

**ERRATA SHEET FOR
ANSI/ASHRAE/IES STANDARD 90.1-2022 (I-P Edition)
Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings**

October 18, 2024

The corrections listed in this errata sheet apply to ANSI/ASHRAE/IES Standard 90.1-2022, I-P Edition. The first printing is identified on the outside back cover of the standard as “Product code: 86327 12/22”. Shaded items have been added since the previously published errata sheet dated August 14, 2024 was distributed.

NOTICE: ASHRAE now has a list server for Standing Standards Project Committee 90.1 (SSPC 90.1). Interested parties can now subscribe and unsubscribe to the list server and be automatically notified via e-mail when activities and information related to the Standard and the User’s Manual is available. To sign up for the list server please visit **Project Committee List Servers for Standard** on the Technology / Standards section of the ASHRAE website at <https://www.ashrae.org/technical-resources/standards-and-guidelines/project-committee-list-servers>.

Page(s) Erratum

2 **Foreword.** Make the following change to Building Envelope.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

Building Envelope

- A requirement was added to perform whole-building air-leakage testing and measurement on buildings less than ~~25,000~~ 10,000 ft².

45 **5.4.3.4 Vestibules and Revolving Doors.**

(Note: Deletions are shown in ~~strikethrough~~.)

5.4.3.4 Vestibules and Revolving Doors. Vestibules and revolving *doors* shall be installed in accordance with this section.

[...]

5.4.3.4.3 Vestibule Envelope. The exterior surfaces of both conditioned vestibules and unconditioned vestibules shall comply with the *continuous air barrier* requirements.

Exceptions to 5.4.3.4.3:

[...]

71 **6.1.4 Alterations to Heating, Ventilating, Air Conditioning, and Refrigeration in Existing Buildings.**

(Note: Deletions are shown in ~~strikethrough~~.)

6.1.4 Alterations to Heating, Ventilation, Air Conditioning, and Refrigeration in Existing Buildings

6.1.4.1 New HVACR *equipment* as a direct replacement of existing HVACR *equipment* shall comply with the following sections as applicable for the *equipment* being replaced:

[...]

6.1.4.5 New and replacement *pipng* shall comply with Section 6.4.4.1.

Exceptions to 6.1.4.5: Compliance shall not be required
[...]

78 **6.4.3.4.3 Damper Leakage.** Revise Section 6.4.3.4.3 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

6.4.3.4.3 Damper Leakage. Where *outdoor air* supply and exhaust/relief dampers are required by Section ~~6.4.3.4.6.4.3.4.1~~, they shall have a maximum leakage rate as indicated in Table 6.4.3.4.3.

131/132 **Table 6.8.1-16 Heat Pump and Heat Recovery Water-Chilling Packages—Minimum Efficiency Requirements.** Add the following footnotes to the title and heading in Table 6.8.1-16 as shown below.
(Note: Additions are shown in underline.)

Table 6.8.1-16 Heat Pump and Heat Recovery Water-Chilling Packages—Minimum Efficiency Requirements^k

Heat Recovery Heating Full-Load
Efficiency (COP_{HR})^{c,d,g}, W/W

172 **10.1.1 Scope.** Revise Section 10.1.1 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

10. OTHER EQUIPMENT

10.1 General

10.1.1 Scope. This section applies to other *equipment* as described in ~~Section 10.4~~below.

217 **Table 11.5.1 Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget.** Revise item 6.g.1 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

6. Lighting

...

g. *Automatic* lighting controls included in the *proposed design* but not required by Section 9.4.1 shall be modeled using the following methods for each luminaire under control:

1. *Manual-ON* or partial-auto-ON *occupancy sensors* shall be modeled by reducing the lighting schedule each hour by the *occupancy sensor* reduction factors in Table G3.7-1 and G3.7-2 for the applicable *space* type multiplied by ~~1.250.25~~.

310 **Table G-1 Modeling Requirements for Calculating Proposed Building Performance and Baseline Building Performance (Continued).** Revise Exception to (a) and (b) under 10. HVAC Systems as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

Exception to (a) and (b): Where part-load performance of chillers in the *proposed design* is not available, and design temperature across the condenser is 10°F, the performance curves in Normative Appendix J ~~Appendix L~~, as referenced in Table J-1, shall be modeled for the specified chiller. When using performance curves from Normative Appendix J ~~Appendix L~~, chiller minimum part-load ratio (ratio of load to available capacity at a given simulation time step) and minimum compressor unloading ratio (part-load ratio below

which the chiller capacity cannot be reduced by unloading and chiller is false loaded) shall be equal to 0.25. *Simulation programs* that do not use performance curves are permitted to use an alternative simulation method that results in the same performance as the curves described in Normative ~~Appendix J~~ Appendix L.

320 G3.3.2.3 Opaque Assemblies. Revise Section G3.3.2.3 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

G3.3.2.3 Opaque Assemblies. *Opaque assemblies* shall be modeled with *U-factors* meeting the requirements in Section ~~5.1.35.1.4~~.

320 G3.3.2.4 Fenestration. Revise Section G3.3.2.4 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

G3.3.2.4 Fenestration. *Fenestration U-factor, SHGC, and VT* shall be modeled as meeting the requirements in Section ~~5.1.35.1.4~~.

The *fenestration area* for an *existing building* shall equal the existing *fenestration area* prior to the proposed work and shall be distributed on each face of the *building* in the same proportions as the *existing building*.

320 G3.3.2.1 General Approach. Revise Section G3.3.2.1 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

G3.3.2.1 General Approach. *System and equipment* included in the scope of retrofit shall be modeled at ~~efficiency~~ efficiency levels meeting the mandatory and prescriptive requirements in Sections 5 through 10 and as described in this section. All other baseline *systems and equipment* shall be modeled the same as in the *proposed design*.

320 G3.3.2.8 HVAC Systems. Revise Section G3.3.2.8 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

G3.3.2.8 HVAC Systems

- a. Baseline *HVAC system* types shall be the same as the *proposed design*.
Exception to G3.3.2.8(a): If the *proposed design* includes variable refrigerant flow heat pumps or *single-zone systems* with *electric resistance* heat, then air source heat pumps shall be used in the *baseline design*.
- b. *Baseline systems* shall meet the requirements in Section ~~6.1.36.1.4~~. Chillers shall meet the *efficiency* requirements in Table 6.8.1-3 using Path A or Path B, the same as the *proposed design*. If the *proposed design* meets both Path A and Path B requirements, Path A shall be used.
[...]

343 Table G3.9.2 Performance Rating Method Baseline Elevator Motor. Revise Table G3.9.2 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

Number of Stories (Including Basement)	Motor Type	Counterweight	Mechanical Efficiency	Motor Efficiency ^a
≤4	Hydraulic	None	58%	Table G3.9.3
>4	Traction	<i>Proposed design</i> counterweight, if not specified use weight of the car plus 40% of the rated load	64%	<u>Table G3.9.1</u> <u>G3.9.3</u>

- 393** **Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019.** Add the addenda to Table M-1 as shown in the attached.
- 394** **Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019.** Update the Description of Changes for Addendum t as shown in the attached. Change highlighted in yellow.
- 395** **Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019.** Revise Table M-1 as shown in the attached, for Addenda ac and ar.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)
- 400-414** **Table Annex1-1 ASHRAE Standard 169-2013, Table B-1: U.S. Climate Zones by State and County.** Replace Table Annex1-1 with the attached.

Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019						
Addendum	Sections	Description of Changes^a	ASHRAE Standard Committee Approval	Co-sponsor Approval (IES)	ASHRAE BOD/Tech Council Approval	ANSI Approval
ba	9.4.1, Table 9.5.2.1, Appendix E, Table G3.7-1, Table G3.7-2	Updates the space-by-space LPD values based on efficacy improvements consistent with manufacturer data sheets. Makes various changes to lighting control requirements, including the addition of several new space types and a new requirement for multilevel control with continuous dimming in place of bilevel lighting control.	7/20/2022	9/8/2022	8/15/2022	9/9/2022
cc	10.5.1.1	Increases the prescriptive on-site renewable energy requirement added by Addendum by from 0.25 W/ft ² to 0.5 W/ft ² .	7/20/2022	9/8/2022	8/15/2022	9/9/2022

Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019

Addendum	Sections	Description of Changes^a	ASHRAE Standard Committee Approval	Cosponsor Approval (IES)	ASHRAE BOD/Tech Council Approval	ANSI Approval
t	3.2, 4.2.5, 5.1.3, 5.4.3, 5.7.2, 5.7.3.1, 5.8, 5.9.1.2, 6.4.4.2.1, 6.4.5, 6.5.1, Table 12.5.1 (5), 12.5.3, 13, C1.5, C3.5.5.3, C3.6, C3.1.1.4, Table G3.1 (5), Table H-3	Adds requirement to perform whole-building air leakage testing and measurement on buildings less than 25,000 10,000 ft ² , specifies performance requirements for compliance, references the applicable ASTM standard, and modifies relevant Section 3 terminology.	6/25/2022	6/17/2022	6/29/2022	7/29/2022

Table M-1 Addenda to ANSI/ASHRAE/IES Standard 90.1-2019

Addendum	Sections	Description of Changes^a	ASHRAE Standard Committee Approval	Co-sponsor Approval (IES)	ASHRAE BOD/Tech Council Approval	ANSI Approval
ac	3.2, 9.4.1.2, Table 9.2.3-19.2.2.1 , Table 9.6.1, Appendix E	Updates interior lighting power and minimum control requirements: adds a power exception for the germicidal function in luminaires and sources, removes exceptions for casinos and parking garage daylight transition zone lighting, and provides a definition for the latter item.	6/25/2022	6/17/2022	6/29/2022	7/29/2022
ar	3.2, Table 9.2.3-19.2.2.1 , 9.4.4, Appendix E	Adds requirements for indoor horticultural lighting based on a new metric, photosynthetic photon efficacy (PPE), developed in ANSI/ASABE S640.	7/20/2022	9/8/2022	8/15/2022	9/9/2022

See PDF version for Table Annex1-1.