



**BSR/ASHRAE/IES Addendum bq
to ANSI/ASHRAE/IES Standard 90.1-2022**

Public Review Draft

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

**First Public Review (November 2024)
(Draft Shows Proposed Changes to Current Standard)**

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

This addendum increases the minimum cooling efficiency requirements for room air conditioners and room air conditioner heat pumps installed outside the United States. When this equipment is installed in the United States, the efficiency is regulated by the federal government in 10 CFR Part 430.

Room air conditioners and room heat pumps will be removed from Table 6.8.1-4 and placed in the new Table 6.8.1-22. Language has been added to section 6.4.1.1, which states that Table 6.8.1-22 does not apply to installations in the United States.

Cost justification:

The United States Department of Energy has determined the levels shown in proposed Table 6.8.1-22 to be cost effective. <https://www.regulations.gov/document/EERE-2014-BT-STD-0059-0057>

[Note to Reviewers: This addendum makes proposed changes to the current standard. 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 current standard 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 changes.]

Addendum bq to 90.1-2022

Modify Section 6.4.1.1 as follows (I-P and SI):

6.4.1 Equipment Efficiencies, Verification, and Labeling Requirements

6.4.1.1 Minimum Equipment Efficiencies—Listed Equipment—Standard Rating and Operating Conditions. *Equipment* shown in Tables 6.8.1-1 through 6.8.1-21 shall have a minimum performance at the specified rating conditions when tested in accordance with the specified test procedure. Where multiple rating conditions or performance requirements are provided, the *equipment* shall satisfy all stated requirements unless otherwise exempted by footnotes in the table. *Equipment* covered under the Federal Energy Policy Act of 1992 (EPACT) shall have no minimum *efficiency* requirements for operation at minimum capacity or other than standard rating conditions. *Equipment* used to provide *service water-heating* functions as part of a combination *system* shall satisfy all stated requirements for the appropriate *space* heating or cooling category. Table 6.8.1-22 does not apply to equipment installed in the United States.

Tables are as follows:

...

d. 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”

...

v. Table 6.8.1-22, “Room Air Conditioners and Room Air Conditioner Heat Pumps Installed Outside the United States—Minimum Efficiency Requirements”

Delete the following from Table 6.8.1-4 (I-P) (Rows not shown are unchanged):

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

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency ^d	Test Procedure ^a
<i>Room air conditioners without reverse cycle with louvered sides for applications outside U.S.</i> ^d	<6000 Btu/h		11.0 <i>CEER</i>	ANSI/AHAM RAC-1
	≥6000 Btu/h and <8000 Btu/h		11.0 <i>CEER</i>	
	≥8000 Btu/h and <14,000 Btu/h		10.9 <i>CEER</i>	
	≥14,000 Btu/h and <20,000 Btu/h		10.7 <i>CEER</i>	
	≥20,000 Btu/h and <28,000 Btu/h		9.4 <i>CEER</i>	
	≥28,000 Btu/h		9.0 <i>CEER</i>	
<i>Room air conditioners without louvered sides</i>	<6000 Btu/h		10.0 <i>CEER</i>	ANSI/AHAM RAC-1
	≥6000 Btu/h and <8000 Btu/h		10.0 <i>CEER</i>	
	≥8000 Btu/h and <11,000 Btu/h		9.6 <i>CEER</i>	
	≥11,000 Btu/h and <14,000 Btu/h		9.5 <i>CEER</i>	
	≥14,000 Btu/h and <20,000 Btu/h		9.3 <i>CEER</i>	
	≥20,000 Btu/h		9.4 <i>CEER</i>	
<i>Room air conditioners with reverse cycle, with louvered sides for applications outside U.S.</i> ^d	<20,000 Btu/h		9.8 <i>CEER</i>	ANSI/AHAM RAC-1
	≥20,000 Btu/h		9.3 <i>CEER</i>	
<i>Room air conditioners with reverse cycle without louvered sides for applications outside U.S.</i> ^d	<14,000 Btu/h		9.3 <i>CEER</i>	ANSI/AHAM RAC-1
	≥14,000 Btu/h		8.7 <i>CEER</i>	
<i>Room air conditioners, casement only for applications outside U.S.</i> ^d	All		9.5 <i>CEER</i>	ANSI/AHAM RAC-1
<i>Room air conditioners, casement slider for applications outside U.S.</i> ^d	All		10.4 <i>CEER</i>	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.~~
- de. “Cap” in *EER* and *COP_H* equations for *PTACs* and *PTHPs* means cooling capacity in Btu/h at 95°F outdoor dry-bulb temperature.

Note to reviewers: The footnotes in the other rows labeled “e” will be changed to “d.”

Delete the following from Table 6.8.1-4 (SI) (Rows not shown are unchanged):

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

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency ^d	Test Procedure ^a
Room air conditioners without reverse cycle with louvered sides for applications outside the U.S.^d	<1.8 kW		$ECOP_e = 3.22$	ANSI/AHAM RAC-1
	≥1.8 and <2.3 kW		$ECOP_e = 3.19$	
	≥2.3 and <4.1 kW		$ECOP_e = 3.19$	
	≥4.1 and <5.9 kW		$ECOP_e = 3.14$	
	≥5.9 kW and <8.2 kW		$ECOP_e = 2.75$	
	≥8.2 kW		$ECOP_e = 2.64$	
Room air conditioners without reverse cycle without louvered sides for applications outside the U.S.^d	<1.8 kW		$ECOP_e = 2.93$	ANSI/AHAM RAC-1
	≥1.8 and <2.3 kW		$ECOP_e = 2.93$	
	≥2.3 and <3.2 kW		$ECOP_e = 2.81$	
	≥3.2 and <3.2 kW		$ECOP_e = 2.78$	
	≥4.1 and <5.9 kW		$ECOP_e = 2.73$	
	≥5.9 kW		$ECOP_e = 2.75$	
Room air conditioners with reverse cycle, with louvered sides for applications outside the U.S.^d	<5.9 kW		$ECOP_e = 2.87$	ANSI/AHAM RAC-1
	≥5.9 kW		$ECOP_e = 2.73$	
Room air conditioners with reverse cycle without louvered sides for applications outside the U.S.^d	<4.1 kW		$ECOP_e = 2.73$	ANSI/AHAM RAC-1
	≥4.1 kW		$ECOP_e = 2.55$	ANSI/AHAM RAC-1
Room air conditioners, casement only for applications outside the U.S.^d	All		$ECOP_e = 2.78$	ANSI/AHAM RAC-1

Room air conditioners, casement slider for applications outside the U.S.^d	All		$CCOP_C = 3.05$	ANSI/AHAM RAC-1
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- 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 m².
- 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 U.S. DOE minimum efficiency requirements.~~
- ~~de.~~ “Cap” in *COPC* and *COPH* equations for *PTACs* and *PTHPs* means “cooling capacity” in kW at 35°C outdoor dry-bulb temperature.

Note to reviewers: The footnotes in the other rows labeled “e” will be changed to “d.”

Add Table 6.8.1-22 (I-P)

Table 6.8.1-22 Room Air Conditioners and Room Air-Conditioner Heat Pumps—Minimum Efficiency Requirements^{a,b,c}

<u>Equipment Type</u>	<u>Capacity</u>	<u>Minimum Efficiency for Equipment Manufactured Before May 26, 2026</u>	<u>Minimum Efficiency for Equipment Manufactured On or After May 26, 2026</u>	<u>Test Procedure^c</u>
<u>Room air conditioners without reverse cycle with louvered sides</u>	<6000 Btu/h	<u>11.0 CEER</u>	<u>13.1 CEER</u>	<u>ANSI/AHAM RAC-1</u>
	≥6000 Btu/h and <8000 Btu/h	<u>11.0 CEER</u>	<u>13.7 CEER</u>	
	≥8000 Btu/h and <14,000 Btu/h	<u>10.9 CEER</u>	<u>16.0 CEER</u>	
	≥14,000 Btu/h and <20,000 Btu/h	<u>10.7 CEER</u>	<u>16.0 CEER</u>	
	≥20,000 Btu/h and <28,000 Btu/h	<u>9.4 CEER</u>	<u>13.8 CEER</u>	
	≥28,000 Btu/h	<u>9.0 CEER</u>	<u>13.2 CEER</u>	
<u>Room air conditioners without louvered sides</u>	<6000 Btu/h	<u>10.0 CEER</u>	<u>12.8 CEER</u>	<u>ANSI/AHAM RAC-1</u>
	≥6000 Btu/h and <8000 Btu/h	<u>10.0 CEER</u>	<u>12.8 CEER</u>	
	≥8000 Btu/h and <11,000 Btu/h	<u>9.6 CEER</u>	<u>14.1 CEER</u>	
	≥11,000 Btu/h and <14,000 Btu/h	<u>9.5 CEER</u>	<u>13.9 CEER</u>	
	≥14,000 Btu/h and <20,000 Btu/h	<u>9.3 CEER</u>	<u>13.7 CEER</u>	
	≥20,000 Btu/h	<u>9.4 CEER</u>	<u>13.8 CEER</u>	
<u>Room air conditioners with reverse cycle, with louvered sides</u>	<20,000 Btu/h	<u>9.8 CEER</u>	<u>14.4 CEER</u>	<u>ANSI/AHAM RAC-1</u>
	≥20,000 Btu/h	<u>9.3 CEER</u>	<u>13.7 CEER</u>	
<u>Room air conditioners with reverse cycle without louvered sides</u>	<14,000 Btu/h	<u>9.3 CEER</u>	<u>13.7 CEER</u>	<u>ANSI/AHAM RAC-1</u>
	≥14,000 Btu/h	<u>8.7 CEER</u>	<u>12.8 CEER</u>	

<u>Room air conditioners, casement-only</u>	<u>All</u>	<u>9.5 CEER</u>	<u>13.9 CEER</u>	<u>ANSI/AHAM RAC-1</u>
<u>Room air conditioners, casement-slider</u>	<u>All</u>	<u>10.4 CEER</u>	<u>15.3 CEER</u>	<u>ANSI/AHAM RAC-1</u>

- a. The US DOE minimum efficiency requirements supersede the values in this table for equipment sold in the United States. The requirements of this table matched the US DOE minimum efficiency requirements at the time of publication of this standard. Room air conditioners sold in the United States must meet the current US DOE energy conservation standards in 10 CFR Part 430.
- b. The units for CEER are Btu/Wh
- c. Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

Add Table 6.8.1-22 (SI)

Table 6.8.1-22 Room Air Conditioners and Room Air-Conditioner Heat Pumps Installed Outside the United States—Minimum Efficiency Requirements^{ab}

<u>Equipment Type</u>	<u>Capacity</u>	<u>Minimum Efficiency for Equipment Manufactured Before May 26, 2026</u>	<u>Minimum Efficiency for Equipment Manufactured On or After May 26, 2026</u>	<u>Test Procedure^b</u>
<u>Room air conditioners without reverse cycle with louvered sides</u>	<u><1.8 kW</u>	<u>CEER = 3.22</u>	<u>CEER = 3.84</u>	<u>ANSI/AHAM RAC-1</u>
	<u>≥1.8 and <2.3 kW</u>	<u>CEER = 3.19</u>	<u>CEER = 4.02</u>	
	<u>≥2.3 and <4.1 kW</u>	<u>CEER = 3.19</u>	<u>CEER = 4.69</u>	
	<u>≥4.1 and <5.9 kW</u>	<u>CEER = 3.14</u>	<u>CEER = 4.69</u>	
	<u>≥5.9 kW and <8.2 kW</u>	<u>CEER = 2.75</u>	<u>CEER = 4.04</u>	
	<u>≥8.2 kW</u>	<u>CEER = 2.64</u>	<u>CEER = 3.87</u>	
<u>Room air conditioners without louvered sides</u>	<u><1.8 kW</u>	<u>CEER = 2.93</u>	<u>CEER = 3.75</u>	<u>ANSI/AHAM RAC-1</u>
	<u>≥1.8 and <2.3 kW</u>	<u>CEER = 2.93</u>	<u>CEER = 3.75</u>	
	<u>≥2.3 and <3.2 kW</u>	<u>CEER = 2.81</u>	<u>CEER = 4.13</u>	
	<u>≥3.2 and <3.2 kW</u>	<u>CEER = 2.78</u>	<u>CEER = 4.07</u>	
	<u>≥4.1 and <5.9 kW</u>	<u>CEER = 2.73</u>	<u>CEER = 4.02</u>	
	<u>≥5.9 kW</u>	<u>CEER = 2.75</u>	<u>CEER = 4.04</u>	
<u>Room air conditioners with reverse cycle, with louvered sides</u>	<u><5.9 kW</u>	<u>CEER = 2.87</u>	<u>CEER = 4.22</u>	<u>ANSI/AHAM RAC-1</u>
	<u>≥5.9 kW</u>	<u>CEER = 2.73</u>	<u>CEER = 4.02</u>	
<u>Room air conditioners with reverse cycle without louvered sides</u>	<u><4.1 kW</u>	<u>CEER = 2.73</u>	<u>CEER = 4.02</u>	<u>ANSI/AHAM RAC-1</u>
	<u>≥4.1 kW</u>	<u>CEER = 2.55</u>	<u>CEER = 3.75</u>	
<u>Room air conditioners, casement-only</u>	<u>All</u>	<u>CEER = 2.78</u>	<u>CEER = 4.07</u>	<u>ANSI/AHAM RAC-1</u>
<u>Room air conditioners, casement-slider</u>	<u>All</u>	<u>CEER = 3.05</u>	<u>CEER = 4.48</u>	<u>ANSI/AHAM RAC-1</u>

- a. The US DOE minimum efficiency requirements supersede the values in this table for equipment sold in the United States. *Room air conditioners* installed in the United States are not subject to the minimum efficiencies in this table. They are regulated as consumer products by 10 CFR 430.
- b. The units for CEER are W/W
- c. Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.