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

## Eligibility Criteria Final Draft Version 5.0

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9 Following is the Final Draft Version 5.0 product specification for ENERGY STAR qualified central air  
10 conditioner and air source heat pump equipment. A product shall meet all of the identified criteria if it is to  
11 earn the ENERGY STAR.

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

13 A. Air-Source Heat Pump (ASHP)<sup>2</sup>: An air-source unitary heat pump model is a product other than a  
14 packaged terminal heat pump, which consists of one or more assemblies, powered by single phase  
15 electric current, rated below 65,000 Btu per hour, utilizing an indoor conditioning coil, compressor, and  
16 refrigerant-to-outdoor air heat exchanger to provide air heating, and may also provide air cooling,  
17 dehumidifying, humidifying circulating, and air cleaning.

18 B. Central Air Conditioner<sup>2</sup>: A central air conditioner is a product, which is powered by single phase  
19 electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as  
20 a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling  
21 unit only.

22 C. Single Package<sup>1</sup>: A single package unit is an ASHP or central air conditioner that has all major  
23 assemblies enclosed in a single cabinet.

24 D. Split System<sup>1</sup>: A split system is an ASHP or central air conditioner that has one or more of the major  
25 assemblies separated from the others.

26 E. Gas/Electric Package Unit: A single package unit with gas heating and electric air conditioning that is  
27 often installed on a slab or roof.

28 F. Basic Model<sup>2</sup>: All units of a given type of covered product (or class thereof) manufactured by one  
29 manufacturer and which have the same primary energy source and, which have essentially identical  
30 electrical, physical, or functional (or hydraulic) characteristics that affect energy consumption, energy  
31 efficiency, water consumption or water efficiency.

32 G. Heating Seasonal Performance Factor (HSPF)<sup>3</sup>: HSPF is the total space heating required in region IV  
33 during the space heating season, expressed in Btu, divided by the total electrical energy consumed by  
34 the heat pump system during the same season, expressed in watt-hours.

35 H. Seasonal Energy Efficiency Ratio (SEER)<sup>1</sup>: SEER is the total heat removed from the conditioned  
36 space during the annual cooling season, expressed in Btu, divided by the total electrical energy  
37 consumed by the air conditioner or heat pump during the same season, expressed in watt-hours.

38 I. Energy Efficiency Ratio (EER)<sup>1</sup>: EER is the ratio of the average rate of space cooling delivered to the  
39 average rate of electrical energy consumed by the air conditioner or heat pump. This ratio is

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1 10 CFR part 430 Subpart B, Appendix M

2 10 CFR part 430, Subpart A, § 430.2 Definitions

3 Based on definition in 10 CFR part 430 Subpart B, Appendix M

- 40 expressed in Btu per watt.h (Btu/W.h).
- 41 J. Independent Coil Manufacturer (ICM): A manufacturer that manufactures only the indoor unit (coil) in  
 42 a Central Air Conditioner or Air-Source Heat Pump Split System.
- 43 K. System Manufacturer (SM): A manufacturer that manufactures all the major assemblies in an Air-  
 44 Source Unitary Heat Pump and/or Unitary Air-Conditioner.

45 **Note:** The HSPF definition has been revised to be specific that HSPF is calculated for region IV. This is in line  
 46 with the definition in the federal test method.

47 **2) Scope:**

- 48 A. Included Products: Single package, split system, and gas/electric package units that meet the  
 49 definitions of an ASHP or central air conditioner as specified herein are eligible for ENERGY STAR  
 50 qualification, with the exception of products listed in Section 2.B. Units may be intended for  
 51 installation into a duct system, or may be ductless.
- 52 B. Excluded Products: Three phase central air conditioners and ASHPs, and products rated at 65,000  
 53 Btu/h or above are not eligible for ENERGY STAR.

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55 **3) Qualification Criteria:**

- 56 A. Energy Efficiency Requirements:
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<b>Table 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<sup>1</sup></b>
CAC Split Systems	≥ 15.00	≥ 12.50	N/A
ASHP Split Systems	≥ 15.00	≥ 12.50	≥ 8.50
CAC Single Package Equipment <sup>2</sup>	≥ 15.00	≥ 12.00	N/A
ASHP Single Package Equipment <sup>2</sup>	≥ 15.00	≥ 12.00	≥ 8.20

58 Notes:

- 59 1. HSPF criteria is applicable to heat pump, only  
 60 2. Including gas/electric package units.

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- 62 B. Multiple Assemblies: For split system ASHP and central air conditioner, ENERGY STAR qualification  
 63 shall be determined by the rated performance of the particular combination of indoor and outdoor  
 64 units, regardless of the fact that the components may be used in other combinations.
- 65 C. Gas/Electric Package Units: To qualify for ENERGY STAR, gas/electric package units shall meet the  
 66 cooling portion of the single package specification requirements in Table 1, above.
- 67 D. ICM coil combinations: To qualify for ENERGY STAR, ICM coil combinations shall meet the Central  
 68 Air Conditioner and Air-Source Heat Pump Split System specification requirements in Table 1, above  
 69 and include a condensing (outdoor) unit listed in the ENERGY STAR program by a system  
 70 manufacturer.

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72 **Note:** With respect to ICM combinations, EPA clarifies that only the ICM coil combinations with the  
73 condensing (or outdoor) units listed in the ENERGY STAR program by their SM are eligible to qualify for  
74 ENERGY STAR.

75 E. The HSPF and SEER ratings for split systems shall be identical to the levels reported to DOE and  
76 appropriately reflected on the current Federal Trade Commission (FTC) Energy guide label. For  
77 packaged units, the HSPF and SEER ratings shall be identical to the levels reported on the Federal  
78 Trade Commission (FTC) Energy guide label and to those reported to DOE. For all units where EER  
79 is reported to DOE, the EER reported to EPA shall be identical.

80 **Note:** From January 1, 2015 onwards, for split systems, the Federal Trade Commission (FTC) label will  
81 include a range of ratings, based on the available indoor coil and outdoor unit combinations. Due to this  
82 change, EPA has updated the above language such that for split systems, the HSPF and SEER ratings shall  
83 be identical with the levels reported to DOE and reflect what is on the FTC label. There is no change proposed  
84 for packaged units.

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86 F. Significant Digits and Rounding:  
87 a. All calculations shall be carried out with actual measured or observed values. Only the final  
88 result of a calculation shall be rounded. Unless otherwise directed below, calculated results  
89 shall be rounded to the nearest significant digit as expressed in the corresponding specification  
90 limit.  
91 b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact  
92 values without any benefit from rounding.  
93 c. As specified in 10 CFR, 430.23(m)(3), SEER, and HSPF shall be rounded off to the nearest  
94 0.05 Btu/W.h. Similarly, EER should also be rounded off to the nearest 0.05 Btu/W.h.  
95 d. As specified in 10 CFR part 430 Subpart B, Appendix M, capacity shall be expressed in  
96 accordance with in Table 2, below.

<b>Capacity Ratings, Btu/h</b>	<b>Multiples, Btu/h</b>
< 20,000	100
≥ 20,000 and < 38,000	200
≥ 38,000 and < 65,000	500

97 **4) Test Requirements:**

98 A. One of the following sampling plans shall be used for purposes of testing for ENERGY STAR  
99 certification:  
100 a. A single unit is selected, obtained, and tested. The measured performance of this unit and  
101 of each subsequent unit manufactured must be equal to or better than the ENERGY STAR  
102 specification requirements. Results of the tested unit may be used to certify additional  
103 individual model variations within a Basic Model as long as the definition for Basic Model  
104 provided in Section 1, above, is met; or  
105 b. Ratings are determined pursuant to the sampling requirements defined in 10 CFR Part 429,  
106 Subpart B § 429.16 either by selecting units for testing or by the application of an alternative  
107 rating method (ARM) as defined in 10 CFR Part 429.70. The certified rating must be equal  
108 to or better than the ENERGY STAR specification requirements. Results of the tested or  
109 simulated unit may be used to certify additional model variations within a Basic Model as

110 long as the definition for provided above and in 10 CFR Part 430.2 is met. Further, all  
111 individual models within a Basic Model must have the same certified rating per DOE's  
112 regulations in Part 429 and this rating must be used for all manufacturer literature, the  
113 qualified product list, and certification of compliance to DOE energy conservation standards.

114 B. When testing ASHPs and central air conditioners, the following test method shall be used to  
115 determine ENERGY STAR qualification:

Table 3: Test Method for ENERGY STAR Qualification	
ENERGY STAR Requirement	Test Method Reference
SEER, EER, HSPF	10 CFR part 430 Subpart B, Appendix M

116 **5) Effective Date:** This ENERGY STAR ASHP and Central Air-Conditioners Specification shall take effect on  
117 **September 15, 2015.** To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR  
118 specification in effect on the date of manufacture. The date of manufacture is specific to each unit and is  
119 the date (e.g., month and year) on which a unit is considered to be completely assembled.

120 **Note:** The proposed effective date reflects EPA's plan to finalize the Version 5.0 specification in December  
121 2014.

122 **6) Future Specification Revisions:** EPA reserves the right to change the specification should technological  
123 and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with  
124 current policy, revisions to the specification are arrived at through industry discussions. In the event of a  
125 specification revision, please note that the ENERGY STAR qualification is not automatically granted for the  
126 life of a product model.

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