AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE
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August 2, 2013

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

Re: AHRI Comments on ENERGY STAR Specification Framework for Central Air Conditioners and Air-Source Heat Pumps – Version 5.0

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. Over 300 members strong, AHRI is an internationally recognized advocate for the industry, 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. AHRI's central air conditioner and air-source heat pump (CAC/ASHP) member companies account for nearly 100 percent of the residential CAC/ASHP products sold in North America.

We believe that the current ENERGY STAR specification for CAC/ASHP products should remain until the end of 2014. From January 1, 2015 onwards, the specification for CAC/ASHP products should not capture any efficiency metrics and should instead evolve into a quality installation program.

We are concerned that the overall value of the ENERGY STAR program for CAC/ASHP products is diminishing since the specification has reached a point where raising equipment efficiencies will be challenging and not cost effective. There is ample evidence that CAC/ASHP equipment efficiencies are approaching their thermodynamic limits. While energy efficiency gains in the 1970s were achieved at a relatively low cost, more recent efficiency improvements have significantly increased equipment cost. We are entering a phase where energy efficiency gains in the future will be minimal but very costly. It is clear that the conventional ENERGY STAR policy of increasing equipment energy efficiency standards for CAC/ASHP equipment has reached a point of diminishing returns with respect to energy savings. Additionally, the effect of the considerable burden being placed on manufacturers by the ENERGY STAR verification testing requirements is clearly evident from a comparison of the AHRI and the Consortium for Energy Efficiency (CEE) directories. Several models exist today that are capable of qualifying as ENERGY STAR models but manufacturers choose not to label

those models as ENERGY STAR because the following compliance burden far outweighs the benefits:

- ENERGY STAR Qualification – manufacturers are required to provide test reports and fill out a submission form each time they want to qualify products – this process requires an extensive amount of time and data from manufacturers.
- Verification – under the multiple tests approach, EPA requires that four samples be wrapped up for every ENERGY STAR model that undergoes a verification test – this is different from AHRI's requirements and requires additional storage planning for the three remaining units in case the first one fails. The release of the three units depends on how soon the EPA-recognized laboratory finishes its first sample test. Manufacturers have no control over the timing of the first sample test and have to deal with the logistical issues associated with the remaining three units until the completion of the first sample test. Additionally, while a second sample may be all that is required under a typical AHRI test, thereby saving cost and time for the manufacturer, EPA requires that at least three more units be tested when the first sample test is below 95% of the certified rating.
- Variation in verification procedures – manufacturers who are part of AHRI's certification programs are subject to varying requirements due to certain procedural differences between the EPA's verification testing documentation and the operations manuals for AHRI's certification programs.
- Manufacturer laboratory evaluations are conducted on an annual basis by EPA-recognized laboratories, even though several manufacturer laboratories are ISO 17025 accredited (the same as EPA-recognized laboratories).
- Requirement to provide calibration records for any rating testing.
- Requirement to provide test data for any rating testing – there is no industry standard for reporting data so every manufacturer must modify its own reporting standard to fill out a form for EPA.

In the case of split system air conditioners, manufacturers list only 5.7% of the total available models (i.e., products that meet the efficiency levels within the EPA specification) as ENERGY STAR units on the CEE directory whereas for split system heat pumps, the number drops to 4.2%. Of the total available models that meet the efficiency levels within the EPA specification, 25% single package air conditioners, 36% single package heat pumps, 8.3% of variable-speed mini-split and multi-split air conditioners, and 24.4% of variable-speed mini-split and multi-split heat pumps are listed as ENERGY STAR units on the CEE directory. The compliance burden on manufacturers is clearly demonstrated by these statistics.

One of the directives of the Clean Air Act is for EPA's ENERGY STAR program to reduce energy consumption through the identification and promotion of energy efficient products. Although EPA has been able to meet this directive to an extent over the last 20 years by specifying high efficiency products in its specifications, it is important to note that a reduction in energy consumption cannot be merely achieved by focusing on a product's energy efficiency. Unlike many plug-and-play consumer appliances,

CAC/ASHP products are typically installed in the field by licensed contractors. A CAC/ASHP that meets the current ENERGY STAR specification could operate at a significantly lower efficiency level if the product is not properly installed in the field. Installation practices and duct work need to be considered in order to determine whether a field-installed product is indeed performing in the manner in which it was intended. We believe that capturing these factors within the ENERGY STAR specification for CAC/ASHP products will result in significant additional energy savings.

Lastly, we have the following specific comments on the framework document:

- Regional Specification – for the reasons stated earlier in this letter, EPA should abandon the idea of creating a regional specification and instead take the necessary steps to ensure the proper installation of CAC/ASHP products in the field. We believe that complying with varying levels in the regional ENERGY STAR specification and the federal regional standards would be onerous for manufacturers. Additionally, the varying ENERGY STAR and federal regional efficiency levels would lead to consumer confusion.

- Performance Metrics – per the reasons stated earlier in this letter, we recommend against the consideration of Coefficient of Performance (COP) at 35°F or 17°F and capacity de-rating at 17°F as a metric for northern regions. Currently, both COPs are not certified by AHRI and not regulated by DOE. The introduction of these metrics would place a significant regulatory burden on manufacturers and would almost certainly lead to a reduction in manufacturer participation within this program.

- Quality Installation – we are supportive of EPA's initiative to promote quality installation practices.

AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

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