



ENERGY STAR® Program Requirements for Residential Air-Source Heat Pumps (ASHPs) and Central Air Conditioners

Eligibility Criteria

Below is the product specification (Version 3.0) for ENERGY STAR qualified residential ASHPs and central air conditioners. A product must meet all of the identified criteria if it is to be labeled as ENERGY STAR by its manufacturer.

- 1) **Definitions:** Below are brief descriptions of residential ASHPs and central air conditioners and other terms as relevant to ENERGY STAR.
 - 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. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts.
 - D. **Split System:** A split system is an ASHP or central air conditioner with separate indoor (evaporator) and outdoor (condenser) units. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts. For split systems, the energy-efficiency ratings of a particular split system model are based on one of the following: 1) the condenser-evaporator combination that is the partner's most commonly sold combination for that condenser, or 2) the actual condenser-evaporator coil combination of the split system model.
 - E. **Gas/Electric Package Unit:** A single package unit with gas heating and electric air conditioning that is often installed on a slab or a roof. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts.
 - F. **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. HSPF is based on tests performed in accordance with ARI 210/240.
 - G. **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. SEER is based on tests performed in accordance with ARI 210/240.
 - H. **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 Btuh divided by the steady-state rate of energy input to the equipment in watts. This ratio is expressed in Btuh per watt (Btuh/watt). EER is based on tests performed in

accordance with ARI 210/240.

2) Qualifying Products:

- A. ASHPs: This agreement shall cover residential ASHPs that are rated below 65,000 Btuh and powered by single-phase current. The ASHP may be a single packaged system, where there is only one assembly, or a split system where there are two. If such equipment is provided in more than one assembly, matched assemblies shall be used in meeting the specifications outlined in Section 3 below.
- B. Central Air Conditioners: This agreement shall cover residential central air conditioners that are rated below 65,000 Btuh, and powered by single-phase current. The central air conditioner may be a single packaged system, where there is only one assembly, or a split system where there are two. If such equipment is provided in more than one assembly, matched assemblies shall be used in meeting the specifications outlined in Section 3 below.
- C. Gas/Electric Package Units: This agreement shall cover gas/electric package units that are rated below 65,000 Btuh. To qualify for the ENERGY STAR label, they must meet the cooling portion of the single package specification outlined in Section 3 below.

3) Energy-Efficiency Specifications for Qualifying Products: Only those products listed in Section 2 that meet the criteria below may qualify as ENERGY STAR. Partner shall include a manufacturer limited warranty with its qualified residential ASHP, central air conditioner, and gas/electric models.

Table 1: Energy-Efficiency Criteria for ENERGY STAR Qualified Residential ASHPs and Central Air Conditioners			
Product Type	SEER	EER	HSPF (for heat pumps only)
Split Systems	≥ 13	≥ 11	≥ 8.0
Single Package Equipment (including gas/electric package units)	≥ 12	≥ 10.5	≥ 7.6

4) Test Criteria: Manufacturers are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. Partner agrees to perform energy-efficiency tests for residential ASHPs, central air conditioners, and gas/electric package units under rating conditions in accordance with ARI 210/240. For EER, manufacturers agree to perform energy-efficiency tests 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. For split systems, the energy-efficiency ratings of a particular model shall be based on one of the following: 1) the condenser-evaporator combination that is the partner's most commonly sold combination for that condenser, or 2) the actual condenser-evaporator coil combination of the split system model.

The HSPF and SEER ratings shall be identical to the levels reported on the Federal Trade Commission (FTC) Energy Guide Label.

5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR will be defined as the *effective date* of the agreement. The ENERGY STAR Residential ASHP and Central Air Conditioner specification Version 3.0 is effective **October 1, 2002**. Any previously executed agreement on the subject of ENERGY STAR labeled residential ASHP and central air conditioners shall be terminated effective September 30, 2002.

6) Future Specification Revisions: ENERGY STAR 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/stakeholder discussions.

In the future, ENERGY STAR anticipates that several aspects of the specification will be examined to determine if any changes are appropriate, including the following:

- increasing ENERGY STAR levels for single package units to 13 SEER and 11 EER;
- increasing the specification level for heat pumps across the board to 8.0 HSPF;
- explicitly including mini-split systems; and
- addressing installation and charging issues in the form of requirements for thermal expansion valves or equivalent and diagnostic lights indicating the need for service.