This presentation premiered at WaterSmart Innovations

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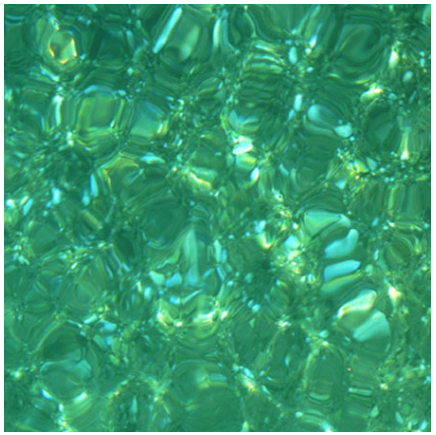
Water Efficiency and Conservation in the International Green Construction Code (IgCC)



WaterSmart Innovations 2011
October 6, 2011
11-T-1115
10:05am - 10:35am

ICC INTERNATIONAL CODE COUNCIL®

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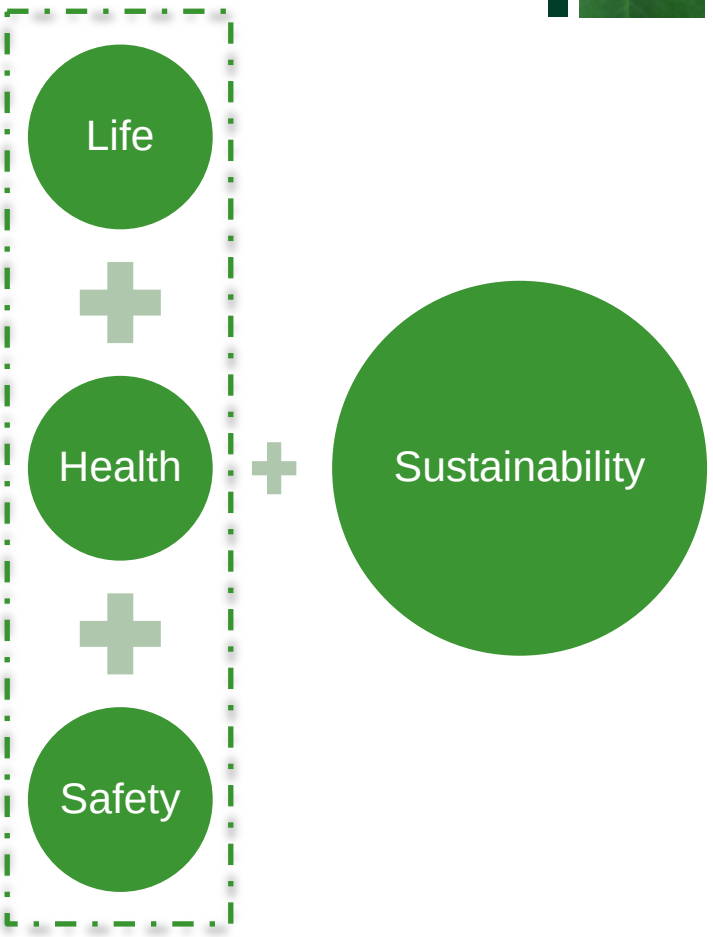
SAFE AND SUSTAINABLE

What is the IgCC?

International Green Construction Code

- Minimum requirements for sustainable commercial buildings.
- Code overlay - works with existing codes.
  - Coordinated with ICC's family of codes.
- Developed through a consensus process
- Written in mandatory language – no rating systems
  - Designed to be enforced by code inspectors.



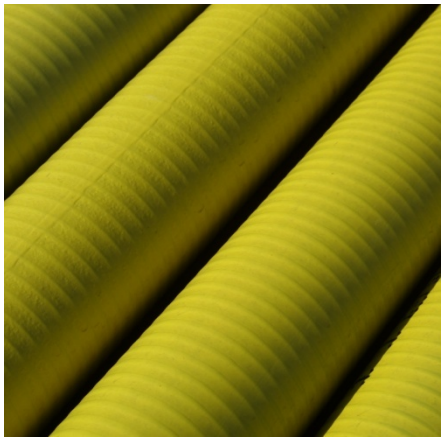
Systems Approach to Building

- Green buildings work best with an integrated approach between trades and systems.

- Allows for improved balance between disciplines like water and energy.
- Avoids contradictions and conflicts.

Subject Areas

- Energy efficiency and alternative energy sources
- Water efficiency and alternate water sources
- Materials and resource use
- Indoor environmental quality
- Global impact
- Site design and impact of land development
- Operation and maintenance
- Existing buildings

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THE AMERICAN INSTITUTE OF ARCHITECTS

ASTM INTERNATIONAL Standards Worldwide

ASHRAE

IES

Elective Requirements

Elective requirements provide vehicles to customize the code to regional priorities and issues.

- Environmental goals
- Geographic differences
- Developmental differences
- Infrastructure
- Local resources

Key elective allows selection of ASHRAE 189.1 alternate compliance path

Water Efficiency & Conservation in the IgCC:

General Principles

- Conserve water used both indoors and outdoors.
- Efficient use of potable AND non-potable water
- Substitute non-potable water for the use of potable water wherever possible
- Seek balance between water and energy use when two are in conflict
- Prevent interruption of nonpotable water sources
- Protect potable water sources from contamination

Efficient Water-Consuming Devices

Fixture and Fitting Consumption

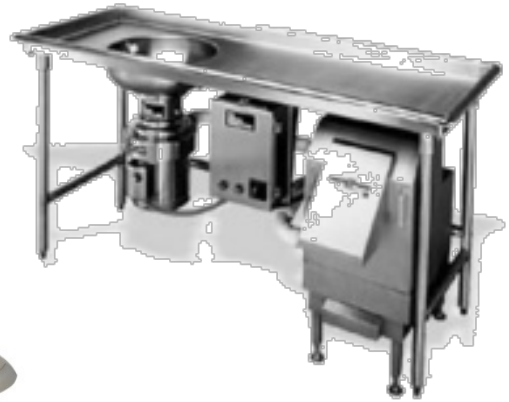
Combination of prescriptive and performance requirements.

- ✓ First requires that several fittings meet prerequisite maximum flow rates
- ✓ Next requires that minimum 20% water savings be shown through calculation.

Prescriptive Maximum Flow Rates

Fixture or Fitting Type	Maximum Flow
Showerhead	2.0 gpm & WaterSense
Lavatory Faucet – Private	1.5 gpm & WaterSense
Lavatory Faucet – Metered Public	0.25 gpc
Lavatory Faucet – Nonmetered Public	0.5 gpm
Kitchen and Bar Sink Faucets	2.2 gpm
Urinal	0.5 gpf &WaterSense; or non-water
Water Closet	1.6 gpf (1.28 gpf, WaterSense if private)
Prerinse Spray Valves	1.3 gpm
Manual Drinking Fountain	0.7 gpm
Metered Drinking Fountain	0.25 gpc

Higher than the Low Hanging Fruit



- Dipper wells (< 1.0 gpm)
- Drinking fountains (< 0.7 gpm or 0.25 gpc)
- Commercial food waste disposers
- Food service handwashing stations

Appliance Water Use

	Clothes Washers	
	Ice Makers	No water cooling.
	Food Steamers	< 2.0 gph in any mode
	Dishwashers	Table per type or
	Combination Oven	< 10.0 gph in any mode
	Commercial Food Waste Disposer	< 1.0 gpm no-load and < 8.0 gpm full-load

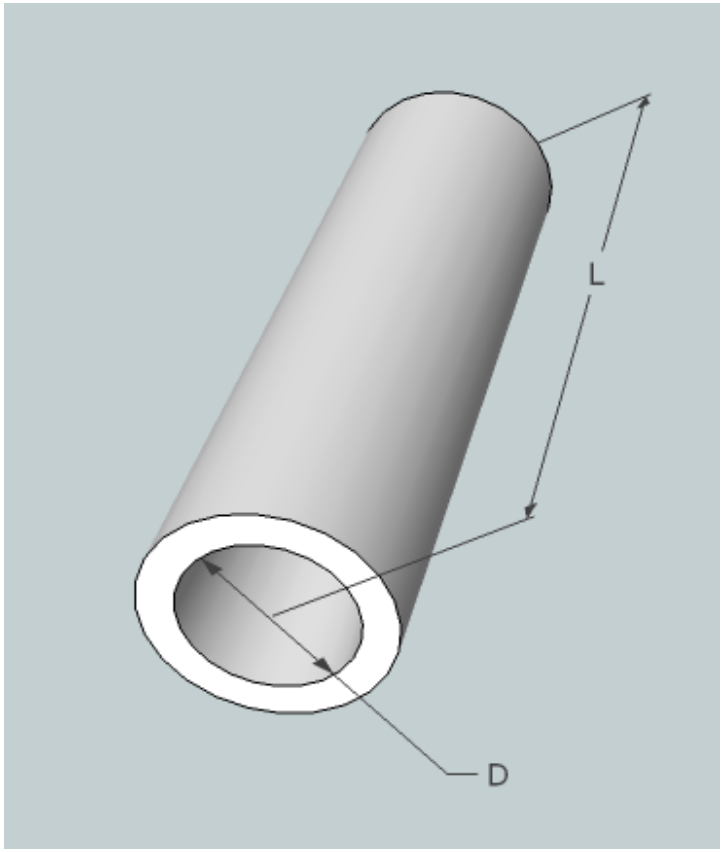
HVAC and Water Treatment

- Water provisions for various types of HVAC equipment
  - Hydronic heating & cooling
  - Condensate cooling
  - Cooling towers (cycles of concentration, drift, conductivity controllers, overflow alarms)
- Water softeners and reverse osmosis systems.
  - Demand initiated regeneration
  - Salt efficiency
  - Automatic shutoff

Efficiency Water Delivery Systems in the IgCC

Efficient Hot Water Delivery Systems

- Reduces water and energy waste by limiting the total volume in hot water pipes.
  - 80 ounces between hot water source and outlet for most systems.
  - 24 ounces from the loop for circulating systems.
  - Included table provides volume values per length for most piping types.
- Includes: Pipe, fittings, valves, meters, manifolds



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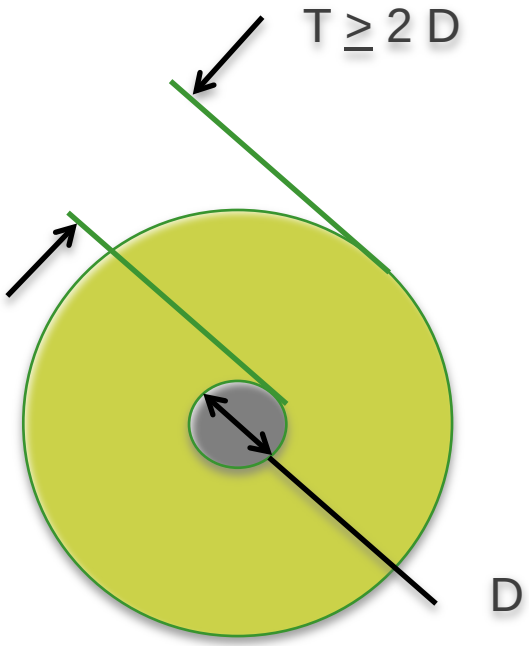
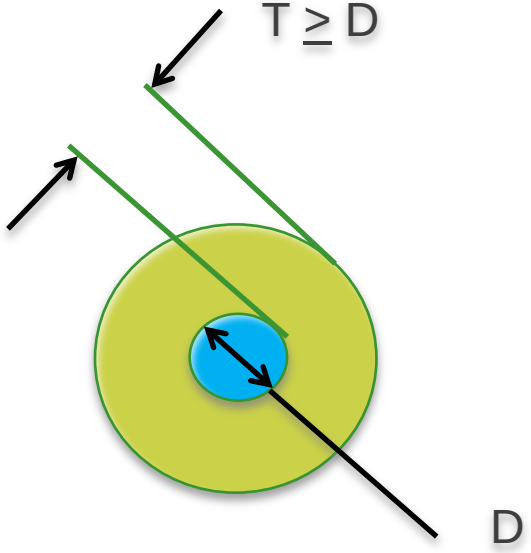
Pipe Insulation Requirements



Steam
(k = 0.27 to 0.34 BTU-in/h-ft^2-F)



Hot or Chilled Water
(k = 0.22 to 0.28 BTU-in/h-ft^2-F)

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Submetering

- Water metering requirements for many types of systems
  - Submeters required for specific systems, tenant spaces, and each water-consuming building.
  - Submetering required for irrigation, water features, cooling towers, pools & spas, steam boilers, evaporative coolers, & more.
  - Separate submeters required for processes using more than 1,000 gal/day.
- Separate metering allows:
  - Isolation of water wasting systems
  - Behavioral impacts
  - Leak detection

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Alternate Water Systems

Alternative Water Systems

Provides detailed requirements for the construction alternate water supply systems including:

- Rainwater collection and distribution systems,
- Onsite graywater reclamation and reuse systems and
- Municipally-supplied reclaimed water systems (also known as “recycled water”)

Nonpotable Water Applications

Applications*

- Flushing
- Surface & subsurface irrigation
- Cooling tower makeup
- Water features
- Fire suppression
- Trap priming
- Fluid coolers
- Onsite water reuse makeup

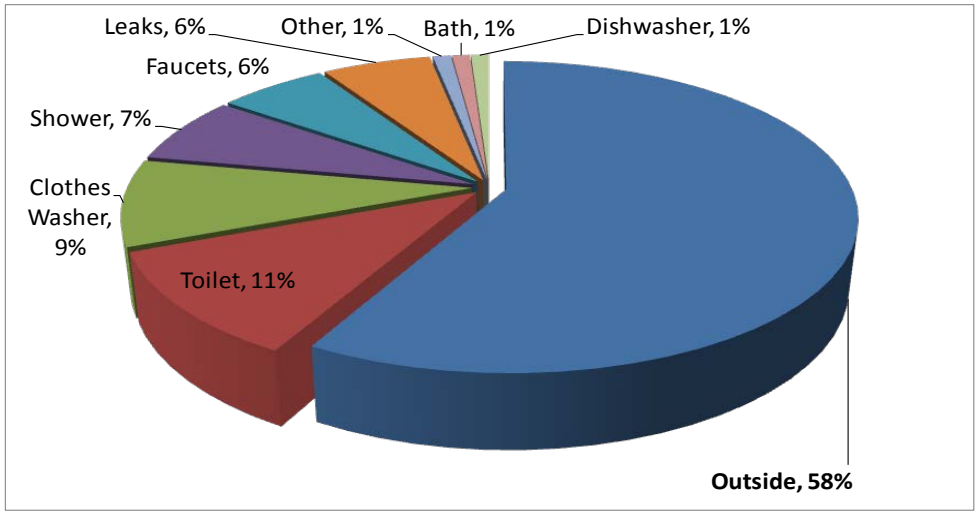
Device Protection

- Filtration
  - 100 micron or finer filtration for many applications
- Disinfection Limits
  - Maximum chlorine/chloramine levels
  - No high concentration entrained ozone bubbles

** As permitted locally*

Outdoor Water Use

- Don’t Forget the Outdoors!
  - Outdoor water use is substantial portion of water consumption in many locations. Any water efficiency code needs to include it to be comprehensive.
- IGCC Contains significant outdoor water use provision
  - Surface and subsurface irrigation
  - Pools and spas
  - Water features
  - Carwash systems



1996 American Water Works Association Research Foundation

Summary

- IgCC is a commercial code overlay designed to work with existing health and safety codes.
- Development is through ICC's consensus process. 2012 version will be available in Spring, 2012
- Adoptions include State of Oregon, Richland WA, Phoenix AZ, State of Florida, State of Maryland, State of Rhode Island, and more.
- Water Provisions version available.
- Public Version 2 now available as a FREE download.
- Go to www.iccsafe.org/cs/igcc for more info.

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Questions?

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KNOWLEDGE EXCHANGE

INTERNATIONAL CODE COUNCIL

Meet us at the Knowledge Exchange, Located at Booth #102 in the WSI Expo.

Date: Thursday, October 6

Time: 2:30-3:00 PM