IgCC: (International green Construction Code)

Cooperating Sponsors:

American Institute of Architects (AIA)
ASTM International
ASHRAE
U.S. Green Building Council (USGBC)
Illuminating Engineering Society (IES)

Alliance for Environmental Sustainability
Grand Rapids, Mi.

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INTERNATIONAL CODE COUNCIL

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Carbon Footprint !!!

Intent and Goals of IgCC… Environmental sustainability, Resource efficiency, Occupant comfort and well being without compromising future generation's ability to meet their needs.

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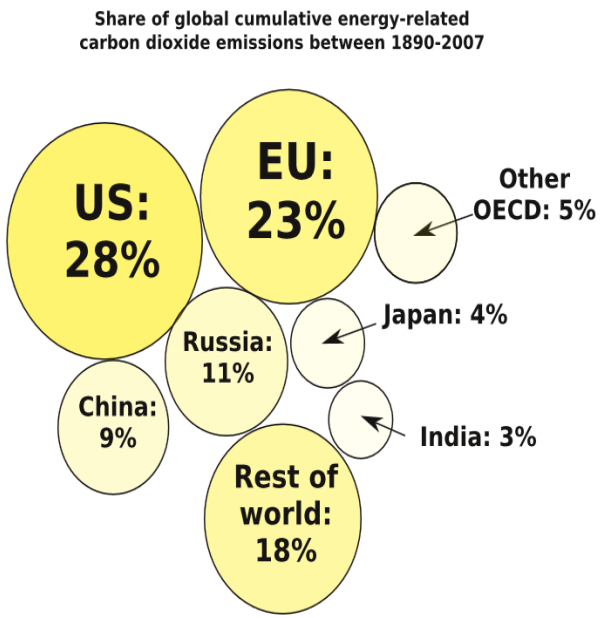
Worldly Facts

If you could fit the entire population of the world into a global village consisting of 100 people, maintaining the proportions of all the races living on the Earth, that village would consist of the following…

57 Asians	East/Far East and NZ & Australia
21 Europeans	Eastern/Western Europe
14 Americans	North/Central & South Americas
8 Africans	Africa/Middle East

Population Statistics

China	**20%**
India	**17%**
USA	**4.6%**
Russia	**2.1%**
Japan	**1.9%**
Rest of the world	**54.5%**



US Energy Consumption

Buildings:	**48%**
Industry:	**24%**
Transportation:	**28%**

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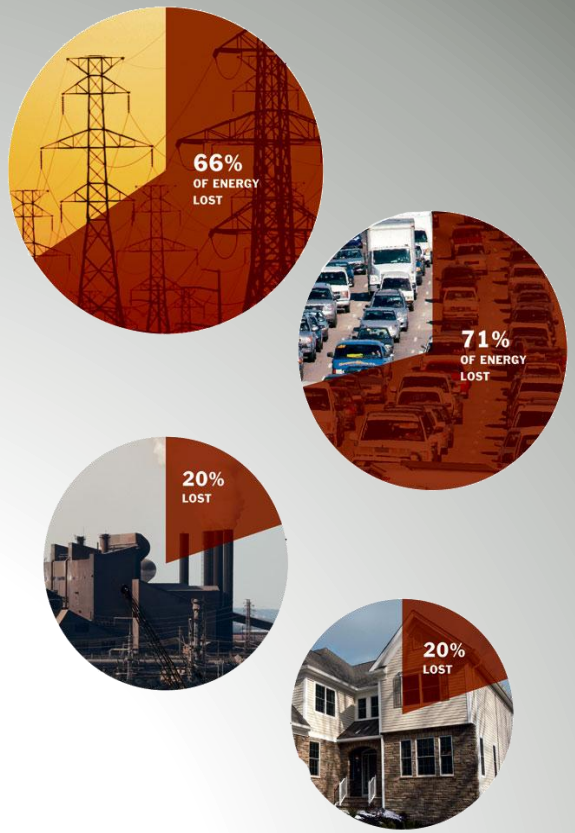
Why a green Building Code?

Facts:



We waste…

- more than 66% of the **Electricity** we create.
- more than 71% of the energy created for **Transportation**.
- more than 20% of the energy created for **Industry**.
- more than 20% of the energy created for **Residential** use.
- more than 20% of the energy created for **Commercial** use.

- We waste more than 50% of all the **Energy** we create.

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Why IgCC over all the others?

Following are not building codes.

- LEED
- Green Globes
- S B Tool
- Green Point
- Energy Star
- GBI
- NAHB Green

IgCC is a:

model building code striving to facilitate design/build and enforce development of carbon neutral built environment.

stand-alone green construction code that overlays with ICC family of building codes.

Learning Objectives:

- Understand green building concepts in land use, material resource, conservation/efficiency of energy and water, indoor environment quality and commissioning.
- Know where IgCC fits in the context of green building standards and rating systems.
- Learn the jurisdictional and project electives options in addition to minimum standards that IgCC is based on.
- Understand how Health, Safety, Welfare remain, in addition to, impact on Environment are the key principals of the IgCC

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What is IgCC ?

- Scope:

  An adoptable, useable and enforceable national model code

- Intent:

  To safeguard the environment, public health, safety, general welfare, and reduce negative impacts of the built environment on the natural environment

- Application:

  Conservation of natural resources, materials, water, energy and ensuring indoor environmental quality

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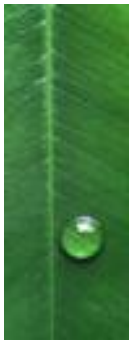
Formatted to require the implementation of environmentally related best practices and encourage other green practices (Chapter 3.electives) appropriate for particular geographic region. Applicable to all buildings except for detached one/two family and multiple single family (townhouses) units not exceeding 3 storeys which are governed by NGBS, LEED, Green Globes etc. depending on adoption.

Chapter 1 /2.	Scope, Administration and Definitions
Chapter 3.	Jurisdictional Requirements- Customization
Chapter 4.	Site development and land use
Chapter 5.	Material resource conservation
Chapter 6.	Energy efficiency and air quality
Chapter 7.	Water resource conservation and efficiency
Chapter 8.	Indoor environmental quality
Chapter 9.	Building operation and maintenance.
Chapter 10:	Existing Buildings



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Chapter 3: Jurisdiction and Life Cycle

Jurisdictional Requirements

- A regulatory framework
- Allows jurisdictions to customize the code to address environmental criteria

Whole Building Life Cycle Assessment

- Not a mandatory requirement.
- An alternative to the material selection requirements of Section 505.

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Chapter 4: Site

- Preservation of natural resources (Tied to T302.1)
  - Allows jurisdictions to prohibit construction in floodplains and limit development of certain sites and site features
  - Natural resources inventory required
- Storm-water management
- Landscape irrigation
- Management of vegetation, soils and erosion control
- Building site waste management
- Transportation impact
- Heat island mitigation
- Site Lighting (Tied to T302.1)

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Chapter 5: Material Resources

- Construction material and waste management plan
  - 50% construction waste diversion min.
  - Jurisdictions can select higher values in Table 302.1
- Requires recycling areas for use by building occupants
- 55% of materials must be:
  - Recycled,
  - Recyclable,
  - Bio-based, or
  - Indigenous.

  (Materials are permitted to have multiple attributes.)
- Mercury limits for fluorescent lamps
- Moisture control

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Chapter 6: Energy/Air Quality

- Chapter 6 is applicable to new buildings and additions to existing buildings.
- Contains detailed energy requirements.
- Energy requirements for alterations to existing buildings are found in Ch 10.
- The IgCC provides the following energy compliance paths:
  - **Prescriptive**-based
  - **Performance**-based zEPI (Zero Energy Performance Index)

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Chapter 7: Water

- Seeks water efficiency regardless of the source
- Encourages the use of lower quality water wherever possible and permissible.
- Efficiency provisions for
  - Plumbing fixtures/fittings
  - Appliances
  - Carwashes
  - Cooling towers
- HVAC systems and equipment
- Water treatment systems
- Metering
- Rainwater collection systems
- Gray water reuse systems
- Reclaimed water systems
- Other alternative water sources

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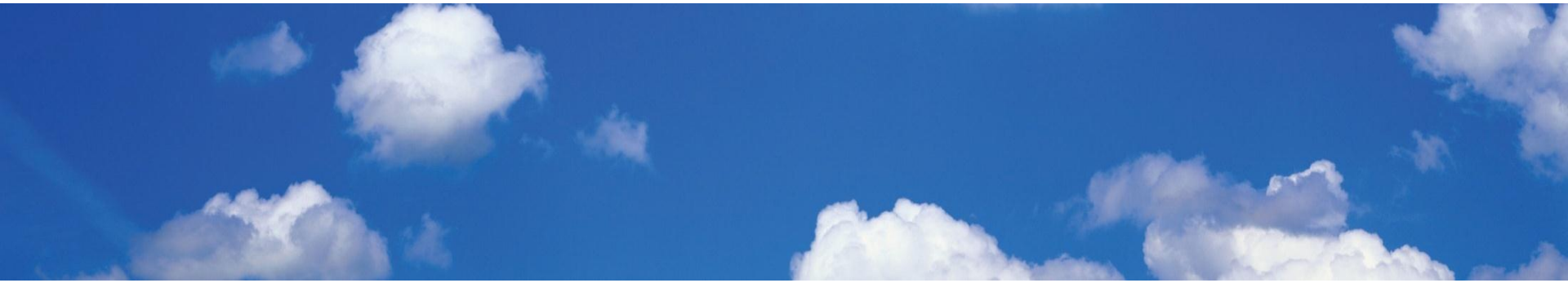

Chapter 8: IEQ

- Indoor Air Quality Management Plan Required
- HVAC & Air-handling systems
  - Air-handling system access
  - Durability and clean-ability
  - Filters
  - Ventilation requirements
- Prohibits smoking in buildings
- IAQ construction phase requirements
- IAQ & pollutant control measures
- Material emissions limits
- Acoustics (Tied to T302.1)
- Day-lighting

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Chapter 9: Commissioning

- Pre-occupancy inspection and testing
- Operation and maintenance manual
- Building maintenance schedules
- Addresses many issues beyond energy
- Commissioning (T903.1)
  - List of items for which commissioning is required or encouraged
  - Distinguishes between pre-occupancy and post-occupancy commissioning

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Chapter 10: Existing Buildings

- Alterations/renovations:
  - Loosely based on IBC Ch. 34.
  - Whatever is changed must meet current IgCC requirements.
  - Unaltered components can remain as they are
  - Requirements primarily related to energy & water
  - Capped at10% of the total cost of alterations & other exceptions.
- Additions are treated much like new construction.
- Historic buildings exempted from many provisions
- Jurisdictions can choose to offer the evaluation of existing buildings for IgCC compliance.
- Chapter 11 covers similar info for building sites.

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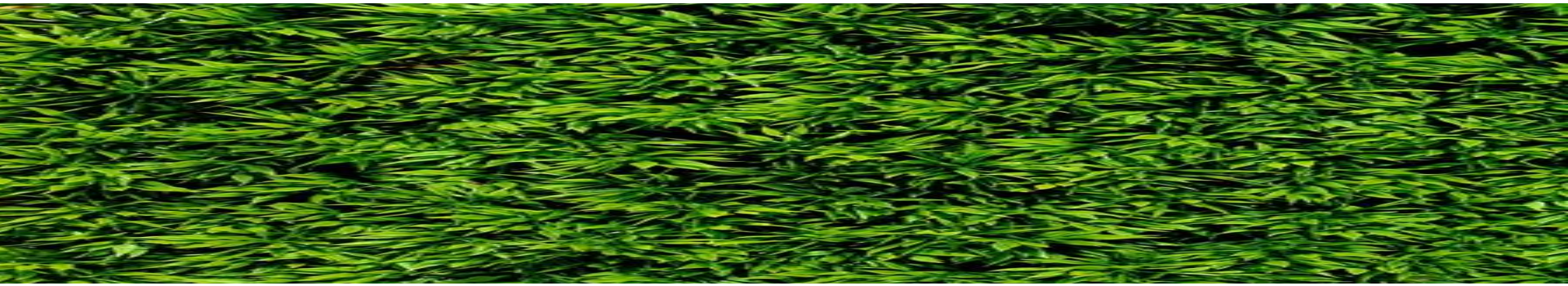

Appendix A: Project Electives

- Enforceable only where specifically adopted.
- The jurisdiction sets the minimum number of electives that must be complied with on all projects constructed in the jurisdiction.
- The owner or the owners' representative/s select the specific project electives to be implemented on each project.

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The IgCC is currently adopted in:

- Rhode Island
- Maryland
- Oregon
- Florida
- North Carolina
- Ft. Collins, CO
- Kayenta Township, AZ
- Boynton Beach, FL
- Phoenix, AZ
- Scottsdale, AZ
- Richland, WA
- Keene, NH

Sustainability: Context

■ Green Codes

a) IECC (energy conservation)

b) IgCC (green construction)

■ Green Standards

c) *ASHRAE 90.1 (energy standards for buildings except low rise residential)

d) *ASHRAE 189.1 (standards for the design of high performance green buildings

**Neither apply to single/two/multi family three or fewer stories above grade*

e) Voluntary/Rating System, not a code: LEED/USGBC

f) Green Globes/Green Building Initiative

g) Rating System: NAHB Green Building Guidelines (single family housing)

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Options for Commercial Buildings

Energy *IECC, ASHRAE 90.1

(Alternative Path: IECC allows compliance with ASHRAE 90.1 as an option)

Green: *IgCC and ASHRAE 189.1

(Alternative Path: IgCC allows Compliance to ASHRAE 189.1as an option)

Notes: IgCC overlaps IECC on energy (chapter 6)

Option for low rise residential

Energy IECC

Green. ICC 700 (NGBS)

ICC Press Release Aug.'14: ASHRAE 189.1 will gradually merge under IgCC as of 2018.

For more information see:

www.iccsafe.org/igcc

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