ADDENDA

ANSI/ASHRAE/IES Addendum cr to
ANSI/ASHRAE/IES Standard 90.1-2019

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on November 4, 2020; by the ASHRAE Board of Directors on November 18, 2020; by the Illuminating Engineering Society on October 7, 2020; and by and by the American National Standards Institute on December 16, 2020.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (https://www.ashrae.org/continuous-maintenance).

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SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus Standard developed under the auspices of ASHRAE. *Consensus* is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this Standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this Standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Senior Manager of Standards of ASHRAE should be contacted for

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard, or
d. permission to reprint portions of the Standard.

(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

Currently, Section 11 and Appendix G allow unlimited trade-offs between building envelope and other building systems. Studies have concluded that weaker building envelopes can permanently limit building energy performance, even as lighting and HVAC components are upgraded over time, because retrofitting the envelope is less likely and more expensive. This issue has been raised by states and jurisdictions around the country. Language to limit the envelope trade-offs on projects following performance path of compliance (aka the envelope backstop) will be included in the New York City and Washington State energy codes among others.

Addendum cr builds on this prior work, striving to preserve design flexibility and minimize documentation effort while improving the long-term building performance. Projects can comply with the proposed envelope backstop by either meeting the prescriptive envelope requirements in Section 5.5 or using Section 5.6 "Building Envelope Trade-Off Option" to demonstrate that the energy cost penalty from the proposed below-code envelope does not exceed the set margins. The backstop margins (15% for residential building area types and 7% for nonresidential building area types) were tested on projects in Climate Zones 2A, 4A, and 6A building types, including multifamily residential, hotel, office, school/university, and standalone retail, light weight, and mass wall construction with high and low window area.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum cr to Standard 90.1-2019

Revise Section 11.2 as shown (I-P and SI units).

11.2 Compliance. The *proposed building design* shall comply with all of the following:

a. Sections 5.2.1, 6.2.1, 7.2.1., 8.2.1, 9.2.1, and 10.2.1.
b. The *design energy cost*, as calculated in Section 11.5, does not exceed the *energy cost budget* as calculated by the *simulation program* described in Section 11.4.
c. The *energy efficiency* level of installed components and systems that meets or exceeds the *efficiency* levels used to calculate the *design energy cost*.
d. For new buildings, one of the following is met:
    1. The *building envelope* complies with Section 5.5, "Prescriptive Building Envelope Compliance Path."
    2. Using Section 5.6, "Building Envelope Trade-Off Option," the *proposed envelope performance factor* shall not exceed the *base envelope performance factor* by more than 15% in multifamily residential, hotel/motel, and dormitory *building* area types. For all other *building* area types, the limit shall be 7%. For buildings with both *residential* and *nonresidential* occupancies, the limit shall be based on the area-weighted average of the *gross conditioned floor area*.

~~d~~e. Verification, testing, and *commissioning* requirements of Section 4.2.5 shall be met.
~~e~~f. Proposed *building systems*, controls, or *building envelope* documented in Section 11.7(b) that do not have criteria in Sections 5 through 10 shall have verification or testing to document proper installation and operation in accordance with Section 4.2.5.

Revise Section G1.2.1 as shown (I-P and SI units).

G1.2.1 Mandatory Provisions. The *proposed building design* shall comply with all of the following:

a. Sections 5.2.1, 6.2.1, 7.2.1., 8.2.1, 9.2.1, and 10.2.1.
b. The interior lighting power shall not exceed the *interior lighting power allowance* determined using either Tables G3.7 or G3.8 and the methodology described in Sections 9.5.1 and 9.6.1.

1. Table G3.7 and the methodology described in Section 9.6.1, or
2. Table G3.8 and the methodology described in Section 9.5.1.

c. For new buildings, one of the following is met:

1. The *building envelope* complies with Section 5.5, "Prescriptive Building Envelope Compliance Path."
2. Using Section 5.6, "Building Envelope Trade-Off Option," the *proposed envelope performance factor* shall not exceed the *base envelope performance factor* by more than 15% in multifamily residential, hotel/motel, and dormitory *building* area types. For all other *building* area types, the limit shall be 7%. For buildings with both *residential* and *nonresidential* occupancies, the limit shall be based on the area-weighted average of the *gross conditioned floor area*.

~~c~~d. Energy efficiency levels of installed components and *systems* that meet or exceed the efficiency levels used to calculate the *proposed building performance*.

~~d~~e. Verification, testing, and *commissioning* requirements of Section 4.2.5 shall be met.

~~e~~f. Proposed building systems, controls or building envelope documented in Section G1.3(c) that do not have criteria in Sections 5 through 10 shall have verification or testing to document proper installation and operation in accordance with Section 4.2.5.

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration, and their allied fields.

As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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