



**Carrier**

A United Technologies Company

**Carrier Corporation**

**RCS Engineering**

7304 West Morris Street

PO Box 70

Indianapolis, IN 46206-0070

317-243-0851

May 9, 2011

Abigail Daken  
HVAC Products Program  
Energy Star  
U.S. Environmental Protection Agency

RE: ENERGY STAR Furnace Specification - Final Draft Version 3.0 and Version 4.0

Dear Ms. Daken:

Carrier Corporation has reviewed the final draft for residential gas furnace Energy Star criteria, V3 and V4, and offers the following comments and recommendations for consideration.

The language from lines 36 through 38 could be interpreted as contradictory definitions for furnace AFUE. We recommend striking the following: "The amount of fuel converted to space heating proportion to the amount of fuel entering the furnace." Instead, we recommend that you refer to 10 CFR 430, Appendix N. The current language in the draft specification is more closely a definition of simple thermal efficiency than of AFUE.

Considerable effort has been invested in creating regulatory, utility, state, and consumer awareness with AHRI's furnace fan energy descriptor, 'e'. With reference to lines 40 through 43, and table 1 of the Final Draft, we urge that the definition of 'e' be shown as a Test Method Reference to an AHRI reference rather than defining it in this document. In order to preserve awareness on the existing  $e < 2\%$  criteria, AHRI plans to adopt a revised definition of 'e' to counteract the impact of the new  $E_{SO}$  value on  $E_{AE}$ .

The scope of included and excluded products is defined in section 2 (lines 65 - 71). Some residential furnaces with input ratings of 225,000 BTUH or less are certified and approved for both residential and commercial applications. We recommend revising the definition of excluded products from the current draft: "Furnaces intended for commercial installation..." Instead, we recommend another form, such as, "Furnaces intended only for commercial installation..." or "Furnaces not approved for residential installation..."

In order to minimize market confusion and burden on manufacturers, we recommend that EPA state in the section defining the regions for qualification criteria (lines 78-86) the intention that the breakdown of states in U.S. North and U.S. South will be aligned with and follow pending DOE definitions for these regions. This is stated in the notes section (lines 139 - 141) but should be directly stated in the table in Section 3.

Section 3. D. (lines 190 – 199) and table 1 (lines 94 – 97) speak to the number of significant digits for measurements and criteria. We recommend that the minimum AFUE levels in table 1 be expressed with one decimal place to the right of the decimal place (95.0% rather than 95%) in order to preclude rounding in the position to the left of the decimal place (ie: rounding raw data from 94.75% to 94.8% rather than to 95%).

Reiterating previous feedback, warranty requirements should be removed as an Energy Star criteria. EPA comments in lines 213 through 219 state: “consumers need to be assured that ENERGY STAR qualified furnaces will be able to perform at the same level as their standard counterparts.” Limited warranties in the marketplace, and described in section 4 of the draft specification (lines 205 – 211), warrant product reliability and function and do not warrant performance metrics.

Test Requirements, Section 5 D, permit two options: a single sample, or testing per 10 CFR 430 Subpart B. These two options infer significantly different confidence intervals and should be reduced to one, based on DOE’s programs and 10 CFR 429 Subpart B. Further, 5) A. refers to “the definition for Basic Model as being defined in Section 1. above” when no definition for Basic Model is found in the document.

Table 2 (lines 233 – 234) refers to AFUE,  $e$  ( $E_{AE}$ ,  $E_F$ )  $Q_{LEAK}$  as test requirements values. To avoid confusion, please eliminate ( $E_{AE}$ ,  $E_F$ ) from this table. The dependence of  $e$  is defined elsewhere in the document (lines 40 – 43).  $E_{AE}$  and  $E_F$  themselves are not direct criteria for Energy Star.

Thank you for considering our views,

Sincerely,

A handwritten signature in blue ink that reads "Karl Zia". The signature is written in a cursive, flowing style.

Karl Zia  
Sr. Manager, Heating Product Development  
Carrier Corporation