ENERGY STAR® Program Requirements
Product Specification for Furnaces

Eligibility Criteria
Final Draft Version 5.0

Following is the **Final Draft Version 5.0** product specification for ENERGY STAR certified furnaces. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

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

A. Residential Furnace[1]: A product which utilizes only single-phase electric current, or single-phase electric current or DC current in conjunction with natural gas, propane, or home heating oil, and which is designed to be the principal heating source for the living space of a residence, is not contained within the same cabinet with a central air conditioner whose rated cooling capacity is above 65,000 Btu per hour, is an electric central furnace, forced-air central furnace, or gravity central furnace, and has a heat input rate of less than 225,000 Btu per hour for forced-air central furnaces, gravity central furnaces, and electric central furnaces. Available furnace configurations[2] are provided below:

a. Upflow: A model with the airflow discharge vertically upward at or near the top of the furnace, with the blower mounted below the heating element.

b. Downflow: A model with the airflow discharge vertically downward at or near the bottom of the furnace, with the blower mounted above the heating element.

c. Horizontal: A model designed for low headroom installation with airflow across the heating element in a horizontal path.

B. Basic Model: All units of a given type of covered product (or class thereof) manufactured by one manufacturer and which have the same primary energy source and, which have essentially identical electrical, physical, or functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption or water efficiency.[3] Further, all individual models within a basic model have the same certified rating based on the applicable sampling criteria per U.S. Department of Energy's (DOE) regulations in Part 429[4], and this rating must be used for all manufacturer literature, the qualified product list and certification of compliance to DOE standards.

C. Annual Fuel Utilization Efficiency (AFUE)[1]: The efficiency descriptor for furnaces, which is the ratio of annual output energy to annual input energy, which includes any non-heating season pilot input loss and, for gas or oil-fired furnaces, does not include electric energy. This assumes that all warm air furnaces which are not weatherized are located indoors and all combustion and ventilation air is admitted through grill or ducts from the outdoors and does not communicate with air in the conditioned space.

D. Air Leakage (Q_{leak}): The percent of the rated airflow of the fan that is required to maintain the applied pressures, accounting for air that leaves or enters through cracks, joints and penetrations in the furnace cabinet rather than through supply and return ducts installed in accordance with manufacturer's instructions.

2) Scope:

A. Included Products: Products that meet the definition of a Residential Furnace as specified herein are eligible for ENERGY STAR certification, with the exception of products listed in Section 2B. Only non-weatherized furnaces

[1] Based on definition in 10 CFR §430.2. When in conflict, the definitions in the 10 CFR §430.2 take precedence.
[2] https://www.ahrinet.org/certification/ahri-certification-programs/residential-furnaces-rfrn
[3] 10 CFR Part 430, Subpart B, Appendix N
[4] 10 CFR Part 429, Subpart B

approved for residential installation are eligible.

B. Excluded Products: Furnaces intended only for commercial installation and/or with a rating of 225,000 Btu per hour energy or higher are not eligible for ENERGY STAR. Weatherized furnaces are not eligible for ENERGY STAR.

3) Certification Criteria:

A. Regions: ENERGY STAR requirements are divided into the following three regions:

a. U.S. North – States with population-weighted Heating Degree Days (HDD) equal to or greater than 5,000.

b. U.S. South – States with population-weighted Heating Degree Days (HDD) less than 5,000.

c. Canada – All provinces and territories.

U.S. Regions	U.S. States per Region
U.S. North	Alaska, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Washington, West Virginia, Wisconsin and Wyoming.
U.S. South	Alabama, American Samoa, Arizona, Arkansas, California, Delaware, District of Columbia, Florida, Georgia, Guam, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, Nevada, New Mexico, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas and Virginia.

B. Product Performance Requirements for Furnaces:

Table 1: ENERGY STAR Gas and Oil Furnace Requirements

Product Type	Regions	AFUE	Air Leakage (Q_{leak})
Gas Furnace	U.S. North/Canada	≥ 97.0%	≤ 2.0%
	U.S. South	≥ 95.0%	
Oil Furnace	U.S. (all)/Canada	≥ 87.0%	

While it is not required that the unit meet the ENERGY STAR certification in all orientations, product literature must clearly indicate the orientations to which the ENERGY STAR certification applies.

C. Biofuel Certification: All oil-fired furnaces must be certified to the UL 727 B20 specification. Within 6 months of B100 being published in UL 727, oil-fired furnaces must be certified to B100.

Note: The EPA has decided to maintain the regional distinction for gas furnaces in the Final Draft specification to provide consumers in the South better consumer payback and to take into account the market landscape of furnaces in the South specifically, as shown by data that stakeholders provided with their comments. The Agency is keeping the proposed 97 AFUE level for the North and adding a 95 AFUE level for the South. 7.3% of the total gas furnace market (870 models) meets the 97 AFUE level for the North, while 45.4% of the total gas furnace market (5,378 models) meets the 95 AFUE level for the South, the level with the fastest payback of consumer investment. All common sizes and all major manufacturers are represented in the models meeting these levels. For the North, the annual savings compared to a standard new furnace are 10.4 MMBtu and the consumer payback is 5 years. For the South, the annual savings are 4.2 MMBtu and the consumer payback is 10.8 years. These payback values should be taken as a general indication, as furnace prices and natural gas prices have been volatile in recent years. The oil furnace AFUE level remains unchanged from Draft 1.

The EPA has removed the "all orientations" requirement to allow for a greater number of qualified models. Given that a furnace's operating efficiency is specific to its installation orientation, the Agency will allow certifications for models if brand owners clearly define the unit as ENERGY STAR only in its qualifying orientations.

The UL certification for oil-fired furnaces has been corrected from UL 726 to UL 727.

5) Test Requirements:

A. One of the following sampling plans shall be used for purposes of testing for ENERGY STAR certification:

1) A single unit is selected, obtained, and tested. The measured performance of this unit and of each subsequent unit manufactured must be equal to or better than the ENERGY STAR specification requirements. Results of the tested unit may be used to certify additional model variations within a basic model as long as the definition for basic model provided in Section 1, above, is met; or

2) Units are selected for testing and results calculated according to the sampling requirements defined in 10 CFR Part 429, Subpart B § 429.18. The certified rating must be equal to or better than the ENERGY STAR specification requirements. Results of the tested unit may be used to certify additional variations within a basic model as long as the definition for basic model provided in Section 1, above, is met. Further, all individual models within a basic model must have the same certified rating based on the applicable sampling criteria. This rating must be used for all manufacturer literature, the qualified products list, and certification of compliance to DOE standards.

B. When testing residential furnaces, the following test methods shall be used to determine ENERGY STAR certification:

Table 2: Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
AFUE	10 CFR Part 430, Appendix N
Q_{leak}	ANSI/ASHRAE 193-2010

C. Significant Digits and Rounding:

1) All calculations shall be carried out with actual measured (unrounded) values. Only the final result of a calculation shall be rounded.

2) Unless otherwise noted in this section, compliance with specification limits shall be evaluated using exact values without any benefit from rounding.

3) Reporting on the ENERGY STAR website shall be performed using calculation results or measured values that are rounded to the nearest unit in the last right-hand digit as specified in the corresponding specification requirement below.

Note: Partners must ensure that all configurations certified as ENERGY STAR continue to meet the certification criteria through subsequent firmware, software, or other changes to the certified product.

6) Effective Date:

The ENERGY STAR Furnace Version 5 specification shall take effect on **July 31, 2026**. To certify as ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

Note: The EPA has chosen an effective date of July 31, 2026. This would make the revision effective ahead of the late summer manufacturing ramp up for the 2026/2027 heating season. This allows for a greater than 18-month transition period, double the typical for ENERGY STAR specifications.

7) Considerations for Future Revisions:

The EPA reserves the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that the ENERGY STAR certification is not automatically granted for the life of a product model.

A. The EPA will continue to monitor environmental policies and the HVAC market to signal future changes to the specification. In the short term, the EPA will be working to understand the use of heat pumps with existing furnaces in replacement scenarios, as well as new dual fuel systems in replacement and new construction.
B. To the extent that gas powered heat pumps have a place in forced air heating, our technical understanding is that they will use hydronic coils and therefore would not be covered by this specification.
C. The EPA continues to believe that HVAC system self-monitoring to confirm a good installation and during operation has an important role to play in efficiency, as does system control. Information from and control signals to furnaces play a key role in these benefits. The EPA will continue to monitor the development of these capabilities in the market.