



**BSR/ASHRAE/IES Addendum bz
to ANSI/ASHRAE/IES Standard 90.1-2016**

Public Review Draft

Proposed Addendum bz to Standard 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings

**First Public Review (February 2019)
(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 clarifies aligns the requirements of Appendix C with more informative outputs, clarifies the schedule of shades, updates energy costs, and references updated minimum efficiency requirements in Section 6.

This addendum impacts an optional performance path in the standard designed to provide increased flexibility and therefore was not subjected to cost effectiveness analysis.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~striketrough~~ (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 bz to 90.1-2016

Modify the standard as follows (IP and SI Units)

3.2 Definitions

envelope performance factor: the trade-off value for the *building envelope* performance compliance option expressed in annual energy cost calculated using the procedures specified in Section 5.6. For the purposes of determining *building envelope* requirements, the classifications are defined as follows:

base envelope performance factor: the *building envelope performance factor* for the base design.

proposed envelope performance factor: the *building envelope performance factor* for the proposed design.

C1.4 For Fenestration

The *class of construction*, area, assembly U-factor, assembly SHGC, VT, and PF shall be specified for *fenestration*. ~~For skylight wells, the width, depth, and height shall be defined as shown in Figure C1.4.~~ Each *fenestration* element shall be associated with a surface as defined in Section C1.2 and shall have the *orientation* of that surface.

C2 Output requirements

C2.1...

...

C2.6 All differences between the *proposed envelope performance factor* and the *base envelope performance factor*.

~~C2.7 Peak heating and cooling loads for building classes of constructions. Total conductive heat gain and conductive heat loss through all opaque classes of construction.~~

~~C2.8 Total conductive heat gain, conductive heat loss, and solar heat gain through all fenestration classes of construction.~~

...

C3.1 Simulation Program

C3.1.1...

C3.1.2

Informative Note

Neither the *proposed envelope performance factor* nor the *base envelope performance factor* are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

...

C3.3 Purchased Energy Rates

The following rates for purchased energy shall be used to determine the proposed envelope performance factor and the base envelope performance factor:

- a. Electricity: ~~0.1032~~ \$0.1063/kWh
- b. Heating: ~~0.99~~ \$0.98/therm

Exception to C3.3

Where approved by the *authority having jurisdiction*, actual annual rates for *purchased energy* or state average *energy* prices published by the Department of Energy's Energy Information Administration shall be permitted. The same rates shall be used for both the *proposed envelope performance factor* and the *base envelope performance factor*.

...

C3.5.5.1 Shading

Manually operated interior shades shall be modeled on all *vertical fenestration*. Shades shall be modeled to be in the lowered position when either the transmitted luminance ~~luminous intensity~~ is greater than 200 cd/ft² or the direct solar transmitted *energy* exceeds 30 Btu/h·ft², and then remain lowered for rest of the day. Shades shall be modeled with visible light transmittance of 0.10, visible light *reflectance* of 0.40, solar transmittance of 0.21, and solar *reflectance* of 0.23. Permanent shading devices such as fins and overhangs shall be modeled.

...

C3.5.8 HVAC Systems

One *HVAC system* shall be provided for each thermal zone and shall have the following characteristics:

- a. Constant-volume fan *control*.
- b. Electrically-provided cooling with EER from Table 6.8.1-1, based on requirements for split system air conditioners with heating section type “all other” between 65,000 Btu/h(19kW) and 135,000 Btu/h(40kW), ~~with constant COP, excluding the indoor fan power equal to 4.4~~ The EER shall be adjusted to remove the fan power in accordance with Section 11.5.2c.
- c. Gas furnace with constant thermal efficiency equal to the minimum AFUE allowed for gas-fired warm-air furnaces with maximum capacity <225,000 Btu/h(<66kW), in accordance with Table 6.8.1-5.
- d.....

(remainder of section unchanged)

The text in this proposed addendum does not conflict or otherwise modify any approved or pending addendum since the 2016 edition.