

2015 WEP™

WATER EFFICIENCY PROVISIONS OF THE INTERNATIONAL GREEN CONSTRUCTION CODE®

Includes:

- High-Performance Water Use Provisions from ANSI/ASHRAE/USGBC/IES 189.1-2014 Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings
- 2015 IPC Chapter 13, Nonpotable Water Systems

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2015 Water Efficiency Provisions of the International Green Construction Code®

First Printing: September 2015

ISBN: 978-1-60983-628-3

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PRINTED IN THE U.S.A.

PREFACE

Introduction

Internationally, code officials recognize the need for a modern, up-to-date code governing the impact of buildings and structures on the environment. The 2015 edition of the *International Green Construction Code*[®] (IgCC[®]) is designed to meet this need through model code regulations that contain clear and specific requirements with provisions that promote safe and sustainable construction in an integrated fashion with the ICC Family of Codes. The 2015 *Water Efficiency Provisions of the International Green Construction Code*[®] (WEP—IgCC[®]) document collects the provisions related to the efficient use of water, water conservation and water management into a compact, standalone document. It is ideal for users who wish to rapidly and economically deploy the most advanced water efficiency code, providing real water savings without sacrificing flexibility or ease of use.

The 2015 *Water Efficiency Provisions of the International Green Construction Code* establishes comprehensive minimum water efficiency and conservation regulations for building systems and site considerations using prescriptive and performance-related provisions. It is intended to be an overlay code to be used with, and is fully compatible with, all of the *International Codes*[®] (I-Codes[®]) published by the International Code Council (ICC)[®], including the *International Building Code*[®], *International Energy Conservation Code*[®], *International Existing Building Code*[®], *International Fire Code*[®], *International Fuel Gas Code*[®], *International Mechanical Code*[®], *ICC Performance Code*[®], *International Plumbing Code*[®], *International Private Sewage Disposal Code*[®], *International Property Maintenance Code*[®], *International Residential Code*[®], *International Swimming Pool and Spa Code*[®], *International Wildland-Urban Interface Code*[®] and *International Zoning Code*[®].

The *Water Efficiency Provisions of the International Green Construction Code* provides many benefits, among which is the model code development process that offers an international forum for building professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. ICC utilizes the same robust and proven consensus code development process used for its other codes to develop and refine the *International Green Construction Code*. This model code also encourages international consistency in the application of provisions.

The *International Green Construction Code* also provides users with the option of selecting ASHRAE/USGBC/IES Standard 189.1–2014, *Standard for the Design of High-Performance, Green Buildings*, as an alternate compliance path within the IgCC's system of electives. This American National Standard was developed by ASHRAE in cooperation with the Illuminating Engineering Society (IES) and the U.S. Green Building Council (USGBC), and is now in its second edition. It provides a comprehensive foundation for the design, construction and operation of sustainable buildings, and is an excellent complement to the IgCC, affording users with still more flexibility and options to meet their unique needs. In the same way, the 2015 *Water Efficiency Provisions of the International Green Construction Code* also includes the ASHRAE/USGBC/IES Standard 189.1–2014 *High-Performance Water-Use Provisions* (HPWUP), which are excerpted from the full ASHRAE 189.1–2014 standard. The 189.1 *High-Performance Water-Use Provisions* focuses on only the water-use provisions included in various sections of the standard, and they were extracted directly from Standard 189.1–2014 without modification. Adopting jurisdictions may select provisions from the WEP—IgCC or HPWUP as a whole or in part, in order to meet their specific requirements.

Similarly, the IgCC also allows jurisdictions to elect to require residential structures, including single-family and townhouses three stories and under, to comply with the ICC 700, *National Green Building Standard*[™]. By selecting these electives, jurisdictions can increase the scope to include various residential structures, their accessory structures and the site or lot on which they are located. ICC 700, which is an ANSI standard developed collaboratively by ICC and the National Association of Home Builders, provides a rating system for the sustainability of residential buildings and sites. In the case of the IgCC, the residential structure must receive a rating of silver or better.

The *International Green Construction Code* has been developed in collaboration with the following Cooperating Sponsors: The American Institute of Architects (AIA); ASTM International; the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the Illuminating Engineering Society (IES); and the U.S. Green Building Council (USGBC). 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.

Water Efficiency Provisions and High-Performance Water-Use Provisions

This document, entitled *2015 Water Efficiency Provisions of the International Green Construction Code*, consists entirely of provisions extracted directly from the 2015 *International Green Construction Code*, Chapter 13 of the 2015 *International Plumbing Code*, and ASHRAE/USGBC/IES Standard 189.1–2014, *Standard for the Design of High-Performance, Green Buildings*, and is designed for ease of access to their water-related provisions.

The IgCC, IPC, and the ASHRAE 189.1 portions of the document will not be revised separately from the *International Green Construction Code*, the 2015 *International Plumbing Code* or ASHRAE 189.1; rather, any changes made to water consumption and conservation-related provisions in future versions of the *International Green Construction Code*, the 2015 *International Plumbing Code* or ASHRAE 189.1 will appear in future versions of this document.

Since this document extracts portions of the 2015 *International Green Construction Code* and ASHRAE 189.1–2014, it necessarily omits some chapters entirely and portions of other chapters. The numbering of sections and chapters in the ASHRAE 189.1–2014 portion remains unchanged.

The use of “this code” refers to the water efficiency provisions and the use of “this standard” refers to the entire ASHRAE/USGBC/IES Standard 189.1–2014, *Standard for the Design of High-Performance, Green Buildings*.

Jurisdictions wishing to make use of the *Water Efficiency Provisions of the International Green Construction Code* and ASHRAE 189.1 *High Performance Water-Use Provisions* may do so by adopting material from either portion, in whole or in part. Users are encouraged to consult the full versions of the IgCC and ASHRAE 189.1 if provisions addressing other aspects of sustainability are required.

Development

The first editions of the *International Green Construction Code* and the *Water Efficiency Provisions of the International Green Construction Code* were the culmination of an effort that started in 2010 with the drafting of Public Version 1.0 (PV 1.0) by the Sustainable Building Technology Committee (SBTC) established by the ICC Board of Directors. Following that, Public Version 2.0 (PV 2.0) was created, based on public comments submitted to PV 1.0 and approved by the IgCC Public Comment Committee. Following the issuance of PV 2.0, a full cycle of code development in accordance with ICC’s Code Development Procedures was held in 2011. This included the submission of code change proposals followed by a Code Development Hearing, the submission of public comments and a Final Action Hearing. This updated 2015 edition reflects changes approved through the ICC Code Development Process in 2014. This was the first code to have been developed through the new cdpACCESS® system. This system allowed stakeholders to collaborate on potential code changes and ultimately was used to submit code changes online via the system. The cdpACCESS also permitted eligible members to vote remotely providing greater membership participation during the hearings of the code adoption process. A new edition of the code is promulgated every three years.

The *International Green Construction Code* is founded on principles intended to establish provisions consistent with the scope of a green construction code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction. These provisions are enforceable, useable and adoptable.

This document, *2015 Water Efficiency Provisions of the International Green Construction Code*, was developed by extracting the water efficiency and conservation provisions from the 2015 *International Green Construction Code* and placing them in a compact, standalone document.

Adoption

The International Code Council maintains a copyright in all of its codes and standards. Maintaining copyright allows the ICC to fund its mission through sales of books, in both print and electronic formats. The 2015 *Water Efficiency Provisions of the International Green Construction Code* is designed for adoption and use 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 ICC codes and ICC standards, along with the laws of many jurisdictions, are available for free in a nondownloadable form on the ICC's website. Jurisdictions should contact the ICC at adoptions@iccsafe.org to learn how to adopt and distribute laws based on the 2015 *Water Efficiency Provisions of the International Green Construction Code* in a manner that provides necessary access, while maintaining the ICC's copyright.

The 2015 *Water Efficiency Provisions of the International Green Construction Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings established in the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page xiii addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

Maintenance

The *International Green Construction Code* is kept up to date through the review of proposed changes submitted by code-enforcing 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 2015 *Water Efficiency Provisions of the International Green Construction Code* document will not be revised separately from the *International Green Construction Code*; rather, any changes made to the water consumption and conservation-related provisions in future versions of the *International Green Construction Code* will also appear in future versions of this document.

The contents of this work are subject to change through both the code development cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the International Code Council.

While the development procedure of the 2015 *Water Efficiency Provisions of the International Green Construction Code* ensures the highest degree of care, the ICC, its members and those participating in the development of this code do not accept any liability resulting from compliance or non-compliance with the provisions because the ICC does not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Italicized Terms

Selected terms set forth in Chapter 2, Definitions, are italicized where they appear in code text. Such terms are not italicized where the definition set forth in Chapter 2 does not impart the intended meaning in the use of the term. The terms selected have definitions that the user should read carefully to facilitate better understanding of the code.

Effective Use of the Water Efficiency Provisions—International Green Construction Code

The 2015 *Water Efficiency Provisions of the International Green Construction Code*® (WEP—IgCC®) 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, as it relates to water consumption. The 2015 WEP—IgCC is fully compatible with the ICC family of codes, including the *International Building Code* (IBC), the *International Code Council Performance Code* (ICCPC), the *International Energy Conservation Code* (IECC), the *International Existing Building Code* (IEBC), the *International Fire Code* (IFC), the *International Fuel Gas Code* (IFGC), the *International Mechanical Code* (IMC), the *International Plumbing Code* (IPC), the *International Private Sewage Disposal Code* (IPSDC), the *International Property Maintenance Code* (IPMC), the *International Residential Code* (IRC), the *International Swimming Pool and Spa Code* (ISPSC), the *International Wildland-Urban Interface Code* (IWUIC), and the *International Zoning Code* (IZC).

Arrangement and Format of the 2015 WEP—IgCC

Before applying the requirements of the WEP—IgCC, it is beneficial to understand its arrangement and format. While the WEP—IgCC does not excerpt language from each chapter or appendix of the full IgCC, each chapter is described below for context, and Chapter 13 of the *International Plumbing Code* (IPC) is also included.

Chapters	Subjects
1-2	Administration and definitions
3	Jurisdictional requirements
4	Site development and land use
5	Energy conservation, efficiency and CO ₂ e emission reduction
6	Water resource conservation, quality and efficiency
7	Nonpotable water systems
8	Commissioning, inspections, operation and maintenance
9	Existing buildings
10	Referenced standards
Appendix A	Project electives
Appendix B	Post-occupancy commissioning reporting

The following is a chapter-by-chapter synopsis of the scope and intent of the provisions of the *Water Efficiency Provisions of the International Green Construction Code*:

Chapter 1 Scope and Administration. Chapter 1 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—109).

Section 101 identifies which buildings and structures come under its purview and Section 102 references other ICC codes as applicable. Section 103 establishes the duties and powers of the code official, requires that compliance and enforcement be part of the enforcement of other ICC codes listed in Section 102.4, and grants authority to the code official to make inspections. Section 105 provides guidance to the code official in the approval of materials, methods of construction, designs, systems and innovative approaches where they are not specifically prescribed in the IgCC. Section 106 requires that permits be issued under other ICC codes.

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

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

Chapter 2 Definitions. All terms that are defined in the code are listed alphabetically in Chapter 2. Codes are technical documents and every word, term and punctuation mark can impact the meaning of the code text and the intended results. The code often uses terms that have a unique meaning in the code and that code meaning can differ substantially from the ordinarily understood meaning of the term as used outside of the code. Where understanding of a term’s definition is especially key to or necessary for understanding a particular code provision, the term is shown in *italics* wherever it appears in the code. However, this is true only for those terms that have a meaning that is unique to the code. In other words, the generally understood meaning of a term or phrase might not be sufficient or consistent with the meaning prescribed by the code; therefore, it is essential that the code-defined meaning be known.

Definitions are deemed to be of prime importance in establishing the meaning and intent of the code text that uses code-defined terms. 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 in a manner that is not commonly understood.

Chapter 3 Jurisdictional Requirements. As indicated earlier, Section 301.1.1 allows ASHRAE 189.1, *Standard for the Design of High-Performance Green Buildings*, to be used.

The jurisdictional requirements contained in Section 302 are formatted to afford jurisdictions the flexibility to adapt the code in a manner that is best suited to meet their unique environmental and regional goals and needs. The section numbers and optional enhanced performance features listed in Table 302.1 do not become enforceable unless they are specifically selected in the table by the jurisdiction and the appropriate “Yes” box is checked or otherwise specifically indicated in the jurisdiction’s adopting ordinance. Those provisions selected by the jurisdiction in Table 302.1 become enforceable for all buildings constructed in the jurisdiction. The text of all section numbers listed in Table 302.1 also contains a reference to Table 302.1, reinforcing the fact that they are not enforceable unless they are specifically adopted. Furthermore, the sample ordinance provided in the IgCC references Table 302.1 and requires that the jurisdiction indicate those provisions from the list that it intends to enforce.

Jurisdictions must take great care when making their choices in Table 302.1. While various requirements listed in Table 302.1 may be environmentally beneficial in many jurisdictions, some may be inappropriate in other jurisdictions. If these practices were appropriate for all jurisdictions, they would have been included in the baseline requirements of the IgCC, not in Table 302.1.

Where jurisdictions find the concept of jurisdictional requirements to be unnecessary, they are able to opt out by simply checking the “No” boxes for all provisions listed in Table 302.1. Because relatively few of the code’s provisions are listed in Table 302.1, even where jurisdictions do not choose any of the provisions or enhanced performance options listed in Table 302.1, the IgCC remains a strong and effective green and sustainable building tool. That said, many jurisdictions will appreciate the flexibility that the jurisdictional requirements provide in their efforts to address specific green and sustainable building concerns. Where jurisdictions begin to specifically adopt more of the items listed in Table 302.1 in future years, they will also appreciate the opportunities that the IgCC provides to grow and to produce a more sustainable built environment with each future adoption of the IgCC.

Chapter 4 Site Development and Land Use. Chapter 4 is intended to minimize the negative environmental impacts on and protect, restore and enhance the natural features and environmental quality of building sites.

Section 401 requires stormwater management. Section 402 limits potable water uses related to landscape irrigation and outdoor fountains.

Chapter 5 Energy Conservation, Efficiency and CO₂e Emission Reduction. Chapter 5 is intended to provide flexibility and permit the use of innovative approaches to achieve the effective use of energy.

All buildings that consume energy must comply with the requirements of Section 503 (Specific Appliances and Equipment).

In addition to the preceding, buildings must comply with one of two options:

- Buildings designed to the performance-based compliance option must also comply with Section 503 (Specific Appliances and Equipment). In addition, these buildings must also be in compliance with key provisions of the *International Energy Conservation Code*.
- Buildings designed to the prescriptive-based compliance option must also comply with Sections 502 (Building Service Water Heating Systems) and 503 (Specific Appliances and Equipment). In addition, these buildings must also be in compliance with key provisions of the *International Energy Conservation Code*.

These systems are also listed in Table 802.1, Commissioning and Inspection Plan Requirements.

There are also provisions outside of Chapter 5 that have significant impacts on energy. Where adopted, the project electives of Section A106 in Appendix A contain additional energy conserving practices that recognize and encourage energy performance that exceeds the baseline minimum requirements of Chapters 3 and 5; Section 903.2 addresses energy use where existing buildings are altered.

Chapter 6 Water Resource Conservation, Quality and Efficiency. Chapter 6 provides requirements that are intended to conserve water, protect water quality and provide for safe water consumption.

Section 601 regulates water metering.

Section 602 regulates water consumption through limitations of fixture and fitting flow rates and by means of requirements related to specific equipment and appliances. It also requires that municipal reclaimed water, where available and required by the jurisdiction in Table 302.1, be supplied to water-supplied toilets, urinals, trap primers and applicable industrial systems. Hot water distribution systems must be designed to reduce the volume of water between fixtures and sources of hot or tempered water in accordance with Section 602.8.

Section 603 regulates water used in HVAC systems and equipment including hydronic closed systems, humidification systems, condensate coolers, condensate drainage recovery, once through heat exchangers, humidifier discharge, cooling towers, evaporative condensers, fluid coolers, wet-hood exhaust scrubber systems and evaporative cooling systems.

Section 604 regulates water treatment devices and equipment including water softeners, reverse osmosis water treatment systems and onsite reclaimed water treatment systems.

Chapter 7 Nonpotable Water Systems. This chapter contains signage and water quality requirements related to nonpotable water. Sections 702, 703 and 704 contain requirements related to gray water systems, rainwater collection and distribution systems, and reclaimed water systems.

Chapter 8 Commissioning, Inspections, Operation and Maintenance. Chapter 8 addresses building commissioning, inspections, operation and maintenance. It requires commissioning and inspections as specifically listed in Table 802.1.

Many of the provisions of Chapter 8, and in particular those in Sections 802 and 803, are essentially based on the requirements for special inspections contained in the *International Building Code*. Both Table 802.1 and Section 803 also contain ties to, and are coordinated with, various provisions in Chapters 4 and 6. The building operation and maintenance documents required by Section 803 are intended to help and encourage building owners and facility management staff to operate and maintain buildings in a manner, and a performance level, as originally intended by the design professionals as they strove to configure the building systems in a manner that satisfied the requirements.

Chapter 9 Existing Buildings. Conceptually, the requirements of Chapter 9 are based upon the requirements in the *International Existing Building Code*. These provisions are not retroactive. They apply only where buildings are altered or added to.

Additions are essentially handled as new construction.

Alterations must meet the requirements of other applicable chapters of the code for those portions or elements of the building that are being altered. However, similar to the means by which the *International Building Code* addresses accessibility in existing buildings, Section 903.2 requires that at least 10 percent of the cost of alterations be dedicated to improvements related to water and energy conservation and efficiency. Water and energy conservation and efficiency requirements that are intended to apply specifically to existing buildings are listed in Sections 903.2.1 through 903.2.3. These sections address the following: metering devices; service water systems; and swimming pools and spas.

Section 904 requires that buildings undergoing a change of occupancy comply with the basic water and energy conservation measures in Sections 901.3.1 and 901.3.2. Section 905 provides relief for historic buildings under certain conditions.

Chapter 10 Referenced Standards. The code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 10 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 Sections 102.4 and 102.4.1). 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 10 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; and the section or sections of the code that reference the standard.

Appendices. Appendices are provided to offer optional or supplemental criteria to the provisions in the main chapters of the code. Appendices provide additional information and standards not typically administered by all building departments. Appendices have the same force and effect as the first 10 chapters only when they are explicitly adopted by the jurisdiction.

Appendix A Project Electives. Where Appendix A is adopted, it encourages the construction of buildings that are "greener" and "more sustainable" than those that meet only the baseline minimum requirements found in the body of the code.

These provisions encourage, but do not require, the implementation of green and sustainable practices that are otherwise difficult or impossible to mandate. For example, it would not be realistic to require that all buildings be constructed on brownfield sites. It is, however, environmentally beneficial to encourage construction on brownfield sites. Thus, Appendix A contains a project elective related to brownfield sites.

Project electives encourage the consideration of, but do not require the implementation of, all green and sustainable practices contained in Appendix A. Compliance is required with at least three of the project electives.

Where green and sustainable practices and provisions are generally suitable as mandatory requirements, they have typically been placed in the body of the IgCC. Green and sustainable practices that are seldom or never appropriate as mandatory requirements for all projects in all regions, or that are intended to encourage and recognize, but not necessarily require, higher building performance, are typically more appropriately integrated in the code as project electives.

Sections A106 and A107 of Appendix A are arranged by major sections that correspond with the fundamental principles addressed in Chapters 4 through 6: energy conservation, efficiency and earth atmospheric quality; and water resource conservation and efficiency.

Section 6. That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this legislation to be published. (An additional provision may be required to direct the number of times the legislation is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7. That this law and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

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