Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

10 CFR Parts 429, 430, and 431

[Docket No. EERE–2011–BT–TP–0024]

RIN 1904–AC46

Energy Conservation Program: Alternative Efficiency Determination Methods and Alternative Rating Methods

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

ACTION: Notice of proposed rulemaking.

SUMMARY: The U.S. Department of Energy (DOE) is proposing to revise and expand its existing regulations governing the use of particular methods as alternatives to testing for the purposes of certifying compliance with the applicable energy conservation standards and the reporting of related ratings for certain consumer products and commercial and industrial equipment covered by energy conservation standards.

DATES: DOE will accept comments, data, and information regarding this notice of proposed rulemaking (NOPR) no later than July 2, 2012. See section V, ''Public Participation,'' of this NOPR for details.

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-2011-BT-TP-0024, by any of the following methods:

- *Email:* to *AED/ARM–2011–TP–0024@ee.doe.gov.* Include EERE-2011-BT-TP-0024 in the subject line of the message.
- *Mail:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE–2J, Revisions to Energy Efficiency Enforcement Regulations, EERE–2011–BT–TP–0024, 1000 Independence Avenue SW., Washington, DC 20585–0121. Phone: (202) 586–2945. Please submit one signed paper original.
- *Hand Delivery/Courier:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024. Phone: (202) 586–2945. Please submit one signed paper original.

Instructions: All submissions received must include the agency name and docket number or RIN for this rulemaking.

Docket: For access to the docket to read background documents, or comments received, go to the Federal eRulemaking Portal at *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Ms. Ashley Armstrong, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE–2J, 1000 Independence Avenue SW., Washington, DC 20585–0121. Telephone: 202–586–6590. Email: *Ashley.Armstrong@ee.doe.gov;* and Ms. Laura Barhydt, U.S. Department of Energy, Office of the General Counsel, Forrestal Building, GC–32, 1000 Independence Avenue SW., Washington, DC 20585. Telephone: (202) 287–5772. Email: *Laura.Barhydt@hq.doe.gov.*

SUPPLEMENTARY INFORMATION:

I. Authority and Background

A. Authority

Title III of the Energy Policy and Conservation Act of 1975, as amended (''EPCA'' or, in context, ''the Act'') sets forth a variety of provisions designed to improve energy efficiency. Part A of Title III (42 U.S.C. 6291–6309) provides for the Energy Conservation Program for Consumer Products Other Than Automobiles. The National Energy Conservation Policy Act (NECPA), Pub. L. 95–619, amended EPCA to add Part A–1 of Title III, which established an energy conservation program for certain industrial equipment. (42 U.S.C. 6311–6317) [1] The Department of Energy (''DOE'') is charged with implementing these provisions.

Under EPCA, this program consists essentially of four parts: (1) Testing; (2) labeling; (3) Federal energy conservation standards; and (4) certification and enforcement procedures. The Federal Trade Commission (FTC) is primarily responsible for labeling consumer products, and DOE implements the remainder of the program. The testing requirements consist of test procedures that manufacturers of covered products and equipment must use (1) as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) for making representations about the efficiency of those products and equipment. Similarly, DOE must use these test requirements to determine whether the products comply with any relevant standards promulgated under EPCA. For certain consumer products and commercial equipment, DOE's existing testing regulations include allowing the use of an alternative efficiency determination method (AEDM) or an alternative rating method (ARM), in lieu of actual testing, to simulate the energy consumption or efficiency of certain basic models of covered products under DOE's test procedure conditions.

B. Background

AEDMs and ARMs are computer modeling or mathematical tools that predict the performance of non-tested basic models. They are derived from mathematical models and engineering principles that govern the energy efficiency and energy consumption characteristics of a type of covered product. (In the context of this discussion, the term ''covered product'' applies both to consumer products and commercial equipment that are covered under EPCA.) These computer modeling and mathematical tools, when properly developed, can provide a relatively straight-forward and reasonably accurate means to predict the energy usage or efficiency characteristics of a basic model of a given covered product.

Where authorized by regulation, AEDMs and ARMs enable manufacturers to rate and certify their basic models by using the projected energy use or energy efficiency results derived from these simulation models. DOE has authorized the use of AEDMs or ARMs for certain covered products that are difficult or expensive to test in an effort to reduce the testing burden faced by the manufacturers of expensive

[1] For editorial reasons, Parts B (consumer products) and C (commercial equipment) of Title III of EPCA were re-designated as parts A and A–1, respectively, in the United States Code.

or highly customized basic models. The primary difference between these two simulation methods is that ARMs must be approved by DOE prior to use while AEDMs do not require prior DOE approval. From a technical perspective, there are no substantive differences between these two simulation methods. DOE's regulations currently permit manufacturers of commercial heating, ventilation and air-conditioning (HVAC) equipment, commercial water heating (WH) equipment, distribution transformers, and electric motors to use AEDMs, while manufacturers of residential central air conditioners (CACs) and central heat pumps (CHPs) may use an ARM to rate their non-tested combinations.

DOE believes other similar products that must currently be rated and certified through testing, such as commercial refrigeration equipment, automatic commercial ice makers, beverage vending machines, walk-in cooler and freezer refrigeration systems and small electric motors, could also be rated and certified through the use of computer or mathematical modeling. Permitting the use of these modeling techniques for certification and rating purposes would require DOE to explicitly permit manufacturers to use an AEDM or ARM through regulation. DOE sought comment on this topic and other issues in a Request for Information (RFI), which was published in the **Federal Register** on April 18, 2011. 76 FR 21673.

The RFI requested suggestions, comments, and information relating to the Department's intent to expand and revise its existing AEDM and ARM requirements for consumer products and commercial and industrial equipment covered under EPCA. This rulemaking is intended to facilitate DOE's consideration of procedural changes to its requirements for AEDMs and ARMs in an effort to advance the effective implementation of DOE's conservation standards and regulations. The comment period for written submissions on the RFI closed on May 18, 2011. This notice proposes to modify those regulations pertaining to the AEDM and ARM requirements within Part 429 of Title 10 of the Code of Federal Regulations (CFR). The Department's goal is to establish a uniform, systematic, and fair approach to the use of these types of modeling techniques that will enable DOE to ensure that products in the marketplace are correctly rated—irrespective of whether they are subject to actual physical testing or are rated using modeling—without unnecessarily burdening regulated entities.

II. Discussion of Specific Revisions to DOE's Alternative Efficiency Determination Methods and Alternative Rating Methods Regulations and Comments Received in Response to the RFI

DOE received comments from 21 interested parties, including manufacturers, trade associations, and advocacy groups. Specifically, Table II.1 lists the entities that submitted comments and their affiliation. These comments are discussed in more detail below, and the full set of comments can be found at: *http://www.regulations.gov/#!docketDetail;dct=FR%252BPR%252BN%252BO%252BSR%252BPS;rpp=25;po=0;D=EERE-2011-BT-TP-0024.*

TABLE II.1—STAKEHOLDERS THAT SUBMITTED COMMENT ON THE RFI

Name	Acronym	Organization type
Air-Conditioning, Heating, and Refrigeration Institute	AHRI	Industry Trade Group.
American Council for an Energy Efficient Economy, Appliance Standards Awareness Project, and Natural Resources Defense Council.	ACEEE, ASAP, and NRDC (Joint Comment).	Advocacy Group.
American Panel Corporation	American Panel	Manufacturer of refrigeration panels.
Bradford White Water Heaters	Bradford White	Manufacturer of water heaters.
Carrier Corporation	Carrier	Manufacturer of Air Conditioning and Heating Equipment.
Earthjustice	Earthjustice	Advocacy Group.
First Company	First	Manufacturer of Air Conditioning and Heating Equipment.
Goodman Manufacturing Company	Goodman	Manufacturer of Air Conditioning and Heating Equipment.
Heatcraft Refrigeration Products	Heatcraft	Manufacturers of Commercial Refrigeration Equipment.
Howe Corporation	Howe	Manufacturer of Automatic Commercial Ice Makers.
Hussmann	Hussmann	Manufacturer of Air Conditioning and Heating Equipment and CRE.
Lennox International, Inc	Lennox	Manufacturers of Air Conditioning and Heating Equipment.
Mitsubishi Electric and Electronics USA, Inc	MEUS	Manufacturer of Air Conditioning and Heating Equipment.
Modine Manufacturing Company	Modine	Manufacturer of Air Conditioning and Heating Equipment.
National Electrical Manufacturers Association	NEMA	Industry Trade Group.
Natural Resources Defense Council	NRDC	Advocacy Group.
Omega Magnetics Engineering, LLC	Omega	Manufacturer of Distribution Transformers.
PVI Industries, LLC	PVI	Manufacturer of Commercial Water Heaters.
Scotsman Ice Systems	Scotsman	Manufacturer of Automatic Commercial Ice Makers.
Structural Concepts Corporation	Structural Concepts	Manufacturer of CRE.
Traulsen	Traulsen	Manufacturer of Air Conditioning and Heating Equipment and CRE.

A. Distinction Between Alternative Efficiency Determination Method and Alternative Rating Method

1. Naming Convention

DOE is contemplating combining AEDMs and ARMs under a single term to avoid confusion, particularly with respect to air conditioning products that currently are subject to different regulations depending on whether the unit is consumer or commercial. The RFI sought comment on the need to have two alternatives to testing or if both alternative methods could be covered by one term with the inclusion of additional product specific requirements.

Both Carrier and AHRI believe the distinction is necessary because ARMs require the highest sales volume tested combination for the indoor coil, while AEDMs are better for low volume, high variety commercial products where testing multiple samples is not feasible. (Carrier, No. 7.1 at p. 2; AHRI, No. 17.1 at p. 3) Lennox and Mitsubishi agreed and pointed out that the two methods are designed for different purposes, applications and capacity ranges. (Lennox, No. 16.1 at p. 1; Mitsubishi, No. 19.1 at p. 1) PVI Industries provided a similar observation that an ARM allows for adjustments to address a shortcoming of the test method, while AEDMs are calculated substitutes for testing. (PVI Industries, No. 15.1 at p. 3)

However, not all stakeholders agreed with the need for separately named methods. Hussmann commented that only AEDMs are needed, and Goodman stated that in order to reduce confusion there should only be one method, which should be ARMs because they have been in place for years. (Hussmann, No. 10.1 at p. 1; Goodman, No 2.1 at p. 1)

DOE tentatively agrees with the commenters suggesting a single term to apply to those modeling techniques used to rate and certify any covered products that would be permitted to use these alternate methods. DOE intends to use AEDM, instead of ARM, to refer to these methods because the provisions DOE proposes to adopt are more similar to the current provisions for AEDMs. DOE also notes that the term ARM is used only for simulations used by manufacturers of residential air conditioners and heat pumps, whereas AEDMs are used by a wider range of industries. Given that these two methods are conceptually identical, DOE is applying the term ''AEDM'' to refer to any simulation method used to determine the efficiency or energy usage of a given product or equipment. DOE, however, agrees with Carrier, AHRI, Lennox, and Mitsubishi in that there are product-specific considerations that should guide the development and application of an AEDM. In response to these comments, DOE is proposing product-specific substantiation requirements in this notice which DOE believes will address the concerns about the current differences between the two methods.

2. Pre-Approval by the Department

In light of the approval process currently in place for ARMs, DOE's RFI sought comment regarding the feasibility of applying a similar requirement for AEDMs or, alternatively, eliminating the approval process for ARMs. EarthJustice supported the adoption of a prior approval-type process. (EarthJustice, No. 21.1 at p. 2) American Panel also supported this approach and noted that it would give both manufacturers and DOE a level of security regarding the development of testing simulations. (American Panel, No. 3.1 at p. 2) Zero Zone echoed this view, expressing support for a ''pre-approved'' option since it would reduce the likelihood of a given manufacturer using an ''unapproved'' AEDM. (Zero Zone, No. 18.1 at p. 7) Similarly, both Hussmann and Goodman asserted that pre-approval would provide manufacturers with confidence in their programs. (Hussmann, No. 10.1 at p. 2; Goodman, No. 2.1 at p. 1) Additionally, Bradford White viewed pre-approval as a way to prevent certain manufacturers from having an unfair advantage by incorrectly rating their products. (Bradford White, No. 5.1 at p. 1)

Despite these expressions of support for a pre-approval process, others identified potential problems with this approach. NEMA stated that there is no perceived benefit in DOE imposing an additional burden on both the manufacturer and itself. Requiring prior approval would, in its view, place an inordinate burden on manufacturers. (NEMA, No. 20.1 at pp. 3–4; NEMA, No. 22.1 at p. 2) Modine commented that there is no need for pre-approval because it is the manufacturer's responsibility to produce and certify products that comply. (Modine, No. 8.1 at p. 2) Heatcraft remarked that a pre-approval requirement is unnecessary and the imposition of one would likely overwhelm DOE by virtue of the number of submitted pre-approval requests. (Heatcraft, No. 11.1 at p. 3) Carrier expressed concern with the potential burden involved with a pre-approval process and indicated that requiring pre-approval can result in time-to-market delays (i.e., delays in getting new products to market for sale). (Carrier, No. 7.1 at p. 6) This view was supported by Lennox, Traulsen, PVI Industries, AHRI, Zero Zone, and Mitsubishi. (Lennox, No. 16.1 at p. 2; Traulsen, No. 9 at p. 4; PVI Industries, No. 15.1 at p. 4; AHRI, No. 17.1 at p. 4; Zero Zone, No. 18.1 at p. 7; Mitsubishi, No. 19.1 at pp. 2–3) Further, Structural Concepts expressed concern that pre-approval would limit innovation with respect to the introduction of new designs and technologies, while PVI Industries mentioned that pre-approval would discourage product innovation. (Structural Concepts, No. 26.1 at p. 2; PVI Industries, No. 15.1 at p. 4)

While a broad AEDM pre-approval process could help provide manufacturers with an added sense of security that their AEDMs comply with DOE's requirements, the available facts indicate that this added benefit would be unlikely to outweigh both the additional burden placed on manufacturers and DOE as well as the drawbacks inherent with increased market delays created by requiring a pre-approval process. DOE notes that the substantiation process, an integral part of the validation of the AEDM, should provide manufacturers and consumers with confidence in ratings derived from the AEDM. The substantiation process requires a manufacturer to test several basic models to validate the accuracy of the AEDM, making DOE pre-approval unnecessary. Furthermore, DOE uses a self-certification process for most covered products, whereby manufacturers are responsible for ensuring that the testing is done in accordance with DOE's regulations. The Department does not review all manufacturers' test data to confirm that the testing was performed correctly and that the basic model was rated correctly; therefore, an approval process for AEDMs could be construed as an advantage to those manufacturers who are permitted to use them. In light of these factors, as well as the potential risks that manufacturers face for using an inaccurate or otherwise faulty AEDM, which includes civil penalties and prohibitions on marketing noncompliant products, DOE is not proposing to add a pre-approval process for AEDMs and is proposing to drop the current pre-approval requirement for methods used to rate residential central air conditioners and heat pumps. While DOE does not plan to review AEDMs prior to their use, DOE may request the records underlying the use of an AEDM at any time. 10 CFR 429.71. Manufacturers must retain any records

of testing performed to support the use of an AEDM. Id.

DOE requests comment on its proposal to continue omitting a pre-approval process for AEDMs, and to no longer require pre-approval for rating methods applied to residential central air conditioners and heat pumps. (See Issue 1 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

B. Products Covered by Alternative Efficiency Determination Methods and Alternative Rating Methods

1. Expansion of Coverage

Under the current DOE regulations, manufacturers of five types of commercial equipment are permitted to use AEDMs to generate the certified ratings of untested basic models, while manufacturers of residential central air conditioners and heat pumps are permitted to use ARMs to generate the certified ratings of untested basic models. As part of this rulemaking, DOE is proposing to expand the types of commercial equipment that would be addressed by these proposed AEDM provisions. However, in the consumer product context, DOE has tentatively decided not to expand the application of AEDMs beyond central air conditioners and heat pumps.

American Panel commented that walk-in coolers and freezers (collectively, ''walk-ins'' or ''WICFs'') should be allowed to use AEDMs for determining the envelope heat transfer characteristics and in selecting the condensing unit and evaporator coil. (American Panel, No. 3.1 at p. 1) Similarly, Zero Zone, Hussmann, PVI Industries, and Structural Concepts remarked that commercial refrigeration equipment (CRE) would also benefit from the use of AEDMs. (Zero Zone, No. 18.1 at p. 2; Hussmann, No. 10.1 at p. 1; PVI Industries, No. 15.1 at p. 2; Structural Concepts, No. 26.1 at p. 2) PVI Industries also suggested extending AEDM coverage to automated commercial ice-makers (ACIMs) and residential water heaters. (PVI Industries, No. 15.1 at p. 2) AHRI concurred with the need to permit the use of AEDMs for walk-ins, CRE units, ACIMs, and commercial water heaters but also indicated that manufacturers of residential boilers and water heaters, furnaces, pool heaters and direct heating equipment should also be permitted to use AEDMs to certify and rate those products. (AHRI, No. 17.1 at p. 2) Zero Zone and Structural Concepts went further and favored permitting the use of AEDMs for all products. (Zero Zone, No. 18.1 at p. 2; Structural Concepts, No. 26.1 at p. 1) Scotsman asserted that AEDMs are not cost-effective for ACIMs because some ACIMs have non-steady operation, which makes them difficult to model with accuracy. It added that testing is not overly burdensome for ACIM manufacturers to conduct. (Scotsman, No. 6.1 at p. 1)

Numerous commenters also stressed that DOE should continue permitting manufacturers to use AEDMs or ARMs with respect to those products that the agency currently permits to be certified and rated with these alternative methods. (Carrier, No. 7.1 at p. 1; Mitsubishi, No 19.1 at p. 1; Heatcraft, No. 11.1 at p. 1; Lennox, No. 13.1 at p. 2; PVI Industries, No. 15.1 at p. 2; Lennox, No. 16.1 at p. 1; AHRI, No. 17.1 at pp. 2,4; NEMA, No. 20.1 at p. 2; NEMA, No. 22.1 at p. 2; Bradford White, No 5.1 at p. 1) Modine, NRDC, ACEEE, ASAP and Traulsen did not provide product-specific recommendations, but commented that large, low-volume, custom equipment manufacturers would benefit from AEDM use. (Modine, No. 8.1 at p. 1; Traulsen, No. 9.1 at p. 2; Joint Comment, No. 24.1 at p. 2)

DOE has conducted a number of rulemaking activities examining the manner in which manufacturers of a variety of products test and rate their products. These activities have addressed products such as CRE, ACIMs, small electric motors, beverage vending machines (BVMs), and walk-ins. Based on substantial amounts of information that DOE has collected through these rulemaking activities, DOE ascertained that many basic models of these product types have low sales volumes or are custom-built, meaning that manufacturers may have a large number of basic models that they would need to test in order to certify compliance under DOE's current requirements. Given the potential for a high testing burden, manufacturers of these products may benefit from the use of an AEDM since it could be used to simulate testing under DOE test conditions and the results could then be used to certify compliance in lieu of conducting the testing that is currently required. Adopting this approach will likely significantly reduce manufacturer testing burdens by minimizing the number of units that a manufacturer must physically test in order to certify all of the basic models offered for sale in the U.S. As a result, in addition to those products that are already permitted to be rated and certified using modeling methods (i.e., commercial HVAC and WH equipment, electric motors, and distribution transformers), DOE is proposing to allow the manufacturers of CRE, ACIMs, small electric motors, and BVMs to use AEDMs to rate and certify their products. Permitting this option should enable these manufacturers to reduce the overall testing burdens that they would otherwise face.

Additionally, DOE is proposing to allow the use of AEDMs for WICFs but is limiting this proposal to apply only to the WICF refrigeration system. As with other types of commercial equipment for which DOE is proposing to expand the voluntary use of AEDMs, WICF refrigeration systems are low-volume and custom-made for the specific installation and could be accurately rated using a computer simulation to predict their behavior under DOE test conditions. DOE is not proposing to permit a similar option for other WICF components. WICF panels are relatively simple pieces of equipment and results from a basic model of a given panel can be extrapolated to many other panel basic models under the provisions of the test procedure. As for WICF doors, the DOE test procedure already provides for the use of certain modeling techniques that are approved by the National Fenestration Rating Council (NFRC), which, in DOE's view, makes a parallel AEDM provision for these components unnecessary. Consequently, DOE's proposal is to expand the use of AEDMs to WICF refrigeration systems because manufacturers of WICF refrigeration systems would benefit from the reduced testing burden that the proposal would provide.

DOE requests comment on its proposal to expand the use of AEDMs to other types of commercial equipment. (See Issue 2 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

In addition, DOE is proposing to retain its existing regulations that allow for the use of simulation or mathematical models to predict the certified ratings of residential central air conditioners and heat pumps. The split-system air conditioner and heat pump market allows the pairings of a variety of different indoor and outdoor models for installation in a residence. This approach results in a proliferation of basic models for which a manufacturer must determine the correct rating to certify compliance to the Department. If all of these basic model combinations had to be tested, manufacturers of CACs and CHPs would likely face significant increased testing burden. DOE believes it is necessary to continue to allow the use of alternatives to testing to predict the performance of all the different combinations of CACs and CHPs that are offered for sale in the U.S. DOE is

clarifying that its proposal allows manufacturers of CACs and CHPs to use an AEDM to predict the energy efficiency of various outdoor units paired with different indoor units as long as the substantiation criteria are met (see section C below for additional discussion).

As for those comments suggesting that DOE expand the use of AEDMs to other consumer products such as residential water heaters and furnaces, DOE does not agree with this approach. Basic models of consumer products such as water heaters and furnaces are typically high-volume, with little to no customization from model-to-model. Many of these products can be found off-the-shelf or are regularly stocked by distributors. As a result, manufacturers of these products do not face the same challenges of testing and rating potentially hundreds of different variations as faced by manufacturers of many commercial products. Unlike manufacturers of many types of commercial equipment that had apparently not performed the required testing of each basic model, manufacturers of consumer products have been regularly conducting the testing necessary to certify compliance to the Department without the use of simulation tools. The Department is unaware of any undue burden caused by testing a large number of basic models, or an issue with obtaining two samples for testing, due to the high-volume nature of the manufacturing for these consumer products.

2. Use Across Product Classes

Because AEDMs are models based on engineering principles, it may be possible to use a single AEDM to simulate testing of basic models from multiple product classes. Since many of the engineering principles underlying the performance characteristics of different pieces of equipment are the same, DOE believes it is reasonable for a manufacturer to develop an AEDM that could apply across multiple product classes and accurately simulate the energy efficiency or energy use of various basic models. An AEDM used to model energy consumption across multiple product classes, however, will be significantly more complex and will have to account for more variables than an AEDM used to model energy consumption within a single product class. While DOE does not want to restrict manufacturer development and use of AEDMs, the inherent complexity of an AEDM used to rate basic models across multiple product classes requires sufficient safeguards to ensure the accuracy of an AEDM with respect to predicting the energy consumption of a basic model from any product class for which the AEDM will be used. Consequently, DOE sought comment on the best approach to verify the accuracy and applicability of AEDMs and ARMs across multiple product classes without unduly burdening manufacturers.

All interested parties who commented on this issue agreed that AEDMs and ARMs can and should be used across multiple product classes. (Goodman, No. 2.1 at p. 1; American Panel, No. 3.1 at p. 2; Bradford White, No. 5.1 at p. 1; Carrier, No. 7.1 at p. 2; Modine, No. 8.1 at p.1; Traulsen, No. 9.1 at p. 2; Hussmann, No. 10.1 at pp. 1–2; Heatcraft, No. 11.1 at p. 2; Lennox, No. 13.1 at p. 2; PVI Industries, No. 15.1 at p. 3; Lennox, No. 16.1 at p. 2; AHRI, No. 17.1 at p. 3; Zero Zone, No. 18.1 at p. 7; Mitsubishi, No. 19.1 at p. 2; NEMA, No. 20.1 at p. 3; Structural Concepts, No. 26.1 at p. 1) However, stakeholders were divided about the need to substantiate the method for every product class. Carrier, Hussmann, AHRI, Mitsubishi and Structural Concepts all commented that the amount of required testing should not depend on the number of covered product classes, while Modine, Lennox, and NEMA noted that AEDMs and ARMs should be verified for each covered product class. (Carrier, No. 7.1 at p. 2; Hussmann, No. 10.1 at pp. 1–2; AHRI, No. 17.1 at p. 3; Mitsubishi, No. 19.1 at p. 2; Structural Concepts, No. 26.1 at p. 1; Modine, No. 8.1 at p. 1; Lennox, No. 13.1 at p. 2; NEMA, No. 20.1 at p. 3)

While DOE acknowledges that AEDMs and ARMs could be applied across product classes, differences in products and operating conditions may hinder the capability of AEDMs to rate products from multiple product classes within the necessary tolerances. DOE believes that manufacturers can build AEDMs that would apply across a variety of product classes and maintain the appropriate tolerances proposed in this NOPR, but DOE also believes that AEDMs should be substantiated in such a manner as to demonstrate that capability. DOE tentatively agrees with the comments, made by Modine, Lennox and NEMA, supporting verification of an AEDM for each product class to which the AEDM will be applied. Consequently, DOE is proposing to require, as part of the substantiation process, testing of at least one basic model from each DOE product class to which the AEDM is to be applied in addition to the other requirements, which are discussed in section II.C. DOE does not believe this added requirement will significantly increase testing burden because, as stated by Goodman, manufacturers should already be continuously validating their AEDMs. (Goodman, No. 2.1 at p. 1) DOE may, however, amend aspects of this proposal based on information and feedback presented by interested parties or that DOE discovers through further research of this issue in preparation of any final rule that may be issued. As a result, DOE urges all interested parties to provide specific and detailed information regarding the proposed substantiation process as well as specific requirements that the agency should consider when developing the final rule.

DOE requests comment on its proposal to require at least one basic model from each product class be tested to substantiate the AEDM. DOE is particularly interested in whether additional clarification is needed for manufacturers of certain covered products to determine all the applicable product classes that would need to be tested to substantiate the AEDM. As part of these comments, the Department is interested in receiving feedback on how manufacturers currently develop any simulation tools to ensure they are applicable across a wide range of product classes. (See Issue 3 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.) Based on these comments and data, DOE may consider and adopt other substantiation criteria from those contained in today's proposal that aid manufacturers in identifying the applicable number of product classes required for testing.

C. Substantiation Requirements

1. Alternative Efficiency Determination Method Tolerances

Currently, DOE requires that manufacturers test a specified number of basic models, apply the AEDM to those same basic models, and compare the results. In order to substantiate the AEDM—i.e., validate the accuracy of the model—the results obtained from the AEDM output must be within a specified tolerance of the results obtained from testing. The comparison is generally required between test results for each individual basic model and the AEDM output for the same basic model, as well as between the average of the test results for all tested basic models, and the average of the AEDM output for all tested basic models. For electric motors, a comparison is only required between individual test results and individual AEDM outputs for the basic models tested. For commercial HVAC and water heaters, the AEDM output for each basic model must be within five percent of the tested value,

and the overall average of AEDM outputs must be within one percent of the average of tested values. For distribution transformers, the individual tolerance is also five percent, but the overall tolerance is three percent. Electric motors are subject only to an individual tolerance of ten percent between the AEDM and tested values. The current modeling approach for residential central air conditioners and heat pumps do not have any specific required tolerances because the ARM must be approved by DOE prior to use.

Interested stakeholders provided numerous suggestions regarding the appropriate product-specific tolerances. Bradford White and PVI Industries commented that tolerances for commercial water heaters should be five percent because of instrumentation tolerances as well as lab to lab variation. (Bradford White, No. 5.1 at p. 2; PVI Industries, No. 15.1 at p. 5) AHRI commented that the one percent overall tolerance for commercial HVAC and water heaters that currently applies was not appropriate and should be relaxed, while Heatcraft indicated that a one percent overall tolerance is not realistic for walk-ins because of equipment tolerances and testing variation inherent in the test procedure. (AHRI, No. 17.1 at p. 5; Heatcraft, No. 11.1 at p. 4) Additionally, AHRI commented in a later proposal that the individual tolerance for residential and commercial HVAC and WH equipment, ACIMs, walk-ins and commercial refrigeration equipment should be 5 percent. (AHRI, No. 31.1 at p. 3) Regarding HVAC products, Mitsubishi remarked that the tolerance should be 5 percent, and both First Company and Carrier concurred with this suggested level. (Mitsubishi, No. 19.1 at p. 4; First Company, No. 14.1 at p. 3; Carrier, No. 7.1 at p. 5) However, Carrier went further and commented that the overall average of AEDM ratings should be within five percent of the overall average of tested ratings. (Carrier, No. 7.1 at p. 5) NEMA pointed out that electric motor tolerances may need to be tightened to test in accordance with Institute of Electrical and Electronics Engineer (IEEE) Standard 114 or Standard 112 (the two protocols used to measure the efficiency of electric and small electric motors) because these test methods are based on the measured output power divided by input power. (NEMA, No. 20. 1 at pp. 5–6) NEMA also suggested DOE should limit the tolerance for overall averages at three percent for distribution transformers and that the tolerance for individual ratings should allow the AEDM output to be up to 5 percent more efficient than the test results. It added, however, that the tolerance should not apply if the AEDM output was conservative. (NEMA, No. 22.1 at p. 3) Similarly, Modine commented that the output from AEDMs should be permitted for rating purposes only if the AEDM output is no more than five percent more efficient than the tested value. (Modine, No. 8.1 at p. 2) None of these commenters explained the basis for their recommendations.

With respect to CREs, commenter views were even more varied. Traulsen recommended a 15 percent tolerance, while Hussmann suggested that a ten percent tolerance was appropriate. Zero Zone remarked that the tolerance should be five percent. (Traulsen, No. 9.1 at p. 4; Hussmann, No. 10.1 at p. 3; Zero Zone, No. 18.1 at p. 11) None of the commenters specified why they believed their recommended tolerance was appropriate.

Regarding potential tolerance levels for CRE-related AEDMs, there are no technical reasons that would compel the application of larger or less stringent tolerances for these products compared to others. In view of this, and the complete absence at this time of any contradictory data or information that would justify a different approach, DOE is proposing to set individual tolerances between the test results of a basic model and AEDM output for that basic model for CREs at five percent. For the same reasons, DOE is proposing to set this same tolerance for refrigeration systems of walk-ins, BVMs, ACIMs, and residential central air conditioners and heat pumps. DOE is not currently planning to amend the tolerances for electric motors and proposes to apply the same ten percent tolerance to small electric motors.

With respect to distribution transformers, DOE agrees with NEMA's view in favor of an overall tolerance, but disagrees with NEMA's suggestion that the AEDM outputs for individual basic models should be limited only to being no more than five percent more efficient than the test results for that basic model. DOE is concerned with confirming the accuracy of an AEDM and having no tolerance for AEDM outputs that are more conservative than the test results could potentially allow for less accurate results from the AEDMs. Consequently, DOE intends to retain the current tolerance on how much the AEDM output can diverge from the test results.

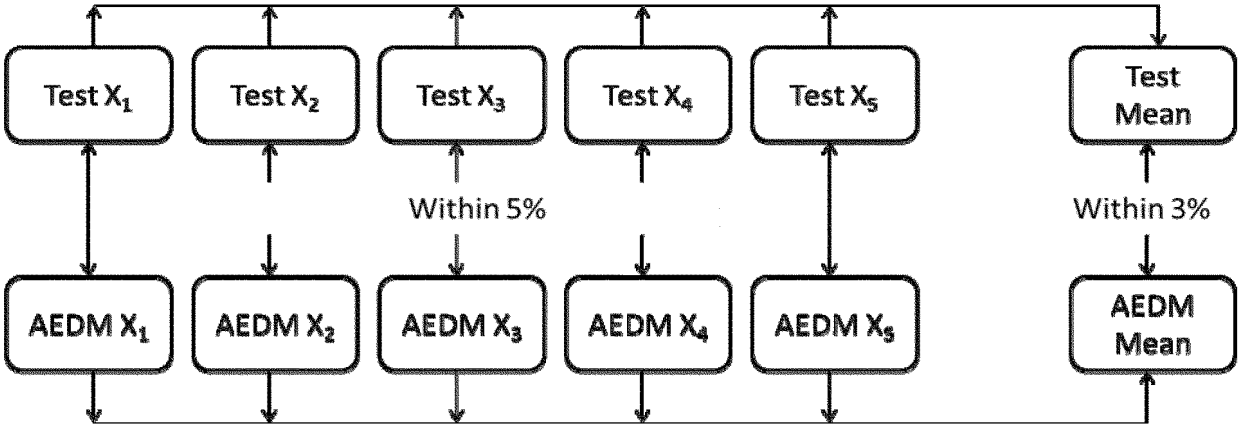
With regard to commercial HVAC equipment, DOE agrees with stakeholders who claimed that the one percent overall average tolerance was unnecessarily stringent. However, DOE disagrees with Carrier's comment suggesting that the overall average tolerance should be five percent. Testing different types of commercial equipment has similar limitations with respect to instrumentation and testing variation in the DOE test procedures as found for other product types, and applying a consistent tolerance across all of these covered products (excluding electric and small electric motors) would help ensure that a consistent, predictable and accurate method is used by manufacturers. This is also seen in the consistency between the certification statistics of different types of commercial air conditioning and heating equipment. Consequently, DOE is proposing to expand this three percent average tolerance to all products that use AEDMs. The overall averages are calculated using the following equation:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

where $\bar{x}$ is the sample average, n is the number of units tested representing all basic models used to substantiate the AEDM and x_i is the ith sample.

Figure C.1, below, provides a visual representation of DOE's proposed substantiation tolerances for all products proposed for AEDM use, excluding motors and small electric motors.

Figure C.1 Proposed Tolerances for All Products, Except Motors and Small Electric Motors.



*This picture is meant to be an illustrative example of the minimum number of tests needed to substantiate the AEDM and the tolerances that must be satisfied in order to validate the AEDMs results, when there are not a substantial number of product classes..

DOE seeks product specific comments and supporting data on these proposed overall and individual tolerance levels by product type. Specifically, DOE seeks data showing that the variability seen in the manufacturing processes, test instrumentation, and testing procedures merits consideration and adoption of different tolerances. (See Issue 4 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.) Based on these data, DOE may consider and adopt different tolerance levels from those contained in today's proposal.

2. Number of Tested Units

In addition to achieving certain tolerances with their AEDMs, manufacturers are required to test a specific number of basic models to demonstrate that the AEDM is sufficiently accurate for determining the ratings of their products. Currently, the required number of models and units that must be tested varies by product and are as follows: Six basic models for commercial HVAC and water heaters; 25 units for distribution transformers (five units of five different basic models); five basic models for electric motors; and four mixed systems for residential central air conditioners and heat pumps. DOE received considerable feedback from interested parties on the necessary sample sizes for these products as well as for other products that manufacturers may be permitted to certify and rate using an AEDM as part of today's proposal.

Bradford White suggested that the appropriate sample size for commercial water heaters is two units, with the smallest and largest input capacity models being tested, and that a manufacturer should not be required to substantiate an AEDM using a number of basic models that a manufacturer does not have in stock. (Bradford White, No. 5.1 at p. 2) PVI agreed that testing two water heaters was adequate for AEDM substantiation. (PVI Industries, No. 15.1 at p. 3) Similarly, Structural Concepts recommended two units as the necessary sample size for CRE, while Hussmann suggested one unit per DOE product class to which the AEDM is applied. (Structural Concepts, No. 26.1 at p. 3; Hussmann, No. 10.1 at p. 3) Regardless of sample size, American Panel cautioned DOE to be aware of the increased cost to manufacturers of testing more units. (American Panel, No. 3.1 at p. 3) NEMA observed that the current sample size and testing for both electric motors and transformers is appropriate. (NEMA, No. 20.1 at p. 4; NEMA, No. 22.1 at p. 3) Carrier mentioned that a sample of three basic models is sufficient and added that DOE should consider permitting manufacturers to decide how to substantiate their AEDMs and how to select models—other than the highest sales volume tested combination—in order to enable them to validate an AEDM across the manufacturer's entire product range. (Carrier, No. 7.1 at p. 4) AHRI submitted a proposal that the sample size for residential and commercial HVAC and WH equipment, ACIMs, walk-ins and CRE should be two units. (AHRI, No. 31.1 at p. 2) However, Lennox remarked that the current sample size for ARMs is reasonable, while Modine supported leaving the decision of how to substantiate an AEDM to the manufacturer. (Lennox, No. 13.1 at p. 4; Modine, No. 8.1 at p. 4) Zero Zone was alone in believing that AEDMs do not need to be substantiated at all. (Zero Zone, No. 18.1 at p. 10)

DOE is reluctant to omit a substantiation process or to leave this process entirely to manufacturer discretion without some form of reasonable confirmation regarding the accuracy and validity of the underlying AEDM. While DOE is sensitive to the costs associated with equipment testing and the fact that some manufacturers may have a high degree of familiarity with how to substantiate their AEDMs, DOE wants to ensure that the AEDM's accuracy is confirmed across the entire range of product classes to which it is applied. Additionally, DOE wants to ensure consistency with regard to the minimum testing requirements needed to substantiate the AEDM across manufacturers of a given equipment type to provide a fair and consistent approach in allowing the use of simulations and mathematical models. For these reasons, DOE is proposing changes to the selection of models used to substantiate an AEDM. Consequently, in DOE's view, to ensure this accuracy, a minimum amount of testing should be conducted to substantiate a given AEDM. Manufacturers may always elect to conduct additional testing to validate the accuracy of the AEDM.

To this end, DOE proposes that at least five basic models be tested to substantiate an AEDM with a minimum of one unit tested of each basic model for all products except distribution transformers. With regard to distribution transformers, DOE proposes to retain the

current requirement to test 25 units (five units of five different basic models). DOE also proposes other criteria discussed below that will help ensure that the AEDM is sufficiently reliable for all product classes to which the AEDM will be applied. Consistent with Hussmann's suggestion regarding the number of models that should be tested to substantiate an AEDM, DOE is proposing that at least one basic model be tested from each product class to which the AEDM will be applied as explained above. While differences among products in different product classes may be minimal, DOE wants to ensure that the AEDM is able to account for differences in test conditions for different product classes (*e.g.,* coolers and freezers) and still accurately predict product performance.

Because physical size or capacity is another characteristic that can have a significant effect on efficiency, DOE agrees with Bradford White's suggestion to test both the smallest and largest capacity units covered by the AEDM, where applicable. DOE recognizes, however, that the burden associated with a requirement to test the largest capacity basic model offered may be prohibitive. Therefore, DOE is proposing that the models tested for substantiation include the smallest and largest capacity basic models, or a basic model with a capacity within 25% of the largest capacity basic model, for all products where physical size (e.g., total display area, vendible capacity, rated storage volume, etc.) or capacity (e.g., heating, cooling, etc.) is an integral part of the test procedure and energy use or efficiency of the product. Further, DOE believes that the basic models that meet these capacity criteria should be from the product class that has the highest sales volume because DOE believes these products would be most representative, less likely to be highly customized or built-to-order, and less costly to test.

In addition to this requirement to test models from the highest sales volume product class, DOE proposes that the tested units include the basic model with the highest sales volume in the previous year or is expected to have the highest sales volume as one of the five tested basic models. Lastly, to ensure that the AEDM is substantiated for current, up-to-date models, DOE proposes to require that test data used for substantiation meet the applicable energy conservation standards in effect at the time that the AEDM is being used. Consequently, when the compliance date for amended standards comes into effect, DOE is proposing that manufacturers may need to re-substantiate the AEDM depending on the efficiencies of the basic models used to originally substantiate the AEDM. Table C.1 below summarizes the requirements proposed in this section.

TABLE C.1—PROPOSED REQUIREMENTS FOR SELECTING UNITS FOR SUBSTANTIATION FOR ALL APPLICABLE COVERED PRODUCTS AND EQUIPMENT

Proposed requirement	Applicable products
Test a minimum of five basic models	All.
Test at least one basic model from each product class to which the AEDM will be applied	All.
Test the smallest and largest capacity basic models from the product class with the highest sales volume	Residential AC/HP, Commercial HVAC and WH, ACIM, WICF refrigeration systems, CRE.
Test the basic model with the highest sales volume the previous year, or the basic model which is expected to have the highest sales volume for newly introduced basic models.	All.
Test data used for substantiation must meet applicable Federal energy conservation standards and applicable DOE testing procedures.	All.

DOE seeks comment on the proposed criteria for selecting basic models and the number of basic models that should be required for substantiation as well as whether the differences in testing requirements for distribution transformers are appropriate or necessary. (See Issue 5 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

3. Required Number of Testing Rounds

To substantiate their AEDMs pursuant to DOE's current regulations, manufacturers of commercial HVAC and water heaters must first apply the AEDM to three or more basic models, which then must be tested. Following this initial round of testing, manufacturers must apply the AEDM to at least three additional models and test them as well. For each round of testing, the ratings predicted by the AEDM must be within a specified percentage of the tested ratings. 10 CFR 429.70. These products are the only products which have to undergo two rounds of testing to substantiate the AEDM. Consequently, DOE is considering altering the number of testing rounds to make AEDM substantiation requirements for these products align with those for other products and sought comment in the RFI on the benefits of a second round of testing because the available data indicate that a reduction in testing burden consistent with DOE's proposal would be unlikely to affect the accuracy of the predicted efficiency levels provided by the appropriate AEDM.

Both Carrier and PVI Industries mentioned that one round of testing is sufficient, while Mitsubishi remarked that two sets of testing do not add any significant benefit. (Carrier, No. 7.1 at p. 6; PVI Industries, No. 15.1 at p. 6; Mitsubishi, No. 19.1 at p. 4) Considering DOE's proposal to change the number of models necessary for substantiation of an AEDM for commercial HVAC and water heaters, DOE believes that the AEDM would be substantiated for every applicable product class following one round of substantiation testing. Given that the manufacturer may test more than the minimum number of basic models during substantiation, DOE believes that a single round of testing is sufficient. Additionally, a manufacturer is free to conduct further testing during the lifetime of an AEDM that is in addition to those substantiation tests being proposed. Requiring this added testing, however, is unnecessary since DOE believes manufacturers are best positioned to assess whether they need to run additional substantiation testing for newly designed or redesigned basic models on a case-by-case basis. DOE is proposing a framework that allows manufacturers to weigh the risk of noncompliance against the increased testing burden and is providing them with the discretion to choose the extent to which they want to conduct additional testing beyond the requirements of this proposal.

Additionally, DOE is proposing new provisions that will require manufacturers to perform additional testing and re-substantiation if changes occur that may impact the validity of the AEDM. These proposals are discussed further below. Because of these additional changes, as well as more stringent substantiation requirements, DOE agrees with commenters that the second round of testing is unnecessary to substantiate the AEDM and is proposing to eliminate the second round of testing for commercial HVAC and water heaters.

4. Standardized Substantiation Package

Establishing a standardized substantiation package would provide a number of benefits, including predictability and consistency with respect to the submission and review of AEDM-related records. Under today's proposal, manufacturers would know what materials to maintain regarding the AEDM-based certifications of their products and DOE would be able to more readily discern the validity and completeness of these submissions.

Adopting a standardized substantiation package approach would provide a number of benefits. First, this approach would clearly inform manufacturers regarding the underlying materials they need to maintain in support of their certified ratings for each basic model that has been certified and rated using an AEDM. With this clarification, manufacturer confusion regarding document retention issues would be eliminated. Second, information packages submitted in response to a request under 10 CFR 429.71 would be comparable in content and lend themselves more readily to DOE's review of those technical materials supporting a given manufacturer's AEDM. By creating an approach that involves the submission of a standardized set of materials, which would likely include a summary of the basic models used to substantiate the AEDM, DOE anticipates that the review time of this material will be substantially less than if a non-standardized approach were used. Other information that would likely be part of this package includes, but is not limited to the following: information demonstrating that the substantiation criteria are met; supporting test data from physical tests of those basic models; information related to the AEDM such as its version number and applicable product classes; and a list of all the basic models that have been rated with the AEDM. DOE intends to address this topic further in the upcoming Certification, Compliance and Enforcement rulemaking.

D. DOE Validation

1. Evaluation

Under the current process, manufacturers must retain documentation containing a description of the AEDM, supporting test data, and the AEDM itself. To avail themselves of the less burdensome option of using an AEDM, manufacturers must be willing to run additional simulations, provide further analysis of previous AEDM output, and test selected basic models on request. See, e.g., 10 CFR 431.17 (specifying AEDM-related requirements for electric motors) and 10 CFR 429.70(c)(3) (specifying AEDM-related requirements for commercial HVAC–WH). However, DOE does not currently require a specific frequency for validating a given AEDM—e.g., annually or once every five years. To address this shortcoming, DOE sought comment in the RFI on how often it should, if at all, validate AEDMs without creating an undue burden on manufacturers or limiting the number of products in the marketplace.

AHRI stated that there was no need for DOE to validate AEDMs or ARMs, particularly if a manufacturer participates in a voluntary industry certification program (VICP). Carrier, Zero Zone, NEMA, Mitsubishi, and Goodman supported this view. (AHRI, No. 17.1 at p. 4; Carrier, No 7.1 at p. 6; Zero Zone, No. 18.1 at p. 12; Mitsubishi, No. 19.1 at p. 3–4; Goodman, No. 2.1 at p. 2) Structural Concepts asserted that the initial validation of AEDMs is all that is needed to ensure the accuracy of the AEDM, while Modine and Lennox argued that validation is unnecessary. (Structural Concepts, No. 26.1 at p. 3; Modine, No. 8.1 at p. 3; Lennox, No. 16.1 at p. 4) While NEMA also indicated that validation was unnecessary, it noted that if DOE still chooses to validate AEDMs, it should be done at most annually. (NEMA, No. 22.1 at p. 4) Traulsen suggested the same validation frequency (i.e., annually) as NEMA. (Traulsen, No. 9.1 at p. 4) Bradford White supported validation testing every three to five years and Hussmann favored testing at least 4 models annually—but at DOE's expense. (Bradford White, No. 5.1 at p. 2; Hussmann, No. 10.1 at p. 3)

In DOE's view, an AEDM validation measure is a necessary component of ensuring the accuracy of product ratings based on AEDMs. However, DOE recognizes that too frequent validation could be unnecessary. Accordingly, rather than specify a particular validation frequency requirement, DOE is reserving the right to request the documentation supporting the AEDM and to test a basic model at any point, pursuant to 10 CFR 429.104.

2. Assessment Testing

As part of today's notice, DOE also seeks to clarify how it would conduct assessment testing to evaluate whether basic models rated with the use of an AEDM comply with conservation standards. When conducting assessment testing, DOE will exercise its authority to select and test a single unit of a basic model, including those that have been certified using an AEDM, at any point, pursuant to 10 CFR 429.104. The unit will be tested to the applicable DOE test procedure at an independent, third-party laboratory accredited to the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC), ''General requirements for the competence of testing and calibration laboratories,'' ISO/IEC 17025:2005(E). The test results obtained from the testing of one unit will be compared to both the applicable Federal conservation standard as well as the manufacturer's certified rating, which was developed using an AEDM. If the test result indicates that the product was rated incorrectly, DOE may require the manufacturer to re-substantiate their AEDM using the DOE test data, and re-rate and re-certify the basic model, as may be necessary. If the test result indicates that the product may not meet Federal conservation standards, DOE may pursue enforcement testing pursuant to 10 CFR 429.110.

The following sections describe potential DOE actions in response to certain verification testing results.

a. Failure to Meet Certified Ratings

If testing results from DOE-initiated testing indicate that the model was rated incorrectly by an AEDM, DOE may require the manufacturer to re-substantiate their AEDM and re-rate and re-certify all products that were rated using the AEDM, as the new results from the AEDM prove necessary. DOE would make this determination by comparing the assessment test results to the certified rating to determine if the specified tolerances were maintained as prescribed in 10 CFR 429.70 (c). If a basic model is rated incorrectly, DOE proposes to require manufacturers to re-substantiate their AEDM within 30 days of being provided with test data by the Department. The manufacturer would be required to use the test data obtained through DOE testing in the re-substantiation of the AEDM. This would

not require an entirely new set of testing by the manufacturer. However, if inclusion of test data from the Department results in new results for basic models that do not meet the substantiation criteria enumerated in 10 CFR 429.70 (c) (e.g., the specified tolerances), then a manufacturer must make additional modifications to the AEDM either through engineering modifications or additional testing. At this time, DOE has tentatively decided not to require new testing for basic models outside of the affected product class as part of the re-substantiation process, in order to alleviate manufacturer burden. Ultimately, if DOE requires re-substantiation of the AEDM, all basic models that were rated using the AEDM in question must be re-rated after re-substantiation and re-certified to the Department if re-substantiation resulted in a rating change for those models.

DOE requests comment on the appropriate course of action and necessary time to complete such steps when a basic model tested by DOE fails to meet its certified rating generated using an AEDM. (See Issue 6 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

b. Non-Compliance With Federal Standards

Based on the results of this initial assessment testing, DOE may initiate an investigation that a basic model may not comply with an applicable conservation standard pursuant to 10 CFR 429.106 and/or undertake enforcement testing pursuant to 10 CFR 429.110. If, following enforcement testing, a model is determined to be non-compliant, all other models within that basic model are deemed non-compliant. DOE will withhold a finding of noncompliance for all other basic models rated with the AEDM pending additional investigation.

If the basic model that is found non-compliant was used for substantiation of the AEDM, the manufacturer must re-substantiate that AEDM within 30 days of notification, pursuant to the substantiation requirements enumerated in 10 CFR 429.70(c). DOE is not proposing to require the manufacturer to re-test basic models that were tested previously for substantiation if DOE has not determined those models to be non-compliant.

c. Multiple Instances of Non-Compliance

Additionally, DOE is considering how to address those manufacturers whose AEDMs do not accurately rate their products on a recurring basis. One possible approach would be to restrict or disallow the use of AEDMs for these manufacturers. Under this approach, manufacturers would have an incentive to exercise greater care when developing and applying AEDMs to rate their products. Another option would be to impose civil penalties. DOE believes that manufacturers must be held accountable for the accuracy of their AEDMs and that a means of discouraging future attempts to circumvent the standards established either by Congress or DOE is necessary. However, DOE does not want to unduly burden manufacturers, adversely impact the ability of small businesses to compete, or otherwise impede the development and marketing of new and innovative compliant products for consumers to purchase.

Responding to DOE's RFI, numerous interested parties suggested a variety of steps DOE could take in dealing with an instance of non-compliance. AHRI observed that a finding of non-compliance does not necessarily indicate an error in the AEDM, and that all models should not be found non-compliant until the reason for failure has been determined. (AHRI, No. 17.1 at p. 3) Goodman, Lennox, Carrier, Modine, Hussmann, Heatcraft, First Company, PVI Industries, NEMA, and Structural Concepts all concurred with this comment. (Goodman, No. 2.1 at p. 1; Carrier, No. 7.1 at pp. 2–3; Modine, No. 8, at p. 1; Hussmann, No. 10.1 at p. 2; Heatcraft, No. 11.1 at p. 2; Lennox, No. 13.1 at p. 2; Lennox, No. 16.1 at p. 2; First Company; No. 14.1 at p. 2; PVI Industries, No. 15.1 at p. 3; NEMA, No. 22.1 at p. 2; Structural Concepts, No. 26.1 at p. 1). Zero Zone and NEMA noted that, rather than restrict AEDM usage, DOE should focus on finding the cause of the error and ensuring that a correction is made. (Zero Zone, No. 18.1 at p. 7; NEMA, No. 20.1 at p. 3)

However, some stakeholders recognized the need to more actively discourage manufacturers who are consistently non-compliant or intentionally non-compliant. Traulsen, Bradford White, First Company and EarthJustice all stated that DOE should disallow the use of AEDMs for manufacturers after multiple instances of non-compliance, while American Panel wrote that the use of AEDMs should be disallowed if there was willful intent by the manufacturer regarding the ratings from the AEDM. (American Panel, No. 3.1 at p. 2; Traulsen, No. 9.1 at p. 3; First Company, No. 14.1 at p. 2; EarthJustice, No. 21.1 at p. 1)

DOE concurs that finding the root cause of a non-compliance is important. As important as this factor is, DOE stresses that determining this cause is the manufacturer's responsibility, not DOE's. DOE remains concerned, however, that the prospect of disallowing the use of AEDMs following a single instance of non-compliance would place a significant burden on manufacturers, and the additional testing necessitated by this penalty potentially could lead to time-to-market delays. Therefore, DOE is proposing to disallow the use of an AEDM following multiple instances of non-compliance and/or if there is evidence that the mis-rating was willful.

DOE requests comment on the proposal that DOE disallow the use of an AEDM if there is evidence that the mis-rating is willful and/or there are multiple instances of non-compliance. (See Issue 7 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

2. Re-Substantiation

In addition to re-substantiation required by DOE as the result of assessment testing, DOE is concerned about the need to update an AEDM to avoid having AEDMs based on outdated substantiation data, which could lead to inaccurate ratings for basic models certified using AEDMs, and requested comment in the RFI on the necessity and required frequency of re-substantiation.

Carrier and Goodman asserted that a given manufacturer's familiarity and understanding of both its products and AEDMs makes them better equipped than DOE to decide when re-substantiation is necessary. (Carrier, No. 7.1 at p. 5; Goodman, No. 2.1 at p. 1) Goodman also noted that there would be an additional burden placed on manufacturers by mandatory re-substantiation, and several other stakeholders, including American Panel, Heatcraft, First Company, and Lennox voiced similar concerns about the added burden. (Goodman, No. 2.1 at p. 1; American Panel, No. 3.1 at p. 3; Heatcraft, No. 11.1 at p. 3; First Company, No. 14.1 at p. 2; Lennox, No. 16.1 at p. 3)

In contrast, a variety of stakeholders—American Panel, First Company, Lennox, NEMA and AHRI—all remarked that significant changes in a test method would justify re-substantiation. (American Panel, No. 3.1 at p. 3; First Company, No. 14.1 at p. 2; Lennox, No. 16.1 at p. 3; AHRI, No. 17.1 at p. 5; NEMA, No. 20.1 at p. 5). Several commenters, including Modine, Hussmann, Howe, Mitsubishi and Structural Concepts, disagreed with this opinion and believed that there is no need for re-substantiation. (Modine, No.

8.1 at p. 3; Hussmann, No. 10.1 at p. 3; Howe, No. 12.1 at p. 1; Mitsubishi, No. 19.1 at p. 3; Structural Concepts, No. 26.1 at p. 2) PVI Industries was the only stakeholder who suggested that re-substantiation be required after a specific amount of time, and it recommended that at least one sample be tested every five years to re-substantiate the AEDM. (PVI Industries, No. 15.1 at p. 5)

DOE is concerned that, without some type of re-substantiation requirement, AEDMs could become outdated over time if they are based on old models, which have been discontinued and are not currently in production. However, DOE acknowledges manufacturer concerns over the additional test burden and is not proposing to require re-substantiation on a periodic basis. Instead, DOE is proposing that manufacturers must re-substantiate their AEDMs when there is a change either to the applicable standards or DOE test procedure. Additionally, DOE is proposing that the substantiation data used by the manufacturer must be obtained from physical tests of current models from that manufacturer. DOE is taking this approach because it agrees with commenters who claim that it is not necessary to re-substantiate an AEDM for products for which there has been no change that would cause the model to behave differently under testing. However, changes to the applicable standards or DOE test procedure are more likely to necessitate changes to a given AEDM that would result in a different output. When a model used for substantiation of the AEDM is discontinued or becomes obsolete, a manufacturer will need to replace that model with a new model and re-rate or re-certify as necessary.

DOE requests comment on the necessity of requiring re-substantiation when there is a change in standards or test procedure and requiring that AEDMs be substantiated with active models. (See Issue 8 under ''Issues on Which DOE Seeks Comment'' in section IV.B of this NOPR.)

III. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget has determined that test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB).

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601, et seq.) requires the preparation of an initial regulatory flexibility analysis (IRFA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's Web site: *www.gc.doe.gov.* DOE reviewed the test procedures considered in today's NOPR under the provisions of the Regulatory Flexibility Act (RFA) and the policies and procedures published on February 19, 2003.

DOE reviewed the AEDM and ARM requirements being proposed under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. As discussed in more detail below, DOE found that because the provisions of this rule will not result in increased testing and/or reporting burden for manufacturers already eligible to use an AEDM and will extend AEDM use to a number of manufacturers, thus reducing their testing burden, manufacturers will not experience increased financial burden as a result of this rule.

Today's proposal, which presents voluntary methods for certifying compliance in lieu of conducting actual physical testing, would not increase the testing or reporting burden of manufacturers who currently use, or are eligible to use, an AEDM to certify their products. Manufacturers who produce products that may be certified using ARMs must obtain approval from the Department prior to the use of those ARMs for certification purposes. This rule, if promulgated, will eliminate the ARM nomenclature and treat these methods as AEDMs. As a result, the pre-approval requirement will be eliminated, resulting in a reduction in reporting burden for those manufacturers.

Furthermore, proposed requirements for substantiation of an AEDM do not require more testing than that required by the AEDM provisions included in the March 7, 2011 Certification, Compliance and Enforcement Final Rule (76 FR 12422) (''March 2011 Final Rule''), and would relax tolerances that tested products are required to meet in order to substantiate the AEDM. In this proposed rule, DOE has discussed re-substantiation requirements for manufacturers utilizing an AEDM. While these requirements were not directly stated in the March 2011 Final Rule, DOE believes that the March rule implicitly included requirements for re-substantiation within its AEDM requirements. DOE is explicitly including re-substantiation requirements in this proposed rule to provide clarity for those manufacturers using an AEDM. As such, DOE does not believe these requirements result in an increased burden for manufacturers who already use an AEDM.

Finally, DOE has clarified in today's proposal how it intends to exercise its authority to validate AEDM performance and verify the performance of products certified using an AEDM. This is a clarification of the process that DOE promulgated in the March 2011 Final Rule and would not increase burden for manufacturers currently allowed to use AEDMs to certify their products.

This notice also proposes to extend the applicability of AEDMs to products that are currently not permitted to be certified or rated by these alternate methods. Manufacturers not eligible to use AEDMs must currently test at least two units of every basic model that they produce in order to certify compliance to the Department pursuant to the March 2011 Final Rule. Today's proposal would reduce a manufacturer's testing burden by enabling these manufacturers to simulate testing based on testing data derived from a reduced number of units. While the Department believes that permitting greater use of AEDMs will reduce the affected manufacturer's test burden, their use is at the manufacturer's discretion. If, as a result of any of the proposals herein, a manufacturer believes that use of an AEDM would increase rather than decrease their financial burden, the manufacturer may choose not to employ the method. Should a manufacturer choose to abstain from using an AEDM, this proposed provision would not apply and the manufacturer would continue to remain subject to the requirements of any DOE test procedure that applies to that product, which would result in no change in burden from that which is required currently.

For the reasons enumerated above, DOE is certifying that the proposed rule,

if promulgated, would not have a significant impact on a substantial number of small entities.

C. Review Under the Paperwork Reduction Act

Manufacturers of the covered products addressed in today's NOPR must certify to DOE that their equipment comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their equipment according to the applicable DOE test procedures for the given equipment type, including any amendments adopted for those test procedures, or use the AEDMs to develop the certified ratings of the basic models. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including the equipment at issue in this NOPR. (76 FR 12422 (March 7, 2011)). The collection-of-information requirement for these certification and recordkeeping provisions is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 20 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act

DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this proposed rule would adopt changes for certifying certain covered appliances, so it would not affect the amount, quality or distribution of energy usage, and, therefore, would not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A6 under 10 CFR part 1021, subpart D. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (August 4, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of today's proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at *www.gc.doe.gov.* DOE examined today's proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations

Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights'' 53 FR 8859 (March 18, 1988), that this regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed today's proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any proposed significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

Today's regulatory action to establish alternate certification requirements for certain covered appliances is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

IV. Public Participation

A. Submission of Comments

DOE will accept comments, data, and information regarding the proposed rule no later than the date provided at the beginning of this notice. Comments, data, and information submitted to DOE's email address for this rulemaking should be provided in WordPerfect, Microsoft Word, PDF, or text (ASCII) file format. Interested parties should avoid the use of special characters or any form of encryption, and wherever possible, comments should include the electronic signature of the author. Absent an electronic signature, comments submitted electronically must be followed and authenticated by submitting a signed original paper document to the address provided at the beginning of this notice. Comments, data, and information submitted to DOE via mail or hand delivery/courier should include one signed original paper copy. No telefacsimiles (faxes) will be accepted.

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 two copies: one copy of the document including all the information believed to be confidential and one copy of the document with the information believed to be confidential deleted. DOE will make its own determination as to 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) a date upon which such information might lose its confidential nature due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

B. Issues on Which DOE Seeks Comment

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

1. DOE requests comment on its proposal not to add a pre-approval process for AEDMs and its proposal to no longer require pre-approval for use of an alternative rating method for residential central air conditioners and heat pumps.

2. DOE requests comment on its proposal to expand the use of AEDMs to other commercial products.

3. DOE requests comment on its proposal to require at least one basic model from each product class to be tested to substantiate the AEDM. Specifically, DOE requests comments from manufacturers as to whether additional clarification is needed for manufacturers of certain covered products to determine all the applicable product classes that would need to be tested to substantiate the AEDM. As part of these comments, the Department is interested in receiving feedback on how manufacturers currently develop any simulation tools to ensure they are applicable across a wide range of product classes.

4. DOE seeks product specific comments on proposed overall and individual tolerance levels by product type. Specifically, DOE seeks data which show that the variability seen in the manufacturing processes, test instrumentation, and testing procedures are such that a different tolerance should be considered.

5. DOE seeks comment on the criteria for selection of basic models and the number of basic models a manufacturer should be required to test for substantiation as well as whether the differences in testing requirements for distribution transformers are appropriate or necessary.

6. DOE seeks comment on the appropriate course of action and the time to complete such steps when a model tested by DOE fails to meet its certified rating.

7. DOE requests comment on the proposal to disallow the use of an AEDM if there is evidence that the mis-rating is willful and/or there are multiple instances of non-compliance.

8. DOE requests comment on the necessity of requiring re-substantiation when there is a change in standards or test procedure and requiring that AEDMs be re-substantiated with active models.

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of today's NOPR.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Reporting and recordkeeping requirements.

10 CFR Part 430

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

10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation, Reporting and recordkeeping requirements.

Issued in Washington, DC, on May 24, 2012.

Timothy Unruh,

Acting Deputy Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons set forth in the preamble, DOE proposes to amend parts 429, 430 and 431 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 429—CERTIFICATION, COMPLIANCE AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317.

2. Section 429.1 is revised to read as follows:

§ 429.1 Purpose and scope.

This part sets forth the procedures to be followed for certification, determination and enforcement of compliance of covered products and covered equipment with the applicable conservation standards set forth in parts 430 and 431 of this subchapter.

3. Section 429.2 is amended by adding the definition for '' Alternative Efficiency Determination Method or AEDM'' in alphabetical order to paragraph (b) to read as follows:

§ 429.2 Definitions.

* * * * *

Alternative Efficiency Determination Method or AEDM is a simulation, calculation or engineering algorithm for determining the efficiency or consumption of a basic model of consumer product or commercial equipment, in terms of the appropriate descriptor used in or under section 325 or 342(a) of the Act to state the standard for that product.

* * * * *

4. Section 429.12 is amended by revising paragraph (b)(12) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(b) * * *

(12) Whether certification is based upon the use of an AEDM, where permitted, for determining measures of energy conservation and the name or version of any such AEDM; and

* * * * *

5. Section 429.16 is amended by revising paragraph (a) and removing paragraph (c) to read as follows:

§ 429.16 Central air conditioners and heat pumps.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to central air conditioners and heat pumps; and

(ii)(A) For central air conditioners and heat pumps, each single-package system and each condensing unit (outdoor unit) of a split-system, when combined with a selected evaporator coil (indoor unit) or a set of selected indoor units, must have a sample of sufficient size tested in accordance with the applicable provisions of this subpart. The represented values for any model of a single-package system, any model of a tested split-system combination, any model of a tested mini-split system combination, or any model of a tested multi-split system combination must be assigned such that—

(*1*) Any represented value of annual operating cost, energy consumption or other measure of energy consumption of the central air conditioner or heat pump for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 90 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of the energy efficiency or other measure of energy consumption of the central air conditioner or heat pump for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The lower 90 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(B) For heat pumps, all units of the sample population must be tested in both the cooling and heating modes and the results used for determining the heat pump's certified Seasonal Energy Efficiency Ratio (SEER) and Heating Seasonal Performance Factor (HSPF) ratings in accordance with paragraph (a)(1)(ii)(A)(*2*) of this section.

(C) For split-system air conditioners and heat pumps, the condenser-evaporator coil combination selected for tests pursuant to paragraph (a)(1)(ii)(A)

of this section shall include the evaporator coil that is likely to have the largest volume of retail sales with the particular model of condensing unit. For mini-split condensing units that are designed to always be installed with more than one indoor unit, a ''tested combination'' as defined in 10 CFR 430.2 shall be used for tests pursuant to paragraph (a)(1)(ii)(A) of this section. For multi-split systems, each model of condensing unit shall be tested with two different sets of indoor units. For one set, a ''tested combination'' composed entirely of non-ducted indoor units shall be used. For the second set, a ''tested combination'' composed entirely of ducted indoor units shall be used. However, for any split-system air conditioner having a single-speed compressor, the condenser-evaporator coil combination selected for tests pursuant to paragraph (a)(1)(ii)(A) of this section shall include the indoor coil-only unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit. This coil-only requirement does not apply to split-system air conditioners that are only sold and installed with blower-coil indoor units, specifically mini-splits, multi-splits, and through-the-wall units. This coil-only requirement does not apply to any split-system heat pumps. For every other split-system combination that includes the same model of condensing unit but a different model of evaporator coil and for every other mini-split and multi-split system that includes the same model of condensing unit but a different set of evaporator coils, whether the evaporator coil(s) is manufactured by the same manufacturer or by a component manufacturer, either—

(*1*) A sample of sufficient size, comprised of production units or representing production units, must be tested as complete systems with the resulting ratings for the outdoor unit-indoor unit(s) combination obtained in accordance with paragraphs (a)(1)(ii)(A)(*1*) and (a)(1)(ii)(A)(*2*) of this section; or

(*2*) The representative values of the measures of energy efficiency must be assigned as follows:

(*i*) For multi-split systems composed entirely of non-ducted indoor units, set equal to the system tested in accordance with paragraph (a)(1)(ii)(A) of this section whose tested combination was entirely non-ducted indoor units; or

(*ii*) For multi-split systems composed entirely of ducted indoor units, set equal to the system tested in accordance with paragraph (a)(1)(ii)(A) of this section when the tested combination was entirely ducted indoor units; or

(*iii*) For multi-split systems having a mix of non-ducted and ducted indoor units, set equal to the mean of the values for the two systems—one having the tested combination of all non-ducted units and the second having the tested combination of all ducted indoor units—tested in accordance with paragraph (a)(1)(ii)(A) of this section.

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of central air conditioners and heat pumps may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of estimated maximum daily energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

6. Section 429.42 is amended by revising paragraph (a) to read as follows:

§ 429.42 Commercial refrigerators, freezers, and refrigerator-freezers.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) Units to be tested.

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to commercial refrigeration equipment; and

(ii)(A) For each basic model of commercial refrigerator, freezer, or refrigerator-freezer selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—to ensure that—

(*1*) Any represented value of estimated maximum daily energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of commercial refrigerators, freezers or refrigerator-freezers may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of estimated maximum daily energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher

values shall be less than or equal to the output of the AEDM.

* * * * *

7. Section 429.43 is amended by revising paragraph (a) and removing paragraph (c) to read as follows:

§ 429.43 Commercial heating, ventilating, air conditioning (HVAC) equipment.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to commercial HVAC equipment; and

(ii)(A) For each basic model of commercial HVAC equipment, a sample of sufficient size shall be selected and tested to ensure that—

(*1*) Any represented value of energy consumption or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of commercial HVAC equipment may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

8. Section 429.44 is amended by revising paragraph (a) and removing paragraph (c) to read as follows:

§ 429.44 Commercial water heating equipment.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to commercial WH equipment; and

(ii)(A) For each basic model of commercial WH equipment, a sample of sufficient size shall be selected and tested to ensure that—

(*1*) Any represented value of maximum standby loss or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of minimum thermal efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(ii) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of commercial WHWH equipment may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of maximum standby loss or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of minimum thermal efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

9. Section 429.45 is amended by revising paragraph (a) to read as follows:

§ 429.45 Automatic commercial ice makers.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to automatic commercial ice makers; and

(ii)(A) For each basic model of automatic commercial ice maker selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(*1*) Any represented value of maximum energy use or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of automatic commercial ice makers may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of maximum energy use or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

10. Section 429.47 is amended by revising paragraph (a) and removing paragraph (c) to read as follows:

§ 429.47 Distribution transformers.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to distribution transformers; and

(ii)(A) For each basic model selected for testing:

(*1*) If the manufacturer produces five or fewer units of a basic model over 6 months, each unit must be tested. A manufacturer may not use a basic model with a sample size of fewer than five units to substantiate an AEDM pursuant to § 429.70.

(*2*) If the manufacturer produces more than five units over 6 months, a sample of at least five units must be selected and tested; and

(B) Any represented value of efficiency of a basic model must satisfy the condition:

$$RE \leq \frac{100}{1 + \left(\frac{100 - \bar{x}}{\bar{x}}\right)\left(\frac{\sqrt{n}}{\sqrt{n} + .08}\right)}$$

where $\bar{x}$ is the average efficiency of the sample.

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency of distribution transformers may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

11. Section 429.52 is amended by revising paragraph (a) to read as follows:

§ 429.52 Refrigerated bottled or canned beverage vending machines.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to refrigerated bottled or canned vending machines; and

(ii)(A) For each basic model of refrigerated bottled or canned beverage vending machine selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(*1*) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the

number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

and

(*2*) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n − 1 degrees of freedom (from Appendix D).

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of refrigerated bottled or canned vending machines may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

12. Section 429.53 is amended by revising paragraph (a) to read as follows:

§ 429.53 Walk-in coolers and walk-in freezers.

(a) *Determination of Certified Rating.* Manufacturers can determine the certified rating for each basic model either by testing or by applying a substantiated AEDM in conjunction with the applicable sampling procedures.

(1) *Units to be tested.*

(i) If represented values are determined through testing, the general requirements of § 429.11 are applicable to walk-in cooler or freezer refrigeration systems; and

(ii)(A) For each basic model of walk-in cooler or freezer refrigeration system selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(*1*) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) Reserved. and

(*2*) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*ii*) Reserved.

(2) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption of walk-in cooler or freezer refrigeration systems may be certified as based on a single unit when determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM; and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM.

* * * * *

13. Section 429.70 is amended by revising paragraphs (a), (c), (d) and (e) to read as follows:

§ 429.70 Alternative methods for determining energy efficiency and energy use.

(a) *General Applicability of an AEDM.* A manufacturer of commercial HVAC and WH equipment, distribution transformers, central air conditioners and heat pumps, commercial refrigeration equipment, refrigeration systems of walk-in coolers and freezers, automatic commercial ice makers, beverage vending machines, electric motors, and small electric motors may not distribute any basic model of such equipment in commerce unless the manufacturer has determined the energy efficiency of the basic model, either from testing the basic model or from applying an alternative method for determining energy efficiency or energy use (AEDM) to the basic model, in accordance with the requirements of this section. In instances where a manufacturer has tested a basic model to substantiate the alternative method, the energy efficiency of that basic model must be determined and rated according to results from actual testing and application of the sampling plans. In addition, a manufacturer may not knowingly use an AEDM to overrate the efficiency of a basic model. For each basic model of distribution transformer that has a configuration of windings that allows for more than one nominal rated voltage, the manufacturer must determine the basic model's efficiency either at the voltage at which the highest losses occur or at each voltage at which the transformer is rated to operate.

* * * * *

(c) *Substantiation of an AEDM.* Before using an AEDM, the manufacturer must substantiate the AEDM's accuracy and reliability as follows:

(1) Apply the AEDM to at least five of the manufacturer's basic models that have been selected for testing in accordance with paragraph (c)(5) of this section, and calculate the efficiency for each of these basic models. In any instance where a manufacturer has produced fewer than five basic models in the previous 6 months, select one model from each basic model and additional individual models to meet the minimum of five;

(2) Test at least one unit of each basic model to which the AEDM was applied in accordance with the applicable provisions of Part 430 or 431 and determine the efficiency (or consumption) for each of these basic models, except that, for distribution transformer AEDMs, test five units of each basic model selected for testing.

(3) *Individual Model Tolerances:*

(i) For electric motors and small electric motors, the efficiency predicted

by the AEDM for each basic model must be within plus or minus 10 percent of the efficiency determined from the corresponding test of the basic model;

(ii) For all other products where an AEDM is authorized for use in paragraph (a) of this section, the efficiency predicted by the AEDM for each basic model must be within plus or minus 5 percent of the efficiency determined from the corresponding test of the basic model.

(4) *Averaged Tolerances:* The average of the predicted efficiencies of the five or more basic models determined in accordance with paragraph (c)(1) of this section must be within plus or minus 3 percent of the average of the tested efficiencies of the five or more basic models determined in accordance with paragraph (c)(2) of this section, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

where $\bar{x}$ is the sample average efficiency, n is the number of samples and $\bar{x}_i$ is the efficiency of the ith sample.

(5) *Additional Test Unit Requirements.*

(i) Each AEDM must be supported by test data obtained from physical tests of current models. The tested basic models underlying an AEDM must meet the following criteria:

(A) There must be at least one basic model selected from each DOE product class to which the AEDM will be applied;

(B) Two basic models must be from the product class with the highest sales volume. For residential AC/HP, Commercial HVAC, Commercial WH, ACIM, WICF refrigeration systems, CRE and BVMs; one of these two selected models must be the smallest capacity (*e.g.,* cooling capacity or total display area), and one must be within 25% of the largest capacity of the models to be covered by the AEDM;

(C) One tested model must be the basic model which either has the highest sales volume of the models covered by the AEDM during the prior year or is expected to have the highest sales volume in the coming year;

(D) Each selected model must meet the current applicable energy or water conservation standards for that product; and

(E) Each test must have been performed in accordance with the test procedure for which compliance is required at the time the basic model is distributed in commerce.

(ii) In any instance where it is not possible for a manufacturer to select basic models for testing in accordance with all of these criteria, the criteria shall be given priority in the order in which they are listed. Within the limits imposed by the criteria, basic models shall be selected randomly.

(d) AEDM Records and Procedures

(1) If a manufacturer has used an AEDM pursuant to this section;

(i) The manufacturer must have available for inspection by the Department records showing:

(A) The method or methods used;

(B) The mathematical model, the engineering or statistical analysis, computer simulation or modeling, and other analytic evaluation of performance data on which the AEDM is based;

(C) Complete test data, product information, and related information that the manufacturer generated or acquired through testing and AEDM calculations for each basic model; and

(D) The calculations used to determine the average efficiency, energy consumption, or power loss of each basic model to which an AEDM was applied.

(ii) If requested by the Department and at DOE's discretion, the manufacturer must perform at least one of the following:

(A) Conduct simulations before representatives of the Department to predict the performance of particular basic models of the product to which the AEDM was applied with DOE witnessing;

(B) Provide analyses of previous simulations conducted by the manufacturer; or

(C) Conduct certification testing of basic models selected by the Department.

(2) *Assessment Testing:* Pursuant to § 429.104, DOE may, at any time, test a basic model to assess whether the basic model is in compliance with the applicable energy conservation standards.

(i) *Indication of non-compliance:* Should the assessment testing suggest the basic model may not comply with the applicable energy conservation standards, DOE may initiate an investigation pursuant to § 429.106 and/or undertake enforcement testing pursuant to § 429.110;

(ii) *Finding of non-compliance:* The provisions of § 429.114 apply, and if the non-compliant basic model was used to substantiate the AEDM, within 30 days the manufacturer must:

(A) Re-substantiate the AEDM based on a completely new set of test data from the product class affected by the determination of non-compliance subject to the applicable provisions of Part 430 and 431, § 429.116, and paragraph (c) of this section, and

(B) Re-rate and re-certify, as necessary, with the re-substantiated AEDM, all basic models that were certified using the AEDM.

(iii) *Failure to meet certified ratings:* If DOE testing demonstrates that the basic model does not test within 10 percent of its certified rating for electric motors and small electric motors or within 5 percent of its certified rating for all other products, the manufacturer shall within 30 days of receipt of DOE test data;

(A) Re-substantiate the AEDM used to certify the model;

(*1*) Pursuant to paragraph (c) of this section, and

(*2*) Incorporate the DOE test data into the substantiation package for the AEDM and recalculate a certified rating for each basic models from the product class for which the tested model failed to achieve its rating. New test data is not required for models in unaffected product classes.

(B) Re-rate and re-certify with the updated AEDM, as necessary, all basic models that used the original AEDM.

(e) R*e-substantiation of an AEDM.*

(1) *Change in applicable standards or DOE test procedure:* Following a change in energy conservation or water use standards or DOE test procedure for products which are rated using an AEDM, a manufacturer shall re-substantiate the AEDM subject to the following criteria in addition to those listed in paragraph (c) of this section:

(i) The basic models used to substantiate the AEDM must be models currently in production; and

(ii) All test data used to substantiate the AEDM must meet the new standard levels.

(2) *Discontinuance of model on which substantiation of AEDM was based:* If a model that was used to substantiate the AEDM is discontinued, a manufacturer must replace that model's data and re-substantiate such that the AEDM is based on models currently in production and meets the criteria of paragraph (c).

(3) *Failure to re-substantiate an AEDM subject to these criteria:* If a manufacturer fails to re-substantiate an AEDM within 30 days of an occurrence of one of the events described in this section, then the AEDM becomes invalid and any certifications made pursuant to the AEDM are invalidated.

14. Section 429.116 is amended to read as follows:

§ 429.116 Additional certification testing requirements.

(a) If DOE determines that independent, third-party testing is

necessary to ensure a manufacturer's compliance with the rules of this part, part 430, or part 431, a manufacturer must base its certification of a basic model under subpart B of this part on independent, third-party laboratory testing.

(b) If DOE determines that a manufacturer has used an AEDM to certify compliance and either has willfully certified the product at an unsupported rating or has distributed multiple, non-compliant basic models in commerce as a result of a faulty AEDM, DOE may prohibit continued use of an AEDM and require the manufacturer to base its certifications of compliance on physical testing of each basic model.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

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

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

§ 430.2 [Amended]

16. Section 430.2 is amended by removing the definition of ''ARM/simulation adjustment factor''.

PART 431—ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

17. The authority citation for part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317.

18. Section 431.2 is amended by revising the definition of ''alternative efficiency determination method or AEDM'' to read as follows:

§ 431.2 Definitions.

* * * * *

Alternative Efficiency Determination Method or AEDM is a simulation, calculation or engineering algorithm for determining the efficiency or consumption of a basic model of consumer product or commercial equipment, in terms of the appropriate descriptor used in or under section 325 or 342(a) of the Act to state the standard for that product.

* * * * *

19. Section 431.17 is amended by revising paragraph (a) to read as follows:

§ 431.17 Determination of efficiency.

* * * * *

(a) *Provisions applicable to all electric motors*— (1) *General requirements.* The average full load efficiency of each basic model of electric motor must be determined either by testing in accordance with § 431.16 of this subpart, or by application of an alternative efficiency determination method (AEDM) that meets the requirements of § 429.70, provided, however, that an AEDM may be used to determine the average full load efficiency of one or more of a manufacturer's basic models only if the average full load efficiency of at least five of its other basic models is determined through testing.

(2) *Alternative efficiency determination method.* An AEDM applied to a basic model must comply with § 429.70.

(3) *Use of a certification program or accredited laboratory.* (i) A manufacturer may have a certification program, that DOE has classified as nationally recognized under § 431.20, certify the nominal full load efficiency of a basic model of electric motor, and issue a certificate of conformity for the motor.

(ii) For each basic model for which a certification program is not used as described in paragraph (a)(3)(i) of this section, any testing of the motor pursuant to paragraphs (a)(1) through (2) of this section to determine its energy efficiency must be carried out in accordance with paragraph (b) of this section, in an accredited laboratory that meets the requirements of § 431.18. (This includes testing of the basic model, pursuant to § 429.70, to substantiate an AEDM.)

* * * * *

§ 431.442 [Amended]

20. Section 431.442 is revised by removing the definition of ''Alternative efficiency determination method''.

* * * * *

21. Section 431.445 is amended by:

a. Revising paragraph (b); and

b. Removing paragraph (c).

§ 431.445 Determination of small electric motor efficiency.

* * * * *

(b) *Provisions applicable to all small electric motors*—(1) *General requirements.* The average full load efficiency of each basic model of electric motor must be determined either by testing in accordance with § 431.444 of this subpart, or by application of an alternative efficiency determination method (AEDM) that meets the requirements of § 429.70, provided, however, that an AEDM may be used to determine the average full load efficiency of one or more of a manufacturer's basic models only if the average full load efficiency of at least five of its other basic models is determined through testing.

(2) *Alternative efficiency determination method.* To use an AEDM to rate a basic model, the AEDM must comply with § 429.70.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2012–0497; Directorate Identifier 2011–NM–140–AD]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede an existing airworthiness directive (AD) that applies to certain The Boeing Company Model 777–200, –200LR, –300, and –300ER series airplanes. The existing AD currently requires inspecting for scribe lines in the skin along lap joints, butt joints, certain external doublers, and the large cargo door hinges, and related investigative and corrective actions if necessary. Since we issued that AD, we have determined that scribe lines could occur where external decals are installed or removed across lap joints, large cargo door hinges, or external doublers. This proposed AD would add inspecting for scribe lines where external decals have been applied or removed across lap joints, large cargo door hinges, and external doublers, and related investigative and corrective actions if necessary. We are proposing this AD to detect and correct scribe lines which can develop into fatigue cracks in the skin. Undetected fatigue cracks can grow and cause sudden decompression of the airplane.

DATES: We must receive comments on this proposed AD by July 16, 2012.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room