

2024 International Green Construction Code®

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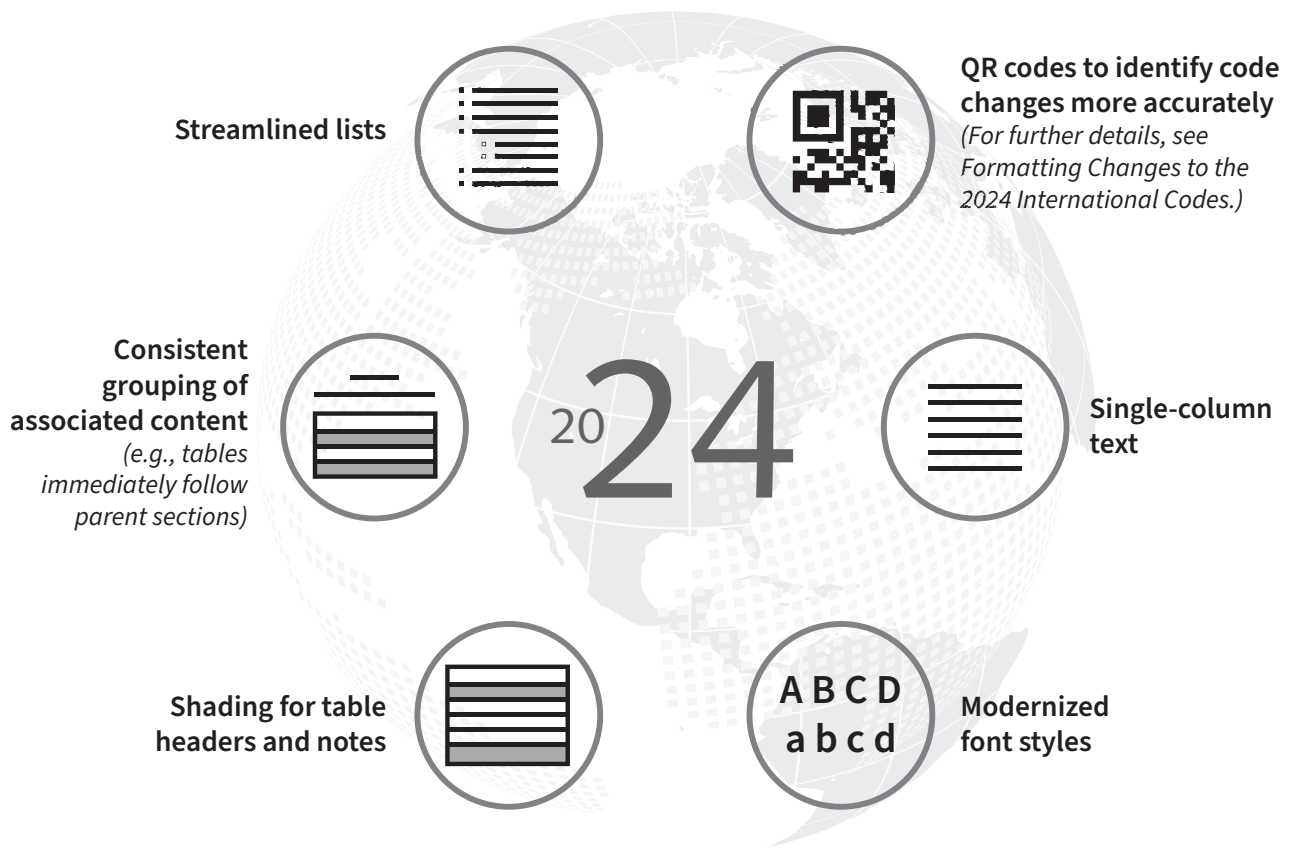
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NEW DESIGN FOR THE 2024 INTERNATIONAL CODES



The 2024 International Codes® (I-Codes®) have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience. The resulting product better aligns the print and PDF versions of the I-Codes with the ICC’s Digital Codes® content.

The changes, promoting a cleaner, more modern look and enhancing readability and sustainability, include:



More information can be found at iccsafe.org/design-updates.



PREFACE

FORMATTING CHANGES TO THE 2024 INTERNATIONAL CODES

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ABOUT THE I-CODES

The 2024 I-Codes, published by the ICC, are 15 fully compatible titles intended to establish provisions that adequately protect public health, safety and welfare; that do not unnecessarily increase construction costs; that do not restrict the use of new materials, products or methods of construction; and that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

The I-Codes are updated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes. Alternative materials, designs and methods not specifically addressed in the I-Code can be approved by the building official where the proposed materials, designs or methods comply with the intent of the provisions of the code.

The I-Codes are used as the basis of laws and regulations in communities across the US and in other countries. They are also used in a variety of nonregulatory settings, including:

- Voluntary compliance programs.
- The insurance industry.
- Certification and credentialing for building design, construction and safety professionals.
- Certification of building and construction-related products.
- Facilities management.
- “Best practices” benchmarks for designers and builders.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

Coordination of the I-Codes

The coordination of technical provisions allows the I-Codes to be used as a complete set of complementary documents. Individual codes can also be used in subsets or as stand-alone documents. Some technical provisions that are relevant to more than one subject area are duplicated in multiple model codes.

Italicized Terms

Terms italicized in code text, other than document titles, are defined in Chapter 3. The terms selected to be italicized have definitions that the user should read carefully to better understand the code. Where italicized, the Chapter 3 definition applies. If not italicized, common-use definitions apply.

INTRODUCTION TO THE INTERNATIONAL GREEN CONSTRUCTION CODE

The *International Green Construction Code*® (IgCC®) is a modern, up-to-date code governing the impact of buildings and structures on the environment. Its model code regulations contain clear and specific requirements with provisions that promote safe and sustainable construction in an integrated fashion with the ICC Family of Codes. This 2024 IgCC is the third fully integrated edition of the code to be developed cooperatively by the ICC and ASHRAE.

This comprehensive green code establishes minimum regulations for building systems and site considerations using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new mechanical designs. This 2024 edition is intended to be compatible with all of the I-Codes.

This code has been developed in collaboration with the following Cooperating Sponsors: ASHRAE, the US Green Building Council (USGBC) and the Illuminating Engineering Society (IES). The ICC wishes to thank these Cooperating Sponsors for recognizing the need for the development of a comprehensive set of green regulations that are enforceable, usable and adoptable.

Development

The 2024 IgCC is the fifth edition of the code. In 2015, the ICC and ASHRAE partnered in the development of the 2018 IgCC, sponsored by The American Institute of Architects (AIA), ASHRAE, ICC, IES and USGBC. The previous two editions (2012 and 2015) were developed utilizing the ICC’s Code Development Process as part of the ICC Family of Codes.

As part of the partnership with ASHRAE, the responsibility for code provisions is now split between the ICC and ASHRAE processes. The ICC is responsible for Chapter 1, Scope and Administration, and Appendix M. The ICC coordinated the technical provisions developed by ASHRAE with the provisions in Chapter 1 of the 2024 IgCC. The remainder of the code is the technical content that is based on the provisions of the 2023 edition of ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*, developed using the American National Standards Institute (ANSI)-approved ASHRAE consensus process. The Standing Standards Project Committee 189.1 (SSPC) serves as the consensus body that developed the standard.

USER NOTE: The code is formatted utilizing the ICC’s code format for chapter and section number designations. However, in order to provide the requisite road map to the technical provisions of Standard 189.1, the Standard 189.1 section number is included in parentheses following the IgCC section number; for example, Section 101.2 (2.3). The IgCC section number is “101.2” and the corresponding section number in Standard 189.1 is “2.3.” In this instance, Section 101.2 was further modified in the ICC process to include the new first sentence, which is not in Section 2.3 of Standard 189.1.

Maintenance

The maintenance responsibilities for updating the IgCC are shared between the ICC and ASHRAE as follows:

Scope and Administration (Chapter 1: ICC process)

Chapter 1 of the code, based on Chapter 1 of the 2021 IgCC with further changes approved by the ICC Code Development Process through 2022, is kept up to date through the review of proposed changes submitted by code enforcement officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The ICC Code Development Process reflects principles of openness, transparency, balance, due process and consensus, the principles embodied in OMB Circular A-119, which governs the federal government’s use of private-sector standards. The ICC process is open to anyone; there is no cost to participate, and people can participate without travel cost through the ICC’s cloud-based app, *cdpAccess*[®]. A broad cross section of interests are represented in the ICC Code Development Process. The codes, which are updated regularly, include safeguards that allow for emergency action when required for health and safety reasons.

The code development committees evaluate and make recommendations regarding proposed changes to the codes. Their recommendations are then subject to public comment and council-wide votes. The ICC’s governmental members—public safety officials who have no financial or business interest in the outcome—cast the final votes on proposed changes.

The contents of this work are subject to change through the code development cycles and by any governmental entity that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the ICC. The next opportunity to propose changes to Chapter 1 of the IgCC will be the ICC’s 2025 Group B Code Development Process. For more information, go to the ICC’s website at iccsafe.org.

Technical Content (Chapters 2–11 and appendices: ASHRAE process)

The technical content of this code is based on the 2023 edition of Standard 189.1. SSPC 189.1 considers and administers changes to Standard 189.1 as a continuous maintenance standard and provides interpretations as requested. Proposed changes to the standard may originate within or outside of the committee. The committee welcomes proposals for improving the standard using the ANSI-approved ASHRAE continuous maintenance procedure. A continuous maintenance proposal (CMP) form can be found online at osr.ashrae.org, and may be completed and submitted at any time. The committee takes formal action on every proposal received, which may lead to changes to the published standard. ASHRAE posts approved addenda in publication notices on the ASHRAE website. To receive notice of all public reviews, approved and published addenda, errata, and interpretations as well as meeting notices, ASHRAE encourages interested parties to sign up for the free ASHRAE Internet Listserv for Standard 189.1. (<https://www.ashrae.org/technical-resources/standards-and-guidelines/project-committee-list-servers>).

Standard 189.1 was originally published in 2009 through a collaborative effort involving ASHRAE, IES, and USGBC. In 2015, the ICC was added as an additional cosponsor of the standard, which reflected a Memorandum of Understanding signed in 2014 by ASHRAE, AIA, ICC, IES, and USGBC to better align green building goals through Standard 189.1, the IgCC, and the LEED certification system. As part of that agreement, the 2017 edition of Standard 189.1 served as the technical content of 2018 IgCC. Prior to this agreement, the 2012 and the 2015 versions of the IgCC included Standard 189.1 as a project compliance option.

Building projects, which are defined in Standard 189.1 (and now in the IgCC), including both the building and the site, result in significant energy and environmental impacts through their design, construction and operation. The US Green Building Council reports that buildings in the United States produce 40 percent of US carbon dioxide emissions, are responsible for 41 percent of US energy consumption, account for 14 percent of US potable water consumption, and use 40 percent of raw materials in their construction and operation. In addition, building development frequently converts land from biologically diverse natural habitat that helps manage rainwater to impervious hardscape with reduced biodiversity. While buildings consume energy and have other environmental impacts, they exist primarily to serve occupants who live, work and otherwise use buildings, providing significant

contributions to national economies. Based on a combination of research and practical experience, it is clear that buildings can provide these services with reduced energy use, greenhouse gas emissions, water use, construction waste, heat island and light pollution effects, and impacts on the atmosphere and other resources. A 2015 Economic Impact Study by USGBC finds that the US green building industry supports over 2 million jobs annually and results in a median state average economic contribution of \$934 million.

The far-reaching influence of buildings, and the benefits provided by high-performance green buildings, have led many organizations to pursue efforts to reduce their energy and environmental impacts. Based on ASHRAE's and the other cosponsors' ongoing responsibilities to support such actions, Standing Standard Project Committee (SSPC) 189.1 has contributed to building sustainability goals by updating Standard 189.1 in response to input from the building community, the public at large and project committee members. Compliance with this code will further reduce energy and environmental impacts through high-performance building design, construction and operation while providing indoor environments that support the activities, health and comfort of building occupants and contribute positively to local economics by providing high-quality jobs and conserving natural resources.

The project committee considers a variety of factors in developing the provisions of Standard 189.1, including published research, justification for proposals received from outside the committee and ultimately the committee members' professional judgment. Cost-benefit assessment, while an important consideration, is not a necessary criterion for inclusion of any given requirement in Standard 189.1. However, the practicality and existing application of any new requirements are considered before they are included. Standard 189.1, and now the IgCC, address site sustainability, water-use efficiency, energy-use efficiency, indoor environmental quality, materials and resources, and construction and plans for operation. The 2023 edition of Standard 189.1 reflects the approval of over 50 separate addenda to the 2020 edition. Some of the highlights include:

- **General**

- An updated scope clarifies the standard's application to sites and to the demolition and deconstruction of buildings, and provides guidance on changes of occupancy or use in buildings.
- New language allows authorities having jurisdiction to disallow improper installation of equipment in a building project.
- Direction is provided for the regulation of used materials and equipment.

- **Site**

- Residential electric vehicle (EV) charging requirements are separated from nonresidential requirements.
- New provisions are added for EV-capable parking spaces, and compliance options are expanded based on percentage of total parking spaces.

- **Water**

- Landscape design language is simplified, and reasonable exceptions are added for select site uses and settings.
- Electronic leak detection requirements are added for buildings and certain end uses. Hot-water efficiency requirements are updated by removing the need for pipe volume calculations.
- Commercial kitchens are made exempt from hot-water design requirements.
- The definition of "potable water" is now in alignment with the IPC.

- **Energy**

- Additional efficiency credits have been harmonized with Standard 90.1-2022.
- Increased lighting efficiency is reflected in lower lighting power density targets and requirements.
- A jurisdictional option is added for electric-ready that requires branch circuits or raceways to be installed where fossil-fuel-fired equipment is installed.
- Advanced lighting requirements for indoor grow spaces and greenhouses are added, and the lighting is required to be powered by renewable energy.
- New requirements are added for electric-water-heater demand response.

- **Energy Modeling**

- The Performance Option is relocated and updated to include new CO₂e and Building Performance Factor data.
- Compliance with three metrics—PCI, zCEF, and zEPI—is now required.
- A new long-run marginal emission rates (LRMER) jurisdictional option is added with the calculation guidelines and tables in Normative Appendix D.

- **Indoor Environmental Quality**

- Soil-gas control requirements are improved to reflect current industry practices that incorporate ANSI/AARST-mandated measures in new building construction projects.
- Building resiliency is improved with the ability to adjust ventilation quickly and easily in response to air-quality-related emergency conditions, such as nearby wildfires, chemical spills or pandemics.
- MERV 13 filters are now required in outdoor airstreams for all buildings located in nonattainment areas.

• **Materials and Resources**

- Prescriptive and performance paths are eliminated and now appear as alternatives under “Material Selection.”
- Considerations are added for reuse of materials.
- The standard now requires submittal of environmental product declarations (EPD) for products meeting specific criteria, as well as the reporting of total global warming potential (GWP) from those products.

• **Construction and Plans for Operation**

- Building flush-out requirements are deleted, and additional ventilation is required prior to occupancy and during initial occupancy.
- Contaminant monitoring requirements are updated for initial occupancy and include providing the owner a report with graphical trends and recommendations.

Adoption

All copyright in this code belongs to the ICC and ASHRAE jointly. Maintaining copyright allows the ICC and ASHRAE to fund their respective missions through sales of books, in both print and electronic formats. The ICC welcomes adoption of its codes by jurisdictions that recognize and acknowledge the ICC’s copyright in the code, and further acknowledge the substantial shared value of the public/private partnership for code development between jurisdictions and the ICC.

The ICC also recognizes the need for jurisdictions to make laws available to the public. All I-Codes and I-Standards, along with the laws of many jurisdictions, are available for free in a nondownloadable format on the ICC’s website. Jurisdictions should contact the ICC at adoptions@icc-safe.org to learn how to adopt and distribute laws based on the IgCC in a manner that provides necessary access, while maintaining the ICC’s copyright.

To facilitate adoption, sections of this code contain blanks for fill-in information that needs to be supplied by the adopting jurisdiction as part of the adoption legislation. For this code, please see:

Section 101.1. Insert: **[name of jurisdiction]**

Section 103.1. Insert: **[name of department]**

Be sure to review the discussion of Chapter 1 under “Effective Use of the International Green Construction Code” for important information on “jurisdictional options [JO].”

Effective Use of the International Green Construction Code

Informative Note: Corresponding ASHRAE 189.1 section numbers have not been included in this Effective Use section but have been included throughout the chapters and appendices of this code.

The IgCC is a model code that provides minimum requirements to safeguard the environment, public health, safety and general welfare through the establishment of requirements that are intended to reduce the negative impacts and increase the positive impacts of the built environment on the natural environment and building occupants.

The IgCC addresses the design, construction, addition, alteration, equipment, change of occupancy, relocation, replacement, demolition and removal of every building or structure or any appurtenances connected or attached to such buildings or structures and to the building site on which the building is located. Occupancy classifications shall be determined in accordance with the IBC. The code will be promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the code. Innovative approaches and alternative materials, designs, and methods not specifically addressed in this code can be approved by the code official where the proposed innovative approaches or materials, designs or methods comply with the intent of the provisions of the code (see Section 104.2.5).

The IgCC applies to all occupancies other than single-family dwellings and multiple-family dwellings that are three stories or less in height (see Section 101.3.1). See the following discussion for additional information in Appendix M for residential construction. Informative Note: [JO] after a section number (e.g., Section 501.3.5.2 (5.3.5.2) [JO] Walls) indicates that this requirement is a jurisdictional option. See further discussion regarding Chapter 1 in Arrangement and Format of the 2024 IgCC.

ARRANGEMENT AND FORMAT OF THE 2024 IGCC

Before applying the requirements of the IgCC, it is beneficial to understand its arrangement and format.

The following table shows how the IgCC is divided. The chapter synopses detail the scope and intent of the provisions of the IgCC.

CHAPTER TOPICS	
Chapters	Subjects
1	Scope and administration
2	Reserved
3	Definitions, abbreviations and acronyms
4	Reserved

CHAPTER TOPICS—continued	
Chapters	Subjects
5	Site sustainability
6	Water use efficiency
7	Energy efficiency
8	Indoor environmental quality (IEQ)
9	Materials and resources
10	Construction and plans for operation
11	Normative references
Normative Appendix A	Prescriptive building envelope tables
Normative Appendix B	Performance option for energy efficiency
Normative Appendix C	Building concentrations
Normative Appendix D	Long-run marginal emission rates
Informative Appendix E	Building envelope tables
Informative Appendix F	Integrated design
Informative Appendix G	Reserved
Informative Appendix H	zEPI conversion methodology
Informative Appendix I	Derivation of source energy conservation factors and CO ₂ e emission factors
Informative Appendix J	Additional guidance for functional and performance testing (FPT) and the commissioning (Cx) process
Informative Appendix K	Requirements that overlap with core elements of the LEED rating system
Informative Appendix L	Informative references and bibliography
Informative Appendix M	Option for residential compliance using the <i>National Green Building Standard</i>
Informative Appendix N	Addenda description information
Annex 1	Referenced standard reproduction annex—ASHRAE Standard 169

Chapter 1 Scope and Administration.

Chapter 1 of the IgCC establishes the limits of applicability of the code and describes the manner in which the code is to be applied and enforced. Chapter 1 is divided into two parts: Part 1—Scope and Application (Sections 101 and 102) and Part 2—Administration and Enforcement (Sections 103–111).

Section 101 identifies which buildings and structures come under its purview and Section 102 references other adopted I-Codes, as applicable, and the application of referenced standards. Section 104 establishes the duties and powers of the code official, including enforcement and the authority granted to the code official to make inspections. Section 105 identifies the permitting process.

The provisions of Chapter 1 also establish the rights and privileges of the design professional, contractor and property owner.

The IgCC is intended to be adopted as a legally enforceable document and it cannot be effective without adequate provisions for its administration and enforcement.

New adoption considerations in Chapter 1, Section 101.5.1: For the 2023 version of ASHRAE Standard 189.1, the project committee identified “jurisdictional options” for the authority having jurisdiction (AHJ) to review as part of their adoption considerations. The intent is to allow the AHJ to “customize” their code based on the unique needs of the jurisdiction, thus providing more flexibility in the use and application of the code. In Section 101.5.1, the AHJ will find the specific directions for use in developing their code adoption ordinance.

Chapter 2 Reserved.

Chapter 3 Definitions, Abbreviations and Acronyms.

Chapter 3 is the repository of the definitions of terms used in the body of the code. The user of the code should be familiar with and consult this chapter because the definitions are essential to the correct interpretation of the code and because the user may not be aware that a term is defined.

Chapter 4 Reserved.

Chapter 5 Site Sustainability.

Chapter 5 contains requirements related to the selection and development of sites and the mitigation of heat island effect, light pollution and transportation impact.

Section 501.3 limits the type of sites that can be built on and the type of development that can occur.

Section 501.3.1.2 limits building development relative to elevation of the 100-year flood, near fish and wildlife habitat conservation areas and near wetlands.

Section 501.3.2 requires predesign site inventory and assessment.

Section 501.3.3 regulates plantings on the site.

Section 501.3.4 contains requirements for stormwater management systems.

Section 501.3.5 requires the mitigation of heat island effect.

Section 501.3.6 addresses light pollution.

Section 501.3.7 addresses transportation impacts.

Section 501.3.8.1 addresses building site waste management.

Chapter 6 Water Use Efficiency.

Chapter 6 provides requirements that are intended to conserve potable and nonpotable water.

Section 601.3.1 reduces water use on sites by means of requirements related to landscape design and irrigation system design.

Section 601.3.2 regulates water consumption through limitations of fixture and fitting flow rates and by means of requirements related to specific equipment, appliances, and HVAC systems and equipment.

Section 601.3.3 regulates water use in hot water distribution pipes.

Section 601.3.4 regulates water use in ornamental fountains and water features.

Section 601.3.5 regulates water consumption management.

Sections 601.3.6, 601.3.7 and 601.3.8 regulate water softeners, reverse osmosis water treatment systems and on-site reclaimed water treatment systems, respectively.

Where a reclaimed water supply is available or is planned to be available within 5 years, Section 601.3.9 requires the installation of a dual water supply plumbing system wherein reclaimed water is supplied to urinals and water closets.

Chapter 7 Energy Efficiency.

Chapter 7 contains requirements related to the effective use of energy in buildings and appliances and to on-site renewable energy systems. Chapter 7 references ANSI/ASHRAE/IES Standard 90.1 and contains many provisions that exceed those in Standard 90.1. It should also be noted that Appendix G is an alternative prescriptive energy compliance path that is built on the prescriptive provisions of the IECC as the baseline for Chapter 7.

Section 701.2 requires that building projects comply with the mandatory provisions of Section 701.3 and either the prescriptive provisions of Section 701.4 and the modified Additional Energy Requirements of Section 701.5 or the performance provisions of Section 701.6.

Section 701.3 contains mandatory provisions that are applicable to both the prescriptive and performance compliance paths. It includes provisions related to air barriers, on-site renewable energy systems, energy consumption management and automated demand response systems.

Section 701.4 contains the prescriptive-based energy compliance path. It includes provisions related to renewable energy systems, the building envelope, HVAC systems, service water heating, power, lighting and various other equipment.

Section 701.5 contains modifications made to ANSI/ASHRAE/IES Standard 90.1, Section 11 for Additional Efficiency Requirements.

Chapter 8 Indoor Environmental Quality (IEQ).

Chapter 8 is intended to ensure that the building's interior environment is conducive to the health of building occupants.

Section 801.3 contains mandatory provisions related to indoor air quality.

Section 801.4 contains thermal environmental conditions for human occupancy.

Section 801.5 contains provisions for moisture control for the building envelope and interior.

Section 801.6 provides requirements for material emissions. The building project can comply through either materials emission reporting requirements in Section 801.6.1 or materials emissions modeling through Section 801.6.2.

Section 801.7 provides requirements for acoustical control.

Section 801.8 provides requirements for controlling soil-gas.

Section 801.9 provides requirements for indoor lighting whereas Section 801.10 provides requirements on daylighting provisions.

Glare control requirements are within Section 801.11 while Section 801.12 provides requirements on exterior views.

Chapter 9 Materials and Resources.

Chapter 9 addresses the human health and environmental impacts of materials.

Section 901.3 contains mandatory provisions related to the human health and environmental impacts of materials. It includes requirements for construction waste management; the extracting, harvesting and manufacturing of materials; refrigerants; the storage and collection of recyclables and discarded goods; and the mercury content levels of lamps.

Section 901.4 contains requirements for Environmental Product Declarations (EPDs) for products permanently installed in the building project as well as reporting requirements for Global Warming Potential (GWP) contributions of the selected products.

Section 901.5 contains performance-based requirements related to the health and environmental impacts of materials. Including provisions for recycled and salvaged material content, regional materials and biobased products. It includes provisions for life-cycle assessment that address performance metrics, procedures and reporting.

Section 901.6 provides requirements for construction and demolition waste management.

Chapter 10 Construction and Plans for Operation.

Chapter 10 addresses building commissioning and functional and performance testing during construction and requires plans for the subsequent operation and maintenance of building projects.

Section 1001.3 regulates the functional and performance testing of building systems.

Section 1001.3.2 regulates the building commissioning process.

Section 1001.4 regulates construction operations and start-up requirements.

Section 1001.5 regulates acoustical field measurements.

Section 1001.6 regulates building envelope airtightness.

Section 1001.7 addresses postconstruction building indoor air quality.

Section 1001.8 regulates soil-gas controls.

Section 1001.9 requires plans for high-performance building operation. These plans are intended to help and encourage building owners and facility management staff to operate and maintain building projects in a manner, and at a performance level, as was originally intended by this code.

Section 1001.10 requires that a service life plan be developed for the building project related to indoor air quality.

Section 1001.11 requires a service life plan for structural, building envelope.

Section 1001.12 requires that a transportation management plan be developed.

Chapter 11 Normative References.

The code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 11 contains a comprehensive list of all standards that are referenced in the code. The standards are part of the code to the extent of the reference to the standard (see Section 102.4.2). Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with the code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the code official, contractor, designer and owner.

Chapter 11 is organized in a manner that makes it easy to locate specific standards. It lists all of the referenced standards, alphabetically, by acronym of the promulgating agency of the standard. Each agency's standards are then listed in either alphabetical or numeric order based on the standard identification. The list also contains the title of the standard, the edition (date) of the standard referenced, any addenda included as part of the ICC adoption of the IgCC, and the section or sections of this code that reference the standard.

Appendices.

User note: Appendices in this edition of the IgCC are treated differently than the appendices in the other I-Codes (see Sections 101.5.2 and 101.5.3).

In the IgCC, the technical content is based on Standard 189.1, including the appendices. These appendices are identified in two categories:

- Normative appendices. As noted in Section 101.5.2, where a normative appendix is referenced in the code, it is considered part of the mandatory provisions of the code.
- Informative appendices. As noted in Section 101.5.3, these appendices provide additional information but are not mandatory provisions and therefore are not part of the code.

Normative Appendix A Prescriptive Building Envelope Tables.

This appendix is referenced in Section 701.4.2.1. This appendix includes minimum roof insulation values.

Normative Appendix B Performance Option for Energy Efficiency.

This appendix is referenced in Section 701.6. This appendix provides a mandatory reference to ANSI/ASHRAE/IES Standard 90.1 for modeling requirements for on-site renewable energy systems and the required information to perform building performance calculations.

Normative Appendix C Building Concentrations.

This appendix is referenced in Section 801.6.2. This appendix provides mandatory criteria to estimate building concentrations of materials for individual VOC concentrations.

Normative Appendix D Long-Run Marginal Emission Rates.

A long-run marginal emission rates (LRMER) jurisdictional option is added with the calculation guidelines as shown in Section 701.6.2.2.

Informative Appendix E Building Envelope Tables.

As an informative appendix, this appendix is not referenced in the body of the code and is therefore not part of the code. This appendix provides *R*-values for common building assemblies such as roofs, walls, floors and doors. It also includes common fenestration values for glazed areas.

Informative Appendix F Integrated Design.

As an informative appendix, this appendix is not referenced in the body of the code and is therefore not part of the code. This appendix provides details and concepts on the need for early collaboration in order to increase the predictability of project outcomes as early as possible in the design phase of the project. See the Chapter 3 definition for “integrated design process.”

Informative Appendix G Reserved.**Informative Appendix H zEPI Conversion Methodology.**

As an informative appendix, this appendix is referenced in an informative note in Section 701.6.3 and is therefore not part of the code. This appendix provides a methodology for converting zEPI₂₀₀₄ to zEPI.

Informative Appendix I Derivation of Source Energy Conservation Factors and CO₂e Emission Factors.

As an informative appendix, this appendix is referenced in an informative note in Section 701.6.3 and is therefore not part of the code. This appendix provides procedures to develop source energy conversion factors where conditions are different than those listed in the code.

Informative Appendix J Additional Guidance for Functional and Performance Testing (FPT) and the Commissioning (Cx) Process.

As an informative appendix, this appendix is not referenced in the body of the code and is therefore not part of the code. This appendix provides guidance on best practices for performance testing and commissioning. See Chapter 3 definitions for “functional and performance testing (FPT)” and “commissioning (Cx) process.”

Informative Appendix K Requirements That Overlap with Core Elements of the LEED Rating System.

As an informative appendix, this appendix is not referenced in the body of the code and is therefore not part of the code. This appendix acknowledges the LEED rating system and how the provisions of the code align with LEED.

Informative Appendix L Informative References and Bibliography.

Even though this is an informative appendix, it is cited in Sections 102.4.2. However, as an informative appendix, it is not part of the code. This appendix includes potentially useful source documents that may be consulted.

Informative Appendix M Option for Residential Compliance Using the National Green Building Standard.

As an informative appendix, this appendix is referenced in Section 101.5.1 and is therefore not part of the code. This appendix provides an option for residential compliance using the National Green Building Standard. The provisions in the appendix are mandatory only when specifically adopted. The provisions can be adopted in total or by individual section(s) at the discretion of the authority having jurisdiction.

Informative Appendix N Addenda Description Information.

As an informative appendix, this appendix is not referenced in the body of the code and is therefore not part of the code. This appendix provides the roadmap of approved addenda to the 2020 edition of Standard 189.1, which resulted in the 2023 edition of Standard 189.1 that forms the technical content for this code. As can be seen by the list, there were over 50 addenda to the 2020 edition.

Annex 1 Referenced Standard Reproduction Annex ASHRAE Standard 169.

This annex contains pertinent information from ASHRAE Standard 169 for assessing climate zones. See also Normative Appendix A.

CONTENTS

<p>CHAPTER 1— SCOPE AND ADMINISTRATION 12</p> <p>101—Scope and General Requirements 12</p> <p>102—Applicability 14</p> <p>103—Code Compliance Agency 15</p> <p>104—Duties and Powers of the Authority Having Jurisdiction 15</p> <p>105—Permits 17</p> <p>106—Construction Documents 17</p> <p>107—Fees 17</p> <p>108—Inspections 18</p> <p>109—Certificate of Occupancy 18</p> <p>110—Means of Appeal 18</p> <p>CHAPTER 2—RESERVED 19</p> <p>CHAPTER 3—DEFINITIONS, ABBREVIATIONS, AND ACRONYMS 20</p> <p>CHAPTER 4—RESERVED 31</p> <p>CHAPTER 5—SITE SUSTAINABILITY 32</p> <p>CHAPTER 6—WATER USE EFFICIENCY 38</p> <p>CHAPTER 7—ENERGY EFFICIENCY 44</p> <p>CHAPTER 8—INDOOR ENVIRONMENTAL QUALITY (IEQ) 73</p> <p>CHAPTER 9—MATERIALS AND RESOURCES 88</p> <p>CHAPTER 10—CONSTRUCTION AND PLANS FOR OPERATION 92</p> <p>CHAPTER 11—NORMATIVE REFERENCES 101</p> <p>NORMATIVE APPENDIX A—PRESCRIPTIVE BUILDING ENVELOPE TABLES 111</p> <p>NORMATIVE APPENDIX B—PERFORMANCE OPTION FOR ENERGY EFFICIENCY 112</p> <p>B101 (B1.1)—General 112</p> <p>NORMATIVE APPENDIX C—BUILDING CONCENTRATIONS 117</p> <p>C101 (C1.)—Building Concentrations 117</p> <p>NORMATIVE APPENDIX D—LONG-RUN MARGINAL EMISSION RATES 118</p> <p>INFORMATIVE APPENDIX E—BUILDING ENVELOPE TABLES 132</p>	<p>INFORMATIVE APPENDIX F—INTEGRATED DESIGN 151</p> <p>F101 (F1)—Integrated Design Process 151</p> <p>INFORMATIVE APPENDIX G—RESERVED 152</p> <p>INFORMATIVE APPENDIX H—zEPI CONVERSION METHODOLOGY 153</p> <p>INFORMATIVE APPENDIX I—DERIVATION OF SOURCE ENERGY CONVERSION FACTORS AND CO₂e EMISSION FACTORS 154</p> <p>I101 (I1)—Source Energy Conversion Factors 154</p> <p>I201 (I2)—Carbon Dioxide Equivalent (CO₂e) Emissions 155</p> <p>I301 (I3)—District Energy Systems 156</p> <p>I401 (I4)—Calculation Results for the United States 156</p> <p>I501 (I5)—Applying the CO₂e Emissions Procedure to Special Cases 156</p> <p>I601 (I6)—Long-Run Marginal Emission Rates 157</p> <p>INFORMATIVE APPENDIX J—ADDITIONAL GUIDANCE FOR FUNCTIONAL PERFORMANCE TESTING (FPT) AND THE COMMISSIONING (CX) PROCESS 166</p> <p>J101 (J1)—Provider Qualifications 166</p> <p>J201 (J2)—Cx Documentation 167</p> <p>INFORMATIVE APPENDIX K—REQUIREMENTS THAT OVERLAP WITH CORE ELEMENTS OF THE LEED RATING SYSTEM 169</p> <p>INFORMATIVE APPENDIX L—INFORMATIVE REFERENCES AND BIBLIOGRAPHY 171</p> <p>INFORMATIVE APPENDIX M—OPTION FOR RESIDENTIAL COMPLIANCE USING THE NATIONAL GREEN BUILDING STANDARD 175</p> <p>M101—General 175</p> <p>M102—Definitions 175</p> <p>INFORMATIVE APPENDIX N—ADDENDA DESCRIPTION INFORMATION 176</p> <p>ANNEX 1—REFERENCE STANDARD REPRODUCTION ANNEX ASHRAE STANDARD 169 183</p> <p>ANNEX 101 (ANNEX 1-1)—ASHRAE Standard 169-2013, Section A3: Climate Zone Definitions 183</p>
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