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Air-Conditioning, Heating, and Refrigeration Institute

April 10, 2012

California Energy Commission (CEC)

Re: March 12, 2012 45-day Language Hearing for Nonresidential Buildings - 2013 Building Energy Efficiency Standards (AHRI Comments on §140.4(c)4 *Fractional HVAC Motors for Fans*; Docket # 12-BSTD-1)

Dear CEC Staff:

The Air-Conditioning, Heating and Refrigeration Institute (AHRI) is the trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. Over 300 members strong, AHRI is an internationally recognized advocate for the industry, and develops standards for and certifies the performance of many of the products manufactured by our members. In North America, the annual output of the HVACR industry is worth more than $20 billion. In the United States alone, our members employ approximately 130,000 people, and support some 800,000 dealers, contractors, and technicians.

We have some comments on the code language that was proposed at the hearing on March 12, 2012, specifically, the proposed language in §140.4(c)4 *Fractional HVAC Motors for Fans*. On November 21, 2011, AHRI hosted a conference call between its members, CEC staff and Mark Hydeman of Taylor Engineering, LLC. During the conference call we stated that the code language on fractional HVAC motors for fans should consider all loading conditions, and not just full load rating conditions. Additionally, we proposed that a third exception be added to §140.4(c)4 (underlined below):

Fractional HVAC Motors for Fans. Fan motors of series fan-powered terminal units. HVAC motors for fans that are Fan motors of series fan-powered terminal units less than1 hp or less and 1/12 hp or greater shall be electronically-commutated motors or shall have a minimum motor efficiency of 70 percent when rated in accordance with NEMA Standard MG 1-2006 at full load rating conditions. These motors shall also have the means to adjust motor speed for either balancing or remote control.

EXCEPTION 1 to Section 144(c)4: Motors in fan-coils and terminal units, including parallel fan-powered terminal units, that operate only when providing heating to the space served.

EXCEPTION 2 to Section 144(c)4: Motors installed in space conditioning equipment certified under Section 110.1 or 110.2.

EXCEPTION 3 to Section 140.4(c)4: Motors for belt-driven fans do not require a variable speed control. However, the sheaves must be sized to ensure that the motor speed will be within 10% of the rated nameplate speed.

The rationale for adding the third exception is as follows:

Single-phase motors that meet the requirement for >70% efficiency are available in the general market for belt-driven motors that are greater than or equal to ¼ hp. Motors with variable speed control built in are not generally available on the market for belt-driven single-phase motors and a separate variable frequency drive for three-phase motors is expensive for small units. Adjusting the sheaves to keep the motor speed near the rated nameplate speed of the motor will ensure that a motor operates at its highest efficiency.

Lastly, we feel that Exception 1 should not include parallel fan-powered terminal units. The exception pertains to units that run in heating only modes and not motors. The exclusion is because of where the primary and fan air mix. If corrected as recommended, this exception would match the current proposed change in ASHRAE Standard 90.1. In our previous letter to CEC, we raised the issues with respect to the relative efficiency of series and parallel fan-powered VAV boxes per the findings in ASHRAE RP-1292. We believe that sufficient technical data exists to counter the studies that were used to justify the Title 24 code language. We urge CEC to evaluate these findings and modify the Title 24 code language.

We appreciate this opportunity to provide comments on fractional HVAC motors for fans. 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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