

This final document represents the definitive view of the agency on the questions addressed and may be relied upon by the regulated industry and members of the public.

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Guidance Type: Conservation Standards

Conservation Standards Category: Consumer Products

Product: Central air conditioners

Guidance Version: Final

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What's the background?

The Department of Energy (DOE) first implemented energy conservation standards for central air conditioners in 1992. DOE has updated the standards for air conditioners several times since then with the last update going into effect on January 1, 2015, and the next update to go into effect on January 1, 2023. The 2015 standards were the first to vary regionally, impacting customers living in the North, Southeast, and Southwest regions differently. The 2023 standards will use this same regional approach, but with higher efficiency levels and the use of new metrics: SEER2, HSPF2, and EER2. DOE created these metrics due to a change in the test procedures for these products, which are designed to produce measures of energy efficiency that better reflect real-world installation and use.¹

How do these new standards benefit me?

These new standards will lower utility bills. Some types of central air conditioners will have to be more efficient than previously required. New air conditioners might be more expensive, but the use of a more efficient model means you will save more on every utility bill. For example, the typical utility bill savings resulting from the regional standard in the warmest climate (hot-dry), on average, is \$150 over the lifetime of the air conditioner

Why should I follow the rules on buying central air conditioners that meet the standards?

First, a central air conditioner meeting the new standards will save you money through lower utility bills. Second, it's the law! It is illegal for your air conditioner contractor to install a product that does not meet the regional standards in the Southeast and Southwest.

¹ Although SEER2, HSPF2, and EER2 ratings are similar to ratings using the original metrics, they are not directly comparable. Compliance with the new standards for each model must be determined based on its measured SEER2, HSPF2, or EER2.

Regional Standards

North, Southeast, and Southwest

The nation was divided into two main regions (North and South) based on the population-weighted number of heating degree days (HDD). States with 5,000 HDD or more are considered part of the northern region, while States with less than 5,000 HDD are considered part of the southern region. The Department of Energy further split the southern region into two regions:

1. “Hot-dry” Southwest region (Arizona, California, Nevada, and New Mexico)
2. “Hot-humid” Southeast region (Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, the District of Columbia, and the U.S. Territories)

The hot-dry region and hot-humid regions were determined based on the number of cooling operating hours and relative humidity during those operating hours per year.

The regional standards apply only to split-system and single-package air conditioners. Other air conditioners or heat pumps manufactured on or after January 1, 2023, must meet the new nationwide energy efficiency standard.

The compliance date of January 1, 2023 was established for the regional and nationwide standards in a direct final rule published in January 2017 (82 FR 1786) and codified in the Code of Federal Regulations at [10 CFR 430.32\(c\)\(5\) and \(6\)](#). There are no delays or special exemptions from this deadline.

If you live in the North:

The amended standards that impact the northern region are based on the product’s date of manufacture. Therefore:

- Units manufactured before January 1, 2023, have to meet the standards that were in effect before January 1, 2023. These units may be installed in the North after January 1, 2023 as long as they were compliant with the standards in effect prior to January 1, 2023.
- Units manufactured after January 1, 2023, have to meet these new standards regardless of when they are installed.

If you live in the Southeast or Southwest:

The amended standards for split-system air conditioners that impact the southern region are based on date of installation. Therefore, units installed on or after January 1, 2023, must meet the new standards. After January 1, 2023, your contractor should not install in the Southeast or Southwest any unit that does not meet the standards.

Per the definition in 10 CFR 430.2, “installation of a central air conditioner” means the connection of the refrigerant lines and/or electrical systems to make the central air conditioner operational.

If you believe your air conditioner installer has installed an illegal air conditioner, you may report it to DOE at EnergyEfficiencyEnforcement@doe.gov or 202-287-6997.

The 2023 Standards

Split-system central air conditioners installed on or after January 1, 2023, must have an energy efficiency ratio (EER2) and seasonal energy efficiency ratio (SEER2) no less than what is indicated in the following table:

Minimum Standards Beginning on Jan. 1, 2023:

DOE adopted new nationwide efficiency standards for central air conditioners and heat pumps. Units manufactured on or after January 1, 2023, must meet the following standards:

Product Class	SEER2	HSPF2*
Split-system air conditioners	13.4	-
Split-system heat pumps	14.3	7.5
Single-package air conditioners	13.4	-
Single-package heat pumps	13.4	6.7
Small-duct, high-velocity systems	12	6.1
Space-constrained air conditioners	11.7	-
Space-constrained heat pumps	11.9	6.3

* HSPF is the heating seasonal performance factor. The higher the HSPF rating, the less electrical energy your heat pump uses to heat your home. HSPF2 is the HSPF as measured by the revised DOE test procedure required as of Jan. 1, 2023.

Regional Standards

In addition to the nationwide standards, DOE also adopted new regional efficiency standards for split system and single-package central air conditioners specific to the Southeast and Southwest regions of the U.S. Beginning on January 1, 2023, systems installed in these regions must meet the following standards:

		North	Southeast	Southwest
Units with cooling capacity less than 45,000 Btu/hr	Seasonal energy efficiency ratio 2 (SEER2)	13.4	14.3	14.3
	Energy efficiency ratio 2 (EER2)	-	-	11.7/9.8*
Units with cooling capacity equal to or greater than 45,000 Btu/hr	Seasonal energy efficiency ratio 2 (SEER2)	13.4	13.8	13.8
	Energy efficiency ratio 2 (EER2)	-	-	11.2/9.8**
Single-package units – air conditioners	Energy efficiency ratio 2 (EER2)	-	-	10.6

* The 11.7 EER2 standard applies to products with a certified SEER2 less than 15.2. The 9.8 EER2 standard applies to products with a certified SEER2 greater than or equal to 15.2.

** The 11.2 EER2 standard applies to products with a certified SEER2 less than 15.2. The 9.8 EER2 standard applies to products with a certified SEER2 greater than or equal to 15.2.

What is an energy efficiency ratio (EER)?

Energy efficiency ratio (EER) is a measure of an air conditioner's peak load efficiency—the efficiency of a system when it's working its hardest. The EER is the ratio of the cooling capacity (in British thermal units [Btu] per hour) to the power input (in watts) at 95F (in other words, the ratio of the work you're getting from your system to the amount of energy you're putting into the system). EER is especially important in hot-dry climates, which experience more high-temperature days requiring air conditioners to work harder cooling your home. The 2023 efficiency standards are expressed in EER2, which is a type of EER metric but is measured differently than EER.

What is a seasonal energy efficiency ratio (SEER)?

The seasonal energy efficiency ratio (SEER) is the ratio of the total heat removed from the conditioned space during the annual cooling season divided by the total electrical energy consumed by the air conditioner during the same season (in other words, it's like EER but seasonally based). The higher the SEER rating, the less electrical energy your air conditioner uses to cool your home. Purchasing an air conditioner with a higher SEER rating could be more expensive but will save you money on your electricity bill. The 2023 efficiency standards are expressed in SEER2, which is a type of SEER metric but is measured differently than SEER.

Example Scenarios

Case 1:
Manufacturer has certified system as compliant with 2023 standards using new DOE test (SEER2/EER2)

Manufactured and installed in 2023

Outdoor Unit

Manufactured and installed in 2022

Indoor Unit

ACs in North or HPs: No restrictions for system as described

ACs in SE or SW Regions: System as described can be installed if compliant with the standards for the region in which it is installed

Case 2:
Discontinued system manufactured before 2023 and certified as compliant with pre-2023 standards using the old DOE test (SEER/EER)

Manufactured before 2023 and installed in 2023

Outdoor Unit

Manufactured and installed before 2023

Indoor Unit

ACs in North or HPs: No restrictions for system as described

ACs in SE or SW Regions: System as described can only be installed on or after Jan. 1, 2023 if certified compliant with the 2023 regional standard (SEER2/EER2)

Case 3:
Discontinued system manufactured before 2023 that is functional as installed but was not certified as a combination

Manufactured before 2023 and installed in 2023

Outdoor Unit

Manufactured and installed before 2023

Indoor Unit

ACs in North or HPs: Not compliant for sale if not certified as a combination

ACs in SE or SW Regions: Not compliant for installation before or after Jan. 1, 2023 if not certified as a combination to the applicable standard

Case 4:
Replacement outdoor unit manufactured in 2023 installed with existing indoor unit manufactured before 2023

Manufactured and installed in 2023

Outdoor Unit

Manufactured and installed before 2023

Indoor Unit

ACs in North or HPs: Compliant for sale if outdoor unit was certified by the manufacturer as an outdoor unit with no match using the new test (SEER2/HSPF2)

ACs in SE or SW Regions: Compliant for installation only if outdoor unit certified compliant with regional standards as an outdoor unit with no match using the new test (SEER2/EER2)