STANDARD

ANSI/ASHRAE/IES Addendum v to
ANSI/ASHRAE/IES Standard 90.1-2022

Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on May 31, 2024; and by the Illuminating Engineering Society on May 8, 2024.

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).

The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 180 Technology Parkway, Peachtree Corners, GA 30092. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

 ISSN 1041-2336

Approved American National Standard
www.ansi.org

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

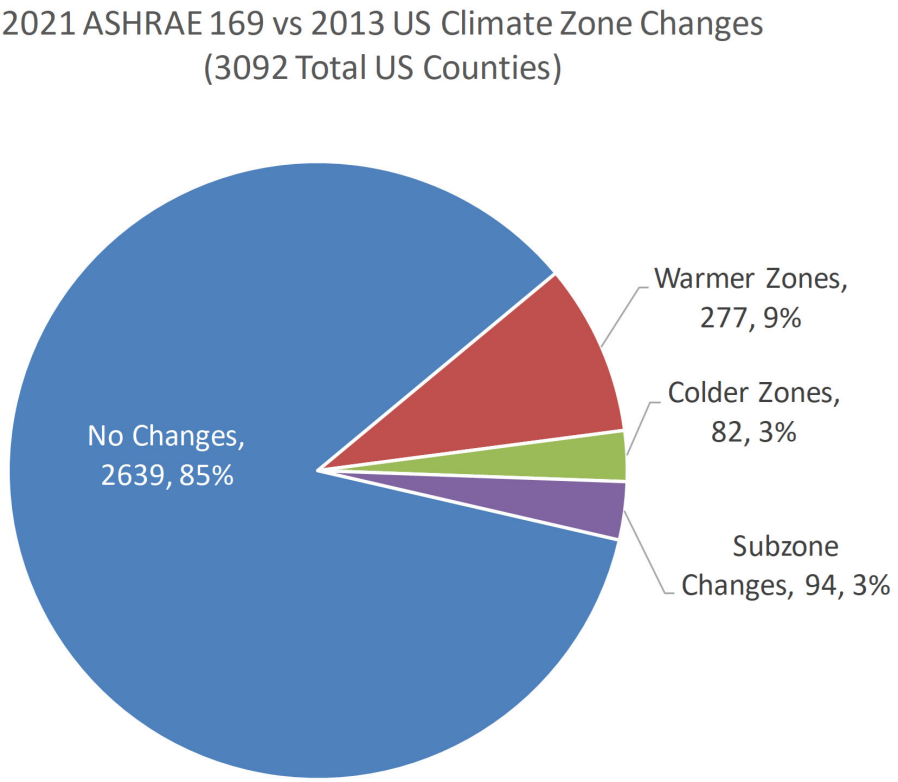
ANSI/ASHRAE/IES Standard 90.1-2022, Annex 1, is a direct extraction from ANSI/ASHRAE Standard 169-2013, Climate Data for Building Design Standards. *Standard 169 is a continuous maintenance standard that is routinely updated to align with* ASHRAE Handbook—Fundamentals*, Chapter 14, which is updated every four years. The current version of* ASHRAE Handbook—Fundamentals *was published in 2021. Since 2013, Standard 169-2020, Addendum a to Standard 169-2020, and Standard 169-2021 have been published.*

Addendum v to Standard 90.1 updates the reference annex climate zone data to that in the current Standard 169-2021. The data and tables in Standard 169-2021 have been completely revised and updated from Standard 169-2013. Standard 169-2021 includes data for 9237 weather station locations throughout the world, compared to 5564 locations in Standard 169-2013, for an increase of 3673.

An analysis of the climate zones for the 3092 U.S. counties was conducted, and the results showed that some counties moved to warmer climate zones, some moved to colder, and some changed subzones. (See the figure below.)

This addendum is a reference update and does not impact cost. Some cities may change climate zones to either warmer, cooler, or subzones, which could impact requirements in Standard 90.1.

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 v to Standard 90.1-2022

Modify Section 5 as follows (IP and SI).

5.1.5 Climate. Determine the climate zone for the location. For U.S. locations, follow the procedure in Section 5.1.5.1. For international locations, follow the procedure in Section 5.1.5.2.

5.1.5.1 United States Locations. For locations in the United States and its territories, use ASHRAE Standard 169, Table ~~B-1~~A-4, "~~U.S. Climate Zones by State and County~~ Climate Zones for United States," to determine the assigned climate zone and, where required, the assigned climate zone letter.

Exception to 5.1.5.1: If there are recorded historical climatic data available for a construction site, they may be used to determine compliance if approved by the building official.

Informative Note: Annex 1 (included at the end of this document) contains an extraction from ASHRAE Standard 169, Table ~~B-1~~ A-4, "~~U.S. Climate Zones by State and County~~ Climate Zones for United States."

5.1.5.2 International Locations. For locations in Canada that are listed in ASHRAE Standard 169, Table A-5, "~~Canada~~ Canadian Stations and Climate Zones," use this table to determine the required assigned climate zone number and, where required, the assigned climate zone letter. For locations in other international countries that are listed in ASHRAE Standard 169, Table A-6, "International Stations and Climate Zones," use this table to determine the required climate zone number and, where required, the assigned climate zone letter. For all international locations that are not listed either in ASHRAE Standard 169, Table A-5, "~~Canada~~ Canadian Stations and Climate Zones," or ASHRAE Standard 169, Table A-6, "International Stations and Climate Zones," use ASHRAE Standard 169, Section A3, "Climate Zone Definitions," and Table ~~A-3~~A-2, "Thermal Climate Zone Definitions," to determine both the climate zone number and letter.

Informative Note: Annex 1 (included at the end of this document) contains extractions from ASHRAE Standard 169, Table A-5, "~~Canada~~ Canadian Stations and Climate Zones"; ASHRAE Standard 169, Table A-6, "International Stations and Climate Zones"; ASHRAE Standard 169, Section A3, "Climate Zone Definitions"; and Table ~~A-3~~A-2, "Thermal Climate Zone Definitions."

Modify Section 13 as follows.

Reference		Section
ASHRAE **180 Technology Parkway, Peachtree Corners, GA 30092**		
ANSI/ASHRAE Standard 169-~~2013~~ 2021	Climatic Data for Building Design Standards	5.1.5.1, 5.1.5.2

Modify Informative Appendix B as follows.

INFORMATIVE APPENDIX B
(RETAINED FOR FUTURE USE)

Climatic data are no longer contained in this appendix. See Section ~~5.1.4~~ 5.1.5 for requirements. Annex 1 of this standard contains

a. an extraction of ASHRAE Standard 169, Table ~~B-1~~A-4, "~~U.S. Climate Zones by State and County~~ Climate Zones for United States" (which is normative for Standard 90.1),
b. an extraction of ASHRAE Standard 169, Figure ~~B-1~~A-2, "Climate Zone for United States Counties" (which is informative for Standard 90.1),
c. an extraction of ASHRAE Standard 169, Table A-5, "~~Canada~~ Canadian Stations and Climate Zones" (which is normative for Standard 90.1),
d. an extraction of ASHRAE Standard 169, Table A-6, "International Stations and Climate Zones" (which is normative for Standard 90.1),
e. an extraction of ASHRAE Standard 169, Section A3, "Climate Zone Definitions" (which is normative for Standard 90.1),
f. an extraction of ASHRAE Standard 169, Table ~~A-3~~A-2, "Thermal Climate Zone Definitions" (which is normative for Standard 90.1),
g. an extraction of ASHRAE Standard 169, Figure A-1, "Thermal Climate Zones as a Function of Heating and Cooling Degree Days" (which is informative for Standard 90.1), and

h. an extraction of ASHRAE Standard 169, Figure ~~C-2~~B-2, "World Climate Zones Map" (which is informative for Standard 90.1).

Modify Informative Appendix D as follows.

INFORMATIVE APPENDIX D
(RETAINED FOR FUTURE USE)

Climatic data are no longer contained in this appendix. See Section ~~5.1.4~~ 5.1.5 for requirements. Annex 1 of this standard contains extracts of material from ASHRAE Standard 169.

Modify Annex 1 as follows.

ANNEX 1
REFERENCE STANDARD REPRODUCTION—ASHRAE STANDARD 169

Annex 1 contains extractions of the following material from ASHRAE Standard 169 in the following order:

ASHRAE Standard 169 Material
Table Annex1-1: Table ~~B-1~~ A-4, ~~U.S.~~ Climate Zones ~~by State and County~~ for United States
Figure Annex1-1: Figure ~~B-1~~ A-2, Climate zones for United States counties.
Table Annex1-2: Table A-5, ~~Canada~~ Canadian Stations and Climate Zones
Figure Annex1-3: Table A-6, International Stations and Climate Zones
Section Annex1-1: Section A3, Climate Zone Definitions
Table Annex1-4: Table ~~A-3~~ A-2, Thermal Climate Zone Definitions
Figure Annex1-2: Figure A-1, Thermal climate zones as a function of heating and cooling degree-days.
Figure Annex1-3: Figure ~~C-2~~ B-2, World climate zones map.
Section Annex1-2: Section 4, Climatic Design Data and Climate Zones

Informative Note: Section references that appear in this annex are references to sections or appendices in ANSI/ASHRAE Standard 169.

Modify Annex 1 as follows. (Note: Tables and figures are not shown. The text below describes the changes made by this addendum. It does not contain underline or strikethrough.)

Delete Table Annex1-1, "ASHRAE Standard 169-2013, Table B-1: U.S. Climate Zones by State and County," and replace with ANSI/ASHRAE Standard 169-2021, Table A-4, "Climate Zones for United States."

- See ANSI/ASHRAE/IES Standard 90.1-2022, Table Annex1-1, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Table A-4, "Climate Zones for United States," for the replacement table.

Delete Figure Annex1-1, "ASHRAE Standard 169-2013, Figure B-1: Climate zones for United States counties," and replace with ANSI/ASHRAE Standard 169-2021, Figure A-2, "Climate zones for United States counties."

- See ANSI/ASHRAE/IES Standard 90.1-2022, Figure Annex1-1, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Figure A-2, "Climate zones for United States counties," for the replacement table.

Delete Table Annex1-2, "ASHRAE Standard 169-2013, Table A-5: Canada Stations and Climate Zones," and replace with ANSI/ASHRAE Standard 169-2021, Table A-5, "Canadian Stations and Climate Zones."

- See ANSI/ASHRAE/IES Standard 90.1-2022, Table Annex1-2 for the current table.
- See ANSI/ASHRAE Standard 169-2021, Table A-5, "Canadian Stations and Climate Zones," for the replacement table.

Delete Table Annex1-3, “ASHRAE Standard 169-2013, Table A-6: International Stations and Climate Zones,” and replace with ANSI/ASHRAE Standard 169-2021, Table A6, “International Stations and Climate Zones.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Table Annex1-3, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Table A6, “International Stations and Climate Zones,” for the replacement table.

Delete Section Annex1-1, “ASHRAE Standard 169-2013, Section A3: Climate Zone Definitions,” and replace with ANSI/ASHRAE Standard 169-2021, Section A3, “Climate Zone Definitions.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Section Annex1-1, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Section A3, “Climate Zone Definitions,” for the replacement table.

Delete Table Annex1-4, “ASHRAE Standard 169-2013, Table A-3: Thermal Climate Zone Definitions,” and replace with ANSI/ASHRAE Standard 169-2021, Table A-2, “Thermal Climate Zone Definitions.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Table Annex1-4, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Table A-2, “Thermal Climate Zone Definitions,” for the replacement table.

Delete Figure Annex1-2, “ASHRAE Standard 169-2013, Figure A-1: Thermal climate zones as a function of heating and cooling degree-days,” and replace with ANSI/ASHRAE Standard 169-2021, Figure A-1, “Thermal climate zones as a function of heating and cooling degree-days.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Figure Annex1-2, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Figure A-1, “Thermal climate zones as a function of heating and cooling degree-days,” for the replacement table.

Delete Figure Annex1-3, “ASHRAE Standard 169-2013, Figure C-2: World climate zones map,” and replace with ANSI/ASHRAE Standard 169-2021, Figure B-2, “World climate zones map.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Figure Annex1-3, for the current table.
- See ANSI/ASHRAE Standard 169-2021, Figure B-2, “World climate zones map,” for the replacement table.

Delete Section Annex1-2, “ASHRAE Standard 169-2013, Section 4: Climatic Design Data and Climate Zones,” and replace with ANSI/ASHRAE Standard 169-2021, Section 4, “Climatic Design Data and Climate Zones.”

- See ANSI/ASHRAE/IES Standard 90.1-2022, Section Annex1-2 for the current table.
- See ANSI/ASHRAE Standard 169-2021, Section 4, “Climatic Design Data and Climate Zones,” for the replacement table.

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.

ASHRAE · 180 Technology Parkway · Peachtree Corners, GA 30092 · www.ashrae.org

About ASHRAE

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.

To stay current with this and other ASHRAE Standards and Guidelines, visit www.ashrae.org/standards, and connect on LinkedIn, Facebook, Twitter, and YouTube.

Visit the ASHRAE Bookstore

ASHRAE offers its Standards and Guidelines in print, as immediately downloadable PDFs, and via ASHRAE Digital Collections, which provides online access with automatic updates as well as historical versions of publications. Selected Standards and Guidelines are also offered in redline versions that indicate the changes made between the active Standard or Guideline and its previous edition. For more information, visit the Standards and Guidelines section of the ASHRAE Bookstore at www.ashrae.org/bookstore.

IMPORTANT NOTICES ABOUT THIS STANDARD

To ensure that you have all of the approved addenda, errata, and interpretations for this Standard, visit www.ashrae.org/standards to download them free of charge.

Addenda, errata, and interpretations for ASHRAE Standards and Guidelines are no longer distributed with copies of the Standards and Guidelines. ASHRAE provides these addenda, errata, and interpretations only in electronic form to promote more sustainable use of resources.

5/24