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Session 2

Green Plumbing and Mechanical Code Supplement

Submitted by: IAPMO




**Green Buildings and Green Growth: The
Enabling Role of Standards and Trade
Washington, D.C., United States
3-4 March 2011**

APEC Green Building Conference
March 3rd and 4th, 2011
Washington, DC

**IAPMO's Green
Plumbing and
Mechanical Code
Supplement**

Presented by:
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*The International Association of Plumbing
and Mechanical Officials*
(IAPMO)



The International Association of Plumbing and Mechanical Officials

- Membership based association, Headquarters in Ontario, CA
- 80+ year history of protecting health and safety
- The *ONLY* model code developer in the USA utilizing an open consensus process accredited by ANSI for plumbing and mechanical codes
- Developers of the Uniform Plumbing Code, Uniform Mechanical Code, Uniform Solar Energy Code, Uniform Swimming Pool, Spa and Hot Tub Code
- A true international organization
 - Collaborative projects in: India, China, Chinese Taipei, Vietnam, Australia, Abu Dhabi, Jordan, Kuwait, Columbia, Venezuela, Ghana, elsewhere
 - Provisions of the UPC protect over half of the Earth's population



The International Association of Plumbing and Mechanical Officials

- Water & energy efficiency provisions are not new trends at IAPMO
 - Fostered incorporation of sustainable provisions in our codes for decades
 - Forward thinking Leadership and Board of Directors
 - Consistent with IAPMO's core mission; Health & Safety
- 2007 – Board of Directors recognizes the need to do better
 - Develop an plug and play code overlay that saves water and energy
 - Addresses Emerging water efficiency and mechanical technologies
 - Provides mechanism for code official approvals
 - Ensures continuing health & safety



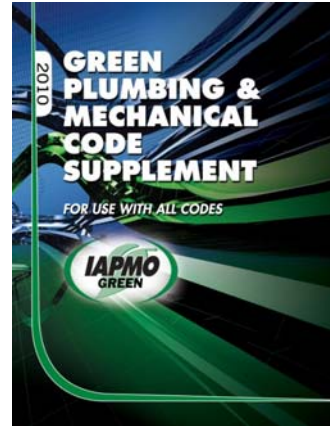
The **Green** Plumbing and Mechanical Code Supplement

- Separate document from the baseline UPC and UMC
- Establishes efficiency provisions applicable to plumbing and mechanical systems
- Overlay to ANY plumbing and mechanical codes used in the US, written in code enforcement language and format – “Plug and Play”
- Can be modified for international use as required
- Resource for: Progressive jurisdictions, code officials, plumbers, contractors, engineers and manufacturers
- Published: **February, 2010 – the *FIRST* green construction code in the United States**



The Green Plumbing and Mechanical Code Supplement

- Green Technical Committee and Sub-Committees: diverse 80+ member group of experts in Green plumbing and mechanical fields
 - Inspectors, plumbers, mechanics, contractors, engineers, manufacturers, trade associations and energy and water conservation authorities



Broad Support



The Green Plumbing and Mechanical Code Supplement - Adoptions

- Serves as the basis of:
 - Los Angeles water conservation ordinance
 - Georgia Senate Bill 370, a comprehensive water conservation law
 - Chicago Metropolitan Agency for Planning Model Water Conservation Ordinance
 - City of Houston Plumbing Code
 - Illinois
 - South Dakota



The Green Plumbing and Mechanical Code Supplement

- How Does It Work?
 - Turnkey document
 - IAPMO philosophy
- What Does It Cover?
 - Residential and commercial installations
 - Water Efficiency and Conservation
 - Alternate Water Sources
 - Hot Water System Design – Saving embedded energy in water
 - HVAC Efficiency
 - Indoor Environmental Quality
 - Installer Qualifications



Water Efficiency and Conservation

- 20% + more efficient than UPC
- Coverage areas:
 - High efficiency plumbing fittings, fixtures and appliances.
 - Water softening equipment
 - Reduces max allowed water pressure
 - Boiler makeup water
 - Occupancy specific provision in restaurants and medical facilities
 - Progressive metering / sub-metering requirements
 - Cooling towers and evaporative coolers

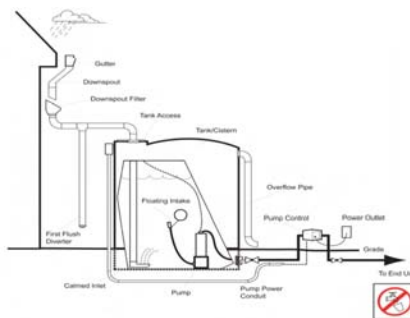


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Alternate Water Sources

- Covers:
 - Rainwater harvesting (nonpotable and potable)
 - Reclaimed (recycled) water
 - Gray water
- System design:
 - Person registered or licensed to perform plumbing design work
- Permitting – required for most systems
- Maintenance and inspection
- Minimum water quality
- Backflow prevention for potable water makeup
- Cross-connection test
- System marking and coloring



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Water Heating System Design, Equipment and Installation

- Comprehensive provisions addressing water heating system efficiency
 - Equipment efficiency
 - Insulation
 - Recirculation
 - Maximum volume of hot water
 - System controls
- Required maximum volume of hot water
 - 32 ounce max between heat source and shower valve, kitchen sink or lavatory faucet
 - 16 ounce max in run out of recirculation loop
- On-demand recirculation in residential occupancies
- Geothermal systems
 - Detailed design and installation criteria



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Key HVAC Provisions

- Equipment efficiencies
- Balancing
- Duct leakage
- System sizing
- System controls
- Geothermal system requirements
- ASHRAE 90.1-2007 ≈17 to 30% more efficient than 2004 edition.
- IECC includes ASHRAE 90.1 as a compliance path

Commissioning

- Designed, installed and maintained to function as intended over system life
- Required for commercial buildings (SMACNA Tier 1)
- Appendix C – Detailed commissioning requirements and acceptance forms.

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Environmental Quality

- Enhanced air quality provisions based on ASHRAE 62.1 and 62.2
- Further reduction of air contaminants beyond UMC
- Construction and post construction indoor air quality
- Thermal comfort controls
- Low VOC solvent cement and primer



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Supplement Maintenance

- Continuous maintenance – can update as needed to address emerging technologies or to support market transition programs
- Areas under investigation
 - Water pipe sizing
 - Life Cycle Assessment (LCA) requirements for plumbing and mechanical products and systems
 - Insulating buried hot water pipe
 - Increasing maximum hot water volume for commercial buildings
 - Waste water heat recovery

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Transitioning from Voluntary to Mandatory

- Baseline codes – published on a 3-year cycle
- IAPMO's Green Technical Committee
 - Reviews all provisions of the GPMCS for applicability to transfer to the UPC and UMC baseline codes
 - Technical committees have high confidence in field tested provisions from the GPMCS clearing the way for adoption
 - Example: The entire Alternate Water Use chapter of the GPMCS will be included in the 2012 edition of the Uniform Plumbing Code

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Thank You

- For further information about IAPMO's Green Plumbing and Mechanical Code Supplement, please contact Pete DeMarco at pete.demarco@iapmo.org or Dave Viola at dave.viola@iapmo.org and reference this presentation
- For information on IAPMO R&T 3rd Party Certification Services, please contact Jin Luo at jin.luo@iapmort.org or Shirley Dewi at shirley.dewi@iapmort.org

