



[6450-01-P]

**DEPARTMENT OF ENERGY**

**10 CFR Part 430**

**Energy Conservation Program: Test Procedures for Consumer Warm Air Furnaces, Notice of Petition for Rulemaking**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of petition for rulemaking; request for comment.

**SUMMARY:** On October 12, 2018, the Department of Energy (DOE) received a petition from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) asking DOE to initiate notice-and-comment rulemaking to develop a new, unified test procedure for residential furnaces which would replace the three currently required performance metrics (*i.e.*, annual fuel utilization efficiency (AFUE), fan efficiency ratio (FER), and standby mode/off mode energy consumption ( $P_{W,SB}$  and  $P_{W,OFF}$ )) with a single new metric (AFUE2). As the petition acknowledges, a combined metric would necessitate a translation of the existing energy conservation standards applicable to residential furnaces using an appropriate crosswalk. Through this announcement, DOE seeks comment on the petition, as well as any data or information that could be used in DOE's determination whether to proceed with the petition.

**DATES:** Written comments and information are requested on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Interested persons are encouraged to submit comments, identified by "Test Procedure for Consumer Warm Air Furnaces Petition," by any of the following methods:

*Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.

*E-mail:* [ResFurnPet2018PET0017@ee.doe.gov](mailto:ResFurnPet2018PET0017@ee.doe.gov). Include Docket No. EERE-2018-BT-PET-0017 in the subject line of the message.

*Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.

*Hand Delivery/Courier:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., Suite 600, Washington, D.C., 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

*Docket:* For access to the docket to read background documents, or comments received, go to the Federal eRulemaking Portal at: <http://www.regulations.gov/docket?D=EERE-2018-BT-PET-0017>.

**FOR FURTHER INFORMATION CONTACT:** Mr. Eric Stas, U.S. Department of Energy, Office of the General Counsel, 1000 Independence Avenue, SW., Washington, DC 20585. Telephone: (202) 586-9507. E-mail: [Eric.Stas@hq.doe.gov](mailto:Eric.Stas@hq.doe.gov).

**SUPPLEMENTARY INFORMATION:** The Administrative Procedure Act (APA), 5 U.S.C. 551 *et seq.*, provides among other things, that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." (5 U.S.C. 553(e)) DOE received a petition from AHRI, as described in this notice and set forth verbatim below,<sup>1</sup> requesting that DOE develop a new test procedure for residential furnaces with a combined metric (annual fuel utilization efficiency 2 (AFUE<sub>2</sub>)), which would encompass the three existing metrics currently required (*i.e.*, AFUE, FER, and  $P_{W,SB}/P_{W,OFF}$ ). In

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<sup>1</sup> Attachments and data submitted by AHRI with its petition for rulemaking are available in the docket at <http://www.regulations.gov/docket?D=EERE-2018-BT-PET-0017>.

promulgating this petition for public comment, DOE is seeking views on whether it should grant the petition and undertake a rulemaking to consider the proposal contained in the petition. By seeking comment on whether to grant this petition, DOE takes no position at this time regarding the merits of the suggested rulemaking or the assertions in AHRI's petition.

In its petition, AHRI requests that DOE undertake notice-and-comment rulemaking to develop a new test procedure for residential warm air furnaces that would consolidate all aspects of the regulation of such furnaces using a single metric (AFUE<sub>2</sub>) and yield a unified timeline for rulemaking and compliance. Currently, residential furnaces are subject to separate requirements for heating (AFUE), air circulation (FER), and standby mode and off mode energy consumptions (power in watts for standby mode and off mode ( $P_{W,SB}$  and  $P_{W,OFF}$ )). The petitioner asserts that its recommended single metric would reduce regulatory burden on manufacturers by streamlining test requirements and aligning regulatory review schedules, thereby promoting design flexibility and product innovation. The petitioner further asserts that consumers would also benefit by having a single, combined metric for product comparison purposes and by receiving some portion of anticipated cost savings, all of which could be achieved without sacrificing energy savings. As the petition acknowledges, a combined metric would necessitate a translation of the existing energy conservation standards applicable to residential furnaces using an appropriate crosswalk.

DOE welcomes comments and views of interested parties on any aspect of the petition for rulemaking.

In conjunction with its petition, AHRI requested that DOE not enforce the reporting, certification and compliance obligations related to the furnace fan energy conservation standards (for which compliance is required on July 3, 2019) pending consideration of this petition for rulemaking.<sup>2</sup> In response to AHRI's

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<sup>2</sup> AHRI's request is available in the docket at <http://www.regulations.gov/docket?D=EERE-2018-BT-PET-0017>.

request, DOE is issuing an enforcement policy regarding enforcement of the furnace fan standards. Further details will be provided on the DOE website.<sup>3</sup>

### *Submission of Comments*

DOE invites all interested parties to submit in writing by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]** comments and information regarding this petition.

*Submitting comments via <http://www.regulations.gov>.* The *<http://www.regulations.gov>* webpage will require you to provide your name and contact information prior to submitting comments. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *<http://www.regulations.gov>* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (CBI)). Comments submitted through *<http://www.regulations.gov>* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the

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<sup>3</sup> See <http://www.energy.gov/gc/enforcement/>.

information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through <http://www.regulations.gov> before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that <http://www.regulations.gov> provides after you have successfully uploaded your comment.

*Submitting comments via email, hand delivery, or postal mail.* Comments and documents via email, hand delivery, or postal mail will also be posted to <http://www.regulations.gov>. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information in your cover letter each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimiles (faxes) will be accepted.

Comments, data, and other information submitted electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English, and free of any defects or viruses. Documents should not include any special characters or any form of encryption, and, if possible, they should carry the electronic signature of the author.

*Campaign form letters.* Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

*Confidential Business Information.* Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked "Confidential" including all the information believed to be confidential, and one copy of the document marked "Non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) a description of the items; (2) whether and why such items are customarily treated as confidential within the industry; (3) whether the information is generally known by or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its confidentiality; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its confidential character due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

DOE considers public participation to be a very important part of its process for considering rulemaking petitions. DOE actively encourages the participation and interaction of the public during the comment period. Interactions with and between members of the public provide a balanced discussion of the

issues and assist DOE in determining how to proceed with a petition. Anyone who wishes to be added to DOE mailing list to receive future notices and information about this petition should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

**Approval of the Office of the Secretary**

The Secretary of Energy has approved publication of this notice of petition for rulemaking.

Signed in Washington, D.C. on November 2, 2018.

Kathleen B. Hogan  
Deputy Assistant Secretary for Energy Efficiency  
Energy Efficiency and Renewable Energy

Before the  
UNITED STATES DEPARTMENT OF ENERGY  
Office of Energy Efficiency and Renewable Energy

Energy Conservation Program:

Test Procedures for Consumer Warm Air Furnaces

**PETITION FOR A RULEMAKING**

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) submits this Petition for a Rulemaking to formally request that the Department of Energy (DOE or the Department) promulgate a new test procedure for residential furnaces pursuant to its authority under the Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6293. Currently, three separate Federal test procedures measure three different performance characteristics of consumer warm-air furnaces: fuel efficiency (AFUE), air-movement efficiency (FER), and stand-by/off-mode energy consumption. AHRI petitions DOE to establish a new test procedure that will designate a single efficiency metric for the entire product and replace the existing test procedures for all three performance characteristics. A whole-product test procedure and single performance metric will reduce regulatory burden and increase opportunity for innovation.

**AHRI Petitions DOE to Conduct a Notice-and-Comment Rulemaking to Adopt the AFUE2 Test Procedure and Metric for Residential Furnaces**

AHRI is the trade association representing air conditioning, heating, commercial refrigeration, and ventilation equipment manufacturers. AHRI advocates for the HVACR industry, administers a third-party

certification program that verifies the performance of HVACR equipment, and publishes global industry standards. Many of AHRI's 315 members design, develop, and manufacture residential furnaces. Any AHRI member that manufactures a furnace for sale in the United States or Canada is eligible to participate in AHRI's Furnace Product Section. The Furnace Engineering Committee is a subcommittee of the Furnace Product Section and is comprised of furnace product engineers with decades of experience. Over a year ago, the Furnace Engineering Committee identified challenges with the existing residential furnace Federal test procedures and has dedicated its time and resources to developing a more functional and facile test procedure. The goal of the new test procedure is to combine the three existing furnace test procedures into a single test using a single metric: AFUE2.<sup>4</sup>

## **I. Description of the Test Method and Metric**

The AFUE2 test procedure is based upon the methods established by the ASHRAE 103-2017 AFUE test procedure;<sup>5</sup> the Federal FER test procedure (10 CFR § 430 Appx AA); and the Federal stand-by loss/off-mode test procedure (10 CFR § 430 Appx N). The AFUE2 metric accounts for furnace fuel, fan power, and stand-by and off-mode power consumption. The measured value represents the sum of usable heat and fan benefit, divided by the total fuel and electricity consumed. A draft of the test procedure is attached.<sup>6</sup> For the

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<sup>4</sup> During previous discussions with DOE about unrelated performance metric changes, DOE staff indicated that the name of a metric is mandated by statute, and therefore any metric change must retain the codified nomenclature. If upon further review, DOE determines that the nomenclature, like the test procedure, is mutable, then AHRI encourages DOE to adopt a fitting identifier for the metric. AHRI is not bound to "AFUE2."

<sup>5</sup> AFUE2 fuel efficiency measures are based primarily on ASHRAE 103-2017. DOE has codified ASHRAE 103-1993 in 10 CFR § 430 Appx N. The relevant portions of the ASHRAE 103-2017 that are referenced in the AFUE2 test procedure are similar to the equivalent provisions in ASHRAE 103-1993/ 10 CFR 430 Appendix N. Other provisions, related to cyclic testing, are only applicable to products with draft hoods and draft diverter technologies.

<sup>6</sup> Exhibit 1 AFUE2 Draft Test Procedure

benefit of the Department and the public, a description of the notable features of the test procedure and metric are provided below.

The first step in the process is to measure the fuel consumption. The furnace is set up and measurements are taken in accordance with the most current industry test standard, ASHRAE 103-2017.<sup>7</sup> The AFUE2 test procedure differs most significantly from the ASHRAE 103-2017 test procedure by including only steady-state testing and excluding cyclic testing for fuel and oil furnace models currently available in the U.S. market.<sup>8</sup> Cyclic testing is time consuming and requires the execution of complex calculations, and the value of the cyclic testing is limited at best. AHRI's data indicates that for the vast majority of modern products, the steady-state efficiency accurately represents the AFUE efficiency, and cyclic testing and calculations are unnecessary. Based on an analysis of over 100 models, only a handful demonstrated greater than a 1% difference between measured AFUE and steady-state efficiencies (less jacket loss).<sup>9</sup> The average difference between actual AFUE and steady-state efficiencies is close to zero. The elimination of cyclic testing for currently compliant products is warranted and reduces testing burden without sacrificing accuracy. Notably, to close any loopholes that might permit technology backsliding, the test procedure specifies that products that incorporate draft hoods and draft diverter technologies must complete the cyclic testing procedures published in ASHRAE 103-2017. AHRI is not aware of any furnaces on the market today that incorporate these technologies.

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<sup>7</sup> Per Note 2, DOE regulations currently refer to the ASHRAE 103-1993, but the test set-up is the same with some clarifications.

<sup>8</sup> These are models with power burners as defined by the DOE test procedures.

<sup>9</sup> Exhibit 2: Calculations reflecting steady-state efficiency and measured AFUE efficiency.

After the fuel consumption is measured, the next step in the procedure is to turn off the equipment and measure the electrical consumption of the furnace when not in heating mode. The procedure for measuring and calculating stand-by and off-mode energy use is identical to the Federal method.

Finally, the ventilation energy consumption is measured. The AFUE2 test method for measuring and calculating ventilation energy consumption is based on the FER test procedure, with some significant changes. First, the AFUE2 test procedure describes set-up and settings for the ventilation test in greater detail than the FER test procedure. For example, the AFUE2 test procedure specifically identifies the location of the external static pressure taps. These set-up descriptions are intended to reduce test-to-test variability.

The AFUE2 test procedure also clarifies the hierarchy of speed taps settings for the various modes of ventilation testing. The FER procedure directs manufacturers to test using the “maximum airflow settings,” but this description is ambiguous and can lead to absurd results depending on its interpretation. The AFUE2 test procedure specifies that the airflow be set according to the installation and operations manual, and the test procedure prescribes which airflow setting should be selected if there is overlap between operating modes. If the manual identifies the maximum airflow during the heating mode, and the second highest airflow during cooling mode, then the speed taps should be set accordingly: first heating, then cooling. If the heating and cooling mode airflows are the same, then the cooling mode speed tap is set first, which reflects how the furnace would operate in the field.

Finally, manufacturers have been challenged with the repeatability of the FER test. Testing has demonstrated more than a 5% difference among tests on the same unit. The poor repeatability of the FER

measurements is resolved in AFUE2 due to the relatively small proportion of the electrical consumption. The AFUE fuel efficiency test is well established and repeatable, so overall AFUE2 will be much more repeatable than FER.

## **II. The AFUE2 Metric Prevents Double Regulation**

AFUE2 efficiency is the sum of the fan benefit and usable heat, divided by electric and fuel consumption, all weighted by operating hours. The calculations for AFUE2 and FER are based on different operating hours. The hours differ in two meaningful ways: (1) the cooling hours are derived directly from AHRI Standard 210/240, which is incorporated by reference into the Federal standard for central air conditioners; and (2) package equipment is ascribed zero fan operating hours in the cooling mode. The AFUE2 test procedure relies on cooling mode operating hours from AHRI Standard 210/240 based on the simple logic that air conditioners conduct the cooling during furnace-ventilation cooling mode and air conditioner operating hours are already defined in AHRI 210/240. Harmonizing the two standards is preferable and logical, and assigning different operating hours in two different regulations for what is essentially the same product is arbitrary. Packaged equipment is assigned zero operating hours because the ventilation electricity consumption is already directly regulated by DOE's air conditioning standard. DOE is strictly prohibited from regulating the same product twice. Two separate regulations (SEER and FER) imposed on the same component of a single type of equipment is contrary to DOE's statutory authority. Eliminating operating hours for packaged equipment permits the furnace to be measured by AFUE2 without double-regulating the ventilation energy use.

Aside from the above distinctions, most of the methods and measurements from the currently applicable test procedures and metrics are reflected in the AFUE2 test procedure and metric. The ultimate goal of combining the AFUE, FER, and stand-by /off-mode test procedures is to streamline the testing requirements, align regulatory review schedules, and reduce regulatory burden.

### **III. Establishing the AFUE2 as the Federal Test Procedure and Metric is in the Public Interest**

#### **A. A Combined Test Procedure and Metric Reduces Burden**

The AFUE2 test procedure and metric will decrease the regulatory burden. At least six different regulations apply to consumer furnace efficiency: (1) AFUE test procedure (2) AFUE energy conservation standard (3) FER test procedure (4) FER energy conservation standard (5) stand-by loss/off-mode test procedure (6) stand-by loss/off-mode energy conservation standard. Each of these regulations is subject to mandatory review—every six years for energy conservation standards and every seven years for test procedures. Each of the six applicable regulations follows a different schedule, which places the equipment manufacturers, distributors, contractors and DOE in a constant state of change and adjustment. The AFUE test procedure was most recently finalized in 2016. DOE is required to review it again by 2023. The FER test procedure was finalized in 2014; it will be reviewed by 2021. The stand-by loss test procedure was finalized in 2013; it will be reviewed by 2020. Stand-by and off-mode test procedures were amended in 2012 and are due for review in 2019. Energy conservation standards for stand-by and FER were published in 2013 and 2014, respectively, while the AFUE standard has been under review since 2011. Industry expects that energy conservation standards will be reviewed again in 2019 and 2020. The Department is perennially reviewing and amending furnace regulations, while manufacturers pour time and resources into public comments,

testing, redesign, and ever-shifting compliance requirements. The total reduction in regulatory burden resulting from implementation of AFUE2 will save manufacturers more than \$250 million over thirty years.<sup>10</sup>

If DOE adopts the AFUE2 test procedure that assesses all three performance characteristics simultaneously, then the Department would only have to conduct a test procedure rulemaking process once every seven years. Similarly, combining the performance measurements into a single metric will obviate the need for three separate energy conservation standards, and DOE will only have to review energy conservation standards once every six years.

Resource savings to the Department are relevant, but pale in comparison to the significant savings afforded manufacturers, and consequently consumers, if DOE were to combine the test metric and eliminate four of six rulemaking review cycles. Multiple discordant regulatory requirements generate unnecessary costs. For example, manufacturers must run an FER test, and a separate AFUE test, and stand-by loss testing. The incremental costs of the equipment, the set-up, mounting on the test stand, the laboratory time, and technician costs can be drastically reduced by conducting one test instead of three. The alignment of review cycles and redesign cycles further reduces repetitive testing required for design development and safety certifications. The AFUE2 test procedure mimics many of the existing test methods, but the merging of the instances of active testing cuts superfluous costs.<sup>11</sup>

Every time DOE makes an amendment to any of the applicable regulations, manufacturers must redesign equipment, make capital investments to update manufacturing facilities, republish all marketing literature,

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<sup>10</sup> Exhibit 3, “Estimated Benefits of AFUE2”

<sup>11</sup> *Id.*

and educate distributors, contractors, and consumers about the change. Merging six rulemaking cycles into two dramatically reduces the compliance burden associated with regulatory changes because changes will occur two-thirds less frequently. Manufacturers can pass on significant savings to consumers by making all required changes to their furnaces within a single design-cycle rather than spending resources on unnecessary tooling, design, testing, production introduction, training and other related costs.<sup>12</sup> Less frequent regulatory changes offer greater certainty to manufacturers, which promotes investment in innovation and product improvements.

Crucially, reduced costs for manufacturers and consumers does not translate to lost energy savings. Fewer regulatory review cycles does not mean regulatory roll-back or less oversight. AHRI is confident that DOE will take no less interest in the representativeness and effectiveness of the applicable test procedure as a result of this change. And each energy conservation standard review remains targeted at achieving the “maximum energy savings” that are economically justified. Ultimately, DOE will be able to look at the furnace as a whole and make necessary adjustments to testing and energy conservation during a single rulemaking review instead of executing its mandate piecemeal.

#### B. The AFUE2 Test Procedure and Metric Will Increase Innovation

As discussed above, the AFUE2 test metric combines three performance characteristics into a single measure. The current approach fragments furnace efficiency into three separate minimum requirements: stand-by/off mode, ventilation, and fuel efficiency. The practice of setting minimums for discrete characteristics of a single product is overly prescriptive; this approach drives product development in only

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<sup>12</sup> *Id.*

one direction. Component level regulation restricts design choices between manufacturers. AFUE2 gives manufacturers more design flexibility on how they achieve overall energy savings. The AFUE2 test method and metric requires manufacturers to account for all three performance characteristics, but it promotes innovation by allowing for internal efficiency trade-offs at the product level. Product designers must be given license to develop better ways to save fuel and electricity while improving the quality and performance of the equipment. A combined metric saves energy without prescribing multiple engineering requirements.

### C. The Combined Metric is Easier for Consumers to Use and Understand

AFUE2 is easier for consumers to understand. It is difficult for the average consumer to distinguish between the fuel efficiency of a furnace, the electric efficiency of the furnace fans and the watts saved or lost during stand-by or off-mode. The average consumer considers three separate measures for a single product unnecessarily complex and unhelpful. A single metric will serve as an easy basis of comparison between all fuel furnace types. A simple label can concisely represent the single efficiency metric and provide approximate costs of operation, which is a chief concern of consumers.

The AFUE2 test method and metric improves consumer utility of the efficiency information. Furnace manufacturers question the technical viability of the FER test procedure and metric. A separate regulation for ventilation energy disproportionately emphasizes the electrical consumption of a furnace, when the fuel consumption is much more significant to consumers. A representative proportion of energy use by both parts is described by AFUE2.

#### **IV. Metric Changes Require a Crosswalk**

AHRI requests that DOE adopt the AFUE2 test procedure pursuant to a notice-and-comment rulemaking. The Department has statutory authority to amend test procedures under 42 U.S.C. 6293(e) of EPCA. The statute prescribes steps to establish a crosswalk from the previous metric to the new metric. Specifically, EPCA states that DOE “shall determine, in the rulemaking carried out with respect to prescribing such procedure, to what extent, if any, the proposed test procedure would alter the measured energy efficiency...of a covered product as determined under the existing test procedure.”

The transition from three independent metrics to one integrated product metric will demonstrably “alter the measured efficiency.” As such, DOE “shall amend the applicable energy conservation standard during the rulemaking carried out with respect to such test procedure. In determining the amended energy conservation standard, the Secretary shall measure, pursuant to the amended test procedure, the energy efficiency...of a representative sample of covered products that minimally comply with the existing standard. The average of such energy efficiency...determined under the amended test procedure shall constitute the amended conservation standard for the applicable covered products.”

AHRI has begun analyzing testing data to assist in the development of the required crosswalk. A representative sample of furnaces that are “minimally compliant” with energy conservation minimums at each furnace product class will be tested, rated, and averaged. This average will provide a degradation factor that can be applied to all furnaces within that product class to ensure equivalence across product lines

with the current AFUE metric. Uniquely, this particular crosswalk requires translation from three performance characteristics to one product efficiency measure, and each of those performance characteristic standards are currently further divided into separate product classes. It will likely be necessary to adjust the calculated baseline efficiencies to ensure that the maximum permissible energy use of the furnace reflects minimally compliant furnaces at each product class for each metric.

For example, minimally compliant non-weatherized natural gas furnaces are currently rated with an AFUE of 80%. Based on preliminary estimates, after the application of the degradation factor, the baseline efficiencies for the AFUE2 rating is 77%.<sup>13</sup> The FER and stand-by loss regulations also specify different product classes for which the minimally compliant product will also have to be measured and averaged. Using this data, the baseline minimum efficiencies can be adjusted upward to ensure all current energy use is appropriately captured. More testing is required to assign values to this methodology.

Crosswalks can create havoc in the market if not carefully executed. AHRI urges DOE to work with stakeholders to ensure a precise and simple transition from “AFUE + FER + Stand-by/off-mode” to “AFUE2.” For clarity, AHRI recommends that the baseline efficiency for translation is the AFUE minimum for each residential furnace product class. Maintaining the established product class structure for residential furnaces will have the least disruptive impact on the market. As described above, these baseline efficiencies can be adjusted to ensure that maximum energy use and minimum efficiencies remain steady, but the decades-old definitions and classifications remain constant for ease of market adoption.

## **V. AHRI Requests a Prompt Response.**

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<sup>13</sup> The 3% degradation factor is based on preliminary findings. AHRI will provide more substantial testing to support a degradation factor as more tests are conducted. The preliminary value will likely change with more data.

Finally, AHRI requests that DOE act promptly to initiate a notice-and-comment rulemaking to adopt the proffered test procedure and metric as soon as possible. The FER minimum efficiency standards go into effect in July of 2019, and DOE will have to expedite the release of a notice of proposed rulemaking to ensure that manufacturers do not have to comply with one metric and test procedure while preparing to comply with another. AHRI appreciates the consideration that DOE will give this petition and thanks the Department in advance for its attention to this petition.

Signed,

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