



**PLUMBING-HEATING-COOLING
CONTRACTORS ASSOCIATION®**

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July 7, 2023

Ann Bailey, Director
ENERGY STAR Labeling Branch
U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460

Dear Director Bailey,

PHCC is grateful for the opportunity to submit comments on the proposed sunseting of the relevant portions of the ENERGY STAR programs which apply to Residential Heating Boilers and the creation of a new standard for air-to-water heat pumps.

The Plumbing-Heating-Cooling Contractors—National Association (PHCC) is the oldest construction trades association in the country representing approximately 3,200 plumbing and HVACR contractors employing over 64,000 professionals across the United States. Since 1883, this organization and its members have been focused on the safe installation and maintenance of plumbing and HVAC systems.

The ENERGY STAR labeling program has been very successful in guiding consumers to high efficiency products. For more than 30 years, this program has provided an easy to recognize metric which has set the bar for energy saving product incentives, promoted energy conservation, and given contractors a key tool to assure consumers that their purchases would indeed perform as advertised. The ENERGY STAR rating has truly become a benchmark in the plumbing and HVAC industry.

PHCC believes in a balanced energy policy and believes ENERGY STAR was conceived in that light. The program should recognize the best economically justified products available in all energy categories. The Association does not believe it was created to pick winners and losers among the energy categories. PHCC sees significant value in the ENERGY STAR program since consumers are assured that listed heating boilers will perform as advertised. The industry has come to rely on this program as a key marketing strategy.

PHCC opposes sunseting the ENERGY STAR Version 3.0 Specification for Residential Boilers and replacing it with a new specification for air-to-water heat pump systems.

If the Department were to eliminate boilers from ENERGY STAR, consumers will lack the benchmark of high efficiency products and in many situations could select lower efficiency products. Gas and oil-fired heating boilers are not going away any time soon, heat pumps will have trouble delivering higher temperature fluids (over 120 to 140°F) needed for certain heating systems.



The nature of a boiler system is much more complicated when considering operating efficiencies and is very different from warm air furnaces. Installed hydronic systems deal with a wide variety of applications and water temperatures, retrofits can require very high fluid temperatures. Hydronic system efficiencies can be very high with low fluid temperatures, but those efficiencies diminish as the fluid temperature goes up. For this discussion, we set aside the world of steam heat, a small market segment, but certainly an existing application.

This complicated nature continues when the idea of air-to-water heat pumps is introduced. The performance of air source heat pump products depends on a number of factors, but two key issues are the air source temperature and the desired heating fluid temperature. Colder outdoor temperatures reduce system efficiency and hotter fluid temperatures reduce efficiency as well. This is not intended to be a science white paper and PHCC does not have performance data for every product on the market, but it is challenging to make a heat pump produce 140°F water (or hotter) on a 0°F day. (Challenging means more expensive equipment, increased operating cost, and questionable reliability.)

For these reasons, PHCC would not recommend calling air-to-water heat pumps “boilers” nor would we consider any form of boiler to be a “furnace.” (Question 1) It would be more appropriate to consider these products as “Hydronic Heat Pumps” or “Air Source Hydronic Heat Pumps.” PHCC offers some additional information by way of answering some of the EPA’s questions.

The response to Question 3 would depend on several factors. The Department asks about forced air distribution systems, one common form of this is a single air handler installed next to a water heater. This water heater is special in that it has additional connection points to allow the unit to serve as the heat source for the air handler. Typically, these water heaters have a larger heating capacity to serve both the domestic hot water needs and the space heating and generally (but not exclusively) are used for apartments and condos.

There are other applications where multiple air handlers are in a structure with piping back to a single boiler heat source, this likely does not directly provide the domestic hot water supply. Both applications could be served by what the industry would consider to be a boiler. The first type of system (apartments and condos) many times is served by what those in the industry would consider to be a water heater. PHCC would recommend a separate label for the water heater that offers space heating capabilities.

Question 4 also depends on several factors. To the average installer, in today’s market, a heat pump water heater is a free-standing complete unit, perhaps larger than a traditional water heater but very similar in appearance. Most installers would not think of remote evaporators as they have not become ubiquitous. It appears that the Department is thinking of remote products when talking about ATWHP’s and that perhaps these are larger capacity units. Most installers would be replacing an existing tank product (that connects to an adjacent air handler) with another tank type heat pump product (if heat pumps become the product of choice).



These products should be rated separately, one rating for hot water (typically lower storage temperature) and one rating for heating duty (typically higher temperature). Heating capacities of space heating water heaters will also be higher, the unit must be able to satisfy demand for the space heat loss and domestic hot water consumption at the same time.

It is also important to note a couple other things, stand alone water heaters absorb heat from their surroundings. If the surroundings are the conditioned space, the heat must be replaced. A heat pump water heater, in today's market has a relatively low capacity; recovery rates indicate that rate could be 4,000 to 5,000 Btu/hr. For space heating, this is likely short at least 8,000 to 10,000 Btu/hr. The heat pump capacity will have to be larger; and if the heat source is the occupied space, the heating unit (the heat pump) has to put that heat back. In other words, a heat pump with a COP of 3 buys 1/3 of the heat from the electric company and borrows 2/3 of the heat from the space.

Questions 6 through 10; PHCC does not manufacture products and as such has no specific information on test procedures but does have some general thoughts. The discussion of outdoor air temperatures, dual fuel, and back-up heat do not seem to reflect a concern for cold weather. As things stand now, heat pumps are a good application in the southern climate zone and other moderate areas. The greatest concern to this Association is the cold climate zones. It is true that in the cold climates, there are moderate days but where the heat is needed is on the very cold days. Products will need to be rated at 5°F or lower so that on the days of the biggest demand, consumers are not forced to the highest cost fuel (likely to be electric resistance heat). Dual fuel, back-up systems, cold climate products, all of these add to the installation cost and increase operating cost; operations and controls will be more complex leading to additional maintenance or operating confusion (resulting in turning on the back-up just to make it work).

While ENERGY STAR is a voluntary program, it is a program that has far reaching effects. It makes sense to continue to have ENERGY STAR recognize the best performing products for those consumers. Without that recognition or incentive, consumers will make selections of lower efficiency products to save money on the front end. A greater concern would be economically challenged consumers who might elect to repair older, less efficient equipment just to get by.

PHCC appreciates the opportunity to have input on the possible changes to ENERGY STAR Boilers. This Association is willing to engage as necessary to help move the country forward and wishes to be a part of responsible climate solutions.

Respectfully submitted,

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