TABLE 2.—MINIMUM HEATING EFFICIENCY LEVELS—Continued

Product	Category	Cooling capacity	Subcategory	Efficiency Level [2]
Large Commercial Packaged Air Conditioning and Heating Equipment.	Air Cooled	135,000 Btu/h and ≥240,000 Btu/h.	Split System and Single Package.	COP = 2.9
Packaged Terminal Heat Pumps.	All	All	All	COP = 1.3+(0.16 × the applicable minimum cooling EER prescribed in Table 1—Minimum Cooling Efficiency Levels)

[2] All COP values must be rated at 47°F outdoor dry-bulb temperature for air-cooled products and evaporatively-cooled products and at 70°F entering water temperature for water-source products.

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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: Notice of proposed rulemaking and public hearing.

SUMMARY: The Energy Policy and Conservation Act, as amended (EPCA), establishes energy efficiency standards and test procedures for certain commercial products, including commercial packaged boilers. In today's proposed rule, the Department of Energy (we, DOE, or the Department) proposes regulations to implement the standards and test procedures for these boilers.

DATES: The Department will accept comments, data, and information regarding the proposed rule until October 23, 2000. Please submit ten (10) copies. In addition, we request that you provide an electronic copy (3½″ diskette) of the comments in WordPerfect™ 8.

We will hold a public hearing (workshop) on September 20, 2000, in Washington, DC. Please send requests to speak at the workshop so that we receive them by 4 p.m., September 6, 2000. Send ten (10) copies of your statements for the public workshop so that we receive them by 4 p.m., September 13, 2000. We also request a computer diskette (WordPerfect™ 8) of each statement.

ADDRESSES: Please submit written comments, oral statements, and requests to speak at the workshop to Brenda Edwards-Jones, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, EE–41, Docket No. EE–RM/TP–99–470, 1000 Independence Avenue, SW., Washington, DC 20585. You may send email to: brenda.edwards-jones@ee.doe.gov.

SUPPLEMENTARY INFORMATION: The workshop will begin at 9 a.m., on September 20, 2000, in Room 1E–245 at the U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC. You can find more information concerning public participation in this rulemaking proceeding in section IV, ''Public Comment,'' of this notice of proposed rulemaking.

You can read the transcript of the public workshop and public comments received in the Freedom of Information Reading Room (Room No. 1E–190) at the U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays.

You can obtain the latest information regarding the public workshop from the Office of Building Research and Standards world wide web site at the following address: http://www.eren.doe.gov/buildings/codes standards/index.htm

FOR FURTHER INFORMATION CONTACT: Cyrus H. Nasseri, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Mail Station, EE–41, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586–9138, FAX (202) 586–4617, e-mail: Cyrus.Nasseri@ee.doe.gov, or Edward Levy, 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: Edward.Levy@hq.doe.gov.

SUPPLEMENTARY INFORMATION: The proposed rule incorporates, by reference, the test procedures contained in industry standards referenced by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE) Standard 90.1 for commercial packaged boilers. Those industry standards are: American National Standards Institute (ANSI) Standard Z21.13a–1993, ''Gas-Fired Low Pressure Steam and Hot Water Boilers;'' The Hydronics Institute (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.'' The proposed rule would also incorporate by reference, ASHRAE Standard 103–1993, ''Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers,'' for its test procedure with respect to condensing boilers.

You can view copies of these standards at the Department of Energy's Freedom of Information Reading Room at the address stated above. You can also obtain copies of the ASHRAE, ANSI, HI, and ASME Standards from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, NE, Atlanta, GA 30329, Internet URL: http://www.ashrae.org/book/bookshop.htm; Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112 or Internet URL: http://webstore.ansi.org/ansidocstore/; the Hydronics Institute Inc., 35 Russo Place, Berkeley Heights, NJ 07922, Internet URL: http://www.gamanet.org/publist/hydroordr.htm; and the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017, Internet URL: http://www.asmeny.org/catalog, respectively.

I. Introduction

I. Introduction

A. Authority

Part B of Title III of the Energy Policy and Conservation Act (EPCA) of 1975, Pub. L. 94–163, as amended, by the National Energy Conservation Policy Act of 1978 (NECPA), Pub. L. 95–619, the National Appliance Energy Conservation Act of 1987 (NAECA), Pub. L. 100–12, the National Appliance Energy Conservation Amendments of 1988 (NAECA 1988), Pub. L. 100–357, and the Energy Policy Act of 1992 (EPACT), Pub. L. 102–486, established the ''Energy Conservation Program for Consumer Products other than Automobiles.'' Part 3 of Title IV of NECPA amended EPCA to add ''Energy Efficiency of Industrial Equipment,'' which included air conditioning equipment, boilers, and other types of commercial products.

EPACT also amended EPCA with respect to certain commercial products. It provided definitions, test procedures, labeling provisions, energy conservation standards, and authority to require information and reports from manufacturers. See 42 U.S.C. 6311–6316. EPCA 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 products for which EPCA prescribes energy conservation standards, including commercial packaged boilers, ''the test procedures shall be those generally accepted industry testing procedures or rating procedures developed or recognized 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 gets amended, DOE must revise its 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 the statute for test procedures. 42 U.S.C. 6314(a)(4)(B).

Before prescribing any test procedures for commercial products, 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 a covered commercial product, such as a commercial packaged boiler, 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 product, 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, EPACT extends certain powers, originally granted to the Secretary under NAECA, to require manufacturers of products covered by this proposed rule to submit information and reports for a variety of purposes, including insuring compliance with requirements. See 42 U.S.C. 6316(a).

B. Background

1. General

The Department of Energy has an energy conservation program for consumer products, and a few commercial products, conducted under Part B of Title III of EPCA, 42 U.S.C. 6291–6309. Under EPCA, this program essentially consists of four parts: test procedures, Federal energy conservation standards, labeling, and certification and enforcement procedures. The Federal Trade Commission (FTC) is responsible for labeling, and we implement the remainder of the program as codified in Title 10 of the Code of Federal Regulations, Part 430—Energy Conservation Program for Consumer Products.

Since 10 CFR Part 430 covers primarily consumer products, which differ from commercial and industrial products, we created a new Part 431 (10 CFR Part 431) in the Code of Federal Regulations, entitled ''Energy Conservation Program for Certain Commercial and Industrial Equipment,'' to implement DOE's program for the commercial and industrial products covered under EPCA. These will include commercial heating, air conditioning and water heating products. This new program will consist of: test procedures, Federal energy conservation standards, labeling, and certification and enforcement procedures. EPCA directs DOE, rather than the FTC, to administer the statute's efficiency labeling provisions for commercial products.

On April 14 and 15, 1998, we convened a public workshop to solicit views and information from interested parties that would aid in the development of rules for commercial heating, air conditioning and water heating products. We requested comments on a number of specific issues, including issues related to test procedures for commercial products, as well as the most cost effective and reliable regimes for sampling, certification and enforcement. Statements during the public workshop and written comments that were received afterwards helped refine the issues involved in this rulemaking and provided useful information contributing to their resolution. We convened a second public workshop on October 18, 1998, to obtain comments on the issues as they had been refined, and on approaches presented by the

National Institute of Standards and Technology (NIST) for resolving them.

2. Issues Concerning Packaged Boilers

During the April 1998 workshop, we sought comments on the following issues regarding test procedures for commercial packaged boilers:

(1) Definitions of the term ''packaged boiler'' in the ASHRAE Standard 90.1-referenced test standards do not precisely coincide with those in EPCA. Should we clarify the EPCA definition by rule?

(2) In establishing the energy conservation standard levels for commercial packaged boilers, EPCA specified a lower capacity limit of 300,000 Btu per hour below which the standard levels do not apply. EPCA sections 342(a)(4)(C) and (D), 42 U.S.C. 6313(a)(4)(C) and (D). There is no upper capacity limit specified in EPCA for these products. Accordingly, the proposed DOE test procedures are designed expressly for commercial packaged boilers whose rated capacities are 300,000 Btu per hour or more. However, certain packaged boilers do exist whose capacities range in tens or even hundreds of millions of Btu per hour, and which are difficult to test under controlled laboratory conditions. Should we explicitly specify a capacity upper limit for the covered packaged boilers in the proposed test procedures?

(3) In extending EPCA to cover packaged boilers, along with other commercial HVAC and hot water heating products, EPACT articulated no limits on the applications for which the covered packaged boilers would be used (*e.g.,* space heating/conditioning of commercial buildings). Should we interpret EPCA as covering only the types of commercial packaged boilers used in heating buildings, or should the test procedure also apply to boilers used exclusively in other applications (*e.g.,* industrial process heating or power generation)?

(4) The industry test procedures referenced in ASHRAE Standard 90.1–1989 (and specified in EPCA), that form the basis for a DOE test procedure for packaged boilers, do not contain methods for determining jacket losses. An exception is the test procedure ASME PTC 4.1, ''Power Test Codes for Steam Generating Units,'' which provides a graph correlation for jacket loss, as well as a detailed test method. Should the DOE test procedure include a jacket loss test method which can be used to determine, for example, the efficiency of a boiler installed outdoors?

(5) EPCA specifies industry test procedures referenced in ASHRAE Standard 90.1–1989 for measuring the energy efficiency of packaged boilers. There are four test standards for gas-fired boilers and three for oil-fired boilers. The test conditions and procedures in those test standards are not identical. Use of different test conditions for a given boiler could produce different efficiency values. Is there a need to prescribe a set of uniform test conditions selected from among those referenced test procedures for a DOE test procedure?

(6) Should the DOE test procedure contain separate provisions for condensing boilers, modulating boilers, modular boilers, as well as for hot water boilers designed for low temperature applications?

(7) If a boiler is designed for both hot water and steam applications, should we specify a steam test and allow a water test as an optional procedure?

Attendees at the April 1998 workshop provided comments on these issues. In addition, the California Energy Commission (CEC) provided additional written comments afterwards. These comments helped to further clarify the issues. Section II, Discussion, will cover them in more detail.

After the April 1998 workshop, we worked towards addressing the identified issues for commercial packaged boilers. A set of recommendations resulted from that work, and NIST developed a summary report of the recommendations. The summary report formed the basis for discussions during the October workshop, which enabled us to elicit further views and information from interested parties. The summary report included draft rule language for commercial packaged boilers. We received additional comments, and the participants raised certain additional issues at the second workshop.

The following additional major issues, raised at that time, are numbered by using the same numbering scheme as the prior issues:

(8) EPCA defines a packaged boiler as ''a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections.'' For the majority of sectional cast iron boilers, a distributor, and not the boiler manufacturer, physically ships out sections of the boiler to the purchaser. Sometimes, a burner manufacturer may ship the burners directly to the purchaser from the factory, or alternately, an installer can supply them at the installation site. Are such boilers covered products under EPCA, and if so, who is responsible for ensuring their compliance with EPCA requirements?

(9) Are high pressure boilers covered products? Here, the term ''high pressure boilers'' applies to boilers classified by ASME Boiler and Pressure Vessel Code, Section I, Power Boilers, which are designed to operate at steam pressures above 15 psig, or at hot water temperatures above 250°F.

(10) For low pressure hot water boilers, should we specify inlet and outlet temperatures as per uniform test conditions recommended by NIST? These include an inlet water temperature of 80°F ±10°F and an outlet water temperature of 180°F ±2°F, for both gas-fired and oil-fired boilers.

C. The Proposed Rule

Today's proposed rule incorporates (1) energy efficiency test procedures for commercial packaged boilers, (2) definitions that clarify EPCA's coverage of this product, and (3) energy conservation standards prescribed by EPCA. In preparing these proposals, we have considered both oral and written comments, and have incorporated recommendations where appropriate. Section II contains the reasons for incorporating or not incorporating any significant recommendations.

II. Discussion

A. General

This section discusses the issues identified for commercial packaged boilers. Subsection (B) addresses ''Commercial Packaged Boiler Definition and Scope of Coverage,'' and subsection (C) addresses ''Commercial Packaged Boiler Test Procedures for the Measurement of Energy Efficiency''.

B. Commercial Packaged Boiler Definition and Scope of Coverage

1. Definitions

EPCA defines a packaged boiler as ''a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections.'' EPCA, Sec. 340(a)(11)(B). ASHRAE Standard 90.1–1989, section 10, entitled ''Heating, Ventilating, and Air-Conditioning (HVAC) Equipment'' (which appears to be the relevant source referenced by Section 343(a)(4) of EPCA, concerning test procedures), refers to five test standards for commercial heating boilers. Of these five, four include an explicit definition for one or more types of a packaged boiler. The definitions in three of the four referenced standards are essentially similar with respect to the heating equipment and controls. The fourth standard introduces a size limit within the definition of a packaged boiler. The

fifth standard, ASME PTC 4.1, does not define a packaged boiler.

Specifically, the first referenced test standard, the Hydronics Institute (HI) test standard ''Testing and Rating Standard for Heating Boilers—1989'' (HI–1989), defines a packaged boiler as ''a boiler-burner unit factory assembled and wired'', where the ''boiler-burner unit'' is defined as ''a combination of boiler, burner, combustion chamber design (if required) and controls, marketed as a unit''. HI–1989 does not specifically limit the test standard to packaged boilers. However, HI–1989 limits the test standard to low pressure heating boilers defined in ASME Boiler and Pressure Vessel Code, Section IV, Heating Boilers.

The second referenced test standard, Underwriters Laboratory (UL) test standard UL Standard 726 for ''Oil-Fired Boiler Assemblies,'' defines an oil-fired boiler assembly as ''a boiler assembly equipped with one or more oil burners, and all the necessary safety controls, electrical equipment as needed, and related equipment, manufactured for assembly as a unit.''

The third referenced test standard, UL Standard 795 for ''Commercial-Industrial Gas Heating Equipment,'' including gas-fired boilers, defines a gas-fired device as one which ''* * * shall be factory-built and shall include all essential components necessary for its normal function as intended, and may be shipped as two or more major subassemblies.'' In addition, both UL Standard 726 and UL Standard 795 specify that '' * * * each subassembly shall be capable of being incorporated into the final assembly without requiring alteration, cutting, drilling, threading, welding or similar tasks by the installer * * *'' Both UL Standard 726 and UL Standard 795 also limit the scope of coverage to a boiler assembly.

The fourth referenced test standard, ANSI Standard Z21.13, does not define a packaged boiler. However, the standard limits its scope of coverage to gas-fired low pressure steam and hot water boilers (defined in its Part IV, Definitions, as a self-contained gas burning appliance for supply steam or hot water) with input ratings of less than 12,500,000 Btu per hour.

The fifth referenced test standard, ASME Power Testing Codes for Steam Generating Units, ASME PTC 4.1, does not include a definition for a packaged boiler.

During the April 1998 DOE workshop, participants discussed the defining characteristics of a packaged boiler in terms of its method of shipment and assembly, its application (*e.g.,* space heating/conditioning, service water heating, industrial processing, and utility applications), its capacity (size), and its operating characteristics (*e.g.,* low pressure steam and hot water heating boilers, high temperature hot water boilers, and high pressure steam boilers). Each of them are discussed individually below.

2. Method of Shipment and Assembly

The Gas Appliances Manufacturers Association (GAMA) stated that a packaged boiler is a boiler which the manufacturer designs with specific component models which are listed in the manufacturer's catalog. (GAMA, April 1998 transcript, at 133). The boiler may not come out of the manufacturer's factory as a completely assembled product ready for shipment, due to a heavy bulk or other considerations. It may be shipped in subsections that are assembled together in the field. However, when assembled, the boiler would conform to the manufacturer's predefined design for its basic model.

The Council of Industrial Boiler Owners stated that even though there were no clear-cut criteria on what constitutes a packaged boiler, generally a boiler will not be considered a packaged boiler if it needs field welding, pressure parts, or fabrication of the assembly at the site. (CIBO, April 1998 transcript, at 136).

The October 1998 workshop participants also discussed what constitutes a packaged boiler. Weil-McLain Co. stated that the cast iron boiler industry subscribes to the definition of packaged boiler in the Hydronics Institute (HI) Standard, as ''a boiler-burner unit factory assembled and wired.'' (Weil-McLain Co., October 1998 transcript, at 209). Weil-McLain stated that this definition is different from the EPCA definition, under which the boiler can be shipped in separate sections not assembled in the factory. Weil-McLain stated further that it sells cast iron boilers in three different ways: (1) Factory assembled and wired as defined by HI, so that the boilers can be installed at the site without any further assembly, (2) with only the heat exchanger sections bolted together in the factory, and with these and other boiler components (*e.g.,* burner, controls and jacket) shipped in separate sections for subsequent assembly at the job site, and (3) through boiler distributors, who maintain inventories of heat exchanger sections, controls and burners (or order them directly from their respective manufacturers), and who either ship all the necessary components, or have manufacturers ship some or all of the components, to the customer for assembly as a complete boiler at the customer's site. Weil-McLain stated that the third manner accounts for probably 90 percent of their sales and asked whether the manufacturer would be held accountable for the performance of boilers sold in this way since they had no control over the distributors and how the unit was assembled. Mestek, Inc. agreed with Weil-McLain. (Mestek, October 1998 transcript, at 214).

Weil-McLain also stated that for every model of boiler that it sells for field assembly, it also sells a packaged boiler of the same design factory assembled and wired (as per HI definition). These factory assembled boilers are tested and certified by the Hydronics Institute. Weil-McLain stated that it will guarantee the efficiency rating of boilers that are not factory assembled, if all the components used in the field assembly (including cast iron heat exchanger sections, burner, and controls) are identical (by model, by type, and by design) to those on the factory assembled boiler. However, Weil-McLain stated that it can not guarantee the efficiency of field-assembled boilers with Weil-McLain cast iron sections, if these use burners that were not specified by the company and not tested and certified by HI.

For purposes of this rulemaking, the definition in EPCA for packaged boilers is the governing definition. It seems obvious that boilers sold in the first two ways described by Weil-McLain fit within the EPCA's definition of packaged boiler. As to the third, we considered the statements by Weil-McLain and Mestek on sectional cast iron boilers, and believe that these boilers also meet the statute's definition of a packaged boiler. This conclusion is supported in part by our belief that the wording in the definition, ''usually shipped in one or more sections,'' is designed to include not only steel and copper boilers, which are usually shipped as completely assembled units, but also large sectional cast iron boilers, which can be shipped in sections. This language would become almost meaningless if the definition were construed as excluding boilers sold in the third manner, since it appears that 90 percent of cast iron boilers are shipped in this way, *i.e.,* components are shipped by distributors or separate manufacturers, sometimes from distinct locations. In addition, cast iron boilers are a major portion of the commercial boilers that provide space heating in buildings. To exclude boilers shipped in this manner from coverage under EPCA would, therefore, exclude a major share of commercial boilers from the statute's reach. We see no basis for concluding that Congress intended such an

exclusion. In this regard, the statute does not state that the components of a packaged boiler must be shipped from the same initial location, or at the same time.

Furthermore, we agree with the manufacturers' concern over the use of burners not approved and specified by the boiler manufacturers. EPCA defines ''manufacturer'' as ''any person who manufactures a consumer product'' and ''manufacture'' to mean ''manufacture, produce, assemble or import.'' (42 U.S.C. 6291(12) and (10)). Therefore, we construe EPCA as meaning that a firm that produces a boiler in its entirety, or that specifies and approves a boiler's components by make and model numbers, including burners or other components produced by others, is a manufacturer of that boiler within the meaning of the statute. If a distributor, installer or another vendor sells a boiler with components that are not specified and approved by another manufacturer, we consider that vendor to be the manufacturer by virtue of having assembled the boiler.

We believe that the definition of packaged boilers, which may consist of boilers shipped in major sub-assemblies for ease of transport and designed to fit together at customers' sites, is clear enough to distinguish them from custom-designed, field-constructed boiler systems, which generally require alteration, cutting, drilling, threading, welding or similar tasks by the installer. In this respect no additional clarification is needed to establish the definition of packaged boilers beyond the text that appears in the statute.

3. Application

Participants at the April 1998 workshop raised questions regarding the effect of a packaged boiler's end use on its coverage under a DOE test procedure, since the statute does not explicitly limit its type of application. Several attendees, including GAMA and Lennox International asserted that EPCA requirements are based on ASHRAE Standard 90.1, and that the standard's scope is limited to heating products for space conditioning and service water only. (GAMA, April 1998 transcript, at 144; Lennox, April 1998 transcript, at 237).

By its title, ''Energy Efficiency Design of New Buildings except Low-Rise Residential Buildings'' ASHRAE Standard 90.1 indicates that it is concerned with minimizing energy consumption in the operation and maintenance of the building *per se* (that is, energy consumption with respect to the function of the building and the comfort of the occupants). While ASHRAE Standard 90.1–1989 contains no specific language excluding any specific type of heating products installed in the building, the test procedures and standards referenced by ASHRAE Standard 90.1 do appear in the section for HVAC equipment (Section 10 of ASHRAE Standard 90.1–1989, Heating, Ventilation, and Air-Conditioning (HVAC) Equipment). A recent major revision to ASHRAE 90.1, entitled ASHRAE Standard 90.1–1999, revised the Title, Purpose, and Scope (TPS) of the standard to exclude from coverage ''equipment and portions of building systems that use energy primarily to provide for industrial, manufacturing or commercial processes.''

We also reviewed the statute to ascertain its intent with respect to the end use of a packaged boiler. The review indicated the following:

(1) In the section that defines ''packaged boiler,'' the statute does not explicitly specify the end use of the boiler.

(2) In EPCA's list of ''covered equipment,'' warm-air furnaces, which are used for space heating, and packaged boilers are entered together as a single item. EPCA, section 340(1)(E), 42 U.S.C. 6311(1)(B).

(3) EPCA groups packaged boilers with other covered products, including small commercial packaged air conditioning and heating products and storage water heaters, all of which are used exclusively for space conditioning and service water heating. EPCA sections 340(2)(B) and 342(a), 42 U.S.C. 6311(2)(B) and 6313(a).

(4) EPCA includes ''steam boilers'' in its list of industrial equipment, separate from warm air furnaces and packaged boilers. EPCA section 340(2)(B), 42 U.S.C. 6311(2)(B).

(5) The Report that accompanied H.R. 776, the House version of EPACT, states that the Act ''amends existing law to set minimum energy efficiency standards for electrical air conditioning, electrical heating and gas heating equipment, boilers and water heaters intended for use in commercial buildings. * * * The standards * * * were developed * * * in ASHRAE Standard 90.1.'' HR Report No. 474, 102nd Congress, 2nd Session, Part 1, at 175 (1992).

(6) The conservation standards prescribed in EPCA for heating and air conditioning products coincide with those contained in ASHRAE Standard 90.1 at the time of enactment, and the statute provides for adoption by the Department, under prescribed conditions, of future amendments by ASHRAE to Standard 90.1. 42 U.S.C. 6313(a)(1)–(6).

On the basis of the above review, we believe that the intent of the statute is to apply the term ''packaged boiler'' to commercial boilers used in buildings for heating, space conditioning and service water heating, and to designate the term ''steam boilers'' for other industrial applications, such as for manufacturing processes and power generation. Therefore, consistent with the comments from the April 1998 workshop, under DOE's proposed definition of commercial packaged boiler EPCA efficiency requirements would apply only to boilers that, to any significant extent, are distributed for heating, space conditioning, or service water heating applications in buildings.[1]

4. Capacity

As mentioned above, participants at the April 1998 workshop discussed the scope of the definition of packaged boiler with respect to capacity (size). Some attendees suggested that size or rated capacity can be a possible criterion for defining the scope of coverage in a DOE test procedure for packaged boilers. As indicated previously, ANSI Standard Z21.13 limits itself to low pressure steam and hot water boilers with less than 12,500,000 Btu per hour input. A review of commercial boilers in the 1998 certified rating directory of the Hydronics Institute showed the largest capacity boiler to be a gas-fired heating unit with approximately 14,000,000 Btu per hour gross output, which would imply that packaged low pressure steam and hot water heating boilers are produced in quantity with output capacities of up to approximately 14 million Btu per hour. However, the California Energy Commission (CEC) stated that the statute does not provide an upper limit on capacity in its definition of packaged boilers, and asserted that one cannot therefore specify an upper limit on capacity in a DOE test procedure for them.

[1] Boilers that provide service water are generally referred to as ''hot water supply boilers.'' For the most part, the Department is addressing the efficiency requirements for this product in a separate, parallel rulemaking that concerns commercial water heating products. The instant rulemaking covers commercial packaged boilers that provide service water, however, in two instances. First, a boiler that is covered by the water heating requirements, but that is also distributed to a significant extent for heating or space conditioning applications, would have to comply with both sets of requirements. Second, a service water heating boiler that is not subject, under Addendum n to ASHRAE Standard 90.1–1989, to the efficiency requirements that apply to commercial water heaters, would have to meet the requirements for boilers.

We agree with CEC's statement that the statute does not specify an upper limit on the capacity. We also understand that there are packaged boilers used for heating buildings, especially of the fire tube and water tube design, whose capacities greatly exceed the capacity values specified in ANSI Standard Z21.13 or those in the Hydronics Institute's certified rating directory. Therefore, we see no basis to conclude that EPCA covers only commercial packaged boilers below a certain size, and we include no upper limit on capacity in today's proposed definition of the product. Consequently, the proposed test procedure would apply to commercial packaged boilers regardless of size. Nevertheless, DOE recognizes that the limited quantities of the types of high-capacity boilers used for space heating, coupled with their large capacities, may make their testing under a DOE test procedure in laboratory conditions costly or impractical. Therefore, we solicit comments from all stakeholders on whether there is an upper limit on capacity above which the testing procedure proposed today would be unduly burdensome to conduct, and thus improper to prescribe under the provisions of EPCA (42 U.S.C. 6314 (a)(2)).

5. Operating Characteristics

During the April 1998 workshop, attendees raised the coverage issue for packaged high pressure boilers. CIBO and others pointed out that when the end user applies a packaged boiler to produce hot water and steam for heating in industrial and manufacturing processes, considerations other than efficiency at steady state may strongly influence the selection and operation of the boilers. (CIBO, April 1998 transcript, at 145). The American Boiler Manufacturers Association (ABMA) and CIBO stated that the operation of packaged high pressure steam and high temperature hot water boilers for industrial processing is different from the low pressure steam and hot water heating boilers typically used in space heating and service water heating applications. (CIBO, April 1998 transcript, at 145).

According to Chapter 10, Steam Systems, of the 1996 ASHRAE HVAC System and Equipment Handbook, investment and operating cost considerations, energy efficiency, and control stability all require the pressure to be held to a minimum value that will accomplish the required heating task. The text goes on to say that space and domestic water heating can best be accomplished with low-pressure systems. During the October 1998 workshop, NIST proposed in its recommendation report that only packaged low pressure steam and hot water boilers should be covered in the proposed test procedure. The CEC objected to that proposal. CEC stated the opinion that the statute sets a minimum efficiency standard for all packaged boilers, which it considers to include high pressure boilers, and that DOE cannot limit the scope of the test method to low pressure steam and hot water boilers. (CEC, October 1998 transcript, at 233). The Natural Resources Canada stated that smaller packaged high pressure boilers are used in district heating applications, where the boilers are located in a small building near the commercial buildings in question and therefore, the high pressure boilers used in those applications should be covered. (NRC, October 1998 transcript, at 241). Other attendees at the workshop stated that high pressure utility boilers and central station boilers are not used in commercial buildings and hence should not be covered by the DOE test procedure. (Laclede Gas Company, October 1998 transcript, at 246; GAMA, October 1998 transcript, at 246; PNNL, October 1998 transcript, at 248).

No language in EPCA excludes packaged high pressure boilers from coverage under the statute. Moreover, based on the above, we believe there are instances where high pressure packaged boilers are used for heating buildings. Therefore, under today's proposed rule, EPCA's efficiency requirements would in effect apply to packaged high pressure boilers which, to any significant extent, are distributed for use for space conditioning in buildings.

During the two DOE workshops, participants expressed differing opinions on the coverage of high pressure boilers, and we realize that there may not be clear-cut criteria for distinguishing a packaged high pressure boiler that can be used for space conditioning. Also, as discussed above under the issue of capacity, the limited quantities and large sizes of packaged high pressure boilers employed in space heating may make testing under the proposed DOE procedure unduly burdensome. Therefore, we are soliciting comments from all stakeholders on the options of:

(1) Limiting application either of all EPCA efficiency requirements, or of only the proposed DOE test procedure, to packaged high pressure boilers that are principally designed for heating buildings, or

(2) Limiting coverage of packaged high pressure boilers to a certain maximum working pressure, such as 150 psig, above which one is unlikely to use a boiler in a commercial building due to the pressure limitation of the terminal heating equipment.

C. Commercial Packaged Boiler Test Procedures for the Measurement of Energy Efficiency

Section 343(a)(4)(A) of EPCA requires the test procedures for measuring the efficiency of commercial packaged boilers to be those generally accepted industry testing procedures or rating procedures that were developed or are recognized by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., as referenced in ASHRAE/IES Standard 90.1 and that were in effect on June 30, 1992. 42 U.S.C. 6314(a)(4)(A). Also, if such an industry test procedure or rating procedure for commercial packaged boilers is amended, the Secretary must adopt such revisions unless the Secretary determines that to do so would not produce test results which reflect energy efficiency, energy use, and estimated operating costs, or that the procedures would be unduly burdensome to conduct. 42 U.S.C. 6314(a)(4)(B).

The version of ASHRAE Standard 90.1 in effect on June 30, 1992, references five industry test standards that apply to gas-fired boilers or oil-fired boilers or both. These are the ANSI Standard Z21.13–1987 for gas-fired boilers; the HI Testing and Rating Standard for Heating Boilers, sixth edition, 1989, for gas and oil-fired boilers (HI 1989); ASME Power Test Codes (PTC) 4.1–1964 including the 1968 and 1969 Addenda (reaffirmed R1991) for Steam Generating Units for fossil fuel boilers (ASME PTC 4.1); the Underwriters Laboratory Standard 795–1973 for gas heating equipment (UL Standard 795); and the Underwriters Laboratory Standard UL Standard 726–1990 for oil-fired boilers (UL Standard 726). Of the five test standards, four are applicable to gas-fired boilers and three are applicable to oil-fired boilers.

Specifically, ANSI Standard Z21.13 covers gas-fired boilers and limits the size of the test boiler to 12,500,000 Btu per hour. The 1991 version of the standard sets the outlet water temperature at 180°F±2°F without specifying an inlet test temperature. A value of 80°F ±10°F, however, is specified in its Combustion Test section. A revision of the standard in 1993 (ANSI Standard Z21.13a–1993) specifies the inlet temperature of 80°F±10°F.

HI–1989 is applicable to both low pressure gas-fired and low pressure oil-fired heating boilers. For hot water

boilers, HI specifies a test condition of 200°F outlet water temperature, and a range of temperature rises across the boiler, ranging from 120°F to 165°F, that result in a test inlet water temperature ranging from 35°F to 80°F.

UL Standards 726 and 795 apply to both low pressure and high pressure boiler assemblies fired by oil and gas, respectively. The section on Combustion Test specifies that the boiler is to be installed and adjusted in accordance with manufacturer's instructions, and fired at the rated input until steady state combustion conditions of draft, fuel input rate, and flue gas temperature have been established. A flue loss which is based on the measured flue gas temperature and flue CO_2 concentration is used in the efficiency evaluation. However, the standards do not provide a calculation procedure for the flue loss. The Continuous Operation Test does set the test conditions for steam pressure and water temperatures. However, these conditions are meant to ensure the continuous safe operation of the boiler and are not necessarily those intended for an energy performance test in accordance with the manufacturer's instructions. Also, the conditions for the Continuous Operations Test are set close to the limit setting of the pressure and/or temperature limit control device, and not at the settings for normal operation of the boilers.

ASME PTC 4.1 is devised for steam generating units and high temperature water heaters. The standard is basically designed for an acceptance testing after installation. It does not specify the operational conditions for the efficiency test. The operational conditions are to be determined by agreement between interested parties. The standard recommends that in determining the efficiency of gaseous or liquid fuel-fired steam generating units, the test runs should preferably be not less than of four hours duration. The standard provides a procedure for an abbreviated efficiency test (Simplified Efficiency Test) based on the heat loss method, where only the major losses (flue losses and radiation or jacket loss) and the chemical heat in the fuel, are considered. Most manufacturers of packaged steel boilers use the Simplified Efficiency Test, and not the detailed procedure appearing in the standard.

1. Test Procedure and Test Conditions for Low Pressure Steam and Hot Water Boilers

All ASHRAE Standard 90.1 referenced test standards from the above list are applicable to low pressure steam and hot water boilers. However, we understand that at present, most gas-fired boilers are rated for energy efficiency according to the ANSI Standard Z21.13, and most oil-fired boilers according to the HI–1989 standard. The two UL standards are mostly used for safety certification purposes. The ASME PTC 4.1 is used mostly for steel fire tube and water tube type boilers with low to very high pressure ratings.

During the April 1998 workshop, it was suggested that, for comparison purposes, a single uniform test procedure for both gas-fired and oil-fired boilers would be preferable within the DOE test procedure. As stated, HI–1989 covers both gas and oil-fired boilers. However, in its Scope section, HI–1989 states that for gas-fired boilers, test reports from the American Gas Association (AGA) and Canadian Gas Association (CGA) Laboratories which comply with ANSI Standard Z21.13a–1993 are acceptable in lieu of the procedures spelled out in HI–1989. A comparison of HI–1989 and ANSI Standard Z21.13a–1993 shows that the test setups, instrumentation, and other features of the two test standards for gas-fired boilers are very similar. The only differences are the water inlet and outlet conditions for hot water boilers, which are discussed later, and the insulation requirement of the test flue stack. The difference in the insulation requirement in the test setup is that the HI–1989 standard requires insulation of the test stack up to the location of flue gas temperature measurement, while ANSI Standard Z21.13 does not require any insulation. This would result in a higher combustion efficiency (and a lower calculated flue loss based on flue gas temperature) by using the ANSI Standard Z21.13 procedure compared with the HI–1989 procedure, if all other test conditions were the same.

Also at the October 1998 workshop, the CEC recommended that the HI–1989 test standard be adopted by us as the test standard for both gas-fired and oil-fired boilers. (CEC, April 1998 transcript, at 178).

The American Boilers Manufacturers Association (ABMA) and Council of Industrial Boiler Owners (CIBO) state that EPACT requires the test procedures to be those generally accepted industry testing or rating procedures. (ABMA, April 1998 transcript, at 187; CIBO, April 1998 transcript, at 194). ABMA states that in the boiler industry (those represented by ABMA) the HI standard was not generally accepted as the industry standard, and that the ASME PTC 4.1 is used more frequently than the HI standard. CIBO stated that members, who are involved in using packaged boilers for industrial type processing, follow ASME, and are not familiar with the HI standard. (CIBO, April 1998 transcript, at 196). Also, during the October 1998 workshop, BR Laboratories Inc. stated that there is no difference in the test method for combustion efficiency between packaged low pressure boilers and high pressure boilers, and it believes that one can use the HI test procedure specified for low pressure boilers to also test the combustion efficiency of high pressure boilers. (BR Laboratories, October 1998 transcript, at 242).

As mentioned above, ANSI Standard Z21.13 and HI–1989 differ in their test conditions for both inlet and outlet water temperatures. At the April 1998 workshop, participants pointed out that the specification of water inlet temperature in ANSI Standard Z21.13a–1993 is more precise (80°F ±10°F) than the corresponding specification in HI–1989 (a range between 35°F to 80°F), and that efficiency values resulting from testing identical units under HI–1989 could vary depending on the test inlet temperature. We understand that the reason for this latitude in the HI–1989 specification is that the boilers are tested at the manufacturers' locations, and not at the Hydronics Institute. Depending on the season and geographical location of the manufacturer, the inlet water temperature from the water main (or other source) can vary widely. During the workshop, York International cautioned that a more stringent test condition could require controlling the temperature of a large quantity of inlet water in a way that may be difficult to achieve. (York, April 1998 transcript, at 194).

At the October 1998 workshop, NIST proposed adopting the HI–1989 standard for both gas and oil-fired low pressure steam and hot water boilers, with a revised inlet water temperature of 80°F ±10°F and an outlet temperature of 180°F ±2°F, to conform to the requirement of ANSI Standard Z21.13a–1993. This test, with a controlled inlet water temperature, may require temperature pre-conditioning of large volumes of inlet water in some regions of the country. However, since this procedure is specified in ANSI Standard Z21.13a–1993, and has been an established practice since 1993, we believe it will not be a major problem for a boiler of less than 12,500,000 Btu per hour rated input.

The proposed temperature of 180°F±2°F for the required outlet temperature for hot water boilers, as opposed to the 200°F ±5°F in the HI

standard, might produce a slight increase in the combustion efficiency value of oil-fired boilers currently tested by the HI standard (which is due to a lower flue gas temperature and flue loss). However, we believe that this increase would be small. BR Laboratories Inc. stated that the use of the HI standard's wide range for the permissible inlet water temperature would lessen the burden on manufacturers, and the inlet temperature specification has no impact on the efficiency. (BR Laboratories, October 1998 transcript, at 254–55). Weil-McLain agreed that the outlet water temperature has more of an impact on the combustion efficiency. A lower (180°F) temperature would give those oil and power gas boilers currently tested to the HI standard a better efficiency value. (Weil-McLain, October 1998 transcript, at 257). However, for gas-fired boilers currently tested to the ANSI Standard Z21.13 standard, changing the outlet temperature from 180°F (under current specification) to 200°F (if the HI standard is used instead, as suggested) might cause their efficiency to degrade. Therefore, Weil-McLain recommended keeping the two standards, HI–1989 and ANSI Standard Z21.13, with the HI standard for use with the power gas and oil-fired boilers, and the ANSI Standard Z21.13 for use with the gas-fired boilers. However, if a single test standard is needed, Weil-McLain would prefer the 180°F outlet water temperature, since it reflects the current practice for testing gas-fired boilers, and is also the temperature tested under the Hydronics Institute auditing program.

We also considered the other three test standards referenced by ASHRAE Standard 90.1–1989. Of these three test standards, the ASME PTC 4.1 standard, with the exception of its Simplified Efficiency Test procedure, is intended for (large) steam generating heating and power boilers. It requires a detailed account of the energy expenditures of all components in the boiler system, and appears to be burdensome for smaller capacity boilers. The HI standard appears to be a satisfactory substitute for the ASME PTC 4.1 for low pressure steam boilers, since the test and calculation procedure in the HI standard is close to the Simplified Efficiency Test (Abbreviated Efficiency Test) of ASME PTC 4.1. The two UL standards are mainly used for the safety certification of boilers. The test procedures for energy performance in the UL standards for low pressure boilers are similar to the HI–1989 standard. However, the UL standards do not provide a procedure for calculating flue loss. We thus believe that the HI–1989 standard is better equipped than the two UL standards for testing the energy efficiency of low pressure steam and hot water boilers.

Even though there might be some differences in the test conditions between HI–1989 and ANSI Standard Z21.13, the attendees at the two workshops suggested that basically the HI test standard can be used to cover gas-fired and oil-fired low pressure heating boilers. We considered three options. The first is to adopt ANSI Standard Z21.13a for all gas-fired boilers and HI–1989 for all oil-fired boilers. This would make the currently listed efficiency values (in Hydronics Institute Certification Directory, for example) of boiler models that are already on the market to stay unchanged. However, because of the differences in test conditions between the two test standards, the gas-and oil-fired boilers will not compare accurately. The second option is to adopt the HI–1989 test standard for both gas-and oil-fired heating boilers. This option may create the problem that for a gas-fired hot water boiler, the resulting efficiency based on a 200°F outlet water temperature is likely to be less than its current value based on a 180°F temperature. This may create a problem for those boilers that just meet the minimum efficiency standard specified in EPCA. The third option is to adopt the HI–1989 test standard for both gas-and oil-fired heating boilers, with a modification that the outlet temperature for hot water boilers be specified at 180°F instead of at 200°F. As discussed before, this option will cause an oil-fired hot water boiler to attain a test efficiency that could be slightly higher than its current value. However, we believe that no re-testing is necessary since the boiler's current efficiency value would be a conservative one. The other two factors that may cause the efficiency value of a gas-fired boiler to change under HI–1989 are the larger inlet temperature range permitted (35°F to 80°F) and the flue pipe insulation requirement (up to the point of flue temperature measurement location—12-inches maximum from the flue collar). However, we believe that the effect of these differences is small, since combustion efficiency is mainly a function of the outlet water or steam temperature (as discussed above), and the portion of the heat loss through the flue pipe that would affect the flue temperature measurement (and flue loss) due to the insulation is restricted to the first 12 inches of the flue pipe.

Based on the above, we are proposing to adopt the HI–1989 standard as the DOE test procedure for gas and oil-fired, low pressure steam and hot water commercial packaged boilers, with the provisions that: (1) the outlet water temperature for hot water boilers be set at 180°F ±2°F, and (2) for gas-fired boilers, to calculate the flue loss a manufacturer may use the procedure specified in Exhibit D of ANSI Z21.13–1993 instead of the procedure in section 11.2 of HI–1989.

Based on the comments from CIBO that some manufacturers use mainly the ASME PTC 4.1 test standard and may not be familiar with the HI–1989 test standard, we are proposing to allow manufacturers the alternative of using the Simplified Efficiency Test of ASME PTC 4.1, with the provisions that: (1) The inlet water temperature will range from 35°F to 80°F, (2) for hot water boilers, the outlet water temperature will be 180°F ±2°F, (3) for steam boilers, steam pressure will range from atmospheric (0 psig) to 2 psig; and (4) in the heat loss method of ASME PTC 4.1 for the determination of efficiency, the radiation loss term will be set to zero to obtain the combustion efficiency (of 100 percent minus percent flue loss).

We believe the calculation procedures by the heat loss method according to HI–1989 and the Simplified Efficiency Test of ASME PTC 4.1 are nearly identical, and that comparisons between the test results from the two standards would be valid when the Simplified Efficiency test is used with the above four provisions. We welcome comments from all stakeholders on today's proposed test procedures as described in this paragraph, and on whether we should adopt instead, one of the other considered options.

2. Testing for High Pressure Steam and High Temperature Water Boilers

ASHRAE Standard 90.1–1999, modified the definition of a boiler (section 3.2 of ASHRAE Standard 90.1–1999, definitions) so that a boiler is defined as a ''self-contained, low pressure appliance for supplying steam or hot water.'' This definition is followed by a definition for packaged boilers, which is defined as a specific class of boilers. ASHRAE Standard 90.1–1989 did not include the term ''low pressure'' in the boiler definition, and did not include a definition for packaged boilers. For test procedures that are applicable to packaged high pressure steam and high temperature hot water boilers, ASHRAE Standard 90.1–1989 references three test procedures. They are ASME PTC 4.1 for steam boilers, UL Standard–795 for gas-fired heating equipment including boilers, and UL Standard–726 for oil-

fired boilers. Of these three test procedures, ASME PTC 4.1 provides detailed procedures for energy efficiency tests. However, ASME PTC 4.1 does not specifically provide the test conditions with respect to steam pressure or water temperature. The intent of ASME PTC 4.1 is to guide the acceptance testing of large steam generating units, where the operational conditions are part of the agreements negotiated between the interested parties (Sections 3.01and 3.04 of ASME PTC 4.1).

As described above in section II C, ASME PTC 4.1 also provides for an abbreviated (simplified, or short form) efficiency test for small heating and industrial steam generators. The two UL standards specify test conditions (installed and adjusted in accordance with the manufacturer's instructions and fired at the rated input) for determining steady state energy performance in their combustion test sections (see Section 36 of UL Standard 726 or Section 51.1 of UL Standard 495). However, the two standards do not provide procedures for the flue loss calculation.

During the October 1998 workshop, BR Laboratories Inc. suggested that one can use the HI–1989 standard to test high pressure boilers, since the measurement requirements for combustion efficiency test are the same for both low and high pressure boilers. (BR Laboratories, October 1998 transcript, at 242). However, during the April 1998 workshop, both ABMA and CIBO stated that their members use the ASME PTC 4.1 test procedure, and are not familiar with the HI–1989 standard (see discussion under section II.C.1 for low pressure boilers above). Informal conversations with some steel boiler manufacturers indicated that industry manufacturers of steel fire tube and water tube boilers of all pressure ranges (from 15 psig steam pressure and up) use the short form test (the Simplified Efficiency Test) of ASME PTC 4.1 and not the HI–1989 standard.

Based on a consideration of the above, we are proposing today to adopt the abbreviated efficiency test (the Simplified or short form Efficiency Test) as specified in section 1.07 of ASME PTC 4.1 as the DOE test procedure for packaged high pressure steam and high temperature hot water boilers covered by EPCA. Also, since the ASME PTC 4.1 does not specify the test condition for the efficiency test, and the test conditions with respect to steam pressure and water temperature vary with the design of the boiler, we are proposing that the conditions specified in the two UL standards be specified as test conditions, *i.e.,* the boiler must be installed and adjusted in accordance with the manufacturer's instructions and fired at its rated input. We further propose that the water temperature and steam pressure be prescribed to reflect the normal conditions for which the manufacturer designed the boiler. As stated previously, even though the calculation procedure for the heat input term (from chemical heat in the fuel only, ignoring any other heat credit) and the major heat loss terms in ASME PTC 4.1 are similar to those specified in the HI–1989, the steel boiler industry's familiarity with the test procedure would make the ASME PTC 4.1 test procedure less burdensome to these manufacturers.

We welcome comments on the proposal to adopt the Simplified Efficiency Test of ASME PTC 4.1 for packaged high pressure boilers. In particular, we solicit suggestions on a uniform procedure for determining the normal steam pressures and water temperatures for which boilers are designed, perhaps based on (or with reference to) the maximum pressure ratings, and for specifying the corresponding conditions in the efficiency test procedures.

3. Provisions for Low Temperature Applications

ASHRAE Standard 90.1 and the test standards referenced by it do not specifically provide test conditions for hot water boilers designed for low temperature applications (having a supply water temperature of 140°F or a return water temperature of 120°F, or less). Attendees at the April 1998 workshop questioned whether a significant number of these boilers were sold on the market, and commented it was unnecessary for DOE to develop another set of test conditions that deviate from those specified in ASHRAE Standard 90.1. We agree with these comments and will not propose a different set of test inlet and outlet water temperatures for applications requiring low supply and return temperature settings.

4. Provision for Condensing Boilers

ASHRAE Standard 90.1 and its referenced test standards do not specifically provide test conditions for a condensing boiler, which is a hot water boiler designed to condense part of the water vapor in the flue gases and which is equipped to collect and drain such condensate. Attendees at the April 1998 workshop commented that, because of the absence of commercial condensing boilers from the market, it was not necessary for DOE to develop a test procedure different from that specified in the ASHRAE Standard 90.1.

We disagree with the comments from the workshop attendees on this issue. We are unable to conclude that commercial size condensing boiler models are unavailable in the market. Also, since condensing boilers are significantly more energy efficient than non-condensing boilers, we believe that even if there were presently no such boilers on the market, a test procedure should be in place so that any manufacturer of condensing boilers would have a readily available accurate method for testing them to establish their efficiencies for compliance with EPCA. In addition, a test procedure is needed for evaluating design options underlying any future minimum efficiency standards. Even though the ASHRAE Standard 90.1-referenced standards do not specify an appropriate test procedure, ASHRAE Standard 103–1993 has been in use over the last decade and provides a method for measuring the increased energy efficiency of residential condensing boilers under steady state test conditions. We believe that the method of collecting and measuring the quantity and the temperature of the flue condensate under steady state conditions at the maximum rated input over a 30 minute test period can also be applicable to a commercial condensing boiler. Therefore, we are proposing to adopt the procedure specified in sections 7.2.2.4, 7.8, 9.2 and 11.3.7 of ASHRAE Standard 103–1993 as the test procedure for determining the incremental increase in energy efficiency due to the condensing feature of a such a boiler.

In proposing the adoption of that test procedure, a slight modification is applied to the equation in Section 11.3.7.2 of ASHRAE 103–1993 for steady state heat loss due to hot condensate flowing down the drain. In the aforementioned section, the assumed indoor temperature is specified as 70°F, and the average outside temperature as 42°F. The modification replaces both of these temperatures with the actual temperature of the test area. In addition, even though the boiler inlet water temperature may not be a major factor affecting the combustion efficiency of a non-condensing boiler, previous experience with residential condensing boilers indicates that the inlet water temperature has a significant effect on the amount of flue condensate produced, so a more precise specification is needed for the inlet temperature. Therefore, we are proposing that for testing a condensing boiler, the boiler inlet water temperature

be restricted to 80°F±5°F instead of the range of 35°F to 80°F specified for non-condensing boilers.

5. Modular Boilers and Multiple Boilers

Participants at the DOE April 1998 workshop raised the issue of how to rate a modular boiler assembly (consisting of a group of identical, smaller boilers or modules, usually of less than 400,000 Btu/h input each, installed as a unit) or a multiple boiler system (consisting of a group of individual boilers, not necessarily of identical design, installed as a system). Since a modular boiler assembly consists of identical individual boilers or modules, it was suggested that for those types of packaged boilers, only a single boiler from the assembly needs to be tested and rated, and that the efficiency rating of the boiler assembly can be derived from the efficiency of the module. For a multiple boiler system, participants suggested that testing and rating the individual boilers in the system should be sufficient, and that the rating of the system as a whole can be derived from the individual ratings. There was no disagreement on either of these suggestions from the workshop attendees, and at the October 1998 workshop, NIST recommended these suggestions for adoption.

The Department is proposing today that the efficiency rating for a packaged modular boiler system with the individual modules or boilers of identical design and construction may be based on the rating for only one boiler module in the assembly. For a multiple boiler system where the individual boilers are of different designs, each boiler of a different design will be considered a separate packaged boiler and must meet the minimum efficiency standard by using the test procedure prescribed for this product.

6. Testing and Rating a Steam and Hot Water Boiler

The test procedures DOE proposes today provide methods for testing both hot water and steam boilers. A packaged boiler designed to produce only hot water or only steam would obviously be tested and rated for efficiency under today's proposed rules only in the applicable mode. As to boilers capable of supplying either hot water or steam, DOE understands that manufacturers customarily test and rate them in the steam mode, and only sometimes in the hot water mode. Moreover, participants at the April 1998 workshop indicated that industry practice is commonly to use the efficiency rating derived from the steam boiler test as the efficiency rating when the boiler is sold as a hot water boiler. (April 14 workshop at page 226) Since the steam test will generally provide an efficiency rating lower than the rating obtained by a hot water test, NIST recommended that we should also accept this practice. (October 13 Workshop at page 199)

In view of the above, DOE proposes to require that a boiler that can be used for both steam and hot water applications must be tested as a steam boiler, as required by HI–1989 (see Sections 8.1.4.1 and 8.1.4.2 of HI–1989), and that such efficiency rating must be reported to DOE and used to determine whether the boiler complies with the applicable efficiency standard. We also propose to allow the manufacturer the option of either using such efficiency rating for both the steam and water operations of the boiler, or, if the manufacturer prefers to report a different rating for water operation, using a rating obtained by also testing the boiler in accordance with the test procedure for a hot water boiler, as allowed in HI–1989. Section 431.362(d)(1)(ii) of the proposed rule implements the testing aspect of these proposals. Although the proposed rule does not include language implementing the rating and reporting proposals, DOE intends to include it in the final rule.

III. Procedural Requirements

A. Review Under the National Environmental Policy Act of 1969

EPCA prescribes energy efficiency standards and test procedures for commercial products, and in today's rule, we propose to implement these requirements for commercial packaged boilers. We have reviewed the proposed rule under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 *et seq.*, the regulations of the Council on Environmental Quality, 40 CFR Parts 1500–1508, the Department's regulations for compliance with NEPA, 10 CFR Part 1021, and the Secretarial Policy on the National Environmental Policy Act (June 1994). Implementation of the proposed rule would not result in environmental impacts. We have therefore determined that the proposed rule is covered under the Categorical Exclusion found at paragraph A6 of appendix A to subpart D of the Department's NEPA Regulations, which applies to rulemakings that are strictly procedural. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

B. Review Under Executive Order 12866, ''Regulatory Planning and Review'

Today's proposed rule has been determined not to be a ''significant regulatory action,'' as defined in section 3(f) of 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 by the Office of Information and Regulatory Affairs.

C. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980, 5 U.S.C. 603, requires the preparation of an initial regulatory flexibility analysis for every rule which the agency must propose for public comment, by law, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. A regulatory flexibility analysis examines the impact of the rule on small entities and considers alternative ways of reducing negative impacts.

The Small Business Administration considers an entity to be a small business if, together with its affiliates, it employs fewer than a threshold number of workers specified in 13 CFR Part 121. The threshold number for SIC classification 3433, which includes commercial packaged boilers, and other non-electric heating equipment, is 500. We estimate that no more than 29 firms manufacture commercial packaged boilers, and of these, the majority are considered small businesses. The number of small businesses that manufacture commercial-sized packaged boilers covered by the EPACT standards (with capacities of 300,000 Btu per hour and above) could be smaller.

EPCA establishes efficiency standards for commercial packaged boilers and requires the Department to prescribe test procedures that are accepted by industry and referenced in ASHRAE Standard 90.1. For the most part, EPCA specifies the standards and test procedures incorporated in today's proposed rule. Therefore, any costs of complying with them are imposed by EPCA and not the rule. Moreover, today's proposed rule codifies testing procedures that are already generally employed by manufacturers, both large and small.

The cost of meeting the requirements of today's proposed rule will depend on the number of basic models a manufacturer produces and the number of these models that do not comply with the efficiency standards imposed by

EPCA and would consequently need to be redesigned or removed from the market. Since the efficiency standards have been in force by statute since 1994, we expect that a negligible number of products presently manufactured would need to be redesigned or discontinued. The cost of performing the proposed test procedures depends on unit size, but could amount to several thousands of dollars per basic model. To the extent that manufacturers must already test their products for efficiency to assure that they meet the existing statutory efficiency standards, or for any other reason, they will not incur new costs in complying with today's proposed rule. We believe that any significant economic impact will fall only on those firms which do not now routinely test their products. We further believe that testing is a widely accepted practice, and that companies that do not test are rare and do not represent a substantial number of small entities.

We have, at most, very limited discretion to apply different requirements to small manufacturers. EPCA mandates uniform standards and test procedures for commercial products. In this regard, it is noteworthy that although EPCA contains a ''small manufacturer exemption'' for consumer products (42 U.S.C. 6295 (t)), it includes no such exemption for commercial and industrial products.

Based on the above, we conclude that the proposed rule would not impose a significant impact on a substantial number of small businesses.

D. Review Under Executive Order 13132, ''Federalism''

Executive Order 13132 (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. Agencies are required 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 proposed rule published today would not regulate the States. The proposed rule would primarily codify energy efficiency standards and test procedures already established in EPCA for commercial packaged boilers. We have determined that today's rule 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.

E. Review Under Executive Order 12630, ''Governmental Actions and Interference With Constitutionally Protected Property Rights'

We have determined under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 52 FR 8859 (March 18, 1988), that this proposed rule would not result in any takings which might require compensation under the Fifth Amendment to the United States Constitution.

F. Review Under the Paperwork Reduction Act

Today's proposed rule will primarily codify energy efficiency standards and test procedures already established in EPCA for commercial packaged boilers and will not require any additional reports or record-keeping. Accordingly, this action was not subject to review under the Paperwork Reduction Act.

G. Review Under Executive Order 12988, ''Civil Justice Reform''

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 executive 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. With regard to the review required by Section 3(a), Section 3(b) of the Executive Order 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) provide 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 the Executive Order requires agencies to review regulations in light of applicable standards Section 3(a) and Section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them.

We reviewed today's proposed rule under the standards of Section 3 of the Executive Order and determined that, to the extent permitted by law, it meets the requirements of those standards.

H. 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 of Energy must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. 15 U.S.C. 788. Section 32 provides in essence that, where a proposed rule contains or involves use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards.

The rule proposed in this notice incorporates certain commercial standards which EPCA requires to be used. These include testing standards referenced by ASHRAE Standard 90.1–1989 for the measurement of steady state combustion efficiency of commercial packaged boilers. Because we have very limited discretion to depart from the standards referenced in ASHRAE/IES 90.1, Section 32 of the FEAA does not apply to them.

The only standard incorporated in this proposed rule that is not referenced by ASHRAE Standard 90.1–1989 is ASHRAE Standard 103–1993, '' Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers.'' We propose to adopt this standard to obtain a suitable optional test procedure for condensing boilers, which are not covered by the test procedures in ASHRAE Standard 90.1–1989. We have evaluated this standard and are unable to conclude whether it fully complies with the requirements of section 32(b) of the Federal Energy Administration Act, *i.e.,* that it was developed in a manner that fully provides for public participation, comment and review.

As required by section 32(c) of the Federal Energy Administration Act, we will consult with the Attorney General and the Chairman of the Federal Trade Commission concerning the impact of this standard on competition, prior to prescribing a final rule.

I. Review Under Unfunded Mandates Reform Act of 1995

Section 202 of the Unfunded Mandates Reform Act of 1995 (''Unfunded Mandates Act'') requires that we prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by state, local, and tribal governments, in the

aggregate, or by the private sector, of $100 million or more in any one year. The budgetary impact statement must include: (i) Identification of the Federal law under which the rule is promulgated; (ii) a qualitative and quantitative assessment of anticipated costs and benefits of the Federal mandate and an analysis of the extent to which such costs to state, local, and tribal governments may be paid with Federal financial assistance; (iii) if feasible, estimates of the future compliance costs and of any disproportionate budgetary effects the mandate has on particular regions, communities, non-Federal units of government, or sectors of the economy; (iv) if feasible, estimates of the effect on the national economy; and (v) a description of the Department's prior consultation with elected representatives of state, local, and tribal governments and a summary and evaluation of the comments and concerns presented.

We have determined that the action proposed today does not include a Federal mandate that may result in estimated costs of $100 million or more to state, local or to tribal governments in the aggregate or to the private sector. Therefore, the requirements of Sections 203 and 204 of the Unfunded Mandates Act do not apply to this action.

J. Review Under the Plain Language Directives

The President's Memorandum on ''Plain Language in Government Writing,'' 63 FR 31885 (June 10, 1998) directs each Federal agency to write all published rulemaking documents in plain language. The Memorandum includes general guidance on what constitutes ''plain language.'' Plain language requirements will vary from one document to another, depending on the intended audience, but all plain language documents should be logically organized and clearly written.

We have tried to make this proposed rule easy to understand. We are also requesting suggestions on how to improve its readability further.

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

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. No. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any proposed rule or policy that may affect family well-being. Today's proposal would not have any impact on the autonomy or the integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

IV. Public Comment

A. Written Comment Procedures

We invite interested persons to participate in the proposed rulemaking by submitting data, comments, or information with respect to the issues set forth in today's proposed rule to Ms. Brenda Edwards-Jones, at the address indicated at the beginning of the notice. We will consider all submittals received by the date specified at the beginning of this notice in developing the final rule.

According to 10 CFR 1004.11, any person submitting information which he or she believes to be confidential and exempt by law from public disclosure should submit one complete copy of the document and ten (10) copies, if possible, from which the information believed to be confidential has been deleted. The Department of Energy will make its own determination with regard to the confidential status of the information and treat it according to its determination.

Factors of interest to us when evaluating requests to treat as confidential information that has been submitted include:

(1) A description of the items;

(2) An indication as to whether and why such items are customarily treated as confidential within the industry;

(3) Whether the information is generally known by or available from other sources;

(4) Whether the information has previously been made available to others without obligation concerning its confidentiality;

(5) An explanation of the competitive injury to the submitting person which would result from public disclosure;

(6) An indication as to when such information might lose its confidential character due to the passage of time; and

(7) Why disclosure of the information would be contrary to the public interest.

B. Public Workshop

1. Procedures for Submitting Requests To Speak

You will find the time and place of the public workshop listed at the beginning of this notice of proposed rulemaking. We invite any person who has an interest in today's notice of proposed rulemaking, or who is a representative of a group or class of persons that has an interest in these proposed rules, to make a request for an opportunity to make an oral presentation. If you would like to attend the public workshop, please notify Ms. Brenda Edwards-Jones at (202) 586–2945. You may hand deliver requests to speak to the address indicated at the beginning of this notice between the hours of 8 a.m. and 4 p.m., Monday through Friday, except Federal holidays, or send them by mail.

The person making the request should state why he or she, either individually or as a representative of a group or class of persons, is an appropriate spokesperson, briefly describe the nature of the interest in the rulemaking, and provide a telephone number for contact. We request each person selected to be heard to submit an advance copy of his or her statement at least two weeks prior to the date of this workshop as indicated at the beginning of this notice. We, at our discretion, may permit any person wishing to speak who cannot meet this requirement to participate if that person has made alternative arrangements with the Office of Building Research and Standards in advance. The letter making a request to give an oral presentation must ask for such alternative arrangements.

2. Conduct of Workshop

The Department will designate a Department official to preside at the workshop and we may also use a professional facilitator to facilitate discussion. The workshop will not be a judicial or evidentiary-type hearing, but the Department will conduct it in accordance with 5 U.S.C. 553 and Section 336 of the Act and a court reporter will be present to record the transcript of the workshop. We reserve the right to schedule the presentations by workshop participants, and to establish the procedures governing the conduct of the workshop.

The Department will permit each participant to make a prepared general statement, limited to five (5) minutes, prior to the discussion of specific topics. The general statement should not address these specific topics, but may cover any other issues pertinent to this rulemaking. The Department will permit other participants to briefly comment on any general statements. We will divide the remainder of the hearing into segments, with each segment consisting of one or more of the following specific topics covered by this notice:

Packaged Boiler Definition and Scope of Coverage

- Method of Shipment and Assembly.
- Boiler Application.
- Boiler Capacity.
- Boiler Operation.

Test Procedures and Energy Efficiency Standards for Commercial Packaged Boilers

- Test Procedure and Test Conditions for Low Pressure Boilers.
- Test Procedure and Test Conditions for High Pressure Boilers.
- Boilers Designed for Low Water Temperature Applications.
- Condensing Boilers.
- Modular Boilers and Multiple Boilers.
- Testing and Rating a Steam and Hot Water Boiler.
- Other Test Standard Topics.

The Department will introduce each topic with a brief summary of the relevant provisions of the proposed rule, and the significant issues involved. We will then permit participants in the hearing to make a prepared statement limited to five (5) minutes on that topic. At the end of all prepared statements on a topic, the Department will permit each participant to briefly clarify his or her statement and comment on statements made by others. Participants should be prepared to answer questions by us and by other participants concerning these issues. Our representatives may also ask questions of participants concerning other matters relevant to the hearing. The total cumulative amount of time allowed for each participant to make prepared statements must be 20 minutes.

The official conducting the hearing will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules, or modification of the above procedures, needed for the proper conduct of the hearing.

We will make the entire record of this rulemaking, including the transcript, available for inspection in the Department's Freedom of Information Reading Room. Any person may purchase a copy of the transcript from the transcribing reporter.

C. Issues on Which Comments Are Requested

We are interested in receiving comments and/or data concerning the feasibility, workability and appropriateness of the test procedures proposed in today's rulemaking. Also, we welcome discussion on improvements or alternatives to the proposed approaches. We also invite comments on how to make this proposed rule easier to understand. For example:

- Are the requirements in the rule clearly stated?
- Have we organized the material to suit your needs, or would a different organization be better?
- Can we improve the rule's format?

List of Subjects in 10 CFR Part 431

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

Issued in Washington, DC, on May 8, 2000.

Dan W. Reicher,

Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons set forth in the preamble, Title 10, Part 431 of the Code of Federal Regulations is proposed to be 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.

2. Subpart K is added to read as follows:

Subpart K—Commercial Packaged Boilers.

Sec.

Subpart K—Commercial Packaged Boilers

§ 431.351 Purpose and scope.

This subpart contains energy conservation requirements for certain commercial packaged boilers, pursuant to Part C of Title III of the Energy Policy and Conservation Act, as amended, 42 U.S.C 6311–6316.

§ 431.352 Definitions for commercial packaged boilers.

For purposes of subparts I through P of this part, terms are defined as provided for elsewhere in this subpart, in section 340 of the Act, and as follows—

Combustion efficiency for a commercial packaged boiler means the efficiency descriptor for packaged boilers, determined using test procedures prescribed under § 431.362 and equals to 100 percent minus percent flue loss.

Commercial packaged boiler means a packaged boiler that is a commercial HVAC & WH product with a capacity of 300,000 Btu per hour or more which, to any significant extent, is distributed in commerce,

(1) For heating or space conditioning applications in buildings, or

(2) For service water heating in buildings but does not meet the definition of ''hot water supply boiler'' in this part.

Condensing boiler means a packaged boiler which will condense part of the water vapor in the flue gases, and which includes a means of collecting and draining this condensate from its heat exchanger section.

Flue condensate means liquid formed by the condensation of moisture in the flue gases.

Packaged boiler means a boiler that is shipped complete with heating equipment, mechanical draft equipment and automatic controls; usually shipped in one or more sections. If the boiler is shipped in more than one section, the sections may be produced by more than one manufacturer, and may be originated or shipped at different times and from more than one location.

Packaged high pressure steam and high temperature water boiler means a commercial packaged boiler which operates at a steam pressure higher than 15 psig for a steam boiler, and at a water pressure above 160 psig or at a water temperature exceeding 250°F, or both, for a high temperature water boiler.

Packaged low pressure steam and hot water boiler means a commercial packaged boiler which operates at or below a steam pressure of 15 psig for a steam boiler, and at or below 160 psig pressure and 250°F temperature for a hot water boiler.

Test Procedures

§ 431.361 Materials incorporated by reference.

(a) The Department incorporates by reference the following test procedures which are not otherwise set forth in this 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 part 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. The Department incorporates 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) The Hydronics Institute (HI) Standard ''Testing and Rating Standard for Heating Boilers'', 6th Edition, 1989 (''1989 HI Standard'').

(2) The American Society of Mechanical Engineers Power Test Codes for Steam Generating Units, ASME PTC 4.1–1964, Reaffirmed 1991 (Including 1968 and 1969 Addenda) (''ASME PTC 4.1'').

(3) 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'', Sections 7.2.2.4, 7.8, 9.2, 11.2.7.1 and 11.3.7.2.

(4) American National Standards Institute (ANSI) Standard Z21.13–1993, ''Gas-Fired Low Pressure Steam and Hot Water Boilers'', Exhibit D.

(c) *Availability of references.*

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

(i) Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.

(ii) U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Hearings and Dockets, ''Test Procedures and Efficiency Standards for Commercial Packaged Boilers,'' Docket No. EE–RM/TP–99–470, 1000 Independence Avenue, SW, Washington, DC 20585.

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

(i) Request copies of the ASHRAE Standards 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) Request copies of the ANSI Standard from Global Engineering Documents, 15 Inverness Way West, Englewood, CO 80112, or http://global.ihs.com/, or http://webstore.ansi.org/ ansidocstore/.

(iii) Request copies of the HI Standard from the Hydronics Institute Inc., 35 Russo Place, Berkeley Heights, NJ 07922, or http://www.gamanet.org/publist/hydroordr.htm.

(iv) Request copies of the ASME Standard from the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017, or http://www.asmeny.org/catalog.

§ 431.362 Uniform test method for the measurement of energy efficiency of commercial packaged boilers.

(a) *Scope.* This section covers the test procedures you must follow if, pursuant to EPCA, you are measuring the steady state combustion efficiency of a gas-fired and oil-fired, packaged commercial boiler having a rated capacity of 300,000 Btu per hour or more.

(b) *Definitions.* For purposes of this section, the Department incorporates by reference the definitions specified in section 3.0 of the Hydronics Institute Testing and Rating Standard for Heating Boilers, sixth edition, June 1989, with the exception of the definition for the terms packaged boiler, condensing boilers, packaged low pressure steam and hot water boiler, and packaged high pressure steam and high temperature water boiler.

(c) *Test Setup.* (1) *Test Setup for Packaged Low Pressure Steam and Hot Water Boilers.* (i) Classifications: If you employ boiler classification, you must classify boilers as given in section 4.0 of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers.

(ii) Requirements: You must conduct the combustion efficiency test as given in sections 5.1.2, (Combustion Efficiency Test), 5.4 (Basis of Ratings, sec. 5.4.1, 5.4.4, 5.4.5, and 5.4.6) of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers.

(iii) Instruments and Apparatus: You must follow the requirements for instruments and apparatus in sections 6 (Instruments) and 7 (Apparatus, with the exception of sec. 7.2.3 which is for boilers of less than 300,000 Btu per hour capacity) of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers.

(iv) Test Conditions: Use test conditions from section 8.0 of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers, with the exception of subsection 8.5.1, in place of which you must use the following paragraphs:

(A) Water Temperatures—For the water test, use a boiler inlet temperature of 35°F to 80°F and a boiler outlet temperature of 180°F±2°F.

(B) Inlet Water Temperature for Condensing Boilers—To test the boiler as a condensing boiler (see paragraph (d)(1)(ii) of this section for condensing boilers), set the inlet water temperature to 80°F±5°F.

(v) Alternative Test Procedure for Testing Low Pressure Steam and Hot Water Boilers. Instead of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers as specified in paragraphs (c)(1)(ii) and (c)(1)(iii) of this section, you may conduct the combustion efficiency test for low pressure steam and hot water boilers using the Abbreviated Efficiency Test (Simplified Efficiency Test) as specified in ASME PTC 4.1 (see paragraphs (c)(2), (c)(2)(i), (c)(2)(ii)(A) of this section). If you select the ASME PTC 4.1 procedure for conducting the required combustion efficiency test for low pressure steam and hot water boilers, you must use the test conditions specified in paragraphs (c)(1)(iv), (c)(1)(iv)(A), and (c)(1)(iv)(B) of this section.

(2) *Test Setup for Packaged High Pressure Steam and High Temperature Water Boilers, and Optional Test Procedure for Packaged Low Pressure Steam and Hot Water Boilers.* (i) Use the test procedure for the efficiency test from ASME PTC 4.1. Conduct the combustion efficiency test with the Abbreviated Efficiency Test (Simplified Efficiency Test) for gas and oil fuels described in Section 1.07 of ASME PTC 4.1.

(ii) Test Conditions for the Combustion Efficiency.

(A) Low Pressure Steam and Hot Water Boilers—If you select ASME PTC 4.1 for the efficiency test of low pressure steam and hot water boilers, use test conditions specified in paragraph (c)(1)(iv) of this section.

(B) High Pressure Steam and High Temperature Water Boilers—For the efficiency test, use a test steam pressure for high pressure steam boilers, and a test water pressure and water temperature for high temperature water boilers, consistent with the normal design point operating conditions for which the manufacturer designed the boiler. The boiler must be tested at the manufacturer's rated maximum input.

(d) *Test Measurements.* (1) *Test measurements for Packaged Low Pressure Steam and Hot Water Boilers.* (i) Test for combustion efficiency according to sections 9.1 (excluding sec. 9.1.1.2.3 and 9.1.2.2.3), 9.2 and 10.2 of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers, except that you must replace the boiler water inlet temperature, boiler water outlet temperature, and boiler water temperature rise (outlet minus inlet) in sections 9.1.2.1.1 and 9.1.2.1.3 of the HI test standard with the inlet and outlet temperatures specified in paragraphs (c)(1)(iv)(A) (for non-condensing boilers) and (c)(1)(iv)(B) (for condensing boilers) of this section.

(ii) Procedure for the Measurement of Condensate for a Condensing Boiler. With the inlet water temperature as specified in paragraph (c)(1)(iv)(B) of this section, measure the condensate from the flue gas under steady state

operation according to sections 7.2.2.4, 7.8 and 9.2 of ASHRAE Standard 103–1993 under the rated input conditions. Conduct the measurement during an additional 30 minutes of steady state operation after completing the steady state combustion efficiency test in paragraph (d)(1)(i) of this section.

(iii) Steam and Hot Water Boilers. Test a steam and hot water boiler as a steam boiler for its combustion efficiency. Optionally, you may also test this boiler as a hot water boiler to obtain a combustion efficiency rating when the boiler is operated as a hot water boiler.

(2) Test measurements for Packaged High Pressure Steam and High Temperature Water Boilers, and Optional Test Procedure for Packaged Low Pressure Boilers. Use the test procedure from Section 5, Efficiency by Heat Loss Method, of ASME PTC 4.1.

(e) *Calculations.* (1) *Calculations for Packaged Low Pressure Steam and Hot Water Boilers.* (i) Combustion Efficiency. Use the calculation procedure for combustion efficiency test specified in section 11.2 of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers (except that for gas fuel, do not calculate Item 9 of sec. 11.2.1 which is for oil fuel only). For gas-fired boilers, instead of using section 11.2 of the 1989 HI Standard to calculate the flue loss, you may calculate the flue loss by the procedure specified in Exhibit D of the ANSI Standard Z21.13a–1993.

(ii) Procedure for the Calculation of the Additional Heat Gain and Heat loss, and Adjustment to the Combustion Efficiency, for a Condensing Boiler.

(A) Procedure for the Calculation of the Additional Heat Gain and Heat loss. After following the procedure for the measurement of flue condensate of paragraph (d)(1)(ii) of this section, calculate the latent heat gain from the condensation of the water vapor in the flue gas and heat loss due to the flue condensate down the drain according to section 11.3.7.1 and 11.3.7.2 of ASHRAE Standard 103–1993, with the exception that in the equation for the heat loss due to hot flue condensate flowing down the drain in section 11.3.7.2, replace the indoor temperature of 70°F and the temperature term TOA by the measured room ambient temperature as determined in section 8.4.3 of the 1989 Hydronics Institute Testing and Rating Standard for Heating Boilers.

(B) Adjustment to the Combustion Efficiency for a Condensing Boiler. Adjust the combustion efficiency calculated in paragraph (e)(1)(i) of this section by adding the latent heat gain from the condensation of the water vapor in the flue gas, and by subtracting the heat loss (due to the flue condensate down the drain) as calculated in (e)(1)(ii)(A) of this section, to obtain the combustion efficiency of a condensing boiler.

(2) *Calculations for Packaged High Pressure Steam and High Temperature Water Boilers, and for the Alternative Test Procedure (paragraph (c)(1)(v) of this section) for Packaged Low Pressure Boilers.* Use the Abbreviated Efficiency Test by the heat loss method for gas or oil fuel as specified in section 7.3 and the Test Forms for the Abbreviated Efficiency Test, PTC 4.1–a (Summary Sheet) and PTC 4.1–b (Calculation Sheet), of ASME PTC 4.1 to determine the combustion efficiency, except that you must set the following specific heat loss terms (as listed in section 7.3 of ASME PTC 4.1) to 0: sections 7.3.2.03 (moisture in fuel), 7.3.2.01 (combustible in dry refuse), 7.3.2.10 (radiation to surroundings), 7.3.2.05 through 7.3.2.09 and 7.3.2.11 through 7.3.2.14 (unmeasured losses).

Energy Efficiency Standards

§ 431.371 Energy conservation standards and effective dates.

Each commercial packaged boiler manufactured on or after January 1, 1994 must meet the following energy efficiency standard levels:

(a) For a gas-fired packaged boiler with a capacity of 300,000 Btu per hour or more, the combustion efficiency at the maximum rated capacity must be not less than 80 percent.

(b) For an oil-fired packaged boiler with a capacity of 300,000 Btu per hour or more, the combustion efficiency at the maximum rated capacity must be not less than 83 percent.

[FR Doc. 00–19721 Filed 8–8–00; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 431

[Docket No. EE–RM/TP–99–480]

RIN 1904–AA95

Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards for Commercial Water Heaters, Hot Water Supply Boilers and Unfired Hot Water Storage Tanks

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

ACTION: Proposed rule and public hearing.

SUMMARY: The Energy Policy and Conservation Act, as amended (EPCA), establishes energy efficiency standards and test procedures for certain commercial products, including commercial water heaters, hot water supply boilers and unfired hot water storage tanks. The Department of Energy (we, DOE, or the Department) proposes regulations to implement the standards and test procedures for these commercial water heaters, hot water supply boilers and unfired hot water storage tanks.

DATES: The Department will accept comments, data, and information regarding the proposed rule until October 23, 2000. Please submit a signed original and ten (10) copies. In addition, we request that you provide an electronic copy (3½″ diskette) of the comments in WordPerfect™ 8.

We will hold a public hearing (workshop) on September 20, 2000, in Washington, DC. Please send requests to speak at the workshop so that we receive them by 4:00 p.m., on September 6, 2000. Send ten (10) copies of your statements for the public workshop so that we receive them by 4:00 p.m., on September 13, 2000. We also request a computer diskette (WordPerfect™ 8) of each statement.

ADDRESSES: Please submit written comments, oral statements, and requests to speak at the workshop to Brenda Edwards-Jones, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, EE–41, Docket No. EE–RM/TP–99–480, 1000 Independence Avenue, SW, Washington, DC 20585. You may send email to: brenda.edwards-jones@ee.doe.gov. The workshop will begin at 9:00 a.m., on September 20, 2000, in Room 1E–245 at the U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW, Washington, DC. You can find more information concerning public participation in this rulemaking proceeding in section IV, ''Public Comment,'' of this notice.

You can read the transcript of the public workshop and public comments received in the Freedom of Information Reading Room (Room No. 1E–190) at the U.S. Department of Energy, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays.

You can obtain the latest information regarding the public workshop from the Office of Building Research and Standards world wide web site at the