

**ANSI/ASHRAE/ICC/USGBC/IES Addendum g to  
ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2017**

# **Standard for the Design of High-Performance Green Buildings**

## **Except Low-Rise Residential Buildings**

*The Complete Technical Content of the International Green Construction Code<sup>®</sup>*

Approved by the ASHRAE Standards Committee on June 22, 2019; by the ASHRAE Technology Council on June 26, 2019; by the International Code Council on May 31, 2019; by the USGBC Board of Directors on July 9, 2019; by the IES Board of Directors on June 10, 2019; and by the American National Standards Institute on June 27, 2019.

These addenda were 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<sup>®</sup> website (<https://www.ashrae.org/continuous-maintenance>).

The latest edition of an ASHRAE Standard may be purchased on the ASHRAE website ([www.ashrae.org](http://www.ashrae.org)) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305, telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in the United States and Canada), or e-mail: [orders@ashrae.org](mailto:orders@ashrae.org). For reprint permission, go to [www.ashrae.org/permissions](http://www.ashrae.org/permissions).

© 2019 ASHRAE

ISSN 1041-2336





**ASHRAE Standing Standard Project Committee 189.1**  
**Cognizant TC: 2.8 Building Environmental Impacts and Sustainability**  
**SPLS Liaison: Walter T. Grondzik**  
**ASHRAE Staff Liaison: Connor Barbaree**  
**ICC Liaison: Mike Pfeiffer**  
**IES Liaison: Mark Lien**  
**USGBC Liaison: Wes Sullens**

Andrew Persily*, Chair	Susan Gitlin*	Darren Molnar-Port
Jennifer Dolin*, <i>Co-Vice Chair</i>	Gregg Gress*	Gwelen Paliaga*
Charles Eley*, <i>Co-Vice Chair</i>	Maureen Guttman	Xiufeng Pang
Larry Schoen*, <i>Co-Vice Chair</i>	Roger Hedrick*	Thomas Pape*
Jessica Gracie-Griffin*, <i>Co-Vice Chair</i>	Thomas Hogarth*	Joseph Riddle
Senthil Arunachlam	Donald Horn*	Steve Rosenstock*
Constantinos Balaras*	Ksenija Janjic	Michael Schmeida
Charles Bertuch	Gregory Johnson	Charles Seyffer
Daryn Cline	Michael Jouaneh*	Matt Sigler
Jeffrey Boldt*	Andrew Klein	Kent Sovocool*
Ernie Conrad*	John Koeller	Dennis Stanke*
John Cross*	Thomas Lawrence*	Martha VanGeem*
Michael Cudahy*	Neil Leslie*	Scott West*
Jim Edelson*	George O. Lea	Daniel Whittet*
Anthony Floyd*	Lori-Ann Lolukoshko	Jason Wilen*
Sam Francis*	Stephany Mason*	Joe Winters*
Mark Frankel	Molly McGuire*	Jianshun Zhang
Francis Gallo	Jonathan McHugh*	

\* Denotes voting member at time of publication

### ASHRAE STANDARDS COMMITTEE 2019–2020

Wayne H. Stoppelmoor, Jr., *Chair*  
Drury B. Crawley, *Vice-Chair*  
Els Baert  
Charles S. Barnaby  
Niels Bidstrup  
Robert B. Burkhead  
Thomas E. Cappellin  
Douglas D. Fick  
Michael W. Gallagher  
Walter T. Grondzik

Susanna S. Hanson  
Rick M. Heiden  
Jonathan Humble  
Srinivas Katipamula  
Essam E. Khalil  
Kwang Woo Kim  
Larry Kouma  
Cesar L. Lim  
Karl L. Peterman  
Erick A. Phelps

Lawrence J. Schoen  
Steven C. Sill  
Richard T. Swierczyna  
Christian R. Taber  
Russell C. Tharp  
Adrienne G. Thomle  
Michael W. Woodford  
Craig P. Wray  
Jaap Hogeling, *BOD ExO*  
Malcolm D. Knight, *CO*

Steven C. Ferguson, *Senior Manager of Standards*

---

#### 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.

#### DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

#### ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

**(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

*Addendum g replaces the current defined term, “design professional,” from ASHRAE/IES Standard 90.1, with “registered design professional,” which is consistent with the terminology used in the 2015 International Green Construction Code. ASHRAE/ICC/USGBC/IES Standard 189.1 addresses subject matter for which the traditional titles of architect and engineer (used in the Standard 90.1 definition) do not necessarily align with typical requirements of authorities having jurisdiction (AHJ). For example, it is common for jurisdictions to have tiered requirements for designer qualifications, often permitting licensed master tradespeople to design certain projects within their respective discipline. The new definition also better accommodates specialty design categories such as onsite wastewater system designer, irrigation system designer, landscape architect, and soil scientist.*

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

### Addendum g to Standard 189.1-2017

*Modify Section 3 as shown.*

~~**design professional:** see ANSI/ASHRAE/IES Standard 90.1.~~

**registered design professional:** An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

*Modify Sections 5 and 9 as shown.*

#### 5.3.7.2 Bicycle Parking

**5.3.7.2.1 Minimum Number of Spaces.** Bicycle parking spaces shall be provided for at least 5% of the *occupant load* of each building but not less than two parking spaces. Occupants who are nonambulatory, under restraint, or under custodial care need not be included in the total occupant load for the building. *Building projects* with dwelling units shall be

provided with at least 0.5 bicycle parking spaces per bedroom for each building but not less than two parking spaces.

#### Exceptions to 5.3.7.2.1:

1. *Building projects* with *dwelling units* that provide each unit with a private garage or private, locked storage *space* of sufficient size to store a bicycle.
2. The number of bicycle parking *spaces* shall be allowed to be reduced subject to *AHJ* approval of a transportation plan, prepared by a registered design professional, that demonstrates the likelihood that building occupants will use public transportation and/or walk to the *building project site*.

[ . . . ]

## 9.5 Performance Option

**9.5.1 Life-Cycle Assessment (LCA).** An *LCA* shall be performed in accordance with ASTM E2921 and ISO Standard 14044, as modified by this section, for a minimum of two building alternatives, both of which shall conform to the *owner's project requirements (OPR)*.

[ . . . ]

**9.5.1.2 Procedure.** The *LCA* shall be performed in accordance with the service lives, life-cycle stages, study boundaries, and comparison methodologies of ASTM E2921 with the following modifications:

- a. Each building alternative shall comply with Sections 6, 7, and 8 of this standard.
- b. The service life of the buildings shall not be less than that determined using Table 10.3.2.3, except that the service life of long-life buildings shall be no less than 75 years.
- c. Operating energy consumption shall be included or excluded at the discretion of the project team.
- d. The *LCA* tool (or tools) or software shall include a published third-party impact indicator method.
- e. The estimate of structural system material quantities shall be verified by a registered design professional or other approved source.

**9.5.1.3 Reporting.** A report that includes a description of the building alternatives and their physical differences shall be prepared and shall comply with the reporting requirements stated in ASTM E2921. The name and address of the registered design professional or other approved source verifying structural system material quantities shall be included. A critical review shall be performed by an external expert independent of those performing the *LCA*.



**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.

