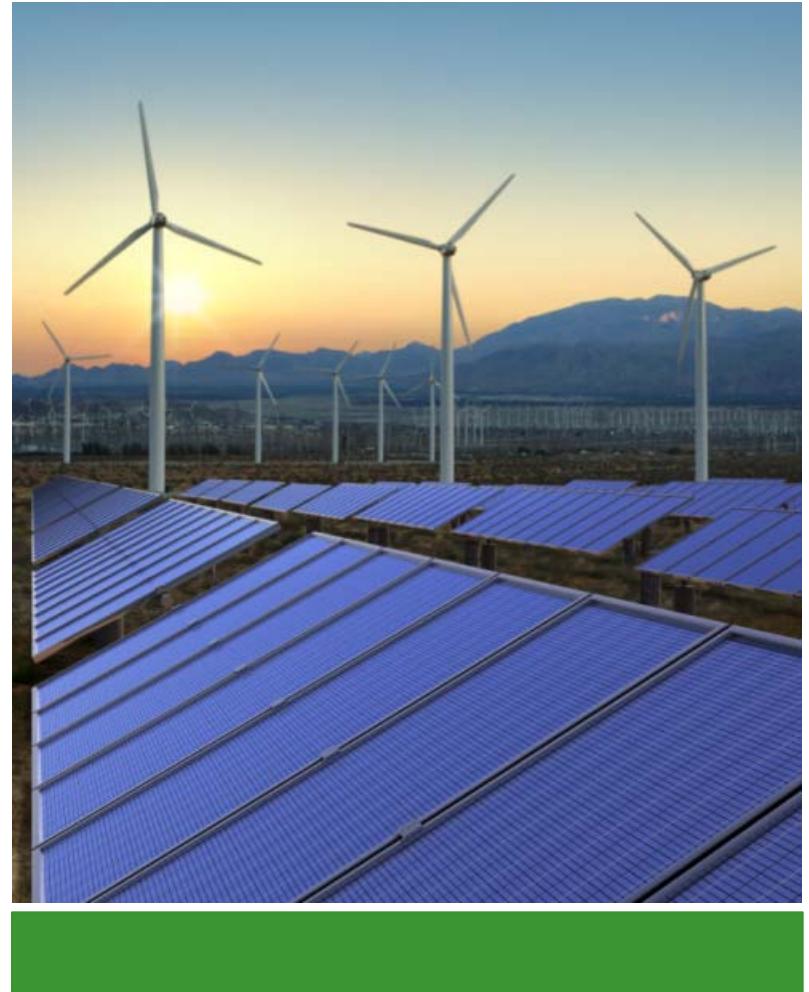


An Overview of the
**International Green
Construction Code**



What is the IGCC?

- Adoptable, useable and enforceable code
- Reduces the negative impacts of the built environment on the natural environment
- Full range of sustainability topics
 - Natural resource preservation
 - Material conservation
 - Energy conservation
 - Water conservation
 - Indoor environmental quality



Scope and Intent

- Applicable to the construction of all new and existing buildings
- Consistent and coordinated with the ICC family of Codes & Standards
- Intended to be enforced primarily by building officials
- Seeks to drive green building into everyday practice



IGCC Development Schedule



IgCC Development began in 2009.



IGCC Code Development Hearing May 16 through 22, 2011, Dallas, Texas.



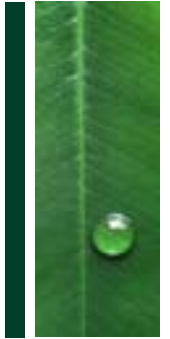
Final Action Hearings November 2 through 6, 2011, Phoenix, Arizona.



The first edition of the IGCC to be published March 2012.

Already adopted in a handful of states and municipalities.

Development Partners



- The IgCC has been developed by the International Code Council (**ICC**) in association with cooperating sponsors.
 - **ASTM**
 - **AIA**
- The IGCC also references ASHRAE 189.1 as an alternative compliance path, as developed by **ASHRAE** and partners:
 - **IES**
 - **USGBC**



IGCC Approach

- The IGCC is *not* a rating system, nor is it intended to replace them.
- The IGCC is **code** which is intended to be adopted on **mandatory** basis.
- Unlike most rating systems, the IGCC primarily consists of **minimum mandatory requirements**, just as other I-Codes.
- Produces **more predictable results** than rating systems.
- **Requires** green practices whenever reasonable.



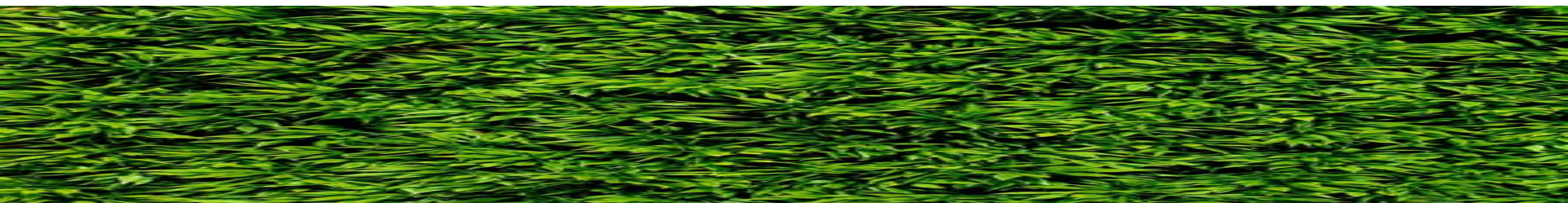
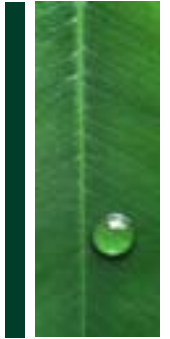
IGCC Context

How should we compare green and sustainable codes, standards, rating systems and programs?

- Building by building?
- By their ability to be **adopted** on a mandatory basis in all regions and potential **overall reduction of negative environmental impacts**?

What should the intent of a green code or program be?

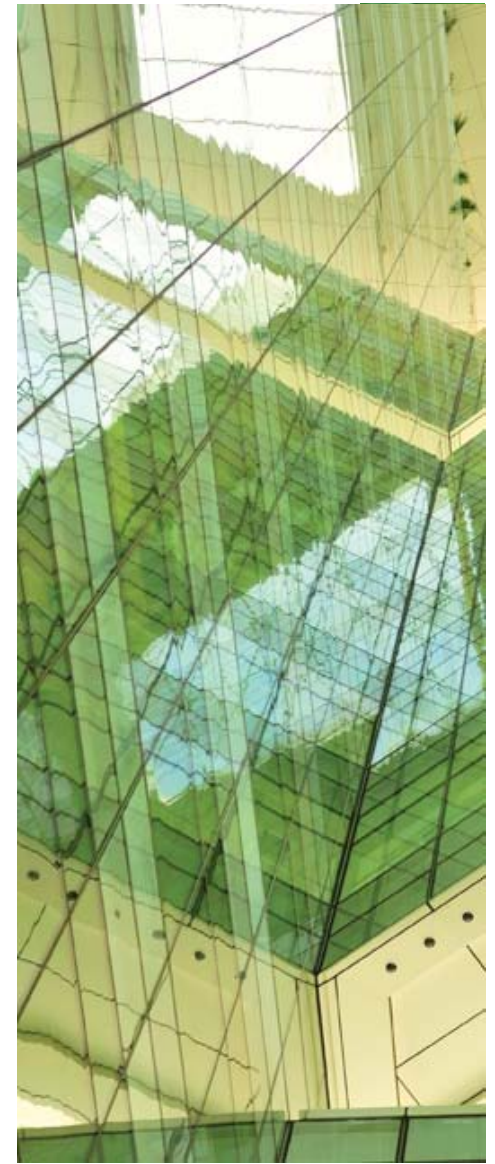
- To make a **few** buildings **very green**?
- To have as **large** a **positive impact** and as **little** a **negative impact** as possible on the **total natural environment**? Not just local, not just the U.S., but the entire planet.



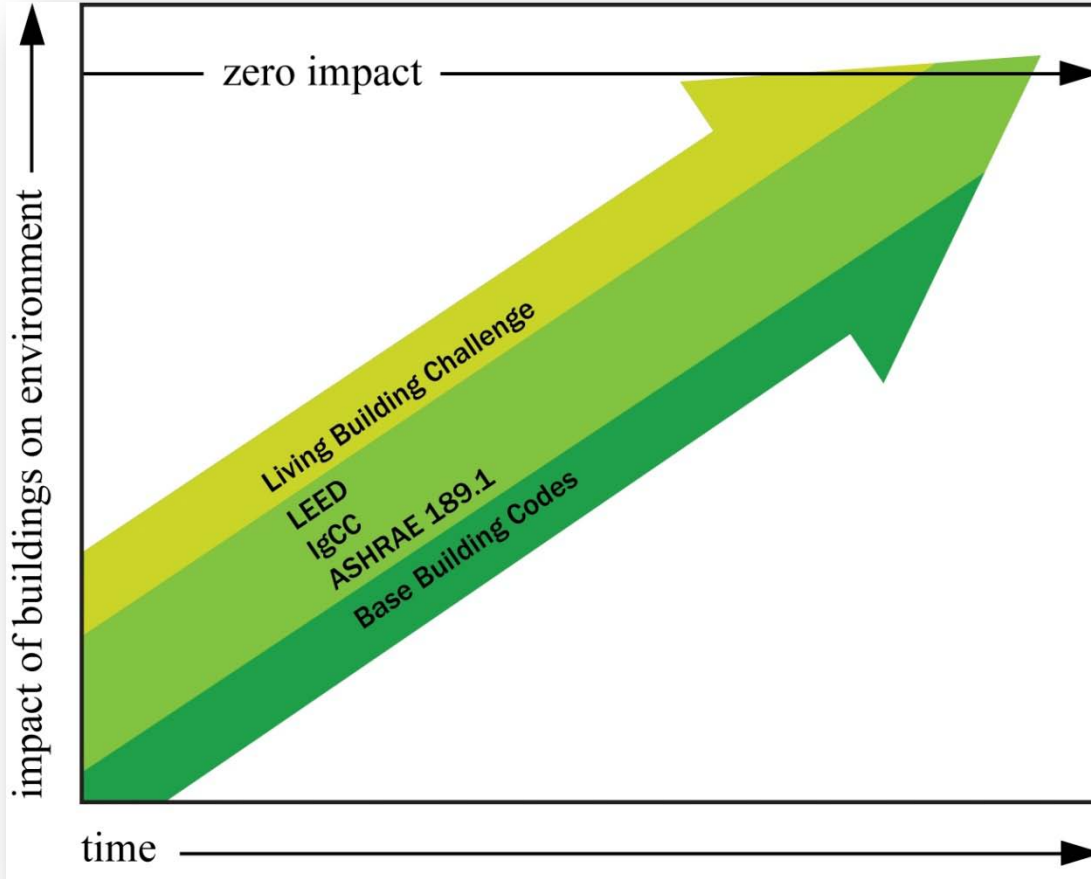
IGCC Context

Because the IGCC is intended to apply to both **private sector** and **government owned** buildings on a *mandatory* basis it:

- Raises the **floor** of sustainability for **all** commercial buildings.
- Positions the IGCC to achieve **environmental benefits** on a **massive scale** – a scale not possible with *voluntary* rating systems.

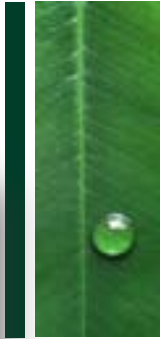
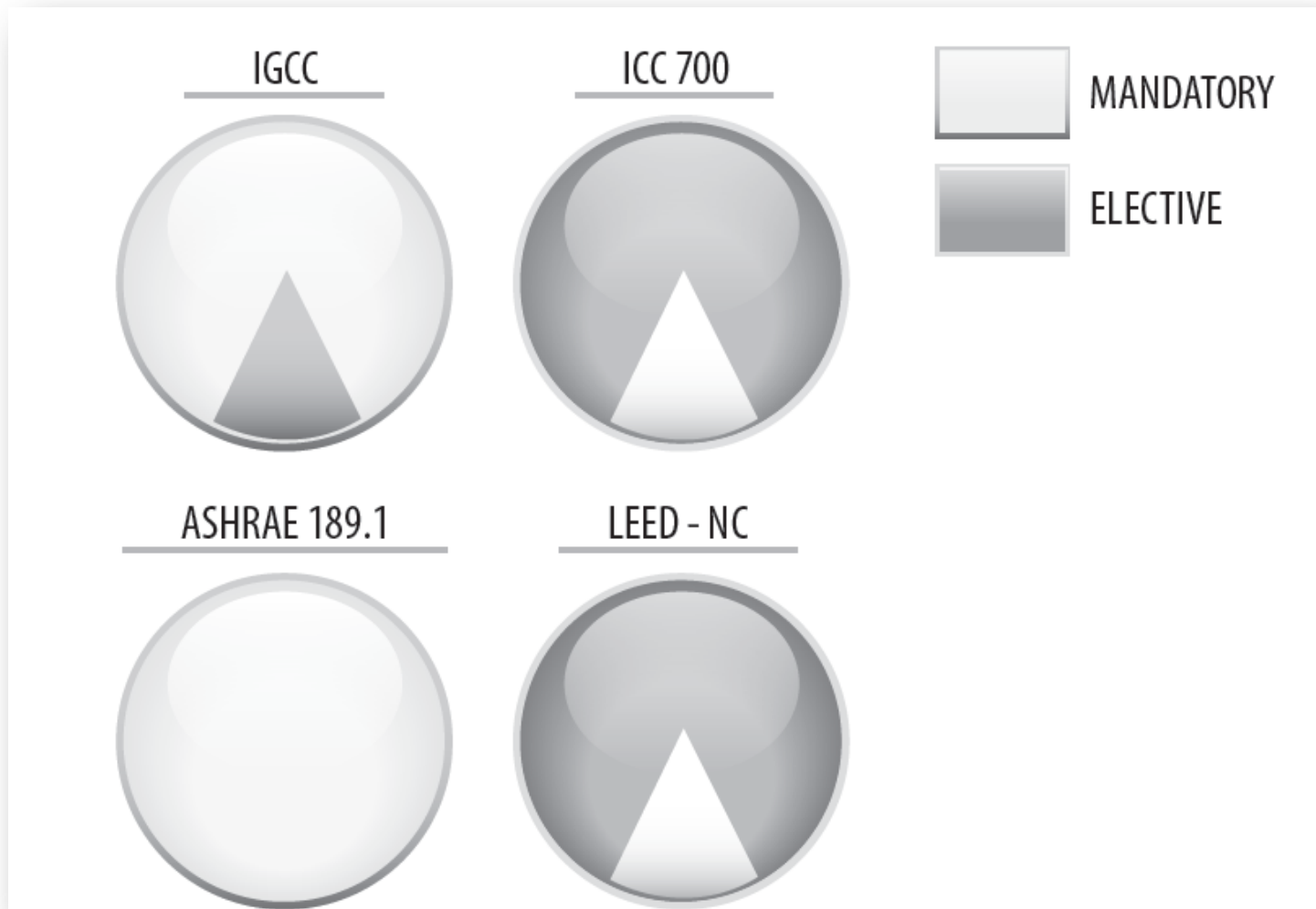


IGCC and LEED



Simply put, a **green building code and a beyond-code green building rating system** provide the best-case scenario to reduce the impact of buildings on the environment.

Mandatory vs. Elective Provisions



IGCC Technical Highlights



Key difference from other ICC codes:

- Chapters based on sustainability topics, not building systems or trades
- Requires that choices be made by the jurisdiction and the owner/RDP

First two chapters are similar to other I-Codes

- Chapter 1: Administration
- Chapter 2: Definitions



Chapter 3: Jurisdictional Requirements

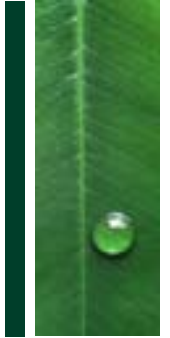


Allows jurisdictions to make choices for higher levels of stringency.

- Once selected, items in Table 302.1 are enforced just like requirements in other I-Codes, for all projects constructed in the jurisdiction.
- Codified during adoption process.
- Allows the jurisdiction to address their own regional environmental goals, needs or concerns
- Most provisions of the code are not tied to Table 302.1 or Appendix A.



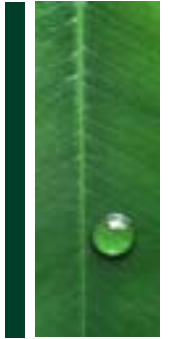
Chapter 4: Site Development and Land Use



Chapter 4 contains requirements for the development and maintenance of buildings and building sites which are intended to promote natural resource conservation and environmentally responsible land use and development.



Chapter 4: Site Development and Land Use



- Preservation of natural resources
 - Site development limitations
 - Natural resources inventory
- Transportation impact
- Stormwater management
- Heat island mitigation
- Site lighting
- Detailed provisions
 - Subsurface graywater irrigation systems,
 - Vegetation and soil protection,
 - Soil use and restoration,
 - Landscape, soil and water quality protection,
 - Vegetative roofs.



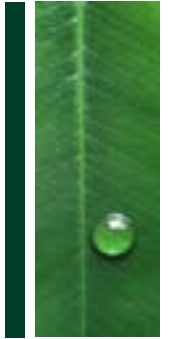
Chapter 5: Material Resource Conservation and Efficiency



Chapter 5 contains provisions that require building material conservation, resource efficiency and environmental performance.



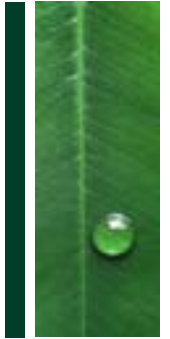
Chapter 5: Material Resource Conservation and Efficiency



- Construction material and waste management plan
 - 50% construction waste diversion minimum with options for increases to 65 or 75 percent
- Recycling areas
- Storage of lamps, batteries and electronics
- 55% of total materials used must consist of:
 - Used
 - Recycled
 - Recyclable
 - Bio-based or
 - Indigenous materials
- Mercury limits in fluorescent lamps
- Moisture control



Chapter 6: Energy Conservation, Efficiency & Atmospheric Quality



Chapter 6 is applicable to new buildings and additions to existing buildings.

Energy requirements for alterations to existing buildings are found in Ch 10.

The IgCC provides the following energy compliance paths:

- Prescriptive-based (Section 602.2.1)
- Performance-based (Section 602.2.2)



Chapter 6: Energy Conservation, Efficiency & Atmospheric Quality



Performance-based designs must comply with the following Sections:

- 602 – Modeled Performance Pathway Requirements
- 603 – Energy Metering
- 604 – Auto Demand Response (If indicated in Table 302.1)
- 608.6 – Plug Load Controls
- 609 – Appliances & Equipment
- 610 – Renewable Energy
- 611 – Commissioning



Chapter 6: Energy Conservation, Efficiency & Atmospheric Quality

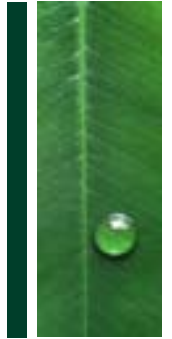


Prescriptive-based designs must comply with the following Sections:

- 603 – Energy Metering
- 604 – Auto Demand Response (If indicated in Table 302.1)
- 605 – Envelope
- 606 – Mechanical
- 607 – Service Water Heating
- 608 – Electrical & Lighting Systems
- 609 – Appliances & Equipment
- 610 – Renewable Energy
- 611 – Commissioning



Chapter 6: Energy Conservation, Efficiency & Atmospheric Quality



Designs which use the *prescriptive*-based compliance path and have a total building area of <25,000 s.f.:

- Are exempt from lower zEPI scores (higher energy performance thresholds) that may be required by some adopting jurisdictions in Table 302.1 (See Section 302.1.1)



zEPI Performance Based Requirements



Zero Energy Performance Index (zEPI) as a metric of efficiency.

- Definition: A scalar representing the ratio of energy performance of the proposed design compared to the average energy performance of buildings in the benchmark year of 2000, with similar occupancy operation schedule and climate.



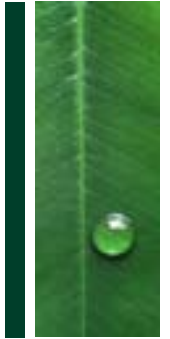
zEPI Performance Based Requirements



- Used in conjunction with Table 302.1 and Appendix A
- Calculation of zEPI gives credit for and encourages
 - Waste energy recovery (cogeneration) and
 - On-site generation of renewable energy.
- zEPI of 100 = average energy performance of buildings in the benchmark year of 2000, for buildings with similar occupancy, operation schedule and climate



zEPI Performance Based Requirements



$$zEPI = 57 \times (EUI_p / EUI) \text{ (Equation 6-1)}$$

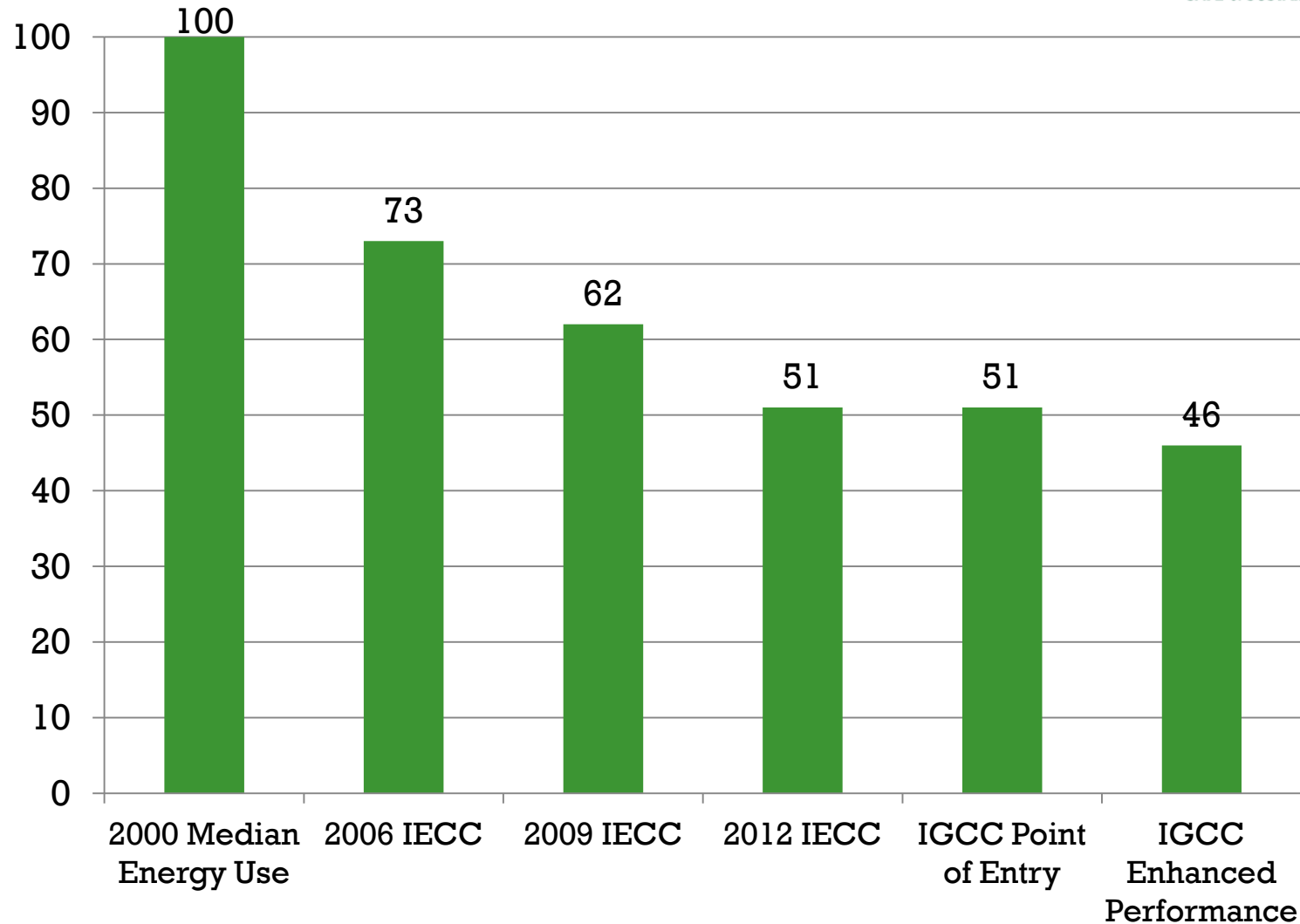
Where

- EUI_p = the base annual energy use index in source kBtu/sf-y for the *proposed* design of the building and its site calculated in accordance with Section 602.1.2*
- EUI = the base annual energy use index in source kBtu/sf-y for a *baseline* building and its site calculated in accordance with Section 602.1.2*

*Sec. 602.1.2 references Equation 6-2 and modifications to Appendix G of ASHRAE 90.1



zEPI in Perspective



Chapter 7: Water Conservation and Efficiency



Chapter 7 requires and encourages the conservation of water used indoors, outdoors and in wastewater conveyance.

- Seeks water efficiency regardless of the source.
- Encourages the use of lower quality water wherever possible and permissible.



Chapter 7: Water Conservation and Efficiency



- Efficiency provisions for indoor and outdoor applications
 - Plumbing fixtures/fittings
 - Appliances
 - Carwashes
 - Cooling towers
- Efficient hot water delivery systems
- Submetering
- Water treatment systems
- Alternate water sources
 - Rainwater harvesting
 - Graywater reuse
 - Reclaimed water
- Nonpotable water applications



Chapter 8: Indoor Environmental Quality and Comfort



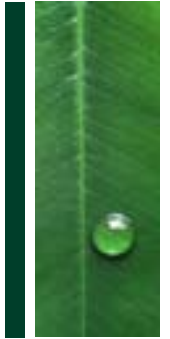
Chapter 8 contains requirements regarding the indoor environmental quality and comfort of building occupants

Requirements include issues of Indoor Air Quality (IAQ) Management Plan for the following:

- Building construction, features, operations and maintenance facilitation, HVAC Systems, specific IAQ & pollutant control measures and restrictions on prohibited materials



Chapter 8: Indoor Environmental Quality and Comfort



Indoor Air Quality (IAQ) Management Plan must address:

- HVAC & Air-handling systems
 - Access
 - Durability & cleanability
 - Filters
 - Performance
- IAQ during construction
- Indoor pollutant control measures (fireplaces, biomass appliances, radon, tobacco smoke, copy rooms, garages etc.)
- Material emissions and pollutant control
- Acoustics/Sound transmission (interior & exterior)
- Daylighting



Chapter 9: Commissioning, Operations & Maintenance

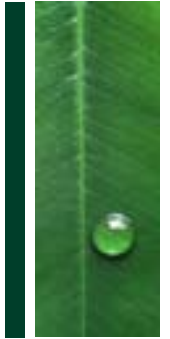


Modeled after

- Special inspections criteria in Chapter 17 of the IBC
- Commissioning criteria found in the IECC
- Sections 903.1.1 and 903.1.2 require pre- and post-occupancy reports be provided to the building owner.
- The building official is charged only with verifying that the reports have been provided to the owner, not with their review and approval.



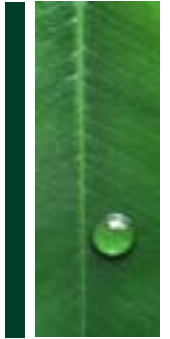
Chapter 9: Commissioning, Operations & Maintenance



- Pre-occupancy inspection and testing
- Operating and maintenance manuals
- Building maintenance schedules
- Commissioning Plan
 - List of items for which commissioning is required or encouraged
 - Distinguishes between pre-occupancy and post-occupancy commissioning
- Post-occupancy periodic reporting as a jurisdictional choice tied to Table 302.1.



Chapter 10: Existing Buildings



Chapter 10 contains provisions for existing buildings in the IgCC are loosely based on the provisions for existing buildings in Chapter 34 of the IBC.

In essence whatever is changed, altered or added must be constructed in accordance with the requirements of the current code, as applicable to that component, assembly or system.



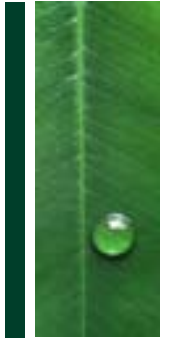
Chapter 10: Existing Buildings



- Alterations/renovations: whatever is changed must meet current IGCC requirements and:
 - Prescriptive reqs. for HVAC, water, metering, lighting, refrigeration, pools
 - Energy audits
 - Limited to 10% of the total cost of alterations
- Unaltered components can remain as they are (but with repairs as needed)
- Additions are treated much like new construction
- Historical building provisions



Chapter 11: Existing Site Development



Chapter 11 covers much of the same information covered as Chapter 10, except that it contains material related to existing building *sites*, as opposed to existing buildings.

Addresses existing building landscaping, site hardscape and surface vehicle parking, as well as other items related to Chapter 4, Site Development and Land Use.



Chapter 12: Referenced Standards

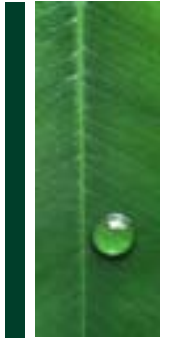


Chapter 12 contains a list of:

- Standards that are referenced in various sections of the IGCC
- The agency which promulgated it
- The standard's identification, effective date, full title and the sections or sections of the IgCC which reference it.
- Latest editions of all standards will be referenced, consistent with referenced standards in other I-Codes.



Appendices



- Appendices are enforceable only where specifically adopted by the jurisdiction.
- The jurisdiction can accomplish this by selecting the “Yes” boxes in Table 302.1 in the rows related to Appendices A, B, C and D.



Appendix A - Project Electives



- Encourage higher performance buildings (buildings which exceed the minimum requirements of the IGCC)
- Encourage and drive the construction of higher performance buildings which exceed the already stringent minimum requirements contained in the body of the code.
- Encourage the implementation of practices that the jurisdiction has not chosen to enforce in Table 302.1



Appendix A - Project Electives



- Encourage implementation of green practices which are difficult or impossible to mandate. (eg., brownfield remediation)
- Adds a degree of flexibility for owners and designers.



Appendices B, C & D



Appendix B: Radon Mitigation

- Similar to the radon provisions in the IRC, but modified for commercial building applications

Appendix C: Optional Ordinance

- Uses performance bonding requirements tied to compliance verification

Appendix D: Enforcement Procedures

- Designed to ensure the continued compliance of buildings, structures and building sites constructed under the IgCC




International Green Construction Code

http://www.iccsafe.org/igcc/

Most Visited - Apple - Wikipedia, the free e... - News - Yahoo! - YouTube - Burke & Herbert Ban... - YouSendIt - File Sha... - Rhodes College | Ho... - FreeRice - Wikipedia - Wikiped... - Quality Graphics an... - RealClearPolitics - O... - Pandora Internet Ra...


a new chapter in our history with the International green construction code



Home
 Newsroom
 Sustainable Building Technology Committee
 FAQ
 Remarks
 News Clips
 Contact

Development Updates
 Background

SAFE & SUSTAINABLE BY THE BOOK



As part of its commitment to green and sustainable safety concepts, the Code Council is excited to develop a new set of green codes under the multi-year initiative called "IGCC: Safe and Sustainable by the Book." This initiative will include collaboration from the Council's closest allies and pre-eminent thought leaders in green building, as well as outreach and feedback from our members and the general public. We are committed to developing an effective and efficient code that will continue our long tradition of international code guidance. ▶

INTERNATIONAL CODE COUNCIL

ICC, a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools. ▶

AIA

Local Leaders in Sustainability

American Institute of Architects is the leading professional membership association for licensed architects, emerging professionals, and allied partners since 1857. ▶

ASTM International

ASTM International is one of the largest voluntary standards development organizations in the world—a trusted source for technical standards for materials, products, systems, and services. ▶

© 2009 International Code Council

For more information and updates check the ICC website

www.iccsafe.org/igcc

Questions?

Presented By:

Steven Thorsell, AIA, CSI

- Program Coordinator – ICC-ES Environmental Programs
- Contact: sthorsell@icc-es.org



This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of ICC is prohibited.