



September 9, 2011

Ms. Abigail Daken
ENERGY STAR® Water Heater Program Manager
U.S. Environmental Protection Agency (EPA)
1200 Pennsylvania Avenue NW
MC 6202J
Washington, DC 20460

Subject: ENERGY STAR® Version 2.0 Draft 1 Commentary

Dear Ms. Daken,

On behalf of Rheem Water Heating, I want to re-emphasize our support of the U.S. EPA efforts in the development of a second generation (Version 2.0) ENERGY STAR® Water Heater Product Specification for Residential Water Heaters. Accordingly, Rheem is submitting further commentary in response to the EPA request and the ENERGY STAR® Version 2.0 Draft 1 Water Heater Product Specification document for Residential Water Heaters. Our commentary falls into three main categories:

1. Total System Efficiency for Add-On Heat Pumps:

Not requiring Supplier testing of representative tank/heat pump water heating system combinations is a significant hole in the specification. When you install an add-on heat pump to an existing field installation, how do you know the efficiency of the new “system” meets ENERGY STAR® minimum requirements? The current U.S. Department of Energy (DOE) test procedure (10 CFR 430, Subpart B) includes provisions to test an add-on heat pump system that is supplied without tanks. It requires use of a “standard” 47 gallon tank/electric water heater that is capable of meeting the minimum energy conservation standard, cited partially below for reference.

DOE procedure reference:

“4.10 Heat Pump Water Heater Storage Tank.

The tank to be used for testing a heat pump water heater without a tank supplied by the manufacturer (see Section 1.12.3b) shall be an electric storage-type water heater having a measured volume of 47.0 gallons □ 1.0 gallon 178 liters □ 3.8 liters); two 4.5 kW heating elements controlled in such a manner as to prevent both elements from operating simultaneously; and an energy factor greater than or equal to the minimum energy conservation standard.....”

While this approach was perhaps reasonable at the time the standard was written, the primary objective being to test add-on heat pumps for minimum EF compliance, it is unproven that a 47-gal standard tank can represent all electric models and gallon capacities that will be found in the field (40, 65, 80, 120 gallon units) and serve to yield minimum ENERGY STAR[®] (2.0 EF) levels with an add-on HPWH module.

Prior testing has shown that the overall EF and performance of a HPWH system depends on several aspects including: tank size, insulation, inlet and outlet fittings, and controls. Not all tanks and electric water heaters are designed or made the same. Accordingly, ENERGY STAR[®] eligibility for add-on HPWH's should be treated as a system which includes HPWH module and specific tank by model number and related components. Rheem recommends add-on heat pump manufacturers test "HPWH module with specified tank models and components" as a system and list accordingly. This approach is consistent with Solar Water Heating System ENERGY STAR[®] listings where solar panel, tank and components play a key role and are certified as a system (SRCC_OG300).

2. Point of Use Electric Category:

From EPA's last webinar on this subject, Rheem indicated that it would propose a revised Qualification Criteria for Point-Of-Use Electrics to include mini-tank products. Attached in Appendix A is our proposal. We ask that you please consider the revised POU Electric Qualification Criteria and discuss with DOE and other stakeholders to see if an agreement in principle can be reached. Should an agreement in principle be reached to pursue, Rheem will be happy to assist in a stakeholder effort to develop a "revised mini-tank test method".

3. Whole Home Gas Category Merging

Rheem recognizes and supports the evolution of new residential energy efficient technology as evidenced by our recently released new products: high efficiency conventional gas storage; heat pump electric water heater; and condensing instantaneous models.

ENERGY STAR[®] qualified products and the associated product certification marking has created further Consumer awareness of the water heating category and has motivated the creation of Federal, State and Energy Utility incentive programs across the U.S. in the form of rebates, tax credits and other discounts to enhance Consumer benefit. These benefits have also jump started the market transformation to high efficiency product choices.

Reducing or removing these minimum qualification requirements will limit the opportunity for industry partners to target incentives towards the condensing category and as a consequence will limit and delay the transformation of the market to this high efficiency solution.

Therefore, with respect to the ENERGY STAR® Version 2.0 Draft 1 proposal to combine both high efficiency gas storage (non-condensing and condensing) categories into one, Rheem holds to the position of maintaining current ENERGY STAR® criteria for each and to keep the two categories distinct.

Specifically, for Residential gas condensing water heaters the current criteria is:

- A minimum Energy Factor of 0.80
- A minimum First-Hour Rating of 67 gallons-per-hour
- A minimum eight-year warranty on the sealed system
- Compliance with ANSI Z21.10.1/CSA 4.1

For ENERGY STAR® Revision 2.0, Rheem does ask the EPA to consider aligning the warranty period of the high efficiency condensing water heater to match that of the high efficiency non-condensing water heater, specifically change the current gas condensing eight year to “A minimum six-year limited warranty on the sealed system” to match the current non-condensing criteria. We believe this change will not impact the reliability of the product but can impact the cost and should enhance Customer ROI when considering this technology for their application.

Thank you for the opportunity to provide commentary and respectfully request that the Department consider our commentary outlined above. Should you have any questions please feel free to contact me directly.

Kind regards,



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APPENDIX A

Qualification Criteria:

Point-Of-Use Electric Units

Criteria	ENERGY STAR® Requirements
Energy Descriptor	<ul style="list-style-type: none"> • $EF \geq 0.97$ (instantaneous) • Watts Loss ≤ 35 (mini-tank)
Capacity	<ul style="list-style-type: none"> • Less than 20 gallons capacity • Less than 36"x25"x24" product footprint
Safety	<ul style="list-style-type: none"> • Maximum Input 12kW • ANSI/UL499 (instantaneous) • Flicker – units shall perform within acceptable region defined by IEC 61000-2-2 (Instantaneous) • UL174 (mini-tank)
Warranty	≥10 years on heat exchanger and 5 years on parts
Test Method	<ul style="list-style-type: none"> • DOE 10CFR430 Subpart B, Appendix E (instantaneous) • (Mini-Tank) Test Method from California Code of Regulations Title 20, Chapter 4, Article 4, 1604(f)(5) (*some revisions needed)

*Please note that revisions needed will allow the mini-tank test method to more closely relate to the DOE Test Procedure.