

unrepresentative of the basic models' true energy consumption characteristics.

Issued in Washington, DC, on April 30, 2010.

Cathy Zoi,  
Assistant Secretary, Energy Efficiency and  
Renewable Energy.

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## DEPARTMENT OF ENERGY

### Office of Energy Efficiency and Renewable Energy

[Docket Number: EERE-BT-2006-WAV-0140]

#### Energy Conservation Program for Consumer Products: Decision and Order Denying a Waiver to PB Heat, LLC From the Department of Energy Residential Furnace and Boiler Test Procedures

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

**ACTION:** Decision and Order.

**SUMMARY:** This notice publishes DOE's Decision and Order in Case No. WAV-0140, which denies a waiver to PB Heat, LLC (PB) from the existing DOE residential furnace and boiler test procedure. This Decision and Order pertains to PB's PO-50, PO-60, PO-63, and PO-73 models of oil-fired boilers. DOE previously published the PB Petition for Waiver and solicited comments, data, and information regarding the petition, which requested permission to publish a Low Water Temperature Seasonal Efficiency (LWTSE) value, conducted under an alternative industry test procedure, in addition to the mandatory Annual Fuel Utilization Efficiency (AFUE) value required under DOE's energy conservation standards. PB's petition suggested that testing and reporting of the AFUE value alone is not representative of its basic models' true energy consumption characteristics. DOE denies PB's Petition for Waiver for the reasons set forth below. Because a waiver is not appropriate, DOE cannot prescribe an alternative test procedure. However, the Decision and Order clarifies that it is permissible for a manufacturer to conduct LWTSE testing and to present such results in product literature. It is noted that the Energy Guide label used for certification and consumer information purposes can only present information generated under the DOE test procedure, as required under applicable Federal Trade

Commission (FTC) regulations. When making such supplemental statements in the product literature, manufacturers must continue to conduct, report, and fairly disclose the AFUE test results generated under the DOE test procedures, and to use those AFUE results when making representations as to the basic model's energy efficiency. Supplemental statements regarding LWTSE must fairly disclose the results of such testing and may not mislead the consumer about the relevance of the required AFUE value. For example, DOE suggests any manufacturer that wishes to show the LWTSE values in addition to the AFUE value should make clear the differences between the two tests, including the different operating characteristics and conditions, for consumers.

**DATES:** This Decision and Order is effective May 7, 2010.

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For access to the docket to read this notice, the Petition for Waiver, background documents, or comments received, please call Ms. Brenda Edwards at (202) 586-2945 for information regarding visiting the Resource Room of the Building Technologies Program. The Resource Room is accessible at the U.S. Department of Energy, 950 L'Enfant Plaza, SW., Suite 600, Washington, DC, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

**SUPPLEMENTARY INFORMATION:** In accordance with 10 CFR 430.27(l), DOE gives notice of the issuance of its Decision and Order as set forth below. In this Decision and Order, DOE denies PB's request for a waiver from the existing DOE residential furnace and boiler test procedure for its PO-50, PO-60, PO-63, and PO-73 models of oil-fired boilers. DOE denies the waiver because: (1) The PB units can and do operate at the higher water temperatures specified in the DOE test procedure; (2) there is no indication that the existing test procedure generates inaccurate results at the specified temperatures; and (3) the PB units meet the AFUE

level required under the energy conservation standard. Accordingly, DOE has determined that the applicable test procedure is representative of the energy consumption characteristics of the PB basic models at the specified conditions (*i.e.*, water temperatures) and that the DOE test procedures for these residential products will allow PB to test and rate its above-referenced line of oil-fired boilers.

DOE clarifies that it is permissible for a manufacturer to conduct LWTSE testing and present the results in product literature (other than supplementation of the certification label, which can only present information generated under the DOE test procedure, as required under applicable FTC regulations). When making such supplemental statements in product literature, manufacturers must continue to conduct, report, and fairly disclose the AFUE test results generated under the DOE test procedures (10 CFR 430.62(a)(4)(viii)), and to use AFUE results when making representations as to the basic model's energy efficiency (42 U.S.C. 6293(c)(1)). Supplemental statements regarding LWTSE must fairly disclose the results of such testing and may not mislead the consumer about the relevance of the required AFUE value. For example, DOE suggests any manufacturer that wishes to show the LWTSE values in addition to the AFUE value should make clear the differences between the two tests, including the different operating characteristics and conditions, for consumers.

Issued in Washington, DC, April 30, 2010.

**Cathy Zoi,**

Assistant Secretary, Energy Efficiency and  
Renewable Energy.

#### Decision and Order

*In the Matter of:* PB Heat, LLC (PB)  
(Case No. WAV-0140).

#### Authority

Title III of the Energy Policy and Conservation Act of 1975 (EPCA), as amended, sets forth a variety of provisions concerning energy efficiency, including Part A<sup>1</sup> of Title III, which establishes the "Energy Conservation Program for Consumer Products Other Than Automobiles." (42 U.S.C. 6291-6309) Similarly, Part A-1<sup>2</sup> of Title III of EPCA, 42 U.S.C. 6311-6317, provides for an energy efficiency program titled,

<sup>1</sup> This part was originally titled Part B. It was redesignated Part A in the United States Code for editorial reasons.

<sup>2</sup> This part was originally titled Part C. It was redesignated Part A-1 in the United States Code for editorial reasons.

“Energy Efficiency Program for Certain Commercial and Industrial Equipment.” (42 U.S.C. 6311–6317)

In general, Part A of Title III also provides for test procedures, labeling, and energy conservation standards for a variety of covered consumer products, including residential furnaces and boilers, and it authorizes DOE to require information and reports from manufacturers. With respect to test procedures, the statute generally authorizes the Secretary of Energy (the Secretary) to prescribe test procedures that are reasonably designed to produce results which reflect energy efficiency, energy use, and estimated annual operating costs, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The statute further provides that no manufacturer, distributor, retailer, or private labeler may make any representation in writing (including on a label) or in any broadcast advertisement with respect to the energy use or efficiency (or water use) of a covered product to which a DOE test procedure is applicable, unless such product has been tested in accordance with such test procedure and such representation fairly discloses the results of such testing. (42 U.S.C. 6293(c)(1))

In relevant part, EPCA requires that DOE prescribe standardized test procedures to measure the energy consumption of residential furnaces and boilers in terms of the AFUE metric. (42 U.S.C. 6291(22)(A)) DOE adopted test procedures for residential furnaces and boilers which are codified at 10 CFR 430.23(n) and at 10 CFR 430, subpart B, appendix N (“Uniform Test Method For Measuring the Energy Consumption of Furnaces and Boilers”). The DOE test procedure incorporates by reference provisions of the American National Standards Institute (ANSI)/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.” The test procedure prescribes a standardized method for measuring the energy consumption of various types of furnaces and boilers. Further, the test procedure measurements can be used in determining model-specific energy consumption information to assist consumers in making purchasing decisions.

DOE’s regulations set forth under 10 CFR 430.27 contain provisions that enable a person to seek a waiver from the test procedure requirements for a covered consumer product under the following circumstances. Any interested

person may submit a petition for waiver upon the grounds that the basic model contains a design characteristic which either prevents testing of the basic model according to the prescribed test procedures, or the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(a)(1).

Furthermore, the regulations authorize the Assistant Secretary for Energy Efficiency and Renewable Energy (Assistant Secretary) to grant an Interim Waiver from test procedure requirements applicable to a particular basic model of consumer product, if it is determined that the applicant will experience economic hardship if the Application for Interim Waiver is denied, if it appears likely that the Petition for Waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the Petition for Waiver. 10 CFR 430.27(g). An Interim Waiver will remain in effect for 180 days or until DOE issues its determination on the Petition for Waiver, whichever occurs first. Further, an Interim Waiver may be extended for an additional 180 days. 10 CFR 430.27(h).

#### *Assertions and Determinations*

PB submitted a Petition for Waiver from the temperature requirements listed in ASHRAE Standard 103–1993, with errata of October 24, 1996, which are incorporated into appendix N to subpart B of 10 CFR Part 430. The Petition for Waiver is based on the grounds that “the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics” [as to provide materially inaccurate comparative data]. 71 FR 46460, 46463 (August 14, 2006). In its petition, PB requested that in addition to the mandatory reporting of AFUE, it be allowed to also provide an LWTSE efficiency measure for its oil-fired boilers based upon testing under the procedures in Appendix F of ASHRAE Standard 103–2003 (Public Review Draft).<sup>3</sup> *Id.* at 46463–64.

<sup>3</sup> The Review Draft is currently part of ASHRAE Standard 103–2007 as an informative appendix. ASHRAE Standard 103–2007 states, “This appendix is not part of the standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus

#### 1. PB Petition for Waiver

On March 27, 2006, PB filed a petition requesting that it be permitted to publish an LWTSE value in conjunction with the AFUE value that is the result of testing under 10 CFR part 430, subpart B, appendix N (*i.e.*, the test procedures for residential furnaces and boilers). At specific issue in the PB Petition are its PO–50, PO–60, PO–63 and PO–73 models of oil-fired boilers. PB stated that the AFUE value from the prescribed test procedure may result in an evaluation of the basic model that is unrepresentative of its true energy consumption characteristics. PB did not request to rely on the LWTSE metric in lieu of the AFUE metric, but instead requested permission to publish both values for its residential boilers. DOE’s current test procedure does not provide for LWTSE testing, which represents a variant of AFUE under different operating conditions (*i.e.*, lower return water temperatures).

DOE understands that residential boilers are typically used either with baseboard convector or radiant floor heating systems that circulate water in a closed-loop fashion. Originating at the boiler, heated water is pumped to the convectors or radiant floor coils. As the water passes through the convectors or floor coils, heat is extracted, and the water is cooled. The heated water exiting the boiler is termed “supply water,” and the cooled water entering the boiler is termed, “return water.” For any given system, the return water temperature is directly related to the supply water temperature, which can be set at the boiler. Also, the return water temperature is a function of a house’s heating load and the effectiveness of either the convector or radiant floor coil system. Different heating systems and heating control systems may provide different water temperatures. For example, supply and return water temperatures are typically lower for a radiant floor coil system than a convector system. Nevertheless, to uniformly test and compare the AFUE of different residential boiler heating systems, the procedure in 10 CFR part 430, subpart B, appendix N specifies the use of standardized supply and return water temperatures for measuring the AFUE. As part of the petition, PB asserted that the specified temperatures do not suitably match the expected performance characteristics of the

process. Unresolved objectors on informative material are not offered the right to appeal to ASHRAE or ANSI.” However, for ease of discussion, this document will continue to refer to ASHRAE Standard 103–2003, as specified in PB’s original petition.

subject boiler units, and consequently, the prescribed test procedures under 10 CFR 430.23(n)(2) and in 10 CFR part 430, subpart B, appendix N, evaluate the subject boiler models in a manner that is unrepresentative of their true energy consumption characteristics in the field.

PB stated that if a boiler is used with radiant floor heating systems, the return and supply water temperatures are far lower than those seen with baseboard convector systems. Similarly, PB stated that if a boiler is used with baseboard convector heating systems, in combination with outdoor reset controls, the supply water temperatures can be lower than that specified in the DOE test procedure for some fraction of the heating season. In its petition, PB also asserted that because the boilers in question are supplied with an outdoor reset control from the manufacturer, the boilers installed with either radiant floor heating systems or baseboard convector heating systems are capable of achieving condensing conditions, and increased efficiency and reduced energy use, during warmer periods of the heating season.

In particular, PB asserted that its oil-fired boiler models PO-50, PO-60, PO-63, and PO-73 achieve fully-condensing conditions at return water temperatures that are below the 120 degrees Fahrenheit (EF) return water temperature required under the test procedure at 10 CFR 430.23(n)(2) and 10 CFR 430, subpart B, appendix N. According to PB, these oil-fired boilers are designed to operate in low-temperature applications, and are supplied with an outdoor reset control that can allow the boiler to operate with lower return water temperatures for much of the heating season.

In contrast, the DOE test procedure prescribed for boilers, under 10 CFR 430.23(n) and 10 CFR part 430, subpart B, appendix N, requires a return water temperature of 120 °F. PB asserted that the DOE test procedure will not reflect the efficiency that its boilers are capable of achieving due to the variations in the return water temperature. Instead, PB argued that the procedure described in ASHRAE Standard 103-2003, which uses a nominal return water temperature of 90 °F and a nominal supply water temperature of 110 °F, would better represent the seasonal efficiency of its boilers. PB believes that a waiver permitting publication of LWTSE would allow customers making purchasing decisions to “receive the greatest seasonal efficiency, save money on fuel costs and apply for the Energy Tax Credit that is part of the Federal Energy Bill of 2005.” 71 FR 46460, 46464 (August 14, 2006).

## 2. Factors To Consider in Granting or Evaluating a Petition

DOE understands that PB is seeking a waiver of the test procedure requirements for return water temperature under 10 CFR 430.23(n)(2), because the petitioner asserts that the test procedure may evaluate its boiler models PO-50, PO-60, PO-63, and PO-73 in a manner so unrepresentative of their true energy consumption characteristics as to provide materially inaccurate comparative data. Also, DOE understands that PB seeks to use an alternative test procedure (*i.e.*, draft ASHRAE Standard 103-2003), which specifies lower supply and return water temperatures than required in DOE’s test procedure and a different seasonal efficiency metric. In addition, PB requested permission to publish an LWTSE in addition to AFUE for its residential boilers.

In light of the above, DOE considered the potential impacts of testing condensing boilers under lower water temperatures, as suggested by PB. In its notice publishing PB’s Petition for Waiver, DOE expressed concern that the reliability of the approach suggested by PB in fact depends upon different seasonal and heating conditions that can vary from house to house, such as heating load profile that is a function of geographic location, temperature of the return water necessary for condensation, and the performance of a particular house’s baseboard convectors or radiant floor heating system. DOE also tentatively concluded that appendix F of the draft ASHRAE Standard 103-2003 (which specifically states it is intended for radiant floor heating systems) does not take into account how often a boiler will operate in the condensing mode with a baseboard convector system, even with an outdoor reset control. Thus, it may not accurately reflect “annualized” efficiency, which could cause confusion to consumers making a purchasing decision. Further, DOE understands from the PB petition that outdoor reset controls are “supplied” with its boilers. However, it is unclear whether such controls are an integral part of the boiler itself or a separate mechanism for installation in the field. If these control mechanisms are field-installed, DOE cannot be certain that a boiler would be equipped with the intended outdoor controls, which ultimately impact the annual energy use of the unit. It is DOE’s understanding that the outdoor temperature reset does not replace the safety mechanisms in place for residential boilers, which prevent them from operating at temperatures well

above the DOE test procedure conditions. Finally, DOE questioned whether granting a waiver to PB could result in LTWSE ratings for its oil-fired boiler models PO-50, PO-60, PO-63, and PO-73 that do not enable uniform comparison with the ratings of other oil-fired boilers. 71 FR 46460, 46461 (August 14, 2006).

## Discussion of Comments

DOE announced in the **Federal Register** the PB Petition for Waiver, the potential use of draft ASHRAE Standard 103-2003, appendix F as an alternative test procedure for residential oil-fired furnaces and boilers, a calculation methodology for LWTSE, and a request for public comments. 71 FR 46460 (August 14, 2006).

In particular, DOE requested comments on the following questions:

- Does the DOE test procedure provide results that are unrepresentative of the PB PO-50, PO-60, PO-63, and PO-73 models of oil-fired boilers’ energy consumption so as to provide materially inaccurate comparative data in all installations?
  - Were PB to be granted a waiver, would it lead to a proliferation of petitions for waiver for other oil-fired boilers?
  - Is the DOE test procedure appropriate for boilers used with baseboard convector heating systems?
  - Are there other metrics that can be used to assess the performance of low-water-temperature boilers used with baseboard heating systems?
  - Is it appropriate for PB to use the proposed alternate test procedures for ratings and representations, and compliance with energy efficiency standards, building codes, and regulatory requirements?
  - Should the Department prescribe for manufacturers the LWTSE for low-water-temperature boilers?
- Id.* at 46462.

In response, DOE received comments from seven interested parties. The comments appear in Docket No. EERE-BT-2006-WAV-0140. (See the **FOR FURTHER INFORMATION CONTACT** section in this notice for further information about access to the docket.) The following discussion identifies each interested party and summarizes its relevant comments.

### (1) Bradford White Corporation

Bradford White Corporation (BWC) generally opposed the Petition for Waiver and commented that lowering the supply water temperature (140 °F) and the return water temperature (120 °F) specified in ASHRAE Standard 103-1993 to 110 °F and 90 °F, respectively,

as PB requests, could increase the rated AFUE for all other boilers, especially condensing types. Further, BWC stated that the condensing products on today's market, including those with outdoor temperature reset controls, are currently rated according to the existing test procedures. In response to the above questions, BWC opined that the current test procedure (10 CFR 430.23(n)(2)) "does not provide materially inaccurate comparative data." (BWC, 9 at p.1) Instead, BWC suggested that it is designed to select a single set of operating conditions that a boiler may see in service and measure efficiency at that point. This single operating test point allows consumers to compare data across available models and manufacturers. BWC asserted that the current test procedure is appropriate for boilers used with baseboard convector systems, and that creating other ratings would confuse the market and consumers by creating a matrix of boiler types, system types, operating temperatures, and so forth. (BWC, 9 at p.2)

(2) National Oilheat Research Alliance

National Oilheat Research Alliance (NORA) generally favored the PB Petition for Waiver and provided several assertions to substantiate its position. First, the oil heating industry has objected to the AFUE rating procedure because it fails to recognize the benefits that controls and electronics may have on overall system efficiency. Second, NORA stated that the current test procedure for AFUE does not serve the interests of consumers because it does not allow the measurement of an oilheating boiler when it is fully condensing. Third, NORA argued that the operating system controls, including use of an outside reset feature, can adjust boiler water temperatures to meet particular heating loads, thereby improving efficiency over a range of weather conditions. (NORA, 8 at p.1,2)

(3) ECR International, Inc.

ECR International, Inc. (ECRI) strongly urged DOE to deny the PB Petition for Waiver. In general, ECRI did not object to the supplemental use of LWTSE for marketing and informational purposes. However, ECRI asserted that the AFUE test results under DOE's test conditions must be clearly distinguished from the optional LWTSE metrics to prevent consumer confusion. Notwithstanding the above, ECRI objected to the PB Petition for Waiver for the following reasons. According to ECRI, AFUE provides a common standard by which a consumer can make a logical comparison between boiler models and

manufacturers. However, AFUE can only be used for relative comparisons between boilers and not absolute expectations of fuel consumption, because the actual efficiency of a boiler depends on many factors that vary from house to house and the current test procedure requires a steady state condition for return water temperature. As an example, ECRI states that the performance of a unit configured with an outdoor reset feature and indirect domestic hot water heating will be different from a system without such features and that return water temperatures vary in any one demand cycle. (ECR, 6 at p.1)

In response to the above questions raised by DOE, ECRI offered the following comments. First, ECRI generally stated that AFUE and LWTSE metrics are not comparable. ECRI opined that the LWTSE metric would provide a higher efficiency value using the same test method due to differences in operating temperatures. Second, if DOE grants PB a waiver, ECRI will apply for and expect to receive a waiver for its products (both gas and oil types), and the result would be an increase of one to three percentage points of efficiency. Third, the current test procedure is appropriate for boilers used in baseboard applications, because AFUE enables comparisons between various boiler types. Fourth, the current use of AFUE allows for comparisons of low-water-temperature boilers. Fifth, it is not appropriate to use the LWTSE rating for compliance with energy efficiency standards, because reducing the water temperature would reduce the validity of the testing protocol. Overall, ECRI asserted that DOE should not substitute AFUE with LWTSE, and instead, ECRI recommended using LWTSE as a supplement to an AFUE rating to provide consumers with additional information on condition that the information is not confusing to consumers. (ECRI, 6 at p.2,3)

(4) Burnham Hydronics

In general, Burnham Hydronics (BH) agreed with PB that the current test procedure underestimates boiler efficiency in low-temperature applications, but it stated that all condensing boilers are disadvantaged in this way, so there should be no waiver. Further, BH opined that if a waiver were granted, there would not be a proliferation of waivers from the two manufacturers of oil-fired boilers, but there would be a proliferation of waivers from the more than twenty manufacturers of gas-fired boilers. BH stated its belief that the current test procedure overestimates the efficiency

of boilers that are used in baseboard heating systems, and underestimates the efficiency of boilers used in condensing systems. BH asserted that there are no other metrics that can be used to measure the performance of low-water-temperature boilers used with baseboard heating systems, and that it is not appropriate to use a test procedure for LWTSE to meet established energy efficiency standards. As a minimum, BH reasoned that the current test procedure puts all condensing boiler manufacturers on a level playing field. Lastly, BH commented that DOE could prescribe LWTSE for low-water-temperature boilers, but only through the rulemaking process. (BH, 3 at p.1,2)

(5) Brookhaven National Laboratory

Brookhaven National Laboratory (BNL) commented that the current AFUE test procedure for boilers specifies supply and return water temperatures at 140 °F and 120 °F, respectively. This return water temperature is specified both for condensing and non-condensing boilers. At this return water temperature, BNL stated that a gas-fired boiler can condense, but an oil-fired boiler will not. Furthermore, due to the lower water vapor content and lower latent heat loss, an oil-fired boiler will achieve higher efficiency than a gas-fired boiler under non-condensing conditions with the same excess air and flue gas temperature. (BNL, 10 at p. 1)

BNL stated its understanding that actual boiler temperatures can vary considerably in the field, and that the temperature in a particular system can be affected by controls, including outdoor reset controls. According to BNL, studies have shown that outdoor reset controls can enable condensing oil-fired boilers to operate in a condensing mode for most of the heating season, even when used with baseboard radiators. (BNL, 10 at p. 1)

In response to DOE's request for comments on other metrics that can be considered for low-water-temperature boilers used with baseboard heating systems, BNL addressed controls that provide variable water temperature. BNL stated that the ASHRAE Special Products Committee 155 is developing a test method for commercial boilers that includes the effects of controls and variable water temperatures, which would result in an "Application Seasonal Efficiency" where controls, oversize features, and multiple boiler options can be selected to evaluate performance in a particular building. In addition, BNL commented that the method for "Determination of Boiler Performance for Low Water

Temperature Applications,” defined an appendix to the public review draft ASHRAE Standard 103, “Method of Testing Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers,” was developed only for information and in particular for low temperature applications, such as radiant floor heating. BNL stated that this optional methodology uses supply and return water temperatures that are low enough to allow for condensing both in oil- and gas-fired boilers, but because this methodology uses a fixed-temperature water supply, it does not apply to a system with a variable temperature water supply. (BNL, 10 at p. 1, 2)

(6) Quincy Hydronic Technology, Inc.

Quincy Hydronic Technology, Inc. (QHT) strongly opposed granting a waiver to PB, arguing that it would be unfair to manufacturers that produce high-efficiency boilers which meet the required AFUE levels. Moreover, QHT objected to the AFUE rating system generally and asserted that it is not only flawed, but penalizes high-efficiency products. QHT cited examples of its B-10 boilers, wall-mounting gas boilers, and flexible cast iron boilers that essentially reduce fuel consumption and are more efficient because of innovative designs, but such benefits cannot be demonstrated through the AFUE test procedure. QHT indicated that, based on homeowner feedback, AFUE ratings fail consumers when making purchasing decisions. QHT opined that if PB were to receive a waiver, then DOE should expect requests for waivers from many manufacturers. QHT argued that DOE should revise the current test procedure so that it better reflects the performance boilers can achieve in actual field use and to make AFUE more meaningful. (QHT, 5 at p. 1, 2)

(7) LAARS Heating Systems Company

LAARS Heating Systems Company (LHSC) opposed granting a waiver to PB for its line of PO models of oil-fired boilers. According to LHSC, the change that PB requests for inlet and outlet temperatures from the levels currently specified in ASHRAE Standard 103-1993 (*i.e.*, from 120 °F/140 °F to 90 °F/110 °F) would increase the rated AFUE for these products, as it would for most other gas-fired and oil-fired boilers, and in particular condensing boilers. Further, if a new test procedure methodology is provided by waiver for only the PB products, then consumers would not be able to make reliable comparisons of AFUE ratings with the product lines of other manufacturers. Accordingly, LHSC argued that any

change in the current test procedure should be industry-wide. (LHSC, 11 at p. 1)

In response to DOE’s questions, LHSC commented that the current test procedure is not materially inaccurate, but it is designed for a single set of operating conditions and measures efficiency at that point, to enable consumers to compare data across available products. Also, LHSC reasoned that the test procedure is appropriate for boilers used with baseboard convector systems that are typically designed for 180 °F supply/160 °F return temperatures, which would result in slightly different installed operating efficiencies than rated AFUE. LHSC observed that existing standards, codes, and other regulatory requirements rely on the current test procedures for AFUE, so providing a unique set of testing requirements through waiver would give PB an unfair competitive advantage in meeting such requirements. In addition, AFUE is the only metric for measuring boiler performance, regardless of boiler or type of heating system that uses gas-fired or oil-fired boilers, and introducing other ratings would cause confusion in the marketplace. LHSC opined that using the alternative test procedure for ratings and representations, as proposed by PB, would artificially raise the ratings for products made by PB over the boiler products of other manufacturers that test for AFUE under the current test procedures. Nevertheless, LHSC asserted that DOE should review and seek comments on potential changes to ASHRAE Standard 103 and consider adoption of appropriate amendments to the test procedure suitable for implementation on an industry-wide basis. (LHSC, 11 at p. 2)

*Response to Comments and DOE Determination*

Regarding the responses received to the above questions raised by DOE and other issues presented by commenters, DOE offers the following discussion.

First, DOE asked whether the currently-prescribed test procedures may evaluate the PO-series basic model of oil-fired boiler manufactured by PB in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate data. Interested parties commented that although the current test procedure measures efficiency at a single operating point under steady-state conditions, it nevertheless underestimates boiler efficiency in low-temperature applications, and in some cases penalizes high-efficiency designs. Two

interested parties objected to the current test procedure because it does not consider the benefits that electronic controls (such as an outdoor temperature reset feature that can adjust boiler output temperature to meet a particular heating need) may have on overall system efficiency, nor does the current test procedure allow for measuring boiler efficiency when it is fully condensing.

DOE generally divides products for standard-setting purposes into product classes by type of energy used, capacity, or other performance-related feature affecting energy efficiency. (42 U.S.C. 6295(q)(1)) In the case of residential boilers, DOE has established product classes based on fuel type, including gas-fired and oil-fired units. 10 CFR 430.32(e)(2).

DOE understands that the current test procedure, at 10 CFR 430.23(n)(2) and 10 CFR part 430, subpart B, appendix N, measures AFUE at steady-state operating conditions under certain supply and return water temperatures. The test procedure for all oil-fired boilers, regardless of manufacturer and across the entire range of efficiencies, was developed to provide a reasonable interpretation to the consumer of the annual fuel utilization efficiency. In order to do this, DOE requires testing at specific incoming and exiting water temperatures to provide a fair comparison for boilers offered for sale and to minimize testing burden on manufacturers. This enables consumers to make comparisons among various gas-fired or oil-fired boilers all operating under the same operating test condition.

While DOE acknowledges that there are certain design features that could enhance efficiency which may not be captured by the current test procedure and statutory metric, one option would be for DOE to consider test procedure revisions in the future, which consider variations to the water temperatures experienced by different systems. PB did not provide any data supplementing their claims to show how the AFUE is impacted by varying water temperatures. In addition, PB also did not provide any data which would give DOE an indication of the proportion of time that the boiler spends operating at various water temperatures throughout the year. (Note: DOE realizes such data would be location and installation dependent.) Given that the statutory metric is AFUE, the current test procedure adequately measures that metric.

When asked if there would be a proliferation of petitions for waiver if PB were granted a waiver, interested parties that commented on this issue

predicted that there would be some petitions for waiver from manufacturers of oil-fired boilers, and more so from manufacturers of gas-fired boilers. In light of the above comments, DOE understands that there would likely be many petitions for waiver from the prescribed test procedures under 10 CFR 430.23(n)(2). However, such considerations do not affect whether PB's Petition for Waiver should be granted on its merits.

DOE believes that an alternative test procedure that is based on the informative appendix F of draft ASHRAE Standard 103–2003 could provide consumers with additional information about system efficiency under various operating conditions in the field, such as those used in radiant heating applications. However, as mentioned in comments by BNL, the procedure provided in appendix F does not address fully the more complicated issue of variable temperature controls.

DOE asked about the appropriateness of its test procedure as it relates to boilers used with baseboard systems. Interested parties generally commented that the current test procedure is appropriate for boilers used with baseboard convector heating systems. It does not provide materially inaccurate comparative data, but is designed around a single set of operating conditions, thereby enabling consumers to compare data and make valid comparisons between products. DOE asked whether there are other metrics that can be used to assess the performance of low-water-temperature boilers used with baseboard heating systems. Interested parties generally commented that the current test procedure is appropriate, because it allows relative comparisons between low-temperature boilers, and that creating other ratings could cause confusion in the marketplace. DOE agrees that the current test procedure allows for an effective means for relative comparisons because the test establishes a single-point operating condition for all boilers regardless of how the boilers are used in actual field installations. For the same reason however, DOE is sensitive to the fact that the test procedure cannot capture the variance in performance of boilers which might be capable of different ratings when tested at other operating conditions (or tested with certain controls). By requiring testing under a specific set of operating conditions, DOE's test procedure allows for reasonable representations to be made of the efficiency, irrespective of efficiency at other conditions or manufacturer.

In response to DOE's request for comments on whether it would be appropriate for PB to use an alternative test procedure for its ratings, representations, and compliance with energy efficiency standards, building codes, and other regulatory requirements, interested parties generally opined that it would not be appropriate to use a test procedure that measures LWTSE to meet established energy efficiency standards or regulations that are based on AFUE. Further, because such regulations rely on the current test procedures for AFUE, commenters argued that providing a unique set of testing requirements would give one manufacturer an unfair competitive advantage in meeting such requirements. Further, DOE understands that the variance in operating conditions, which impact the efficiency of the boiler, are not manufacturer-specific or model-specific. If DOE were to consider any changes, it would do so in a separate proceeding. DOE agrees that using LWTSE would be inappropriate because AFUE is the established metric, and, in addition, not deviating from the current AFUE metric and test procedure would maintain a method for consistent and equivalent comparisons of all boilers.

As to whether DOE should prescribe a test procedure and establish levels for LWTSE, DOE did not receive specific comments on the technical merits of PB's requested alternative test procedure as a proposed amendment to 10 CFR part 430, subpart B, appendix N—Uniform Test Method for Measuring the Energy Consumption of Furnaces and Boilers. 71 FR 46460, 46461 (August 14, 2006). Instead, interested parties commented that if DOE prescribes a test procedure and standard for LWTSE, it should be through the rulemaking process, include the opportunity for public comments, and be applied on an industry-wide basis. Two interested parties generally addressed the test method defined in appendix F of the public review draft ASHRAE Standard 103, and one interested party said that the method of test was developed for low-water-temperature applications, such as radiant floor heating systems, but for information purposes only. (BNL, 10 at p.2) The other interested party asserted that DOE should seek comments on changes to ASHRAE Standard 103, and make appropriate changes to the DOE test procedures. (LHSC, 11 at p.2) DOE believes the most appropriate approach presently is to not propose an amendment prescribing the alternative test procedure and establishing standard

levels based on LWTSE. However, DOE is sensitive to the potential issue of its current test procedure possibly underrating the efficiency of some boilers used in condensing modes/systems. Accordingly, DOE is receptive to any comments and suggestions for workable solutions during any future DOE activity aimed at revising the test procedure. DOE believes that a full understanding of the issue and identification of the appropriate approaches to remedying issues can only be accomplished through a rulemaking process.

DOE appreciates all of the comments it received, which have helped DOE reach a more fully informed decision regarding the PB Petition. DOE recognizes the concern raised by some commenters that the current DOE test procedure may not equally estimate the performance of condensing boilers and non-condensing boilers, and some commenters believe that the LWTSE test procedure would better characterize the efficiency of condensing boilers. DOE believes, however, that the LWTSE test procedure, which specifies lower fixed test temperatures only, may not be comprehensive enough to either capture or sufficiently represent the performance of condensing systems equipped with certain controls (*i.e.*, temperature reset controls) that vary system operating temperatures. A revised test procedure that both accommodates lower water temperatures and captures the potential benefits of control strategies may be required to wholly and accurately characterize the spectrum of available boiler products and operating conditions. Even though DOE understands that there could be a variety of operating conditions experienced in the field, PB has not shown that the current AFUE test cannot be applied to these models. In addition, the test procedures are to provide reasonable efficiency ratings across the range of covered oil-fired boilers, and DOE was not provided details as to why DOE's test procedure does not accurately capture the energy efficiency of the range of products currently sold.

In light of the above, DOE has determined the following in response to the PB Petition for Waiver. Pursuant to 42 U.S.C. 6291(22)(A), the "efficiency descriptor" for furnaces (of which boilers are one type) is annual fuel utilization efficiency. Because the efficiency metric for those products are set by statute, DOE does not have authority to substitute other metrics to rate the efficiency of residential furnaces and boilers. The DOE test

procedure prescribed at 10 CFR 430.23(n) and contained in 10 CFR part 430, subpart B, appendix N require AFUE testing of boilers with an inlet water temperature of 140 °F and an outlet water temperature of 120 °F. DOE could, however, consider modifications to the test conditions in the AFUE test as part of a separate rulemaking proceeding if DOE had data showing different test conditions were more appropriate.

Even though PB's Petition for Waiver requested permission to report information supplemental to AFUE rather than to only report different data expected to be more representative than AFUE, PB asserted that the DOE test procedure generates results that are so unrepresentative of the true energy consumption characteristics of its basic models as to provide materially inaccurate comparative data.

After subsequent inquiry concerning PB's assertion and in light of the above, DOE has determined that the PB boilers in question can and do operate at the higher water temperatures specified in the DOE test procedure. PB did not state that its units are incapable of operating at higher water temperatures; DOE understands the units are neither shipped with an add-on component nor equipped with an integral part that precludes operation at higher water temperatures. As stated earlier in this Decision and Order, system water temperatures are a function of many factors unrelated to the unit itself and can range significantly. In the absence of outdoor temperature reset, the incoming water temperatures can vary greatly depending on heating load, installation, and other factors. Thus, because the PB boilers can operate at the temperatures specified in the existing DOE test procedures, it is appropriate to test at those temperatures when rating the unit's AFUE. Testing in this manner provides a steady-state test condition that generates results that can be compared across a range of products and manufacturers. PB has provided no evidence to suggest that the existing test procedure generates results that are either inaccurate or are not representative when testing is conducted at the higher temperatures specified in the test procedure. Therefore, a waiver is not appropriate, which in turn provides no basis for granting an alternative test procedure.

The PB Petition for Waiver has raised a legitimate issue of whether the DOE test procedure would benefit from amendments to test and rate the performance of boilers at lower water input and output temperatures, as well as the efficiency effects of various

controls for those products. PB has suggested that results generated at lower water temperature conditions would be more typical of the specified models' performance, although it did not state that its products would be unable to be tested using DOE's test procedure or to meet the energy conservation standard when testing is conducted at the higher water temperatures specified in the existing DOE test procedure for residential boilers. However, given their potential complexity, DOE believes that such issues should be addressed in the context of a rulemaking with the opportunity for public notice and comment. The results of such rulemaking would apply on an industry-wide basis, thereby resulting in no advantage or disadvantage to any particular manufacturer. DOE may consider potential amendments to the test procedure regarding testing the energy efficiency of condensing boilers at lower water temperatures as part of a future rulemaking.

In the meantime, DOE points out that PB and similarly situated manufacturers may make supplemental statements regarding the energy efficiency of their boilers (*e.g.*, on marketing materials, Web sites), provided that they continue to disclose the AFUE result generated using the DOE test procedure. Such supplemental results must not mislead the consumer and must be clearly distinguished from the AFUE results. With that said, DOE notes that it has examined ASHRAE Standard 103-2003 (Public Review Draft) and believes it to be generally adequate for the supplemental testing purposes envisioned by PB, provided that the significance of LWTSE results are explained and clearly differentiated from AFUE results, so as to prevent consumer confusion in the marketplace. Since LWTSE test conditions promote condensing operation, DOE would caution, in the interest of consumer safety, that units tested accordingly, and advertised with a LWTSE, be appropriately designed or equipped to contend with potential corrosion issues which are typically associated with condensates produced from low-temperature flue gases. Accordingly, nothing currently prevents PB (or any other manufacturer) from reporting low-water-temperature test results for the boilers in question, along with the required AFUE results in marketing or other informative materials for consumers. DOE suggests any manufacturer that wishes to show the LWTSE values in addition to the AFUE values clearly distinguish the differences between the two tests,

including the different operating characteristics, for consumers. DOE notes, however, that such supplemental information could not be placed on the product's Energy Guide label, because the FTC's regulations limit such information to results generated under the DOE test procedure.

#### Consultations With Other Agencies

DOE consulted with the FTC staff concerning the PB Petition for Waiver. The FTC staff did not have any objections to the decision to deny a waiver to PB.

#### Conclusion

After careful consideration of all the materials submitted by PB and consultation with the FTC staff, for the reasons above, it is ordered that:

(1) The "Petition for Waiver" filed by PB Heat, LLC (PB) (Case No. WAV-0140) is hereby denied for the reasons discussed above; and

(2) PB shall be required to test or rate the AFUE of its residential PO-50, PO-60, PO-63, and PO-73 oil-fired boilers on the basis of the current test procedure contained in 10 CFR 430.23(n) and 10 CFR part 430, subpart B, appendix N.

PB may conduct LWTSE testing and report the results in product literature (other than supplementation of the certification label), provided that the AFUE test results generated under the DOE test procedure continue to be disclosed and that the LWTSE results provide reasonable, clear, and distinguishable representations of those results to the consumer.

Issued in Washington, DC, on April 30, 2010.

Cathy Zoi,  
Assistant Secretary,  
Energy Efficiency and Renewable Energy.  
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## DEPARTMENT OF ENERGY

### Federal Energy Regulatory Commission

[Docket No. ER10-1089-000]

#### EquiPower Resources Management, LLC; Supplemental Notice That Initial Market-Based Rate Filing Includes Request for Blanket Section 204 Authorization

April 29, 2010.

This is a supplemental notice in the above-referenced proceeding of EquiPower Resources Management, LLC's application for market-based rate authority, with an accompanying rate