This document, concerning air conditioners and heat pumps is an action issued by the U.S. Department of Energy (DOE). Though it is not intended or expected, should any discrepancy occur between the document posted here and the document published in the Federal Register, the Federal Register publication controls.

The text of this rule is subject to correction based on the identification of errors as defined in 10 CFR 430.5 before publication in the Federal Register. Readers are requested to notify DOE by email at ApplianceStandardsQuestions@ee.doe.gov of any typographical or other errors, as described in such regulations, by no later than midnight on January 19, 2017, in order that DOE may make any necessary corrections in the regulatory text submitted to the Office of the Federal Register for publication.

[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 430

[Docket Number EERE–2014–BT–STD–0048]

RIN 1904–AD37

Energy Conservation Program: Energy Conservation Standards for Residential Central Air Conditioners and Heat Pumps

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

ACTION: Notice of proposed rulemaking.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products, including residential central air conditioners and heat pumps. EPCA also requires the U.S. Department of Energy (DOE) to periodically determine whether more-stringent, amended standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this proposed rule, DOE proposes to amend the energy conservation standards for residential central air conditioners and heat pumps identical to those set forth in a direct final rule published elsewhere in this Federal Register. If DOE receives an adverse comment and determines that such comment may provide a

reasonable basis for withdrawing the direct final rule, DOE will publish a notice withdrawing the direct final rule and will proceed with this proposed rule.

DATES: DOE will accept comments, data, and information regarding the proposed standards no later than **[INSERT DATE 110 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Comments regarding the likely competitive impact of the proposed standard should be sent to the Department of Justice contact listed in the **ADDRESSES** section before [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: Instructions: Any comments submitted must identify the proposed rule for energy conservation standards for residential central air conditioners and heat pumps, and provide docket number EERE–2014–BT–STD–0048 and/or regulatory information number (RIN) 1904–AD37. Comments may be submitted using any of the following methods:

1. Federal eRulemaking Portal: www.regulations.gov. Follow the instructions for submitting comments.
2. E-mail: CommPkgACHP2013STD0007@ee.doe.gov. Include the docket number and/or RIN in the subject line of the message. Submit electronic comments in

WordPerfect, Microsoft Word, PDF, or ASCII file format, and avoid the use of special characters or any form of encryption.

3. 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.

4. Hand Delivery/Courier: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor,, 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 the rulemaking process, see section III of this document ("Public Participation").

Written comments regarding the burden-hour estimates or other aspects of the collection-of-information requirements contained in this proposed rule may be submitted to Office of Energy Efficiency and Renewable Energy through the methods listed above and by e-mail to Chad_S_Whiteman@omb.eop.gov.

EPCA requires the Attorney General to provide DOE a written determination of whether the proposed standard is likely to lessen competition. The U.S. Department of

Justice Antitrust Division invites input from market participants and other interested persons with views on the likely competitive impact of the proposed standard. Interested persons may contact the Division at energy.standards@atr.usdoj.gov before [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Please indicate in the "Subject" line of your e-mail the title and Docket Number of this proposed rule.

Docket: The dockets, which include Federal Register notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at www.regulations.gov. All documents in the dockets are listed in the 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.

A link to the docket webpage for residential central air conditioners and heat pumps can be found at: www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/72. The www.regulations.gov webpage contains instructions on how to access all documents, including public comments, in the docket.

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

FOR FURTHER INFORMATION CONTACT: Mr. Antonio Bouza, 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) 586-4563. E-mail: ApplianceStandardsQuestions@ee.doe.gov.

Ms. Johanna Jochum, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-6307. E-mail: Johanna.Jochum@hq.doe.gov.

SUPPLEMENTARY INFORMATION:

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I. Introduction

A. Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Public Law 94-163 (42 U.S.C. 6291-6309, as codified) established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances (collectively referred to as "covered products"), which includes the residential central air conditioners and heat pumps that are the subject of this rulemaking. (42 U.S.C. 6292(a)(3))

Pursuant to EPCA, DOE's energy conservation program for covered products consists essentially of four parts: (1) testing; (2) labeling; (3) the establishment of Federal energy conservation standards; and (4) certification and enforcement procedures. The Federal Trade Commission (FTC) is primarily responsible for labeling, and DOE implements the remainder of the program. Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product prior to the adoption of a new or amended energy conservation standard. (42 U.S.C. 6295(o)(3)(A) and (r)) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding the energy use or efficiency of those products. (42 U.S.C. 6293(c) and 6295(s)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s)) The

DOE test procedures for central air conditioners and heat pumps appear at title 10 of the Code of Federal Regulations (CFR) part 430, subpart B, appendix M and M1.

The National Appliance Energy Conservation Act of 1987 (NAECA; Public Law 100-12) included amendments to EPCA that established the original energy conservation standards for central air conditioners and heat pumps. (42 U.S.C. 6295(d)(1)-(2)) EPCA, as amended, also requires DOE to conduct two cycles of rulemakings to determine whether to amend the energy conservation standards for central air conditioners and heat pumps. (42 U.S.C. 6295(d)(3)) The first cycle culminated in a final rule published in the Federal Register on August 17, 2004 (the August 2004 Rule), which prescribed energy conservation standards for central air conditioners and heat pumps manufactured or imported on and after January 23, 2006. 69 FR 50997. DOE completed the second of the two rulemaking cycles by issuing a direct final rule on June 6, 2011 (2011 Direct Final Rule), which was published in the Federal Register on June 27, 2011. 76 FR 37408. The 2011 Direct Final Rule (June 2011 DFR) amended standards for central air conditioners and heat pumps manufactured on or after January 1, 2015.

EPCA requires DOE to periodically review its already established energy conservation standards for a covered product. Not later than six years after issuance of any final rule establishing or amending a standard, DOE must publish a notice of determination that standards for the product do not need to be amended, or a notice of proposed rulemaking including new proposed standards. (42 U.S.C. 6295(m)(1)) Pursuant to this requirement, the next review that DOE would need to conduct must

occur no later than six years from the issuance of the 2011 direct final rule. This direct final rule fulfills that requirement.

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products, including residential central air conditioners and heat pumps. Any new or amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and (3)(B)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)) Moreover, DOE may not prescribe a standard: (1) for certain products, including residential central air conditioners and heat pumps, if no test procedure has been established for the product, or (2) if DOE determines by rule that the proposed standard is not technologically feasible or economically justified. (42 U.S.C. 6295(o)(3)(A)-(B)) In deciding whether a proposed standard is economically justified, after receiving comments on the proposed standard, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i)) DOE must make this determination by, to the greatest extent practicable, considering the following seven factors:

(1) The economic impact of the standard on manufacturers and consumers of the products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial

charges, or maintenance expenses for the covered products that are likely to result from the standard;

(3) The total projected amount of energy (or as applicable, water) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the covered products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant.

(42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

DOE notes that the current energy conservation standards for central air conditioners and heat pumps (set forth at 10 CFR 430.32(c)) contain requirements for seasonal energy efficiency ratio (SEER), heating seasonal performance factor (HSPF), energy efficiency ratio (EER), and average off mode power consumption. Standards based upon the latter two metrics were newly adopted in the June 27, 2011 DFR for the reasons stated in that rulemaking. 76 FR 37408. As discussed in section II.B.1 and section II.B.3 of this proposed rule, DOE has chosen to specify performance standards based on EER and SEER for only the southwest region of the country. Pursuant to its mandate under 42 U.S.C. 6295(m)(1), this DOE rulemaking has considered amending the existing energy conservation standards for central air conditioners and heat pumps, and DOE is adopting the amended standards contained in this direct final rule.

EPCA, as codified, also contains what is known as an "anti-backsliding" provision, which prevents the Secretary from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1)) Also, the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of evidence that the standard is likely to result in the unavailability in the United States of any covered product type (or class) or performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States. (42 U.S.C. 6295(o)(4))

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii)) DOE generally considers these criteria as part of its analysis but consistently conducts a more thorough analysis of a given standard's projected impacts that extends beyond this presumption.

Additionally, 42 U.S.C. 6295(q)(1) specifies requirements when promulgating an energy conservation standard for a covered product that has two or more subcategories. In this case, DOE must specify a different standard level for a type or class of covered

product that has the same function or intended use, if DOE determines that products within such group: (A) consume a different kind of energy from that consumed by other covered products within such type (or class); or (B) have a capacity or other performance-related feature that other products within such type (or class) do not have and such feature justifies a higher or lower standard. (42 U.S.C. 6295(q)(1)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE must consider such factors as the utility to the consumer of the feature and other factors DOE deems appropriate. Id. Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2))

Under 42 U.S.C. 6295(o)(6), which was added to EPCA by section 306(a) of the Energy Independence and Security Act of 2007 (EISA 2007; Public Law 110-140), DOE may consider the establishment of regional standards for central air conditioners and heat pumps. Specifically, in addition to a base national standard for a product, DOE may for central air conditioners and heat pumps, establish one or two more-restrictive regional standards. (42 U.S.C. 6295(o)(6)(B)) The regions must include only contiguous States (with the exception of Alaska and Hawaii, which may be included in regions with which they are not contiguous), and each State may be placed in only one region (i.e., an entire State cannot simultaneously be placed in two regions, nor can it be divided between two regions). (42 U.S.C. 6295(o)(6)(C)) Further, DOE can establish the additional regional standards only: (1) where doing so would produce significant energy savings in comparison to a single national standard, (2) if the regional standards are economically

justified, and (3) after considering the impact of these standards on consumers, manufacturers, and other market participants, including product distributors, dealers, contractors, and installers. (42 U.S.C. 6295(o)(6)(D))

Federal energy conservation requirements generally supersede State laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)–(c)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d).

Pursuant to further amendments to EPCA contained in EISA 2007, Public Law 110-140, any final rule for new or amended energy conservation standards promulgated after July 1, 2010, is required to address standby mode and off mode energy use. (42 U.S.C. 6295(gg)(3)) Specifically, when DOE adopts a standard for a covered product after that date, it must, if justified by the criteria for adoption of standards under EPCA (42 U.S.C. 6295(o)), incorporate standby mode and off mode energy use into a single standard, or, if that is not feasible, adopt a separate standard for such energy use for that product. (42 U.S.C. 6295(gg)(3)(A)-(B)) The SEER and HSPF metrics for central air conditioners and heat pumps already account for standby mode energy use, and the current standards include limits on off mode energy use. Section **Error! Reference source not found.** further discusses standby mode and off mode energy use.

As mentioned previously, EISA 2007 amended EPCA, in relevant part, to grant DOE authority to issue a final rule (hereinafter referred to as a "direct final rule") establishing an energy conservation standard on receipt of a statement submitted jointly by interested persons that are fairly representative of relevant points of view (including representatives of manufacturers of covered products, States, and efficiency advocates), as determined by the Secretary, that contains recommendations with respect to an energy or water conservation standard that are in accordance with the provisions of 42 U.S.C. 6295(o). (42 U.S.C. 6295(p)(4)) Pursuant to 42 U.S.C. 6295(p)(4), the Secretary must also determine whether a jointly-submitted recommendation for an energy or water conservation standard satisfies 42 U.S.C. 6295(o) or 42 U.S.C. 6313(a)(6)(B), as applicable.

A notice of proposed rulemaking (NOPR) that proposes an identical energy efficiency standard must be published simultaneously with the direct final rule, and DOE must provide a public comment period of at least 110 days on this proposal. (42 U.S.C. 6295(p)(4)(A)-(B)) While DOE typically provides a comment period of 60 days on proposed standards, in this case, DOE provides a comment period of the same length as the comment period on the direct final rule -- i.e. 110 days. Based on the comments received during this period, the direct final rule will either become effective, or DOE will withdraw it not later than 120 days after its issuance if (1) one or more adverse comments is received, and (2) DOE determines that those comments, when viewed in light of the rulemaking record related to the direct final rule, provide a reasonable basis for withdrawal of the direct final rule under 42 U.S.C. 6295(o) and for DOE to continue this

rulemaking under the NOPR. (42 U.S.C. 6295(p)(4)(C)) Receipt of an alternative joint recommendation may also trigger a DOE withdrawal of the direct final rule in the same manner. Id.

Typical of other rulemakings, it is the substance, rather than the quantity, of comments that will ultimately determine whether a direct final rule will be withdrawn. To this end, the substance of any adverse comment(s) received will be weighed against the anticipated benefits of the jointly-submitted recommendations and the likelihood that further consideration of the comment(s) would change the results of the rulemaking. DOE notes that, to the extent an adverse comment had been previously raised and addressed in the rulemaking proceeding, such a submission will not typically provide a basis for withdrawal of a direct final rule. Nevertheless, if the Secretary makes such a determination, DOE must withdraw the direct final rule and proceed with the simultaneously-published NOPR. DOE must publish in the Federal Register the reason why the direct final rule was withdrawn. Id.

B. Background

According to the Energy Policy and Conservation Act's 6-year review requirement (42 U.S.C. 6295(m)(1)), DOE must publish a notice of proposed rulemaking to propose new standards for residential central air conditioner and heat pump products or a notice of determination that the existing standards do not need to be amended by June 6, 2017. On November 5, 2014, DOE initiated efforts pursuant to the 6-year lookback requirement by publishing a request for information (RFI) regarding central air

conditioners and heat pumps to solicit comments on whether to amend the current energy conservation standards for residential central air conditioner and heat pump products. 79 FR 65603. The November 2014 RFI also described the procedural and analytical approaches that DOE anticipated to use in order to evaluate potential amended energy conservation standards for central air conditioners and heat pumps.

On August 28, 2015, DOE published a notice of data availability (NODA) describing analysis to be used in support of the central air conditioners and heat pumps standards rulemaking. 80 FR 52206. The analysis for this notice provided the results of a series of DOE provisional analyses regarding potential energy savings and economic impacts of amending the central air conditioner and heat pump energy conservation standards. These analyses were conducted for the following categories: engineering, consumer impacts, national impacts, and manufacturer impacts.

In response to the November 2014 RFI, Lennox formally requested that DOE convene a negotiated rulemaking to address potential amendments to the current standards, which would help ensure that all stakeholders have input into the discussion, analysis, and outcome of the rulemaking. (Lennox, No. 22) Other key industry stakeholders made similar suggestions. (American Council for an Energy-Efficient Economy, No. 23; Air Conditioning Contractors of America, No. 25; Heating, Air Conditioning & Refrigeration Distributors International, No. 26) ASRAC carefully evaluated this request, and the Committee voted to charter a working group to support the negotiated rulemaking effort requested by these parties.

Subsequently, DOE determined that the complexity of the CAC/HP rulemaking necessitated a combined effort to address these equipment types to ensure a comprehensive vetting of all issues and related analyses to support any final rule settting standards. To this end, DOE solicited the public for membership nominations to the CAC/HP Working Group that would be formed under the ASRAC charter by issuing a Notice of Intent to Establish the Central Air Conditioners and Heat Pumps Working Group To Negotiate a Notice of Proposed Rulemaking for Energy Conservation Standards. 80 FR 40938 (July 14, 2015). The CAC/HP Working Group was established under ASRAC in accordance with the Federal Advisory Committee Act (FACA) and the Negotiated Rulemaking Act -- with the purpose of discussing and, if possible, reaching consensus on a set of energy conservation standards to propose/finalize for CACs and HPs. The CAC/HP Working Group was to consist of fairly representative parties having a defined stake in the outcome of the proposed standards, and would consult, as appropriate, with a range of experts on technical issues.

DOE received 26 nominations for membership. Ultimately, the CAC/HP Working Group consisted of 15 members, including one member from ASRAC and one DOE representative.[1] The CAC/HP Working Group met ten times (nine times in-person

[1] The group members were Tony Bouza (U.S. Department of Energy), Marshall Hunt (Pacific Gas & Electric Company, San Diego Gas & Electric Company, Southern California Edison, and Southern California Gas Company), Andrew deLaski (Appliance Standards Awareness Project and ASRAC representative), Meg Waltner (Natural Resources Defense Council), John Hurst (Lennox), Karen Meyers (Rheem Manufacturing Company), Charles McCrudden (Air Conditioning Contractors of America), Harvey Sachs (American Council for an Energy Efficient Economy), Russell Tharp (Goodman Manufacturing),

and once by teleconference). The meetings were held on August 26, 2015, September 10, 2015, September 28-29, 2015, October 13-14, 2015, October 26-27, 2015. November 18-19, 2015, December 1-2, 2015, December 16-17, 2015, January 11-12, 2016, and a webinar on January 19, 2016.

During the CAC/HP Working Group discussions, participants discussed setting new standards for single-package air conditioners. Specifically, arguments were made against raising the standard level for single-package systems due to the unavailability of full product lines, which span the entire range of cooling capacities, with efficiencies that are only modestly greater (i.e., 15 SEER) than the current standard level (i.e., 14 SEER). (ASRAC Public Meeting, No. 80 at pp. 75-6) After being informed that the national energy savings from a 15 SEER standard for single-package systems would be small (i.e., approximately 0.1 quads), the Working Group agreed not to recommend raising the standards for these product classes. (ASRAC Public Meeting, No. 80 at pp. 90-91). In addition, some parties wanted the Group to recommend a level for standards for split-system heat pumps that would encourage use of two-speed equipment (i.e., greater than 15 SEER), but the manufacturer representatives objected to this proposal due to two primary concerns: (1) only a single compressor manufacturer supplies two-stage compressors, thereby creating the possibility of a limited or constrained supply of the most critical component of a two-speed system and (2) the likelihood, in replacement installations, that the utilization of existing thermostat control wiring could result in the

Karim Amrane (Air-Conditioning, Heating, and Refrigeration Institute), Don Brundage (Southern Company), Kristen Driskell (California Energy Commission), John Gibbons (United Technologies), Steve Porter (Johnstone Supply), and Jim Vershaw (Ingersoll Rand).

use of only high-speed, thereby eliminating the efficiency gain resulting from low-speed operation during part-load conditions.

The CAC/HP Working Group successfully reached consensus on recommended energy conservation standards, as well as test procedure amendments for CACs and HPs. On January 19, 2016, the CAC/HP Working Group submitted the Term Sheet to ASRAC outlining its recommendations, which ASRAC subsequently adopted.[2]

After carefully considering the consensus recommendations for amending the energy conservation standards for CACs and HPs submitted by the CAC/HP Working Group and adopted by ASRAC, DOE has determined that these recommendations are in accordance with the statutory requirements of 42 U.S.C. 6295(p)(4) for the issuance of a direct final rule.

More specifically, these recommendations comprise a statement submitted by interested persons who are fairly representative of relevant points of view on this matter. In reaching this determination, DOE took into consideration the fact that the CAC/HP Working Group, in conjunction with ASRAC members who approved the recommendations, consisted of representatives of manufacturers of the covered equipment at issue, States, and efficiency advocates -- all of which are groups specifically identified by Congress as relevant parties to any consensus recommendation. (42 U.S.C. 6295(p)(4)(A)) As delineated above, the Term Sheet was signed and submitted by a

[2] Available at (copy and paste into browser): https://www.regulations.gov/document?D=EERE-2014-BT-STD-0048-0076.

broad cross-section of interests, including the manufacturers who produce the subject products, trade associations representing these manufacturers and installation contractors, environmental and energy-efficiency advocacy organizations, and electric utility companies. Although States were not direct signatories to the Term Sheet, the ASRAC Committee approving the CAC/HP Working Group's recommendations included at least two members representing States -- one representing the National Association of State Energy Officials (NASEO) and one representing the State of California.[3] Moreover, DOE does not read the statute as requiring a statement submitted by all interested parties before the Department may proceed with issuance of a direct final rule. By explicit language of the statute, the Secretary has the discretion to determine when a joint recommendation for an energy or water conservation standard has met the requirement for representativeness (i.e., "as determined by the Secretary"). Id.

DOE also evaluated whether the recommendation satisfies 42 U.S.C. 6295(o), as applicable. In making this determination, DOE conducted an analysis to evaluate whether the potential energy conservation standards under consideration achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified and result in significant energy conservation. The evaluation is the same comprehensive approach that DOE typically conducts whenever it considers potential energy conservation standards for a given type of product or equipment.

[3] These individuals were Deborah E. Miller (NASEO) and David Hungerford (California Energy Commission).

DOE has considered the recommended energy conservation standards and believes that they meet the EPCA requirements for issuance of a direct final rule. As a result, DOE published a direct final rule establishing energy conservation standards for residential central air conditioners and heat pumps elsewhere in this Federal Register. If DOE receives adverse comments that may provide a reasonable basis for withdrawal and withdraws the direct final rule, DOE will consider those comments and any other comments received in determining how to proceed with this proposed rule.

For further background information on the proposed standards and the supporting analyses, please see the direct final rule published elsewhere in this Federal Register. That document includes additional discussion of the EPCA requirements for promulgation of energy conservation standards; the current standards for residential central air conditioners and heat pumps; the history of the standards rulemakings establishing such standards; and information on the test procedures used to measure the energy efficiency of residential central air conditioners and heat pumps. The document also contains an in-depth discussion of the analyses conducted in support of this rulemaking, the methodologies DOE used in conducting those analyses, and the analytical results.

II. Proposed Standards

When considering new or amended energy conservation standards, the standards that DOE adopts for any type (or class) of covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is

technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the seven statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i)) The new or amended standard must also result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

For this proposed rule, DOE considered the impacts of amended standards for central air conditioners and heat pumps at each TSL, beginning with the maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next-most-efficient level and undertook the same evaluation until it reached the highest efficiency level that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader in understanding the benefits and/or burdens of each TSL, tables in this section summarize the quantitative analytical results for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a standard and impacts on employment.

1. Benefits and Burdens of TSLs Considered for Central Air Conditioner and Heat Pump Standards

Table II-1 and Table II-2 summarize the quantitative impacts estimated for each TSL for central air conditioners and heat pumps. The national impacts are measured over the lifetime of central air conditioners and heat pumps purchased in the 30-year period that begins in the anticipated first year of compliance with any amended standards (2021-2050 or, in the case of the recommended TSL, 2023-2052). The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle results. The efficiency levels contained in each TSL are described in section V.A of the direct final rule.

Table II-1 Summary of Results for Central Air Conditioner and Heat Pump TSLs: National Impacts

Category	TSL 1	Recommended TSL	TSL 3	TSL 4
FFC National Energy Savings				
Quads	1.3	3.2	8.6	14.2
NPV of Consumer Costs and Benefits (2015$ billion)				
3% discount rate	5.7	12.2	1.1	(28.1)
7% discount rate	1.3	2.5	(10.0)	(31.4)
Cumulative Emissions Reduction (Total FFC Emissions)				
CO_2 (million metric tons)	76.68	188.3	508.7	841.0
SO_2 (thousand tons)	40.94	100.8	272.4	452.4
NO_X (thousand tons)	142.4	350.3	944.2	1,559
Hg (tons)	0.151	0.372	1.005	1.669
CH_4 (thousand tons)	341.2	842.4	2,264	3,738
CH_4 (million tons CO_2eq)*	9,553	23,586	63,387	104,677
N_2O (thousand tons)	0.858	2.114	5.711	9.481
N_2O (thousand tons CO_2eq)*	227.5	560.3	1,514	2,512
Value of Emissions Reduction (Total FFC Emissions)				
CO_2 (2015$ billion)**	0.482 to 6.997	1.143 to 16.855	3.190 to 46.375	5.298 to 76.950
NO_X – 3% discount rate (2015$ million)	222.2 to 506.6	528.1 to 1204.1	1471.5 to 3355.0	2448.1 to 5581.5
NO_X – 7% discount rate (2015$ million)	80.0 to 180.4	178.6 to 402.6	525.4 to 1184.5	875.0 to 1972.9

* CO_2eq is the quantity of CO_2 that would have the same global warming potential (GWP).
** Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.
Note: Parentheses indicate negative values.

Table II-2 Summary of Results for Central Air Conditioners and Heat Pumps by TSL: Manufacturer and Consumer Impacts

Category	TSL 1	Recommended TSL*	TSL 3	TSL 4
Manufacturer Impacts				
Industry NPV (2015$ million)	3,852.0 to 4,466.2	3,803.9 to 4,381.9	3,382.0 to 4,512.2	3,360.6 to 4,889.6
No-new-standards case INPV = $4,496.1				
Change in Industry NPV (%)	(14.3) to (0.7)	(15.4) to (2.5)	(24.8) to 0.4	(25.3) to 8.8
Consumer Average LCC Savings (2015$)				
Split Air Conditioners	N: $43 HD: $169 HH: $82	N: $43 HD: $150 HH: $39	($122)	($304)
Split Heat Pumps	$72	$131	($25)	($425)
Package Air Conditioners	N/A	N/A	$43	($80)
Package Heat Pumps	N/A	N/A	$115	$115
Space-Constrained Air Conditioners	N/A	N/A	N/A	$58
Small-Duct High-Velocity	N/A	N/A	N/A	($540)
Shipment-Weighted Average**	$68	$75	($71)	($315)
Consumer Simple PBP (years)				
Split Air Conditioners	N: 10.5 HD: 5.4 HH: 5.5	N: 10.5 HD: 7.6 HH: 7.7	15.2	19.2
Split Heat Pumps	5.2	4.9	9.4	14.9
Package Air Conditioners	N/A	N/A	8.9	12.3
Package Heat Pumps	N/A	N/A	5.2	5.2
Space-Constrained Air Conditioners	N/A	N/A	N/A	11.6
Small-Duct High-Velocity	N/A	N/A	N/A	34.3
Shipment-Weighted Average**	6.0	6.7	12.5	16.8
% of Consumers that Experience Net Cost				
Split Air Conditioners	N: 25% HD: 14% HH: 15%	N: 25% HD: 42% HH: 45%	63%	75%
Split Heat Pumps	9%	20%	54%	79%
Package Air Conditioners	N/A	N/A	53%	69%
Package Heat Pumps	N/A	N/A	39%	39%
Space-Constrained Air Conditioners	N/A	N/A	N/A	60%
Small-Duct High-Velocity	N/A	N/A	N/A	90%
Shipment-Weighted Average*	14%	28%	59%	74%

Note: Parentheses indicate negative values. N = North region. HD = Hot-dry region; HH = Hot-humid region.

* There are no impacts for Package Air Conditioners. Package Heat Pumps, Space-Constrained Air Conditioners, and Small-Duct High-Velocity because the standard levels are at the baseline efficiency.

** Weighted by shares of each product class in total projected shipments in 2021. Does not include shipments for SCAC and SDHV.

First, DOE considered TSL 4, which would save an estimated total of 14.2 quads of energy, an amount DOE considers significant. TSL 4 has an estimated NPV of consumer benefit of -$31.4 billion using a 7-percent discount rate, and -$28.1 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 4 are 841 Mt of CO_2, 452.4 thousand tons of SO_2, 1,559 thousand tons of NO_X, 1.669 tons of Hg, 3,738 thousand tons of CH_4, and 9.481 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reductions at TSL 4 ranges from $5.298 billion to $76.950 billion.

At TSL 4, the average LCC savings is -$304 for split air conditioners, -$425 for split heat pumps, -$80 for package air conditioners, $115 for package heat pumps, $58 for space-constrained air conditioners, and -$540 for small-duct high-velocity air conditioners. The simple PBP is 19.2 years for split air conditioners, 14.9 years for split heat pumps, 12.3 years for package air conditioners, 5.2 years for package heat pumps, 11.6 years for space-constrained air conditioners, and 34.3 years for small-duct high-velocity air conditioners. The share of consumers experiencing a net LCC cost is 75 percent for split air conditioners, 79 percent for split heat pumps, 69 percent for package air conditioners, 39 percent for package heat pumps, 60 percent for space-constrained air conditioners, and 90 percent for small-duct high-velocity air conditioners.

At TSL 4, the projected change in INPV ranges from a decrease of $1,135.6 million to an increase of $393.5 million. If the more severe range of impacts is reached, TSL 4 could result in a net loss of up to 25.3 percent of INPV for manufacturers.

After considering the analysis and weighing the benefits and the burdens, the Secretary has tentatively concluded that, at TSL 4 for central air conditioner and heat pump standards, the benefits of energy savings and emissions reductions would be outweighed by the negative NPV of total consumer benefits at a 3-percent and 7-percent discount rate, negative average consumer LCC savings for most product classes, and the reduction in industry value.

Next, DOE considered TSL 3, which would save an estimated total of 8.6 quads of energy, an amount DOE considers significant. TSL 3 has an estimated NPV of consumer benefit of -$10 billion using a 7-percent discount rate, and $1.1 billion using a 3-percent discount rate.

The cumulative emissions reductions at TSL 3 are 508.7 Mt of CO_2, 272.4 thousand tons of SO_2, 944.2 thousand tons of NO_X, 1.005 tons of Hg, 2,264 thousand tons of CH_4, and 5.711 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reductions at TSL 3 ranges from $3.190 billion to $46.375 billion.

At TSL 3, the average LCC savings is -$122 for split air conditioners, -$25 for split heat pumps, $43 for package air conditioners, and $115 for package heat pumps.

The simple PBP is 15.2 years for split air conditioners, 9.4 years for split heat pumps, 8.9 years for package air conditioners, and 5.2 years for package heat pumps. The share of consumers experiencing a net LCC cost is 63 percent for split air conditioners, 54 percent for split heat pumps, 53 percent for package air conditioners, and 39 percent for package heat pumps. There are no impacts on space-constrained air conditioners or small-duct high-velocity air conditioners at TSL 3.

At TSL 3, the projected change in INPV ranges from a decrease of $1,114.2 million to an increase of $16.1 million. If the more severe range of impacts is reached, TSL 3 could result in a net loss of up to 24.8 percent of INPV for manufacturers.

After considering the analysis and weighing the benefits and the burdens, the Secretary has tentatively concluded that at TSL 3 for central air conditioner and heat pump standards, the benefits of energy savings, positive NPV of consumer benefit at a 3-percent discount rate, and emissons reductions would be outweighed by the negative NPV of consumer benefit at a 7-percent discount rate, negative average LCC savings for most product classes, and the potential reduction in INPV for manufacturers.

Next, DOE considered the Recommended TSL, which would save an estimated total of 3.2 quads of energy, an amount DOE considers significant. The Recommended TSL has an estimated NPV of consumer benefit of $2.5 billion using a 7-percent discount rate, and $12.2 billion using a 3-percent discount rate.

The cumulative emissions reductions under the Recommended TSL are 188.3 Mt of CO_2, 100.8 thousand tons of SO_2, 350.3 thousand tons of NO_X, 0.372 tons of Hg, 842.4 thousand tons of CH_4, and 2.114 thousand tons of N_2O. The estimated monetary value of the CO_2 emissions reductions ranges from $1.143 billion to $16.855 billion.

Under the Recommended TSL, the average LCC savings for split air conditioners is $43 in the north region, $150 in the hot dry region, $39 in the hot humid region, and $131 for split heat pumps. The simple payback period for split air conditioners is 10.5 years in the north region, 7.6 years in the hot dry region, 7.7 years in the hot humid region, and 4.9 years for split heat pumps. The share of consumers experiencing a net LCC cost for split air conditioners is 25 percent in the north region, 42 percent in the hot dry region, 45 percent in the hot humid region, and 20 percent for split heat pumps. There are no impacts to packaged air conditioners, packaged heat pumps, space-constrained air conditoners, and small-duct high-velocity air conditioners under the Recommended TSL.

Under the Recommended TSL, the projected change in INPV ranges from a decrease of $692.3 million to a decrease of $114.2 million. If the more severe range of impacts is reached, TSL 3 could result in a net loss of up to 15.4 percent of INPV for manufacturers.

After considering the analysis and weighing the benefits and the burdens, the Secretary has tentatively concluded that under the Recommended TSL for central air conditioner and heat pump standards, the benefits of energy savings, positive NPV of

consumer benefit, positive impacts on consumers (as indicated by positive average LCC savings and favorable PBPs), and emission reductions, would outweigh the negative impacts on some consumers and the potential reduction in INPV for manufacturers.

Under the authority provided by 42 U.S.C. 6295(p)(4), DOE is issuing this notice of proposed rulemaking that proposes amended energy conservation standards for central air conditioners and heat pumps at the Recommended TSL. The proposed amended energy conservation standards for central air conditioners and heat pumps as determined by the DOE test procedure at the time of the 2015-2016 ASRAC negotiations are presented in Table II-3.

Table II-3 Proposed Amended Energy Conservation Standards for Central Air Conditioners and Heat Pumps as Determined by the DOE Test Procedure at the time of the 2015-2016 ASRAC Negotiations

Product Class	**National**		**Southeast***	**Southwest****	
	SEER	HSPF	SEER	SEER	EER
Split-System Air Conditioners with a Certified Cooling Capacity <45,000 Btu/h	14		15	15	12.2/10.2***
Split-System Air Conditioners with a Certified Cooling Capacity ≥45,000 Btu/h	14		14.5	14.5	11.7/10.2***
Split-System Heat Pumps	15	8.8			
Single-Package Air Conditioners†	14				11.0
Single-Package Heat Pumps†	14	8.0			
Space-Constrained Air Conditioners†	12				
Space-Constrained Heat Pumps†	12	7.4			
Small-Duct High-Velocity Systems†	12	7.2			

* Southeast includes: The states of Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, the District of Columbia, and the U.S. territories.
** Southwest includes the states of Arizona, California, Nevada, and New Mexico.
*** The 10.2 EER amended energy conservation standard applies to split-system air conditioners with a seasonal energy efficiency ratio greater than or equal to 16.

† The energy conservation standards for small-duct high velocity and space-constrained product classes remain unchanged from current levels

Table II-4 shows the amended energy conservation standards for central air conditioners and heat pumps as determined by the test procedure final rule issued by DOE on November 30, 2016, hereinafter referred to as the "November 2016 test procedure final rule". [4] (Docket No. EERE-2016-BT-TP-0029)

Table II-4 Amended Energy Conservation Standards for Central Air Conditioners and Heat Pumps as Determined by the November 2016 Test Procedure Final Rule

Product Class	**National**		**Southeast***	**Southwest****	
	SEER2	HSPF2	SEER2	SEER2	EER2
Split-System Air Conditioners with a Certified Cooling Capacity <45,000 Btu/h	13.4		14.3	14.3	11.7/9.8***
Split-System Air Conditioners with a Certified Cooling Capacity ≥45,000 Btu/h	13.4		13.8	13.8	11.2/9.8***
Split-System Heat Pumps	14.3	7.5			
Single-Package Air Conditioners†	13.4				10.6
Single-Package Heat Pumps†	13.4	6.8			
Space-Constrained Air Conditioners†	11.7				
Space-Constrained Heat Pumps†	11.9	6.3			
Small-Duct High-Velocity Systems†	12	6.1			

* Southeast includes: The states of Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, the District of Columbia, and the U.S. territories.
** Southwest includes the states of Arizona, California, Nevada, and New Mexico.
*** The 9.8 EER amended energy conservation standard applies to split-system air conditioners with a seasonal energy efficiency ratio greater than or equal to 15.2.
† The energy conservation standards for small-duct high velocity and space-constrained product classes remain unchanged from current levels.

[4] The test procedure final rule issued by DOE on November 30, 2016, is accessible via the DOE website at: http://energy.gov/eere/buildings/downloads/issuance-2016-11-30-energy-conservation-program-test-procedures-central-air

The following paragraph describes how DOE translated the energy conservation standards in Table II-3 – which are in terms of SEER, HSPF, and EER as determined by the DOE test procedure at the time of the 2015-2016 ASRAC Negotiations – to the energy conservation standard levels in Table II-4 – which are in terms of SEER2, HSPF2, and EER2 as determined by the November 2016 test procedure final rule. DOE used a methodology consistent with the recommendations of the CAC/HP Working Group to translate the SEER standard levels to SEER2 standard levels for the split-system and single-package product classes. Note that the heating load line slope factor established by the November 2016 test procedure final rule is different than the heating load line slope factors used by the CAC/HP Working Group in their Term Sheet recommendation #9. DOE translated the HSPF standard levels to HSPF2 standard levels for split-system and single-packge heat pumps by adjusting for the intermediate heating load line slope factor established by the November 2016 test procedure final rule using interpolation. (November 2016 Test Procedure Final Rule, pp. 127-130)

Comments in response to the provisional translations for HSPF2 for split system and single-package heat pumps are summarized in the November 2016 test procedure final rule. (November 2016 Test Procedure Final Rule, pp. 127-130) . Commenters agreed with the translation for split-system heat pumps, but industry commenters felt that the 6.8 value was too high for single-package heat pumps. Alternative HSPF2 values that were suggested in comments ranged from 6.5 (Docket No. EERE-2016-BT-TP-0029, Lennox, No. 25 at p. 10) to 6.7 (Docket No. EERE-2016-BT-TP-0029, Goodman, No. 39 at p. 10) Data provided under confidentiality supports the range suggested in comments.

DOE combined that data with the data it used to validate its interpolated value of 6.8. DOE found that the combined data shows that 6.7 HSPF2 is an appropriate translation. For this reason, DOE is proposing 6.7 HSPF2 for single-package heat pumps in this notice.

The August 2016 test procedure SNOPR and November 2016 test procedure final rule did not include translated levels for small-duct high velocity (SDHV) and space-constrained products. Neither did Recommendation #9 of the Term Sheet. Recommendation #9 did, however, state that the energy conservation standards for those product classes should remain unchanged from current levels (i.e. that there would be no change in stringency). (ASRAC Term Sheet, No. 76 at pp. 4–5) On October 27, 2016, DOE published a notice of data availability (NODA) that provided provisional translations of the CAC/HP Working Group's recommended energy conservation standard levels for small-duct high velocity and space constrained products (which are in terms of the test procedure at the time of the 2015–2016 Negotiations) into levels consistent with the test procedure proposed in the August 2016 test procedure SNOPR. Table II-5 presents the provisional translations included in the October 2016 NODA. Note that multiple provisional translations from SEER to SEER2 are included for space-constrained air conditioners and heat pumps because, at the time of the NODA publication, DOE had not finalized the test procedure which would establish the minimum external static pressure requirements.

Table II-5: Provisional Translations of CAC/HP Working Group-Recommended Energy Conservation Standard Levels Included in October 2016 NODA

Product Class	CAC/HP Working Group Recommendation		August 2016 Test Procedure SNOPR Translation	
	SEER	HSPF	SEER2	HSPF2
Small-Duct High-Velocity Systems	12	7.2	12	6.1
Space-Constrained Air Conditioners			11.6*/11.8**	
Space-Constrained Heat Pumps	12		11.5*/11.9**	6.3

* Estimated SEER2 at 0.50 in. wc.
** Estimated SEER2 at 0.30 in. wc.

In developing its provisional translations for space-constrained air conditioners published in the NODA, DOE reviewed existing test data, adjusted relevant measurements based on blower performance data, and translated the levels based on the average impact. For the space-constrained and SDHV heat pump translations published in the NODA, DOE also reviewed test data and confirmed that the 15% reduction from HSPF to HSPF2 that DOE observed for split-system and single-package heat pumps was appropriate also for space-contrained and SDHV heat pumps.

In written comments, manufacturers and AHRI expressed support for DOE's provisional translations for SDHV products. Unico stated that it reviewed all of its test reports from the previous two years and found its range of results validated DOE's translations for SDHV products. (Unico, No. 95 at p. 2). AHRI and Lennox also expressed support for DOE's SEER and HPSF to SEER2 and HSPF2 levels for SDHV products. (AHRI, No. 94 at p. 1; Lennox, No. 97 at p. 1) EEI commented that it did not agree with DOE's translation because the HSPF appears to drop by approximately 15.3%, even though there has been no change to the product. (EEI, No. 96 at p. 2).

Regarding the concern expressed by EEI, DOE's translations do not assume nor reflect any change to product design. EPCA requires DOE to consider changes in energy conservation standards if a test procedure change alters the measurement, but does not prohibit a test procedure change that alters the measurement. (42 U.S.C. 6293(e)) In the November 2016 test procedure final rule, DOE adopted provisions that amend the test procedure required to determine representations for CAC/HP, including SDHV products. These provisions impact the value of the test procedure results. For instance, the November 2016 test procedure final rule assumes higher heating loads for heat pumps in colder outdoor conditions, which will typically result in lower HSPF2 ratings. (November 2016 Test Procedure Final Rule, pp. 110-127) Simply stated, an SDHV product tested in accordance with the test procedure at the time of the 2015-2016 ASRAC Negotiations will get a different rating than the same SDHV product (without design changes) tested in accordance with the test procedure adopted in the November 2016 test procedure final rule. DOE's translations are intended to reflect these differences. DOE is using "SEER2", "HSPF2", and "EER2" to distinguish ratings determined by the November 2016 test procedure from the SEER, HSPF and EER ratings determined by past test procedures to mitigate confusion that may result from the possibility that products available before and after the November 2016 test procedure may have a different SEER2/HSPF2/EER2 than SEER/HSPF/EER rating despite no changes to design.

Unico's SDHV data validate DOE's translations, which are also supported by AHRI and Lennox. DOE did not receive any other comments or data suggesting that its

translations for SDHV products are inappropriate. For these reasons, DOE is proposing the SDHV translations presented in the October 2016 NODA in this NOPR.

AHRI is concerned that the SEER2 translation DOE presented for space-constrained air conditioners is too high by 0.1. AHRI calculated SEER2 to be 11.7 at 0.30 in. wc. rather than 11.8. AHRI provided data for 4 space-constrained products to illustrate its results. (AHRI, No. 94 at p. 2). Lennox also commented that DOE's SEER2 translation for space-constrained air conditioners is too high by 0.1. (Lennox, No. 97 at p. 2) AHRI and Lennox also commented that DOE should adopt the same SEER2 standard for space-constrained air conditioners and heat pumps (AHRI, No. 94 at p.2; Lennox, No. 97 at p. 2) First Co. strongly disagrees with DOE's proposed translation of SEER to SEER2 values for space-constrained air conditioners because DOE's methodology for determining SEER2 fails to account for the significant SEER reduction resulting from what they claim to be "new" coil-only testing requirements for space-constrained air conditioners. First Co. is referring to amendments to the certification requirements of 10 CFR 429 adopted for CAC/HP in the June 2016 test procedure final rule, which became effective in July 2016 and are required for representations starting December 5, 2016. (10 CFR 429.16(a)(1)) First Co. stated that prior to the June 2016 test procedure final rule, space constrained units, which are manufactured and sold only for installation with blower coil indoor units, have been tested with blower coil units with high-efficiency motors (ECMs). The high-efficiency motors average 200W /1000 scfm or less for indoor power compared with the default fan power value of 365W /1000 scfm applied under the "coil- only" test. First Co. claims that the impact of the "coil-only" test alone is

approximately a 10% reduction in SEER of these products from 12 SEER to 10.8 SEER, and that DOE's methodology is flawed because it uses a starting point of 365W/1000 (i.e., the"coil-only" default fan power value of the current test procedure) and only considers the change in energy usage from 365W /1000 scfm to 441 W/1000 scfm. They claim that this ignores the increase in energy usage from 200W/1000 scfm to 365W/1000 scfm, and the resulting SEER reduction, caused by the imposition of the "coil-only" test. First Co. submits that SEER2 should be calculated by applying the following methodology, which takes into account the new "coil-only" test and the changes in the August 2016 test procedure SNOPR: replace 200W /1000 scfm (test data using ECM) with 411 W /1000 scfm and recalculate the SEER. First Co. indicates that applying this methodology, SEER will be reduced by approximately 10% for the coil only test and by an additional 4% to account for the suggested 411 W/1000 scfm number, resulting in a 10.4 SEER2 rating for space constrained air conditioners. (First Co., No. 93 at pp. 1, 2)

DOE appreciates the space-constrained air conditioner translation data provided by AHRI. DOE combined AHRI's data with the data DOE used to develop DOE's provisional translations. Note that after the October 2016 NODA, DOE issued the November 2016 test procedure final rule in which it adopted a minimum external static pressure requirement of 0.3 in. wc. for space-constrained air conditioners and heat pumps. (November 2016 Test Procedure Final Rule, pp. 97-99) Consequently, DOE combined AHRI's data with DOE's data reflective of performance at that operating condition. Once combined, the data validates AHRI's assertion that 11.7 is the appropriate SEER2 level for space-constrained air conditioners at 0.3 in. wc.. Thus, DOE

is adopting 11.7 SEER2 as the standard level for space-constrained air conditioners in this final rule. DOE disagrees with AHRI and Lennox that 11.7 SEER2 should also be used for space-constrained heat pumps. While space-constrained air conditioners are required to certify at least one coil-only combination that is representative of the least efficient coil-only combination distributed in commerce, space-constrained heat pumps have no coil-only requirement. (10 CFR 429.16(a)(1)) AHRI derived 11.7 SEER2 using 406 W/1000 scfm (the default fan power at 0.3 in. wc.) for indoor fan power consumption. As discussed in the November 2015 test procedure SNOPR and subsequently referenced in the November 2016 test procedure final rule, this default fan power value is reflective of the weighted-average performance of indoor fan by motor type distribution projected for the effective date of this standard, which includes a significant majority of lower-efficiency PSC motors. 80 FR 69319-20 and (November 2016 Test Procedure Final Rule, p. 104) First Co. states that most space-constrained blower-coil systems currently sold include a high-efficiency ECM motor. (First Co., No 93 at pp. 1-2) Brushless permanent magnet motors (often referred to as "ECM") are more efficient than PSC motors. Thus, 406 W/1000 scfm is not representative of the field operation of space-constrained blower-coil systems being sold. DOE's provisional analysis presented in the October 2016 NODA is consistent with First Co.'s claims, showing that higher-efficiency motors typically used in space-constrained blower-coil systems sold today consume less than 406 W/1000 scfm, resulting in a higher SEER2 level for space-constrained blower-coil systems compared to space-constrained coil-only systems. DOE did not receive any additional comments or data regarding the SEER2 level for space-constrained heat pumps. For these reasons, DOE finds that a higher

SEER2 level for space-constrained heat pumps - which is based on blower-coil performance - compared to space-constrained air-conditioners - which is based on coil-only performance - is appropriate. DOE adopts its provisional translation of 11.9 SEER2 for space-constrained heat pumps for these reasons.

DOE provided a response to First Co.'s comment regarding the required coil-only test for testing of space constrained products in the November 30, 2016 test procedure final rule. (November 2016 Test Procedure Final Rule, pp. 146-148)

2. Summary of Benefits and Costs (Annualized) of the Proposed Amended Standards

The benefits and costs of the proposed amended standards can also be expressed in terms of annualized values. The annualized monetary values are the sum of: (1) the annualized national economic value (expressed in 2015$) of the benefits from operation of products that meet the proposed standards (consisting primarily of operating cost savings from using less energy, minus increases in product purchase costs, which is another way of representing consumer NPV), and (2) the annualized monetary value of the benefits of emission reductions, including CO_2 emission reductions.[5]

[5] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2016, the year used for discounting the NPV of total consumer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.*, 2020 or 2030), and then discounted the present value from each year to 2016. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year, that yields the same present value.

Estimates of annualized benefits and costs of the proposed amended standards for central air conditioners and heat pumps, expressed in 2015$, are shown in Table II-6. The results under the primary estimate are as follows.

Using a 7-percent discount rate for benefits and costs other than CO_2 reduction, (for which DOE used a 3-percent discount rate along with the average SCC series that uses a 3-percent discount rate ($40.6/t in 2015)), the estimated cost of the proposed standards is $741 million per year in increased product costs, while the estimated benefits are $1,041 million per year in reduced product operating costs, $337 million per year in CO_2 reductions, and $22 million per year in reduced NO_X emissions. In this case, the net benefit would amount to $659 million per year.

Using a 3-percent discount rate for all benefits and costs and the average SCC series that uses a 3-percent discount rate ($40.6/t in 2015), the estimated cost of the proposed standards is $747 million per year in increased product costs, while the estimated benefits are $1,488 million per year in reduced product operating costs, $337 million per year in CO_2 reductions, and $32 million per year in reduced NO_X emissions. In this case, the net benefit would amount to $1,110 million per year.

DOE also notes that, using a 7-percent discount rate for only the increased product costs and the reduced product operating costs, the net benefit would amount to $300 million per year. Using a 3-percent discount rate for only the increased product

costs and the reduced product operating costs, the net benefit would amount to $741 million per year.

Table II-6 Annualized Benefits and Costs of Proposed Amended Standards (Recommended TSL) for Central Air Conditioners and Heat Pumps*

	Discount Rate %	Primary Estimate*	Low Net Benefits Estimate*	High Net Benefits Estimate*
		million 2015$/year		
Benefits				
Consumer Operating Cost Savings	7	1,041	1,005	1,147
	3	1,488	1,425	1,653
CO_2 Reduction (using mean SCC at 5% discount rate)**	5	100	100	100
CO_2 Reduction (using mean SCC at 3% discount rate)**	3	337	337	337
CO_2 Reduction (using mean SCC at 2.5% discount rate)**	2.5	494	494	494
CO_2 Reduction (using 95th percentile SCC at 3% discount rate)**	3	1,027	1,027	1,027
NO_X Reduction†	7	22	22	49
	3	32	32	73
Total Benefits††	7 plus CO_2 range	1,163 to 2,090	1,127 to 2,054	1,296 to 2,223
	7	1,400	1,364	1,533
	3 plus CO_2 range	1,620 to 2,547	1,557 to 2,484	1,826 to 2,753
	3	1,857	1,794	2,063
Costs				
Consumer Incremental Installed Costs	7	741	784	723
	3	747	799	725
Net Benefits				
Total††	7 plus CO_2 range	422 to 1,349	342 to 1,269	573 to 1,500
	7	659	580	810
	3 plus CO_2 range	873 to 1,800	757 to 1,684	1,100 to 2,028
	3	1,110	994	1,338

* This table presents the annualized costs and benefits associated with central air conditioners and heat pumps shipped in 2023-2052. These results include benefits to consumers which accrue after 2050 from the products purchased in 2023-2052. The incremental installed costs include incremental equipment cost as well as installation costs. The CO_2 reduction benefits are global benefits due to actions that occur nationally. The Primary, Low Net Benefits, and High Net Benefits Estimates utilize projections of energy prices from the AEO 2015 Reference case, Low Estimate, and High Estimate, respectively. In addition, incremental product costs reflect a modest decline rate for projected product prices in the Primary Estimate, a constant rate in the Low Net Benefits Estimate, and a higher decline rate in the High Net Benefits Estimate. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.
** The CO_2 reduction benefits are calculated using 4 different sets of SCC values. The first three use the average SCC calculated using 5%, 3%, and 2.5% discount rates, respectively. The fourth represents the 95th percentile of the SCC distribution calculated using a 3% discount rate. The SCC values are emission year specific.
† DOE estimated the monetized value of NOx emissions reductions using benefit per ton estimates from the Regulatory Impact Analysis for the Clean Power Plan Final Rule, published in August 2015 by EPA's Office of Air Quality Planning and Standards. (Available at: http://www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-regulatory-impact-analysis.) For the Primary Estimate and Low Net Benefits Estimate, DOE used a national benefit-per-ton estimate for NO_X emitted from the Electric Generating Unit sector based on an estimate of premature mortality derived from the ACS study (Krewski et al., 2009). For the High Net Benefits Estimate, the benefit-per-ton estimates were based on the Six Cities study (Lepuele et al., 2011); these are nearly two-and-a-half times larger than those from the ACS study.
†† Total Benefits for both the 3% and 7% cases are presented using only the average SCC with 3-percent discount rate. In the rows labeled "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values.

III. Public Participation

A. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule no later than the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this proposed rule.

Submitting comments via www.regulations.gov. The www.regulations.gov webpage 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 itself 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. Otherwise, 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 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 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 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 www.regulations.gov provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or mail. Comments and documents submitted via email, hand delivery/courier, or mail also will be posted to 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 in 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/courier, 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 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, that are written in English, and that are 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. 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/courier 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 that 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).

IV. Procedural Issues and Regulatory Review

The regulatory reviews conducted for this proposed rule are identical to those conducted for the direct final rule published elsewhere in this Federal Register. Please see the direct final rule for further details.

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this proposed rule.

List of Subjects in 10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, Small businesses.

Issued in Washington, DC, on December 5, 2016.

David J. Friedman
Acting Assistant Secretary
Energy Efficiency and Renewable Energy

For the reasons set forth in the preamble, DOE proposes to amend part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 430 - ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291-6309; 28 U.S.C. 2461 note.

2. Section 430.32 is amended by revising paragraphs (c)(1), (2) and (3) and adding paragraphs (c)(5) and (6) to read as follows:

§430.32 Energy and water conservation standards and their compliance dates.

* * * * *

(c) Central air conditioners and heat pumps. The energy conservation standards defined in terms of the heating seasonal performance factor are based on Region IV, the minimum standardized design heating requirement, and the provisions of 10 CFR 429.16.

(1) Central air conditioners and central air conditioning heat pumps manufactured on or after January 1, 2015, and before January 1, 2023, must have Seasonal Energy Efficiency Ratio and Heating Seasonal Performance Factor not less than:

Product class	Seasonal energy efficiency ratio (SEER)	Heating seasonal performance factor (HSPF)
(i) Split systems - air conditioners	13	

(ii) Split systems - heat pumps	14	8.2
(iii) Single package units - air conditioners	14	
(iv) Single package units - heat pumps	14	8.0
(v) Small-duct, high-velocity systems	12	7.2
(vi)(A) Space-constrained products – air conditioners	12	
(vi)(B) Space-constrained products – heat pumps	12	7.4

(2) In addition to meeting the applicable requirements in paragraph (c)(1) of this section, producs in product class (i) of paragraph (c)(1) of this section (i.e., split-systems - air conditioners) that are installed on or after January 1, 2015, and before January 1, 2023, in the States of Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, or Virginia, or in the District of Columbia, must have a Seasonal Energy Efficiency Ratio (SEER) of 14 or higher. Any outdoor unit model that has a certified combination with a rating below 14 SEER cannot be installed in these States. The least efficient combination of each basic model must comply with this standard.

(3)(i) In addition to meeting the applicable requirements in paragraph (c)(1) of this section, products in product classes (i) and (iii) of paragraph (c)(1) of this section (i.e., split systems - air conditioners and single-package units - air conditioners) that are installed on or after January 1, 2015, and before January 1, 2023, in the States of Arizona, California, Nevada, or New Mexico must have a Seasonal Energy Efficiency Ratio (SEER) of 14 or higher and have an Energy Efficiency Ratio (EER) (at a standard rating

of 95 °F dry bulb outdoor temperature) not less than the following:

Product class	Energy efficiency ratio (EER)
(i) Split systems - air conditioners with rated cooling capacity less than 45,000 Btu/hr	12.2
(ii) Split systems - air conditioners with rated cooling capacity equal to or greater than 45,000 Btu/hr	11.7
(iii) Single-package units - air conditioners	11.0

(ii) Any outdoor unit model that has a certified combination with a rating below 14 SEER or the applicable EER cannot be installed in this region. The least-efficient combination of each basic model must comply with this standard.

* * * * *

(5) Central air conditioners and central air conditioning heat pumps manufactured on or after January 1, 2023, must have Seasonal Energy Efficiency Ratio 2 and Heating Seasonal Performance Factor 2 not less than:

Product class	Seasonal energy efficiency ratio 2 (SEER2)	Heating seasonal performance factor 2 (HSPF2)
(i)(A) Split systems - air conditioners with a certified cooling capacity less than 45,000 Btu/hr	13.4	
(i)(B) Split systems - air conditioners with a certified cooling capacity equal to or greater than 45,000 Btu/hr	13.4	
(ii) Split systems - heat pumps	14.3	7.5
(iii) Single-package units - air conditioners	13.4	
(iv) Single-package units - heat pumps	13.4	6.7
(v) Small-duct, high-velocity systems	12	6.1
(vi)(A) Space-constrained	11.7	

products – air conditioners		
(vi)(B) Space-constrained products – heat pumps	11.9	6.3

(6)(i) In addition to meeting the applicable requirements in paragraph (c)(5) of this section, products in product classes (i) and (iii) of paragraph (c)(5) of this section (i.e., split systems - air conditioners and single-package units - air conditioners) that are installed on or after January 1, 2023, in the southeast or southwest must have Seasonal Energy Efficiency Ratio 2and Energy Efficiency Ratio 2 not less than:

Product Class	**Southeast***	**Southwest****	
	SEER2	SEER2	EER2***
(i)(A) Split-systems - air conditioners with a certified cooling capacity less than 45,000 Btu/hr	14.3	14.3	11.7/9.8†
(i)(B) Split-systems - air conditioners with a certified cooling capacity equal to or greater than 45,000 Btu/hr	13.8	13.8	11.2/9.8††
(iii) Single-package units - air conditioners			10.6

* "Southeast" includes the States of Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, the District of Columbia, and the U.S. Territories.
** "Southwest" includes the States of Arizona, California, Nevada, and New Mexico.
***EER refers to the energy efficiency ratio at a standard rating of 95 °F dry bulb outdoor temperature.
† The 11.7 EER2 standard applies to products with a certified SEER2 less th an 15.2. The 9.8 EER2 standard applies to products with a certified SEER2 greater than or equal to 15.2.
†† The 11.2 EER2 standard applies to products with a certified SEER2 less than 15.2. The 9.8 EER2 standard applies to products with a certified SEER2 greater than or equal to 15.2.

(ii) Any outdoor unit model that has a certified combination with a rating below the applicable standard level(s) for a region cannot be installed in that region. The least-efficient combination of each basic model must comply with this standard.

* * * * *