

May 9, 2011

Abigail Daken
U.S. Environmental Protection Agency (EPA)
ENERGY STAR HVAC Program

Re: AHRI Comments on Draft Final Version 3.0 and Version 4.0 ENERGY STAR
Specification for Furnaces

Dear Ms. Daken,

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is the trade association representing manufacturers of air-conditioning, heating and commercial refrigeration equipment. AHRI's furnace manufacturer member companies account for nearly 100 percent of the residential gas and oil furnaces sold in North America. We appreciate the opportunity to comment on EPA's draft final Version 3.0 and 4.0 ENERGY STAR specification for furnaces. In general, we applaud the extension of the effective date with regards to air leakage requirement. As previously stated in our comments on Version 3.0: Draft 2 that were submitted on February 22, 2011, we recommend a national ENERGY STAR requirement of $\geq 92\%$ AFUE instead of the proposed regional levels. As EPA knows, the U.S. Department of Energy (DOE) is seriously considering the adoption of the consensus agreement in the rulemaking on federal minimum standards it is currently undertaking on residential central air conditioners, heat pumps and furnaces. Even if the consensus agreement is adopted into law, the provisions in the agreement will not be effective until May 2013. Therefore, we see no urgency for EPA to establish a regional specification before 2013. Instead, we recommend that EPA adopt a national specification at $\geq 92\%$ AFUE effective in 2011, and revisit the issue later if DOE adopts a regional federal standard.

Additionally, we have the following comments on the draft final version 3.0 and version 4.0 ENERGY STAR specifications for furnaces:

1. EPA recently published a document titled "Draft ENERGY STAR Calculation Methodology for Calculating the Furnace Fan Efficiency (*e*)" which indicates EPA's intent to modify this proposal to use the E_{AE} equation specified in DOE's October 2010 final rule, which added the E_{SO} metric to the test procedures. During the EPA stakeholder webinar on January 6, 2011, we made EPA aware of the ramifications that the revised E_{AE} calculation would have on the "*e*" metric. At the time EPA acknowledged that in order to address this issue the 2% criterion with respect to "*e*" may need to be raised. We also filed comments to EPA on February 22, 2011 stating that although we support EPA's proposal to use the "*e*"

metric and the established 2% criterion, a redefinition of the “*e*” calculation is now required in order to maintain the same level of stringency. This is due to the fact that DOE revised the E_{AE} calculation in its October 2010 final rule. The current EPA draft defines the calculation for “*e*” as it was originally developed and is used in incentive programs and federal tax credit legislation. The scope of EPA’s calculation methodology document states that the test approach duplicates that stipulated in EISA 2007. As currently written, the Version 3.0 and 4.0 specification is not consistent with the criterion for furnace fans in EISA 2007.

On October 20, 2010 DOE issued a Final Rule to add a test procedure and calculation to determine the energy consumption during standby and off modes (E_{SO}) for residential furnaces and boilers. The Final Rule also redefined E_{AE} to add the E_{SO} term to the calculation for that metric. The revised calculation is:

$$E_{AE} = BOH_{SS}(y_{PPE} + y_{IGPE_{IG}} + y_{BE}) + E_{SO}$$

This revised E_{AE} calculation inadvertently changes the “*e*” metric. If this revised E_{AE} value were used in the “*e*” calculation, higher “*e*” values would result for all models. Many existing furnaces that currently meet the 2% criterion would exceed the criterion, and be disqualified from various federal and state tax incentives associated with the advanced main air circulating fan. To rectify this situation and continue to maintain the original criterion for “*e*”, AHRI recommends that EPA use the following revised “*e*” metric in its specification:

$$[(E_{AE} - E_{SO}) \times 3413] / [((E_{AE} - E_{SO}) \times 3413) + (E_f \times 1,000,000)] \leq 2\%$$

Furnaces currently meeting the $\leq 2\%$ criterion for “*e*” must continue to be recognized as such. The characteristics that made such furnaces qualify for “*e*” remain the same and the recognition of those models should not be arbitrarily changed by a test procedure revision that does not directly relate to the “*e*” metric.

If EPA is against the approach of using the revised “*e*” metric in the furnace specification, EPA should clarify that this proposal is an increase in the stringency of this furnace fan efficiency specification. Unless the “*e*” calculation is revised or the 2% criterion is raised, the specification would automatically disqualify 43% of the furnaces on the AHRI directory that have a minimum AFUE rating of 90% and meet the 2% criterion. Increasing the 2% criterion may cause further confusion in the marketplace since it currently exists in legislation and various incentive programs. Making changes to the 2% criterion in legislation would be an uncertain and laborious process. Furthermore, when the industry established the “*e*” metric in 2003, the 2% criterion was found to be an adequate benchmark to distinguish electrically efficient furnaces. Therefore, we suggest that EPA adopt the revised “*e*” metric in its furnace specification.

2. Although Section 5A, line 224 of the furnace specification mentions the term “Basic Model”, there is no reference to this term in Section 1. We think that EPA’s intent was to reference “Product Family”. Additionally, we feel that “Basic Model Group” is a more appropriate term than “Product Family”.

3. The definition of AFUE in the furnace specification should be consistent with the definition in Section 10.1 of Appendix N to Subpart B of Part 430 in the Code of Federal Regulations.
4. The definition of “*e*” in lines 40-43 of the furnace specification needs to be revised to indicate that “*e*” is the ratio of the furnace electrical consumption to the total energy consumption of the furnace during the heating mode. We want to reiterate that EPA should revise the “*e*” calculation in order to avoid disqualifying products that currently meet the “*e*” criterion (refer to comment #1).
5. Section 3D in the furnace specification is unclear and should be revised. Line 194 indicates that the manufacturer shall not benefit from rounding, but line 197 indicates that reported results shall be rounded to the nearest significant digit. As an example of how ambiguous this section is, a manufacturer producing a 95.6% AFUE furnace would be required to round it to 95%. As the EPA continues to increase the AFUE minimums in its ENERGY STAR specifications with respect to furnaces (including the top tier program), rounding requirements such as those specified in section 3D create a significant disadvantage for manufacturers in the marketplace. Instead, EPA should revise the significant digits for the criteria in Table 1 as follows:

Product Type	Regions	AFUE	Furnace Fan Efficiency (<i>e</i>)	Air Leakage (Q_{leak})
Gas Furnace	U.S. North/Canada	$\geq 95.0\%$	$\leq 2.0\%$	$\leq 2.0\%$
	U.S. South	$\geq 90.0\%$		
Oil Furnace	U.S. (all)/Canada	$\geq 85.0\%$		

6. The ENERGY STAR requirement in Table 2 should exclude E_{AE} and E_F since there are no requirements associated with these metrics in the furnace specification.
7. The industry is currently evaluating an appropriate tolerance with respect to verification testing of “*e*”. We intend to file comments on this issue shortly. Additionally, the industry may file comments in the future with respect to the significant digits and the appropriate tolerance for cabinet air leakage in Table 1, Version 4.0.

In summary, AHRI feels that the furnace specification has some serious flaws that would negatively impact the participants within ENERGY STAR program, despite the fact that some of them manufacturer products that meet the criteria in the specification. We would appreciate an opportunity to discuss this specification further with EPA. If you have any questions or wish to discuss this further, please do not hesitate to call me at (703) 600-0383.

Sincerely,



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