



ENERGY STAR® Program Requirements for Light Commercial HVAC

Partner Commitments Version 2.0

Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified light commercial HVAC equipment. 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 light commercial HVAC equipment and specifying the testing criteria for light commercial HVAC equipment. 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 light commercial HVAC model within one year of activating the light commercial HVAC 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 light commercial HVAC models. The ENERGY STAR label must be clearly displayed in product literature (i.e., user manuals, consumer brochures, 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;
- 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 N calculation, or other equivalent commercial load calculation, in order to encourage proper sizing of equipment;
- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying light commercial HVAC models. Once the Partner submits its first list of ENERGY STAR labeled light commercial HVAC 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 light commercial HVAC models 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. Any information used will be masked by EPA so as to protect the confidentiality of the Partner; and

- notify EPA of a change in the designated responsible party or contacts for light commercial HVAC equipment 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 label for buildings;
- purchase ENERGY STAR labeled 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 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 labeled 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 labeled products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) 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 (3) 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;
- join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. SmartWay Transport 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;

- join EPA's Climate Leaders Partnership to inventory and reduce greenhouse gas emissions. Through participation, companies create a credible record of their accomplishments and receive EPA recognition as corporate environmental leaders. For more information on Climate Leaders, visit www.epa.gov/climateleaders; and
- 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; visit <http://www.epa.gov/grnpower>.



ENERGY STAR® Program Requirements for Light Commercial HVAC

Eligibility Criteria Version 2.0

Below is the Version 2.0 product specification for ENERGY STAR qualified light commercial HVAC equipment. A product must meet all of the identified criteria if it is to earn the ENERGY STAR.

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

- A. Central Air Conditioner: A central air-conditioner model consists of one or more factory-made assemblies that 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. For the purposes of this specification, both split system (i.e., a system with components located both inside and outside of a building) and single package units (i.e., a system that has all components completely contained in one unit) rated at 65,000 Btu/h to <240,000 Btu/h are eligible for ENERGY STAR qualification. In addition, three-phase equipment rated below 65,000 Btu/h may qualify under this specification if it meets the energy efficiency criteria outlined in Section 3, below.
- B. Heat Pump: A heat pump model consists of one or more factory-made assemblies that normally include an indoor conditioning coil(s), compressor(s), and outdoor coil(s), including means to provide a heating function. Heat pumps 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. For the purposes of this specification, both split system and single package units rated at 65,000 Btu/h to <240,000 Btu/h are eligible for ENERGY STAR qualification. In addition, three-phase equipment rated below 65,000 Btu/h may qualify under this specification if it meets the energy efficiency criteria outlined in Section 3, below.
- C. 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. For the purposes of this specification, units rated at 65,000 Btu/h to <240,000 Btu/h are eligible for ENERGY STAR qualification assuming they meet the cooling portion of the specification in Section 3, below. In addition, three-phase equipment rated below 65,000 Btu/h may qualify under this Version 2.0 specification if it meets the energy efficiency criteria outlined in Section 3, below.
- D. Variable Refrigerant Flow (VRF) Multi-Split Systems: A split system air-conditioner or heat pump incorporating a single refrigerant circuit, with one or more outdoor units, at least one variable speed compressor or an alternative compressor combination for varying the capacity of the system by three or more steps, multiple indoor fan coil units, each of which is individually metered and individually controlled by a proprietary control device and common communications network. The system shall be capable of operating either as an air conditioner or a heat pump.
- E. Cooling Capacity: The cooling capacity is the quantity of heat in Btu (British Thermal Units) that an air conditioner or heat pump is able to remove from an enclosed space during a one-hour period.
- F. Energy Efficiency Ratio (EER): EER is a measure of efficiency in the cooling mode that represents the ratio of total cooling capacity (Btu/h) to electrical energy input (Watts).
- G. Coefficient of Performance (COP): COP is a measure of efficiency in the heating mode that represents the ratio of total heating capacity (Btu) to electrical input (also in Btu).

- H. **Integrated Energy Efficiency Ratio (IEER):** IEER is a measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.¹
- I. **Seasonal Energy Efficiency Ratio (SEER):** SEER 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.
- J. **Heating Seasonal Performance Factor (HSPF):** HSPF 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.
- 2) **Qualifying Products:** For the purposes of ENERGY STAR, light commercial HVAC equipment includes the following: air-source central air conditioners, air-source heat pumps, gas/electric package units, and VRF multi-split systems. Only three-phase, split system and single package units rated below 240,000 Btu/h are eligible for ENERGY STAR qualification under this specification.
- 3) **Energy-Efficiency Criteria for Qualifying Products:** Light commercial HVAC equipment must meet all of the requirements provided in Tables 1 or 2, below, based on product type as defined in Section 1 above, to qualify for ENERGY STAR.

Gas/Electric Package Unit Note: To qualify for ENERGY STAR, a gas/electric package unit must meet the appropriate air conditioner specification based on its size category.

VRF Multi-Split Equipment Note: To qualify for ENERGY STAR, VRF equipment must be tested in accordance to AHRI Standard 1230-2009 and meet the appropriate air conditioner or heat pump specification based on its size category.

Table 1: Criteria for ENERGY STAR Qualified Light Commercial Air Conditioners

Equipment Type	Size Category	Heating Section Type	Minimum Energy Efficiency Criteria	Test Procedure*
Air-Source Central Air Conditioner (3 phase – Single Package)	<65,000 Btu/h	All	Tier 1 (May 1, 2010): 14 SEER; 11 EER Tier 2 (July 1, 2011): TBD	AHRI 210/240-2008 or AHRI 1230-2009
Air-Source Central Air Conditioner (3 phase – Split System)	<65,000 Btu/h	All	Tier 1 (May 1, 2010): 14 SEER; 12 EER Tier 2 (July 1, 2011): TBD	AHRI 210/240-2008 or AHRI 1230-2009
Air-Source Central Air Conditioner	≥65,000 Btu/h – <135,000 Btu/h	Electric Resistance (or None)	Tier 1 (May 1, 2010): 11.7 EER; 11.8 IEER Tier 2 (July 1, 2011): TBD	AHRI 340/360-2007 or AHRI 1230-2009
		All other	Tier 1 (May 1, 2010): 11.5 EER; 11.6 IEER Tier 2 (July 1, 2011): TBD	

¹ Public Review Draft of the Proposed Addendum “s” to ASHRAE Standard 90.1- 2007, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, October 2007.

Equipment Type	Size Category	Heating Section Type	Minimum Energy Efficiency Criteria	Test Procedure*
Air-Source Central Air Conditioner	≥135,000 Btu/h – <240,000 Btu/h	Electric Resistance (or None)	Tier 1 (May 1, 2010): 11.7 EER; 11.8 IEER Tier 2 (July 1, 2011): TBD	AHRI 340/360-2007 or AHRI 1230-2009
		All other	Tier 1 (May 1, 2010): 11.5 EER; 11.6 IEER Tier 2 (July 1, 2011): TBD	

Table 2: Criteria for ENERGY STAR Qualified Light Commercial Heat Pumps

Equipment Type	Size Category	Heating Section Type	Minimum Energy Efficiency Criteria	Test Procedure*
Air-Source Heat Pump (3 phase – Single Package)	<65,000 Btu/h	All	Tier 1 (May 1, 2010): 14 SEER; 11 EER; 8.0 HSPF Tier 2 (July 1, 2011): TBD	AHRI 210/240-2008 or AHRI 1230-2009
Air-Source Heat Pump (3 phase – Split System)	<65,000 Btu/h	All	Tier 1 (May 1, 2010): 14 SEER; 11 EER; 8.2 HSPF Tier 2 (July 1, 2011): TBD	AHRI 210/240-2008 or AHRI 1230-2009
Air-Source Heat Pump	≥65,000 Btu/h – <135,000 Btu/h	Electric Resistance (or None)	Tier 1 (May 1, 2010): 11.3 EER; 11.4 IEER; 3.35 COP Tier 2 (July 1, 2011): TBD	AHRI 340/360-2007 or AHRI 1230-2009 COP rated at 47° F
Air-Source Heat Pump	≥135,000 Btu/h – <240,000 Btu/h	Electric Resistance (or None)	Tier 1 (May 1, 2010): 10.9 EER; 11 IEER; 3.25 COP Tier 2 (July 1, 2011): TBD	AHRI 340/360-2007 or AHRI 1230-2009 COP rated at 47° F

***Note:** Beginning January 1, 2010, test procedures ARI 210/240 and ARI 340/360 will be referenced as AHRI 210/240-2008 and AHRI 340/360-2007, respectively. Test procedure AHRI 1230-2009 is applicable to VRF equipment only.

- 4) **Test Procedure:** The manufacturer shall perform energy efficiency tests or have tests performed by third-party testing laboratories to determine which products qualify as ENERGY STAR. Based on the results of these tests, the manufacturer shall qualify those products that meet the specification outlined above. Light commercial air conditioners and heat pumps shall qualify under rating conditions in accordance with AHRI 210/240-2008 (formerly ARI 210/240-2008), AHRI 340/360-2007 (formerly ARI 340/360-2007) or AHRI 1230-2009, as appropriate. The test procedure for each equipment type and size category is provided in Tables 1 and 2 of Section 3, above.

Product Verification Note: Tier 2 will include enhanced verification requirements. EPA expects to propose that light commercial HVAC equipment meet verification requirements similar to those in place for Residential Ventilating Fans. These requirements can be found on page 14 of the ENERGY STAR Program Requirements for Residential Ventilating Fans (http://www.energystar.gov/ia/partners/product_specs/program_reqs/vent_fans_prog_req.pdf). Stakeholders will be engaged in the program-wide discussions and encouraged to provide constructive feedback.

- 5) **Effective Date:** The date that products must meet the requirements specified under the Version 2.0 Light Commercial HVAC specification will be defined as the effective date of the agreement. Any previously executed agreement on the subject of ENERGY STAR qualified light commercial HVAC shall be terminated effective **April 30, 2010**.
- A. **Qualifying Products under Tier 1 of the Version 2.0 Specification:** Tier 1 of the Version 2.0 ENERGY STAR Light Commercial HVAC specification shall become effective on **May 1, 2010**. All products, including models originally qualified under the previous Version 1.0 light commercial HVAC specification, with a date of manufacture on or after May 1, 2010, 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) on which a unit is considered to be completely assembled.
 - B. **Qualifying Products under Tier 2 of the Version 2.0 Specification:** The second phase of this specification, Tier 2, shall become effective on **July 1, 2011**. All models, including those originally qualified under Tier 1, with a date of manufacture on or after July 1, 2011, must meet the Tier 2 requirements in order to qualify for ENERGY STAR.
 - C. **Elimination of Grandfathering:** 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.
- 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 ENERGY STAR qualification is not automatically granted for the life of a product model. To carry the ENERGY STAR mark, a product model must meet the ENERGY STAR specification in effect on the model's date of manufacture.

Energy Efficiency Criteria for Equipment <65,000 Btu/h: In 2010, EPA intends to evaluate Tier 1 performance levels in this Version 2.0 specification for single package and split system central air conditioner and air-source heat pump equipment rated below 65,000 Btu/h to determine if new levels are warranted for Tier 2. EPA plans to use the performance data provided in the AHRI Certified Directory to establish Tier 2 requirements with the goal of representing approximately the top 25% of available models. Tier 2 is scheduled to go into effect on July 1, 2011.

Energy Efficiency Criteria for Equipment \geq 65,000 Btu/h: EPA intends to revisit the performance levels presented in this Version 2.0 specification for equipment rated at and above 65,000 Btu/h once more IEER data become available. This IEER data will help EPA to characterize the market with regard to model availability, evaluate cost-effectiveness, and determine whether the levels in Tables 1 and 2 of this Version 2.0 specification represent the top energy efficiency performers. EPA expects to begin the Tier 2 review process immediately following the Tier 1 effective date (i.e., May 1, 2010). Tier 2 is scheduled to become effective on July 1, 2011.

Similar to the Version 2.0 development process, any revisions to the program requirements will be shared with industry stakeholders for review and comment.