



3633 I Street, Philadelphia, PA 19134
PO Box 14818

tel: 215.535.8900
fax: 215.535.9736

December 13, 2013 (via email)

Ms. Abigail Daken
ENERGY STAR Product Development Team
US Environmental Protection Agency
1200 Pennsylvania Avenue NW (Postal Code 6202J)
Washington DC 20460

Re: Version 3.0, Final Draft Product Specification for Boilers

Dear Ms. Daken,

Crown Boiler Company continues to believe that EPA's decision to raise the Energy Star specification to 90% for gas fired boilers cannot be justified based on any reasonable cost-benefit analysis. In our opinion this specification will therefore fail to provide any significant savings to consumers and will damage the credibility of the Energy Star program itself. In addition, because this specification would apply to condensing boilers, which are manufactured almost exclusively overseas, it will also have the effect of driving US manufacturing jobs offshore.

Crown's contention that the benefits of this specification are outweighed by its costs is primarily based on the following points:

- Condensing boilers are significantly more expensive to purchase, install, and maintain than non-condensing boilers - In support of this, Crown has previously provided EPA with a cost-benefit analysis including typical installation costs provided by contractors in the Northeast where most residential boilers are installed (Attachment 1). Crown also provided a copy of an article from the UK publication *This is Money* which also supports this point (Attachment 2).
- Condensing boilers have a significantly shorter life expectancy than non-condensing boilers - In our August 29th comments on the 2nd draft of this specification, Crown provided EPA with warranty data for most comparable condensing and non-condensing residential gas fired boilers sold in the US today (Attachment 3). While we appreciate EPA's attempt to address this point in the latest specification, we believe that they have failed to do so for reasons explained below.
- Unlike most other products in the Energy Star program, residential boiler efficiency performance is highly dependent on the system in which they are installed - This is particularly true of condensing boilers, which require water temperatures below 130F in order for any latent heat to be recovered. EPA has acknowledged this and has promised to use consumer education as a method for addressing the need to select a boiler based on the characteristics of the dwelling in which it is to be installed. While we appreciate EPA's willingness to do this, the reality is that both consumers and rebate programs currently evaluate the presence of the Energy Star mark on an appliance in its own right and this is unlikely to change in the foreseeable future.

In the final draft EPA reports having reviewed comments provided by Crown and other stakeholders that the life expectancy of condensing boilers is significantly shorter than for non-condensing boilers. In line 75 of the final draft EPA concludes that they still believe that the life expectancy for the two types of boilers is similar. We believe that EPA's analysis of life expectancy is flawed for the following reasons:

- 1) We strongly disagree with EPA's conclusion, stated in line 60, that "the shorter condensing boiler warranty is not related to the condensing boiler lifetime but instead solely driven by general industry practice....". Even if all US condensing boiler manufacturers were to simply "pass on" the warranties provided to them by their heat exchanger supplier (OEM) as EPA implies in line 57, these warranties must still have some basis in the OEM's experience respecting longevity. Taken at face value, EPA's conclusion therefore does not change our opinion that retail warranties are currently one of the few impartial indicators currently available for predicting relative boiler life expectancies.

We also highly doubt that most US condensing boiler manufacturers based their warranties solely on the warranties provided to them by their OEMs. Crown and its affiliated companies purchase both aluminum and stainless steel condensing heat exchanger from two of the largest condensing boiler heat exchanger manufacturers in Europe (and therefore in the world) – the warranties for these heat exchangers are 3.5 and 5 years respectively. If EPA was correct in its assertion that market forces do not tend to maximize the feasible duration of retail warranties for condensing boilers, we would expect to see much *shorter* retail warranties applied to at least some of them.

- 2) In line 64 EPA reports having contacted "European regulators" to get information on the relative life expectancies of condensing versus non-condensing boilers in Europe. Other than the reference to the DEFRA analysis in line 66, it is unclear exactly who EPA contacted, what they were asked, and what responses were given that led EPA to conclude that there is no difference in life expectancy. We see several problems, or potential problems, with this part of EPA's analysis:
 - a) Energy regulators are not necessarily a good source of impartial information on condensing boiler life expectancy as energy conservation, not life expectancy, is their primary concern. A more balanced approach to this research should include discussions with European utilities, manufacturers, and installer trade groups.
 - b) Although Europe has far more experience with condensing boilers than does the US, this experience is still relatively short, particularly in places such as the UK. By contrast, there are decades of experience with cast iron boilers in both the US and Europe.

As an aside, it is our understanding that a principle force behind the shift to condensing technology in Europe are concerns about energy independence, since Europe is highly dependent upon gas supplied from Russia (which has a history of threatening to interrupt supply). In the US there is a large domestically supplied source of cheap natural gas and no expectation that this will change in the foreseeable future.
 - c) In the US, most residential "non-condensing" boilers have cast iron heat exchangers. Most non-condensing boilers currently sold in Europe have copper water tube heat exchangers. The latter are generally considered to have significantly shorter life expectancies than cast iron boilers (also evidenced by warranties offered for the two types of boilers). To the extent that European condensing boiler life expectancies actually do approach those of European "non-condensing" boilers, this is probably because European non-condensing boilers have a *shorter* life expectancy.
 - d) Much of the European installed boiler base is located in climates having significantly milder winters than that in the Northeast, where most US residential boilers are installed. For a variety of reasons, this can be expected to result in longer overall life expectancies in Europe. In addition,

condensing boilers installed in Europe spend less time cycling in and out of condensing mode because European hydronic systems tend to operate at lower return water temperatures. Repeated cycling in and out of condensing mode tends to concentrate the acids in the flue gas condensate, resulting in increased likelihood of heat exchanger corrosion.

- e) Many industry experts on both continents believe that European residential boilers receive more regular maintenance than do those in the US (which are often subjected to an “install and forget until it breaks” maintenance regimen). EPA acknowledges the potentially greater impact of deferred maintenance on condensing boiler longevity in the paragraph starting on line 68. For this reason, if no other, condensing boilers can be expected to have a shorter life expectancy in the US than they do in Europe.

As previously noted, this specification could significantly reduce the demand for cast iron boilers, most of which are manufactured in the US and increase the demand for condensing boilers manufactured predominantly overseas. While it is theoretically possible for US boiler manufacturers to start producing condensing heat exchangers, the reality is that the entire domestic market for all types of residential, boilers is less than 1/20th of that in Europe. These means that the volumes needed to amortize the R&D and tooling expenses for a domestic condensing boiler, and sell it at a competitive price, are simply not there. Again, the impact on US manufacturing needs to be considered in light of the fact that the benefits associated with condensing boiler technology are questionable at best.

Sincerely,



Yale Steingard
President