

## Water Heater Version 2.0 Spec - Stakeholder Comments Draft 1

Topic	Comment	EPA Response
<b>General - Draft 1</b>		
Whole Home Gas Categories Merging	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, EPA should maintain current ENERGY STAR® criteria for each and keep the two categories distinct.	Consistent with EPA policy, consumers are best served by technology neutral ENERGY STAR specification.
	While we support EPA's combining the "gas-fired storage" and "gas condensing" categories, we are disappointed in the minimum efficiency requirements proposed for them (EF = 0.67). In order to uphold the integrity of the Energy Star brand for this product category, EPA should establish a minimum EF rating of at least 0.80.	At this time, EPA believes that it is not appropriate to increase the efficiency levels for this product category. It is EPA's intention to address this issue during the next criteria revision, before 2015 when the new federal standards go into effect, and there is ample time for gas condensing water heaters to reach the residential market.
	Combining the gas condensing and high efficiency storage categories is consistent with our understanding of how the ENERGY STAR Program works in other product areas and of the realities of the water heater market.	Generally accepted and EPA will take this approach.
Definitions	The description of "Included Products" is unnecessarily restrictive because of the added phrase "which are intended only for sale in the residential market." There are certain low use, non-residential applications (e.g. kitchen/lunchrooms and lavatories in office buildings and factories or some types of small businesses) where the hot water load can be satisfied by a "residential" water heater. We suggest that this phrase be deleted from the description, and replaced with "Only products which meet the definition of a residential water heater"	EPA recognizes that many products are appropriate either for residential use or for commercial use. Accordingly, we will modify this definition.
	The definition of Point-of-use electric water heater (Item A.a.iii) confuses "table top water heaters" with (electric tankless and small tank) point of use water heaters, at lines 43 and 73. The allowed dimensions, 36x25x24 inches) are those associated with under-counter storage electric resistance water heaters with capacities that can range up to 40 gallons (or more?)	It is not EPA's intention to include these units; accordingly a definition based on capacity (< 20 G) as well as input power is proposed in Draft 2.
Test Requirements	In conjunction with our comment on the definition of "Basic Model Group" the last sentence of B. 2) will have to be modified to reflect any changes made to address that comment. Also, in conjunction with our recommended criteria for small storage volume POU models, the Test Method table in C. will have to be modified to include the standby loss test procedure that is to be developed.	EPA proposes waiting to include small storage volume, point of use units until DOE develops or validates a test method for them.
General	While it is clearly stated in draft 1 that higher input heaters (EPACT-covered) such as hybrids will not be included at this time, we continue to support their inclusion in the program. Using the same criteria as the 25C Federal income tax credit would be an appropriate way to do so.	EPA appreciates that many higher input heaters are designed and marketed for residential use, and may present good, energy efficient solutions for some consumers. However, this specification will continue to apply only to residential units as distinguished by EPCA, as amended. EPA will consider labeling EPACT-covered water heaters based on a separate specification during 2012.
<b>Gas Storage- Draft 1</b>		
Warranty	The warranty criteria for gas storage water heaters should be changed to 6 years. As explained in the draft specification, EPA had to choose between the current, different warranty criteria for high efficiency gas storage and condensing models. However, the only gas storage water heaters currently listed in the Energy Star program are high efficiency models meeting the 6 year warranty criterion. In view of that, the choice of the 8 year warranty criterion to which no Energy Star gas water heaters currently comply seems illogical and ill-advised.	EPA has determined that a 6 year warranty is sufficient guarantee of product quality, and proposes such, in accordance with this recommendation, in Draft 2.
<b>Solar - Draft 1</b>		
General	We believe that solar water heater systems should remain in the water heater ENERGY STAR program, and should convert to the SEF as the performance measurement instead of SF. The argument of excluding due to cost effectiveness is not effective, as other technologies which have similar economics are included (gas tankless heaters, for example, according to several sources, including Consumer Reports, have very long payback periods).	EPA will strive to address payback concerns in all product categories.
	Another measure of cost-effectiveness is how much savings is leveraged from incentives. In an analysis conducted in 2009 by U.S. Department of Energy's Energy Utility Solar Water Heating Initiative Efficiency and Renewable Energy Office1, SWH (offsetting natural gas) was found to be the second most effective technology in savings/rebate amount.	Because ENERGY STAR is a consumer label, EPA considers cost effectiveness from the standpoint of the individual purchaser. EPA takes national incentives in to account when calculating cost effectiveness.

Cost-effectiveness	Solar water heating markets exist in areas where energy rates are tiered and high energy users have some portion of their consumption priced in the higher tiers. State and federal incentives, consumer awareness and increased product sales volume also expand markets for solar water heaters. The prospect of de-listing solar water heaters from the Energy Star Program causes great concern to those solar companies who participated in developing the Energy Star Water Heater Program, and who invested their time and resources to earn the Energy Star listing.	EPA recognizes the investment solar water heater manufacturers made in ENERGY STAR, and will carefully consider any decision.
	Excluding SWH from ENERGY STAR could send a confusing message to consumers. In essence, this exclusion could convey to consumers that SWH technology does not perform well when it comes to saving energy and avoiding emissions. Yet those are the very two attributes that consumers associate with SWH.	EPA strives to provide accurate consumer information. Our label is one way we do this, but we also have information on our website. This would be maintained regardless of labeling.
	The Energy Star label contributes significantly to a product's certification value, because Energy Star is a widely-known mark. By displaying this mark near the certification mark, product sellers increase customer confidence, leading to a competitive advantage.	
Ideas on more effective tools than ENERGY STAR labeling to encourage adoption of solar water heaters.	U.S. solar thermal sales are growing at an annual rate of 6% since 1991. In the two years since launching the ENERGY STAR label for SWH, incentive programs in at least 11 states have used the ENERGY STAR label in their programs. In short, there are no better tools to encourage solar adoption.	EPA appreciates the growing involvement of solar water heater manufacturers and program sponsors. We have received some feedback about the effectiveness of the ENERGY STAR label in the solar water heater market. EPA has not changed the solar water heater proposal in Draft 2, as this dialogue continues.
	In the course of developing incentive programs for renewable energy products, the Energy Star designation, coupled with solar energy system certification, increases the comfort level of renewable energy program administrators. Removing the Energy Star designation would likely have a deleterious effect on market acceptance of solar water heating systems.	
<b>Tankless - Draft 1</b>		
Electric Tankless	EPA should include a statement that appears as follows: "Electric Tankless Water Heaters with an input greater than 12 kW up to 25kW, whether Whole-Home or Point-of-Use units, will be included under this specification upon inclusion of such units in section 321(27)(B) of the Energy Policy and Conservation Act (42 U.S.C. 6291(27)(B))."	Draft 2 includes language to this effect.
	Electric Tankless models should require modulating. i.e. if there is only a 5 kw demand, the unit should not activate its full capacity.	EPA agrees that modulating input is critical to the energy efficiency of these units. We believe this is covered by the requirement that the outlet water temperature be adjustable.
Editorial	The table in 3.B.b (line 144 of draft 1), under the "Safety" entry, references either ANSI Z21.10.1 or Z21.10.3, depending on burner size. This is incorrect, as all gas tankless (instantaneous) heaters, regardless of input rate, are covered in Z21.10.3. Volume 1 should not be referenced at all in this context.	Thank you for bringing this to our attention. We will investigate the safety standards and alter the specification as appropriate.
<b>Heat Pump Water Heaters - Draft 1</b>		
General	The current ENERGY STAR Program for Heat Pump Water Heaters is falling short of its promise to consumers, more specifically those consumers in colder regions of the country. One of the key tenets of ENERGY STAR is that labeled products "deliver the same or better performance as comparable models while using less energy and saving money." To imply, through lack of education, that this product is right for everyone is not accurate, especially for consumers in the colder climates.	EPA recognizes the need for careful customer education regarding heat pump water heaters, and is considering several measures to address this. We do not believe that a regional label for water heaters is practical at this time.
Tiered Climate Rating Method	EPA should ensure that its own specifications are appropriate to the field use of this technology, including the conditions under which they are rated and the features that will maintain the energy savings and consumer satisfaction. EPA should adopt a tiered HPWH criteria based on climate.	However, we will investigate specific parts of the Northern Climate Heat Pump specification, and consider including those relevant to the nation as a whole in the Heat Pump Water Heaters requirements.
	At this time, we are not recommending a whole sale adoption of the latest Northern Climate Specification for Heat Pump Water Heaters. Rather, we advocate adoption of a similar tiered test method that uses a lower ambient air temperature.	In addition, we will consider requiring product labeling regarding the need for additional features in cooler climates. Third, we will use the platform of the ENERGY STAR heat pump water heater page to educate consumers about choosing products for use in northern climates. We look forward to working with partners knowledgeable about the specific requirements of northern installations to develop appropriate content.
Installation	We envision the potential development of an ENERGY STAR tool to help consumer/contractors in colder climates determine if their particular home is an appropriate fit for a heat pump water heater, where in the house is ideal and determining the right size water heater for their family's needs.	
<b>Add-On Heat Pump Water Heaters - Draft 1</b>		

General	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 energy saving potential of add-on HPWH rests largely on their use with existing water heaters which are already installed. As such, we are more interested in recognizing a lower cost improvement in efficiency rather than performance at a specific level.
	Add-on heat pump manufacturers should 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).	
	We support inclusion of add-on heat pump water heaters, and agrees that the proposed language may be a good-enough solution to the controls challenges for now.	EPA will work with stakeholders to improve the WH requirements in later revisions.
	In addition to the reliability concerns that have been previously raised, we have concerns over the difficulty in predicting the savings an add-on heat pump unit could offer given the high variability in conditions from home to home. Until the analysis and data showing savings and reliability of these units from a broader range of usage patterns is available, we recommend EPA does not extend the label to these categories given the potential for significant negative experiences for consumers.	EPA recognizes the difficulty of assigning a specific consumption number to add-on heat pump installations, but is working with manufacturers to develop data on EF improvement.
	The other major commercial issue that is raised by installing an add-on HP onto a storage heater is the problem with the safety certification of the storage heater. The factory wiring of a heater is obviously a part of the certified construction of the heater (by UL, or whomever), and the provisions of that certification clearly state that if any modifications are made to the construction of the heater, the safety certification is voided. Since all add-on HP units (of which we are aware) require modification of the wiring of the storage heater in order to tie the HP unit into the thermostat circuitry, such factory wiring modification constitutes a change to the certified construction, thus voiding of the certification.	EPA is actively pursuing this issue in discussion with safety certifiers, add-on heat pump manufacturers, and those familiar with add on heat pump field installation programs.  If this issue is not adequately addressed, EPA will not include add on heat pump water heaters in the scope of the specification.
	We take the position that add-on heat pump units should NOT be included in ENERGY STAR, as we do not believe the program should endorse putting a consumer in the situation where a product’s safety certification is no longer valid, and where there is no practically administer-able warranty available to that consumer (unless ALL warranty requirements are removed from the ENERGY STAR criteria).	
Warranty Requirements	We do not support EPA’s proposal to make add-on HPWH manufacturers responsible for any portion of the warranty for the tanks to which they are attached. We also suspect that no manufacturer would willingly submit to being made responsible for the performance or integrity of a product that they neither manufactured nor installed	After consideration of stakeholder feedback, EPA agrees it is not practical to require add on heat pump manufacturers to assume the warranty of water heaters from other manufacturers. The draft 2 proposal includes specific requirements for add on manufacturers to warn consumers that installation of their product may void the manufacturer’s original warranty. EPA requests stakeholder feedback on this proposal.
	The warranty of the system which includes an add-on HP unit from one manufacturer and a storage heater from a different manufacturer is difficult, to the point of nearly impossible, to administer. We strongly believe that allowing the option of a warranty only on the add-on unit and a voided warranty on the storage heater is not something that is in the best interests of either the consumer or the ENERGY STAR brand.	
<b>Point of Use - Draft 1</b>		
General	We ask that EPA consider their specific POU standards as outlined in Appendix A of their comment for this product category.	EPA will carefully consider these suggestions.
	These products impose the same or more electric demand on the grid compared to a typical electric storage water heater, and substantially more demand than a heat pump water heater.	EPA has not seen reliable evidence either way about whether these products impose additional or more problematic demand.
	While there may be valid reasons for using POU water heating products in a residential setting, energy and cost savings are not among them. Therefore there is no valid rationale that we can see for including them in the Energy Star program, which is, above all, supposed to be about providing homeowners cost-effective energy savings. Our funding utilities would no doubt be forced to exclude these products from their water heater efficiency programs, if not on the basis of the electric demand profile of the technology, then on the basis of a lack of cost-effectiveness.	Upon further consideration, EPA believes that the ENERGY STAR label may not be an effective consumer tool for POU water heaters. The choice whether to purchase a POU heater for residential use is complex, with many different scenarios and choices of type of product to use. Consumers may be better served by more nuanced education than by a binary label.
	We do not support the inclusion of Point-of Use (POU) electric water heaters in the Energy Star program for residential water heaters. There is no extra ordinary energy design options required for the electric POU water heaters to meet the EF of ≥ .97 that is easily attainable within the tolerances in the water heater test procedure. There are also no assurances that the POU water heater will be installed near the fixture.	EPA has been and will continue discussing the details of use scenarios for POU heaters with stakeholders.

	<p>We support the electric point-of-use water heater category, and the list of required features for these products (line 135).</p> <p>We would like to see more data and analysis to support the inclusion of the tankless point-of-use electric water heaters. More specifically, we would like confirmation that these products will yield consistent, cost-effective energy savings without any unintended consequences related to peak demand spiking or unintended fuel switching.</p>	<p>Thank you for your feedback.</p> <p>EPA would also be interested in seeing such data, particularly studies of field situations.</p>
Criteria	<p>The draft specification recognizes POU models that may have small storage volume but does not specify any qualification criteria. We recommend the following to correct this matter: Energy Descriptor: Standby Loss <math>\leq</math> 35 W. Storage Volume: Less than 20 gallons. Safety: UL174. Warranty: <math>\geq</math>10 years on heat exchanger and 5 years on parts. Test Method: Modified standby loss measurement from DOE Residential Water Heater Efficiency Test Procedure (Specific recommendation being developed.)</p>	<p>DOE advised that developing and/or validating a standby loss test would take several months. Also, DOE is in the midst of developing an EF test method for these units. Given this, EPA has chosen not to pursue a standby loss test method. As written in Draft 2, small storage units would need to meet the same requirements as other POU units, including <math>EF \geq 0.97</math>, and output temperature control.</p>
Definition	<p>We support legislative language to be contained in the package of national consensus agreements currently pending in the U.S. Senate that would change the input limit in NAECA to include EIWH with an input of 25kW or less.</p>	<p>Thank you for the information; EPA recognizes this with language allowing units up to 25 kW to be included if legislation changes.</p>
	<p>“Activation” should be defined. We suggest “Activation is when the water temperature exiting the water heater is at least 105F”.</p>	<p>Thank you for the suggestion.</p>
	<p>We're really concerned about the POU definition that would consider 40 gallon "TableTop" electric resistance water heaters as eligible for EnergyStar. This is not what we envisioned when agreeing that POU could include very small tank units, and we believe it would completely loophole and subvert the intent of rejecting tank resistance water heaters from the program, from the beginning.</p> <p>The addition of the “envelope” specifications of 36”x25”x24” appears to open the POU category to small storage electric heaters, not just tankless electric heaters. Unfortunately, since the DOE test method to determine EF does not apply to heaters less than 20 gallon capacity, small storage heaters are still excluded from coverage.</p>	<p>Draft 2 proposes a limit of 20G instead of a physical size constraint.</p>
Test Method	<p>We understand that some of the objections to the 25kW limit are based on liability concerns for manufacturers who might potentially advertise products as having a specific energy factor prior to an adequate test procedure being developed and approved by the U.S. Department of Energy (DOE).The energy star product specification should contain a simple subparagraph that allows for the input-power limit to be updated as soon as the pending legislation is enacted.</p>	<p>Draft 2 includes language to this effect.</p>
	<p>We support the addition of the “flicker” requirement to the electric tankless criteria, and agree that the proposed IEC test method is an appropriate method of test.</p>	<p>Thank you for your input.</p>
Low Flow Rate Requirement	<p>As EPA is aware, when a unit is turned on to heat water, that heat remains in the system momentarily even after the unit is turned off. In order to meet a requirement for activation at .3 gallons-per-minute (GPM) or less, the excess heat required by the unit can compromise the unit's elements and reduce their lifespan. This heat can also potentially present a scalding hazard for consumers when the unit is subsequently used. This requirement should be removed. If EPA is insistent on including this requirement, we suggest the following alternative requirements which would alleviate our performance concerns: “Low Flow Rate Requirement – (a) 0-5kW: Activation must occur at a flow rate of .3 GPM or less; (b) 5kW and higher: Activation must occur at a flow rate of .5 GPM or less.”</p>	<p>EPA appreciates the concern for consumer safety and will consider this alteration.</p>
	<p>The inclusion of a low flow rate requirement is important, and we strongly support it. While there is not a currently included test method for flow rate, we believe that it should be relatively easy to establish one.</p>	<p>DOE and EPA will work to identify an appropriate test method.</p>
Warranty	<p>We propose the following reasonable alternative: “Warranty – Warranty <math>\geq</math> 5 years on heating chamber and 1 year on parts.”</p>	<p>EPA agrees that an alternate warranty requirement gives sufficient assurance of product quality and has changed the requirement to 6 years on the heating chamber and 1 year on parts.</p>
	<p>The criteria for Point-of-Use (POU) electric water heaters should be modified. The warranty specification appears to have been copied from the existing specification for gas tankless water heaters. This may not be appropriate. Electric POU water heaters are different than gas tankless models and the warranty specification should be based on an analysis of the warranties currently offered for POU models. The manufacturers of electric tankless models indicate that a 5 year warranty is a more appropriate specification.</p>	

	<p>In order to be able to use the unit as a booster, the unit must be able to take warm water in as well as be able to handle a demand that requires a small temperature raise without overshooting. The unit must be temperature controlled within a reasonable fluctuation range. We suggest modifying "Temperature Adjustment" to "Temperature Controlled to +/-3 degrees F".</p>	
<p>Booster Capability</p>	<p>Having the ability to utilize EIWH as a booster can be a plus in certain situations but it is our view that this is properly recognized as a consumer feature of choice at the time of purchase as opposed to a requirement for the Energy Star program. The most efficient use of EIWH is to run cold water lines to the heater and to heat at the POU. By including a requirement that EIWH units have the capacity to act as a booster, and therefore encouraging the use of EIWH as a supplement to a central tank heater, this provision would actually reduce the energy efficiency of the system</p>	<p>EPA has removed the booster requirement from the Draft 2 proposal.</p>