



# Federal Register

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**Part II**

## **Department of Energy**

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**Office of Energy Efficiency and  
Renewable Energy**

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**10 CFR Part 431  
Energy Efficiency Program for Certain  
Commercial and Industrial Equipment:  
Test Procedures and Efficiency Standards;  
Final Rules**

**DEPARTMENT OF ENERGY****Office of Energy Efficiency and Renewable Energy****10 CFR Part 431**

[Docket No. EE-RM/TP-99-450]

RIN 1904-AA96

**Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards for Commercial Warm Air Furnaces; General Provisions for Commercial Heating, Air Conditioning and Water Heating Equipment; Energy Efficiency Provisions for Electric Motors**

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

**ACTION:** Final rule.

**SUMMARY:** Pursuant to Part C of Title III of the Energy Policy and Conservation Act (EPCA), the Department of Energy (DOE or the Department) promulgates a rule prescribing test procedures to rate the energy efficiency of commercial warm air furnaces. The rule also recodifies existing commercial warm air furnace energy conservation standards so that they are located contiguous with the test procedures that DOE promulgates today. For commercial heating, air conditioning and water heating products generally, the rule prescribes definitions and procedural provisions, and incorporates from EPCA general enforcement and administrative provisions. Finally, we are placing the new requirements for this equipment in the part of our regulations that already contains existing efficiency requirements for electric motors, and we are reorganizing and republishing, without substantive change, the existing requirements for motors.

**DATES:** This rule is effective November 22, 2004. The incorporation by reference of certain publications listed in this rule is approved by the Director of the Federal Register as of November 22, 2004.

**FOR FURTHER INFORMATION CONTACT:**

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**SUPPLEMENTARY INFORMATION:** This final rule incorporates, by reference, into Subpart D of Part 431, two test procedures contained in industry testing standards referenced by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) and the Illuminating Engineering Society of North America (IES) Standard 90.1 ("ASHRAE/IES Standard 90.1"), for commercial warm air furnaces. Those industry testing standards are: American National Standards Institute (ANSI) Standard Z21.47-1998, "Gas-Fired Central Furnaces," and Underwriters Laboratories (UL) Standard 727-1994, "Standard for Safety Oil-Fired Central Furnaces." This final rule also incorporates by reference into Subpart D of Part 431, (1) sections 8.2.2, 11.1.4, 11.1.5 and 11.1.6.2 of the Hydronics Institute Division of the Gas Appliance Manufacturers Association Boiler Testing Standard BTS-2000, "Method to Determine Efficiency of Commercial Space Heating Boilers," published January 2001 (HI BTS-2000) which specify a flue loss calculation procedure for oil-fired equipment, and (2) sections 7.2.2.4, 7.8, 9.2 and 11.3.7 of the ASHRAE Standard 103-1993, "Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers," which specify a test procedure for measuring the incremental efficiency of condensing furnaces under steady state operation.

You can view copies of these standards in the resource room of the Building Technologies Program, room 1J-018 at the U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Please call Ms. Brenda Edwards-Jones at (202) 586-2945, for additional information regarding visiting the resource room.

You can purchase copies of the ASHRAE Standard 103-1993 from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, NE., Atlanta, GA 30329, <http://www.ashrae.org/book/bookshop.htm>; HI Standard BTS-2000 from Hydronics Institute Division of GAMA, P.O. Box 218, Berkeley Heights, NJ 07922, <http://www.gamanet.org/publist/hydroordr.htm>; and Standards ANSI Z21.47-1998 and UL 727-1994 from Global Engineering Documents, 15 Inverness Way East, Englewood, CO

80112, <http://global.ihs.com/> respectively.

- I. Introduction
  - A. Authority
  - B. Background
  - C. Summary of the Final Rule
- II. Discussion
  - A. General
  - B. Warm Air Furnaces
    - 1. Definitions
      - a. "Commercial Warm Air Furnace"
      - b. "Thermal Efficiency" for Furnaces
    - 2. ASHRAE/IES Standard 90.1 Referenced Furnace Test Standards
    - 3. Procedures for Measuring the Flue Losses of Oil Furnaces and the Incremental Efficiency of Condensing Furnaces
      - a. Flue Loss Calculation for Oil-Fired Furnaces
      - b. Condensing Furnaces
    - C. Procedural, Administrative and Enforcement Provisions for Commercial Heating, Air Conditioning and Water Heating Products
    - D. Effect of Amended Test Procedure on Measured Energy Efficiency
  - III. Procedural Requirements
    - A. Review Under Executive Order 12866
    - B. Review Under the Regulatory Flexibility Act
    - C. Review Under the Paperwork Reduction Act
    - D. Review Under the National Environmental Policy Act
    - E. Review Under Executive Order 13132
    - F. Review Under Executive Order 12988
    - G. Review Under the Unfunded Mandates Reform Act of 1995
    - H. Review Under the Treasury and General Government Appropriations Act, 1999
    - I. Review Under Executive Order 12630
    - J. Review Under the Treasury and General Government Appropriations Act, 2001
    - K. Review Under Executive Order 13211
    - L. Review Under Section 32 of the Federal Energy Administration Act of 1974
    - M. Congressional Notification
    - N. Approval of the Office of the Secretary

**I. Introduction****A. Authority**

Title III of the Energy Policy and Conservation Act (EPCA) sets forth a variety of provisions designed to improve energy efficiency. Part B of Title III (42 U.S.C. 6291-6309) provides for the "Energy Conservation Program for Consumer Products other than Automobiles." Part C of Title III (42 U.S.C. 6311-6317) provides for a program similar to Part B which is entitled "Certain Industrial Equipment," and which includes commercial air conditioning equipment, furnaces, and other types of equipment.

DOE publishes today's final rule pursuant to Part C which specifically provides for definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from

manufacturers. (42 U.S.C. 6311–6317) With regard to test procedures, Part C generally authorizes the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results which reflect energy efficiency, energy use and estimated operating costs, and that are not unduly burdensome to conduct. (42 U.S.C. 6314)

With respect to some commercial equipment for which EPCA prescribes energy conservation standards, including commercial warm air furnaces, Section 343 (a)(4)(A) provides “the test procedures shall be those generally accepted industry testing procedures or rating procedures developed or recognized by the Air-Conditioning and Refrigeration Institute or by the American Society of Heating, Refrigerating and Air Conditioning Engineers, as referenced in ASHRAE/IES Standard 90.1 and in effect on June 30, 1992.” (42 U.S.C. 6314(a)(4)(A)) Further, if such an industry testing or rating procedure is amended, DOE must revise the test procedure to be consistent with the amendment, unless the Secretary determines, based on clear and convincing evidence, that to do so would not meet certain general requirements spelled out in EPCA Section 343 for test procedures. (42 U.S.C. 6314(a)(4)(B)) Before prescribing any test procedures for such equipment, the Secretary must publish them in the **Federal Register** and afford interested persons at least 45 days to present data, views and arguments. (42 U.S.C. 6314(b)) Effective 360 days after a test procedure rule applicable to any covered commercial equipment, such as a commercial warm air furnace, is prescribed, no manufacturer, distributor, retailer or private labeler may make any representation in writing or in broadcast advertisement respecting the energy consumption or cost of energy consumed by such equipment, unless it has been tested in accordance with the prescribed procedure and such representation fairly discloses the results of the testing. (42 U.S.C. 6314(d)) Finally, under the terms of Part C of Title III of EPCA, the Secretary is authorized to require manufacturers of equipment covered by today’s rule to submit information and reports for a variety of purposes, including insuring compliance with requirements. (42 U.S.C. 6316(b)(1))

### B. Background

DOE began implementation of Part C of Title III of EPCA by establishing 10 CFR Part 431. Part 431 is entitled “Energy Efficiency Program for Certain Commercial and Industrial Equipment.”

It consists of test procedures, Federal energy conservation standards, labeling, and certification and enforcement procedures. Today, DOE amends Part 431 in order further to implement Part C of Title III of EPCA.

As a first step in the process that led to today’s final rule, we convened public workshops on April 14 and 15, 1998, and on October 18, 1998, to solicit views and information from interested parties to aid in developing proposed rules that would address test procedures, certification and enforcement procedures, and EPCA’s coverage for this equipment. The workshop discussions and comments focused on the following issues for warm air furnaces specifically:

- (1) The efficiency descriptor;
- (2) Calculation of flue loss for oil fired furnaces; and
- (3) Adoption of a test procedure for condensing furnaces.

We also requested comment on several issues for all commercial heating, air conditioning and water heating products, relating primarily to the most cost effective and reliable methodology for sampling, certification and enforcement. Discussion and comments focused largely on the following:

- (1) Whether we should require sampling procedures for compliance certification and enforcement testing that are similar to those used for consumer products;
- (2) Adapting for commercial equipment other compliance and enforcement procedures that currently apply to consumer products; and
- (3) The use of voluntary industry programs to help assure compliance, and the content of such programs.

We published a Notice of Proposed Rulemaking and Public Hearing (“proposed rule” or “NOPR”) after considering statements made during the public workshops and written comments. (64 FR 69598, December 13, 1999). We proposed regulations to: (1) Implement the energy efficiency standards and test procedures mandated by EPCA for commercial warm air furnaces, and (2) set forth definitions, methods of determining efficiency, compliance certification procedures, prohibited actions, enforcement procedures, and general administrative and procedural provisions for all covered commercial heating, air conditioning and water heating products. The Department requested data, comments and information regarding the proposed regulations. We held a public hearing on January 27, 2000, (the January 2000 workshop) to receive oral comments, and we accepted

written comments until February 28, 2000.

In formulating today’s final rule, we considered the comments received, and have incorporated recommendations where appropriate. Section II below discusses comments that questioned or disagreed with the Department’s positions as presented in the NOPR.

Energy conservation standard levels are not at issue here. The NOPR merely proposed to incorporate into the Department’s regulations on efficiency requirements for commercial warm air furnaces the standard levels that had been established by law in Section 342(a) of EPCA.

Subsequent to issuance of the NOPR, in a separate proceeding, we promulgated a regulation (10 CFR Part 431, Subpart Q) to adopt as Federal standards some of the efficiency levels contained in amendments to ASHRAE/IES Standard 90.1. 66 FR 3336, 3354 (January 12, 2001). For furnaces, the levels contained in these amendments, and consequently in Subpart Q (10 CFR 431.702), are the same as the levels in Section 342(a) of EPCA.

### C. Summary of the Final Rule

Today’s final rule incorporates the following for commercial warm air furnaces: (1) Definitions for the equipment and for its efficiency descriptor, (2) energy efficiency test procedures, and (3) energy conservation standards. Pursuant to the definition of “commercial warm air furnace” in today’s rule, the rule covers only those commercial furnaces for which EPCA specifies standard levels, *i.e.*, furnaces having a maximum rated input capacity of 225,000 Btu (British thermal unit) per hour or more. The rule also uses “thermal efficiency” as the efficiency descriptor, as specified in the statute, but defines the term as having the meaning conventionally given to “combustion efficiency,” as proposed in the NOPR. The rule adopts, as the test procedures under EPCA, ANSI Standard Z21.47–1998 for gas-fired furnaces and UL Standard 727–1994 for oil-fired furnaces (incorporated by reference, see § 431.75). We have incorporated provisions of the HI Standard BTS–2000 to calculate flue loss for oil-fired furnaces, and ASHRAE Standard 103–1993 (incorporated by reference, see § 431.75) to determine the incremental efficiency of condensing furnaces under steady state conditions. Finally, so that the efficiency test procedures and standards for commercial warm air furnaces will be in the same place in our regulations, this rule also recodifies elsewhere in Part 431 the minimum energy efficiency levels prescribed by

Section 342(a) of EPCA and 10 CFR 431.702. Consequently, we are deleting § 431.702 from the regulations.

Today's final rule also adopts certain general provisions to implement efficiency requirements for the commercial air conditioning, heating, and water heating products, as well as boilers and furnaces, for which EPCA provides energy conservation standards (which we refer to collectively as "commercial HVAC & WH products"). Specifically, as proposed in the NOPR, the rule contains provisions for these products that: (1) Allow manufacturers to obtain a waiver of an applicable test procedure, (2) require maintenance of records concerning compliance, (3) provide for subpoenas and confidential treatment of information, and (4) incorporate from EPCA a description of prohibited actions, general enforcement procedures, and provisions as to imported and exported equipment. At this time, however, the Department is not adopting for commercial HVAC & WH products methods and procedures for manufacturers to determine and certify compliance, or procedures (including testing regimens) that DOE will use in resolving any disputed performance claims and in deciding whether to pursue enforcement action. We proposed such methods and procedures in the NOPR, and are still considering what action to take with respect to these proposals.

Finally, today's final rule combines in 10 CFR Part 431 the existing requirements for electric motors and the new requirements for commercial HVAC & WH products. Because we are reorganizing and renumbering 10 CFR Part 431 in this rule, we are republishing today the text of these provisions. The text of these provisions is substantively the same as currently exists in DOE's regulations. We have also reorganized and renumbered the proposed regulations.

## II. Discussion

### A. General

Representatives from seven organizations representing stakeholders from trade associations (the Gas Appliance Manufacturers Association (GAMA) and the Air Conditioning and Refrigeration Institute (ARI)), manufacturers (A.O. Smith Water Products Co. (A.O. Smith), York International (York), and Bock Water Heaters (Bock)), and State government energy offices (the California Energy Commission (CEC) and the Oregon Office of Energy (OOE)) attended the January 2000 workshop. GAMA and ARI submitted written statements in advance

of the hearing. GAMA, ARI and CEC also submitted additional written comments afterward. We provided a call-in telephone number (notifying stakeholders by telephone and e-mail on the day before) for interested stakeholders who could not attend the workshop due to adverse weather conditions along the east coast prior to the day of the workshop.

In the next portion of this **SUPPLEMENTARY INFORMATION**, the Department addresses the points on which significant comments were made in response to the NOPR on issues concerning commercial warm air furnaces. Then, DOE addresses the NOPR's proposals as to certification, methods of determining compliance, and enforcement for commercial HVAC & WH products generally, and DOE's decision to adopt at this time only certain of these proposals.

### B. Warm Air Furnaces

#### 1. Definitions

##### a. "Commercial Warm Air Furnace"

In § 431.141 of the rule language in the NOPR, we proposed to define a commercial warm air furnace as "a warm air furnace that is a commercial HVAC & WH product," and to define "commercial HVAC & WH product" in part as a product "to which an energy conservation standard is applicable under Section 342(a)" of EPCA. 64 FR at 69610. Section 342(a) specifies standards for furnaces with capacities of 225,000 Btu per hour or more, but no standard has been adopted under that section for any smaller commercial furnace. Thus, "commercial warm air furnace" as defined in the NOPR would not include any such smaller furnace, and the proposed requirements in the NOPR would not apply to these products. Moreover, proposed §§ 431.162 and 431.171 in the NOPR explicitly state that the test procedures and efficiency standards, respectively, would apply to commercial warm air furnaces of 225,000 Btu per hour or more. 64 FR 69611–12.

At the January 2000 workshop, and in written comments following the workshop, the CEC asserted, that in the final rule, the Department should apply the efficiency standards for commercial furnaces to products less than 225,000 Btu per hour that are not consumer products, and that, in any event, it appeared from the NOPR that the certification, enforcement and compliance requirements in the proposed rule would apply to these

smaller commercial furnaces. (CEC, Tr.<sup>1</sup> 27–29, and No. 7 at 4<sup>2</sup>). The CEC referred to 10 CFR 430.2, which delineates the consumer products covered by EPCA efficiency requirements, and defines a "furnace" as one that (1) is an electric or fossil-fueled furnace that uses single-phase electric current, (2) is designed as the principal heating source for residential living space, (3) is not in a cabinet with a central air conditioner with a rated cooling capacity above 65,000 Btu per hour, and (4) has a heat input rate of less than 225,000 Btu per hour. Expressing particular concern about smaller equipment that uses three-phase electric current, CEC recommended that the final rule apply the efficiency standards for commercial furnaces to any warm air furnace with a capacity of less than 225,000 Btu per hour that does not meet this definition of a consumer product and, consequently, is not covered by the standards for such a product. CEC also stated that, regardless of what position we take on this point, we should make that position clear. The OOE concurred with the CEC's recommendation as to coverage of smaller three-phase equipment, with three-phase equipment with a capacity of 150,000 Btu per hour. (OOE, Tr. 29). CEC recognized, however, that EPCA does not explicitly provide efficiency standards for such smaller commercial furnaces, and GAMA stated that there is a gap in the statute with respect to these products. (GAMA, Tr. 30).

We have considered these comments, and have decided to adhere to the approach taken in the NOPR for the reasons set forth below. Thus, the efficiency requirements we are adopting at this point for commercial warm air furnaces will apply only to equipment with a capacity of 225,000 Btu per hour or greater.

Section 340 of EPCA, which contains definitions for certain types of commercial and industrial equipment covered by EPCA, defines a "warm air furnace" in terms of its features and its functions, specifically including or excluding certain equipment.<sup>3</sup> Section

<sup>1</sup> "Tr." followed by a number or numbers, refers to a page or pages in the transcript of the January 2000 workshop.

<sup>2</sup> A notation in the form "CEC, No. 7 at 4" identifies a written comment DOE received in this rulemaking subsequent to issuance of the NOPR. This notation refers to a comment (1) by CEC, (2) in document number 7 in the docket in this matter, and (3) appearing at page 4 of document number 7.

<sup>3</sup> The definition reads as follows:

"Warm air furnace" means a self-contained oil-fired or gas-fired furnace designed to supply heated air through ducts to spaces that require it and includes combination warm air furnace/electric air conditioning units but does not include unit heaters

342(a)(4), 42 U.S.C. 6313(a)(4), then specifies energy conservation standards for “warm air furnaces with capacity of 225,000 Btu per hour or more.” Section 342(a)(6) further mandates action by DOE should the conservation standards in ASHRAE/IES Standard 90.1 for warm air furnaces (and other specified equipment) be amended.

With regard to efficiency standards, the purpose of this rulemaking is to recodify standards already prescribed by statute or the Department’s regulations. The only such existing standards for commercial warm air furnaces, set forth in Section 342(a)(4)(A) and (B) of EPCA and 10 CFR 431.702 (66 FR 3354), are for units with a capacity of 225,000 Btu per hour or more. In the NOPR, the Department did not propose, or even discuss, the adoption of efficiency standards for smaller furnaces; we did not invite comment on the issue or give any indication such standards might be promulgated. Therefore, we decline to adopt any such standards at this time. Similarly, we proposed test procedures in the NOPR only for furnaces with a capacity of 225,000 Btu per hour or more, and did not discuss application of these procedures to smaller furnaces. As to the certification and enforcement provisions proposed in the NOPR, by their terms they address compliance with applicable efficiency standards and do not apply to equipment for which no standards have been prescribed. The compliance provisions—the methods (other than the test procedures) for determining efficiency—are also designed to assure compliance with existing standards, as illustrated by provisions such as proposed §§ 431.481(a) and 431.484(a)(10). For all of these reasons, and as proposed in the NOPR, the test procedures in today’s final rule apply only to commercial warm air furnaces of 225,000 Btu per hour or more.<sup>4</sup>

Accordingly, we have revised the definition of “commercial warm air furnace” in today’s final rule to make explicit that it includes only furnaces (1) with capacities of 225,000 Btu per hour or larger, *i.e.*, furnaces for which standards have been prescribed, and (2) that are “industrial equipment,” a term which EPCA defines and which we define in today’s rule by incorporating

and duct furnaces. EPCA Section 340(11)(A), 42 U.S.C. 6311(11)(A).

<sup>4</sup> We are not adopting compliance, certification or, for the most part, enforcement provisions for commercial HVAC equipment in today’s final rule. But as with the enforcement procedures that are in the rule, we anticipate that when we adopt such provisions, the only commercial warm air furnaces to which they will apply will have capacities of 225,000 Btu per hour or more.

and paraphrasing language from the EPCA definition. These language changes will not in any way alter the coverage of warm air furnaces as proposed in the NOPR, or the substance of the regulation. But they should make the rule clearer.

Finally, EPCA and the NOPR refer to commercial furnaces with a “capacity” of 225,000 Btu per hour or more, but do not state whether “capacity” refers to an input or output value. Because any given Btu per hour level of input and output actually represents two different values and sizes of equipment, we believe we should clarify what “capacity” means so as to make clear what equipment is covered. We note first that ASHRAE/IES Standard 90.1–1989 delineated categories of furnaces by reference to the 225,000 Btu per hour value, without mentioning input or output, whereas Standard 90.1–1999 explicitly states that such size categories are based on “input.” We believe this change was designed to clarify rather than alter the scope of the applicable efficiency requirements. Because EPCA’s efficiency requirements for commercial furnaces are based on these same provisions in ASHRAE 90.1, and also use the 225,000 Btu/hr level as a cut-off for differentiating efficiency requirements, ASHRAE’s categorization of commercial furnace sizes by reference to input strongly suggests that furnace “capacity” in EPCA should be interpreted to mean input capacity. Second, the Department believes that, because EPCA provides efficiency standards for furnaces that are consumer (residential) products if they have an “input rate” of less than 225,000 Btu/hr, (42 U.S.C. 6291–6292), the “capacity” of commercial furnaces to which Section 342(a)(4)(A)–(B) of EPCA refers is also the input rate. The most reasonable construction of EPCA is that the capacities of residential and commercial furnaces must be measured in a uniform manner under the statute. If the term “capacity” in EPCA were construed as providing standards for commercial furnaces with an output rate of 225,000 BTU/hr or more, there would be a gap between the capacities of the largest consumer furnace and the smallest commercial furnace for which EPCA prescribes standards. We do not believe Congress intended such a result.

For these reasons, we construe the term “capacity,” as applied to commercial warm air furnaces in Section 342(a)(4)(A)–(B) of EPCA, to mean the rated input capacity and not the output capacity. To clarify this point, we are including in our definition of “commercial warm air furnace,” in 10 CFR 431.72, the parenthetical “(rated

maximum input)” to modify the term “capacity.”

b. “Thermal Efficiency” for Furnaces

EPCA specifies the energy efficiency standard levels for commercial warm air furnaces in terms of “thermal efficiency,” 42 U.S.C. 6313(a)(4)(A)–(B), but provides no definition for this term. For reasons discussed in detail in the NOPR, 64 FR 69601, we proposed to interpret this term, for purposes of commercial warm air furnaces as meaning what is commonly known as “combustion efficiency” in other contexts, *i.e.*, 100 percent minus percent flue loss.

No one opposed this proposal during the January 2000 workshop, although in its subsequent written comments CEC supported our approach but advocated use of the term “combustion efficiency” rather than “thermal efficiency.” (CEC, No. 7 at 3). Given use of the latter term in EPCA, and its continued use as the efficiency descriptor for furnaces in ANSI Standard Z21.47, which we reference in today’s rule, we believe it would be confusing to use the term “combustion efficiency” in the final rule. Accordingly, as proposed in the NOPR, we are defining the term “thermal efficiency” to mean 100 percent minus the percent flue loss.

## 2. ASHRAE/IES Standard 90.1 Referenced Furnace Test Standards

EPCA requires that the testing procedures for measuring the energy efficiency of commercial warm air furnaces must be those generally accepted industry testing procedures or rating procedures that were developed or are recognized by ASHRAE, as referenced in ASHRAE/IES Standard 90.1–1989 and in effect on June 30, 1992. EPCA also specifies that if such an industry test procedure or rating procedure for commercial warm air furnaces is amended, we must adopt the revisions unless we determine that they are not reasonably designed to produce test results which reflect energy efficiency, energy use, and estimated operating costs, or that the revised procedures would be unduly burdensome to conduct.

ASHRAE/IES Standard 90.1 as in effect on June 30, 1992 referenced two industry test standards: One for gas-fired furnaces, ANSI Standard Z21.47–1987, and the other for oil-fired furnaces, UL Standard 727–1986. Both standards were subsequently revised, resulting in ANSI Standard Z21.47–1993 and UL Standard 727–1994. We proposed in the NOPR to incorporate by reference as the applicable test

procedures under EPCA these revised versions of the two test procedures.

During the January 2000 workshop, all attendees supported the DOE proposal to incorporate by reference revised versions of the two industry test procedures. However, GAMA pointed out that ANSI Z21.47–1993 has been revised to ANSI Z21.47–1998. (GAMA, Tr. 32, No. 3, at 3.) GAMA stated that since there is no change in the energy efficiency test sections between these two versions of the test standard, DOE should reference the latest version of that standard. York supported GAMA's recommendation and pointed out that the only change between the two versions is the thermal efficiency test Section number (Section 2.37 in the 1993 version versus Section 2.38 in the 1998 version). (York, Tr. 32.) A.O. Smith questioned whether the designation ANSI Z21.47 is still appropriate since it is also a harmonized Canadian standard with a different designation. (A.O. Smith, Tr. 33.) CEC stated that the ANSI Z21.47 designation is still valid for use in the United States. (CEC, Tr. 34.) CEC also supported referencing the 1998 version.

We compared the 1993 and 1998 versions of ANSI Z21.47 with respect to the sections that involve thermal efficiency testing. Except for the difference in the designation of the section number for the thermal efficiency test, mentioned above, there is no change in the test procedure for the thermal efficiency test. Therefore, we agree with GAMA's recommendation, and are incorporating by reference in today's final rule the latest version of the ANSI test procedure, ANSI Z21.47–1998, (incorporated by reference, see § 431.75) for the energy efficiency test of gas-fired furnaces. Also, as proposed, we are incorporating by reference in today's final rule the energy efficiency test sections of UL 727–1994 for oil-fired furnaces (incorporated by reference, see § 431.75).

### 3. Procedures for Measuring the Flue Losses of Oil Furnaces and the Incremental Efficiency of Condensing Furnaces

#### a. Flue Loss Calculation for Oil-Fired Furnaces

The referenced test standard for oil-fired furnaces, UL Standard 727, does not provide a procedure for calculating the percent flue loss. Accordingly, in the NOPR we proposed that this calculation be made using the flue loss calculation specified for oil-fired boilers in the 1989 edition of the Hydronics Institute Testing and Rating Standard

for Heating Boilers (HI–1989). We received no comments opposing our proposal. Subsequent to the January 2000 workshop, however, in January 2001, a revised test standard, BTS–2000, “Method to Determine Efficiency of Commercial Space Heating Boilers,” replaced HI–1989. BTS–2000 contains provisions for calculating flue loss that are identical to the provisions of HI–1989 that we proposed in the NOPR to adopt for oil-fired furnaces. Therefore, in today's final rule, we are adopting these provisions of BTS–2000 as the calculation procedure for percent flue loss for oil-fired furnaces. (We note that the forms in BTS–2000 that have replaced Forms 715 and 721 of HI–1989, which are referenced in the NOPR, are no longer integral to the flue loss calculation. Therefore, we are not incorporating the BTS–2000 forms in today's rule.)

#### b. Condensing Furnaces

ASHRAE/IES Standard 90.1, and the two warm air furnace test standards referenced by it, do not specifically provide test conditions or procedures for testing a condensing furnace. In the NOPR, we stated that a test procedure should be in place to test these more efficient products in the future, and to enable evaluation of this design option during any consideration of possible revisions to the efficiency standard, even if no commercial condensing furnaces are currently available in the market as asserted by some participants in earlier workshops. Therefore we proposed to adopt for commercial warm air furnaces the test procedure specified in the steady state efficiency test sections of ASHRAE Standard 103–1993 (sections 7.2.2.4, 7.8, 9.2 and 11.3.7) (incorporated by reference, see § 431.75) for determining the increment in energy efficiency due to the condensing feature of a residential furnace. In proposing to adopt this test procedure, we applied a slight modification to the equation in Section 11.3.7.2 of ASHRAE Standard 103–1993 for steady-state heat loss due to hot condensate flowing down the drain. In the aforementioned section, the assumed indoor temperature is 70°F, and the average outside temperature is 42°F. The modification replaces both of these temperatures with the actual temperature of the test area during the steady-state thermal efficiency test, consistent with Section 2.2.8 of ANSI Standard Z21.47–1993 (now ANSI Standard Z21.47–1998).

At the January 2000 workshop, York International (York, Tr. 39–41) stated that the regulation should make clear that DOE is referencing the steady-state test in ASHRAE Standard 103, not its

annual fuel utilization efficiency test. CEC supported our proposal to incorporate Standard 103 as the test method for condensing furnaces. (CEC, Tr. 42, No. 7 at p. 3.)

With regard to the concern expressed by York, the specific sections of the ASHRAE Standard 103–1993 that we proposed to adopt for commercial condensing furnaces all deal with steady state testing only. The Department did not propose to adopt those sections of ASHRAE Standard 103–1993 dealing with cyclic tests and AFUE calculations.

For the reasons stated above and in the NOPR, we are incorporating by reference, in today's final rule, the test procedure specified in sections 7.2.2.4, 7.8, 9.2 and 11.3.7 of ASHRAE Standard 103–1993 (incorporated by reference, see § 431.75) for determining the increment in energy efficiency, under steady state conditions, of a condensing furnace, including modifications which replace the values of the indoor and outdoor temperatures with the actual measured test room temperature as described earlier in this section.

#### C. Procedural, Administrative, and Enforcement Provisions for Commercial Heating, Air Conditioning and Water Heating Products

The NOPR proposed detailed provisions designed to provide reasonable assurance that commercial HVAC & WH products would be appropriately tested and comply with applicable energy conservation standards. These included methods for applying the DOE test procedures, as well as calculation methods, to be used by manufacturers to determine the efficiency of this equipment. We also proposed procedures for manufacturers to certify that their equipment complies with our efficiency requirements, and proposed to allow manufacturer participation in DOE-approved Voluntary Industry Certification Programs (VICPs) as a means of helping to assure such compliance. The NOPR had detailed criteria for a VICP to obtain our approval. The proposed rule set forth, in addition, procedures for DOE to use to address allegations of non-compliance. These included detailed procedures for enforcement testing of allegedly noncompliant products, criteria for determining whether the test results warranted pursuit of enforcement action, and provisions for ceasing distribution of non-compliant products, as well as provisions that largely incorporated EPCA procedures for DOE to seek injunctive relief and civil penalties. Finally, we proposed other general provisions, similar to

those in 10 CFR Part 430 for consumer products, such as a restatement of EPCA's list of prohibited actions, procedures for waiving test procedures and records maintenance requirements.

During the January 2000 workshop, and in subsequent written statements, we received many comments concerning (1) methods for manufacturers to determine the efficiencies of their equipment, (2) certification of such efficiencies to DOE, (3) criteria for our approval of VICPs and (4) the procedures and criteria for DOE to pursue enforcement action. These comments, as well as the Department's further review of the proposed rule, raised significant issues, concerning these subjects, on which further comment appears to be warranted. Therefore, the Department has decided to continue its review of these subjects and it is not issuing final regulations at this time concerning methods for manufacturers to determine efficiency, certification of compliance, use of VICPs, and, for the most part, procedures and criteria for pursuing enforcement action. The Department intends to seek further comment on these issues.

However, DOE received no comments on the proposed provisions, adapted from EPCA, as to prohibited actions and remedies, or on proposed general provisions such as those concerning waiver of test procedures, records maintenance, treatment of exported and imported products, subpoenas, and confidentiality of information. As a result, DOE concludes that these provisions are noncontroversial and supported by all stakeholders. Therefore, in today's final rule the Department is adopting these provisions as proposed in the NOPR, without substantive change but with some renumbering, reorganization and editorial changes to reflect the combining of these provisions with existing requirements for electric motors in Part 431.

Subpart D of Part 431 currently contains procedures for a State to seek and obtain a rule from DOE to waive Federal preemption of a State energy conservation requirement for electric motors, and for a party to seek to have such a rule withdrawn. The NOPR did not propose such provisions for commercial HVAC & WH products. Their adoption is warranted, however, because waiver provisions are already prescribed by law, *i.e.*—Section 345(b)(2)(D) of EPCA (42 U.S.C. 6316(b)(2)(D)), which provides for waiver of preemption for this equipment under the same procedures as for electric motors. Since Subpart D is

purely procedural, and procedural rules can be adopted without notice and comment, 5 U.S.C. 553(b), today's final rule makes Subpart D applicable to commercial HVAC & WH products.

We note also that § 431.141 of the proposed rule contained definitions for furnaces and for commercial HVAC & WH products generally. Those definitions that would apply only to methods of determining efficiency, certification, or enforcement for these products are not included in today's final rule. The remainder of the definitions in proposed § 431.141 are divided among three different sections, one applying to the revised Part 431 generally, another to furnaces only, and the third to commercial HVAC and water heating products generally.

#### *D. Effect of Amended Test Procedure on Measured Energy Efficiency*

As to rulemakings to amend test procedures, section 323(e) of EPCA, 42 U.S.C. 6293(e), provides that DOE shall determine whether the amended test procedure would alter measured energy efficiency of any covered product. "If the amendment does alter measured efficiency, the Secretary must determine the average efficiency level under the new test procedure of products that minimally complied with the applicable energy conservation standard prior to the test procedure amendment, and must set the standard at that level. (42 U.S.C. 6293(e)(2)) In addition, any existing model of a product that complied with the previously applicable standard would be deemed to comply with the new standard. "(42 U.S.C. 6293(e)(3)) These provisions prevent changes in a test procedure from indirectly altering the applicable Federal energy conservation standard. "They also prevent products that complied with standards using the previous test procedure from being forced out of compliance by the new test procedure.

For commercial furnaces, this final rule is adopting later versions of two test procedures referenced in ASHRAE 90.1–1989 and in effect on June 30, 1992: ANSI Standard Z21.47–1998 for gas-fired equipment and UL Standard 727–1994 for oil-fired equipment. These later versions do not contain amendments to the efficiency test methods for this equipment. Accordingly, section 323(e) does not apply to their adoption by DOE.

In addition, this final rule adds two provisions, first a method for testing condensing furnaces, based upon ASHRAE Standard 103–1993, and second, a method for calculating the flue loss of oil-fired furnaces, a method

necessary for determining furnace efficiency that is missing from ANSI Standard Z21.47–1998 and its predecessor version. This latter requirement is in HI BTS–2000.

With respect to the first additional requirement, there is no existing DOE test procedure for condensing furnaces. Therefore, this added requirement does not represent an amended test procedure. Accordingly, section 323(e) does not apply.

With respect to the second additional requirement, in order to determine the efficiency of oil-fired furnaces, a value for the percent flue loss is needed. Today's rule adopts a method which DOE understands the industry has been using unofficially to test oil-fired furnaces. Therefore, requiring use of this method will not alter measured energy efficiency of oil-fired furnaces for purposes of section 323(e) of EPCA.

### **III. Procedural Requirements**

#### *A. Review Under Executive Order 12866*

The Office of Information and Regulatory Affairs of the Office of Management and Budget (OMB) has determined that today's regulatory action is not a "significant regulatory action" under Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (October 4, 1993). Accordingly, this action was not subject to review under the Executive Order.

#### *B. Review Under the Regulatory Flexibility Act*

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis 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 rulemaking process (68 FR 7990). DOE has made its procedures and policies available on the Office of General Counsel's Web site: <http://www.gc.doe.gov>.

DOE reviewed today's rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003, and certified in the NOPR that the proposed rule would not impose a significant economic impact on a substantial

number of small entities. (64 FR 69597). We received no comments on this issue, and after considering the potential small entity impact of this final rule, DOE affirms the certification that this rule will not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a regulatory flexibility analysis for this rulemaking. DOE will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review pursuant to 5 U.S.C. 605(b).

#### *C. Review Under the Paperwork Reduction Act*

This rulemaking will impose no new information or recordkeeping requirements. Accordingly, OMB clearance is not required under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*)

#### *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 the Department's implementing regulations at 10 CFR Part 1021. Specifically, this rule amends an existing rule without changing the environmental effect of the rule being amended, and, therefore, is covered by the Categorical Exclusion in paragraph A5 to subpart D, 10 CFR Part 1021. 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 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 today's rule and has determined that it does not

preempt State law and does 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. No further action is required by Executive Order 13132.

#### *F. Review Under Executive Order 12988*

With respect to the review of existing regulations and the promulgation of new regulations, Section 3(a) of Executive Order 12988, "Civil Justice Reform" (61 FR 4729, February 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; and (3) provide a clear legal standard for affected conduct rather than a general standard and 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 Section 3(a) and Section 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, this 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 (Pub. L. 104-4) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and tribal governments and the private sector. With respect to a proposed regulatory action that may result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector of \$100 million or more (adjusted annually for inflation), Section 202 of the Act requires a Federal agency to publish estimates of the resulting costs, benefits, and other effects on the national economy (2 U.S.C. 1532(a),(b)). The Act

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 the Act (62 FR 12820) (also available at <http://www.gc.doe.gov>). The rule published today does not contain any Federal mandate, 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 pursuant to 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 which might require compensation under the Fifth Amendment to the United States Constitution.

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

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 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002). DOE has reviewed today's final 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 the Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget, 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 would not have a significant adverse effect on the supply, distribution, or use of energy and, therefore, is not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

**L. Review Under Section 32 of the Federal Energy Administration Act of 1974**

Under Section 301 of the Department of Energy Organization Act (Pub. L. 95-91), the Department must comply with Section 32 of the Federal Energy Administration Act of 1974 (FEAA), as amended by the Federal Energy Administration Authorization Act of 1977, 15 U.S.C. 788. The Department stated in the NOPR the reasons why Section 32 does not apply to two of the commercial standards incorporated into the proposed rule, ANSI Standard Z21.47-1993 and UL Standard 727-1994, 64 FR 69608. The Department did not receive any comments on this issue. The rule published today incorporates the UL Standard, as well as an amended version of the ANSI Standard. The Department continues to adhere to the view expressed in the NOPR that Section 32 of the FEAA does not apply to these standards.

The Department also indicated in the NOPR that Section 32 does apply to the other two commercial standards it is incorporating in this rule, ASHRAE Standard 103-1993 and HI BTS-2000, 64 FR 69608. As required by Section

32(c) of the FEAA, the Department has consulted with the Attorney General and the Chairman of the Federal Trade Commission concerning the impact of these two standards on competition, and neither recommended against incorporation of these standards.

**M. Congressional Notification**

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of today's rule prior to its effective date. The report will state that it has been determined that the rule is not a "major rule" as defined by 5 U.S.C. 804(2).

**N. Approval of the Office of the Secretary**

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

**List of Subjects in 10 CFR Part 431**

Administrative practice and procedure, Energy conservation, Incorporation by reference.

Issued in Washington, DC, on July 27, 2004.

**David K. Garman,**

*Assistant Secretary, Energy Efficiency and Renewable Energy.*

■ For the reasons set forth in the preamble, Part 431 of Chapter II of Title 10, Code of Federal Regulations, is amended, as set forth below:

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

■ 1. The authority citation for Part 431 continues to read as follows:

**Authority:** 42 U.S.C. 6311-6316.

**Subpart A—General Provisions**

■ 2. Section 431.2 of subpart A is revised to read as follows:

**§ 431.2 Definitions.**

The following definitions apply for purposes of this part. Any words or terms not defined in this Section or elsewhere in this Part shall be defined as provided in Section 340 of the Act.

*Act* means the Energy Policy and Conservation Act of 1975, as amended, 42 U.S.C. 6291-6316.

*Btu* means British thermal unit, which is the quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

*Covered equipment* means any electric motor, as defined in § 431.12, or commercial heating, ventilating, and air conditioning, and water heating product (HVAC & WH product), as defined in § 431.72.

*DOE or the Department* means the U.S. Department of Energy.

*EPCA* means the Energy Policy and Conservation Act, as amended, 42 U.S.C. 6291-6316.

*Gas* means propane or natural gas as defined by the Federal Power Commission.

*ISO* means International Organization for Standardization.

*Manufacture* means to manufacture, produce, assemble, or import.

*Manufacturer* means any person who manufactures industrial equipment, including any manufacturer of a commercial packaged boiler.

*Secretary* means the Secretary of Energy.

*State* means a State, the District of Columbia, Puerto Rico, or any territory or possession of the United States.

*State regulation* means a law or regulation of a State or political subdivision thereof.

**Appendix A to Subpart A—[Removed]**

■ 3. Appendix A to subpart A of Part 431 is removed.

■ 4. Subpart B is revised to read as follows:

**Subpart B—Electric Motors**

Sec.

431.11 Purpose and scope.

431.12 Definitions.

**Test Procedures, Materials Incorporated and Methods of Determining Efficiency**

431.15 Materials incorporated by reference.

431.16 Test procedures for the measurement of energy efficiency.

431.17 Determination of efficiency.

431.18 Testing laboratories.

431.19 Department of Energy recognition of accreditation bodies.

431.20 Department of Energy recognition of nationally recognized certification programs.

431.21 Procedures for recognition and withdrawal of recognition of accreditation bodies and certification programs.

**Energy Conservation Standards**

431.25 Energy conservation standards and effective dates.

431.26 Preemption of State regulations.

**Labeling**

431.30 Applicability of labeling requirements.

431.31 Labeling requirements.

431.32 Preemption of State regulations.

**Certification**

431.35 Applicability of certification requirements.

431.36 Compliance Certification.

Appendix A to Subpart B of 10 CFR Part 431—Policy Statement for Electric Motors Covered Under the Energy Policy and Conservation Act

Appendix B to Subpart B of Part 431—  
Uniform Test Method for Measuring  
Nominal Full Load Efficiency of Electric  
Motors

Appendix C to Subpart B of Part 431—  
Compliance Certification

## Subpart B—Electric Motors

### § 431.11 Purpose and scope.

This subpart contains energy conservation requirements for electric motors. It contains test procedures that EPCA requires DOE to prescribe, related requirements, energy conservation standards prescribed by EPCA, labeling rules, and compliance procedures. It also identifies materials incorporated by reference in this part.

### § 431.12 Definitions.

The following definitions apply for purposes of this subpart, and of subparts K through M of this part. Any words or terms not defined in this Section or elsewhere in this Part shall be defined as provided in Section 340 of the Act.

*Accreditation* means recognition by an accreditation body that a laboratory is competent to test the efficiency of electric motors according to the scope and procedures given in Test Method B of Institute of Electrical and Electronics Engineers (IEEE) Standard 112–1996, *Test Procedure for Polyphase Induction Motors and Generators*, and Test Method (1) of CSA Standard C390–93, *Energy Efficient Test Methods for Three-Phase Induction Motors*. (Incorporated by reference, see § 431.15)

*Accreditation body* means an organization or entity that conducts and administers an accreditation system and grants accreditation.

*Accreditation system* means a set of requirements to be fulfilled by a testing laboratory, as well as rules of procedure and management, that are used to accredit laboratories.

*Accredited laboratory* means a testing laboratory to which accreditation has been granted.

*Alternative efficiency determination method* or *AEDM* means, with respect to an electric motor, a method of calculating the total power loss and average full load efficiency.

*Average full load efficiency* means the arithmetic mean of the full load efficiencies of a population of electric motors of duplicate design, where the full load efficiency of each motor in the population is the ratio (expressed as a percentage) of the motor's useful power output to its total power input when the motor is operated at its full rated load, rated voltage, and rated frequency.

*Basic model* means, with respect to an electric motor, all units of a given type of electric motor (or class thereof)

manufactured by a single manufacturer, and which have the same rating, have electrical characteristics that are essentially identical, and do not have any differing physical or functional characteristics which affect energy consumption or efficiency. For the purpose of this definition, “rating” means one of the 113 combinations of an electric motor's horsepower (or standard kilowatt equivalent), number of poles, and open or enclosed construction, with respect to which § 431.25 prescribes nominal full load efficiency standards.

*Certificate of conformity* means a document that is issued by a certification program, and that gives written assurance that an electric motor complies with the energy efficiency standard applicable to that motor, as specified in § 431.25.

*Certification program* means a certification system that determines conformity by electric motors with the energy efficiency standards prescribed by and pursuant to the Act.

*Certification system* means a system, that has its own rules of procedure and management, for giving written assurance that a product, process, or service conforms to a specific standard or other specified requirements, and that is operated by an entity independent of both the party seeking the written assurance and the party providing the product, process or service.

*CSA* means CSA International.

*Definite purpose motor* means any motor designed in standard ratings with standard operating characteristics or standard mechanical construction for use under service conditions other than usual, such as those specified in National Electrical Manufacturers Association (NEMA) Standards Publication MG1–1993 (MG1), *Motors and Generators*, paragraph 14.03, “Unusual Service Conditions,” (Incorporated by reference, see § 431.15) or for use on a particular type of application, and which cannot be used in most general purpose applications.

*Electric motor* is defined as follows:

(1) “Electric motor” means a machine which converts electrical power into rotational mechanical power and which:

(i) Is a general purpose motor, including but not limited to motors with explosion-proof construction;

(ii) Is a single speed, induction motor (MG1);

(iii) Is rated for continuous duty (MG1) operation, or is rated duty type S1 (International Electrotechnical Commission (IEC));

(iv) Contains a squirrel-cage (MG1) or cage (IEC) rotor, and has foot-mounting,

including foot-mounting with flanges or detachable feet;

(v) Is built in accordance with NEMA T-frame dimensions (MG1), or IEC metric equivalents (IEC);

(vi) Has performance in accordance with NEMA Design A (MG1) or B (MG1) characteristics, or equivalent designs such as IEC Design N (IEC); and

(vii) Operates on polyphase alternating current 60-Hertz sinusoidal power, and:

(A) Is rated 230 volts or 460 volts, or both, including any motor that is rated at multi-voltages that include 230 volts or 460 volts, or

(B) Can be operated on 230 volts or 460 volts, or both.

(2) Terms in this definition followed by the parenthetical “MG1” must be construed with reference to provisions in NEMA Standards Publication MG1–1993, *Motors and Generators*, with Revisions 1, 2, 3 and 4, (Incorporated by reference, see § 431.15) as follows:

(i) Section I, *General Standards Applying to All Machines*, Part 1, *Referenced Standards and Definitions*, paragraphs 1.16.1, 1.16.1.1, 1.17.1.1, 1.17.1.2, and 1.40.1 (Incorporated by reference, see § 431.15) pertain to the terms “induction motor,” “squirrel-cage,” “NEMA Design A,” “NEMA Design B,” and “continuous duty” respectively;

(ii) Section I, *General Standards Applying to All Machines*, Part 4, *Dimensions, Tolerances, and Mounting*, paragraph 4.01 and Figures 4–1, 4–2, 4–3, and 4–4 (Incorporated by reference, see § 431.15) pertain to “NEMA T-frame dimensions;”

(iii) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 11, *Dimensions—AC and DC Small and Medium Machines*, paragraphs 11.01.2, 11.31 (except the lines for frames 447T, 447TS, 449T and 449TS), 11.32, 11.34 (except the line for frames 447TC and 449TC, and the line for frames 447TSC and 449TSC), 11.35, and 11.36 (except the line for frames 447TD and 449TD, and the line for frames 447TSD and 449TSD), and Table 11–1, (Incorporated by reference, see § 431.15) pertain to “NEMA T-frame dimensions;” and

(iv) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 12, *Tests and Performance—AC and DC Motors*, paragraphs 12.35.1, 12.35.5, 12.38.1, 12.39.1, and 12.40.1, and Table 12–2, (Incorporated by reference, see § 431.15) pertain both to “NEMA Design A” and “NEMA Design B.”

(3) Terms in this definition followed by the parenthetical “IEC” must be construed with reference to provisions in IEC Standards as follows:

(i) IEC Standard 60034-1 (1996), *Rotating electrical machines, Part 1: Rating and performance*, with Amendment 1 (1997), Section 3: *Duty*, clause 3.2.1 and figure 1 (Incorporated by reference, see § 431.15) pertain to “duty type S1”;

(ii) IEC Standard 60050-411 (1996), *International Electrotechnical Vocabulary Chapter 411: Rotating machines*, sections 411-33-07 and 411-37-26, (Incorporated by reference, see § 431.15) pertain to “cage”;

(iii) IEC Standard 60072-1 (1991), *Dimensions and output series for rotating electrical machines—Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080*, clauses 2, 3, 4.1, 6.1, 7, and 10, and Tables 1, 2 and 4, (Incorporated by reference, see § 431.15) pertain to “IEC metric equivalents” to “T-frame” dimensions; and

(iv) IEC Standard 60034-12 (1980), *Rotating electrical machines, Part 12: Starting performance of single-speed three-phase cage induction motors for voltages up to and including 660 V*, with Amendment 1 (1992) and Amendment 2 (1995), clauses 1, 2, 3.1, 4, 5, and 6, and Tables I, II, and III, (Incorporated by reference, see § 431.15) pertain to “IEC Design N.”

*Enclosed motor* means an electric motor so constructed as to prevent the free exchange of air between the inside and outside of the case but not sufficiently enclosed to be termed airtight.

*General purpose motor* means any motor which is designed in standard ratings with either:

(1) Standard operating characteristics and standard mechanical construction for use under usual service conditions, such as those specified NEMA Standards Publication MG1-1993, paragraph 14.02, “Usual Service Conditions,” (Incorporated by reference, see § 431.15) and without restriction to a particular application or type of application; or

(2) Standard operating characteristics or standard mechanical construction for use under unusual service conditions, such as those specified in NEMA Standards Publication MG1-1993, paragraph 14.03, “Unusual Service Conditions,” (Incorporated by reference, see § 431.15) or for a particular type of application, and which can be used in most general purpose applications.

*IEC* means the International Electrotechnical Commission.

*IEEE* means the Institute of Electrical and Electronics Engineers, Inc.

*NEMA* means the National Electrical Manufacturers Association.

*Nominal full load efficiency* means, with respect to an electric motor, a

representative value of efficiency selected from Column A of Table 12-8, NEMA Standards Publication MG1-1993, (Incorporated by reference, see § 431.15), that is not greater than the average full load efficiency of a population of motors of the same design.

*Open motor* means an electric motor having ventilating openings which permit passage of external cooling air over and around the windings of the machine.

*Special purpose motor* means any motor, other than a general purpose motor or definite purpose motor, which has special operating characteristics or special mechanical construction, or both, designed for a particular application.

*Total power loss* means that portion of the energy used by an electric motor not converted to rotational mechanical power, expressed in percent.

#### **Test Procedures, Materials Incorporated and Methods of Determining Efficiency**

##### **§ 431.15 Materials incorporated by reference.**

(a) *General.* We incorporate by reference the following test procedures into Subpart B of Part 431. The material listed in paragraph (b) of this section has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR 51. Any subsequent amendment to a standard by the standard-setting organization will not affect the DOE test procedures unless and until amended by DOE. Material is incorporated as it exists on the date of the approval and a notice of any change in the material will be published in the **Federal Register**.

(b) *List of standards incorporated by reference.* (1) The following provisions of National Electrical Manufacturers Association Standards Publication MG1-1993, *Motors and Generators*, with Revisions 1, 2, 3 and 4, IBR approved for §§ 431.12; 431.31 and appendix B to subpart B of Part 431:

(i) Section I, *General Standards Applying to All Machines*, Part 1, *Referenced Standards and Definitions*, paragraphs 1.16.1, 1.16.1.1, 1.17.1.1, 1.17.1.2, and 1.40.1, IBR approved for § 431.12;

(ii) Section I, *General Standards Applying to All Machines*, Part 4, *Dimensions, Tolerances, and Mounting*, paragraph 4.01 and Figures 4-1, 4-2, 4-3, and 4-4, IBR approved for § 431.12;

(iii) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 11, *Dimensions—AC and DC Small and*

*Medium Machines*, paragraphs 11.01.2, 11.31 (except the lines for frames 447T, 447TS, 449T and 449TS), 11.32, 11.34 (except the line for frames 447TC and 449TC, and the line for frames 447TSC and 449TSC), 11.35, and 11.36 (except the line for frames 447TD and 449TD, and the line for frames 447TSD and 449TSD), and Table 11-1, IBR approved for § 431.12;

(iv) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 12, *Tests and Performance—AC and DC Motors*, paragraphs 12.35.1, 12.35.5, 12.38.1, 12.39.1, and 12.40.1, 12.58.1, and Tables 12-2 and 12-8, IBR approved for § 431.12; and

(v) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 14, *Application Data—AC and DC Small and Medium Machines*, paragraphs 14.02 and 14.03, IBR approved for § 431.12.

(2) Institute of Electrical and Electronics Engineers, Inc., Standard 112-1996, *Test Procedure for Polyphase Induction Motors and Generators*, Test Method B, *Input-Output with Loss Segregation*, and the correction to the calculation at item (28) in Section 10.2 Form B-Test Method B issued by IEEE on January 20, 1998. (Note: Paragraph 2 of appendix A to subpart B of Part 431 sets forth modifications to this Standard when it is used for purposes of Part 431 and EPCA, IBR approved for §§ 431.12; 431.19; 431.20; appendix B to subpart B of Part 431.

(3) CSA International Standard C390-93, *Energy Efficiency Test Methods for Three-Phase Induction Motors*, Test Method (1), *Input-Output Method With Indirect Measurement of the Stray-Load Loss and Direct Measurement of the Stator Winding (I<sub>2</sub>R), Rotor Winding (I<sub>2</sub>R), Core and Windage-Friction Losses*, IBR approved for §§ 431.12; 431.19; 431.20; appendix B to subpart B of Part 431.

(4) International Electrotechnical Commission Standard 60034-1 (1996), *Rotating electrical machines, Part 1: Rating and performance*, with Amendment 1 (1997), Section 3: *Duty*, clause 3.2.1 and figure 1, IBR approved for § 431.12.

(5) International Electrotechnical Commission Standard 60050-411 (1996), *International Electrotechnical Vocabulary Chapter 411: Rotating machines*, sections 411-33-07 and 411-37-26, IBR approved for § 431.12.

(6) International Electrotechnical Commission Standard 60072-1 (1991), *Dimensions and Output Series for Rotating Electrical Machines—Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080*, clauses 2, 3, 4.1,

6.1, 7, and 10, and Tables 1, 2 and 4, IBR approved for § 431.12.

(7) International Electrotechnical Commission Standard 60034-12 (1980), *Rotating Electrical Machines, Part 12: Starting performance of single-speed three-phase cage induction motors for voltages up to and including 660 V*, with Amendment 1 (1992) and Amendment 2 (1995), clauses 1, 2, 3.1, 4, 5, and 6, and Tables I, II, and III, IBR approved for § 431.12.

(c) *Inspection of standards.* The standards incorporated by reference are available for inspection at:

(1) National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html);

(2) U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Hearings and Dockets, "Test Procedures, Labeling, and Certification Requirements for Electric Motors," Docket No. EE-RM-96-400, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC.

(d) *Availability of standards.* Standards incorporated by reference may be obtained from the following sources:

(1) Copies of IEEE Standard 112-1996 can be obtained from the Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, 1-800-678-IEEE (4333);

(2) Copies of NEMA Standards Publication MG1-1993 with Revisions 1, 2, 3, and 4, and copies of International Electrotechnical Commission standards can be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80112-5776, 1-800-854-7179 (within the U.S.) or (303) 397-7956 (international).

(3) Copies of CSA International Standard C390-93 can be obtained from CSA International, 5060 Spectrum Way, Mississauga, Ontario, Canada L4W5N6, (416) 747-4044;

(e) *Reference standards*—(1) *General.* The standards listed in this paragraph are referred to in the DOE procedures for testing laboratories, and recognition of accreditation bodies and certification programs but are not incorporated by reference. These sources are given here for information and guidance.

(2) *List of references.* (i) National Voluntary Laboratory Accreditation Program Handbooks 150, "Procedures and General Requirements," March 1994, and 150-10, "Efficiency of

Electric Motors," August 1995. National Voluntary Laboratory Accreditation Program, National Institute of Standards and Technology, Gaithersburg, MD 20899.

(ii) ISO/IEC Guide 25, "General requirements for the competence of calibration and testing laboratories."

(iii) ISO Guide 27, "Guidelines for corrective action to be taken by a certification body in the event of either misapplication of its mark of conformity to a product, or products which bear the mark of the certification body being found to subject persons or property to risk."

(iv) ISO/IEC Guide 28, "General rules for a model third-party certification system for products."

(v) ISO/IEC Guide 58, "Calibration and testing laboratory accreditation systems—General requirements for operation and recognition."

(vi) ISO/IEC Guide 65, "General requirements for bodies operating product certification systems."

#### **§ 431.16 Test procedures for the measurement of energy efficiency.**

For purposes of 10 CFR Part 431 and EPCA, the test procedures for measuring the energy efficiency of an electric motor shall be the test procedures specified in appendix B to this subpart B.

#### **§ 431.17 Determination of efficiency.**

When a party determines the energy efficiency of an electric motor in order to comply with an obligation imposed on it by or pursuant to Part C of Title III of EPCA, 42 U.S.C. 6311-6316, this Section applies. This section does not apply to enforcement testing conducted pursuant to § 431.192.

(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 paragraphs (a)(2) and (3) of this section, 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 be:

(i) Derived from a mathematical model that represents the mechanical and electrical characteristics of that basic model, and

(ii) Based on engineering or statistical analysis, computer simulation or modeling, or other analytic evaluation of performance data.

(3) *Substantiation of an alternative efficiency determination method.* Before an AEDM is used, its accuracy and reliability must be substantiated as follows:

(i) The AEDM must be applied to at least five basic models that have been tested in accordance with § 431.16, and

(ii) The predicted total power loss for each such basic model, calculated by applying the AEDM, must be within plus or minus ten percent of the mean total power loss determined from the testing of that basic model.

(4) *Subsequent verification of an AEDM.* (i) Each manufacturer shall periodically select basic models representative of those to which it has applied an AEDM, and for each basic model selected shall either:

(A) Subject a sample of units to testing in accordance with §§ 431.16 and 431.17(b)(2) by an accredited laboratory that meets the requirements of § 431.18;

(B) Have a certification body recognized under § 431.20 certify its nominal full load efficiency; or

(C) Have an independent state-registered professional engineer, who is qualified to perform an evaluation of electric motor efficiency in a highly competent manner and who is not an employee of the manufacturer, review the manufacturer's representations and certify that the results of the AEDM accurately represent the total power loss and nominal full load efficiency of the basic model.

(ii) Each manufacturer that has used an AEDM under this section shall have available for inspection by the Department of Energy records showing: the method or methods used; 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; complete test data, product information, and related information that the manufacturer has generated or acquired pursuant to paragraphs (a)(3) and (a)(4)(i) of this section; and the calculations used to determine the average full load efficiency and total power losses of each basic model to which the AEDM was applied.

(iii) If requested by the Department, the manufacturer shall conduct simulations to predict the performance of particular basic models of electric motors specified by the Department, analyses of previous simulations conducted by the manufacturer, sample

testing of basic models selected by the Department, or a combination of the foregoing.

(5) *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)(5)(i) of this section, any testing of the motor pursuant to paragraphs (a)(1) through (3) 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 paragraph (a)(3)(i) of this section, to substantiate an AEDM.)

(b) *Additional testing requirements applicable when a certification program is not used—(1) Selection of basic models for testing.* (i) Basic models must be selected for testing in accordance with the following criteria:

(A) Two of the basic models must be among the five basic models with the highest unit volumes of production by the manufacturer in the prior year, or during the prior 12 calendar month period beginning in 1997,<sup>1</sup> whichever is later;

(B) The basic models should be of different horsepowers without duplication;

(C) The basic models should be of different frame number series without duplication; and

(D) Each basic model should be expected to have the lowest nominal full load efficiency among the basic models with the same rating ("rating" as used here has the same meaning as it has in the definition of "basic model").

(ii) In any instance where it is impossible 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.

(2) *Selection of units for testing.* For each basic model selected for testing,<sup>2</sup> a sample of units shall be selected at

random and tested. The sample shall be comprised of production units of the basic model, or units that are representative of such production units. The sample size shall be not fewer than five units, except that when fewer than five units of a basic model would be produced over a reasonable period of time (approximately 180 days), then each unit shall be tested. In a test of compliance with a represented average or nominal efficiency:

(i) The average full-load efficiency of the sample  $\bar{X}$  which is defined by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i,$$

where  $X_i$  is the measured full-load efficiency of unit  $i$  and  $n$  is the number of units tested, shall satisfy the condition:

$$\bar{X} \geq \frac{100}{1 + 1.05 \left( \frac{100}{RE} - 1 \right)}$$

where RE is the represented nominal full-load efficiency, and

(ii) The lowest full-load efficiency in the sample  $X_{\min}$ , which is defined by

$$X_{\min} = \min (X_i)$$

shall satisfy the condition

$$\bar{X}_{\min} \geq \frac{100}{1 + 1.15 \left( \frac{100}{RE} - 1 \right)}$$

(3) *Substantiation of an alternative efficiency determination method.* The basic models tested under § 431.17(a)(3)(i) must be selected for testing in accordance with paragraph (b)(1) of this section, and units of each such basic model must be tested in accordance with paragraph (b)(2) of this section by an accredited laboratory that meets the requirements of § 431.18.

#### § 431.18 Testing laboratories.

(a) Testing pursuant to § 431.17(a)(5)(ii) must be conducted in an accredited laboratory for which the accreditation body was:

(1) The National Institute of Standards and Technology/National Voluntary Laboratory Accreditation Program (NIST/NVLAP); or

(2) A laboratory accreditation body having a mutual recognition arrangement with NIST/NVLAP; or

(3) An organization classified by the Department, pursuant to § 431.19, as an accreditation body.

(b) NIST/NVLAP is under the auspices of the National Institute of Standards and Technology (NIST) which is part of the U.S. Department of

Commerce. NIST/NVLAP accreditation is granted on the basis of conformance with criteria published in 15 CFR Part 285, *The National Voluntary Laboratory Accreditation Program Procedures and General Requirements*. NIST Handbook 150-10, August 1995, presents the technical requirements of the National Voluntary Laboratory Accreditation Program for the Efficiency of Electric Motors field of accreditation. This handbook supplements NIST Handbook 150, *National Voluntary Laboratory Accreditation Program Procedures and General Requirements*, which contains 15 CFR Part 285 plus all general NIST/NVLAP procedures, criteria, and policies. Changes in NIST/NVLAP's criteria, procedures, policies, standards or other bases for granting accreditation, occurring subsequent to the initial effective date of 10 CFR Part 431, shall not apply to accreditation under this Part unless approved in writing by the Department of Energy. Information regarding NIST/NVLAP and its Efficiency of Electric Motors Program (EEM) can be obtained from NIST/NVLAP, 100 Bureau Drive, Mail Stop 2140, Gaithersburg, MD 20899-2140, telephone (301) 975-4016, or telefax (301) 926-2884.

#### § 431.19 Department of Energy recognition of accreditation bodies.

(a) *Petition.* To be classified by the Department of Energy as an accreditation body, an organization must submit a petition to the Department requesting such classification, in accordance with paragraph (c) of this section and § 431.21. The petition must demonstrate that the organization meets the criteria in paragraph (b) of this section.

(b) *Evaluation criteria.* To be classified as an accreditation body by the Department, the organization must meet the following criteria:

(1) It must have satisfactory standards and procedures for conducting and administering an accreditation system and for granting accreditation. This must include provisions for periodic audits to verify that the laboratories receiving its accreditation continue to conform to the criteria by which they were initially accredited, and for withdrawal of accreditation where such conformance does not occur, including failure to provide accurate test results.

(2) It must be independent of electric motor manufacturers, importers, distributors, private labelers or vendors. It cannot be affiliated with, have financial ties with, be controlled by, or be under common control with any such entity.

<sup>1</sup> In identifying these five basic models, any electric motor that does not comply with § 431.25 shall be excluded from consideration.

<sup>2</sup> Components of similar design may be substituted without requiring additional testing if the represented measures of energy consumption continue to satisfy the applicable sampling provision.

(3) It must be qualified to perform the accrediting function in a highly competent manner.

(4) It must be expert in the content and application of the test procedures and methodologies in IEEE Standard 112–1996 Test Method B and CSA Standard C390–93 Test Method (1), (Incorporated by reference, see § 431.15) or similar procedures and methodologies for determining the energy efficiency of electric motors.

(c) *Petition format.* Each petition requesting classification as an accreditation body must contain a narrative statement as to why the organization meets the criteria set forth in paragraph (b) of this section, must be signed on behalf of the organization by an authorized representative, and must be accompanied by documentation that supports the narrative statement. The following provides additional guidance:

(1) *Standards and procedures.* A copy of the organization's standards and procedures for operating an accreditation system and for granting accreditation should accompany the petition.

(2) *Independent status.* The petitioning organization should identify and describe any relationship, direct or indirect, that it has with an electric motor manufacturer, importer, distributor, private labeler, vendor, trade association or other such entity, as well as any other relationship it believes might appear to create a conflict of interest for it in performing as an accreditation body for electric motor testing laboratories. It should explain why it believes such relationship(s) would not compromise its independence as an accreditation body.

(3) *Qualifications to do accrediting.* Experience in accrediting should be discussed and substantiated by supporting documents. Of particular relevance would be documentary evidence that establishes experience in the application of guidelines contained in the ISO/IEC Guide 58, *Calibration and testing laboratory accreditation systems—General requirements for operation and recognition*, as well as experience in overseeing compliance with the guidelines contained in the ISO/IEC Guide 25, *General Requirements for the Competence of Calibration and Testing Laboratories*.

(4) *Expertise in electric motor test procedures.* The petition should set forth the organization's experience with the test procedures and methodologies in IEEE Standard 112–1996 Test Method B and CSA Standard C390–93 Test Method (1), (Incorporated by reference, see § 431.15) and with similar procedures and methodologies. This

part of the petition should include description of prior projects, qualifications of staff members, and the like. Of particular relevance would be documentary evidence that establishes experience in applying the guidelines contained in the ISO/IEC Guide 25, *General Requirements for the Competence of Calibration and Testing Laboratories*, to energy efficiency testing for electric motors.

(d) *Disposition.* The Department will evaluate the petition in accordance with § 431.21, and will determine whether the applicant meets the criteria in paragraph (b) of this section to be classified as an accrediting body.

#### **§ 431.20 Department of Energy recognition of nationally recognized certification programs.**

(a) *Petition.* For a certification program to be classified by the Department of Energy as being nationally recognized in the United States for the purposes of Section 345(c) of EPCA (“nationally recognized”), the organization operating the program must submit a petition to the Department requesting such classification, in accordance with paragraph (c) of this Section and § 431.21. The petition must demonstrate that the program meets the criteria in paragraph (b) of this section.

(b) *Evaluation criteria.* For a certification program to be classified by the Department as nationally recognized, it must meet the following criteria:

(1) It must have satisfactory standards and procedures for conducting and administering a certification system, including periodic follow up activities to assure that basic models of electric motor continue to conform to the efficiency levels for which they were certified, and for granting a certificate of conformity.

(2) It must be independent of electric motor manufacturers, importers, distributors, private labelers or vendors. It cannot be affiliated with, have financial ties with, be controlled by, or be under common control with any such entity.

(3) It must be qualified to operate a certification system in a highly competent manner.

(4) It must be expert in the content and application of the test procedures and methodologies in IEEE Standard 112–1996 Test Method B and CSA Standard C390–93 Test Method (1), (Incorporated by reference, see § 431.15) or similar procedures and methodologies for determining the energy efficiency of electric motors. It must have satisfactory criteria and

procedures for the selection and sampling of electric motors tested for energy efficiency.

(c) *Petition format.* Each petition requesting classification as a nationally recognized certification program must contain a narrative statement as to why the program meets the criteria listed in paragraph (b) of this section, must be signed on behalf of the organization operating the program by an authorized representative, and must be accompanied by documentation that supports the narrative statement. The following provides additional guidance as to the specific criteria:

(1) *Standards and procedures.* A copy of the standards and procedures for operating a certification system and for granting a certificate of conformity should accompany the petition.

(2) *Independent status.* The petitioning organization should identify and describe any relationship, direct or indirect, that it or the certification program has with an electric motor manufacturer, importer, distributor, private labeler, vendor, trade association or other such entity, as well as any other relationship it believes might appear to create a conflict of interest for the certification program in operating a certification system for compliance by electric motors with energy efficiency standards. It should explain why it believes such relationship would not compromise its independence in operating a certification program.

(3) *Qualifications to operate a certification system.* Experience in operating a certification system should be discussed and substantiated by supporting documents. Of particular relevance would be documentary evidence that establishes experience in the application of guidelines contained in the ISO/IEC Guide 65, *General requirements for bodies operating product certification systems*, ISO/IEC Guide 27, *Guidelines for corrective action to be taken by a certification body in the event of either misapplication of its mark of conformity to a product, or products which bear the mark of the certification body being found to subject persons or property to risk*, and ISO/IEC Guide 28, *General rules for a model third-party certification system for products*, as well as experience in overseeing compliance with the guidelines contained in the ISO/IEC Guide 25, *General requirements for the competence of calibration and testing laboratories*.

(4) *Expertise in electric motor test procedures.* The petition should set forth the program's experience with the test procedures and methodologies in IEEE Standard 112–1996 Test Method B

and CSA Standard C390-93 Test Method (1), (Incorporated by reference, see § 431.15) and with similar procedures and methodologies. This part of the petition should include description of prior projects, qualifications of staff members, and the like. Of particular relevance would be documentary evidence that establishes experience in applying guidelines contained in the ISO/IEC Guide 25, *General requirements for the competence of calibration and testing laboratories*, to energy efficiency testing for electric motors.

(d) *Disposition*. The Department will evaluate the petition in accordance with § 431.21, and will determine whether the applicant meets the criteria in paragraph (b) of this section for classification as a nationally recognized certification program.

**§ 431.21 Procedures for recognition and withdrawal of recognition of accreditation bodies and certification programs.**

(a) *Filing of petition*. Any petition submitted to the Department pursuant to §§ 431.19(a) or 431.20(a), shall be entitled "Petition for Recognition" ("Petition") and must be submitted, in triplicate to the Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. In accordance with the provisions set forth in 10 CFR 1004.11, any request for confidential treatment of any information contained in such a Petition or in supporting documentation must be accompanied by a copy of the Petition or supporting documentation from which the information claimed to be confidential has been deleted.

(b) *Public notice and solicitation of comments*. DOE shall publish in the **Federal Register** the Petition from which confidential information, as determined by DOE, has been deleted in accordance with 10 CFR 1004.11 and shall solicit comments, data and information on whether the Petition should be granted. The Department

shall also make available for inspection and copying the Petition's supporting documentation from which confidential information, as determined by DOE, has been deleted in accordance with 10 CFR 1004.11. Any person submitting written comments to DOE with respect to a Petition shall also send a copy of such comments to the petitioner.

(c) *Responsive statement by the petitioner*. A petitioner may, within 10 working days of receipt of a copy of any comments submitted in accordance with paragraph (b) of this section, respond to such comments in a written statement submitted to the Assistant Secretary for Energy Efficiency and Renewable Energy. A petitioner may address more than one set of comments in a single responsive statement.

(d) *Public announcement of interim determination and solicitation of comments*. The Assistant Secretary for Energy Efficiency and Renewable Energy shall issue an interim determination on the Petition as soon as is practicable following receipt and review of the Petition and other applicable documents, including, but not limited to, comments and responses to comments. The petitioner shall be notified in writing of the interim determination. DOE shall also publish in the **Federal Register** the interim determination and shall solicit comments, data and information with respect to that interim determination. Written comments and responsive statements may be submitted as provided in paragraphs (b) and (c) of this section.

(e) *Public announcement of final determination*. The Assistant Secretary for Energy Efficiency and Renewable Energy shall as soon as practicable, following receipt and review of comments and responsive statements on the interim determination, publish in the **Federal Register** a notice of final determination on the Petition.

(f) *Additional information*. The Department may, at any time during the recognition process, request additional relevant information or conduct an

investigation concerning the Petition. The Department's determination on a Petition may be based solely on the Petition and supporting documents, or may also be based on such additional information as the Department deems appropriate.

(g) *Withdrawal of recognition—(1) Withdrawal by the Department*. If the Department believes that an accreditation body or certification program that has been recognized under §§ 431.19 or 431.20, respectively, is failing to meet the criteria of paragraph (b) of the section under which it is recognized, the Department will so advise such entity and request that it take appropriate corrective action. The Department will give the entity an opportunity to respond. If after receiving such response, or no response, the Department believes satisfactory correction has not been made, the Department will withdraw its recognition from that entity.

(2) *Voluntary withdrawal*. An accreditation body or certification program may withdraw itself from recognition by the Department by advising the Department in writing of such withdrawal. It must also advise those that use it (for an accreditation body, the testing laboratories, and for a certification organization, the manufacturers) of such withdrawal.

(3) *Notice of withdrawal of recognition*. The Department will publish in the **Federal Register** a notice of any withdrawal of recognition that occurs pursuant to this paragraph.

**Energy Conservation Standards**

**§ 431.25 Energy conservation standards and effective dates.**

(a) Each electric motor manufactured (alone or as a component of another piece of equipment) after October 24, 1997, or in the case of an electric motor which requires listing or certification by a nationally recognized safety testing laboratory, after October 24, 1999, shall have a nominal full load efficiency of not less than the following:

Motor horsepower/standard kilowatt equivalent	Nominal full load efficiency					
	Open motors (number of poles)			Enclosed motors (number of poles)		
	6	4	2	6	4	2
1/.75 .....	80.0	82.5	.....	80.0	82.5	75.5
1.5/1.1 .....	84.0	84.0	82.5	85.5	84.0	82.5
2/1.5 .....	85.5	84.0	84.0	86.5	84.0	84.0
3/2.2 .....	86.5	86.5	84.0	87.5	87.5	85.5
5/3.7 .....	87.5	87.5	85.5	87.5	87.5	87.5
7.5/5.5 .....	88.5	88.5	87.5	89.5	89.5	88.5
10/7.5 .....	90.2	89.5	88.5	89.5	89.5	89.5
15/11 .....	90.2	91.0	89.5	90.2	91.0	90.2
20/15 .....	91.0	91.0	90.2	90.2	91.0	90.2

Motor horsepower/standard kilowatt equivalent	Nominal full load efficiency					
	Open motors (number of poles)			Enclosed motors (number of poles)		
	6	4	2	6	4	2
25/18.5	91.7	91.7	91.0	91.7	92.4	91.0
30/22	92.4	92.4	91.0	91.7	92.4	91.0
40/30	93.0	93.0	91.7	93.0	93.0	91.7
50/37	93.0	93.0	92.4	93.0	93.0	92.4
60/45	93.6	93.6	93.0	93.6	93.6	93.0
75/55	93.6	94.1	93.0	93.6	94.1	93.0
100/75	94.1	94.1	93.0	94.1	94.5	93.6
125/90	94.1	94.5	93.6	94.1	94.5	94.5
150/110	94.5	95.0	93.6	95.0	95.0	94.5
200/150	94.5	95.0	94.5	95.0	95.0	95.0

(b) For purposes of determining the required minimum nominal full load efficiency of an electric motor that has a horsepower or kilowatt rating between two horsepower or kilowattages listed consecutively in paragraph (a) of this section, each such motor shall be deemed to have a horsepower or kilowatt rating that is listed in paragraph (a) of this section. The rating that the motor is deemed to have shall be determined as follows:

(1) A horsepower at or above the midpoint between the two consecutive horsepower shall be rounded up to the higher of the two horsepower;

(2) A horsepower below the midpoint between the two consecutive horsepower shall be rounded down to the lower of the two horsepower, or

(3) A kilowatt rating shall be directly converted from kilowatts to horsepower using the formula, 1 kilowatt = (1 / 0.746) horsepower, without calculating beyond three significant decimal places, and the resulting horsepower shall be rounded in accordance with paragraphs (b)(1) or (b)(2) of this section, whichever applies.

(c) This section does not apply to definite purpose motors, special purpose motors, and those motors exempted by the Secretary.

**§ 431.26 Preemption of State regulations.**

Any State regulation providing for any energy conservation standard, or other requirement with respect to the energy efficiency or energy use, of an electric motor that is not identical to a Federal standard in effect under this subpart is preempted by that standard, except as provided for in Section 345(a) and 327(b) and (c) of the Act.

**Labeling**

**§ 431.30 Applicability of labeling requirements.**

The labeling rules in § 431.31, established pursuant to Section 344 of EPCA, 42 U.S.C. 6315, apply only to

electric motors manufactured after October 5, 2000.

**§ 431.31 Labeling requirements.**

(a) *Electric motor nameplate*—(1) *Required information.* The permanent nameplate of an electric motor for which standards are prescribed in § 431.25 must be marked clearly with the following information:

(i) The motor's nominal full load efficiency (as of the date of manufacture), derived from the motor's average full load efficiency as determined pursuant to this subpart; and

(ii) A Compliance Certification number ("CC number") supplied by DOE to the manufacturer or private labeler, pursuant to § 431.36(f), and applicable to that motor. Such CC number must be on the nameplate of a motor beginning 90 days after either:

(A) The manufacturer or private labeler has received the number upon submitting a Compliance Certification covering that motor, or

(B) The expiration of 21 days from DOE's receipt of a Compliance Certification covering that motor, if the manufacturer or private labeler has not been advised by DOE that the Compliance Certification fails to satisfy § 431.36.

(2) *Display of required information.* All orientation, spacing, type sizes, type faces, and line widths to display this required information shall be the same as or similar to the display of the other performance data on the motor's permanent nameplate. The nominal full load efficiency shall be identified either by the term "Nominal Efficiency" or "Nom. Eff." or by the terms specified in paragraph 12.58.2 of NEMA MG1-1993, (Incorporated by reference, see § 431.15) as for example "NEMA Nom. Eff. \_\_\_\_\_." The DOE number shall be in the form "CC \_\_\_\_\_."

(3) *Optional display.* The permanent nameplate of an electric motor, a separate plate, or decalomania, may be

marked with the encircled lower case letters "ee", for example,



or with some comparable designation or logo, if the motor meets the applicable standard prescribed in § 431.25, as determined pursuant to this subpart, and is covered by a Compliance Certification that satisfies § 431.36.

(b) *Disclosure of efficiency information in marketing materials.* (1) The same information that must appear on an electric motor's permanent nameplate pursuant to paragraph (a)(1) of this section, shall be prominently displayed:

(i) On each page of a catalog that lists the motor; and

(ii) In other materials used to market the motor.

(2) The "ee" logo, or other similar logo or designations, may also be used in catalogs and other materials to the same extent they may be used on labels under paragraph (a)(3) of this section.

**§ 431.32 Preemption of State regulations.**

The provisions of § 431.31 supersede any State regulation to the extent required by Section 327 of the Act. Pursuant to the Act, all State regulations that require the disclosure for any electric motor of information with respect to energy consumption, other than the information required to be disclosed in accordance with this part, are superseded.

**Certification**

**§ 431.35 Applicability of certification requirements.**

Section 431.36 sets forth the procedures for manufacturers to certify that electric motors comply with the applicable energy efficiency standards set forth in this subpart.

**§ 431.36 Compliance Certification.**

(a) *General.* Beginning April 26, 2003, a manufacturer or private labeler shall

not distribute in commerce any basic model of an electric motor which is subject to an energy efficiency standard set forth in this subpart unless it has submitted to the Department a Compliance Certification certifying, in accordance with the provisions of this section, that the basic model meets the requirements of the applicable standard. The representations in the Compliance Certification must be based upon the basic model's energy efficiency as determined in accordance with the applicable requirements of this subpart. This means, in part, that either:

(1) The representations as to the basic model must be based on use of a certification organization; or

(2) Any testing of the basic model on which the representations are based must be conducted at an accredited laboratory.

(b) *Required contents*—(1) *General representations*. Each Compliance Certification must certify that:

(i) The nominal full load efficiency for each basic model of electric motor distributed is not less than the minimum nominal full load efficiency required for that motor by § 431.25;

(ii) All required determinations on which the Compliance Certification is based were made in compliance with the applicable requirements prescribed in this subpart;

(iii) All information reported in the Compliance Certification is true, accurate, and complete; and

(iv) The manufacturer or private labeler is aware of the penalties associated with violations of the Act and the regulations thereunder, and of 18 U.S.C. 1001 which prohibits knowingly making false statements to the Federal Government.

(2) *Specific data*. (i) For each rating of electric motor (as the term "rating" is defined in the definition of basic model) which a manufacturer or private labeler distributes, the Compliance Certification must report the nominal full load efficiency, determined pursuant to §§ 431.16 and 431.17, of the least efficient basic model within that rating.

(ii) The Compliance Certification must identify the basic models on which actual testing has been performed to meet the requirements of § 431.17.

(iii) The format for a Compliance Certification is set forth in appendix C of this subpart.

(c) *Optional contents*. In any Compliance Certification, a manufacturer or private labeler may at its option request that DOE provide it with a unique Compliance Certification number ("CC number") for any brand name, trademark or other label name under which the manufacturer or

private labeler distributes electric motors covered by the Certification. Such a Compliance Certification must also identify all other names, if any, under which the manufacturer or private labeler distributes electric motors, and to which the request does not apply.

(d) *Signature and submission*. A manufacturer or private labeler must submit the Compliance Certification either on its own behalf, signed by a corporate officer of the company, or through a third party (for example, a trade association or other authorized representative) acting on its behalf. Where a third party is used, the Compliance Certification must identify the official of the manufacturer or private labeler who authorized the third party to make representations on the company's behalf, and must be signed by a corporate official of the third party. The Compliance Certification must be submitted to the Department by certified mail, to Department of Energy, Assistant Secretary for Energy Efficiency and Renewable Energy, Building Technologies (EE-2J), Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121.

(e) *New basic models*. For electric motors, a Compliance Certification must be submitted for a new basic model only if the manufacturer or private labeler has not previously submitted to DOE a Compliance Certification, that meets the requirements of this section, for a basic model that has the same rating as the new basic model, and that has a lower nominal full load efficiency than the new basic model.

(f) *Response to Compliance Certification; Compliance Certification Number (CC number)*—(1) DOE processing of Certification. Promptly upon receipt of a Compliance Certification, the Department will determine whether the document contains all of the elements required by this section, and may, in its discretion, determine whether all or part of the information provided in the document is accurate. The Department will then advise the submitting party in writing either that the Compliance Certification does not satisfy the requirements of this section, in which case the document will be returned, or that the Compliance Certification satisfies this section. The Department will also advise the submitting party of the basis for its determination.

(2) *Issuance of CC number(s)*. (i) Initial Compliance Certification. When DOE advises that the initial Compliance Certification submitted by or on behalf of a manufacturer or private labeler is acceptable, either:

(A) DOE will provide a single unique CC number, "CC \_\_\_\_\_," to the manufacturer or private labeler, and such CC number shall be applicable to all electric motors distributed by the manufacturer or private labeler, or

(B) When required by paragraph (f)(3) of this section, DOE will provide more than one CC number to the manufacturer or private labeler.

(ii) Subsequent Compliance Certification. When DOE advises that any other Compliance Certification is acceptable, it will provide a unique CC number for any brand name, trademark or other name when required by paragraph (f)(3) of this section.

(iii) When DOE declines to provide a CC number as requested by a manufacturer or private labeler in accordance with § 431.36(c), DOE will advise the requester of the reasons for such refusal.

(3) *Issuance of two or more CC numbers*. (i) DOE will provide a unique CC number for each brand name, trademark or other label name for which a manufacturer or private labeler requests such a number in accordance with § 431.36(c), except as follows. DOE will not provide a CC number for any brand name, trademark or other label name

(A) For which DOE has previously provided a CC number, or

(B) That duplicates or overlaps with other names under which the manufacturer or private labeler sells electric motors.

(ii) Once DOE has provided a CC number for a particular name, that shall be the only CC number applicable to all electric motors distributed by the manufacturer or private labeler under that name.

(iii) If the Compliance Certification in which a manufacturer or private labeler requests a CC number is the initial Compliance Certification submitted by it or on its behalf, and it distributes electric motors not covered by the CC number(s) DOE provides in response to the request(s), DOE will also provide a unique CC number that shall be applicable to all of these other motors.

#### **Appendix A to Subpart B of 10 CFR Part 431, Policy Statement for Electric Motors Covered Under the Energy Policy and Conservation Act**

This is a reprint of a policy statement which was published on November 5, 1997 at 62 FR 59978.

*Policy Statement for Electric Motors Covered Under the Energy Policy and Conservation Act*

#### **I. Introduction**

The Energy Policy and Conservation Act (EPCA), 42 U.S.C. 6311, *et seq.*, establishes

energy efficiency standards and test procedures for certain commercial and industrial electric motors manufactured (alone or as a component of another piece of equipment) after October 24, 1997, or, in the case of an electric motor which requires listing or certification by a nationally recognized safety testing laboratory, after October 24, 1999.<sup>1</sup> EPCA also directs the Department of Energy (DOE or Department) to implement the statutory test procedures prescribed for motors, and to require efficiency labeling of motors and certification that covered motors comply with the standards.

Section 340(13)(A) of EPCA defines the term "electric motor" based essentially on the construction and rating system in the National Electrical Manufacturers Association (NEMA) Standards Publication MG1. Sections 340(13)(B) and (c) of EPCA define the terms "definite purpose motor" and "special purpose motor," respectively, for which the statute prescribes no efficiency standards.

In its proposed rule to implement the EPCA provisions that apply to motors (61 FR 60440, November 27, 1996), DOE has proposed to clarify the statutory definition of "electric motor," to mean a machine which converts electrical power into rotational mechanical power and which: (1) Is a general purpose motor, including motors with explosion-proof construction<sup>2</sup>; (2) is a single speed, induction motor; (3) is rated for continuous duty operation, or is rated duty type S-1 (IEC)<sup>3</sup>; (4) contains a squirrel-cage or cage (IEC) rotor; (5) has foot-mounting, including foot-mounting with flanges or detachable feet; (6) is built in accordance with NEMA T-frame dimensions, or IEC metric equivalents (IEC); (7) has performance in accordance with NEMA Design A or B characteristics, or equivalent designs such as IEC Design N (IEC); and (8) operates on polyphase alternating current 60-Hertz sinusoidal power, and is (i) rated 230 volts or 460 volts, or both, including any motor that is rated at multi-voltages that include 230 volts or 460 volts, or (ii) can be operated on 230 volts or 460 volts, or both.

Notwithstanding the clarification provided in the proposed rule, there still appears to be uncertainty as to which motors EPCA covers. It is widely understood that the statute covers "general purpose" motors that are manufactured for a variety of applications,

and that meet EPCA's definition of "electric motor." Many modifications, however, can be made to such generic motors. Motor manufacturers have expressed concern as to precisely which motors with such modifications are covered under the statute, and as to whether manufacturers will be able to comply with the statute by October 25, 1997 with respect to all of these covered motors. Consequently, motor manufacturers have requested that the Department provide additional guidance as to which types of motors are "electric motors," "definite purpose motors," and "special purpose motors" under EPCA. The policy statement that follows is based upon input from motor manufacturers and energy efficiency advocates, and provides such guidance.

## II. Guidelines for Determining Whether a Motor Is Covered by EPCA

### A. General

EPCA specifies minimum nominal full-load energy efficiency standards for 1 to 200 horsepower electric motors, and, to measure compliance with those standards, prescribes use of the test procedures in NEMA Standard MG1 and Institute of Electrical and Electronics Engineers, Inc., (IEEE) Standard 112. In DOE's view, as stated in Assistant Secretary Ervin's letter of May 9, 1996, to NEMA's Malcolm O'Hagan, until DOE's regulations become effective, manufacturers can establish compliance with these EPCA requirements through use of competent and reliable procedures or methods that give reasonable assurance of such compliance. So long as these criteria are met, manufacturers may conduct required testing in their own laboratories or in independent laboratories, and may employ alternative correlation methods (in lieu of actual testing) for some motors. Manufacturers may also establish their compliance with EPCA standards and test procedures through use of third party certification or verification programs such as those recognized by Natural Resources Canada. Labeling and certification requirements will become effective only after DOE has promulgated a final rule prescribing such requirements.

Motors with features or characteristics that do not meet the statutory definition of "electric motor" are not covered, and therefore are not required to meet EPCA requirements. Examples include motors without feet and without provisions for feet, and variable speed motors operated on a variable frequency power supply. Similarly, multi speed motors and variable speed motors, such as inverter duty motors, are not covered equipment, based on their intrinsic design for use at variable speeds. However, NEMA Design A or B motors that are single speed, meet all other criteria under the definitions in EPCA for covered equipment, and can be used with an inverter in variable speed applications as an additional feature, are covered equipment under EPCA. In other words, being suitable for use on an inverter by itself does not exempt a motor from EPCA requirements.

Section 340(13)(F) of EPCA, defines a "small electric motor" as "a NEMA general purpose alternating current single-speed induction motor, built in a two-digit frame

number series in accordance with NEMA Standards Publication MG 1-1987." Section 346 of EPCA requires DOE to prescribe testing requirements and efficiency standards only for those small electric motors for which the Secretary determines that standards are warranted. The Department has not yet made such a determination.

### B. Electrical Features

As noted above, the Department's proposed definition of "electric motor" provides in part that it is a motor that "operates on polyphase alternating current 60-Hertz sinusoidal power, and \* \* \* can be operated on 230 volts or 460 volts, or both." In DOE's view, "can be operated" implicitly means that the motor can be operated successfully. According to NEMA Standards Publication MG1-1993, paragraph 12.44, "Variations from Rated Voltage and Rated Frequency," alternating-current motors must operate successfully under running conditions at rated load with a variation in the voltage or the frequency up to the following: Plus or minus 10 percent of rated voltage, with rated frequency for induction motors;<sup>4</sup> plus or minus 5 percent of rated frequency, with rated voltage; and a combined variation in voltage and frequency of 10 percent (sum of absolute values) of the rated values, provided the frequency variation does not exceed plus or minus 5 percent of rated frequency. DOE believes that, for purposes of determining whether a motor meets EPCA's definition of "electric motor," these criteria should be used to determine when a motor that is not rated at 230 or 460 volts or 60 Hertz can be operated at such voltage and frequency.<sup>5</sup>

NEMA Standards Publication MG1 categorizes electrical modifications to motors according to performance characteristics that include locked rotor torque, breakdown torque, pull-up torque, locked rotor current, and slip at rated load, and assigns design letters, such as Design A, B, C, D, or E, to identify various combinations of such electrical performance characteristics. Under Section 340(13)(A) of EPCA, electric motors subject to EPCA efficiency requirements include only motors that fall within NEMA "Design A and B \* \* \* as defined in [NEMA] Standards Publication MG1-1987." As to locked rotor torque, for example, MG1 specifies a minimum performance value for a Design A or B motor of a given speed and

<sup>4</sup> For example, a motor that is rated at 220 volts should operate successfully on 230 volts, since  $220 + .10(220) = 242$  volts. A 208 volt motor, however, would not be expected to operate successfully on 230 volts, since  $208 + .10(208) = 228.8$  volts.

<sup>5</sup> The Department understands that a motor that can operate at such voltage and frequency, based on variations defined for successful operation, will not necessarily perform in accordance with the industry standards established for operation at the motor's rated voltage and frequency. In addition, under the test procedures prescribed by EPCA, motors are to be tested at their rated values. Therefore, in DOE's view a motor that is not rated for 230 or 460 volts, or 60 Hertz, but that can be successfully operated at these levels, must meet the energy efficiency requirements at its rated voltage(s) and frequency. DOE also notes that when a motor is rated to include a wider voltage range that includes 230/460 volts, the motor should meet the energy efficiency requirements at 230 volts or 460 volts.

<sup>1</sup> The term "manufacture" means "to manufacture, produce, assemble or import." EPCA § 321(10). Thus, the standards apply to motors produced, assembled, imported or manufactured after these statutory deadlines.

<sup>2</sup> Section 342(b)(1) of EPCA recognizes that EPCA's efficiency standards cover "motors which require listing or certification by a nationally recognized safety testing laboratory." This applies, for example, to explosion-proof motors which are otherwise general purpose motors.

<sup>3</sup> Terms followed by the parenthetical "IEC" are referred to in the International Electrotechnical Commission (IEC) Standard 34-1. Such terms are included in DOE's proposed definition of "electric motor" because DOE believes EPCA's efficiency requirements apply to metric system motors that conform to IEC Standard 34, and that are identical or equivalent to motors constructed in accordance with NEMA MG1 and covered by the statute.

horsepower, and somewhat higher minimum values for Design C and D motors of the same speed and horsepower. The Department understands that, under MG1, the industry classifies a motor as Design A or B if it has a locked rotor torque at or above the minimum for A and B but below the minimum for Design C, so long as it otherwise meets the criteria for Design A or B. Therefore, in the Department's view, such a motor is covered by EPCA's requirements for electric motors. By contrast a motor that meets or exceeds the minimum locked rotor torque for Design C or D is not covered by EPCA. In sum, if a motor has electrical modifications that meet Design A or B performance requirements it is covered by EPCA, and if its characteristics meet Design C, D or E it is not covered.

### C. Size

Motors designed for use on a particular type of application which are in a frame size that is one or more frame *series* larger than the frame size assigned to that rating by sections 1.2 and 1.3 of NEMA Standards Publication MG 13-1984 (R1990), "Frame Assignments for Alternating Current Integral-Horsepower Induction Motors," are not, in the Department's view, usable in most general purpose applications. This is due to the physical size increase associated with a frame series change. A frame series is defined as the first two digits of the frame size designation. For example, 324T and 326T are both in the same frame series, while 364T is in the next larger frame series. Hence, in the Department's view, a motor that is of a larger frame series than normally assigned to that standard rating of motor is not covered by EPCA. A physically larger motor within the same frame series would be covered, however, because it would be usable in most general purpose applications.

Motors built in a T-frame series or a T-frame size smaller than that assigned by MG 13-1984 (R1990) are also considered usable in most general purpose applications. This is because simple modifications can generally be made to fit a smaller motor in place of a motor with a larger frame size assigned in conformity with NEMA MG 13. Therefore, DOE believes that such smaller motors are covered by EPCA.

### D. Motors With Seals

Some electric motors have seals to prevent ingress of water, dust, oil, and other foreign materials into the motor. DOE understands that, typically, a manufacturer will add seals to a motor that it manufactures, so that it will sell two motors that are identical except that one has seals and the other does not. In such a situation, if the motor without seals is "general purpose" and covered by EPCA's efficiency requirements, then the motor with seals will also be covered because it can still be used in most general purpose applications. DOE understands, however, that manufacturers previously believed motors with seals were not covered under EPCA, in part because IEEE Standard 112, "Test Procedure for Polyphase Induction Motors and Generators," prescribed by EPCA, does not address how to test a motor with seals installed.

The efficiency rating of such a motor, if determined with seals installed and when the motor is new, apparently would significantly understate the efficiency of the motor as operated. New seals are stiff, and provide friction that is absent after their initial break-in period. DOE understands that, after this initial period, the efficiency ratings determined for the same motor with and without seals would be virtually identical. To construe EPCA, therefore, as requiring such separate efficiency determinations would impose an unnecessary burden on manufacturers.

In light of the foregoing, the Department believes that EPCA generally permits the efficiency of a motor with seals to be determined without the seals installed. Furthermore, notwithstanding the prior belief that such motors are not covered by EPCA, use of this approach to determining efficiency will enable manufacturers to meet EPCA's standards with respect to covered motors with seals by the date the standards go into effect on October 25, 1997.

### III. Discussion of How DOE Would Apply EPCA Definitions, Using the Foregoing Guidelines

Using the foregoing guidelines, the attached matrix provides DOE's view as to which motors with common features are covered by EPCA. Because manufacturers produce many basic models that have many modifications of generic general purpose motors, the Department does not represent that the matrix is all-inclusive. Rather it is a set of examples demonstrating how DOE would apply EPCA definitions, as construed by the above guidelines, to various motor types. By extension of these examples, most motors currently in production, or to be designed in the future, could probably be classified. The matrix classifies motors into five categories, which are discussed in the following passages.

Category I—For "electric motors" (manufactured alone or as a component of another piece of equipment) in Category I, DOE will enforce EPCA efficiency standards and test procedures beginning on October 25, 1997.

The Department understands that some motors essentially are relatively simple modifications of generic general purpose motors. Modifications could consist, for example, of minor changes such as the addition of temperature sensors or a heater, the addition of a shaft extension and a brake disk from a kit, or changes in exterior features such as the motor housing. Such motors can still be used for most general purpose applications, and the modifications have little or no effect on motor performance. Nor do the modifications affect energy efficiency.

Category II—For certain motors that are "definite purpose" according to present industry practice, but that can be used in most general purpose applications, DOE will generally enforce EPCA efficiency standards and test procedures beginning no later than October 25, 1999.

#### General Statement

EPCA does not prescribe standards and test procedures for "definite purpose motors."

Section 340(13)(B) of EPCA defines the term "definite purpose motor" as "any motor designed in standard ratings with standard operating characteristics or standard mechanical construction for use under service conditions other than usual or for use on a particular type of application *and which cannot be used in most general purpose applications.*" [Emphasis added.] Except, significantly, for exclusion of the italicized language, the industry definition of "definite purpose motor," set forth in NEMA MG1, is identical to the foregoing.

Category II consists of electric motors with horsepower ratings that fall between the horsepower ratings in Section 342(b)(1) of EPCA, thermally protected motors, and motors with roller bearings. As with motors in Category I, these motors are essentially modifications of generic general purpose motors. Generally, however, the modifications contained in these motors are more extensive and complex than the modifications in Category I motors. These Category II motors have been considered "definite purpose" in common industry parlance, but are covered equipment under EPCA because they can be used in most general purpose applications.

According to statements provided during the January 15, 1997, Public Hearing, Tr. pgs. 238-239, Category II motors were, until recently, viewed by most manufacturers as definite purpose motors, consistent with the industry definition that did not contain the clause "which cannot be used in most general purpose applications." Hence, DOE understands that many manufacturers assumed these motors were not subject to EPCA's efficiency standards. During the period prior and subsequent to the hearing, discussions among manufacturers resulted in a new understanding that such motors are general purpose under EPCA, since they *can* be used in most general purpose applications. Thus, the industry only recently recognized that such motors are covered under EPCA. Although the statutory definition adopted in 1992 contained the above-quoted definition of "definite purpose," the delay in issuing regulations which embody this definition may have contributed to industry's delay in recognizing that these motors are covered.

The Department understands that redesign and testing these motors in order to meet the efficiency standards in the statute may require a substantial amount of time. Given the recent recognition that they are covered, it is not realistic to expect these motors will be able to comply by October 25, 1997. A substantial period beyond that will be required. Moreover, the Department believes different manufacturers will need to take different approaches to achieving compliance with respect to these motors, and that, for a particular type of motor, some manufacturers will be able to comply sooner than others. Thus, the Department intends to refrain from taking enforcement action for two years, until October 25, 1999, with respect to motors with horsepower ratings that fall between the horsepower ratings in Section 342(b)(1) of EPCA, thermally protected motors, and motors with roller bearings. Manufacturers are encouraged, however, to manufacture

these motors in compliance with EPCA at the earliest possible date.

The following sets forth in greater detail, for each of these types of motors, the basis for the Department's policy to refrain from enforcement for two years. Also set forth is additional explanation of the Department's understanding as to why manufacturers previously believed intermediate horsepower motors were not covered by EPCA.

#### Intermediate Horsepower Ratings

Section 342(b)(1) of EPCA specifies efficiency standards for electric motors with 19 specific horsepower ratings, ranging from one through 200 horsepower. Each is a preferred or standardized horsepower rating as reflected in the table in NEMA Standards Publication MG1-1993, paragraph 10.32.4, *Polyphase Medium Induction Motors*. However, an "electric motor," as defined by EPCA, can be built at other horsepower ratings, such as 6 horsepower, 65 horsepower, or 175 horsepower. Such motors, rated at horsepower levels between any two adjacent horsepower ratings identified in Section 342(b)(1) of EPCA will be referred to as "intermediate horsepower motors." In the Department's view, efficiency standards apply to every motor that has a rating from one through 200 horsepower (or kilowatt equivalents), and that otherwise meets the criteria for an "electric motor" under EPCA, including an electric motor with an intermediate horsepower (or kW) rating.

To date, these motors have typically been designed in conjunction with and supplied to a specific customer to fulfill certain performance and design requirements of a particular application, as for example to run a certain type of equipment. See the discussion in Section IV below on "original equipment" and "original equipment manufacturers." In large part for these reasons, manufacturers believed intermediate horsepower motors to be "definite purpose motors" that were not covered by EPCA. Despite their specific uses, however, these motors are electric motors under EPCA when they are capable of being used in most general purpose applications.

Features of a motor that are directly related to its horsepower rating include its physical size, and the ratings of its controller and protective devices. These aspects of a 175 horsepower motor, for example, which is an intermediate horsepower motor, must be appropriate to that horsepower, and would generally differ from the same aspects of 150 and 200 horsepower motors, the two standard horsepower ratings closest to 175. To re-design an existing intermediate horsepower electric motor so that it complies with EPCA could involve all of these elements of a motor's design. For example, the addition of material necessary to achieve EPCA's prescribed level of efficiency could cause the size of the motor to increase. The addition of magnetic material would invite higher inrush current that could cause an incorrectly sized motor controller to malfunction, or the circuit breaker with a standard rating to trip unnecessarily, or both. The Department believes motor manufacturers will require a substantial amount of time to redesign and retest each

intermediate horsepower electric motor they manufacture.

To the extent such intermediate horsepower electric motors become unavailable because motor manufacturers have recognized only recently that they are covered by EPCA, equipment in which they are incorporated would temporarily become unavailable also. Moreover, re-design of such a motor to comply with EPCA could cause changes in the motor that require re-design of the equipment in which the motor is used. For example, if an intermediate horsepower electric motor becomes larger, it might no longer fit in the equipment for which it was designed. In such instances, the equipment would have to be re-designed. Because these motors were previously thought not to be covered, equipment manufacturers may not have had sufficient lead time to make the necessary changes to the equipment without interrupting its production.

With respect to intermediate horsepower motors, the Department intends to refrain from enforcing EPCA for a period of 24 months only as to such motor designs that were being manufactured prior to the date this Policy Statement was issued. The Department is concerned that small adjustments could be made to the horsepower rating of an existing electric motor, in an effort to delay compliance with EPCA, if it delayed enforcement as to all intermediate horsepower motors produced during the 24 month period. For example, a 50 horsepower motor that has a service factor of 1.15 could be renameplated as a 57½ horsepower motor that has a 1.0 service factor. By making this delay in enforcement applicable only to pre-existing designs of intermediate horsepower motors, the Department believes it has made adequate provision for the manufacture of bona fide intermediate horsepower motor designs that cannot be changed to be in compliance with EPCA by October 25, 1997.

#### Thermally Protected Motors

The Department understands that in order to redesign a thermally protected motor to improve its efficiency so that it complies with EPCA, various changes in the windings must be made which will require the thermal protector to be re-selected. Such devices sense the inrush and running current of the motor, as well as the operating temperature. Any changes to a motor that affect these characteristics will prevent the protector from operating correctly. When a new protector is selected, the motor must be tested to verify proper operation of the device in the motor. The motor manufacturer would test the locked rotor and overload conditions, which could take several days, and the results may dictate that a second selection is needed with additional testing. When the manufacturer has finished testing, typically the manufacturer will have a third party conduct additional testing. This testing may include cycling the motor in a locked-rotor condition to verify that the protector functions properly. This testing may take days or even weeks to perform for a particular model of motor.

Since it was only recently recognized by industry that these motors are covered by EPCA, in the Department's view the total

testing program makes it impossible for manufacturers to comply with the EPCA efficiency levels in thermally protected motors by October 25, 1997, especially since each different motor winding must be tested and motor winding/thermal protector combinations number in the thousands.

#### Motors With Roller Bearings

Motors with roller bearings fit within the definition of electric motor under the statute. However, because the IEEE Standard 112 Test Method B does not provide measures to test motors with roller bearings installed, manufacturers mistakenly believed such motors were not covered. Under IEEE Standard 112, a motor with roller bearings could only be tested for efficiency with the roller bearings removed and standard ball bearings installed as temporary substitutes. Then on the basis of the energy efficiency information gained from that test, the manufacturer may need to redesign the motor in order to comply with the statute. In this situation, the Department understands that testing, redesigning, and retesting lines of motors with roller bearings, to establish compliance, would be difficult and time consuming.

Categories III, IV and V—Motors not within EPCA's definition of "electric motor," and not covered by EPCA.

#### Close-Coupled Pump Motors

NEMA Standards Publication MG1-1993, with revisions one through three, Part 18, "Definite-Purpose Machines," defines "a face-mounting close-coupled pump motor" as "a medium alternating-current squirrel-cage induction open or totally enclosed motor, with or without feet, having a shaft suitable for mounting an impeller and sealing device." Paragraphs MG1-18.601-18.614 specify its performance, face and shaft mounting dimensions, and frame assignments that replace the suffix letters T and TS with the suffix letters JM and JP.

The Department understands that such motors are designed in standard ratings with standard operating characteristics for use in certain close-coupled pumps and pumping applications, but cannot be used in non-pumping applications, such as, for example, conveyors. Consequently, the Department believes close-coupled pump motors are definite-purpose motors not covered by EPCA. However, a motor that meets EPCA's definition of "electric motor," and which can be coupled to a pump, for example by means of a C-face or D-flange end shield, as depicted in NEMA Standards Publication MG1, Part 4, "Dimensions, Tolerances, and Mounting," is covered.

#### Totally-Enclosed Non-Ventilated (TENV) and Totally-Enclosed Air-Over (TEAO) Motors

A motor designated in NEMA MG1-1993, paragraph MG1-1.26.1, as "totally-enclosed non-ventilated (IP54, IC410)"<sup>6</sup> is "not

<sup>6</sup> IP refers to the IEC Standard 34-5: Classification of degrees of protection provided by enclosures for rotating machines. IC refers to the IEC Standard 34-6: Methods of cooling rotating machinery. The IP and IC codes are referenced in the NEMA designations for TENV and TEAO motors in MG1-1993 Part 1, "Classification According to Environmental Protection and Methods of Cooling,"

equipped for cooling by means external to the enclosing parts." This means that the motor, when properly applied, does not require the use of any additional means of cooling installed external to the motor enclosure. The TENV motor is cooled by natural conduction and natural convection of the motor heat into the surrounding environment. As stated in NEMA MG1-1993, Suggested Standard for Future Design, paragraph MG1-1.26.1a, a TENV motor "is only equipped for cooling by free convection." The general requirement for the installation of the TENV motor is that it not be placed in a restricted space that would inhibit this natural dissipation of the motor heat. Most general purpose applications use motors which include a means for forcing air flow through or around the motor and usually through the enclosed space and, therefore, can be used in spaces that are more restrictive than those required for TENV motors. Placing a TENV motor in such common restricted areas is likely to cause the motor to overheat. The TENV motor may also be larger than the motors used in most general purpose applications, and would take up more of the available space, thus reducing the size of the open area surrounding the motor. Installation of a TENV motor might require, therefore, an additional means of ventilation to continually exchange the ambient around the motor.

A motor designated in NEMA MG1-1993 as "totally-enclosed air-over (IP54, IC417)" is intended to be cooled by ventilation means external to (*i.e.*, separate and independent from) the motor, such as a fan. The motor must be provided with the additional ventilation to prevent it from overheating.

Consequently, neither the TENV motor nor the TEAO motor would be suitable for most general purpose applications, and, DOE believes they are definite-purpose motors not covered by EPCA.

#### Integral Gearmotors

An "integral gearmotor" is an assembly of a motor and a specific gear drive or assembly of gears, such as a gear reducer, as a unified package. The motor portion of an integral gearmotor is not necessarily a complete motor, since the end bracket or mounting flange of the motor portion is also part of the gear assembly and cannot be operated when separated from the complete gear assembly. Typically, an integral gearmotor is not manufactured to standard T-frame dimensions specified in NEMA MG1. Moreover, neither the motor portion, not the entire integral gearmotor, are capable of being used in most general purpose applications without significant modifications. An integral gearmotor is also designed for a specific purpose and can have unique performance characteristics, physical dimensions, and casing, flange and shafting configurations. Consequently, integral gearmotors are outside the scope of the EPCA definition of "electric motor" and are not covered under EPCA.

as a Suggested Standard for Future Design, since the TENV and TEAO motors conform to IEC Standards. Details of protection (IP) and methods of cooling (IC) are defined in MG1 Part 5 and Part 6, respectively.

However, an "electric motor," as defined by EPCA, which is connected to a stand alone mechanical gear drive or an assembly of gears, such as a gear reducer connected by direct coupling, belts, bolts, a kit, or other means, is covered equipment under EPCA.

#### IV. Electric Motors That Are Components in Certain Equipment

The primary function of an electric motor is to convert electrical energy to mechanical energy which then directly drives machinery such as pumps, fans, or compressors. Thus, an electric motor is always connected to a driven machine or apparatus. Typically the motor is incorporated into a finished product such as an air conditioner, a refrigerator, a machine tool, food processing equipment, or other commercial or industrial machinery. These products are commonly known as "original equipment" or "end-use equipment," and are manufactured by firms known as "original equipment manufacturers" (OEMs).

Many types of motors used in original equipment are covered under EPCA. As noted above, EPCA prescribes efficiency standards to be met by all covered electric motors manufactured after October 24, 1997, except that covered motors which require listing or certification by a nationally recognized safety testing laboratory need not meet the standards until after October 24, 1999. Thus, for motors that must comply after October 24, 1997, once inventories of motors manufactured before the deadline have been exhausted, only complying motors would be available for purchase and use by OEMs in manufacturing original equipment. Any non-complying motors previously included in such equipment would no longer be available.

The physical, and sometimes operational, characteristics of motors that meet EPCA efficiency standards normally differ from the characteristics of comparable existing motors that do not meet those standards. In part because of such differences, the Department is aware of two types of situations where strict application of the October 24, 1997, deadline could temporarily prevent the manufacture of, and remove from the marketplace, currently available original equipment.

One such situation is where an original equipment manufacturer uses an electric motor as a component in end-use equipment that requires listing or certification by a nationally recognized safety testing laboratory, even though the motor itself does not require listing or certification. In some of these instances, the file for listing or certification specifies the particular motor to be used. No substitution could be made for the motor without review and approval of the new motor and the entire system by the safety testing laboratory. Consequently, a specified motor that does not meet EPCA standards could not be replaced by a complying motor without such review and approval.

This re-listing or re-certification process is subject to substantial variation from one piece of original equipment to the next. For some equipment, it could be a simple paperwork transaction between the safety

listing or certification organization and the OEM, taking approximately four to eight weeks to complete. But the process could raise more complex system issues involving redesign of the motor or piece of equipment, or both, and actual testing to assure that safety and performance criteria are met, and could take several months to complete. The completion time could also vary depending on the response time of the particular safety approval agency. Moreover, in the period immediately after October 24, the Department believes wholesale changes could occur in equipment lines when OEMs must begin using motors that comply with EPCA. These changes are likely to be concentrated in the period immediately after EPCA goes into effect on October 24, and if many OEMs seek to re-list or re-certify equipment at the same time, substantial delays in the review and approval process at the safety approval agencies could occur. For these reasons, the Department is concerned that certain end-user equipment that requires safety listing or certification could become unavailable in the marketplace, because an electric motor specifically identified in a listing or certification is covered by EPCA and will become unavailable, and the steps have not been completed to obtain safety approval of the equipment when manufactured with a complying motor.

Second, a situation could exist where an electric motor covered by EPCA is constructed in a T-frame series or T-frame size that is smaller (but still standard) than that assigned by NEMA Standards Publication MG 13-1984 (R1990), sections 1.2 and 1.3, in order to fit into a restricted mounting space that is within certain end-use equipment. (Motors in IEC metric frame sizes and kilowatt ratings could also be involved in this type of situation.) In such cases, the manufacturer of the end-use equipment might need to redesign the equipment containing the mounting space to accommodate a larger motor that complies with EPCA. These circumstances as well could result in certain currently available equipment becoming temporarily unavailable in the market, since the smaller size motor would become unavailable before the original equipment had been re-designed to accommodate the larger, complying motor.

The Department understands that many motor manufacturers and OEMs became aware only recently that the electric motors addressed in the preceding paragraphs were covered by EPCA. This is largely for the same reasons, discussed above, that EPCA coverage of Category II motors was only recently recognized. In addition, the Department understands that some motor manufacturers and original equipment manufacturers confused motors that themselves require safety listing or certification, which need not comply until October 25, 1999, with motors that, while not subject to such requirements, are included in original equipment that requires safety listing or certification. Consequently, motor manufacturers and original equipment manufacturers took insufficient action to assure that appropriate complying motors would be available for the original equipment involved, and that the equipment could accommodate such motors.

OEMs involved in such situations may often be unable to switch to motors that meet EPCA standards in the period immediately following October 24. To mitigate any hardship to purchasers of the original equipment, the Department intends to refrain from enforcing EPCA in certain limited circumstances, under the conditions described below.

Where a particular electric motor is specified in an approved safety listing or certification for a piece of original equipment, and the motor does not meet the applicable efficiency standard in EPCA, the Department's policy will be as follows: For the period of time necessary for the OEM to obtain a revised safety listing or certification for that piece of equipment, with a motor specified that complies with EPCA, but in no event beyond October 24, 1999, the Department would refrain from taking enforcement action under EPCA with respect to manufacture of the motor for installation in such original equipment. This policy would apply only where the motor has been manufactured and specified in the approved safety listing or certification prior to October 25, 1997.

Where a particular electric motor is used in a piece of original equipment and manufactured in a smaller than assigned frame size or series, and the motor does not meet the applicable efficiency standard in EPCA, the Department's policy will be as follows: For the period of time necessary for the OEM to re-design the piece of equipment to accommodate a motor that complies with

EPCA, but in no event beyond October 24, 1999, the Department would refrain from enforcing the standard with respect to manufacture of the motor for installation in such original equipment. This policy would apply only to a model of motor that has been manufactured and included in the original equipment prior to October 25, 1997.

To allow the Department to monitor application of the policy set forth in the prior two paragraphs, the Department needs to be informed as to the motors being manufactured under the policy. Therefore, each motor manufacturer and OEM should jointly notify the Department as to each motor they will be manufacturing and using, respectively, after October 24, 1997, in the belief that it is covered by the policy. The notification should set forth: (1) The name of the motor manufacturer, and a description of the motor by type, model number, and date of design or production; (2) the name of the original equipment manufacturer, and a description of the application where the motor is to be used; (3) the safety listing or safety certification organization and the existing listing or certification file or document number for which re-listing or re-certification will be requested, if applicable; (4) the reason and amount of time required for continued production of the motor, with a statement that a substitute electric motor that complies with EPCA could not be obtained by an earlier date; and (5) the name, address, and telephone number of the person to contact for further information. The joint request should be signed by a responsible

official of each requesting company, and sent to: U.S. Department of Energy, Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Building Research and Standards, EE-41, Forrestal Building, 1000 Independence Avenue, SW., Room 1J-018, Washington, DC 20585-0121. The Department does not intend to apply this policy to any motor for which it does not receive such a notification. Moreover, the Department may use the notification, and make further inquiries, to be sure motors listed in the notification meet the criteria for application of the policy.

This part of the Policy Statement will not apply to a motor in Category II, discussed above in Section III. Because up to 24 months is contemplated for compliance by Category II motors, the Department believes any issues that might warrant a delay of enforcement for such motors can be addressed during that time period.

**V. Further Information**

The Department intends to incorporate this Policy Statement into an appendix to its final rule to implement the EPCA provisions that apply to motors. Any comments or suggestions with respect to this Policy Statement, as well as requests for further information, should be addressed to the Director, Building Technologies, EE-2J, U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121.

**EXAMPLES OF MANY COMMON FEATURES OR MOTOR MODIFICATIONS TO ILLUSTRATE HOW THE EPCA DEFINITIONS AND DOE GUIDELINES WOULD BE APPLIED TO MOTOR CATEGORIES: GENERAL PURPOSE; DEFINITE PURPOSE; AND SPECIAL PURPOSE**

Motor modification	Category <sup>1</sup>					Explanation
	I	II	III	IV	V	
<b>A. Electrical Modifications</b>						
1 Altitude .....	X	.....	.....	.....	.....	General purpose up to a frame series change larger.
2 Ambient .....	X	.....	.....	.....	.....	General purpose up to a frame series change larger.
3 Multispeed .....	.....	.....	.....	.....	X	EPCA applies to single speed only.
4 Special Leads .....	X	.....	.....	.....	.....	
5 Special Insulation .....	X	.....	.....	.....	.....	
6 Encapsulation .....	.....	.....	.....	X	.....	Due to special construction.
7 High Service Factor .....	X	.....	.....	.....	.....	General purpose up to a frame series change larger.
8 Space Heaters .....	X	.....	.....	.....	.....	
9 Wye Delta Start .....	X	.....	.....	.....	.....	
10 Part Winding Start .....	X	.....	.....	.....	.....	
11 Temperature Rise .....	X	.....	.....	.....	.....	General purpose up to a frame series change larger.
12 Thermally Protected .....	.....	X	.....	.....	.....	Requires retesting and third party agency approval.
13 Thermostat/Thermistor .....	X	.....	.....	.....	.....	
14 Special Voltages .....	.....	.....	.....	.....	X	EPCA applies to motors operating on 230/460 voltages at 60 Hertz.
15 Intermediate Horsepowers .....	.....	X	.....	.....	.....	Round horsepower according to 10 CFR 431.42 for efficiency.
16 Frequency .....	.....	.....	.....	.....	X	EPCA applies to motors operating on 230/460 voltages at 60 Hertz.
17 Fungus/Trop Insulation .....	X	.....	.....	.....	.....	

**B. Mechanical Modifications**

EXAMPLES OF MANY COMMON FEATURES OR MOTOR MODIFICATIONS TO ILLUSTRATE HOW THE EPCA DEFINITIONS AND DOE GUIDELINES WOULD BE APPLIED TO MOTOR CATEGORIES: GENERAL PURPOSE; DEFINITE PURPOSE; AND SPECIAL PURPOSE—Continued

Motor modification	Category <sup>1</sup>					Explanation
	I	II	III	IV	V	
18 Special Balance .....	X	.....	.....	.....	.....	Does not meet definition of T-frame.
19 Bearing Temp. Detector .....	X	.....	.....	.....	.....	
20 Special Base/Feet .....	.....	.....	.....	.....	X	
21 Special Conduit Box .....	X	.....	.....	.....	.....	
22 Auxiliary Conduit Box .....	X	.....	.....	.....	.....	
23 Special Paint/Coating .....	X	.....	.....	.....	.....	
24 Drains .....	X	.....	.....	.....	.....	
25 Drip Cover .....	X	.....	.....	.....	.....	
26 Ground. Lug/Hole .....	X	.....	.....	.....	.....	
27 Screens on ODP Enclosure .....	X	.....	.....	.....	.....	
28 Mounting F1,F2; W1-4; C1,2 .....	X	.....	.....	.....	.....	Foot-mounting, rigid base, and resilient base.
<b>C. Bearings</b>						
29 Bearing Caps .....	X	.....	.....	.....	.....	Test with a standard bearing.
30 Roller Bearings .....	.....	X	.....	.....	.....	
31 Shielded Bearings .....	X	.....	.....	.....	.....	Test with a standard bearing. Special mechanical construction.
32 Sealed Bearings .....	X	.....	.....	.....	.....	
33 Thrust Bearings .....	.....	.....	.....	X	.....	Special mechanical construction.
34 Clamped Bearings .....	X	.....	.....	.....	.....	
35 Sleeve Bearings .....	.....	.....	.....	X	.....	Special mechanical construction.
<b>D. Special Endshields</b>						
36 C Face .....	X	.....	.....	.....	.....	As defined in NEMA MG-1.
37 D Flange .....	X	.....	.....	.....	.....	As defined in NEMA MG-1.
38 Customer Defined .....	.....	.....	.....	X	.....	Special design for a particular application.
<b>E. Seals</b>						
39 Contact Seals .....	X	.....	.....	.....	.....	Includes lip seals and taconite seals—test with seals removed.
40 Non-Contact Seal .....	X	.....	.....	.....	.....	Includes labyrinth and slinger seals—test with seals installed.
<b>F. Shafts</b>						
41 Standard Shafts/NEMA Mg-1 .....	X	.....	.....	.....	.....	Includes single and double, cylindrical, tapered, and short shafts.
42 Non Standard Material .....	X	.....	.....	.....	.....	
<b>G. Fans</b>						
43 Special Material .....	X	.....	.....	.....	.....	
44 Quiet Design .....	X	.....	.....	.....	.....	
<b>H. Other Motors</b>						
45 Washdown .....	X	.....	.....	.....	.....	Test with seals removed.
46 Close-coupled pump .....	.....	.....	X	.....	.....	JM and JP frame assignments.
47 Integral Gear Motor .....	.....	.....	.....	.....	X	Typically special mechanical design, and not a T-frame; motor and gearbox inseparable and operate as one system.
48 Vertical—Normal Thrust .....	.....	.....	.....	.....	X	EPCA covers foot-mounting.
49 Saw Arbor .....	.....	.....	.....	X	.....	Special electrical/mechanical design.
50 TENV .....	.....	.....	X	.....	.....	Totally-enclosed non-ventilated not equipped for cooling (IP54, IC410).
51 TEAO .....	.....	.....	X	.....	.....	Totally-enclosed air-over requires airflow from external source (IP54, IC417).
52 Fire Pump .....	X	.....	.....	.....	.....	When safety certification is not required. See also EPCA § 342(b)(1).
53 Non-continuous .....	.....	.....	.....	.....	X	EPCA covers continuous ratings.
54 Integral Brake Motor .....	.....	.....	.....	X	.....	Integral brake design factory built within the motor.

<sup>1</sup> Category I—General purpose electric motors as defined in EPCA.

Category II—Definite purpose electric motors that *can be used in most general purpose applications* as defined in EPCA.

Category III—Definite purpose motors as defined in EPCA.

Category IV—Special purpose motors as defined in EPCA.

Category V—Outside the scope of “electric motor” as defined in EPCA.

**Appendix B to Subpart B of Part 431—Uniform Test Method for Measuring Nominal Full Load Efficiency of Electric Motors**

- 1. *Definitions.*  
Definitions contained in §§ 431.2 and 431.12 are applicable to this appendix.
- 2. *Test Procedures.*  
Efficiency and losses shall be determined in accordance with NEMA MG1–1993 with Revisions 1 through 4, paragraph 12.58.1, “Determination of Motor Efficiency and Losses,” (Incorporated by reference, see § 431.15) and either:
  - (1) CSA International (or Canadian Standards Association) Standard C390–93 Test Method (1), (Incorporated by reference, see § 431.15), *Input-Output Method With Indirect Measurement of the Stray-Load Loss and Direct Measurement of the Stator Winding (I<sup>2</sup>R), Rotor Winding (I<sup>2</sup>R), Core and Windage-Friction Losses*, or
  - (2) IEEE Standard 112–1996 Test Method B, *Input-Output With Loss Segregation*, (Incorporated by reference, see § 431.15) with IEEE correction notice of January 20, 1998, except as follows:
    - (i) Page 8, subclause 5.1.1., *Specified temperature*, the introductory clause does not apply. Instead the following applies:  
The specified temperature used in making resistance corrections should be determined by one of the following (Test Method B only allows the use of preference (a) or (b).), which are listed in order of preference.
    - (ii) Page 17, subclause 6.4.1.3., *No-load test*, the text does not apply. Instead, the following applies:  
See 5.3 including 5.3.3, the separation of core loss from friction and windage loss. Prior to making this test, the machine shall be operated at no-load until the input has stabilized.
    - (iii) Page 40, subclause 8.6.3, *Termination of test*, the third sentence does not apply. Instead, the following applies:  
For continuous rated machines, the temperature test shall continue until there is 1 °C or less change in temperature rise over a 30-minute time period.
    - (iv) Page 47, at the top of 10.2 form B, immediately after the line that reads “Rated Load Heat Run Stator Winding Resistance Between Terminals,” the following additional line applies:  
Temperature for Resistance Correction (t<sub>s</sub>) = –°C (See 6.4.3.2).
    - (v) Page 47, at the bottom of 10.2 Form B, after the first sentence to footnote t<sub>r</sub>, the following additional sentence applies:  
The values for t<sub>s</sub> and t<sub>r</sub> shall be based on the same method of temperature measurement, selected from the four methods in subclause 8.3.
    - (vi) Page 47, at the bottom of 10.2 Form B, below the footnotes and above “Summary of Characteristics,” the following additional note applies:  
**Note:** The temperature for resistance correction (t<sub>s</sub>) is equal to [(4) – (5) + 25 °C].
    - (vii) Page 48, item (22), the torque constants “k = 9.549 for torque, in N·m” and

“k = 7.043 for torque, in 1bf·ft” do not apply. Instead, the following applies:  
 “k<sub>2</sub> = 9.549 for torque, in N·m” and “k<sub>2</sub> = 7.043 for torque, in 1bf·ft.”  
 (viii) Page 48, at the end of item (27), the following additional reference applies:  
 “See 6.4.3.2.”  
 (ix) Page 48, item (29). “See 4.3.2.2, Eq. 4,” does not apply. Instead the following applies:  
 Is equal to (10)·[k<sub>1</sub> + (4) – (5) + 25 °C] / [k<sub>1</sub> + (7)], see 6.4.3.3.”

3. *Amendments to test procedures.*  
 Any revision to IEEE Standard 112–1996 Test Method B with correction notice of January 20, 1998, to NEMA Standards Publication MG1–1993 with Revisions 1 through 4, or to CSA Standard C390–93 Test Method (1), subsequent to promulgation of this appendix B, shall not be effective for purposes of test procedures required under Part 431 and this appendix B, unless and until Part 431 and this appendix B are amended.

**Appendix C to Subpart B of Part 431—Compliance Certification**

Certification of Compliance With Energy Efficiency Standards for Electric Motors (Office of Management and Budget Control Number: 1910–5104. Expires 09/30/2007)

- 1. Name and Address of Company (the “company”):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  - 2. Name(s) to be Marked on Electric Motors to Which this Compliance Certification Applies:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  - 3. If manufacturer or private labeler wishes to receive a unique Compliance Certification number for use with any particular brand name, trademark, or other label name, fill out the following two items:
    - A. List each brand name, trademark, or other label name for which the company requests a Compliance Certification number:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
    - B. List other name(s), if any, under which the company sells electric motors (if not listed in item 2 above):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Submit by Certified Mail to:* U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies (EE–2J), Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585–0121.
- This Compliance Certification reports on and certifies compliance with requirements contained in 10 CFR Part 431 (Energy Conservation Program for Certain

Commercial and Industrial Equipment) and Part C of the Energy Policy and Conservation Act (Pub. L. 94–163), and amendments thereto. It is signed by a responsible official of the above named company. Attached and incorporated as part of this Compliance Certification is a Listing of Electric Motor Efficiencies. For each rating of electric motor\* for which the Listing specifies the nominal full load efficiency of a basic model, the company distributes no less efficient basic model with that rating and all basic models with that rating comply with the applicable energy efficiency standard.

\*For this purpose, the term “rating” means one of the 113 combinations of an electric motor’s horsepower (or standard kilowatt equivalent), number of poles, and open or enclosed construction, with respect to which § 431.25 of 10 CFR Part 431 prescribes nominal full load efficiency standards.

Person to Contact for Further Information:

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone Number: \_\_\_\_\_  
 Facsimile Number: \_\_\_\_\_

If any part of this Compliance Certification, including the Attachment, was prepared by a third party organization under the provisions of 10 CFR 431.36, the company official authorizing third party representations:

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone Number: \_\_\_\_\_  
 Facsimile Number: \_\_\_\_\_

Third Party Organization Officially Acting as Representative:

Third Party Organization: \_\_\_\_\_  
 Responsible Person at that Organization: \_\_\_\_\_  
 Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_  
 Facsimile Number: \_\_\_\_\_

All required determinations on which this Compliance Certification is based were made in conformance with the applicable requirements in 10 CFR Part 431, subpart B. All information reported in this Compliance Certification is true, accurate, and complete. The company is aware of the penalties associated with violations of the Act and the regulations thereunder, and is also aware of the provisions contained in 18 U.S.C. 1001, which prohibits knowingly making false statements to the Federal Government.

Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Title: \_\_\_\_\_

Firm or Organization: \_\_\_\_\_ **Attachment to Certification of Compliance With Energy Efficiency Standards for Electric Motors: Listing of Electric Motor Efficiencies** Name of Company: \_\_\_\_\_  
 Date: \_\_\_\_\_

Rating of electric motor			Least efficient basic model—(model numbers(s))	Nominal full load efficiency
Motor horsepower/kilowatts	Number of poles	Open or enclosed motor		
1 or .75 .....	6 .....	Open .....	_____	_____
1 or .75 .....	4 .....	Open .....	_____	_____
1 or .75 .....	6 .....	Enclosed .....	_____	_____
1 or .75 .....	4 .....	Enclosed .....	_____	_____
1 or .75 .....	2 .....	Enclosed .....	_____	_____
1.5 or 1.1 .....	6 .....	Open .....	_____	_____
1.5 or 1.1 .....	4 .....	Open .....	_____	_____
1.5 or 1.1 .....	2 .....	Open .....	_____	_____
1.5 or 1.1 .....	6 .....	Enclosed .....	_____	_____
1.5 or 1.1 .....	4 .....	Enclosed .....	_____	_____
1.5 or 1.1 .....	2 .....	Enclosed .....	_____	_____
.....	.....	.....	_____	_____
Etc. ....	Etc. ....	Etc. ....	_____	_____

**Note:** Place an asterisk beside each reported nominal full load efficiency that is determined by actual testing rather than by application of an alternative efficiency determination method. Also list below additional basic models that were subjected to actual testing.

*Basic Model* means all units of a given type of electric motor (or class thereof) manufactured by a single manufacturer, and which (i) have the same rating, (ii) have electrical design characteristics that are essentially identical, and (iii) do not have any differing physical or functional characteristics that affect energy consumption or efficiency.

*Rating* means one of the 113 combinations of an electric motor's horsepower (or standard kilowatt equivalent), number of poles, and open or enclosed construction, with respect to which § 431.25 of 10 CFR Part 431 prescribes nominal full load efficiency standards.

**MODELS ACTUALLY TESTED AND NOT PREVIOUSLY IDENTIFIED**

Rating of electric motor			Basic model(s) (model number(s))	Nominal full load efficiency
Motor power output (e.g. 1 hp or .75 kW)	Number of poles	Open or enclosed motor		
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Etc. ....	Etc. ....	Etc. ....	Etc. ....	Etc. ....

**Subpart C—[Removed and Reserved]**

- 5. Subpart C is removed and reserved.
- 6. Subpart D is revised to read as follows:

**Subpart D—Commercial Warm Air Furnaces**

Sec.  
 431.71 Purpose and scope.  
 431.72 Definitions concerning commercial warm air furnaces.

**Test Procedures**

431.75 Materials incorporated by reference.  
 431.76 Uniform test method for the measurement of energy efficiency of commercial warm air furnaces.

**Energy Conservation Standards**

431.77 Energy conservation standards and their effective dates.

**Subpart D—Commercial Warm Air Furnaces**

**§ 431.71 Purpose and scope.**

This subpart contains energy conservation requirements for

commercial warm air furnaces, pursuant to Part C of Title III of the Energy Policy and Conservation Act, as amended, 42 U.S.C. 6311–6316.

**§ 431.72 Definitions concerning commercial warm air furnaces.**

The following definitions apply for purposes of this subpart D, and of subparts J through M of this part. Any words or terms not defined in this Section or elsewhere in this Part shall be defined as provided in Section 340 of the Act.

*Commercial warm air furnace* means a warm air furnace that is industrial equipment, and that has a capacity (rated maximum input) of 225,000 Btu per hour or more.

*Thermal efficiency* for a commercial warm air furnace equals 100 percent minus percent flue loss determined using test procedures prescribed under § 431.76.

*Warm air furnace* means a self-contained oil-fired or gas-fired furnace

designed to supply heated air through ducts to spaces that require it and includes combination warm air furnace/electric air conditioning units but does not include unit heaters and duct furnaces.

**Test Procedures**

**§ 431.75 Materials incorporated by reference.**

(a) We incorporate by reference the following test procedures into subpart D of Part 431. The Director of the Federal Register has approved the material listed in paragraph (b) of this section for incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR 51. Any subsequent amendment to this material by the standard-setting organization will not affect the DOE test procedures unless and until DOE amends its test procedures. We incorporate the material as it exists on the date of the approval and a notice of

any change in the material will be published in the **Federal Register**.

(b) *List of test procedures incorporated by reference.* (1) American National Standards Institute (ANSI) Standard Z21.47–1998, “Gas-Fired Central Furnaces,” IBR approved for § 431.76.

(2) Underwriters Laboratories (UL) Standard 727–1994, “Standard for Safety Oil-Fired Central Furnaces,” IBR approved for § 431.76.

(3) Sections 8.2.2, 11.1.4, 11.1.5, and 11.1.6.2 of the Hydronics Institute (HI) Division of GAMA Boiler Testing Standard BTS–2000, “Method to Determine Efficiency of Commercial Space Heating Boilers,” published January 2001 (HI BTS–2000), IBR approved for § 431.76.

(4) Sections 7.2.2.4, 7.8, 9.2, and 11.3.7 of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) Standard 103–1993, “Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers,” IBR approved for § 431.76.

(c) *Availability of references.* (1) *Inspection of test procedures.* The test procedures incorporated by reference are available for inspection at:

(i) National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741–6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(ii) U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Hearings and Dockets, “Test Procedures and Efficiency Standards for Commercial Warm Air Furnaces; Efficiency Certification, Compliance, and Enforcement Requirements for Commercial Heating, Air Conditioning and Water Heating Equipment;” Docket No. EE–RM/TP–99–450, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585.

(2) *Obtaining copies of Standards.* Anyone can purchase a copy of standards incorporated by reference from the following sources:

(i) The ASHRAE Standard from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, NE., Atlanta, GA 30329, or <http://www.ashrae.org/book/bookshop.htm>.

(ii) The ANSI Standard from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, or <http://global.ih.com/>, or <http://webstore.ansi.org/ansidocstore/>.

(iii) The UL Standard from Global Engineering Documents, 15 Inverness

Way East, Englewood, CO 80112, or <http://global.ih.com/>.

(iv) The HI Standard from the Hydronics Institute Division of GAMA, P.O. Box 218, Berkeley Heights, NJ 07922, or <http://www.gamanet.org/publist/hydroordr.htm>.

**§ 431.76 Uniform test method for the measurement of energy efficiency of commercial warm air furnaces.**

(a) This Section covers the test procedures you must follow if, pursuant to EPCA, you are measuring the steady state thermal efficiency of a gas-fired or oil-fired commercial warm air furnace with a rated maximum input of 225,000 Btu per hour or more. Where this Section prescribes use of ANSI standard Z21.47–1998 or UL standard 727–1994, (Incorporated by reference, see § 431.75), perform only the procedures pertinent to the measurement of the steady-state efficiency.

(b) *Test setup.* (1) *Test setup for gas-fired commercial warm air furnaces.* The test setup, including flue requirement, instrumentation, test conditions, and measurements for determining thermal efficiency is as specified in sections 1.1 (Scope), 2.1 (General), 2.2 (Basic Test Arrangements), 2.3 (Test Ducts and Plenums), 2.4 (Test Gases), 2.5 (Test Pressures and Burner Adjustments), 2.6 (Static Pressure and Air Flow Adjustments), 2.38 (Thermal Efficiency), and 4.2.1 (Basic Test Arrangements for Direct Vent Control Furnaces) of the ANSI Standard Z21.47–1998. The thermal efficiency test must be conducted only at the normal inlet test pressure, as specified in Section 2.5.1 of ANSI Standard Z21.47–1998, (Incorporated by reference, see § 431.75), and at the maximum hourly Btu input rating specified by the manufacturer for the product being tested.

(2) *Test setup for oil-fired commercial warm air furnaces.* The test setup, including flue requirement, instrumentation, test condition, and measurement for measuring thermal efficiency is as specified in sections 1 (Scope), 2 (Units of Measurement), 3 (Glossary), 37 (General), 38 and 39 (Test Installation), 40 (Instrumentation, except 40.4 and 40.6.2 through 40.6.7, which are not required for the thermal efficiency test), 41 (Initial Test Conditions), 42 (Combustion Test—Burner and Furnace), 43.2 (Operation Tests), 44 (Limit Control Cutout Test), 45 (Continuity of Operation Test), and 46 (Air Flow, Downflow or Horizontal Furnace Test), of the UL Standard 727–1994. You must conduct a fuel oil analysis for heating value, hydrogen

content, carbon content, pounds per gallon, and American Petroleum Institute (API) gravity as specified in Section 8.2.2 of the HI BTS–2000 (Incorporated by reference, see § 431.75). The steady-state combustion conditions, specified in Section 42.1 of UL Standard 727–1994, (Incorporated by reference, see § 431.75), are attained when variations of not more than 5°F in the measured flue gas temperature occur for three consecutive readings taken 15 minutes apart.

(c) *Additional test measurements.* (1) *Measurement of flue CO<sub>2</sub>* (carbon dioxide) for oil-fired commercial warm air furnaces. In addition to the flue temperature measurement specified in Section 40.6.8 of UL Standard 727–1994, (Incorporated by reference, see § 431.75) you must locate one or two sampling tubes within six inches downstream from the flue temperature probe (as indicated on Figure 40.3 of UL Standard 727–1994) (Incorporated by reference, see § 431.75). If you use an open end tube, it must project into the flue one-third of the chimney connector diameter. If you use other methods of sampling CO<sub>2</sub>, you must place the sampling tube so as to obtain an average sample. There must be no air leak between the temperature probe and the sampling tube location. You must collect the flue gas sample at the same time the flue gas temperature is recorded. The CO<sub>2</sub> concentration of the flue gas must be as specified by the manufacturer for the product being tested, with a tolerance of ±0.1 percent. You must determine the flue CO<sub>2</sub> using an instrument with a reading error no greater than ±0.1 percent.

(2) *Procedure for the measurement of condensate for a gas-fired condensing commercial warm air furnace.* The test procedure for the measurement of the condensate from the flue gas under steady state operation must be conducted as specified in sections 7.2.2.4, 7.8 and 9.2 of the ASHRAE Standard 103–1993 (Incorporated by reference, see § 431.75) under the maximum rated input conditions. You must conduct this condensate measurement for an additional 30 minutes of steady state operation after completion of the steady state thermal efficiency test specified in paragraph (b) of this section.

(d) *Calculations of thermal efficiency.* (1) *Gas-fired commercial warm air furnaces.* You must use the calculation procedure specified in Section 2.38, Thermal Efficiency, of ANSI Standard Z21.47–1998 (Incorporated by reference, see § 431.75).

(2) *Oil-fired commercial warm air furnaces.* You must calculate the

percent flue loss (in percent of heat input rate) by following the procedure specified in sections 11.1.4, 11.1.5, and 11.1.6.2 of the HI BTS–2000 (Incorporated by reference, see § 431.75). The thermal efficiency must be calculated as:

$$\text{Thermal Efficiency (percent)} = 100 \text{ percent} - \text{flue loss (in percent)}.$$

(e) *Procedure for the calculation of the additional heat gain and heat loss, and adjustment to the thermal efficiency, for a condensing commercial warm air furnace.*

(1) You must calculate the latent heat gain from the condensation of the water vapor in the flue gas, and calculate heat loss due to the flue condensate down the drain, as specified in sections 11.3.7.1 and 11.3.7.2 of ASHRAE Standard 103–1993, (Incorporated by reference, see § 431.75), with the exception that in the equation for the heat loss due to hot condensate flowing down the drain in Section 11.3.7.2, the assumed indoor temperature of 70° F and the temperature term  $T_{OA}$  must be replaced by the measured room temperature as specified in Section 2.2.8 of ANSI Standard Z21.47–1998 (Incorporated by reference, see § 431.75).

(2) Adjustment to the Thermal Efficiency for Condensing Furnace. You must adjust the thermal efficiency as calculated in paragraph (d)(1) of this section by adding the latent gain, expressed in percent, from the condensation of the water vapor in the flue gas, and subtracting the heat loss (due to the flue condensate down the drain), also expressed in percent, both as calculated in paragraph (e)(1) of this section, to obtain the thermal efficiency of a condensing furnace.

### Energy Conservation Standards

#### § 431.77 Energy conservation standards and their effective dates.

Each commercial warm air furnace manufactured on or after January 1, 1994, must meet the following energy efficiency standard levels:

(a) For a gas-fired commercial warm air furnace with capacity of 225,000 Btu per hour or more, the thermal efficiency at the maximum rated capacity (rated maximum input) must be not less than 80 percent.

(b) For an oil-fired commercial warm air furnace with capacity of 225,000 Btu per hour or more, the thermal efficiency at the maximum rated capacity (rated maximum input) must be not less than 81 percent.

■ 7. Subpart E heading is revised to read as follows:

#### Subpart E—Commercial Packaged Boilers [Reserved]

##### §§ 431.81 through 431.83 [Removed]

- 8. Sections 431.81 through 431.83 are removed.
- 9. Subpart G heading is revised to read as follows:

#### Subpart G—Commercial Water Heaters, Hot Water Supply Boilers and Unfired Hot Water Storage Tanks [Reserved]

##### §§ 431.121 through 431.132 and Appendices A and B to Subpart G [Removed]

- 10. Sections 431.121 through 431.132 and appendices A and B to subpart G are removed.

#### Subparts H and I [Added and Reserved]

- 11. Subparts H and I are added and reserved.
- 12. Subparts J through M are added to read as follows:

#### Subpart J—Provisions for Commercial HVAC & Water Heating Products

- Sec.  
431.171 Purpose and scope. [Reserved]  
431.172 Definitions.

#### Subpart K—Enforcement

- Sec.  
431.190 Purpose and scope.  
431.191 Prohibited acts.  
431.192 Enforcement process for electric motors.  
431.193 [Reserved]  
431.194 Cessation of distribution of a basic model of an electric motor.  
431.195 Remedies.  
431.196 Hearings and appeals.  
Appendix A to Subpart K of Part 431—  
Sampling Plan for Enforcement Testing of Electric Motors

#### Subpart L—General Provisions

- Sec.  
431.201 Petitions for waiver, and applications for interim waiver, of test procedure.  
431.202 Preemption of State regulations for commercial HVAC & WH products.  
431.203 Maintenance of records.  
431.204 Imported equipment.  
431.205 Exported equipment.  
431.206 Subpoena.  
431.207 Confidentiality.

#### Subpart M—Petitions To Exempt State Regulation From Preemption; Petitions To Withdraw Exemption of State Regulation

- Sec.  
431.211 Purpose and scope.  
431.212 Prescriptions of a rule.  
431.213 Filing requirements.  
431.214 Notice of petition.  
431.215 Consolidation.  
431.216 Hearing.  
431.217 Disposition of petitions.  
431.218 Effective dates of final rules.  
431.219 Request for reconsideration.  
431.220 Finality of decision.

#### Subpart J—Provisions for Commercial HVAC & Water Heating Products

##### § 431.171 Purpose and scope. [Reserved]

##### § 431.172 Definitions.

The following definitions apply for purposes of subparts D through G and J through M of this part. Other terms in these subparts shall be as defined elsewhere in this Part and, if not defined in this part, shall have the meaning set forth in Section 340 of the Act.

*Basic model* means, with respect to a commercial HVAC & WH product, all units of such product, manufactured by one manufacturer, which have the same primary energy source and which do not have any differing electrical, physical, or functional characteristics that affect energy consumption.

*Commercial HVAC & WH product* means any small or large commercial package air-conditioning and heating equipment, packaged terminal air conditioner, packaged terminal heat pump, commercial packaged boiler, hot water supply boiler, commercial warm air furnace, instantaneous water heater, storage water heater, or unfired hot water storage tank.

*Flue loss* means the sum of the sensible heat and latent heat above room temperature of the flue gases leaving the appliance.

*Industrial equipment* means an article of equipment, regardless of whether it is in fact distributed in commerce for industrial or commercial use, of a type which:

- (1) In operation consumes, or is designed to consume energy;
- (2) To any significant extent, is distributed in commerce for industrial or commercial use; and
- (3) Is not a “covered product” as defined in Section 321(2) of EPCA, 42 U.S.C. 6291(2), other than a component of a covered product with respect to which there is in effect a determination under Section 341(c) of EPCA, 42 U.S.C. 6312(c).

*Private labeler* means, with respect to a commercial HVAC & WH product, an owner of a brand or trade mark on the label of a product which bears a private label. A commercial HVAC & WH product bears a private label if:

- (1) Such product (or its container) is labeled with the brand or trademark of a person other than a manufacturer of such product;
- (2) The person with whose brand or trademark such product (or container) is labeled has authorized or caused such product to be so labeled; and
- (3) The brand or trademark of a manufacturer of such product does not appear on such label.

**Subpart K—Enforcement****§ 431.190 Purpose and scope.**

This subpart describes violations of EPCA's energy conservation requirements, specific procedures we will follow in pursuing alleged non-compliance of an electric motor with an applicable energy conservation standard or labeling requirement, and general procedures for enforcement action, largely drawn directly from EPCA, that apply to both electric motors and commercial HVAC & WH products.

**§ 431.191 Prohibited acts.**

(a) Each of the following is a prohibited act under sections 332 and 345 of the Act:

(1) Distribution in commerce by a manufacturer or private labeler of any "new covered equipment" which is not labeled in accordance with an applicable labeling rule prescribed in accordance with Section 344 of the Act, and in this part;

(2) Removal from any "new covered equipment" or rendering illegible, by a manufacturer, distributor, retailer, or private labeler, of any label required under this Part to be provided with such covered equipment;

(3) Failure to permit access to, or copying of records required to be supplied under the Act and this part, or failure to make reports or provide other information required to be supplied under the Act and this part;

(4) Advertisement of an electric motor or motors, by a manufacturer, distributor, retailer, or private labeler, in a catalog from which the equipment may be purchased, without including in the catalog all information as required by § 431.31(b)(1), provided, however, that this shall not apply to an advertisement of an electric motor in a catalog if distribution of the catalog began before the effective date of the labeling rule applicable to that motor;

(5) Failure of a manufacturer to supply at his expense a reasonable number of units of covered equipment to a test laboratory designated by the Secretary;

(6) Failure of a manufacturer to permit a representative designated by the Secretary to observe any testing required by the Act and this part, and to inspect the results of such testing; and

(7) Distribution in commerce by a manufacturer or private labeler of any new covered equipment which is not in compliance with an applicable energy efficiency standard prescribed under the Act and this part.

(b) In accordance with sections 333 and 345 of the Act, any person who knowingly violates any provision of

paragraph (a) of this section may be subject to assessment of a civil penalty of no more than \$110 for each violation. Each violation of paragraphs (a)(1), (2), and (7) of this section shall constitute a separate violation with respect to each unit of any covered equipment, and each day of noncompliance with paragraphs (a)(3) through (6) of this section shall constitute a separate violation.

(c) For purposes of this section:

(1) The term "new covered equipment" means covered equipment the title of which has not passed to a purchaser who buys such product for purposes other than:

(i) Reselling it; or

(ii) Leasing it for a period in excess of one year; and

(2) The term "knowingly" means:

(i) Having actual knowledge; or

(ii) Presumed to have knowledge deemed to be possessed by a reasonable person who acts in the circumstances, including knowledge obtainable upon the exercise of due care.

**§ 431.192 Enforcement process for electric motors.**

(a) *Test notice.* Upon receiving information in writing, concerning the energy performance of a particular electric motor sold by a particular manufacturer or private labeler, which indicates that the electric motor may not be in compliance with the applicable energy efficiency standard, or upon undertaking to ascertain the accuracy of the efficiency rating on the nameplate or in marketing materials for an electric motor, disclosed pursuant to subpart B of this part, the Secretary may conduct testing of that electric motor under this subpart by means of a test notice addressed to the manufacturer in accordance with the following requirements:

(1) The test notice procedure will only be followed after the Secretary or his/her designated representative has examined the underlying test data (or, where appropriate, data as to use of an alternative efficiency determination method) provided by the manufacturer and after the manufacturer has been offered the opportunity to meet with the Department to verify, as applicable, compliance with the applicable efficiency standard, or the accuracy of labeling information, or both. In addition, where compliance of a basic model was certified based on an AEDM, the Department shall have the discretion to pursue the provisions of § 431.17(a)(4)(iii) prior to invoking the test notice procedure. A representative designated by the Secretary shall be permitted to observe any re-verification

procedures undertaken pursuant to this subpart, and to inspect the results of such reverification.

(2) The test notice will be signed by the Secretary or his/her designee. The test notice will be mailed or delivered by the Department to the plant manager or other responsible official, as designated by the manufacturer.

(3) The test notice will specify the model or basic model to be selected for testing, the method of selecting the test sample, the date and time at which testing shall be initiated, the date by which testing is scheduled to be completed and the facility at which testing will be conducted. The test notice may also provide for situations in which the specified basic model is unavailable for testing, and may include alternative basic models.

(4) The Secretary may require in the test notice that the manufacturer of an electric motor shall ship at his expense a reasonable number of units of a basic model specified in such test notice to a testing laboratory designated by the Secretary. The number of units of a basic model specified in a test notice shall not exceed 20.

(5) Within five working days of the time the units are selected, the manufacturer shall ship the specified test units of a basic model to the testing laboratory.

(b) *Testing laboratory.* Whenever the Department conducts enforcement testing at a designated laboratory in accordance with a test notice under this section, the resulting test data shall constitute official test data for that basic model. Such test data will be used by the Department to make a determination of compliance or noncompliance if a sufficient number of tests have been conducted to satisfy the requirements of appendix A of this subpart.

(c) *Sampling.* The determination that a manufacturer's basic model complies with its labeled efficiency, or the applicable energy efficiency standard, shall be based on the testing conducted in accordance with the statistical sampling procedures set forth in appendix A of this subpart and the test procedures set forth in appendix B to subpart B of this part.

(d) *Test unit selection.* A Department inspector shall select a batch, a batch sample, and test units from the batch sample in accordance with the provisions of this paragraph and the conditions specified in the test notice.

(1) The batch may be subdivided by the Department utilizing criteria specified in the test notice.

(2) A batch sample of up to 20 units will then be randomly selected from one or more subdivided groups within the

batch. The manufacturer shall keep on hand all units in the batch sample until such time as the basic model is determined to be in compliance or non-compliance.

(3) Individual test units comprising the test sample shall be randomly selected from the batch sample.

(4) All random selection shall be achieved by sequentially numbering all of the units in a batch sample and then using a table of random numbers to select the units to be tested.

(e) *Test unit preparation.* (1) Prior to and during the testing, a test unit selected in accordance with paragraph (d) of this section shall not be prepared, modified, or adjusted in any manner unless such preparation, modification, or adjustment is allowed by the applicable Department of Energy test procedure. One test shall be conducted for each test unit in accordance with the applicable test procedures prescribed in appendix B to subpart B of this part.

(2) No quality control, testing, or assembly procedures shall be performed on a test unit, or any parts and sub-assemblies thereof, that is not performed during the production and assembly of all other units included in the basic model.

(3) A test unit shall be considered defective if such unit is inoperative or is found to be in noncompliance due to failure of the unit to operate according to the manufacturer's design and operating instructions. Defective units, including those damaged due to shipping or handling, shall be reported immediately to the Department. The Department shall authorize testing of an additional unit on a case-by-case basis.

(f) *Testing at manufacturer's option.* (1) If a manufacturer's basic model is determined to be in noncompliance with the applicable energy performance standard at the conclusion of Department testing in accordance with the sampling plan specified in appendix A of this subpart, the manufacturer may request that the Department conduct additional testing of the basic model according to procedures set forth in appendix A of this subpart.

(2) All units tested under this paragraph shall be selected and tested in accordance with the provisions given in paragraphs (a) through (e) of this section.

(3) The manufacturer shall bear the cost of all testing conducted under this paragraph.

(4) The manufacturer shall cease distribution of the basic model tested under the provisions of this paragraph from the time the manufacturer elects to exercise the option provided in this paragraph until the basic model is

determined to be in compliance. The Department may seek civil penalties for all units distributed during such period.

(5) If the additional testing results in a determination of compliance, a notice of allowance to resume distribution shall be issued by the Department.

#### **§ 431.193 [Reserved]**

#### **§ 431.194 Cessation of distribution of a basic model of an electric motor.**

(a) In the event that a model of an electric motor is determined non-compliant by the Department in accordance with § 431.192 or if a manufacturer or private labeler determines a model of an electric motor to be in noncompliance, then the manufacturer or private labeler shall:

(1) Immediately cease distribution in commerce of the basic model.

(2) Give immediate written notification of the determination of noncompliance, to all persons to whom the manufacturer has distributed units of the basic model manufactured since the date of the last determination of compliance.

(3) Pursuant to a request made by the Secretary, provide the Department within 30 days of the request, records, reports, and other documentation pertaining to the acquisition, ordering, storage, shipment, or sale of a basic model determined to be in noncompliance.

(4) The manufacturer may modify the non-compliant basic model in such manner as to make it comply with the applicable performance standard. Such modified basic model shall then be treated as a new basic model and must be certified in accordance with the provisions of this subpart; except that in addition to satisfying all requirements of this subpart, the manufacturer shall also maintain records that demonstrate that modifications have been made to all units of the new basic model prior to distribution in commerce.

(b) If a basic model is not properly certified in accordance with the requirements of this subpart, the Secretary may seek, among other remedies, injunctive action to prohibit distribution in commerce of such basic model.

#### **§ 431.195 Remedies.**

If the Secretary determines that a basic model of any covered equipment does not comply with an applicable energy conservation standard:

(a) The Secretary will notify the manufacturer, private labeler, or any other person as required, of this finding and of the Secretary's intent to seek a judicial order restraining further distribution in commerce of units of

such a basic model unless the manufacturer, private labeler or other person as required, delivers, within 15 calendar days, a satisfactory statement to the Secretary, of the steps the manufacturer, private labeler or other person will take to insure that the noncompliant basic model will no longer be distributed in commerce. The Secretary will monitor the implementation of such statement.

(b) If the manufacturer, private labeler or any other person as required, fails to stop distribution of the noncompliant basic model, the Secretary may seek to restrain such violation in accordance with sections 334 and 345 of the Act.

(c) The Secretary will determine whether the facts of the case warrant the assessment of civil penalties for knowing violations in accordance with sections 333 and 345 of the Act.

#### **§ 431.196 Hearings and appeals.**

(a) Under sections 333(d) and 345 of the Act, before issuing an order assessing a civil penalty against any person, the Secretary must provide to such a person a notice of the proposed penalty. Such notice must inform the person that such person can choose (in writing within 30 days after receipt of the notice) to have the procedures of paragraph (c) of this section (in lieu of those in paragraph (b) of this section) apply with respect to such assessment.

(b)(1) Unless a person elects, within 30 calendar days after receipt of a notice under paragraph (a) of this section, to have paragraph (c) of this section apply with respect to the civil penalty under paragraph (a), the Secretary will assess the penalty, by order, after providing an opportunity for an agency hearing under 5 U.S.C. 554, before an administrative law judge appointed under 5 U.S.C. 3105, and making a determination of violation on the record. Such assessment order will include the administrative law judge's findings and the basis for such assessment.

(2) Any person against whom the Secretary assesses a penalty under this paragraph may, within 60 calendar days after the date of the order assessing such penalty, initiate action in the United States Court of Appeals for the appropriate judicial circuit for judicial review of such order in accordance with 5 U.S.C. chapter 7. The court will have jurisdiction to enter a judgment affirming, modifying, or setting aside in whole or in part, the order of the Secretary, or the court may remand the proceeding to the Secretary for such further action as the court may direct.

(c)(1) In the case of any civil penalty with respect to which the procedures of this paragraph have been elected, the

Secretary will promptly assess such penalty, by order, after the date of the receipt of the notice under paragraph (a) of this section of the proposed penalty.

(2) If the person has not paid the civil penalty within 60 calendar days after the assessment has been made under paragraph (c)(1) of this section, the Secretary will institute an action in the appropriate District Court of the United States for an order affirming the assessment of the civil penalty. The court will have authority to review de novo the law and the facts involved and jurisdiction to enter a judgment enforcing, modifying, and enforcing as so modified, or setting aside in whole or in part, such assessment.

(3) Any election to have this paragraph apply can only be revoked with the consent of the Secretary.

(d) If any person fails to pay an assessment of a civil penalty after it has become a final and unappealable order under paragraph (b) of this section, or after the appropriate District Court has entered final judgment in favor of the Secretary under paragraph (c) of this section, the Secretary will institute an action to recover the amount of such penalty in any appropriate District Court of the United States. In such action, the validity and appropriateness of such final assessment order or judgment will not be subject to review.

(e)(1) In accordance with the provisions of sections 333(d)(5)(A) and 345 of the Act and notwithstanding the provisions of title 28, United States Code, or Section 502(c) of the Department of Energy Organization Act, the General Counsel of the Department of Energy (or any attorney or attorneys within DOE designated by the Secretary) will represent the Secretary, and will supervise, conduct, and argue any civil litigation to which paragraph (c) of this section applies (including any related collection action under paragraph (d) of this section) in a court of the United States or in any other court, except the Supreme Court of the United States. However, the Secretary or the General Counsel will consult with the Attorney General concerning such litigation and the Attorney General will provide, on request, such assistance in the conduct of such litigation as may be appropriate.

(2) In accordance with the provisions of sections 333(d)(5)(B) and 345 of the Act, and subject to the provisions of Section 502(c) of the Department of Energy Organization Act, the Secretary will be represented by the Attorney General, or the Solicitor General, as appropriate, in actions under this section, except to the extent provided in paragraph (e)(1) of this section.

(3) In accordance with the provisions of Section 333(d)(5)(c) and 345 of the Act, Section 402(d) of the Department of Energy Organization Act will not apply with respect to the function of the Secretary under this section.

**Appendix A to Subpart K of Part 431— Sampling Plan for Enforcement Testing of Electric Motors**

Step 1. The first sample size ( $n_1$ ) must be five or more units.

Step 2. Compute the mean ( $\bar{X}_1$ ) of the measured energy performance of the  $n_1$  units in the first sample as follows:

$$\bar{X}_1 = \frac{1}{n_1} \sum_{i=1}^{n_1} X_i \quad (1)$$

where  $X_i$  is the measured full-load efficiency of unit  $i$ .

Step 3. Compute the sample standard deviation ( $S_1$ ) of the measured full-load efficiency of the  $n_1$  units in the first sample as follows:

$$S_1 = \sqrt{\frac{\sum_{i=1}^{n_1} (X_i - \bar{X}_1)^2}{n_1 - 1}} \quad (2)$$

Step 4. Compute the standard error ( $SE(\bar{X}_1)$ ) of the mean full-load efficiency of the first sample as follows:

$$SE(\bar{X}_1) = \frac{S_1}{\sqrt{n_1}} \quad (3)$$

Step 5. Compute the lower control limit ( $LCL_1$ ) for the mean of the first sample using RE as the desired mean as follows:

$$LCL_1 = RE - tSE(\bar{X}_1) \quad (4)$$

where: RE is the applicable EPCA nominal full-load efficiency when the test is to determine compliance with the applicable statutory standard, or is the labeled nominal full-load efficiency when the test is to determine compliance with the labeled efficiency value, and  $t$  is the 2.5th percentile of a  $t$ -distribution for a sample size of  $n_1$ , which yields a 97.5 percent confidence level for a one-tailed  $t$ -test.

Step 6. Compare the mean of the first sample ( $\bar{X}_1$ ) with the lower control limit ( $LCL_1$ ) to determine one of the following:

(i) If the mean of the first sample is below the lower control limit, then the basic model is in non-compliance and testing is at an end.

(ii) If the mean is equal to or greater than the lower control limit, no final determination of compliance or non-compliance can be made; proceed to Step 7.

Step 7. Determine the recommended sample size ( $n$ ) as follows:

$$n = \left\lceil \frac{tS_1(120 - 0.2RE)}{RE(20 - 0.2RE)} \right\rceil^2 \quad (5)$$

where  $S_1$ , RE and  $t$  have the values used in Steps 3 and 5, respectively. The factor

$$\frac{120 - 0.2RE}{RE(20 - 0.2RE)}$$

is based on a 20 percent tolerance in the total power loss at full-load and fixed output power.

Given the value of  $n$ , determine one of the following:

(i) If the value of  $n$  is less than or equal to  $n_1$  and if the mean energy efficiency of the first sample ( $\bar{X}_1$ ) is equal to or greater than the lower control limit ( $LCL_1$ ), the basic model is in compliance and testing is at an end.

(ii) If the value of  $n$  is greater than  $n_1$ , the basic model is in non-compliance. The size of a second sample  $n_2$  is determined to be the smallest integer equal to or greater than the difference  $n - n_1$ . If the value of  $n_2$  so calculated is greater than  $20 - n_1$ , set  $n_2$  equal to  $20 - n_1$ .

Step 8. Compute the combined ( $\bar{X}_2$ ) mean of the measured energy performance of the  $n_1$  and  $n_2$  units of the combined first and second samples as follows:

$$\bar{X}_2 = \frac{1}{n_1 + n_2} \sum_{i=1}^{n_1+n_2} X_i \quad (6)$$

Step 9. Compute the standard error ( $SE(\bar{X}_2)$ ) of the mean full-load efficiency of the  $n_1$  and  $n_2$  units in the combined first and second samples as follows:

$$SE(\bar{X}_2) = \frac{S_1}{\sqrt{n_1 + n_2}} \quad (7)$$

(Note that  $S_1$  is the value obtained above in Step 3.)

Step 10. Set the lower control limit ( $LCL_2$ ) to,

$$LCL_2 = RE - tSE(\bar{X}_2) \quad (8) \sqrt{b^2 - 4ac}$$

where  $t$  has the value obtained in Step 5, and compare the combined sample mean ( $\bar{X}_2$ ) to the lower control limit ( $LCL_2$ ) to find one of the following:

(i) If the mean of the combined sample ( $\bar{X}_2$ ) is less than the lower control limit ( $LCL_2$ ), the basic model is in non-compliance and testing is at an end.

(ii) If the mean of the combined sample ( $\bar{X}_2$ ) is equal to or greater than the lower control limit ( $LCL_2$ ), the basic model is in compliance and testing is at an end.

**Manufacturer-Option Testing**

If a determination of non-compliance is made in Steps 6, 7 or 10, of this appendix A, the manufacturer may request that additional testing be conducted, in accordance with the following procedures.

Step A. The manufacturer requests that an additional number,  $n_3$ , of units be tested, with  $n_3$  chosen such that  $n_1 + n_2 + n_3$  does not exceed 20.

Step B. Compute the mean full-load efficiency, standard error, and lower control limit of the new combined sample in accordance with the procedures prescribed in Steps 8, 9, and 10, of this appendix A.

Step C. Compare the mean performance of the new combined sample to the lower control limit ( $LCL_2$ ) to determine one of the following:

(a) If the new combined sample mean is equal to or greater than the lower control limit, the basic model is in compliance and testing is at an end.

(b) If the new combined sample mean is less than the lower control limit and the value of  $n_1 + n_2 + n_3$  is less than 20, the manufacturer may request that additional units be tested. The total of all units tested may not exceed 20. Steps A, B, and C are then repeated.

(c) Otherwise, the basic model is determined to be in non-compliance.

### Subpart L—General Provisions

#### § 431.201 Petitions for waiver, and applications for interim waiver, of test procedure.

(a) *General criteria.* (1) Any interested person may submit a petition to waive for a particular basic model any requirements of §§ 431.16, 431.76, 431.86, 431.96, and 431.106 of this part, upon the grounds that either the basic model contains one or more design characteristics which prevent testing of the basic model according to the prescribed test procedures, or the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data.

(2) Any person who has submitted a Petition for Waiver as provided in this subpart, may also file an Application for Interim Waiver of the applicable test procedure requirements.

(b) *Submission, content, and publication.* (1) You must submit your Petition for Waiver in triplicate, to the Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Department of Energy. Each Petition for Waiver must:

(i) Identify the particular basic model(s) for which a waiver is requested, the design characteristic(s) constituting the grounds for the petition, and the specific requirements sought to be waived, and must discuss in detail the need for the requested waiver;

(ii) Identify manufacturers of all other basic models marketed in the United States and known to the petitioner to incorporate similar design characteristic(s);

(iii) Include any alternate test procedures known to the petitioner to evaluate the characteristics of the basic model in a manner representative of its energy consumption; and

(iv) Be signed by you or by an authorized representative. In accordance with the provisions set forth in 10 CFR 1004.11, any request for confidential treatment of any information contained in a Petition for Waiver or in supporting documentation must be accompanied by

a copy of the petition, application or supporting documentation from which the information claimed to be confidential has been deleted. DOE will publish in the **Federal Register** the petition and supporting documents from which confidential information, as determined by DOE, has been deleted in accordance with 10 CFR 1004.11 and will solicit comments, data and information with respect to the determination of the petition.

(2) You must submit any Application for Interim Waiver in triplicate, with the required three copies of the Petition for Waiver, to the Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Department of Energy. Each Application for Interim Waiver must reference the Petition for Waiver by identifying the particular basic model(s) for which you seek a waiver and temporary exception. Each Application for Interim Waiver must demonstrate likely success of the Petition for Waiver and address what economic hardship and/or competitive disadvantage is likely to result absent a favorable determination on the Application for Interim Waiver. You or an authorized representative must sign the Application for Interim Waiver.

(c) *Notification to other manufacturers.* (1) After filing a Petition for Waiver with DOE, and after DOE has published the Petition for Waiver in the **Federal Register**, you must, within five working days of such publication, notify in writing all known manufacturers of domestically marketed units of the same product type (as defined in Section 340(1) of the Act) and must include in the notice a statement that DOE has published in the **Federal Register** on a certain date the Petition for Waiver and supporting documents from which confidential information, if any, as determined by DOE, has been deleted in accordance with 10 CFR 1004.11. In complying with the requirements of this paragraph, you must file with DOE a statement certifying the names and addresses of each person to whom you have sent a notice of the Petition for Waiver.

(2) If you apply for Interim Waiver, whether filing jointly with or subsequent to your Petition for Waiver with DOE, you must concurrently notify in writing all known manufacturers of domestically marketed units of the same product type (as defined in Section 340(1) of the Act), and must include in the notice a copy of the Petition for Waiver and a copy of the Application for Interim Waiver. In complying with this section, you must in the written notification include a statement that the Assistant Secretary for Energy Efficiency

and Renewable Energy will receive and consider timely written comments on the Application for Interim Waiver. Upon filing an Application for Interim Waiver, you must in complying with the requirements of this paragraph certify to DOE that a copy of these documents has been sent to all known manufacturers of domestically marked units of the same product type (as listed in Section 340(1) of the Act). Such certification must include the names and addresses of such persons. You must comply with the provisions of paragraph (c)(1) of this Section with respect to the petition for waiver.

(d) *Comments; responses to comments.* (1) Any person submitting written comments to DOE with respect to an Application for Interim Waiver must also send a copy of the comments to the applicant.

(2) Any person submitting written comments to DOE with the respect to a Petition for Waiver must also send a copy of such comments to the petitioner. In accordance with paragraph (b)(1) of this section, a petitioner may submit a rebuttal statement to the Assistant Secretary for Energy Efficiency and Renewable Energy.

(e) *Provisions specific to interim waivers—(1) Disposition of application.* If administratively feasible, DOE will notify the applicant in writing of the disposition of the Application for Interim Waiver within 15 business days of receipt of the application. Notice of DOE's determination on the Application for Interim Waiver will be published in the **Federal Register**.

(2) *Consequences of filing application.* The filing of an Application for Interim Waiver will not constitute grounds for noncompliance with any requirements of this subpart, until an Interim Waiver has been granted.

(3) *Criteria for granting.* The Assistant Secretary for Energy Efficiency and Renewable Energy will grant an Interim Waiver from test procedure requirements if he or she determines that the applicant will experience economic hardship if the Application for Interim Waiver is denied, if it appears likely that the Petition for Waiver will be granted, and/or if the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the Petition for Waiver.

(4) *Duration.* An interim waiver will terminate 180 days after issuance or upon the determination on the Petition for Waiver, whichever occurs first. DOE may extend an interim waiver for up to 180 days or modify its terms based on

relevant information contained in the record and any comments received subsequent to issuance of the interim waiver. DOE will publish in the **Federal Register** notice of such extension and/or any modification of the terms or duration of the interim waiver.

(f) *Provisions specific to waivers*—(1) *Rebuttal by petitioner.* Following publication of the Petition for Waiver in the **Federal Register**, a petitioner may, within 10 working days of receipt of a copy of any comments submitted in accordance with paragraph (b)(1) of this section, submit a rebuttal statement to the Assistant Secretary for Energy Efficiency and Renewable Energy. A petitioner may rebut more than one response in a single rebuttal statement.

(2) *Disposition of petition.* DOE will notify the petitioner in writing as soon as practicable of the disposition of each Petition for Waiver. The Assistant Secretary for Energy Efficiency and Renewable Energy will issue a decision on the petition as soon as is practicable following receipt and review of the Petition for Waiver and other applicable documents, including, but not limited to, comments and rebuttal statements.

(3) *Consequence of filing petition.* The filing of a Petition for Waiver will not constitute grounds for noncompliance with any requirements of this subpart, until a waiver or interim waiver has been granted.

(4) *Granting: criteria, conditions, and publication.* The Assistant Secretary for Energy Efficiency and Renewable Energy will grant a waiver if he or she determines that either the basic model for which the waiver was requested contains a design characteristic which prevents testing of the basic model according to the prescribed test procedures, or the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. The Assistant Secretary for Energy Efficiency and Renewable Energy may grant a waiver subject to conditions, which may include adherence to alternate test procedures. DOE will promptly publish in the **Federal Register** notice of each waiver granted or denied, and any limiting conditions of each waiver granted.

(g) *Revision of regulation.* Within one year of the granting of any waiver, the Department will publish in the **Federal Register** a notice of proposed rulemaking to amend our regulations so as to eliminate any need for the continuation of such waiver. As soon thereafter as practicable, the Department will publish in the **Federal Register** a

final rule. Such waiver will terminate on the effective date of such final rule.

(h) *Exhaustion of remedies.* In order to exhaust administrative remedies, any person aggrieved by an action under this Section must file an appeal with the DOE's Office of Hearings and Appeals as provided in 10 CFR Part 1003, subpart C.

#### **§ 431.202 Preemption of State regulations for commercial HVAC & WH products.**

Beginning on the effective date of such standard, an energy conservation standard set forth in this Part for a commercial HVAC & WH product supersedes any State or local regulation concerning the energy efficiency or energy use of that product, except as provided for in Section 345(b)(2)(B)–(D) of the Act.

#### **§ 431.203 Maintenance of records.**

(a) If you are the manufacturer of any covered equipment, you must establish, maintain and retain records of the following:

(1) The test data for all testing conducted pursuant to this part;

(2) For electric motors, the development, substantiation, application, and subsequent verification of any AEDM used under this part; and

(3) For electric motors, any written certification received from a certification program, including a certificate or conformity, relied on under the provisions of this part.

(b) You must organize such records and index them so that they are readily accessible for review. The records must include the supporting test data associated with tests performed on any test units to satisfy the requirements of this Part (except tests performed by us directly).

(c) For each basic model, you must retain all such records for a period of two years from the date that production of all units of that basic model has ceased. You must retain records in a form allowing ready access to DOE, upon request.

#### **§ 431.204 Imported equipment.**

(a) Under sections 331 and 345 of the Act, any person importing any covered equipment into the United States must comply with the provisions of the Act and of this part, and is subject to the remedies of this part.

(b) Any covered equipment offered for importation in violation of the Act and of this part will be refused admission into the customs territory of the United States under rules issued by the Secretary of the Treasury, except that the Secretary of the Treasury may, by such rules, authorize the importation of

such covered equipment upon such terms and conditions (including the furnishing of a bond) as may appear to the Secretary of Treasury appropriate to ensure that such covered equipment will not violate the Act and this part, or will be exported or abandoned to the United States.

#### **§ 431.205 Exported equipment.**

Under Sections 330 and 345 of the Act, this Part does not apply to any covered equipment if:

(a) Such equipment is manufactured, sold, or held for sale for export from the United States (or such equipment was imported for export), unless such equipment is, in fact, distributed in commerce for use in the United States; and,

(b) Such equipment, when distributed in commerce, or any container in which it is enclosed when so distributed, bears a stamp or label stating that such covered equipment is intended for export.

#### **§ 431.206 Subpoena.**

Pursuant to sections 329(a) and 345 of the Act, for purposes of carrying out this part, the Secretary or the Secretary's designee, may sign and issue subpoenas for the attendance and testimony of witnesses and the production of relevant books, records, papers, and other documents, and administer the oaths. Witnesses summoned under the provisions of this section shall be paid the same fees and mileage as are paid to witnesses in the courts of the United States. In case of contumacy by, or refusal to obey a subpoena served upon any persons subject to this part, the Secretary may seek an order from the District Court of the United States for any District in which such person is found or resides or transacts business requiring such person to appear and give testimony, or to appear and produce documents. Failure to obey such order is punishable by such court as a contempt thereof.

#### **§ 431.207 Confidentiality.**

Pursuant to the provisions of 10 CFR 1004.11, any person submitting information or data which the person believes to be confidential and exempt from public disclosure should submit one complete copy, and 15 copies from which the information believed to be confidential has been deleted. In accordance with the procedures established at 10 CFR 1004.11, the Department shall make its own determination with regard to any claim that information submitted be exempt from public disclosure.

### Subpart M—Petitions To Exempt State Regulation From Preemption; Petitions To Withdraw Exemption of State Regulation

#### § 431.211 Purpose and scope.

(a) The regulations in this subpart prescribe the procedures to be followed in connection with petitions requesting a rule that a State regulation prescribing an energy conservation standard or other requirement respecting energy use or energy efficiency of a type (or class) of covered equipment not be preempted.

(b) The regulations in this subpart also prescribe the procedures to be followed in connection with petitions to withdraw a rule exempting a State regulation prescribing an energy conservation standard or other requirement respecting energy use or energy efficiency of a type (or class) of covered equipment.

#### § 431.212 Prescriptions of a rule.

(a) *Criteria for exemption from preemption.* Upon petition by a State which has prescribed an energy conservation standard or other requirement for a type or class of covered equipment for which a Federal energy conservation standard is applicable, the Secretary shall prescribe a rule that such standard not be preempted if he/she determines that the State has established by a preponderance of evidence that such requirement is needed to meet unusual and compelling State or local energy interests. For the purposes of this regulation, the term “unusual and compelling State or local energy interests” means interests which are substantially different in nature or magnitude from those prevailing in the U.S. generally, and are such that when evaluated within the context of the State’s energy plan and forecast, the costs, benefits, burdens, and reliability of energy savings resulting from the State regulation make such regulation preferable or necessary when measured against the costs, benefits, burdens, and reliability of alternative approaches to energy savings or production, including reliance on reasonably predictable market-induced improvements in efficiency of all equipment subject to the State regulation. The Secretary may not prescribe such a rule if he finds that interested persons have established, by a preponderance of the evidence, that the State’s regulation will significantly burden manufacturing, marketing, distribution, sale or servicing of the covered equipment on a national basis. In determining whether to make such a finding, the Secretary shall evaluate all relevant factors including: The extent to

which the State regulation will increase manufacturing or distribution costs of manufacturers, distributors, and others; the extent to which the State regulation will disadvantage smaller manufacturers, distributors, or dealers or lessen competition in the sale of the covered equipment in the State; the extent to which the State regulation would cause a burden to manufacturers to redesign and produce the covered equipment type (or class), taking into consideration the extent to which the regulation would result in a reduction in the current models, or in the projected availability of models, that could be shipped on the effective date of the regulation to the State and within the U.S., or in the current or projected sales volume of the covered equipment type (or class) in the State and the U.S.; and the extent to which the State regulation is likely to contribute significantly to a proliferation of State commercial and industrial equipment efficiency requirements and the cumulative impact such requirements would have. The Secretary may not prescribe such a rule if he/she finds that such a rule will result in the unavailability in the State of any covered equipment (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the State at the time of the Secretary’s finding. The failure of some classes (or types) to meet this criterion shall not affect the Secretary’s determination of whether to prescribe a rule for other classes (or types).

(1) Requirements of petition for exemption from preemption. A petition from a State for a rule for exemption from preemption shall include the information listed in paragraphs (a)(1)(i) through (a)(1)(vi) of this section. A petition for a rule and correspondence relating to such petition shall be available for public review except for confidential or proprietary information submitted in accordance with the Department of Energy’s Freedom of Information Regulations set forth in 10 CFR Part 1004.

(i) The name, address, and telephone number of the petitioner;

(ii) A copy of the State standard for which a rule exempting such standard is sought;

(iii) A copy of the State’s energy plan and forecast;

(iv) Specification of each type or class of covered equipment for which a rule exempting a standard is sought;

(v) Other information, if any, believed to be pertinent by the petitioner; and

(vi) Such other information as the Secretary may require.

(b) *Criteria for exemption from preemption when energy emergency conditions exist within State.* Upon petition by a State which has prescribed an energy conservation standard or other requirement for a type or class of covered equipment for which a Federal energy conservation standard is applicable, the Secretary may prescribe a rule, effective upon publication in the **Federal Register**, that such regulation not be preempted if he determines that in addition to meeting the requirements of paragraph (a) of this Section the State has established that: an energy emergency condition exists within the State that imperils the health, safety, and welfare of its residents because of the inability of the State or utilities within the State to provide adequate quantities of gas or electric energy to its residents at less than prohibitive costs; and cannot be substantially alleviated by the importation of energy or the use of interconnection agreements; and the State regulation is necessary to alleviate substantially such condition.

(1) Requirements of petition for exemption from preemption when energy emergency conditions exist within a State. A petition from a State for a rule for exemption from preemption when energy emergency conditions exist within a State shall include the information listed in paragraphs (a)(1)(i) through (a)(1)(vi) of this section. A petition shall also include the information prescribed in paragraphs (b)(1)(i) through (b)(1)(iv) of this section, and shall be available for public review except for confidential or proprietary information submitted in accordance with the Department of Energy’s Freedom of Information Regulations set forth in 10 CFR Part 1004:

(i) A description of the energy emergency condition which exists within the State, including causes and impacts.

(ii) A description of emergency response actions taken by the State and utilities within the State to alleviate the emergency condition;

(iii) An analysis of why the emergency condition cannot be alleviated substantially by importation of energy or the use of interconnection agreements;

(iv) An analysis of how the State standard can alleviate substantially such emergency condition.

(c) *Criteria for withdrawal of a rule exempting a State standard.* Any person subject to a State standard which, by rule, has been exempted from Federal preemption and which prescribes an

energy conservation standard or other requirement for a type or class of covered equipment, when the Federal energy conservation standard for such equipment subsequently is amended, may petition the Secretary requesting that the exemption rule be withdrawn. The Secretary shall consider such petition in accordance with the requirements of paragraph (a) of this section, except that the burden shall be on the petitioner to demonstrate that the exemption rule received by the State should be withdrawn as a result of the amendment to the Federal standard. The Secretary shall withdraw such rule if he determines that the petitioner has shown the rule should be withdrawn.

(1) Requirements of petition to withdraw a rule exempting a State standard. A petition for a rule to withdraw a rule exempting a State standard shall include the information prescribed in paragraphs (c)(1)(i) through (c)(1)(vii) of this section, and shall be available for public review, except for confidential or proprietary information submitted in accordance with the Department of Energy's Freedom of Information Regulations set forth in 10 CFR Part 1004:

(i) The name, address and telephone number of the petitioner;

(ii) A statement of the interest of the petitioner for which a rule withdrawing an exemption is sought;

(iii) A copy of the State standard for which a rule withdrawing an exemption is sought;

(iv) Specification of each type or class of covered equipment for which a rule withdrawing an exemption is sought;

(v) A discussion of the factors contained in paragraph (a) of this section;

(vi) Such other information, if any, believed to be pertinent by the petitioner; and

(vii) Such other information as the Secretary may require.

(2) [Reserved]

#### § 431.213 Filing requirements.

(a) *Service.* All documents required to be served under this subpart shall, if mailed, be served by first class mail. Service upon a person's duly authorized representative shall constitute service upon that person.

(b) *Obligation to supply information.* A person or State submitting a petition is under a continuing obligation to provide any new or newly discovered information relevant to that petition. Such information includes, but is not limited to, information regarding any other petition or request for action subsequently submitted by that person or State.

(c) *The same or related matters.* A person or State submitting a petition or other request for action shall state whether to the best knowledge of that petitioner the same or related issue, act, or transaction has been or presently is being considered or investigated by any State agency, department, or instrumentality.

(d) *Computation of time.* (1) Computing any period of time prescribed by or allowed under this subpart, the day of the action from which the designated period of time begins to run is not to be included. If the last day of the period is Saturday, or Sunday, or Federal legal holiday, the period runs until the end of the next day that is neither a Saturday, or Sunday or Federal legal holiday.

(2) Saturdays, Sundays, and intervening Federal legal holidays shall be excluded from the computation of time when the period of time allowed or prescribed is 7 days or less.

(3) When a submission is required to be made within a prescribed time, DOE may grant an extension of time upon good cause shown.

(4) Documents received after regular business hours are deemed to have been submitted on the next regular business day. Regular business hours for the DOE's National Office, Washington, DC, are 8:30 a.m. to 4:30 p.m.

(5) DOE reserves the right to refuse to accept, and not to consider, untimely submissions.

(e) *Filing of petitions.* (1) A petition for a rule shall be submitted in triplicate to: The Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Department of Energy, Section 327 Petitions, Building Technologies, EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585.

(2) A petition may be submitted on behalf of more than one person. A joint petition shall indicate each person participating in the submission. A joint petition shall provide the information required by § 431.212 for each person on whose behalf the petition is submitted.

(3) All petitions shall be signed by the person(s) submitting the petition or by a duly authorized representative. If submitted by a duly authorized representative, the petition shall certify this authorization.

(4) A petition for a rule to withdraw a rule exempting a State regulation, all supporting documents, and all future submissions shall be served on each State agency, department, or instrumentality whose regulation the petitioner seeks to supersede. The petition shall contain a certification of this service which states the name and

mailing address of the served parties, and the date of service.

(f) *Acceptance for filing.* (1) Within 15 days of the receipt of a petition, the Secretary will either accept it for filing or reject it, and the petitioner will be so notified in writing. The Secretary will serve a copy of this notification on each other party served by the petitioner. Only such petitions which conform to the requirements of this subpart and which contain sufficient information for the purposes of a substantive decision will be accepted for filing. Petitions which do not so conform will be rejected and an explanation provided to petitioner in writing.

(2) For purposes of the Act and this subpart, a petition is deemed to be filed on the date it is accepted for filing.

(g) *Docket.* A petition accepted for filing will be assigned an appropriate docket designation. Petitioner shall use the docket designation in all subsequent submissions.

#### § 431.214 Notice of petition.

(a) Promptly after receipt of a petition and its acceptance for filing, notice of such petition shall be published in the **Federal Register**. The notice shall set forth the availability for public review of all data and information available, and shall solicit comments, data and information with respect to the determination on the petition. Except as may otherwise be specified, the period for public comment shall be 60 days after the notice appears in the **Federal Register**.

(b) In addition to the material required under paragraph (a) of this section, each notice shall contain a summary of the State regulation at issue and the petitioner's reasons for the rule sought.

#### § 431.215 Consolidation.

DOE may consolidate any or all matters at issue in two or more proceedings docketed where there exist common parties, common questions of fact and law, and where such consolidation would expedite or simplify consideration of the issues. Consolidation shall not affect the right of any party to raise issues that could have been raised if consolidation had not occurred.

#### § 431.216 Hearing.

The Secretary may hold a public hearing, and publish notice in the **Federal Register** of the date and location of the hearing, when he determines that such a hearing is necessary and likely to result in a timely and effective resolution of the issues. A

transcript shall be kept of any such hearing.

**§ 431.217 Disposition of petitions.**

(a) After the submission of public comments under § 431.213(a), the Secretary shall prescribe a final rule or deny the petition within 6 months after the date the petition is filed.

(b) The final rule issued by the Secretary or a determination by the Secretary to deny the petition shall include a written statement setting forth his findings and conclusions, and the reasons and basis therefor. A copy of the Secretary's decision shall be sent to the petitioner and the affected State agency. The Secretary shall publish in the **Federal Register** a notice of the final rule granting or denying the petition and the reasons and basis therefor.

(c) If the Secretary finds that he cannot issue a final rule within the 6-month period pursuant to paragraph (a) of this section, he shall publish a notice in the **Federal Register** extending such period to a date certain, but no longer than one year after the date on which the petition was filed. Such notice shall include the reasons for the delay.

**§ 431.218 Effective dates of final rules.**

(a) A final rule exempting a State standard from Federal preemption will be effective:

(1) Upon publication in the **Federal Register** if the Secretary determines that such rule is needed to meet an "energy emergency condition" within the State;

(2) Three years after such rule is published in the **Federal Register**; or

(3) Five years after such rule is published in the **Federal Register** if the Secretary determines that such additional time is necessary due to the burdens of retooling, redesign or distribution.

(b) A final rule withdrawing a rule exempting a State standard will be effective upon publication in the **Federal Register**.

**§ 431.219 Request for reconsideration.**

(a) Any petitioner whose petition for a rule has been denied may request reconsideration within 30 days of denial. The request shall contain a statement of facts and reasons supporting reconsideration and shall be submitted in writing to the Secretary.

(b) The denial of a petition will be reconsidered only where it is alleged and demonstrated that the denial was based on error in law or fact and that evidence of the error is found in the record of the proceedings.

(c) If the Secretary fails to take action on the request for reconsideration within 30 days, the request is deemed

denied, and the petitioner may seek such judicial review as may be appropriate and available.

(d) A petitioner has not exhausted other administrative remedies until a request for reconsideration has been filed and acted upon or deemed denied.

**§ 431.220 Finality of decision.**

(a) A decision to prescribe a rule that a State energy conservation standard or other requirement not be preempted is final on the date the rule is issued, *i.e.*, signed by the Secretary. A decision to prescribe such a rule has no effect on other regulations of covered equipment of any other State.

(b) A decision to prescribe a rule withdrawing a rule exempting a State standard or other requirement is final on the date the rule is issued, *i.e.*, signed by the Secretary. A decision to deny such a petition is final on the day a denial of a request for reconsideration is issued, *i.e.*, signed by the Secretary.

**Subpart Q—[Removed]**

- 13. Subpart Q is removed.

[FR Doc. 04-17729 Filed 10-20-04; 8:45 am]

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**DEPARTMENT OF ENERGY**

**Office of Energy Efficiency and Renewable Energy**

**10 CFR Part 431**

[Docket No. EE-RM/TP-99-470]

RIN 1904-AB02

**Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards for Commercial Packaged Boilers**

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

**ACTION:** Final rule.

**SUMMARY:** Pursuant to Part C of title III of the Energy Policy and Conservation Act (EPCA), the Department of Energy (DOE or the Department) promulgates a rule prescribing test procedures to rate the energy efficiency of commercial packaged boilers and definitions relevant to this equipment. The rule also recodifies energy conservation standards prescribed by EPCA for commercial packaged boilers so that they are located contiguous with the test procedures that DOE promulgates today.

**DATES:** This rule is effective November 22, 2004. The incorporation by reference

of certain publications listed in this rule is approved by the Director of the Federal Register as of November 22, 2004.

**FOR FURTHER INFORMATION CONTACT:**

Mohammed Khan, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Mail Station, EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-7892, FAX (202) 586-4617, e-mail: [Mohammed.Khan@ee.doe.gov](mailto:Mohammed.Khan@ee.doe.gov), or Francine Pinto, Esq., U.S. Department of Energy, Office of General Counsel, Mail Station, GC-72, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-9507, e-mail: [Francine.Pinto@hq.doe.gov](mailto:Francine.Pinto@hq.doe.gov).

**SUPPLEMENTARY INFORMATION:** This final rule incorporates, by reference, into Subpart E of Part 431, two test procedures contained in industry standards referenced by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) and the Illuminating Engineering Society of North America (IES) Standard 90.1 ("ASHRAE/IES Standard 90.1") for commercial packaged boilers. Those industry standards are: the Hydronics Institute (HI) Division of the Gas Appliance Manufacturer's Association (GAMA) Boiler Testing Standard BTS-2000, "Method to Determine Efficiency of Commercial Space Heating Boilers" (which supersedes the ASHRAE Standard 90.1 referenced 1989 HI Standard, "Testing and Rating Standard for Heating Boilers," 6th Edition, 1989); and American Society of Mechanical Engineers (ASME) PTC 4.1-1964/RA-1991, "Power Test Codes for Steam Generating Units."

You can view copies of these standards in the resource room of the Building Technologies Program, room 1J-018 at the U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Please call Ms. Brenda Edwards-Jones at (202) 586-2945, for additional information regarding visiting the resource room.

You can purchase copies of the HI Standard BTS-2000 from Hydronics Institute Division of GAMA, P.O. Box 218, Berkeley Heights, NJ 07922, <http://www.gamanet.org/publist/hydroordr.htm>; and Standards ANSI Z21.47-1998 and UL 727-1994 from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, <http://global.ihs.com/> respectively.