BSR/ASHRAE/IES Addendum bs
to ANSI/ASHRAE/IES Standard 90.1-2022

Public Review Draft

Proposed Addendum bs to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

First Public Review (February 2025)
(Draft Shows Proposed Changes to Current Standard)

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FOREWORD

This addendum proposes minimum efficiency improvements for certain products in Tables 6.8.1-4, specifically *Single Package Vertical Air Conditioners* (*SPVAC*) and *Single Package Vertical Heat Pumps* (*SPVHP*).

The current industry test procedure is AHRI Standard 390-2021 (I-P), Performance Rating of Single Package Vertical Air-Conditioners (*SPVAC*) and Heat Pumps (*SPVHP*).

https://www.ahrinet.org/system/files/2023-06/ANSI%20AHRI%20390-2021%20I-P.pdf)

The AHRI 390 standard includes requirements for publishing the full load cooling efficiency *EER* metric and the annualized *IEER* metric. For HP heating the standard requires a COP_H at 47 °F be published, but there is no requirements for other COP_H at 17 °F and 5 °F data to be published and there is no annualized metric defined in the standard. The revised standard was adopted in ASHRAE 90.1-2022 but no minimum values were defined for *IEER* and only the full load *EER* and COP_H at 47 F were included in table 6.8.1-4.

DOE adopted the AHRI 390-2021 standard on December 7, 2022 (87FR75144). In the DOE test procedure final rule, DOE amended the federal test procedure for *SPVAC* and *SPVHP* to incorporate by reference to AHRI 390–2021. DOE established a new appendix G to document the test procedure for *SPVAC* and *SPVHP*. DOE also changed their cooling metric from *EER* to *IEER.* DOE Appendix G1 provides the test procedure for representations based on IEER and will be federally mandatory only at such time as compliance is required with amended energy conservation standards.

On December 8, 2022 (87FR75388), DOE issued a proposed rule proposing to adopt standards based on *IEER* and COP_H that are of equivalent stringency as the current DOE energy conservation standard levels and the current standard levels specified in ASHRAE Standard 90.1-2019, shown below (DOE Table I-1). DOE proposed, that if adopted, energy conservation standards would apply to *SPVAC* and *SPVHP* manufactured in, or imported into, the United States starting on the tentative compliance date of 360 days after the publication in the Federal Register of the final rule for this rulemaking. DOE has only proposed moving to the table I-1 (shown below) to the cross walked *IEER* and COP_H levels and no increases in the cross walked *IEER* as their economic analysis could not justify increases.

Table I-1—Proposed Energy Conservation Standards for SPVUs

Equipment class	Proposed standard level
SPVAC <65,000 Btu/h	IEER = 12.5
SPVHP <65,000 Btu/h	IEER = 12.5 COP = 3.3
SPVAC ≥65,000 Btu/h and <135,000 Btu/h	IEER = 10.3
SPVHP ≥65,000 Btu/h and <135,000 Btu/h	IEER = 10.3 COP = 3.0
SPVAC ≥135,000 Btu/h and <240,000 Btu/h	IEER = 11.2
SPVHP ≥135,000 Btu/h and <240,000 Btu/h	IEER = 11.2 COP = 3.0

AHRI and manufacturers have done additional work and have proposed to ASHRAE 90.1 a two-step increase in the proposal for *IEER* and COP_H levels.

This addendum will update the metrics being for *SPVAC* and *SPVHP* used in table 6.8.1-4 to add *IEER* and the minimum values for the metrics including future efficiency improvements.

AHRI has proposed the following changes to the ASHRAE 90.1 table 6.8.1-4.

1. For Cooling– *IEER* and *EER* will be used for cooling mode for both *SPVAC* and *SPVHP.* DOE is only allowed to regulate one metric and has changed from *EER* to *IEER,* but ASHRAE 90.1 will continue to regulate both *EER* and *IEER* due to concerns in warm climate zones and minimum requirements for both will be included in ASHRAE 90.1
2. For Heating– COP_H at 47 °F for heating mode of heat pumps will continue to be used and no other metrics will be added for COP_H at 17 °F or 5 °F and no annualized metric will be used because AHRI 390 has not defined an annualized heating metric.

For the revised 2025 ASHRAE 90.1 Standard the following 3 stepped changes will be made to minimum values for the cooling efficiency metrics and heating metrics.

Step 1. The proposed standard level were cross walked from today's *EER* to *IEER* to add the annualized *IEER* metric based on current products with no product redesign.. The cross walked *IEER* minimums will be added to the 2025 standard effective the date of publication of the ASHRAE 90.1-2025 standard. The current EER levels will remain in the standard. The minimum cooling values will be the same for SPVAC and SPVHP. The current COPH levels range from 3.0 to 3.3 and AHRI is proposing for all sizes that they be 3.3 because all products can currently comply with the 3.3.

Step 2. On January 1, 2028, the cooling efficiency *IEER* levels are proposed to increase by approximately 10% of the cross walked 2025 values. *EER* levels will be held constant to provide a backstop for high ambient and peak load concerns. The minimum cooling values will be the same for SPVAC and SPVHP. The COP_H 47°F values will increase to 3.4 for all size units.

Step 3. On January 1, 2031, the *IEER* efficiency levels are proposed to increase again by approximately 20% of the 2025 values. *EER*'s will continue to be used but will remain at the 2025 levels and a backstop for peak load and warm climates. The minimum cooling values will be the same for SPVAC and SPVHP. The COP_H 47°F values will increase to 3.5 for all size units.

For the revised 2025 ASHRAE 90.1 Standard the following will be used.

1. The table will continue to use COP_H even though the AHRI 390 standard only uses COP. This is done to differentiate between cooling and heating with the use of COP_C for cooling efficiency and COPH for heating efficiency in the ASHRAE 90.1 SI version. There is no AHRI 390 SI standard at this time, so the confusion was not addressed by AHRI.

2. No new metric changes will be made and only the current full load COP_H at 47 °F will be listed in the ASHRAE 90.1 table.
3. The heating COP_H at 47 °F will increase for the >65000 Btu/h products 3.0 to 3.3 which is not per the DOE rule. Review of the AHRI directory has indicated that all products are currently above 3.3 and AHRI recommended this change. AHRI also proposed the *SPVAC* products will then have one common $COPH_{47}$ for all capacity categories.
4. On January 1, 2028, the heating COP_H at 47 °F will further be increased 3% relative to 2025 to a value 3.4 for all *SPVHP* products
5. On January 1, 2031, the COP_H at 47 F will again be increased % relative to 2025 to a value 3.5 for all SPVHP

AHRI has provided estimated product cost increases for the changes in 2028 and 2031. Using the ASHRAE 90.1 standard work and the energy cost savings estimate using the ASHRAE 90.1 Primary School Reference Building an economic analysis has been completed and summarized below. A primary school was used because the *SPVAC* and *SPVHP* are often used in schools. Other buildings will have similar energy saving scalars.

For the economic analysis, a US average electric cost of 0.1122 $/kW has used as well as the ASHRAE 90.1 energy cost adjusted for the social cost of carbon of with a modified electric rate 0.1772 $/kW. The scalar ratio which is equivalent to a payback period was then calculated and compared to the scalar ratio limit. Typically, these products use a life of 15 years, but some have used 18 and 20 hrs., and the table below shows the scalar limit for all three. The scalar analysis was done for all 19 climate zones and for cooling and heat pumps and then weight average using regional sales volumes.

	Energy Cost Scalar		**Energy Cost + Cost of Carbon Scalar**	
15 yr. Cooling Scalar Limit = 11.4, Heating Scalar Limit =11.5 18 yr. Cooling Scalar Limit = 13.3, Heating Scalar Limit =13.1 20 hr. Cooling Scalar Limit = 14.4, Heating Scalar Limit =14.1				
Product	**2028**	**2031**	**2028**	**2031**
SPVAC<65K Btu/h	16.33	12.01	10.34	7.60
SPVAC>65K and <135K Btu/h	24.63	16.67	15.59	10.55
SPVAC >135K Btu/h	25.92	17.54	16.41	11.11
SPVHP<65K Btu/h	14.73	11.18	9.32	7.08
SPVHP>65K and <135K Btu/h	21.55	16.02	13.64	10.14
SPVHP >135K Btu/h	22.67	16.85	14.36	10.67
Weighted Average	20.02	14.29	12.68	9.05

The scalar limits in 2028 in some cases exceed the scalar limits. They are better with the cost of carbon. The MSC has reviewed the data provide by AHRI and relative to other cost estimate provided by AHRI for Unitary Products and for WSHP the estimate are the highest we have seen. The costs are likely high for the 2028 as some of the changes may include redesign to use multiple stages and enhanced fan control. The incremental cost in 2031 are lower and the cost effectiveness is better in 2031. Overall, the MSC feels the cost increases are very conservatives and once the manufacturers have had more time to optimize the designs the incremental cost will likely be lower. Overall, the manufacturers support the proposal and although marginally cost effective they do support the change.

[Note to Reviewers: This public review draft makes proposed independent substantive changes to the previous public review draft. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the previous draft are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.]

All comments should be submitted thru the ASHRAE online comment data base.

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Comments should comply with the following;

- ***Be marked as supportive or non-supportive***
- ***Be specific to the text, section or table that is the subject of the comment***
- ***Where possible proposed alternate language or requirements***
- ***Provide supporting information if needed***
- ***Comments should be submitted during the comment period***
- ***Only text marked underlines or strikeout are open for comments.***

Do not use the following comment submittal approach;

- ***Do not submit comments by email or other systems***
- ***Comments should be on a simple topic and do not submit multiple comments in one comment. If you have multiple comments submit multiple comments in the on-line system***
- ***Attachments can be used for additional backup, but comments should be entered into the system***

Addendum bs to 90.1-2022

Revise table 6.8.1-4 as shown below to modify SPVAC and SPVHP requirements. Note that addendum BQ has been generated to modify Window Air Conditioner requirements and has been moved to a new table 6.8.1-22

Only the modified requirements for SPVAC IP changes are show. For a complete table modification due to this addendum and Addendum BQ see the below the line revised table.

Table 6.8.1-4 Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps—Minimum Efficiency Requirements (IP)

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency[d]	Test Procedure[a]
SPVAC (cooling mode) single and three phase	<65,000 Btu/h	~~95°F db/75°F wb *outdoor air*~~[e]	11.0 *EER*, 12.5 *IEER* before 1/1/2028 11.0 EER, 13.7 *IEER* on or after 1/1/2028 11.0 EER, 15.0 *IEER* on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER* 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or before 1/1/2031	
	≥135,000 Btu/h ~~and <240,000 Btu/h~~		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or before 1/1/2031	
SPVHP (cooling mode)	<65,000 Btu/h	~~95°F db/75°F wb *outdoor air*~~[e]	11.0 *EER*, 12.5 *IEER* before 1/1/2028 11.0 *EER*, 13.7 *IEER* on or after 1/1/2028 11.0 *EER*, 15.0 *IEER* on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or after 1/1/2031	

	≥135,000 Btu/h ~~and <240,000 Btu/h~~		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or before 1/1/2028 10.0 *EER*, 13.4 *IEER* on or before 1/1/2031	
SPVHP (heating mode)	<65,000 Btu/h	47°F db/43°F wb *outdoor air*	3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	
	≥135,000 Btu/h ~~and <240,000 Btu/h~~		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	

a. Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Nonstandard size units must be factory *labeled* as follows: "MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW STANDARD PROJECTS." Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external *wall* opening of less than 16 in. high or less than 42 in. wide and having a cross-sectional area less than 670 in^2.

c. The cooling-mode wet bulb temperature requirement only applies for units that reject condensate to the condenser coil.

~~d. *Room air conditioners* are regulated as consumer products by 10 CFR 430. For U.S. applications of *room air conditioners*, refer to Informative Appendix F, Table F-3, for the U.S. DOE minimum efficiency requirements for U.S. applications.~~ (Note this was deleted in addendum AQ)

~~e~~d. "Cap" in *EER* and COP_H equations for *PTAC*s and *PTHP*s means cooling capacity in Btu/h at 95°F outdoor dry-bulb temperature.

Make the following changes to SI tables

Table 6.8.1-4 Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps—Minimum Efficiency Requirements (SI)

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency[d]	Test Procedure[a]
SPVAC (cooling mode) single and three phase	<19 KW	~~95°F db/75°F wb *outdoor air*~~[e]	3.22 COP_C, 3.66 *ICOP* before 1/1/2028 3.22 COP_C, 4.01 *ICOP* on or after 1/1/2028 3.22 COP_C, 4.01 *ICOP* on or after 1/1/2031	AHRI 390
	≥19 KW and <39 KW		2.93 COP_C, 3.28 *ICOP* before 1/1/2028 2.93 COP_C 3.60 *ICOP* on or after 1/1/2028 2.93 COP_C, 3.93 *ICOP* on or after 1/1/2031	
	≥39 KW ~~and <700 KW~~		2.93 COP_C, 3.28 *ICOP* before 1/1/2028 2.93 COP_C, 3.60 *ICOP* on or after 1/1/2028 2.93 COP_C, 3.93 *ICOP* on or after 1/1/2031	
SPVHP (cooling mode)	<19 KW	~~95°F db/75°F wb *outdoor air*~~[e]	3.22 COP_C, 3.66 *ICOP* before 1/1/2028 3.22 COP_C, 4.01 *ICOP* on or before 1/1/2028 3.22 COP_C 4.01 *ICOP* on or before 1/1/2031	AHRI 390
	≥19 KW and <39 KW		2.93 COP_C, 3.28 *ICOP* before 1/1/2028 2.93 COP_C, 3.60 *ICOP* on or after 1/1/2028 2.93 COP_C 3.93 *ICOP* on or after 1/1/2031	
	≥39 KW ~~and <70 KW~~		2.93 COP_C, 3.28 *ICOP* before 1/1/2028 2.93 COP_C, 3.60 *ICOP* on or after 1/1/2028	

			2.93 COP_C, 3.93 *ICOP* on or after 1/1/2031	
SPVHP (heating mode)	<19 KW	8.3°C db/6.1°C wb *outdoor air*	3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	AHRI 390
	≥19 KW and <39 KW		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	
	≥39 KW ~~and <240,000 KW~~		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	

a. Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Nonstandard size units must be factory *labeled* as follows: "MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW STANDARD PROJECTS." Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external *wall* opening of less than 0.45 m high or less than 1.0 m. wide and having a cross-sectional area less than 0.4 $m.^2$.

c. The cooling-mode wet bulb temperature requirement only applies for units that reject condensate to the condenser coil.

~~d. *Room air conditioners* are regulated as consumer products by 10 CFR 430. For U.S. applications of *room air conditioners*, refer to Informative Appendix F, Table F-3, for the U.S. DOE minimum efficiency requirements for U.S. applications.~~ (Note this was deleted by addendum BQ)

~~e~~d. "Cap" in COP_C and COP_H equations for *PTAC*s and *PTHP*s means cooling capacity in kW at 35°C outdoor dry-bulb temperature.

Below the line changes.

This addendum and addendum BQ for Windows Air are both proposing changes to the table. Addendum BQ removed Window Air Conditioners from the table and created a new table 6.8.1-22.

Shown below is the complete table with all the changes. Addendum BQ is shown in Yellow and this addendum is in Green. Only the IP version is shown.

Table 6.8.1-4 Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, ~~Room Air Conditioners, and Room Air-Conditioner Heat Pumps~~—Minimum Efficiency Requirements (IP)

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency[d]	Test Procedure[a]
PTAC (cooling mode) Standard size	<7000 Btu/h	95°F db/75°F wb *outdoor air*[c]	11.9 *EER*	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		14.0-(0.300 x Cap/1000) *EER*[e]	
	>15,000 Btu/h		9.5 *EER*	
PTAC (cooling mode) nonstandard size[b]	<7000 Btu/h	95°F db/75°F wb *outdoor air*[c]	9.4 *EER*	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		10.9-(0.213 x Cap/1000) *EER*[e]	
	>15,000 Btu/h		7.7 *EER*	
PTHP (cooling mode) Standard size	<7000 Btu/h	95°F db/75°F wb *outdoor air*[c]	11.9 *EER*	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		14.0-(0.300 x Cap/1000) *EER*[e]	
	>15,000 Btu/h		9.5 *EER*	
PTHP (cooling mode) nonstandard size[b]	<7000 Btu/h	95°F db/75°F wb *outdoor air*[c]	9.3 *EER*	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		10.8-(0.213 x Cap/1000) *EER*[e]	
	>15,000 Btu/h		7.6 *EER*	
PTHP (heating mode) Standard size	<7000 Btu/h	47°F db/43°F wb *outdoor air*[c]	3.3 COP_H	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		3.7-(0.052 x Cap/1000) COP_H[e]	
	>15,000 Btu/h		2.90 COP_H	
PTHP (heating mode) nonstandard size	<7000 Btu/h	47°F db/43°F wb *outdoor air*[c]	2.7 COP_H	AHRI 310/380
	≥7000 Btu/h and ≤15,000 Btu/h		2.9-(0.026 x Cap/1000) COP_H[e]	
	>15,000 Btu/h		2.50 COP_H	
SPVAC (cooling mode) single and three phase	<65,000 Btu/h	~~95°F db/75°F wb *outdoor air*[c]~~	11.0 *EER*, ~~12.5 *IEER*~~ before 1/1/2028 11.0 EER, 13.7 *IEER* on or after 1/1/2028 11.0 EER, 15.0 *IEER* on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER* 12.3 *IEER* on or after 1/1/2028	

			10.0 *EER*, 13.4 *IEER* on or after 1/1/2031	
	≥135,000 Btu/h ~~and <240,000 Btu/h~~		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or after 1/1/2031	
SPVHP (cooling mode)	<65,000 Btu/h	~~95°F db/75°F wb *outdoor air*~~[c]	11.0 *EER*, 12.5 *IEER* before 1/1/2028 11.0 *EER*, 13.7 *IEER* on or after 1/1/2028 11.0 *EER*, 15.0 *IEER* on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or after 1/1/2031	
	≥135,000 Btu/h ~~and <240,000 Btu/h~~		10.0 *EER*, 11.2 *IEER* before 1/1/2028 10.0 *EER*, 12.3 *IEER* on or after 1/1/2028 10.0 *EER*, 13.4 *IEER* on or after 1/1/2028	
SPVHP (heating mode)	<65,000 Btu/h	47°F db/43°F wb *outdoor air*	3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	AHRI 390
	≥65,000 Btu/h and <135,000 Btu/h		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or before 1/1/2028 3.5 COP_H on or after 1/1/2031	

	≥135,000 Btu/h ~~and <240,000 Btu/h~~		~~3.0 COP_H~~ 3.3 COP_H before 1/1/2028 3.4 COP_H on or after 1/1/2028 3.5 COP_H on or after 1/1/2031	
~~*Room air conditioners* without reverse cycle with louvered sides for applications outside U.S.~~ [d]	~~<6000 Btu/h~~		~~11.0 *CEER*~~	~~ANSI/AHAM RAC-1~~
	~~≥6000 Btu/h and <8000 Btu/h~~		~~11.0 *CEER*~~	
	~~≥8000 Btu/h and <14,000 Btu/h~~		~~10.9 *CEER*~~	
	~~≥14,000 Btu/h and <20,000 Btu/h~~		~~10.7 *CEER*~~	
	~~≥20,000 Btu/h and <28,000 Btu/h~~		~~9.4 *CEER*~~	
	~~≥28,000 Btu/h~~		~~9.0 *CEER*~~	
~~*Room air conditioners* without louvered sides~~	~~<6000 Btu/h~~		~~10.0 *CEER*~~	~~ANSI/AHAM RAC-1~~
	~~≥6000 Btu/h and <8000 Btu/h~~		~~10.0 *CEER*~~	
	~~≥8000 Btu/h and <11,000 Btu/h~~		~~9.6 *CEER*~~	
	~~≥11,000 Btu/h and <14,000 Btu/h~~		~~9.5 *CEER*~~	
	~~≥14,000 Btu/h and <20,000 Btu/h~~		~~9.3 *CEER*~~	
	~~≥20,000 Btu/h~~		~~9.4 *CEER*~~	
~~*Room air conditioners* with reverse cycle, with louvered sides for applications outside U.S.~~ [d]	~~<20,000 Btu/h~~		~~9.8 *CEER*~~	~~ANSI/AHAM RAC-1~~
	~~≥20,000 Btu/h~~		~~9.3 *CEER*~~	
~~*Room air conditioners* with reverse cycle without louvered sides for applications outside U.S.~~ [d]	~~<14,000 Btu/h~~		~~9.8 *CEER*~~	~~ANSI/AHAM RAC-1~~
	~~≥14,000 Btu/h~~		~~9.3 *CEER*~~	
~~*Room air conditioners*, casement only for applications outside U.S.~~ [d]	~~All~~		~~9.5 *CEER*~~	~~ANSI/AHAM RAC-1~~
~~*Room air conditioners*, casement slider for applications outside U.S.~~ [d]	~~All~~		~~10.4 *CEER*~~	~~ANSI/AHAM RAC-1~~

a. Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Nonstandard size units must be factory *labeled* as follows: "MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW STANDARD PROJECTS." Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external *wall* opening of less than 16 in. high or less than 42 in. wide and having a cross-sectional area less than 670 in^2.

c. The cooling-mode wet bulb temperature requirement only applies for units that reject condensate to the condenser coil.

d. *Room air conditioners* are regulated as consumer products by 10 CFR 430. For U.S. applications of *room air conditioners*, refer to Informative Appendix F, Table F-3, for the U.S. DOE minimum efficiency requirements for U.S. applications.

e. "Cap" in *EER* and COP_H equations for *PTAC*s and *PTHP*s means cooling capacity in Btu/h at 95°F outdoor dry-bulb temperature.