



# ENERGY STAR® Program Requirements for Residential Air Source Heat Pump (ASHPs) and Central Air Conditioner Equipment

## Partner Commitments

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Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacture and labeling of ENERGY STAR qualified products. The ENERGY STAR Partner must adhere to the following partner commitments:

### Qualifying Products

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1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and test procedures for residential ASHPs and central air conditioners. A list of eligible products and their corresponding Eligibility Criteria can be found at [www.energystar.gov/specifications](http://www.energystar.gov/specifications).
2. **Prior to associating the ENERGY STAR name or mark with any product**, obtain written certification of ENERGY STAR qualification from a Certification Body recognized by EPA for residential ASHPs and central air conditioners. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform residential ASHP and central air conditioner testing. A list of EPA-recognized laboratories and Certification Bodies can be found at [www.energystar.gov/testingandverification](http://www.energystar.gov/testingandverification).

### Using the ENERGY STAR Name and Marks

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3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at [www.energystar.gov/logouse](http://www.energystar.gov/logouse).
4. Use the ENERGY STAR name and marks only in association with qualified products. Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is qualified and offered for sale in the U.S. and/or ENERGY STAR partner countries.
5. Provide clear and consistent labeling of ENERGY STAR qualified residential ASHPs and central air conditioners.
  - 5.1. 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.
  - 5.2. It is also recommended that the mark appear on the product packaging.
  - 5.3. Partner shall adhere to the following product-specific commitments regarding use of the ENERGY STAR certification mark on qualified products:
    - 5.3.1. Whenever the ENERGY STAR certification mark is used in connection with a qualifying product in advertising, on specification sheets, on marketing materials, and on manufacturer's Internet site, provide the following disclaimer language: "Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit [www.energystar.gov](http://www.energystar.gov)."

- 5.3.2. Provide detailed information in installation manuals that stresses the importance of proper installation. This information should be written for the equipment installer and should include the following paragraph.

For Package Units:

**IMPORTANT** – This product has been designed and manufactured to meet ENERGY STAR criteria for energy efficiency. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow the manufacturer’s refrigerant charging and air flow instructions. **Failure to confirm proper charge and airflow may reduce energy efficiency and shorten equipment life.**

For Split-System Units:

**IMPORTANT** - This product has been designed and manufactured to meet ENERGY STAR criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow the manufacturer’s refrigerant charging and air flow instructions. **Failure to confirm proper charge and airflow may reduce energy efficiency and shorten equipment life.**

### **Verifying Ongoing Product Qualification**

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6. Participate in third-party verification testing through a Certification Body recognized by EPA for residential ASHPs and central air conditioners, providing full cooperation and timely responses. EPA/DOE may also, 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 the government’s request.

### **Providing Information to EPA**

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7. Provide unit shipment data or other market indicators to EPA annually to assist with creation of ENERGY STAR market penetration estimates, as follows:
- 7.1. Partner must submit the total number of ENERGY STAR qualified residential ASHPs and central air conditioners shipped in the calendar year or an equivalent measurement as agreed to in advance by EPA and Partner. Partner shall exclude shipments to organizations that rebrand and resell the shipments (unaffiliated private labelers).
  - 7.2. Partner must provide unit shipment data segmented by meaningful product characteristics (e.g., type, capacity, presence of additional functions) as prescribed by EPA.
  - 7.3. Partner must submit unit shipment data for each calendar year to EPA or an EPA-authorized third party, preferably in electronic format, no later than March 1 of the following year.

Submitted unit shipment 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.

8. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence testing or certification results or to engage in discriminatory practices.
9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at [www.energystar.gov/mesa](http://www.energystar.gov/mesa).

### **Training and Consumer Education**

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10. Partner shall comply with the following, product-specific requirements concerning training and education:

- 10.1. Offer and encourage training to distributors and/or contractors on the following issues: air distribution issues and their effect on equipment performance, refrigerant charging, proper installation of registers, duct work, and plenum to ensure low leakage and to meet insulation requirements, and proper use of the Manual J calculation, or other equivalent calculation, in order to encourage proper sizing of equipment.

### **Performance for Special Distinction**

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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:

- 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.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program.
- 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 qualified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If information concerning ENERGY STAR is provided on the Partner website as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR website), EPA may provide links where appropriate to the Partner website.
- Ensure the power management feature is enabled on all ENERGY STAR qualified displays and computers 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 products.
- 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, and communicate Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list of planned activities or milestones of which Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR qualified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) providing information to users (via the website and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air pollution. For more information on SmartWay, visit [www.epa.gov/smartway](http://www.epa.gov/smartway).
- Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune 500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities. For more information on Green Power, visit [www.epa.gov/greenpower](http://www.epa.gov/greenpower).



# ENERGY STAR<sup>®</sup> Program Requirements Product Specification for Air Source Heat Pump and Central Air Conditioner Equipment

## Eligibility Criteria Version 4.1

Following is the **Version 4.1** product specification for ENERGY STAR qualified central air conditioner and air source heat pump equipment. 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. Air-Source Heat Pump (ASHP): An air-source unitary heat pump model consists of one or more factory-made assemblies which normally include an indoor conditioning coil(s), compressor(s), and outdoor coil(s), including means to provide a heating function. ASHPs shall provide the function of air heating with controlled temperature, and may include the functions of air-cooling, air-circulation, air-cleaning, dehumidifying or humidifying.
- B. Central Air Conditioner: A central air conditioner model consists of one or more factory-made assemblies which normally include an evaporator or cooling coil(s), compressor(s), and condenser(s). Central air conditioners provide the function of air-cooling, and may include the functions of air-circulation, air-cleaning, dehumidifying or humidifying.
- C. Single Package: A single package unit is an ASHP or central air conditioner that combines both condenser and air handling capabilities in a single casing.
- D. Split System: A split system is an ASHP or central air conditioner with separate indoor (evaporator) and outdoor (condenser) units. For split systems, the energy-efficiency rating of a particular split system is based on the actual condenser-evaporator coil combination of the split system.
- E. Gas/Electric Package Unit: A single package unit with gas heating and electric air conditioning that is often installed on a slab or roof.
- F. Product Family: A product family consists of models with the same outdoor unit used with several indoor coil combinations (i.e., horizontal, vertical, A-coil, etc.). The "same outdoor unit" refers to models with the same compressor, used with the same outdoor coil surface area and the same outdoor air quantity.
- G. Heating Seasonal Performance Factor (HSPF): This is a measure of a heat pump's energy efficiency over one heating season. It represents the total heating output of a heat pump (including supplementary electric heat) during the normal heating season (in Btu) as compared to the total electricity consumed (in watt-hours) during the same period.
- H. Seasonal Energy Efficiency Ratio (SEER): This is a measure of equipment energy efficiency over the cooling season. It represents the total cooling of a central air conditioner or heat pump (in Btu) during the normal cooling season as compared to the total electric energy input (in watt-hours) consumed during the same period.

- I. Energy Efficiency Ratio (EER): This is a measure of the instantaneous energy efficiency of cooling equipment. EER is the steady-state rate of heat energy removal (e.g., cooling capacity) by the equipment in Btu/h divided by the steady-state rate of energy input to the equipment in watts. This ratio is expressed in Btu per watt.h (Btu/W.h).
- J. Matched Assembly: A matched assembly is a model combination that is listed in the AHRI Directory of Certified Equipment or for which the manufacturer has published energy efficiency data that includes rated SEER and EER levels, and in which both the condenser unit and evaporator coil are installed simultaneously. A matched assembly shall also include the air handler, furnace, or other component that is used to determine the rating according to AHRI 210/240.

**2) Scope:**

- A. Included Products: Single package, split system, and gas/electric package units that meet the definitions of an ASHP or central air conditioner as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B. Units may be intended for installation into a duct system, or may be ductless.
- B. Excluded Products: Central air conditioners and ASHPs that use a third party (or independent) coil, three-phase equipment, and products rated above 65,000 Btu/h are not eligible for ENERGY STAR.

**3) Qualification Criteria:**

- A. Energy Efficiency Requirements:

<b>Table 1: TIER 1 Energy-Efficiency Criteria for Qualified Residential ASHPs and Central Air Conditioners</b>			
<b>Product Type</b>	<b>SEER</b>	<b>EER</b>	<b>HSPF (for heat pumps only)</b>
Split Systems	≥ 14	≥ 11.5	≥ 8.2
Single Package Equipment (including gas/electric package units)	≥ 14	≥ 11	≥ 8.0

<b>Table 2: TIER 2 Energy-Efficiency Criteria for Qualified Residential ASHPs and Central Air Conditioners</b>			
<b>Product Type</b>	<b>SEER</b>	<b>EER</b>	<b>HSPF (for heat pumps only)</b>
Split Systems	≥ 14.5	≥ 12	≥ 8.2
Single Package Equipment (including gas/electric package units)	≥ 14	≥ 11	≥ 8.0

- B. Multiple Assemblies: If the ASHP or central air conditioner is provided in more than one assembly, matched assemblies shall be used for ENERGY STAR qualification.
- C. Gas/Electric Package Units: To qualify for ENERGY STAR, gas/electric package units shall meet the cooling portion of the single package specification requirements in Tables 1 and 2, above.
- D. The HSPF and SEER ratings shall be identical to the levels reported on the Federal Trade Commission (FTC) Energy guide label.

E. Significant Digits and Rounding:

- a. All calculations shall be carried out with actual measured or observed values. Only the final result of a calculation shall be rounded. Unless otherwise directed below, calculated results shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.
- b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact values without any benefit from rounding.
- c. SEER, EER and HSPF shall be expressed in multiples of the nearest 0.05 Btu/W.h.
- d. Capacity shall be expressed as mentioned in Table 3, below.

<b>Table 3: Rounding Requirements for Capacity</b>	
<b>Capacity Ratings, Btu/h</b>	<b>Multiples, Btu/h</b>
< 20,000 [5,900]	100 [30]
≥ 20,000 and < 38,000 [5,900 up to 11,000]	200 [60]
≥ 38,000 and < 65,000 [11,000 up to 19,000]	500 [150]

**4) Test Requirements:**

- A. Representative Models shall be selected for testing per the following requirements:
  - a. For qualification of an individual product model, the representative model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR.
  - b. For qualification of a product family, any model within that product family can be tested and serve as the representative model.
  - c. For ratings developed using the Alternate Rating Method (ARM), the ARM tool used to derive the ratings must be approved by the Department of Energy (DOE).
- B. When testing ASHPs and central air conditioners, the following test methods shall be used to determine ENERGY STAR qualification:

<b>Table 4: Test Methods for ENERGY STAR Qualification</b>	
<b>ENERGY STAR Requirement</b>	<b>Test Method Reference</b>
SEER, HSPF	ANSI/AHRI 210/240-2008 "Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment"
EER	AHRI 210/240-1994 "Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment"

**Note:** For EER, energy-efficiency test shall be performed based on ARI Standard 210/240-94, operating condition A: 95°F outdoor air temperature, 80°F dry bulb/67°F wet bulb indoor coil air entering conditions.

**5) Effective Date:** This ENERGY STAR ASHP and Central Air-Conditioners Specification shall take effect on the dates specified in Table 5, below. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the date of manufacture. The date of manufacture is specific to each unit and is the date (e.g., month and year) on which a unit is considered to be completely assembled.

<b>Table 5: Specification Effective Dates</b>	
<b>Tier 1</b>	<b>Tier 2</b>
April 1, 2006	January 1, 2009

**6) Future Specification Revisions:** EPA reserves the right to change the 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 industry discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.