



ENERGY STAR® Program Requirements for Furnaces

Partner Commitments Version 2.0 – Final Draft

Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified furnaces. The ENERGY STAR Partner must adhere to the following program requirements:

- comply with current ENERGY STAR Eligibility Criteria, defining the performance criteria that must be met for use of the ENERGY STAR certification mark on furnaces and specifying the testing criteria for furnaces. EPA may, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at EPA's request;
- comply with current ENERGY STAR Identity Guidelines, describing how the ENERGY STAR marks and name may be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance;
- qualify at least one ENERGY STAR furnace model within one year of activating the furnaces portion of the agreement. When Partner qualifies the product, it must meet the specification (e.g., Tier 1 or 2) in effect at that time;
- provide clear and consistent labeling of ENERGY STAR qualified furnaces. The ENERGY STAR mark must be clearly displayed in product literature (i.e., user manuals, spec sheets, etc.) and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed. It is also recommended that the label appear on the top/front of the product and on the product packaging;
- offer and encourage training to distributors and/or contractors on the following issues: system venting, condensate removal, code compliance, and proper use of the Manual J calculation, or other equivalent calculation, in order to encourage proper sizing of equipment;
- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying furnace models. Once the Partner submits its first list of ENERGY STAR qualified furnace models, the Partner will be listed as an ENERGY STAR Partner. Partner must provide annual updates in order to remain on the list of participating product manufacturers;
- provide to EPA, on an annual basis, unit shipment data or other market indicators to assist in determining the market penetration of ENERGY STAR. Specifically, Partner must submit the total number of ENERGY STAR qualified furnaces shipped (in units by model) or an equivalent measurement as agreed to in advance by EPA and Partner. Partner is also encouraged to provide ENERGY STAR qualified unit shipment data segmented by meaningful product characteristics (e.g., capacity, size, speed, or other as relevant), total unit shipments for each model in its product line, and percent of total unit shipments that qualify as ENERGY STAR. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. The data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked

by EPA so as to protect the confidentiality of the Partner;

- notify EPA of a change in the designated responsible party or contacts for furnaces within 30 days.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures and should keep EPA informed on the progress of these efforts:

- consider energy efficiency improvements in company facilities and pursue the ENERGY STAR mark for buildings;
- purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR labeled product information to employees for use when purchasing products for their homes;
- ensure the power management feature is enabled on all ENERGY STAR qualified monitors in use in company facilities, particularly upon installation and after service is performed;
- provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified product models;
- feature the ENERGY STAR label(s) on Partner Web site and in other promotional materials. If information concerning ENERGY STAR is provided on the Partner Web site as specified by the ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on the ENERGY STAR Web site at www.energystar.gov), EPA may provide links where appropriate to the Partner Web site;
- provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, communicate, and/or promote Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple as providing a list of planned activities or planned milestones that Partner would like EPA to be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR qualified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) provide information to users (via the Web site and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products, and (4) build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event;
- provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.



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Eligibility Criteria Version 2.0 –Final Draft

Below is the **FINAL DRAFT** Version 2.0 product specification for ENERGY STAR qualified furnaces. A product must meet all of the identified criteria to earn the ENERGY STAR. Please note that this specification is intended for furnaces installed and used in residences.

1) Definitions: Below are the definitions of the relevant terms in this document.

A. Furnace: A heating unit with a heat output of less than 225,000 Btu per hour whose function is the combustion of fossil fuel for space heating with forced hot air. Unit must include burner(s), heat exchanger(s), blower(s) and connections to heating ducts. A heating unit that meets this definition and also provides hot water for domestic or other use may be considered a furnace for purposes of this agreement.

B. AFUE: The Annual Fuel Utilization Efficiency ("AFUE") measures the amount of fuel converted to space heat in proportion to the amount of fuel entering the furnace. This is commonly expressed as a percentage. For purposes of this agreement, the efficiency of a furnace shall be measured using AFUE. Test procedures have been developed to test AFUE by the Department of Energy (DOE). These procedures are specified in 10 Code of Federal Regulations (CFR) part 430, Appendix N.

Note: It was brought to EPA's attention that the maximum heating capacity reference that was included in the previous Draft specification was incorrect. This limit has been revised to match the requirements of ANSI/ASHRAE Standard 103-1993 and DOE 10 CFR Part 430, Appendix N referenced in Section 4, below.

EPA received a recommendation to remove the term "residential" from the furnace definition since single-phase furnaces under 225,000 Btu/hour can be used in both residential and commercial applications without modification to the design. In response to this comment, EPA has removed the term "residential" throughout the specification. However, the intention of this specification continues to be to recognize energy-efficient furnaces installed in homes. Therefore, EPA has added a statement that explains that this specification is intended for furnaces installed and used in residences.

The definition for Eae has been removed as a result of changes made to Section 3, below.

C. Manufacturer Limited Warranty: For purposes of this agreement, a manufacturer limited warranty is an assurance by the Partner that purchased system equipment and components are warranted by the manufacturer for a period of time. The period of time is typically expressed in numbers of years.¹ The exact terms of the limited warranty shall be determined by the Partner.

2) Qualifying Products: Any furnace that meets the definition in Section 1A is eligible for ENERGY STAR qualification.

¹ At the time of writing, a manufacturer limited warranty is typically 20 years for the heat exchanger(s).

- 3) Energy-Efficiency Specifications: Only those products listed in Section 2 that meet the following Tier I and Tier II criteria may qualify as ENERGY STAR. Proposed effective dates for Tiers I and II are covered in Section 5 of this specification.

Tier I

- A. Gas furnace models: \geq 90% AFUE rating
- B. Oil furnace models: \geq 83% AFUE rating

In addition Partner will:

- Include a manufacturer limited warranty with its qualified furnace models.
- Consider using high efficiency electric blower motors with its qualified furnace models.

Tier II

- A. Gas furnace models: \geq 90% AFUE rating and TBD requirement for electrical efficiency
- B. Oil furnace models: \geq 85% AFUE rating and TBD requirement for electrical efficiency

In addition Partner will:

- Include a manufacturer limited warranty with its qualified furnace models.

Note on Proposed AFUE Requirement for Oil Furnaces: EPA received a number of comments on the proposed new 83% AFUE minimum requirement for oil furnaces. While many stakeholders agree with EPA's proposal to lower the AFUE for oil furnaces from the current 90% AFUE level, others do not. Some stakeholders are concerned that the 83% level may not be representative of all available configurations and have asked EPA to consider even lower levels (81 or 82% AFUE). Others stated that 83% AFUE is not stringent enough and suggest an 84 or 85% AFUE requirement to ensure significant energy savings over conventional furnace models. One stakeholder suggested making the specification even more stringent than the current 90% AFUE level.

In light of this varied feedback, EPA revisited the most recent GAMA Product Certification Directory to address concerns regarding availability of ENERGY STAR qualified oil furnace models across multiple configurations and input capacities. The following four configurations were analyzed: upflow, downflow, horizontal, and low-boy. According to the database 22% of "upflow" furnaces and 31% of "low-boy" furnaces comply with the proposed 83% AFUE. Smaller percentages of "horizontal" and "downflow" models meet the proposed 83% AFUE, but, according to a Department of Energy Market and Technology Assessment, these technologies represent a small share of the overall oil furnace market.

EPA also reviewed the GAMA Directory to determine whether the proposed 83% AFUE level was representative of the different brands, manufacturers, and input capacities available. More than 25 manufacturers/brands have models that meet the proposed 83% AFUE level for oil furnaces, representing multiple input capacities ranging from 50,000 – 225,000 MBtu. Therefore EPA has decided to retain the 83% AFUE as it identifies top performers, is not exclusionary, and maintains adequate product selection for consumers.

Note on Gas Furnace 90% AFUE Requirement: EPA received a request to consider separate gas furnace AFUE requirements for models sold in northern and southern climates. Given that ENERGY STAR is a national program, going to a regional requirement would add significant complications. In the absence of a more compelling need, EPA cannot justify the additional program administration costs and increased burden on manufacturers that would result.

Note on Proposed Furnace Fan Efficiency Level: EPA received a number of comments on the furnace fan efficiency Draft 1 proposal. One commenter noted that furnace fan electrical consumption is a small piece of the total energy equation for furnaces and that, instead, attention should continue to focus solely on the fuel efficiency of furnaces. While there was general support from other stakeholders to include a fan efficiency requirement, many stated that EPA's initial approach of an 800 kWh/year maximum Eae requirement failed to take into consideration differences in technologies and input capacities. In particular, the use of a flat kWh/yr level would disadvantage large equipment while allowing nearly all small equipment to qualify. Based on this input, EPA is considering the use of a capacity-dependent criterion so as to ensure that ENERGY STAR represents high performance across a range of furnace capacities. Over the next few months, EPA will continue to work with industry stakeholders to identify the most appropriate approach for addressing electricity used by furnace fans and propose new levels for industry review and comment. Therefore, the Tier II furnace fan efficiency requirement now reads "TBD". Once finalized, EPA will update this Version 2.0 specification with the new furnace fan efficiency levels and re-issue a new Version 2.1 document.

- 4) Test Criteria: Manufacturers are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. Partner agrees to measure a furnace model's energy-efficiency using the test conditions as specified in 10 CFR Part 430, Appendix N.

Note: The reference to the Eae test procedure, as specified in 10 CFR 430, Appendix N, has been removed until EPA determines how to address furnace fan efficiency in this specification. Once an approach has been identified, all applicable test procedures will be listed in this section.

- 5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR, under this Version 2.0 specification, will be defined as the *effective date* of the agreement. Any previously executed agreement on the subject of ENERGY STAR qualified furnaces shall be terminated effective October 26, 2006.

- A. Qualifying Products Under Tier I of the Version 2.0 Specification: The first phase of this specification is proposed to commence on **October 27, 2006**. All products, including models originally qualified under Version 1.3, with a **date of manufacture** on or after **October 27, 2006**, must meet the new (Version 2.0) requirements in order to qualify for ENERGY STAR. The **date of manufacture** is specific to each unit and is the date (e.g., month and year) of which a unit is considered to be completely assembled.

Note: As the proposed specification revision serves to relax the requirements for oil furnaces, any product that currently qualifies for ENERGY STAR will continue to qualify once this revision becomes effective.

- B. Qualifying Products Under Tier II of the Version 2.0 Specification: The second phase of this specification, Tier II, is proposed to commence on **October 1, 2007**. All products, including models originally qualified under Tier I, with a **date of manufacture** on or after **October 1, 2007**, must meet the Tier II requirements in order to qualify for ENERGY STAR.
- C. EPA will not allow grandfathering under this Version 2.0 ENERGY STAR specification. **ENERGY STAR qualification under previous Versions is not automatically granted for the life of the product model.** Therefore, any product sold, marketed, or identified by the manufacturing partner as ENERGY STAR must meet the current specification in effect at the time of manufacture of the product.

Note: EPA received a number of comments on the proposed new oil furnace AFUE level, which required additional research and discussions with various stakeholders resulting in a delay in distributing this final draft. As a result of this delay and in the interest of allowing stakeholders sufficient time to review the Final Draft, EPA is pushing back the Tier I effective date to October 27, 2006.

The Final Version 2.0 specification will be issued in late-October. Over the next few months, EPA will continue research and discussions with stakeholders regarding potential Tier II furnace fan efficiency requirements. The goal is that a metric and associated levels can be determined by January 2007 so that manufacturers will have enough time to prepare for the new requirements. EPA will also monitor the oil furnace market to ensure that ENERGY STAR market penetration is increasing as a result of the new AFUE level and determine whether it continues to be reasonable to raise the AFUE requirement to 85% without negatively impacting progress in this market.

- 6) Future Specification Revisions: EPA reserves the right to revise the specification should technological and/or market changes affect its usefulness to consumers or industry or its impact on the environment. In keeping with current policy, revisions to the specification will be discussed with stakeholders.