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**Subject:** A.O. Smith Corporation comments on ENERGY STAR for Water Heaters 2.0 Specification, draft 3

### **ENERGY STAR® for Water Heaters 2.0 Specification – Draft 3 Comments – AOSmith**

A.O. Smith Corporation is a leading manufacturer of residential and commercial water heating products, and is an ENERGY STAR Partner. We appreciate the opportunity to comment on draft 3 of the ENERGY STAR for Water Heaters 2.0 Specification.

All EPACT-covered residential water heaters should be included in the ENERGY STAR program, not just hybrids. In the March 19, 2012, cover letter from EPA, you acknowledge that some EPACT heaters are intended for the residential market. We strongly agree with this assertion, and believe that every statement made in the “Hybrids” paragraph which justifies the inclusion of hybrid heaters is equally applicable to high efficiency storage water heaters (with a capacity/input ratio over 1 gallon per 4,000 Btuh):

- *“These units can be designed to have some of the efficiency and performance advantages of instantaneous heaters, and some of the ease of installation and performance advantages of storage water heaters.”* - EPACT-covered storage heaters can be (and many are) designed to operate at efficiency levels as high as or higher than many instantaneous (tankless) heaters, and to provide continuous hot water like tankless heaters. Being storage heaters, they inherently have the ease of installation and performance advantages of storage heaters.
- *“Because their efficiency and installed cost lie between that of instantaneous water heaters and storage water heaters, these products present an attractive alternative to residential consumers.”* – Apparently this comment assumes that the efficiency and installed cost of tankless heaters is relatively high, and the efficiency and installed cost of storage heaters is relatively low. There are EPACT-covered residential gas storage water heaters on the market that have efficiencies as high (or higher) than many of the ENERGY STAR eligible tankless heaters, have equal or lower installed cost than tankless heaters, and are an “attractive alternative” to residential consumers – as is borne out by the number of such heaters (from multiple manufacturers) sold in the USA today.

- “...including hybrid water heaters as part of the ENERGY STAR residential specification is consistent with the program’s objective of helping consumers identify the most efficient among the product options available to them.” – This statement is equally valid if the word “hybrid” is replaced with the phrase “EPACT-covered storage”. EPA’s continuing exclusion of highly efficient, high performance, storage water heaters from the program when they achieve all of the stated objectives that make hybrid heaters attractive for inclusion in the program is technology biased, and contrary to the goals and principles of the program, and hinders a consumer’s ability to identify the most efficient product options available to them.

We have the following comments regarding the draft eligibility criteria:

- Definitions, lines 33-35 – the definition of hybrid is “... *intended to limit the coverage of this specification to units with hot water delivery capability appropriate for residential use.*” – storage heaters above 75,000 Btuh input (with a capacity/input ratio over 1 gallon per 4,000 Btuh) can (and do) provide equivalent water delivery capability, and should also be included.
- Excluded Products, lines 98-100 – excludes “...*products intended only for commercial use...*” – just because a storage heater is EPACT-covered (input above 75,000 Btuh), it is NOT automatically “*intended only for commercial use*”. Some higher input storage heaters can be (and are) designed specifically for residential use – just like some hybrid heaters.
- Gas Hybrid Units (criteria table), line 195 – We agree with the less than 20 gallon criterion of 0.75 EF, but do not agree with the over 20 gallon TE criterion only being 0.80. First of all, an EF of 0.75 is not equivalent to a TE of 0.80 (80%) – it is a higher efficiency level. Secondly, as is discussed in the notes, 80% TE is the Federal minimum efficiency level for EPACT-covered heaters, and we neither understand, nor agree with, an ENERGY STAR requirement that is no higher than the allowable minimum level. We do not believe that the standby loss argument put forth in the notes (lines 201-202) is compelling justification. We believe that the appropriate levels would be 0.75 EF and 90% TE. We have comparison data that we are willing to provide under confidentiality protection that will illustrate our position.
- Safety, lines 195 and 222-227 – We **STRONGLY** disagree with the discriminatory requirement for FVIR provisions for several reasons:
  - First and foremost, whether equipped with FVIR technology or not, all water heaters are safe products. It is notable that the agency that regulates consumer products, the Consumer Products Safety Commission (CPSC), has never recalled any water heater, whether floor mounted or wall mounted, because the heater was not equipped with FVIR technology.
  - Mere height of installation (really, height of the air intake into the combustion chamber) does not guarantee FV resistance, any more than installing a conventional heater on an 18” stand guarantees FV resistance. Many factors, including air movement, affect the ignition of flammable vapor by a heater.
    - It is relevant to note that most tankless heaters (and high efficiency storage heaters) are fan-assisted combustion, meaning they have blowers that draw in the air needed for combustion. Therefore, the operation of the heater itself creates air movement that can affect the ignition of FV by the heater.
  - Tankless heaters, though usually installed at “eye level”, can be installed within 12” of the floor (most models, anyway). Floor mounted heaters can have their air intake at any level on the heater – such as near the top, which would put it at around 36” for most hybrids, and could be around 60” for a storage heater. Therefore, even for adherents of the “elevation theory” for FVIR compliance (and the CPSC is not one of them!), merely using floor versus wall mounting as the differentiating criteria is flawed.
  - EPA’s conclusion that FVIR technology only applies to floor-mounted units sold in the residential market, is incorrect. All gas water heaters that have an input rating below 75,000 Btu/h are governed by ANSI Z.21.10.1 (Volume 1), a standard that requires FVIR compliance. All Volume 1 water

heaters, whether installed on wall or floor, in a residence or in a commercial space, must be FVIR compliant.

- Gas water heaters with an input rating above 75,000 Btu/h, including all tankless water heaters, are governed by a different standard, ANSI Z.21.10.3 (Volume 3). Volume 3 does not require FVIR compliance, regardless of the manner or location of installation.
- While NAECA and EPACT may apply to residential and commercial products respectively, ANSI Volumes 1 and 3 do not and the Volumes are not synonymous with NAECA and EPACT. There are commercial products in Volume 1 and there are residential products, such as tankless water heaters, in Volume 3.
- None of the tankless water heaters on the market today comes equipped with FVIR technology, and they will ignite flammable vapors that reach their igniter and main burner, even if the tankless water heater is installed on a wall, 18" or more off of the ground.
- EPA's apparent stance (that floor mounted gas water heaters are less safe than wall mounted ones) actually may have the consequence (we assume unintended by the EPA) of giving owners of tankless products a "false sense of security" that they are protected from their misuse of flammable materials because tankless products do not ignite flammable vapors. Since tankless water heaters do not come equipped with FVIR technology, the owner is not protected from their own misuse of flammable materials.
- The EPA's proposed stance that a residential product must come equipped with FVIR technology to be eligible for ENERGY STAR is unprecedented and, if applied uniformly instead of to select products based on inconsistent and unfounded criteria, would prohibit a multitude of gas-fired appliances or appliances with an electrical relay, such as furnaces, dryers, or refrigerators, from being ENERGY STAR eligible. The only products that would be ENERGY STAR eligible are Volume 1 gas water heaters.
- We believe that safety standard issues are best left to the bodies responsible for implementing them - in this case, ANSI. If the EPA chooses to address FVIR technology in the context of ENERGY STAR, the EPA should be consistent and adopt a level playing field. If the EPA believes FVIR compliance is a component of ENERGY STAR, the EPA should exclude all water heaters from the program that do not comply with ANSI Z.21.10.1 FVIR requirements. This would eliminate any tankless water heaters from the program unless they have FVIR technology, all of which currently do not. If the EPA believes that tankless water heaters should remain in ENERGY STAR, then EPA should include other Volume 3 water heaters (not only gas hybrids, but larger storage-volume heaters as well) that meet the same standards that tankless water heaters are required to meet.

There are several changes in draft 3 with which we agree:

- We support the continued inclusion of solar water heating systems, and agree with changing from SF to SEF as the descriptor. The values of 1.8 and 1.2 SEF for electric and gas backup (respectively) in line 235 are appropriate.
- We agree with the exclusion of add-on heat pump water heaters (HPWH's) in the version 2.0 specification due to the warranty and safety certification concerns noted, but also agree with the continued surveillance of that class of product to determine if there is a way to include them into the program at some future date.
- We also agree with the exclusion of POU electrics from version 2.0, as their energy savings is primarily dependent on how/where they are installed in a residence. We do support EPA continuing to consider how to best include them (both tankless and storage) in the future, however. Since their energy savings is system-based rather than product-based, perhaps the ENERGY STAR for Homes program is a more appropriate avenue to consider.
- We support changing the blocked condensate "alarm" to an "alert" on HPWH's, and are agreeable to an alert when the compressor is locked-out by the user for more than 48 hours.

We appreciate the opportunity to provide these comments on the ENERGY STAR Specification, and will be happy to answer any questions that you may have regarding any of the points we raise.

Regards,

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