April 12, 2019

Ms. Johnson
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-0121

Re: RFI for Direct Heating Equipment Test Procedure

Dear Ms. Johnson,

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is the trade association representing manufacturers of air conditioning, space heating, water heating and commercial refrigeration equipment. The AHRI member companies that manufacturer gas-fired, vented direct heating equipment account for essentially all of the vented room heaters, wall furnaces and floor furnaces that are sold and installed in the U.S. We submit the following comments in response to the Request for Information (RFI) on amending the test procedure for direct heating equipment (DHE) issued in the February 26, 2019 Federal Register. Our comments on the issues on which DOE is seeking comments are provided below.

**Issue A.1** DOE requests comment on the definitions currently applicable to unvented heaters and whether any of the definitions should be revised, and if so, how. Please provide a rationale for any suggested change.

AHRI has no comments on this issue.

**Issue A.2** DOE requests comment on the definitions currently applicable to vented heaters and whether any of the definitions should be revised, and if so, how. Please provide a rationale for any suggested change.

AHRI recommends against revisions to the definitions currently applicable to vented heaters. The definitions are appropriate as written and should not be revised.

**Issue B.4** DOE requests comment on whether the maximum post-purge time should be increased from less than 5 seconds to less than or equal to 30 seconds for vented heaters with no measurable airflow through the combustion chamber and heat exchanger.
AHRI and its members recommend against changing the maximum post-purge time for vented heaters with no measurable airflow through the combustion chamber and heat exchanger.

**Issue C.1** DOE requests comment on whether the assumptions for calculating the national and regional values of annual fuel energy consumption are still appropriate.

AHRI and its members believe the assumptions for calculating the national and regional values of annual fuel energy consumption are still appropriate.

**Issue C.2** DOE requests comment on whether annual fuel energy consumption should be calculated for unvented natural gas, propane, and oil heaters. If annual fuel energy consumption should be calculated, DOE requests comment on what equations and assumptions should be used.

AHRI recommends against calculating annual fuel energy consumption for unvented heaters as all heat created is contained within the conditioned space and the heaters are considered to be 100-percent efficient.

**Issue C.3** DOE requests comment on whether annual fuel energy consumption for unvented heaters should include standby mode and off mode energy use. DOE is also interested in detailed information on any additional test burden that would result from calculating annual fuel energy consumption with standby mode and off mode energy use and if so, the nature and extent of that burden.

AHRI recommends against incorporating standby mode and off mode energy use in annual fuel energy consumption for unvented heaters. Standby mode energy use has the same level of effectiveness in heating the space as active mode energy use. As a general rule, off mode energy consumption is reduced by the user by turning off the pilot during non-heating seasons.

**Issue C.4** DOE requests any information in relation to annual and/or regional heating season data, heating mode operating hours, standby mode hours, and off mode hours for unvented heaters.

The requested data does not exist, as usage patterns, structure characteristics, etc., vary for every DOE heating region. During heating season, the standby mode hours contribute to supplemental heating of the space. During non-heating season, the standby mode hours go to zero when the user turns off the pilot.

**Issue D.1** DOE requests comment and data on manufacturers’ and test laboratories’ experience with the condensing provisions in Appendix O. DOE requests detailed information regarding any test burden associated with conducting the condensing provisions, including the nature and extent of any such burden. DOE also requests comment on ways to potentially reduce any test burden of the provisions specific to condensing technology.
AHRI and its members believe the condensing provisions in Appendix O are appropriate as written and not overly burdensome.

**Issue D.2** DOE requests comment on whether the definition for “Manually controlled vented heater” should be amended, and if so, how.

AHRI recommend against amending the definition for “Manually controlled vented heater.”

**Issue D.3** DOE also requests comment on whether the other definitions provided in section 1.0 of Appendix O are all still appropriate, or if other updates are needed.

AHRI recommends against changes to the definitions provided in section 1.0 of Appendix O. The definition are appropriate as written.

**Issue D.7** DOE requests comment on whether DHE that have multiple automatic operation modes exist, and if so, whether further direction regarding the tested operating mode is necessary.

There is currently direct heating equipment on the market that have multiple automatic operation modes. AHRI recommends DOE should clarify that the least efficient mode must be used when testing for and calculating AFUE of direct heating equipment.

**Issue D.8** DOE requests comment on the extent to which vented heaters currently use the provisions in 3.6.1 and 3.6.2 of Appendix O, whether models with induced draft or condensing technology are always capable of meeting the conditions to use the default draft factor, and whether provisions should be added to the vented heater test procedure to allow condensing or induced draft DHE to be considered to have no measurable airflow and to use a constant value of 0.05 for DΦ and DΠ without confirmation testing.

AHRI recommends against adding provisions to allow condensing or inducted draft DHE to be considered to have no measurable airflow and to use a constant value of 0.05 for DΦ and DΠ without confirmation testing.

AHRI and its members have no comments at this time regarding the following issues.

**Issue B.1** DOE requests any information in relation to the revisions to the existing standards that have been incorporated by reference, including the purpose of the updates and whether any of the updates would be expected to impact the test burden or measured energy consumption under the DOE test procedures for vented and unvented heaters.

**Issue B.2** DOE requests comment on whether removing the allowable error in the oil pressure measurement value from section 6.3 of the ANSI/ASHRAE 103–2017 standard was intentional. If so, DOE requests comment on what allowable error measurement should be used within the vented heater test procedure (Note: ANSI/ASHRAE 103–2007 stated ±0.5 psi).
Issue B.3 DOE requests comment on whether the replacement of figures 12 and 13 with a set of equations in section 8.6 of ANSI/ASHRAE 103–2017 is appropriate for the vented heater test procedure.

Issue D.4 DOE requests comment on whether the differences in the balance point temperature (TX) produced by the equation and as obtained from Table 3 can result in different results in the values for the fraction of the heating load (X₁ and X₂) and average outdoor temperature at the reduced and maximum operating modes (TOA and TOA*), and if so, the extent of any such difference.

Issue D.5 DOE requests comment on whether any differences in the values of X₁, X₂, TOA, and TOA* within Table 3 and Figures 1 and 2 could produce different results, especially in AFUE, and if so, the extent of such differences. If any such difference in results would occur, DOE requests comment on whether any of these variables should be obtained using equations instead of Table 3 or Figures 1 and 2.

Issue D.6 DOE requests comment and test data on whether a higher default jacket loss value should be considered for vented floor furnaces.

We appreciate this opportunity to provide comments and participate in this rulemaking.

Respectfully submitted,

[Signature]

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