



December 9, 2020

Ms. Abigail Daken and Ms. Catherine Rivest  
U.S. Environmental Protection Agency and U.S. Department of Energy  
ENERGY STAR Products Program  
E-mail: [WaterHeaters@energystar.gov](mailto:WaterHeaters@energystar.gov)

Re: Comments on Draft 1 of the ENERGY STAR Water Heater Product Specification Version 4.0 and Draft 2 of the ENERGY STAR Test Method to Validate Demand Response

Dear Ms. Daken and Ms. Rivest,

A. O. Smith Corporation (“A. O. Smith”) appreciates the opportunity to submit these comments to the U. S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (“DOE or Department”) regarding its request for comment on Draft 1 of the ENERGY STAR Water Heater Product Specification Version 4.0 and Draft 2 of the ENERGY STAR Test Method to Validate Demand Response. A. O. Smith is pleased to work with EPA and DOE in further developing the ENERGY STAR specification for water heaters more broadly and the testing requirements needed to support connected water heaters. A. O. Smith was pleased to see that EPA and DOE have addressed and incorporated previous feedback provided at stakeholder meetings in the latest drafts and is generally supportive of both Draft 1 of the specification and Draft 2 of the connected test procedure. A. O. Smith has some specific feedback on definitions, new product categories, efficiency levels, first hour ratings, as well as the certain aspects of the test procedure that it hopes both DOE and EPA will further consider before finalizing the specification and test procedure.

#### **About A. O. Smith**

A. O. Smith Corporation, with global headquarters in Milwaukee, Wisconsin, applies technology and energy-efficient solutions to products manufactured and marketed worldwide. Listed on the New York Stock Exchange (NYSE), the company is one of the world’s largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products.

#### **120-Volt Heat Pump Water Heaters**

A. O. Smith strongly encourages EPA to set a separate product category for residential heat pump water heaters (HPWHs) that utilize 120 volts and are capable of being installed and run off a shared electrical circuit. 120-volt HPWHs are an emerging product area for the water heating industry and provide a unique utility to consumers as they can be installed on a shared electrical circuit. Due to this unique installation ability, the 120-volt HPWHs are limited to the inclusion of electrical elements with a rated power less than 900 W immersed in the tank. During times of hot water use, the water heater will likely need to use an elevated tank temperature to ensure the hot water needs of its customers can be met. This inherent limitation from the shared circuit and the electrical design directly impacts the energy efficiency of the product when tested using the DOE test procedure for uniform energy factor (UEF). When models are tested for UEF at heightened tank temperatures, their UEFs will be lower compared to values more typical of 240-volt HPWH operation due to the increased standby losses. Thus,

A. O. Smith respectfully requests that EPA separate out 120-volt HPWHs as their own product category and leave the current UEF requirements in place, which are a 2.0 and 2.2 UEF depending on gallon size. In addition, A. O. Smith believes the minimum first hour rating requirement for the 120-volt HPWH category should be revised to be greater than or equal to 38 gallons due to the electrically constrained nature of the product. The 38 gallon first-hour rating corresponds to the minimum requirements in the latest edition of the Uniform Plumbing Code. In order to facilitate this product category carve out, A. O. Smith suggests that EPA adopt a definition of the 120-V HPWH to read as follows:

*120V HPWH means a HPWH that operates at 120 volts and on a shared 15-amp circuit.*

Lastly, if EPA needs additional information to help support its analysis to separate out the 120-volt HPWH into its own product category, A. O. Smith is willing to have additional discussions with the ENERGY STAR program.

### **240-Volt Heat Pump Water Heaters**

A. O. Smith supports EPA's proposed increase of 3.3 UEF for HPWHs other than 120-volt as explained above. A. O. Smith believes EPA could further simplify its approach for this product category by expanding the 3.3 UEF to all gallons size as models that are commercially available demonstrate that a significantly lower UEF of 2.7 is no longer needed. Further, there are models available from multiple manufacturers in the larger gallon sizes with UEFs significantly higher than the proposed 2.7 for this category. See DOE's Compliance Certification Database as of December 9, 2020<sup>1</sup>. If EPA were to extend the 3.3 UEF to the larger gallon sizes as A. O. Smith requests, the ENERGY STAR program would see energy savings increase for customers yielding greater benefits, including emissions reductions. If EPA decides to continue to divide the category, A. O. Smith believes the UEF requirement should be increased to be more stringent than the proposed 2.7 UEF.

### **Gas Instantaneous Water Heaters**

A. O. Smith believes the revision to the first hour rating for gas instantaneous water heaters is unnecessary. The proposed gallon per minute first hour rating is extremely low and likely represents the first hour rating for a condo with 1 bedroom and 1 bathroom. A. O. Smith believes the current first hour rating should be maintained as it is more representative.

### **AHRI 1430**

As EPA and DOE are aware, AHRI is working to develop a standard to address connected water heaters in an attempt to harmonize the various requirements aiding manufacturers in providing a national connected product offering. Both EPA and DOE are part of the Working Group along with many interested parties including utilities, national labs, manufacturers, and regulators. As such, A. O. Smith strongly recommends that EPA and DOE transition to adopting AHRI 1430 as soon as its finalized. The development of a harmonized standard is key to further developing the market for connected water heaters.

### **CTA-2045B**

A. O. Smith understands that the Consumer Technology Association (CTA) is in the process of finalizing a revised version of its CTA-2045 standard. While A. O. Smith was a key

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<sup>1</sup> DOE's Compliance Certification Database for Residential Water Heaters, [https://www.regulations.doe.gov/certification-data/CCMS-4-Water\\_Heaters.html#fq=%7B!tag%3DType\\_of\\_Heater\\_s%7DType\\_of\\_Heater\\_s%3A%22Electric%20Storage%20Water%20Heater%22&fq=Uniform\\_Energy\\_Factor\\_UEF\\_d%3A%5B1.0%20TO%20985%5D&q=Product\\_Group\\_s%3A%22Water%20Heaters%22](https://www.regulations.doe.gov/certification-data/CCMS-4-Water_Heaters.html#fq=%7B!tag%3DType_of_Heater_s%7DType_of_Heater_s%3A%22Electric%20Storage%20Water%20Heater%22&fq=Uniform_Energy_Factor_UEF_d%3A%5B1.0%20TO%20985%5D&q=Product_Group_s%3A%22Water%20Heaters%22).

participant in the working group and supports the revisions represented by CTA-2045B, EPA should realize that manufacturers are currently in process of complying with the regulatory requirements in WA and OR that require CTA-2045A. In order for a smooth transition to occur, A. O. Smith urges EPA to harmonize its requirements with those states and consider a mechanism to update the version without a larger specification review as the regulatory bodies transition to CTA-2045B.

### **Draft 2 of the Connected Test Procedure**

A. O. Smith was pleased with many of the revisions represented in Draft 2 of the Connected Test Procedure. DOE has incorporated some significant improvements into this version, especially surrounding advanced load-up and reheat measurement. A. O. Smith has one additional question that it would like additional clarification on and seeking edits to the test procedure to address testing the loss of connectivity. More specifically, there is a new section called "loss of connectivity," which removes connectivity for a time specified by Energy Star 4.D.c:

*Loss of connectivity: A 'loss of connectivity' event is defined as 5 consecutive polling events from the DRMS not responded to by the CWHP, or vice versa. Note: DR program implementation may set the polling time interval, so the elapsed time for a 'loss of connectivity' event may vary.*

A. O. Smith questions what time will be used during the test. CTA-2045 specifies that the UCM must poll the SGD as follows:

*Sent from the UCM to the SGD when outside communication status is gained or lost. When in the "communicating" state, this command is resent every 1 to 5 minutes so that SGD's may know that the UCM is still attached and working.*

While the ENERGY STAR specification requires that the unit should return to normal after 30 min, it does not specify how the test will be run to validate this. A. O. Smith respectfully requests that DOE add more clarity to this section of the test method.

In conclusion, A. O. Smith appreciates the opportunity to provide this detailed feedback with EPA and DOE on the revisions to draft 1 of the 4.0 specification and draft 2 of the connected test procedure. Should EPA or DOE have any additional questions or need additional information, please do not hesitate to contact me as we would welcome the opportunity to further work together on the ENERGY STAR water heater program.

Best Regards,



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