is published, it must be used to report cleaning and rinse performance in order for a product to remain listed.

6) **Effective Date:**

The ENERGY STAR Clothes Washer specification shall take effect on **January 1, 2018**. To qualify 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.

Note: Under EPA's anticipated schedule for the residential and commercial clothes washer specification revision, a final version of the specification would be published by April 1, 2017 to be effective 9 months later on January 1, 2018, which would harmonize with the DOE federal standard effective date.

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.