

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



OFFICE OF  
AIR AND RADIATION

December 19, 2014

Dear ENERGY STAR® Dishwasher Brand Owner or Other Interested Stakeholder:

In response to stakeholder comments received on the ENERGY STAR Version 6.0 Draft 2 Residential Dishwasher Specification, and new data supplied by the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA) is releasing for comment a supplemental proposal specific to the optional criteria for connected functionality. Note that this supplemental proposal is limited to the demand response criteria included in Section 5G of the Draft 2 specification.

This supplemental proposal has three elements:

1. Clarification on the scope and intent of the general demand response criteria, Section 5.G;
2. Revision of the Temporary Appliance Load Reduction (TALR) criteria to include a simpler fixed-wattage power draw limit and refine the sanitization cycle exemption; and
3. Removal of the 60 second response time criterion in Section 5.G.2.c.

EPA's intent in sharing this additional proposal is to enable further discussion regarding these criteria prior to releasing a subsequent Final Draft document. EPA welcomes written comments no later than January 14, 2014 via email to [appliances@energystar.gov](mailto:appliances@energystar.gov).

#### **Clarifying the Scope of Demand Response Capabilities**

Revisions to the general Demand Response criteria below are being proposed to reflect the Agency's intent that all dishwasher operational cycles, excepting sanitization cycles, are subject to the Section 5.G.2 demand response criteria.

*Proposed Section 5.G (new text underlined):*

##### *Demand Response*

*A connected dishwasher system 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 5.G.2)*

#### **Amending Temporary Appliance Load Reduction**

In Drafts 1 and 2, the proposed TALR criteria required at least a 50 percent reduction in power draw, relative to the baseline average power draw. However, in response to Draft 2, several stakeholders indicated a preference for the simpler approach proposed for clothes washers on April 28, 2014. EPA and DOE believe that redefining the minimum TALR response such that the dishwasher must restrict the average power draw during the load reduction period to no more than a fixed, specified wattage will simplify implementation, reduce test burden, and improve testing repeatability.

Accordingly, EPA is proposing that dishwashers restrict average power draw over TALR load reduction periods to no more than 250 watts. This level is informed by DOE dishwasher test data, included herein, and will provide load shed comparable to the prior 50% reduction criterion. Under this criterion, a dishwasher may need to suspend water heating and power dry, but could continue other operations, including circulating water, soil sensing, and soil sensor calibration. In support of this proposal, plots showing the DOE dishwasher test data are

included that show the full-cycle power draw as a function of time for several ENERGY STAR certified dishwashers, with and without power dry. Since the 250 watt level will allow soil sensing and sensor calibration to take place during TALR response periods, EPA is proposing to remove the Draft 2 Section 5.G.2.c criterion, which allowed up to a 60-second TALR delay to facilitate completion of soil sensing and soil sensor calibration.

Cognizant of the fact that manufacturers may use varied standards for sanitization, EPA is proposing to refine the TALR response exemption such that it applies to cycles designed for sanitization, including but not limited to, those in compliance with National Sanitation Foundation/American National Standards Institute (NSF/ANSI) Standard 184. In order to be eligible for the TALR response exemption, the cycle must be documented as intended for sanitization in the product user documentation, and/or on the product itself.

*Proposed Section 5.G.2 (new text underlined):*

*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 250 watts. (deleted Draft 2 text: 50% relative to the baseline average power draw defined in the Test Method to Validate Demand Response)*

- a. Default settings – The product shall ship with default settings that enable a response in accordance with 5.G.2 for a time period of least 10 minutes.*
- b. The product is not required to provide a response in accordance with 5.G.2.a if the consumer selected wash cycle is a ~~sanitization~~ cycle explicitly designed or primarily intended for sanitization, such as those in compliance with NSF/ANSI Standard 184. The product user documentation and/or the product itself must indicate that the cycle is designed or intended for sanitization.*

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

~~(deleted Draft 2 text: 5.G.2.c: Upon receipt of a signal requesting a temporary appliance load reduction response, except as allowed by 5.G.2.b, the product shall response within 60 seconds of the requested start time. Note: The product should respond at the requested start time whenever possible. The 60-second response time deferral is intended to allow soil sensing and sensor calibration to complete)~~

- c. Consumer override – The consumer shall be able to override the product's Temporary Appliance Load Reduction response before or during a load reduction period.*
- d. The product shall be able to provide at least one Temporary Appliance Load Reduction response per consumer initiated operating cycle.*

Once vetted, EPA plans to incorporate the new criteria into the ENERGY STAR Version 6.0 Final Draft Residential Dishwasher Specification, anticipated for release in early 2015. The ENERGY STAR Version 6.0 specification will be effective 9 months after finalization.

Should you have any questions or wish to set up a meeting to discuss this proposal, please contact me at [Fiffer.Melissa@epa.gov](mailto:Fiffer.Melissa@epa.gov) or (202) 343-9464. Dishwasher test method questions should be directed to Bryan Berringer, DOE, at [Bryan.Berringer@ee.doe.gov](mailto:Bryan.Berringer@ee.doe.gov) or (202) 586-0371. Thank you for your review of this proposal and your continued support of the ENERGY STAR program.

Sincerely,



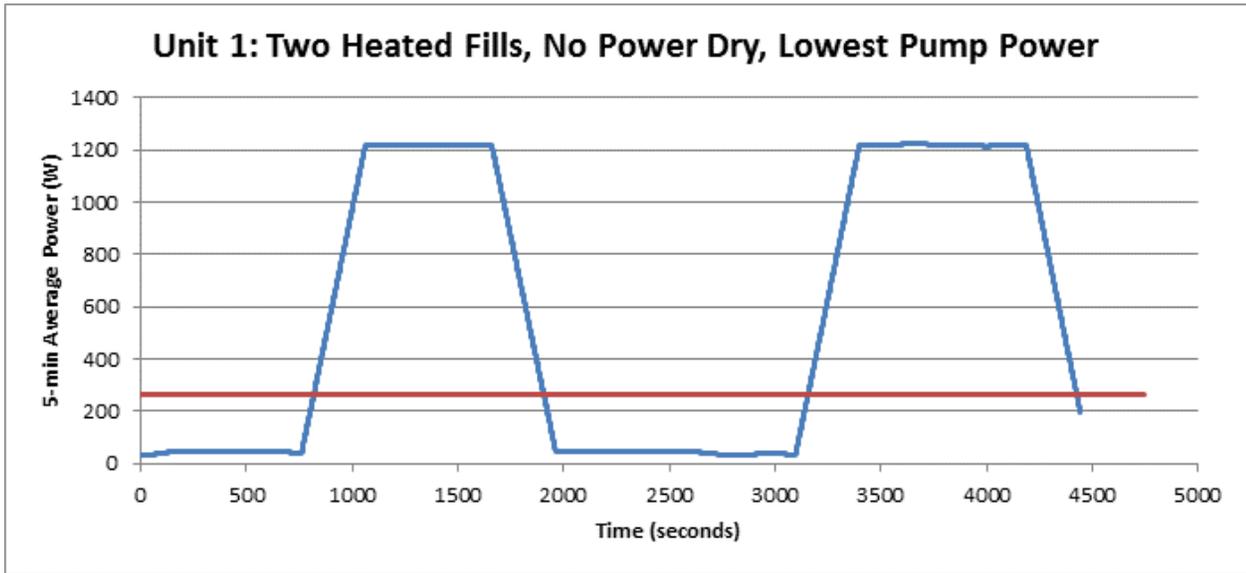
Melissa Fiffer, Product Manager  
ENERGY STAR Appliances

Encl. Dishwasher power draw plots

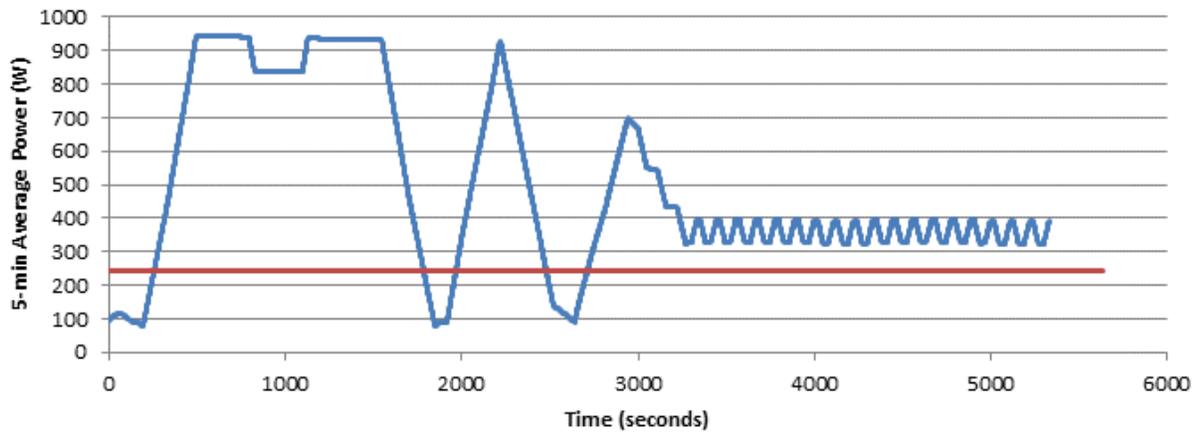
### DOE Dishwasher Data

The U.S. Department of Energy (DOE) tested 3 ENERGY STAR residential dishwashers in support of this proposal. The tested models represent a range of available dishwasher technologies and functionalities, including varying power requirements for water pumps, cycle times, tub fills, and drying capabilities. Each product was tested one time using the energy test method found in 10 CFR 430 Appendix C1. The table below presents the units' water pumping power demands, and the assessed 50% of the average power draw over the duration of the tested cycle. Graphical data reflects the product's 5-minute running average power draw over the tested cycle, overlaid with the proposed 250 watt average power draw limit for the temporary appliance load reduction response.

Unit	Water Pumping Power (W)	50% of Average Power (W)
1	50	267
2	140	241
3	250	243



**Unit 2: Multiple Heated Fills, Power Dry, Mid Pump Power**



**Unit 3: Multiple Heated Fills, Power Dry, Highest Pump Power**

