2012 INTERNATIONAL GREEN CONSTRUCTION CODE™

An ICC Support Product for the IgCC™

2012 IgCC™

WATER EFFICIENCY PROVISIONS

Includes High-Performance Water Use Provisions from ASHRAE/USGBC/IES Standard 189.1-2011 Design of High-Performance Green Buildings

This document consists of provisions extracted from the 2012 IgCC™ and ASHRAE/USGBC/IES Standard 189.1-2011 and is designed to provide building safety professionals with a user-friendly summary of the water-related provisions. This document will be updated, as the requirements of the water provisions in the IgCC™ and ASHRAE/USGBC/IES Standard 189.1-2011 are changed through the ICC Code Development Process and the ASHRAE Standard Development Process, respectively.

THE AMERICAN INSTITUTE OF ARCHITECTS

2012 International Green Construction Code™—Water Efficiency Provisions

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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 first edition, the 2012 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 *International Green Construction Code*™*—Water Efficiency Provisions* (IgCC™—WEP) 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.

This support product for the IgCC 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 *International Green Construction Code*™*—Water Efficiency Provisions* 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 189.1–2011, *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 *International Green Construction Code—Water Efficiency Provisions* also includes the ASHRAE/USGBC/IES Standard 189.1–2011 *High-Performance Water-Use Provisions* (HPWUP), which are excerpted from the full ASHRAE 189.1–2011 standard. The 189.1 *High-Performance Water-Use Provisions* focuses on only the water-use provisions included in various sections of the standard, and were extracted directly from Standard 189.1-2011 without modification. Adopting jurisdictions may select provisions from the IgCC—WEP 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 *International Green Construction Code—Water Efficiency Provisions*, consists entirely of provisions extracted directly from the 2012 *International Green Construction Code* and ASHRAE/USGBC/IES Standard 189.1–2011, *Standard for the Design of High-Performance, Green Buildings* and is designed for ease of access to their water-related provisions.

Both the IgCC and the ASHRAE 189.1 portions of the document will not be revised separately from the *International Green Construction 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* or ASHRAE 189.1 will appear in future versions of this document.

Since this document extracts portions of the 2012 *International Green Construction Code* and ASHRAE 189.1–2011, it necessarily omits some chapters entirely and portions of other chapters. In all cases the numbering of sections and chapters remains unchanged from the 2012 *International Green Construction Code* and ASHRAE 189.1–2011.

The use of "this code" within the IgCC portion of this document refers to the entire *International Green Construction Code*, while mentions of water efficiency provisions refer directly to the *International Green Construction Code—Water Efficiency Provisions*. Likewise, the use of "this standard" within the ASHRAE 189.1 portion of this document refers to the entire ASHRAE/USGBC/IES Standard 189.1–2011, *Standard for the Design of High-Performance, Green Buildings*.

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

Development

The first editions of the 2012 *International Green Construction Code* and the 2012 *International Green Construction Code—Water Efficiency Provisions* are 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 was created, based upon 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. 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. This is achieved by comprehensive provisions that are enforceable, useable and adoptable.

This *International Green Construction Code—Water Efficiency Provisions* document was developed by extracting the water efficiency and conservation provisions from throughout the 2012 *International Green Construction Code* in a compact, standalone document.

Adoption

The *International Green Construction Code—Water Efficiency Provisions* 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 xv 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 *International Green Construction Code—Water Efficiency Provisions* 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 both through 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 *International Green Construction Code* ensures the highest degree of care, the ICC, AIA, ASHRAE, ASTM International, IES and the USGBC and their members and those participating in the development of the IgCC do not accept any liability resulting from compliance or noncompliance with the provisions given herein, for any restrictions imposed on materials or processes, or for the completeness of the text. ICC, AIA, ASHRAE, ASTM International, IES and the USGBC do not have power or authority to police or enforce compliance with the contents of the *International Green Construction Code*. Only the governmental body that enacts the code into law has such authority.

Note that, for the development of the 2015 edition of the I-Codes, there will be two groups of code development committees, and they will meet in separate years. The groupings are as follows:

Group A Codes (Heard in 2012, Code Change Proposals Deadline: January 3, 2012)	Group B Codes (Heard in 2013, Code Change Proposals Deadline: January 3, 2013)	Group A Codes (Heard in 2014, Code Change Proposals Deadline: January 6, 2014)
International Building Code	Administrative Provisions (Chapter 1 all codes except IRC and ICCPC, administrative updates to currently referenced standards, and designated definitions)	International Green Construction Code
International Fuel Gas Code	International Energy Conservation Code	
International Mechanical Code	International Existing Building Code	
International Plumbing Code	International Fire Code	
International Private Sewage Disposal Code	ICC Performance Code	
	International Property Maintenance Code	
	International Residential Code	
	International Swimming Pool and Spa Code	
	International Wildland-Urban Interface Code	
	International Zoning Code	

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 International Green Construction Code—Water Efficiency Provisions

The *International Green Construction Code*™—*Water Efficiency Provisions* (IgCC™—WEP) is a support document for the *International Green Construction 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, as it relates to water consumption. The IgCC—WEP 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®).

The IgCC 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 the 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 105.4).

Arrangement and Format of the 2012 IgCC

Before applying the requirements of the IgCC, it is beneficial to understand its arrangement and format. While the IgCC—WEP does not excerpt language from each chapter or appendices of the full IgCC, each chapter is described below for context.

Chapters	Subjects
1-2	Administration and definitions
3	Jurisdictional requirements and life cycle assessment
4	Site development and land use
5*	Material resource conservation and efficiency
6	Energy conservation, efficiency and CO_2e emission reduction
7	Water resource conservation, quality and efficiency
8*	Indoor environmental quality and comfort
9	Commissioning, operation and maintenance
10	Existing buildings
11*	Existing building site development
12	Referenced standards
Appendix A	Project electives
Appendix B*	Radon mitigation
Appendix C*	Optional ordinance
Appendix D*	Enforcement procedures

* Denotes an entire chapter of the *International Green Construction Code* has been omitted from the IgCC—WEP.

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

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 – 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, in conjunction with Section 101.2 as an overlay code, 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.

It is important to note that by reference to Section 301.1.1, Section 101.3 allows ASHRAE 189.1, *Standard for the Design of High-Performance Green Buildings*, to be used. In addition, Exception 1 to Section 101.3 notes that the code is not applicable to low-rise residential structures unless the jurisdiction selects ICC 700 in Table 302.1 for application to various types of residential buildings and occupancies. Further, ICC 700 is noted in Section 101.3.1 as being a "deemed to comply document" for mid- and high-rise R-2 and R-4 occupancies.

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. Terms are defined 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 and Life Cycle Assessment. As indicated earlier, Section 301.1.1 allows ASHRAE 189.1, *Standard for the Design of High-Performance Green Buildings*, to be used. Similarly, ICC 700 may be applicable to specific types of residential construction in accordance with the decisions made by the jurisdiction in the portions of Table 302.1 related to Section 101.3.

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.

Section 303 contains provisions for whole building life cycle assessment. The IgCC does not require that whole building life cycle assessment be performed. However, where these provisions are complied with, compliance with the material selection provisions of Section 505 is not required. In this manner, whole building life cycle assessment is encouraged, though not required.

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 401.2 requires predesign site inventory and assessment. Where indicated by the jurisdiction in Table 302.1, Section 402 limits building construction near surface water, in conservation and flood hazard areas and on greenfield sites, park land or agricultural land. Section 403 requires stormwater management. Section 404 limits potable water uses related to landscape irrigation and outdoor fountains. Section 405 addresses vegetation, soil and water quality protection.

Section 406 requires that a plan be developed to ensure that at least 75 percent of land-clearing debris and excavated soils is diverted from disposal.

Section 407.1 requires that at least one walkway or bicycle path connect building entrances to streets or other paths. Buildings with a total floor area of over 10,000 square feet (929 m^2) must also provide changing and shower facilities. Bicycle parking and storage requirements are contained in Sections 407.3 through 407.3.2 and Table 407.3.

Where indicated by the jurisdiction in Table 302.1, and where the total building floor area is greater than 10,000 square feet (929 m^2), preferred parking is required for high-occupancy and low-emission, hybrid and electric vehicles. These requirements, however, do not take precedence over the accessible parking requirements of the *International Building Code*.

Section 408 mitigates heat island effects through requirements related to site hardscape materials, shading and roof surfaces and coverings. Where indicated to be enforceable in the jurisdiction in Table 302.1, light pollution from building sites must be controlled in accordance with Section 409.

Chapter 5 Material Resource Conservation and Efficiency. Chapter 5 addresses material resource conservation and efficiency by means of provisions related to material selection, recycling, reuse, renewability, toxicity and durability, including resistance to damage caused by moisture.

Section 502 addresses material storage and handling during the construction phase. Section 503 requires that a construction material and waste management plan be prepared and allows the jurisdiction to increase the percentage of waste that must be recycled in Table 302.1. Section 504 requires areas be designed and constructed to facilitate the recycling of waste generated post certificate of occupancy.

Section 505 requires that at least 55 percent of constructed materials selected for each project be any combination of the following material types: used, recycled, recyclable, bio-based, or indigenous. However, where a whole building life cycle analysis is performed in accordance with Section 303, compliance with Section 505 is not required.

Section 506 regulates the mercury content of fluorescent lamps. Section 507 contains requirements for inspections that are tied to Table 903.1 and are intended to control moisture intrusion in the building envelope.

Chapter 6 Energy Conservation, Efficiency and CO_2e Emission Reduction. Chapter 6 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 Sections 603 (Energy Metering, Monitoring and Reporting), 609 (Specific Appliances and Equipment), 610 (Building Renewable Energy Systems), 611 (Energy Systems Commissioning and Completion) and, where indicated by the jurisdiction in Table 302.1, must also comply with Section 604 (Automated Demand Response Infrastructure).

In addition to the preceding, buildings designed on a performance basis must comply with Sections 602 (Modeled Performance Pathway Requirements) and 608.6 (Plug load controls), while buildings designed on a prescriptive basis must comply with the prescriptive requirements of Sections 605 (Building Envelope Systems), 606 (Building Mechanical Systems), 607 (Building Service Water Heating Systems) and 608 (Building Electrical Power and Lighting Systems).

Section 602.1.1 requires that performance based designs demonstrate a zEPI of not more than 51, as determined in accordance with Equation 6-1. This equation contains a reference to EUI (energy use index), which must be calculated in accordance Appendix G of ASHRAE 90.1, as modified by Sections 602.1.2.2 and 602.1.2.3 of the IgCC. Section 602.1.1 requires that performance based designs also demonstrate CO_2e emissions reduction in accordance with Section 602.2 and Equation 6-2.

Section 603 addresses energy metering, monitoring and reporting and is applicable to all buildings that consume energy. Section 603.2 requires that energy distribution systems be designed to provide separate metering of the energy use categories listed in Table 603.2. For buildings greater than 25,000 square feet in gross floor area, meters must be installed. For buildings less than 25,000 square feet in gross floor area, the system must be designed to accommodate the installation of future meters. Section 603.3 requires that building energy metering be capable of determining energy use and peak demand for the types of energy indicated in Sections 603.3.1 through 603.3.7.

Where the jurisdiction has indicated in Table 302.1 that Section 604.1 is enforceable, an automated demand-response infrastructure must be provided. This requires that building energy, HVAC and lighting systems and specific building energy-using components be provided with controls that respond to changes in energy demand by means of automated preprogrammed strategies.

Section 605 provides building envelope system requirements for buildings that are designed on a prescriptive basis. Section 605.1.1 requires that insulation and fenestration exceed the requirements of the *International Energy Conservation Code* by at least 10 percent. Section 605.1.2.2 requires testing of the building thermal envelope for air tightness.

Section 610 establishes minimum renewable energy source requirements for all buildings that consume energy. It requires that buildings use renewable energy sources to provide either 2 percent of total calculated annual energy use by means of solar photovoltaic or wind, or 10 percent of annual estimated hot water energy by means of solar hot water heating.

Section 611 is applicable to all buildings that consume energy. It requires the commissioning and completion of mechanical, lighting, electrical and building envelope systems. These systems are also listed in Table 903.1, Commissioning Plan.

There are also provisions outside of Chapter 6 that have significant impacts on energy: Table 302.1 allows jurisdictions to require lower zEPI values, or require more stringent levels of efficiency, by occupancy; where indicated to be enforceable in Table 302.1, the project electives of Section A106 in Appendix A require additional energy conserving practices be implemented and recognize and encourage energy performance that exceeds the baseline minimum requirements of Chapters 3 and 6; Section 1003.2 addresses energy use where existing buildings are altered; and, where indicated to be enforceable in Table 302.1, Section 1007.2 requires that owners of existing buildings report post certificate of occupancy zEPI, energy demand and CO_2e emissions.

Chapter 7 Water Resource Conservation, Quality and Efficiency. Chapter 7 provides requirements that are intended to conserve water, protect water quality and provide for safe water consumption.

Section 702 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 702.8.

Section 703 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 cooers, wethood exhaust scrubber systems and evaporative cooling systems.

Section 704 regulates water treatment devices and equipment including water softeners, reverse osmosis water treatment systems and onsite reclaimed water treatment systems.

Section 705 contains specific water conservation measures for indoor ornamental fountains and other water features. It also requires the separate metering of water consumed from any source associated with the building or its site.

Section 706 contains signage and water quality requirements related to nonpotable water. Sections 707, 708 and 709 contain requirements related to rainwater collection and distribution systems, gray water systems, and reclaimed water systems, respectively. Section 710 contains provisions for other alternative onsite sources of nonpotable water.

Chapter 8 Indoor Environmental Quality and Comfort. Chapter 8 is intended to ensure that the building's interior environment is conducive to the health of building occupants.

Section 801.2.requires that an indoor air quality management plan be developed to ensure compliance with Sections 802 through 805. Section 802 addresses air-handling system access for cleaning and repair, as well as air-handling filter rack design. Section 803 contains requirements for the ventilation of buildings during the construction phase, prohibits smoking within buildings, limits pollutant sources in print, copy and janitorial rooms, and provides filters requirements for air-conditioning systems. Section 804 contains specific indoor air quality and pollutant control requirements for fireplaces, solid fuel-burning appliances, vented decorative gas appliances, vented gas fireplace heaters and decorative gas appliances. Where the jurisdiction has indicated in Table 302.1 that Section 804.2 is enforceable, baseline indoor air quality testing is required. Section 805 prohibits the use of urea-formaldehyde foam insulation and materials that contain asbestos.

Section 806 regulates emissions from wood products, adhesives, sealants, paints, coatings, flooring, acoustical ceiling tiles, wall systems and insulation.

Where the jurisdiction has indicated in Table 302.1 that Section 807.1 is to be enforceable, sound transmission levels must be limited in accordance with Sections 807.2 through 807.5.2.

Section 808 requires that fenestration be provided to ensure that interior spaces in the specified occupancies benefit from exposure to natural light.

Chapter 9 Commissioning, Operation and Maintenance. Chapter 9 addresses building commissioning, operation and maintenance. It requires inspections as specifically listed in Table 903.1. Chapter 9 also requires that construction documents contain information related to building operation and maintenance in accordance with Section 904.3.

Many of the provisions of Chapter 9, and in particular those in Sections 902 and 903, are essentially based on the requirements for special inspections contained in the *International Building Code*. Both Table 903.1 and Section 904 also contain ties to, and are coordinate with, various provisions in Chapters 4 through 8 of the IgCC. The building operation and maintenance documents required by Section 904.3 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 design professionals as they strove to configure building systems in a manner that satisfied the requirements of the IgCC.

Chapter 10 Existing Buildings. Conceptually, the requirements of Chapter 10 of the IgCC are based upon the requirements of Chapter 34 of the *International Building Code* for existing buildings. 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 1003.2 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 1003.2.1 through 1003.2.7. These sections address the following: metering devices; heating, ventilation and air conditioning; service water systems; lighting; swimming pools and spas; insulation of unconditioned attics; and roof replacement insulation.

Section 1005 provides relief for historic buildings under certain conditions. Where buildings are decommissioned, Section 1006 requires that a material and waste management plan be developed to ensure that such buildings are d and demolished in such a manner that at least 50 percent of materials are diverted from landfills.

Where indicated to be enforceable in the jurisdiction in Table 302.1, Section 1007.2 requires post certificate of occupancy zEPI, energy demand and CO_2e emissions reporting.

Chapter 11 Existing Building Site Development. While Chapter 10 is applicable to existing buildings, Chapter 11 is applicable to additions to and to the alteration, repair, maintenance and operation of the sites upon which those buildings are located. Conceptually, much like Chapter 10, the requirements of Chapter 11 of the IgCC are based upon the requirements of Chapter 34 of the *International Building Code* for existing buildings. 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.

Section 1105 provides relief for historic buildings under certain conditions.

Chapter 12 Referenced Standards. The code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 12 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 12 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 upon 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 this code that reference the standard.

Appendices. Appendices are provided in the IgCC 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 12 chapters of the IgCC only when they are explicitly adopted by the jurisdiction.

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

Project electives were created to encourage performance which exceeds the minimum requirements of the IgCC and to encourage, but not mandate, 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. 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 where they 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 A104 through A108 of Appendix A are arranged by major sections that correspond with the fundamental principles addressed in Chapters 4 through 8 of the IgCC: site; material resource conservation and efficiency; energy conservation, efficiency and earth atmospheric quality; water resource conservation and efficiency; and indoor environmental quality and comfort. In each of these major sections, jurisdictions that intend to enforce Appendix A must determine the number of project electives that must be complied with from the list of project electives tables associated with each of those major sections. Jurisdictions must exercise discretion when determining these minimum values, as it may be difficult or impossible for some projects to comply with various provisions. In addition, if jurisdictions have chosen to enforce certain provisions listed in Table 302.1, they may be unknowingly reducing the number of project electives available in Appendix A. The text of some project electives indicates that they are not available if the jurisdiction has made the practice mandatory in Table 302.1. Thus the specific text of the project electives should be reviewed and coordinated with the jurisdictional requirements from Table 302.1 that are enforced in the jurisdiction. Where jurisdictions have not chosen to enforce various provisions listed in Table 302.1, project electives encourage the implementation of many of the same green and sustainable practices that Table 302.1 addressed.

Although the jurisdiction determines the number of project electives that must be satisfied in each table in Appendix A, the specific project electives to be implemented on each project are selected by the owner and design professional. It is because the specific electives selected can vary from project to project that they are deemed "project" electives, and it is the fact that these provisions are not mandatory until they are selected by the owner and design professional that they are deemed project "electives."

Appendix B Radon Mitigation. Radon comes from the natural radioactive decay of the element radium in soil, rock and water and finds its way into the air. Appendix B contains requirements for the design and construction of systems that mitigate the transfer of radon gases from the soil to building interior spaces.

Appendix C Optional Ordinance. The optional ordinance contained in Appendix C addresses key elements of an evidentiary-based adoption structure that includes performance-bonding requirements. These bonding requirements are tied to the issuance of building permits, certificates of occupancy and the process of compliance verification.

Appendix D Enforcement Procedures. Appendix D is intended to ensure that buildings constructed in accordance with the IgCC are maintained in a manner that is compliant with the code. Appendix D requires that existing buildings that do not comply with these code requirements be altered or repaired to restore compliance with the IgCC.

LEGISLATION

The *International Codes* are designed and promulgated to be adopted by reference by legislative action. Jurisdictions wishing to adopt the 2012 *International Green Construction Code*™ as amended in the 2012 *International Green Construction Code*™—*Water Efficiency Provisions* as an enforceable regulation governing structures and premises should ensure that certain factual information is included in the adopting legislation at the time adoption is being considered by the appropriate governmental body. The following sample adoption legislation addresses several key elements, including the information required for insertion into the code text.

SAMPLE LEGISLATION FOR ADOPTION OF THE *INTERNATIONAL GREEN CONSTRUCTION CODE—WATER EFFICIENCY PROVISIONS* ORDINANCE NO._____

A**[N] [ORDINANCE/STATUTE/REGULATION]** of the **[JURISDICTION]** adopting the 2012 edition of the *International Green Construction Code*™—*Water Efficiency Provisions*, regulating and governing the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of water-consuming and alternate water source systems in the **[JURISDICTION]**; providing for the issuance of permits and collection of fees therefor; repealing **[ORDINANCE/STATUTE/REGULATION]** No. _____ of the **[JURISDICTION]** and all other ordinances or parts of laws in conflict therewith.

The **[GOVERNING BODY]** of the **[JURISDICTION]** does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the **[TITLE OF JURISDICTION'S KEEPER OF RECORDS]** of **[NAME OF JURISDICTION]**, being marked and designated as the *International Green Construction Code—Water Efficiency Provisions*, 2012 edition, including Appendix Chapters **[FILL IN THE APPENDIX CHAPTERS BEING ADOPTED]**, as published by the International Code Council, be and is hereby adopted as the Water Efficiency Code of the **[JURISDICTION]**, in the State of **[STATE NAME]** regulating and governing the conditions and maintenance of structures and premises as herein provided; the standards for physical things and conditions essential to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the consumption of water in the built environment on building sites; and each and all of the regulations, provisions, penalties, conditions and terms of said Water Efficiency Code on file in the office of the **[JURISDICTION]** are hereby referred to, adopted, and made a part hereof, as if fully set out in this legislation, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

Section 2. The following sections are hereby revised:

Section 101.1. Insert: **[NAME OF JURISDICTION]**

Table 302.1. Insert: **[JURISDICTIONAL REQUIREMENTS]**

Section 3. That **[ORDINANCE/STATUTE/REGULATION]** No. _____ of **[JURISDICTION]** entitled **[FILL IN HERE THE COMPLETE TITLE OF THE LEGISLATION OR LAWS IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION]** and all other ordinances or parts of laws in conflict herewith are hereby repealed.

Section 4. That if any section, subsection, sentence, clause or phrase of this legislation is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The **[GOVERNING BODY]** hereby declares that it would have passed this law, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 5. That nothing in this legislation or in the Water Efficiency Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this law; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this legislation.

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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