



ANSI/ASHRAE/IESNA Standard 90.1-2004
(Supersedes ANSI/ASHRAE/IESNA Standard 90.1-2001)
Includes ANSI/ASHRAE/IESNA Addenda listed in Appendix F

ASHRAE STANDARD

Energy Standard for Buildings Except Low-Rise Residential Buildings

I-P Edition

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the IESNA Board of Directors, and the American National Standards Institute.

This standard is under continuous maintenance 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. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE Web site, <http://www.ashrae.org>, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada).

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- b. participation in the next review of the Standard,
- c. offering constructive criticism for improving the Standard,
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NOTE

When addenda, interpretations, or errata to this standard have been approved, they can be downloaded free of charge from the ASHRAE Web site at <http://www.ashrae.org>.

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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

The original Standard 90 was published in 1975 and revised editions were published in 1980, 1989, and 1999 using the ANSI and ASHRAE periodic maintenance procedures. Based upon these procedures, the entire standard was publicly reviewed and published in its entirety each time. As technology and energy prices began changing more rapidly, however, the ASHRAE Board of Directors voted in 1999 to place the standard on continuous maintenance, permitting the standard to be updated several times each year through the publication of approved addenda to the standard. Starting with the 2001 edition, the standard is now published in its entirety in the fall of every third year. This schedule allows the standard to be submitted and proposed by the deadline for inclusion or reference in model building and energy codes. All approved addenda and errata will be included in the new edition every three years. This procedure allows users to have some certainty about when new editions will be published.

*This 2004 edition of the standard has several new features and includes changes resulting from the continuous maintenance proposals from the public. The standard has been completely reformatted for ease of use and clarity. The climate zones have been reduced from 26 to 8 and the Lighting LPDs have been reduced as well. The committee welcomes suggestions for improving the standard. Users of the standard are encouraged and invited to use the continuous maintenance procedure to suggest changes. A form, *Submittal of Proposed Change*, is included in the back of this standard. The committee will take formal action on every proposal received.*

The project committee is continually considering changes and proposing addenda for public review. When addenda are approved, notices will be published on the ASHRAE and IESNA Web sites. Users are encouraged to sign up for the free ASHRAE and IESNA internet list server for this standard to receive notice of all public reviews and approved and published addenda and errata.

Changes from the previous 2001 edition of the standard are not marked in the margin, as was the practice with the 1999 edition, because of the extensive reformatting that has taken place in this 2004 edition.

This edition corrects all known typographical errors in the 2001 standard. It includes the content of 31 addenda that were processed by the committee and approved by the ASHRAE and IESNA Boards of Directors. For the publication dates and brief descriptions of the addenda to 90.1-2001, see Appendix F.

1. PURPOSE

The purpose of this standard is to provide minimum requirements for the energy-efficient design of buildings except low-rise residential buildings.

2. SCOPE

2.1 This standard provides:

- (a) minimum energy-efficient requirements for the design and construction of:
 - 1. new buildings and their systems,
 - 2. new portions of buildings and their systems, and
 - 3. new systems and equipment in existing buildings and
- (b) criteria for determining compliance with these requirements.

2.2 The provisions of this standard apply to:

- (a) the envelope of buildings, provided that the enclosed spaces are:
 - 1. heated by a heating system whose output capacity is greater than or equal to 3.4 Btu/h-ft² or
 - 2. cooled by a cooling system whose sensible output capacity is greater than or equal to 5 Btu/h-ft², and
- (b) the following systems and equipment used in conjunction with buildings:
 - 1. heating, ventilating, and air conditioning,
 - 2. service water heating,
 - 3. electric power distribution and metering provisions,
 - 4. electric motors and belt drives, and
 - 5. lighting.

2.3 The provisions of this standard do not apply to:

- (a) single-family houses, multi-family structures of three stories or fewer above grade, manufactured houses (mobile homes) and manufactured houses (modular),
- (b) buildings that do not use either electricity or fossil fuel, or
- (c) equipment and portions of building systems that use energy primarily to provide for industrial, manufacturing, or commercial processes.

2.4 Where specifically noted in this standard, certain other buildings or elements of buildings shall be exempt.

2.5 This standard shall not be used to circumvent any safety, health, or environmental requirements.

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

3.1 General

Certain terms, abbreviations, and acronyms are defined in this section for the purposes of this standard. These definitions are applicable to all sections of this standard. Terms that are not defined shall have their ordinarily accepted meanings within the context in which they are used. Ordinarily accepted meanings shall be based upon American standard English language usage as documented in an unabridged dictionary accepted by the *adopting authority*.