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[6450-01-P]

**DEPARTMENT OF ENERGY**

**10 CFR Part 430**

[EERE-2017-BT-0012]

**Energy Conservation Program: Test Procedure for Room Air Conditioners**

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

**ACTION:** Request for information (RFI).

**SUMMARY:** The U.S. Department of Energy (“DOE”) is initiating a data collection process through this request for information to consider whether to amend DOE’s test procedure for room air conditioners (“room ACs”). To inform interested parties and to facilitate this process, DOE has gathered data, identifying several issues associated with the currently applicable test procedure on which DOE is interested in receiving comment. The issues outlined in this document mainly concern issues initially identified in an RFI issued in 2015 considering amendments to the current energy conservation standards and test procedure for room ACs; harmonization with the recently established portable air conditioner (“portable AC”) test procedure; clarification of the test setup and testing conditions; updated industry test procedures for room ACs; and any additional topics that may inform DOE’s decisions in a future test procedure rulemaking, including methods to reduce regulatory burden while ensuring the

procedure's accuracy. DOE welcomes written comments from the public on any subject within the scope of this document (including topics not raised in this RFI).

**DATES:** Written comments and information are requested on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN *FEDERAL REGISTER*]**.

**ADDRESSES:** Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at <http://www.regulations.gov>. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2017-BT-TP-0012, by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
- *E-mail:* [RoomAC2017TP0012@ee.doe.gov](mailto:RoomAC2017TP0012@ee.doe.gov). Include the docket number EERE-2017-BT-TP-0012 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, DC, 20024. Telephone: (202) 586-6636. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document.

*Docket:* The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at <http://www.regulations.gov>. All documents in the docket are listed in the <http://www.regulations.gov> index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at <https://www.regulations.gov/docket?D=EERE-2017-BT-TP-0012>. The docket web page will contain simple instructions on how to access all documents, including public comments, in the docket. See section III for information on how to submit comments through <http://www.regulations.gov>.

#### **FOR FURTHER INFORMATION CONTACT:**

Mr. Bryan Berringer, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-0371. E-mail: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Ms. Sarah Butler, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-1777. E-mail: [Sarah.Butler@hq.doe.gov](mailto:Sarah.Butler@hq.doe.gov).

For further information on how to submit a comment or review other public comments and the docket, contact the Appliance and Equipment Standards Program staff at (202) 586-6636 or by e-mail: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

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### **I. Introduction**

Room ACs are included in the list of “covered products” for which DOE is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6292(a)(2)) DOE’s test procedure for room ACs appears at title 10 of the Code of Federal Regulations (“CFR”) part 430, subpart B, appendix F (“appendix F”). The following sections discuss DOE’s

authority to establish and amend the test procedure for room ACs, as well as relevant background information regarding DOE’s consideration of test procedures for this product.

#### *A. Authority and Background*

The Energy Policy and Conservation Act of 1975 (“EPCA” or “the Act”),<sup>1</sup> Public Law 94-163 (42 U.S.C. 6291–6317, as codified), among other things, authorizes DOE to regulate the energy efficiency of a number of consumer products and industrial equipment. Title III, Part B<sup>2</sup> of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency. These products include room ACs, the subject of this RFI. (42 U.S.C. 6292(a)(2))

Under EPCA, DOE’s energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of the Act specifically include definitions (42 U.S.C. 6291), energy conservation standards (42 U.S.C. 6295), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (See 42 U.S.C. 6297) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions

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<sup>1</sup> All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015 (EEIA 2015), Public Law 114–11 (April 30, 2015).

<sup>2</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

of EPCA. (42 U.S.C. 6297(d))

The Federal testing requirements consist of test procedures that manufacturers of covered products must use as the basis for: (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6295(s)), and (2) making representations about the efficiency of those consumer products (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the products comply with relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section shall be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and shall not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, if DOE determines that a test procedure amendment is warranted, it must publish a proposed test procedure and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6293(b)(2))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered equipment, including room ACs, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures

to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6293(b)(1)(A)) If amended test procedures are appropriate, DOE must publish a final rule to incorporate the amendments. If DOE determines that test procedure revisions are not appropriate, DOE must publish its determination not to amend the test procedures. DOE is publishing this RFI to collect data and information to inform a potential test procedure rulemaking to satisfy the 7-year review requirement specified in EPCA, which requires that DOE publish, by January 6, 2018, either a final rule amending the test procedures or a determination that amended test procedures are not required. (42 U.S.C. 6293(b)(1)(A))

#### *B. Rulemaking History*

DOE's current test procedures for room ACs are codified at appendix F and the room AC performance metric calculations are codified at 10 CFR 430.23(f). Test procedures for room ACs were established on June 1, 1977, and were subsequently redesignated and editorially amended on June 29, 1979. 42 FR 27898 (June 1, 1977); 44 FR 37938 (June 29, 1979).

##### *1. The January 2011 Final Rule*

The Energy Independence and Security Act of 2007 ("EISA 2007") amended EPCA, directing DOE to amend its energy efficiency test procedures for all covered products to include measures of standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A)) In compliance with the EISA 2007 requirements, on January 6, 2011, DOE published a final rule amending the room AC test procedure to include measurements of standby mode and off mode energy consumption and to introduce a new combined efficiency metric, Combined Energy



Efficiency Ratio (“CEER”), that accounts for energy consumption in active mode, standby mode, and off mode. 76 FR 972. DOE also incorporated a new standard, International Electrotechnical Commission (“IEC”) Standard 62301, to measure the standby and off mode energy consumption. Id. In addition to IEC Standard 62301, the final rule updated the references to standards developed by the American National Standards Institute (“ANSI”), the Association of Home Appliance Manufacturers (“AHAM”), and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (“ASHRAE”). Id. In sum, the current room AC test procedure incorporates by reference three industry test standards: (1) ANSI/AHAM RAC-1-2008, “Room Air Conditioners” (“ANSI/AHAM RAC-1”);<sup>3</sup> (2) ANSI/ASHRAE Standard 16-1983 (RA 2009), “Method of Testing for Rating Room Air Conditioners and Packaged Terminal Air Conditioners” (“ANSI/ASHRAE 16”);<sup>4</sup> and (3) IEC Standard 62301, “Household electrical appliances – Measurement of standby power (first edition June 2005)”.<sup>5</sup>

## 2. The June 2015 Request for Information

On June 18, 2015, DOE published an RFI (hereinafter the “June 2015 RFI”) regarding the energy conservation standards and the test procedures for room ACs. 80 FR 34843 (June 18, 2015). In addition to soliciting information regarding the energy conservations standards, the June 2015 RFI discussed and sought comment on the following test procedure related items: (1) potential updates to the energy efficiency metric that would address performance in additional operating modes; (2) alternate methods for measuring cooling mode performance; (3) addressing heating mode performance and any relevant test methods, existing industry standards, operating

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<sup>3</sup> Copies can be purchased from <http://webstore.ansi.org>.

<sup>4</sup> Copies can be purchased from <http://www.techstreet.com>.

<sup>5</sup> Copies can be purchased from <http://webstore.iec.ch>.

conditions, and associated test burden; (4) methods for measuring part-load performance and the prevalence of units on the market with components optimized for efficient part-load operation; (5) testing and certification of units that can operate on multiple voltages; and (6) the energy usage associated with connected functionality. 80 FR 34843, 34846–34848. DOE received comments from interested parties pertaining to the test procedure in response to the June 2015 RFI.<sup>6</sup>

## **II. Request for Information and Comments**

In the following sections, DOE has identified a variety of issues on which it seeks input to aid in the development of the technical and economic analyses regarding whether amended test procedures for room ACs may be warranted. Specifically, DOE is requesting comment on any opportunities to streamline and simplify testing requirements for room ACs.

Additionally, DOE welcomes comments on other issues relevant to the conduct of this process that may not specifically be identified in this document. In particular, DOE notes that under Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” Executive Branch agencies such as DOE are directed to manage the costs associated with the imposition of expenditures required to comply with Federal regulations. See 82 FR 9339 (Feb. 3, 2017). Pursuant to that Executive Order, DOE encourages the public to provide input on measures DOE could take to lower the cost of its regulations applicable to room ACs consistent with the requirements of EPCA. DOE also requests comment on the benefits and burdens of

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<sup>6</sup> All public comments are located in the energy conservation standards docket: <http://www.regulations.gov/#!docketDetail;D=EERE-2014-BT-STD-0059>

adopting any industry/voluntary consensus-based or other appropriate test procedure, without modification.

A. Harmonization with the Portable Air Conditioners Test Procedure

As discussed in the June 2015 RFI, DOE believes that consumers regard portable ACs and room ACs as similar products with similar function and consumer utility, because both are self-encased products powered by single-phase electric current that utilize refrigerant to provide cooling to defined spaces, and their product usage is broadly similar. See 80 FR 34843, 34845. Consequently, DOE believes that consumers are inclined to compare the two products based on their rated capacity and efficiency. Thus, harmonizing the test conditions for room ACs and portable ACs may allow consumers to make a more accurate comparison of the energy use or efficiency of the two products.

DOE published a test procedure final rule for portable ACs on June 1, 2016 (hereinafter the “June 2016 Portable AC Final Rule”), in which DOE established test procedures for portable ACs in 10 CFR part 430, subpart B, appendix CC (“appendix CC”). 81 FR 35242. DOE assessed both the new portable AC test procedure and the room AC test procedure to determine whether any significant differences would impede an accurate consumer comparison of measured performance of the two covered products. DOE notes that the portable AC test procedure differentiates between single-duct and dual-duct portable ACs, which require different test conditions. For the purposes of the comparison with room ACs, DOE specifically considered the dual-duct testing provisions in the portable AC test procedure, because dual-duct portable ACs are most similar to room ACs in that the condenser inlet air is drawn from the

unconditioned space, unlike single-duct portable ACs that draw condenser inlet air from the conditioned space. DOE identified several key differences between the test procedures in appendix F and appendix CC that lead to incomparable results. Specifically, the portable AC test procedure includes (1) two sets of test conditions for dual-duct portable ACs, one at 95 degrees Fahrenheit (“°F”) dry-bulb and 75 °F wet-bulb outdoor temperature (identical to the room AC test procedure) and the other at 83 °F dry-bulb and 67.5 °F wet-bulb outdoor temperature;<sup>7</sup> (2) a requirement that the test unit be set up and tested with all manufacturer-provided materials and the associated heat losses be accounted for in the energy efficiency metric; and (3) the consideration of energy consumption in off-cycle mode (as defined in appendix CC). In light of these differences, DOE is requesting feedback in this RFI on whether amendments to the room AC test procedure are warranted to harmonize the two test procedures in order to enable a more accurate comparison of portable AC and room AC performance. In the following subsections, DOE describes the differences between the two test procedures in greater detail and requests information on key topics related to their harmonization.

## 1. Test Conditions

In a portable AC test procedure supplemental notice of proposed rulemaking (“SNOPR”), published on November 27, 2015 (hereinafter the “November 2015 Portable AC SNOPR”), DOE developed a climate analysis to determine the ideal cooling mode test conditions for portable ACs. 80 FR 74020, 74026. DOE considered 2012 climate data from the National Centers for

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<sup>7</sup> For single-duct portable ACs, testing is only required at the 95 °F dry-bulb and 75 °F wet-bulb outdoor test condition. Single-duct portable ACs do not intake air from the unconditioned space and therefore performance of the unit while testing would be unchanged by the adjustment in outdoor test conditions. Thus, DOE requires numerical adjustments for the 83 °F dry-bulb and 67.5 °F wet-bulb outdoor condition when determining the seasonally adjusted cooling capacity and CEER for single-duct portable ACs. This approach minimizes test burden yet ensures that the performance of a single-duct and dual-duct portable AC can be compared.

Environmental Information (“NCEI”)<sup>8</sup> of the National Oceanic and Atmospheric Administration (“NOAA”) to determine the average dry-bulb temperature and relative humidity associated with the hottest 750 hours of the year in each state for which data were available.<sup>9</sup> DOE then reviewed room AC ownership data from the 2009 Residential Energy Consumption Survey (“RECS”)<sup>10</sup> to identify room AC ownership by geographic region, as a proxy for portable AC ownership.<sup>11</sup> Based on these data, DOE used a weighted-average approach to combine the average temperature and humidity for each state to determine a national average test condition representative of the hottest 750 hours of the year. DOE found that the national average dry-bulb temperature and relative humidity associated with the hottest 750 hours are 83 °F and 45 percent, respectively. DOE then proposed two cooling mode test conditions for dual-duct portable ACs in the November 2015 Portable AC SNOPR: (1) a higher outdoor temperature condition based on AHAM PAC-1-2015, “Portable Air Conditioners” (95 °F dry-bulb and 75 °F wet-bulb temperature), representing high-temperature conditions when cooling is most needed; and (2) the lower outdoor temperature condition based on the weighted-average temperature and humidity observed during the hottest 750 hours (83 °F dry-bulb and 67.5 °F wet-bulb temperature). *Id.* In the June 2016 Portable AC Final Rule, DOE adopted in appendix CC the cooling mode test conditions proposed in the November 2015 Portable AC SNOPR. 81 FR 35242, 35249–35251.

In the June 2016 Portable AC Final Rule, DOE also established an energy efficiency metric, CEER, which provides a representative measure of overall portable AC performance that accounts for the variability in performance during the cooling season. CEER for dual-duct

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<sup>8</sup> The NCEI was formerly known as the National Climate Data Center.

<sup>9</sup> NCEI climate data are available online at: <https://www.ncdc.noaa.gov/crn/qcdatasets.html>.

<sup>10</sup> RECS data are available online at: <http://www.eia.gov/consumption/residential/data/2009/>.

<sup>11</sup> DOE utilized RECS data for room ACs because such data were not available for portable ACs.

portable ACs is calculated as follows:

$$CEER = \left[ \frac{ACC_{95}}{\left( \frac{AEC_{95} + AEC_T}{k \times t} \right)} \right] \times 0.2 + \left[ \frac{ACC_{83}}{\left( \frac{AEC_{83} + AEC_T}{k \times t} \right)} \right] \times 0.8$$

Where:

$ACC_{95}$  = adjusted cooling capacity measured at an outdoor temperature of 95 °F in British thermal units per hour (Btu/h);

$ACC_{83}$  = adjusted cooling capacity measured at an outdoor temperature of 83 °F in Btu/h;

$AEC_{95}$  = total annual energy consumption in cooling mode at an outdoor temperature of 95 °F in kilowatt-hours per year (kWh/year);

$AEC_{83}$  = total annual energy consumption in cooling mode at an outdoor temperature of 83 °F in kWh/year;

$k$  = 0.001 kWh/Wh conversion factor for watt-hours to kilowatt-hours;

$t$  = number of hours per year, 8,760.

81 FR 35242, 35268.

Room ACs are currently tested with a single outdoor test condition, 95 °F dry-bulb and 75 °F wet-bulb temperature, which aligns with only one of the two cooling mode test conditions for dual-duct portable ACs. Considering the similarities between the two products (i.e., consumer utility, internal components, etc.) and the potential for consumers to compare the energy use or efficiency of both products, DOE seeks comment on whether it would be appropriate to harmonize the two test procedures by including an additional test condition for room AC cooling mode testing (83 °F dry-bulb and 67.5 °F wet-bulb temperature). Should this

harmonization of test conditions occur, DOE would also investigate the applicability of the portable AC energy metric and determine if any modifications would be necessary for its application to room ACs.

As noted in the June 2015 RFI, the current room AC test procedure measures only the full-load performance at outdoor ambient conditions of 95 °F dry-bulb and 75 °F wet-bulb temperature. 80 FR 34843, 34848. Therefore, available technologies that improve part-load performance, such as variable-speed compressors and variable-opening expansion devices, are not considered in the determination of the rated performance of a room AC under the current test procedure. *Id.* DOE expects that harmonizing the room AC test procedure with the portable AC test procedure by including an additional cooling mode test condition potentially would ensure the room AC efficiency metric is more representative of actual use, and it will capture benefits associated with variable-speed compressors and other components that improve part-load performance.

Issue A.1.1 DOE seeks feedback on the harmonization of the room AC test procedure with the DOE test procedure for dual-duct portable ACs, specifically related to the inclusion of an additional cooling mode test condition.

Issue A.1.2 DOE seeks information on the test burden and other potential impacts associated with the inclusion of an additional cooling mode test condition in the room AC test procedure.

Issue A.1.3 DOE seeks information on the merits and limitations of utilizing the CEER efficiency metric adopted for dual-duct portable ACs for the purposes of rating room ACs.

Issue A.1.4 DOE seeks information on the implementation and operation of variable-speed compressors and other components that will improve part-load performance for room ACs, and whether the dual rating conditions specified for testing of dual-duct portable ACs would capture benefits of these technologies for room ACs and be included in the revised test procedure.

## 2. Installation Heat Transfer and Leakage

The portable AC test procedure in appendix CC requires that the test unit be set up and tested with all manufacturer-provided materials (including the ducts, connectors for attaching the duct(s) to the test unit, sealing, insulation, and window mounting fixtures) to ensure that the performance measured during the test is reflective of actual installation and operation. The portable AC test procedure also accounts for the impacts of infiltration air, which is caused by negative pressure in the conditioned space created by the unit's operation, thereby driving unconditioned air into the space and impacting the overall cooling provided by the unit to the conditioned space.

Room ACs are typically installed with side curtains or other window or wall mounting installation materials that, during typical operation, may allow air to leak through or around the materials and would impact the cooling provided to the conditioned space. However, DOE notes that when conducting the calorimeter test prescribed in ANSI/ASHRAE Standard 16 (as



referenced by the current DOE room AC test procedure), the test unit is set up so all air leakage around the unit that would normally be present in a typical installation is precluded by means of sealing.

Considering the requirements of EPCA for DOE to adopt test procedures that are representative of an average use cycle, which would encompass typical installation and operation, DOE requests comment on testing in accordance with the manufacturer-provided installation materials.

Issue A.2.1 DOE seeks feedback on the harmonization of the room AC test set up requirements with those in the portable AC test procedure, specifically related to installation with all manufacturer-provided installation materials.

Issue A.2.2 DOE requests information and data related to air and heat leakage through and around room AC installation materials, specifically side curtains and wall sleeves, which the current room AC test procedure does not capture. DOE request comment on whether these losses should be considered given the requirements of EPCA.

### 3. Off-Cycle Mode

In the June 2016 Portable AC Final Rule, DOE adopted a definition for “off-cycle mode” as a mode in which the portable air conditioner: (1) has cycled off its main cooling or heating function by thermostat or temperature sensor signal; (2) may or may not operate its fan or blower; and (3) will reactivate the main function according to the thermostat or temperature

sensor signal. 81 FR 35242, 35265. DOE notes that this off-cycle mode definition for portable ACs is different from an off-cycle mode definition that DOE proposed on December 9, 2008, in a NOPR for the previous room AC test procedure rulemaking, which explicitly excluded fan operation from the off-cycle mode.<sup>12</sup> 73 FR 74639, 74645 (Dec. 9, 2008) (hereinafter the “December 2008 NOPR”). By excluding the periods of fan operation from off-cycle mode that would be expected for a typical installation and usage, the definition proposed in the December 2008 NOPR excluded potentially significant energy consumption when compared to the definition adopted for portable ACs.

DOE also established provisions for determining the average off-cycle mode power in the June 2016 Portable AC Final Rule. 81 FR 35242, 35267. The portable AC off-cycle mode test is conducted following the cooling mode test under the same ambient conditions, and includes a 5-minute delay prior to measuring power consumption to allow for a brief period of fan operation while the evaporator returns to its non-cooling state. Because the evaporator is still cool at the end of compressor operation following cooling mode, additional room cooling is possible through continued fan operation at relatively low energy consumption. Therefore, DOE included the 5-minute delay before the start of off-cycle mode testing to prevent penalizing manufacturers for utilizing the cooling potential of the evaporator following the compressor cycle.

In the June 2015 RFI, DOE requested comment on the merits and/or limitations of accounting for energy modes not currently included in the room AC test procedure, including

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<sup>12</sup> DOE notes that the definition for off-cycle mode proposed in the December 2008 NOPR was not adopted in the June 2011 Final Rule.

off-cycle mode, referencing the definition proposed in the December 2008 NOPR. 80 FR 34843, 34846. In response to the June 2015 RFI, DOE received a comment opposed to the inclusion of off-cycle mode in the DOE test procedure for room ACs. However, due to the significant difference between that definition and the definition of off-cycle mode established in the portable AC test procedure, DOE is requesting feedback on including provisions for measuring average off-cycle mode power in the room AC test procedure, consistent with the portable AC test procedure.

Issue A.3.1 DOE seeks feedback on the harmonization of the room AC test procedure with the portable AC test procedure, specifically related to the inclusion of off-cycle mode in the room AC test procedure.

Issue A.3.2 DOE seeks feedback on the applicability of the portable AC off-cycle mode definition, provisions to measure average off-cycle mode power, and the inclusion of off-cycle mode in the efficiency metric for room ACs.

Issue A.3.3 DOE requests information and data related to off-cycle mode, including input power levels, fan operation, time spent in that mode, etc.

## B. Test Setup and Air Sampling

The current DOE room AC test procedure references certain sections of ANSI/AHAM RAC-1 and ANSI/ASHRAE 16 for the room AC cooling mode test conditions and test methods. Section 4.2.7 of ANSI/ASHRAE 16 requires the calorimeter chamber conditions to be verified

by air sampled from a location that is representative of the temperatures surrounding the unit and that simulate the conditions in which the unit operates in the field. DOE notes that there is no procedure to verify if the measured chamber temperature reading is representative of conditions at the test unit condenser and evaporator inlet, which may be affected by recirculation from the condenser and evaporator exhaust, respectively, thereby potentially reducing test repeatability and reproducibility. As a result, DOE is seeking comment on this issue and any potential modifications to the test procedure that should be considered as part of this investigative effort.

Issue B.1 DOE welcomes information on more specific requirements for air sampling device positioning within the calorimeter chamber to improve test repeatability.

#### C. Room Air Conditioner Referenced Test Procedures

1. American National Standards Institute/Association of Home Appliance Manufacturers  
RAC-1

The cooling mode test in appendix F is conducted in accordance with the testing conditions, methods, and calculations in sections 4, 5, 6.1, and 6.5 of the 2008 version of ANSI/AHAM RAC-1. Since DOE last revised its room AC test procedure in 2011, ANSI/AHAM RAC-1 has been updated and the current standard was released in 2015 (ANSI/AHAM RAC-1-2015, “Room Air Conditioners”). Based on review of the 2015 standard, DOE believes that the updates to ANSI/AHAM RAC-1 provide added specificity, but do not substantively impact the results of DOE’s cooling mode test. Accordingly, DOE does not expect that updating the references to ANSI/AHAM RAC-1 in the room AC test procedure at appendix F would substantively affect testing results. DOE further notes that the 2015 update to

ANSI/AHAM RAC-1 included adjustments to section organization, and DOE would consider updating section references as necessary if the 2015 version of ANSI/AHAM RAC-1 is incorporated by reference in the room AC test procedure at appendix F.

Issue C.1.1 DOE seeks feedback on whether the references to ANSI/AHAM RAC-1-2008 in its test procedure at appendix F should be updated to certain sections of the most current version of ANSI/AHAM RAC-1, ANSI/AHAM RAC-1-2015.

2. American National Standards Institute/American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 16

Appendix F currently references in its provisions for cooling mode test conditions, methods, and calculations the 1983 version of ANSI/ASHRAE 16, which was reaffirmed in 2009. ANSI/AHAM RAC-1-2015 also references the 1983 version of ANSI/ASHRAE 16 reaffirmed in 2009. A new version of ANSI/ASHRAE 16 was published in 2016, which includes many significant updates to the standard, including heating mode testing and an air enthalpy test approach as an alternative to the calorimeter approach, while the general cooling mode methodology remains unchanged.

Issue C.2.1 DOE seeks feedback on the applicability of the recent updates to ANSI/ASHRAE 16 to the room AC test procedure in appendix F.

Issue C.2.2 DOE welcomes feedback on whether the test procedure in appendix F should continue to reference the version of ANSI/ASHRAE 16 that was reaffirmed in 2009, consistent

with the referenced version in both ANSI/AHAM RAC-1-2008 and ANSI/AHAM RAC-1-2015, or if appendix F should reference the 2016 version of ANSI/ASHRAE 16. If appendix F were to reference the 2016 version of ANSI/ASHRAE 16, DOE seeks information on modified instructions that would be required in appendix F to continue to reference certain sections of ANSI/AHAM RAC-1.

#### D. Other Test Procedure Topics

In addition to the issues identified earlier in this document, DOE welcomes comment on any other aspect of the existing test procedure for room ACs not already addressed by the specific areas identified in this document. DOE particularly seeks information that would improve the repeatability, reproducibility, and consumer representativeness of the test procedure. DOE also requests information that would help DOE create a procedure that would limit manufacturer test burden through streamlining or simplifying testing requirements. Comments regarding the repeatability and reproducibility are also welcome.

DOE also requests feedback on any potential amendments to the existing test procedure that could be considered to address impacts on manufacturers, including small businesses. Regarding the Federal test method, DOE seeks comment on the degree to which the DOE test procedure should consider and be harmonized with the most recent relevant industry standards for room ACs and whether there are any changes to the Federal test method that would provide additional benefits to the public.

Additionally, DOE requests comment on whether the existing test procedure limits a manufacturer's ability to provide additional features to consumers on room ACs. DOE particularly seeks information on how the test procedure could be amended to reduce the cost of new or additional features and make it more likely that such features are included on room ACs.

### **III. Submission of Comments**

DOE invites all interested parties to submit in writing by **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**, comments and information on matters addressed in this RFI and on other matters relevant to DOE's test procedure for room ACs. These comments and information will aid in the development of a test procedure NOPR for room ACs if DOE determines that amended test procedures may be appropriate for these products.

Submitting comments via <http://www.regulations.gov>. The <http://www.regulations.gov> web page will require you to provide your name and contact information. 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 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 mail. Comments and documents submitted via email, hand delivery, or mail also will 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 each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE 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 contain 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. According 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 the process for developing test procedures. DOE actively encourages the participation and interaction of the public during the comment period in each stage of the rulemaking process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the rulemaking process. Anyone who wishes to be added to the DOE mailing list to receive future

notices and information about this process or would like to request a public meeting should contact Appliance and Equipment Standards Program staff at (202) 586-6636 or via e-mail at [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Issued in Washington, DC, on July 27, 2017.

A handwritten signature in black ink, appearing to read 'K. Hogan', written over a horizontal line.

Kathleen Hogan, Ph.D.  
Deputy Assistant Secretary for Energy Efficiency  
Energy Efficiency and Renewable Energy