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Ms. Abigail Daken
US EPA
ENERGY STAR
1200 Pennsylvania Ave NW
Washington, DC 20460

Re: ENERGY STAR Product Specifications for Furnaces, Version 3.0: Draft 1

Ingersoll Rand Residential Solutions, manufacturer of Trane and American Standard residential heating and air conditioning products, appreciates the opportunity to comment on the EPA's Draft 1 of Version 3.0 specification for ENERGY STAR Furnaces. We believe that this draft should be modified to call for a single AFUE level for all of Canada and the US with an established descriptor for fan performance. Our rationale is given below.

Use a Single AFUE Level

The proposed three levels of AFUE across Canada and the United States should be changed to a single level of AFUE $\geq$ 92%.

- There is no reason that Canada should be higher than the Northern portions of the US, since 90% of Canada's population is concentrated within 100 miles of the US/Canadian border.
- There is essentially no installed cost difference to the consumer between a 90% and a 92% AFUE furnace. Furthermore, there are very few furnaces available less than 92% AFUE.
- A single AFUE level would eliminate labeling and enforcement problems.
- A single level at 92% would facilitate a "top tier" level set at AFUE's $\geq$ 95%

Use an Established Fan Performance Descriptor

The revised ENERGY STAR furnace specifications should state that the furnace fan must meet or exceed the requirements to be listed with the "***e***" descriptor currently used to qualify for 25C tax credits. This descriptor indicates that the fan uses 2% or less than the total energy use of the furnace. Only the most energy efficient fan systems can meet this requirement. AECR, an annual energy usage calculation based on a not-yet-final Canadian standard should not be used.

- "***e***" is an accepted descriptor that is already in use. It can only be met by the most energy efficient furnace fan systems.
- Adopting the "***e***" descriptor gives manufacturers a performance goal with an established test method. Since C823 is not final and may not be until 2011, there is no way to fully assess the performance of current products. Until the standard is final and EPA finalizes the AECR levels, it is impossible for manufacturers to create product development plans. This could delay the implementation of the new ENERGY STAR specifications.

- The Canadian descriptor, AECR, is more aligned to development of blower design application curves over a wide range of air flows and static pressures than it is to assuring the efficient performance of a blower under the well defined AFUE test conditions.
- AECR is based on a draft version of a flawed standard.
    - A furnace performance specification should not include cooling energy usage since the fan energy used in cooling mode is included in the SEER calculation.
    - C823 specifies that there are 2000 heating operating hours in Canada, and EPA is working on the assumption that the operating hours across the US will be similar to Canada. The assumption of 2000 operation hours in heating in both Canada and the US is flawed. Ingersoll Rand's analysis shows that the furnace operating hours range from 700 to 1200 hours across the Northern region of the US, while the range for the Southern region of the US is 100 to 700 hours. This is substantially different from the 2000 hour level with not only a wide variation between regions but within regions. This raises substantial questions as to the validity of using AECR.
    - Calculating this questionably valid AECR value for a furnace requires a substantial amount of additional test time for manufacturers. The data to calculate "e" is already part of the AFUE test.

Respectfully,

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Chief Engineer