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May 23, 2019

Ms. Abigail Daken  
Manager, ENERGY STAR HVAC Program  
United States Environmental Protection Agency  
Washington, DC 20460  
(Sent via email to [cacashp@energystar.gov](mailto:cacashp@energystar.gov))

**Re: ENERGY STAR Residential Air Source Heat Pump (ASHP) and Central Air Conditioner (CAC) Equipment Version 6.0 Draft 1**

Dear Ms. Daken,

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) (collectively, the “Joint Commenters”) are submitting these comments in response to the United States Environmental Protection Agency (EPA) ENERGY STAR® Residential Air Source Heat Pump (ASHP) and Central Air Conditioner (CAC) Equipment Version 6.0 Draft 1, issued on April 23, 2019.

The Joint Commenters stand behind comments submitted in September 2018 responding to the Discussion Draft of the specification. The proposals are not well timed with the major changes the industry is working to accomplish by January 1, 2023. The primary concern is the proposal to create a “crossover” test procedure and introduce cold-climate test conditions in Appendix M1, which comes into force with new metrics on January 1, 2023, into the current market. Any effective date for a significant change of specification prior to 2023 is not an option for industry at this time.

**Concerns with Proposed Timing of v6.0**

Given the major changes the industry is preparing for, both on the residential and commercial side, the timing of these proposals is especially concerning. For January 1, 2023, we are preparing for new efficiency metrics and levels for residential central air conditioners and heat pumps; new efficiency levels for small, large, and very large commercial package air conditioners and heat pumps and air-cooled, water-cooled, evaporatively-cooled, and water source unitary air conditioners and heat pumps; as well as new, mildly-flammable refrigerants in certain states, which require the development of a second product line for all products using refrigerants. Another potential challenge is that Canada has not announced an amendment to determine if and when new efficiency metrics and levels for residential central

air conditioners and heat pumps would be adopted, and if they will be harmonized with the U.S.

The Joint Commenters continue to support harmonizing ENERGY STAR requirements and metrics in the US and Canada. We support EPA using the new metrics (SEER2, EER2, and HSPF2) that U.S. Department of Energy (DOE) requires for representations after January 1, 2023 for Version 6.0 and that the specification become effective on the same date.

Draft 1 of Version 6.0 contemplates several complex proposals, including connectivity and an adaptation of the Appendix M1 test procedure applied to current products. We are concerned that Draft 1 of v6.0 includes proposals which will require retesting and redesign of production lines between now and the new standards coming into force in the US.

Based on the schedule presented at the May 10, 2019, EPA webinar, it takes about 18 months to develop new specifications. If v6.0 is intended to have a Q3 or Q4 2020 effective date, it will require industry to start work on v7.0 in Q1 2021 to launch a program with new metrics coming into force on January 1, 2023. The industry lacks the bandwidth, on both the R&D and testing to retest and redesign products twice prior to January 1, 2023.

The Joint Commenters urge EPA establish levels using SEER2, EER2, and HSPF2, and have no modifications to Appendix M1 test procedures for all equipment manufactured after January 1, 2023 and that EPA enact no changes to efficiency levels prior to January 1, 2023.

We also see a burden on EPA with any significant changes to new specifications effective two years prior to transitioning to new metrics in v7.0. This problem is most significant in light of the cold climate proposal as this will be different when Appendix M1 comes into force. Again, at this time we are unsure if Canada will harmonize with Appendix M1 and new metrics. We urge EPA to reconsider any proposal presented in v6.0 Draft 1 which seeks to require retesting or redesign of product.

#### **Crossover Test Procedure – Percentage of Heating Capacity at 5°F**

The Joint Commentators are opposed to the proposal to differentiate cold climate performance as a percentage of heating capacity at 5°F. A proposal requiring that the capacity of a given unit as measured under the conditions defined by Appendix M1 at 5°F, divided by the heating capacity as measured per Appendix M at 47°F, expressed as a percentage, creates a hybrid test procedure and is not something we can support. This proposal would require retesting of all heat pumps in the program, which is not feasible at this time.

Establishing an arbitrary level of 80-percent of the product's 47°F heating capacity at the 5°F test condition to meet the requirement is not feasible. Neither Appendix M nor M1 requires reporting of data to determine if the product would meet a proposed threshold. Determining this, in addition to using a brand new, crossover test procedure, would require manufacturers to report additional information, such as identifying products with heat boost. If climate differentiation is a feature to consider after new metrics are in force, the proposal should be developed carefully, and should not require performance below the building heat load line at

5°F. It is imperative that where a federal test procedure exists, ENERGY STAR harmonize directly, without deviation. Any deviation in test procedure burdens manufacturers and certification bodies. Certification bodies must perform correlation testing between third party test laboratories for any new metric. Correlation testing is time consuming to perform well, and we are concerned that it would not be worthwhile, given the short shelf-life of this proposed metric.

### **Prescriptive Requirements**

The Joint Commenters are opposed to EPA's proposal to require at least two stages of capacity for a unit to be recognized as ENERGY STAR. While EPA is interested in examining the CAC/ASHP specification to address market trends toward two-stage and variable speed equipment and the Joint Commenters agree that variable capacity HVAC systems afford the capability to provide greater peak load reduction than traditional single-capacity systems (for the same reduction in cooling), it is not necessary to set a prescriptive requirement when a performance requirement will suffice. We do not support mixing design requirements and performance requirements.

### **Regionally-Specific Label**

The Joint Commenters cannot support a label that echoes the FTC label, introduces a regional approach for heat pumps which does not exist at a federal level in the U.S., and is also not recognized in Canada,. The purpose of ENERGY STAR programs are to provide consumers and businesses with simple, credible, and unbiased information to make purchasing decisions for cost-saving energy efficiency solutions. An ENERGY STAR label should be distinctly different than the label used for enforcement. The proposed map stands to confuse consumers and disharmonizes with federal requirements. We do not support the inclusion of a map.

### **Connected Criteria**

The Joint Commenters look forward to reviewing a complete proposal regarding connected criteria in the next draft of v6.0. We appreciate EPA's desire to build on the work that has already gone into the development of AHRI Standard 1380 (I-P/2019), *Demand Response through Variable Capacity HVAC Equipment in Residential and Small Commercial Applications*. We are pleased to announce that since the Discussion Draft, the Standard has been published and is available for free download from AHRI's website, here: [http://www.ahrinet.org/App\\_Content/ahri/files/STANDARDS/AHRI/AHRI Standard 1380 I-P 2019.pdf](http://www.ahrinet.org/App_Content/ahri/files/STANDARDS/AHRI/AHRI Standard 1380 I-P 2019.pdf).

Along with EPA's contribution, this standard has benefitted from the participation of Consortium for Energy Efficiency (CEE), Electric Power Research Institute, Inc. (EPRI) and other utilities. The standard establishes requirements for variable capacity HVAC systems 65,000 Btu/hr and less that support demand response (DR) strategies that predictably benefit the electric grid. AHRI Standard 1380 promotes consumer participation by facilitating price response or similar incentive programs offered by electric utilities or related entities. It standardizes communication and equipment functionality as they relate to energy management strategies for variable capacity unitary DR-Ready HVAC systems, including two-stage products, installed in residential and small commercial applications. The standard

provides two communication protocols for broad utility adoption. Equipment will respond to signals for general and critical curtailments. These shed requests for cooling direct the system to curtail energy consumption, limiting input power to a maximum of 70% and 40% of the rated load power. Similar signals are included for curtailing power in heating mode as well. Utilities will be able to schedule events in advance and turn off during grid emergencies. Consumers will be able to configure equipment to respond automatically to utility peak load price signals.

Now that the standard has been published, AHRI committees will begin discussing a certification program; however, this discussion has not yet begun. Should EPA wish to differentiate equipment based on connected criteria, the Joint Commenters cannot support a Q3 or Q4 2020 effective date. While this may not need to wait until January 1, 2023, AHRI cannot develop a brand-new certification program and expect participants to join in about one year. Again, we look forward to EPA's complete proposal on connected equipment and hope to continue the conversation about timing as certification discussions unfold within industry.

### **Summary**

Due to the complexity and timing of the v6.0 proposal, the Joint Commenters cannot support Draft 1 as written. In addition to the significant testing burden on manufacturers and certification bodies, we foresee difficulty explaining the value of v6.0, particularly the cold-climate metric as proposed, to customers. Program participation has dropped over the past decade and this trend is likely to continue unless substantial updates to content and timing are made as suggested in these comments. The Joint Commenters cannot support significant change of specification prior to January, 1 2023.

We appreciate the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact Laura Petrillo-Groh, [lpetrillo-groh@ahrinet.org](mailto:lpetrillo-groh@ahrinet.org) and Marie Carpizo, [mcarpizo@ahrinet.org](mailto:mcarpizo@ahrinet.org).

Sincerely,

Sandy MacLeod



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