Comments on the Energy Star Residential Water Heaters Second Draft Criteria Analysis

Thank you for continuing efforts to develop an Energy Star specification for water heaters. Even though it is has been difficult, because such a large fraction of energy is used in homes by this appliance it is critical that an Energy Star label be developed for water heaters.

Although I understand that Energy Star can not wait until the test procedure is fixed, I would like to emphasize my earlier statement on the importance of revising the Energy Factor (EF) test procedure for water heaters. It is important that the test procedure actually becomes a reasonable tool to measure the field performance of water heaters. The discrepancies on the relative lab versus field ratings of tank-type and tankless water heaters are likely to cause more difficulties in the future.

As a general issue, I don't think condensing water heaters should be considered separately from non-condensing water heaters. This distinction introduces an artificial category in the water heater market. Since Energy Star is about pulling advanced technologies onto the market, there should not be any boundaries or barriers between different types advanced water heaters. The EF of a condensing water heater is higher than that of the proposed advanced non-condensing water heaters. It will automatically qualify as an energy star water heater. There is no reason to make it a separate category. This reasoning also applies to heat pump water heaters. An EF of 2.0 is sufficient to limit electric storage water heaters to heat pump technologies. There is no reason to treat heat pump water heaters separately.

About high-performance gas storage water heaters, having a limited three-year timeframe on 0.65 EF water heaters does not make sense. Although there are 0.65 EF water heaters currently on the market, these are not drop-in replacements for existing water heaters. They are all power vent and power direct vent models. Installing these requires 110V electricity and a special vent system. They can not be easily installed as replacements for today's typical gas storage water heater. Manufacturers have indicated that they are planning to introduce gas storage water heaters with EFs of at least 0.67 that can use existing vent systems and do not require 110V electricity in the next few years. It would make more sense to issue a time-limited Energy Star label for EF of 0.62 with the announced intention of advancing it to at least 0.67 in three years. This takes advantage of the existing 0.62 models and gets the manufactures and, more importantly, the market distribution channels used to working with Energy Star labeled water heaters. This would be done without causing homeowners to face significant installation costs while the manufacturers prepare for the next step in efficiency.

About heat pump water heaters, there is no reason to limit the Energy Star label to integral heat pump water heaters. Add-on heat pump water heaters that can meet an EF of at least 2.0 on a baseline electric storage water heater should also qualify. These have the same relative efficiency improvement as integrated heat pump water heaters and have had just as much development. I don't see why they should be excluded.

Although the market share for heat pump water heaters in North America has been insignificant, it is probably worth noting that sales in Japan are expected to reach nearly 500,000 units this year.

I do want to correct you about the statement that residential gas-condensing water heaters are not in the market. At least two manufacturers of tankless gas water heaters are offering condensing residential models in the US. The second draft criteria correctly avoids making a distinction between condensing and non-condensing tankless water heaters. This lack of distinction between condensing and non-condensing should also be applied to tank-type water heaters.

Finally, the EF criteria for an Energy Star label for all tank-type water heaters should scale with the volume of the tank. Larger tanks have a more surface area, and thus higher standby losses. This effect is accounted for in the NAECA minimum efficiency standards and manufacturers have a clear understanding of how to EF varies with tank size.

Tank size and first hour rating should not be part of an Energy Star criteria. There are many applications where a smaller tank or a smaller first hour rating make sense. By limiting Energy Star labels to only higher first hour rating, you may inadvertently be encouraging people to buy a larger water heater than they need, and thus even with an Energy Star water heater, using more energy than they would than if they got a correctly sized water heater.

Again, I'd like to thank you for continuing this important, though occasionally contentious, work of developing Energy Star criteria for water heaters. I hope that Energy Star will be issue the final criteria quickly and collaborate with all its partners to increase the availability of advanced water heaters.

Sincerely,

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