Recognition Criteria
Central Air Conditioners, Heat Pumps, and Geothermal Heat Pumps

Scope

Included products: Residential ducted split-system and single-package central air conditioners, air-source heat pumps, and geothermal heat pumps, as defined below, are eligible for ENERGY STAR® Most Efficient recognition in 2021.

Central air conditioner or central air conditioning heat pump[1]: A product, other than a packaged terminal air conditioner or packaged terminal heat pump, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only.

A central air conditioner or central air conditioning heat pump may consist of: A single-package unit; an outdoor unit and one or more indoor units; an indoor unit only; or an outdoor unit with no match. In the case of an indoor unit only or an outdoor unit with no match, the unit must be tested and rated as a system (combination of both an indoor and an outdoor unit).

> **Central air conditioner (CAC):** A product, as defined above, that does not have a heating function.
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> **Air-source heat pump (ASHP):** A product, as defined above, that does have a heating function.

Single-package unit[1]: Any central air conditioner or heat pump that has all major assemblies enclosed in one cabinet.

Split system[1]: Any air conditioner or heat pump that has at least two separate assemblies that are connected with refrigerant piping when installed. One of these assemblies includes an indoor coil that exchanges heat with the indoor air to provide heating or cooling, while one of the others includes an outdoor coil that exchanges heat with the outdoor air. Split systems may be either blower coil systems or coil-only systems.

Ducted system[1]: An air conditioner or heat pump that is designed to be permanently installed equipment and delivers conditioned air to the indoor space through a duct(s). The air conditioner or heat pump may be either a split-system or a single-package unit.

[1] 10 CFR Part 430, Subpart B, Appendix M - Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps.

Geothermal Heat Pump (GHP): A geothermal heat pump uses the thermal energy of the ground or groundwater to provide residential space conditioning and/or domestic water heating. A GHP model normally consists of one or more factory-made assemblies that include indoor conditioning and/or domestic water heat exchanger(s), compressors, and a ground-side heat exchanger. A GHP model may provide space heating, space cooling, domestic water heating, or a combination of these functions and may also include the functions of liquid circulation, thermal storage, air circulation, air cleaning, dehumidifying, or humidifying. A GHP system generally consists of one or more GHP models, the ground heat exchanger(s), the air and/or hydronic space conditioning distribution system(s), temperature controls, and thermal storage tanks.

Excluded products: The following products are not eligible for ENERGY STAR Most Efficient recognition in 2021 under this specification:

- Units that run on three-phase power.
- Central Air Conditioner or Heat Pump models rated for more than 65,000 Btu/h of cooling. This limit does not apply to GHPs.
- Non-ducted Single-Split, Mini-split, and Multi-split systems are eligible for ENERGY STAR Most Efficient in 2021 with different requirements under the Non-Ducted Split Air Conditioners and Heat Pumps recognition criteria.

Recognition Criteria

1) Product must be ENERGY STAR certified consistent with applicable ENERGY STAR Partner Commitments and the requirements set forth in the ENERGY STAR Program Requirements Product Specifications for Residential Air Source Heat Pump and Central Air Conditioner, Version 5.0 or Geothermal Heat Pumps, Version 3.2. Product performance must be certified by a certification body recognized by the U.S. Environmental Protection Agency (EPA).

2) Products must meet the following cooling and heating performance levels:

Product type	SEER	EER	HSPF	COP
Split system CAC	18	13		
Split system ASHP	18	12.5	9.6	
Single-package CAC	16	12.0		
Single-package ASHP	16	12.0	8.2	
Closed Loop Water-to-Air GHP		17.1		3.6
Open Loop Water-to-Air GHP		21.1		4.1
Closed Loop Water-to-Water GHP		16.1		3.1
Open Loop Water-to-Water GHP		20.1		3.5
DGX-to-Air		16.0		3.6
DGX-to-Water		15.0		3.1

3) Products must be able to provide heating and cooling (as applicable) at two or more capacity levels. Water-to-Water and DGX-to-Water GHP products are exempt from this requirement.

4) Products must work as part of a system that provides system status and messaging capabilities as specified below.

A. **Unit setup information:** Units shall be able to send to and receive information from at least one system controller to automatically configure settings appropriate to the

controlled equipment, such as airflow for heating and cooling. This may include prompting an installer through configuration of HVAC system settings and desired comfort settings, and a test sequence at turn-on. The controller may be a thermostat, mobile application, or an on-board controller designed to coordinate operation of an entire HVAC system.

B. **Fault History:** Service personnel shall be able to access a log displaying fault history on an alphanumeric display, which may show plain text or error codes. The product may enable access through any mechanism, for example: 1) a text-based display (e.g. LED) permanently incorporated into the unit, 2) at least one thermostat available on the market, 3) a diagnostic tool available on the market which can be brought to the work site by the service personnel. Other equivalent mechanisms are also acceptable.

C. **Resident Alerts in Plain Text:** Units shall facilitate display, in plain text, of messages to residents, without assuming that the resident knows much about their system. At a minimum, these messages shall clearly recommend a specific action for the resident to take if the air filter needs to be checked, changed, or cleaned, and if the unit needs professional service. This may be through display on the thermostat or other control device in occupied space in the home, or through any other system that can reach residents directly (e.g., mobile application). Displays on a unit inside a closet, basement or attic, or outside of conditioned space, will not be sufficient. An LED on a remote or thermostat, with static text beside it, is acceptable.

Recognition Period

Upon review and approval of applications received from ENERGY STAR Partners, EPA will add qualifying models to the ENERGY STAR Most Efficient 2021 product list for central air conditioners and heat pumps from January 1, 2021 through December 31, 2021. The ENERGY STAR Most Efficient 2021 designation may be used in association with models recognized during this period for as long as the model remains on the market.