

This presentation premiered at WaterSmart Innovations

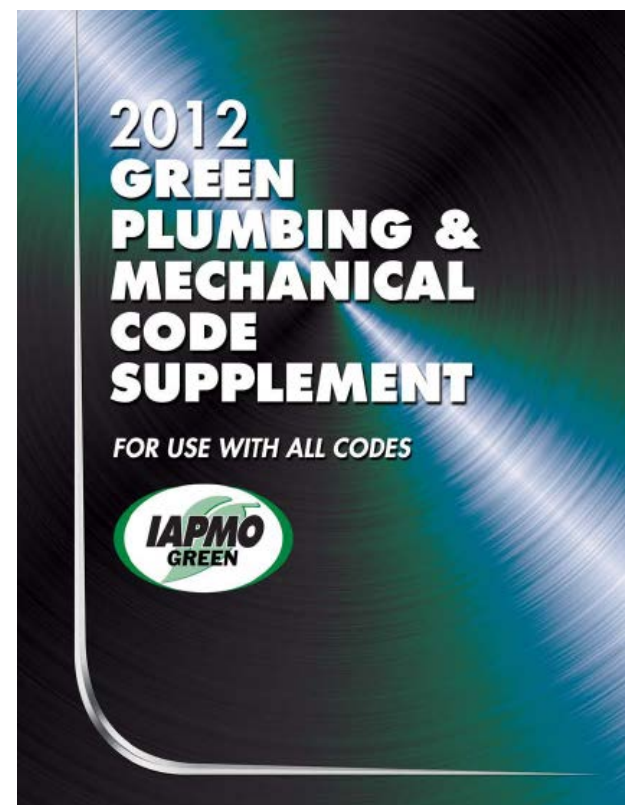
watersmartinnovations.com





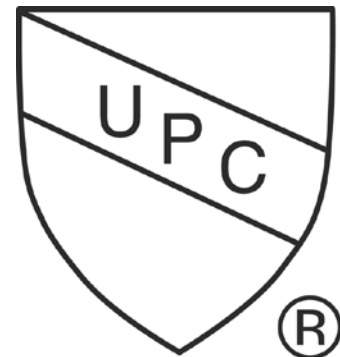
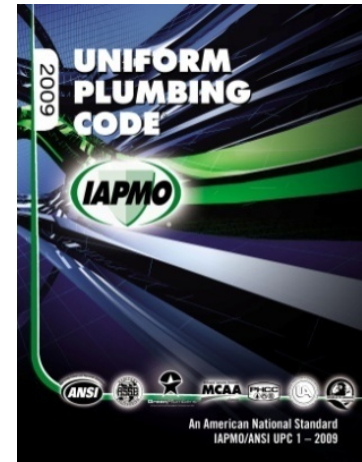
Green Plumbing and Mechanical Code Supplement

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Special Services



IAPMO Group

- Association of the plumbing & mechanical industry
- One Goal:
Public Health, Safety and welfare
- Develop Uniform Codes
- Test and certify plumbing, mechanical, and electrical products



IAPMO Green



- Uniform Codes - developed with critical eye on sustainability
- 2007- IAPMO Board calls for a reduction in energy and water consumption in the Uniform Plumbing and Mechanical Codes.
 - Created Green Technical Committee (GTC) to accomplish goal.

GTC – Diverse Group of Experts



- 25 experts in Green plumbing and mechanical fields
 - Inspectors, contractors, plumbers and mechanics, engineers, manufacturers, trade associations, energy and water and energy conservation authorities.

GTC Task Groups



- 14 task groups (150+ people in total)
 - Largest concentration of P&M sustainability experts ever assembled
 - No other process comes close in sustainable P&M contact hours
 - 2 to 3 meetings per year
 - 20 + conference calls per year
 - 100 + contact hours on P&M issues

GTC Task Groups



- Plumbing Fixtures and Fittings
- HVACR
- Hot Water Systems
- Water Pipe Sizing
- Alternate Water Sources
- Potable Rainwater Catchment Systems
- Life Cycle Assessment
- Irrigation
- Food Services
- Pools, Spas and Hot Tubs
- Natural Gas
- Hydronics
- Commissioning and Verification
- General/Administration

GTC Objectives

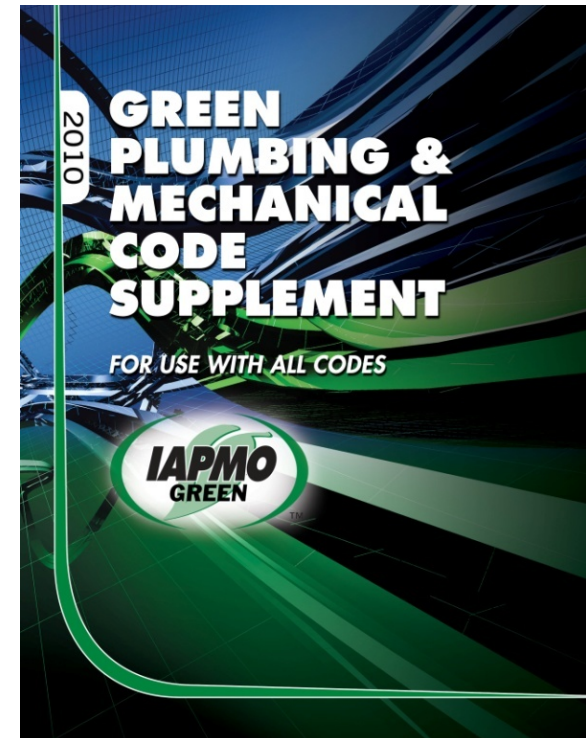


- Develop Green Plumbing and Mechanical Code Supplement
- Identify opportunities to make Uniform Codes more sustainable

GPMCS Overview



- FIRST green code
 - Published in February, 2010
- Turnkey document
 - Residential and commercial sustainable plumbing and mechanical systems
 - Covers all aspects of sustainability
 - Water and energy efficiency
 - Hot water system design
 - Alternate water source use
 - Indoor environmental quality



GPMCS Overview



- Bridge between codes and green building schemes
- Overlays ANY adopted plumbing code
- Baseline for sustainability
 - No tiers of compliance or rating system
- Repository for future code provisions

GPMCS Development and Maintenance

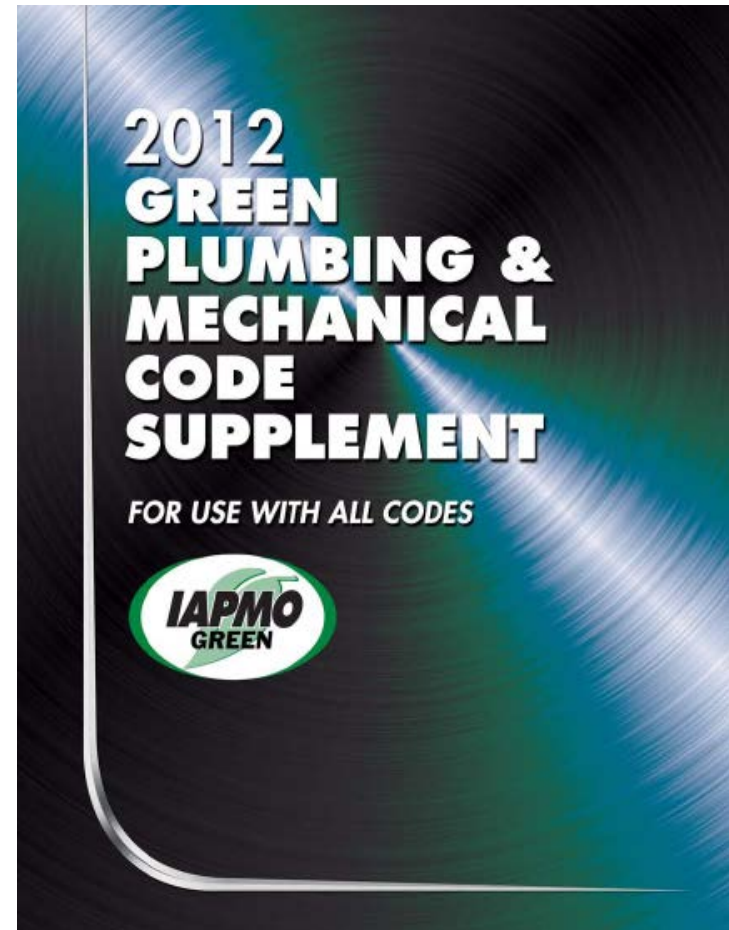


- Consensus
- Continuous
 - Nimble process to address emerging technologies
 - Changes can be submitted at any time by anyone
 - Submittal form posted on IAPMO website
 - Next edition February 2012

GPMCS Development and Maintenance



- Currently out for public comment until November 7, 2011
- For more information visit: www.iapmogreen.org/publiccomment
- Comments serve as agenda for December 8-9, 2011 GTC meeting



Broad Support

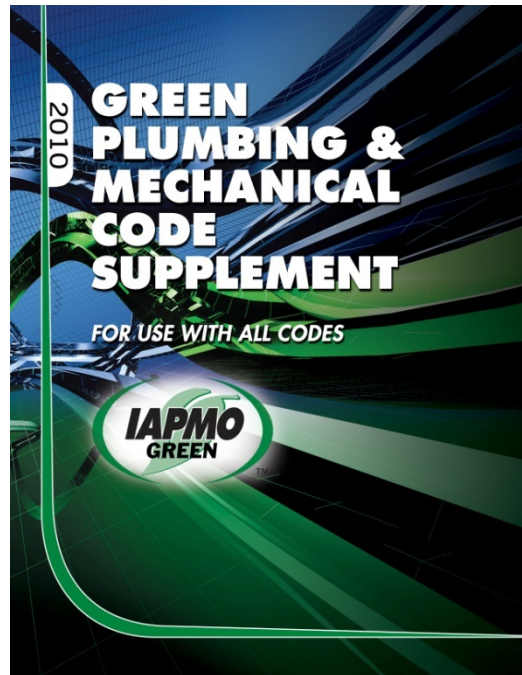


Adoptions



- Los Angeles water conservation ordinance
- Georgia Senate Bill 370, water conservation law
- Chicago Metropolitan Agency for Planning Model Water Conservation Ordinance
- City of Houston Plumbing Code
- South Dakota
- India
- Kuwait
- National Standard Plumbing Code- Appendix G
- Oregon Reach
- California AB 275 awaiting Governor's signature

What does it Cover?



Water Efficiency and Conservation



- 20% + more efficient than UPC
- Coverage areas:
 - High efficiency plumbing fittings, fixtures and appliances.
 - Occupancy specific provision in restaurants and medical facilities
 - Water softening equipment
 - Submeters
 - HVAC systems

Alternate Water Source Systems (AWSS)

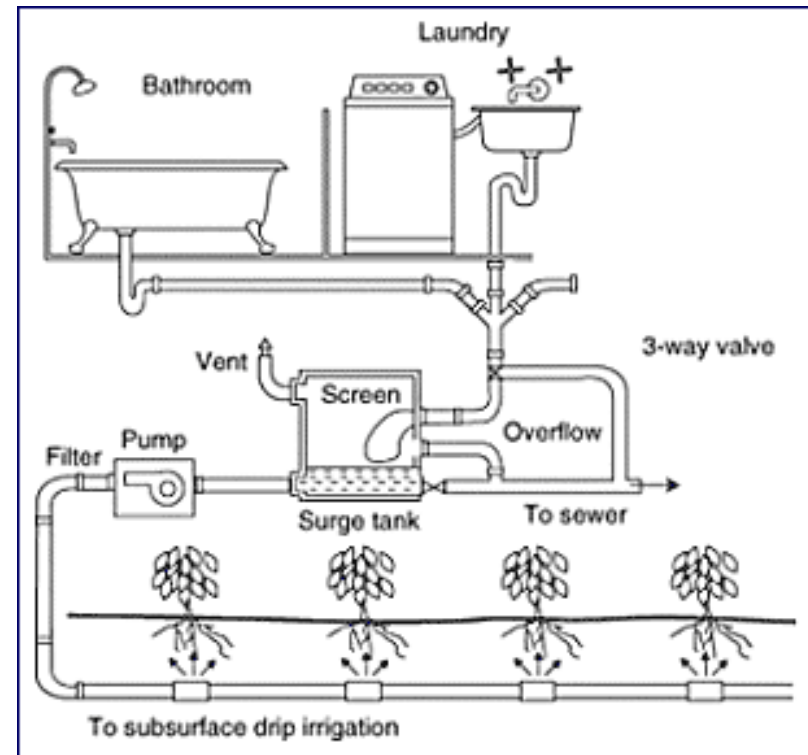


- Comprehensive provisions addressing
 - Gray water
 - Rainwater harvesting (nonpotable and potable)
 - Reclaimed (recycled) water
 - On-site treated nonpotable water systems.
- Design, installation and maintenance provision

Gray Water



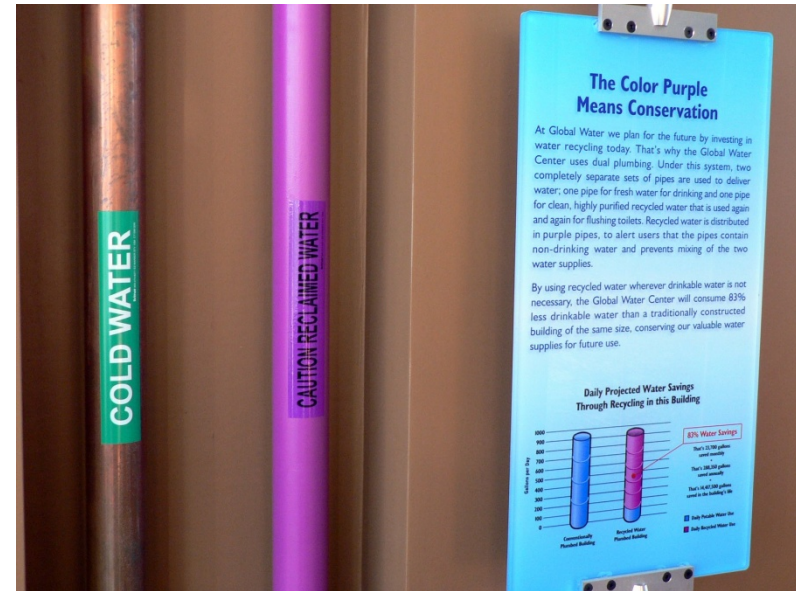
- Untreated waste from:
 - bathtub
 - shower
 - lavatory
 - clothes washer
 - laundry tub
- Irrigation only
- Commercial and residential use



Reclaimed (Recycled) Water



- Non-potable water provided by water wastewater utility
- Municipally treated
- High quality and reliability
- Based on UPC, Chapter 16
- Irrigation and toilet and urinal flushing



Nonpotable Rainwater Catchment System Provisions



- Developed in tandem with ASPE/ARCSA Design Standard
- Applications:
 - Flushing toilets and urinals
 - Trap priming
 - Irrigation
 - Water features
 - Cooling tower makeup water



Potable Rainwater Catchment System Provisions



- Based on ASPE/ARCSA Design Standard
- Provisions included in Appendix



On-Site Treated Nonpotable Water System



On-Site Treated Nonpotable Water System

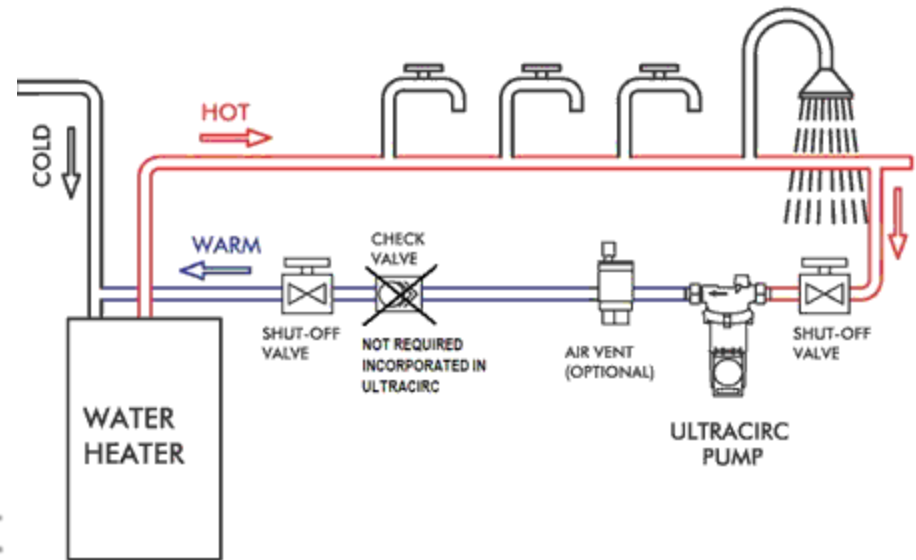


- Gray water emphasized
 - Condensate, rainwater, storm water can be used
- Fixture flushing, trap priming and irrigation
- System and components must be 3rd party certified
- Installed in accordance with listing
- Required treatment:
 - Chlorination
 - UV sterilization
 - Ozone

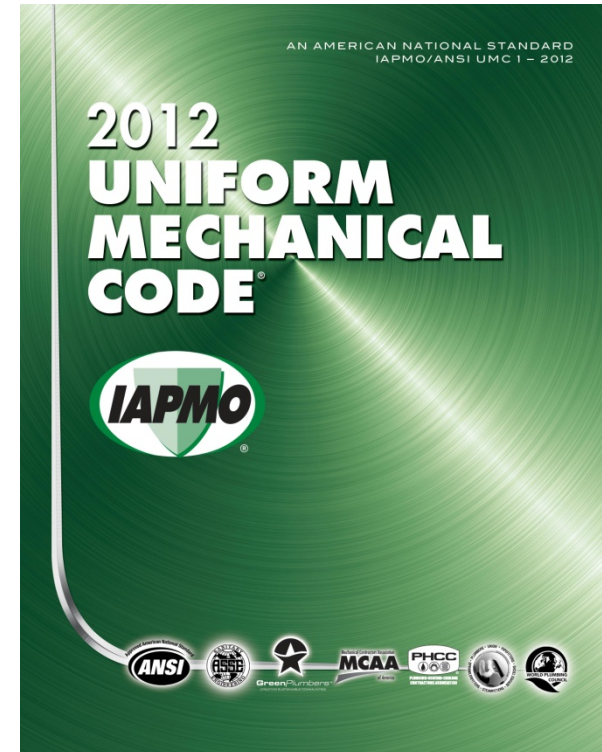
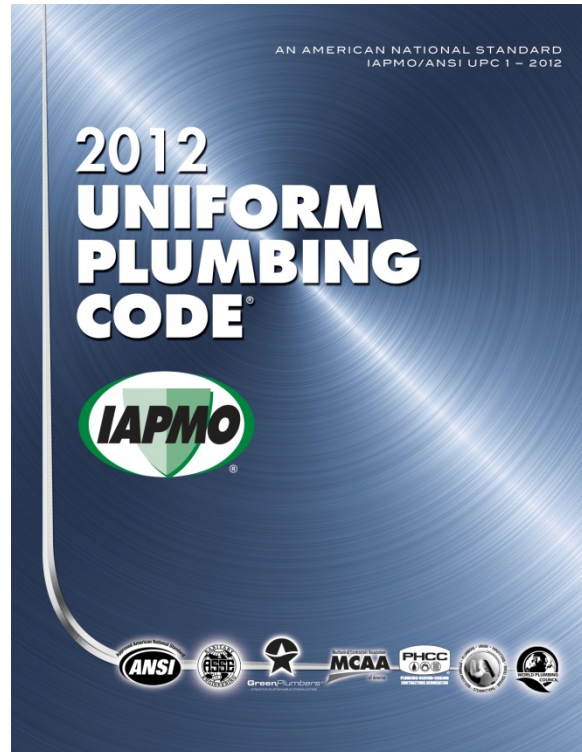
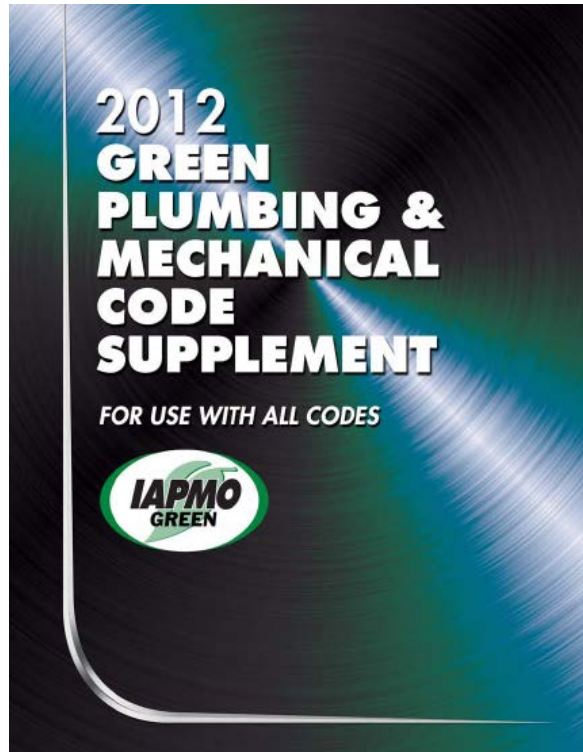
Water Heating System Design, Equipment and Installation



- Comprehensive provisions addressing water heating system efficiency.
 - Equipment efficiency
 - Insulation
 - Recirculation
 - Maximum volume of hot water
 - System controls



What's New in 2012



Clarify scope of on-site treated nonpotable water sources



- 2010 emphasized gray water
- 2012 specifically includes:
 - Gray water
 - Black water
 - Rainwater
 - Stormwater
 - Condensate
 - Dry weather run off
- Keeps RWH section separate and simple

Clarify Who is Able to Design AWSS Systems



- 2010 required design by person registered or licensed to perform plumbing design work
- 2012 will also allow a person who demonstrates competency to design AWSS

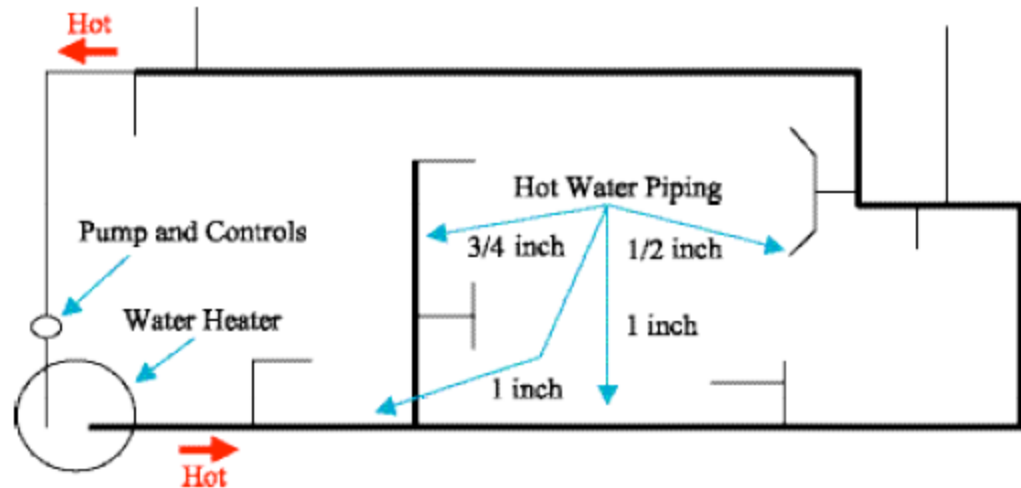
Water Quality Req'ts for AWSS

- 2010 required AHJ to determine minimum water quality
 - No standards or broadly accepted guidelines were available
- 2012 will contain the following:
 - Gray water treatment systems must be tested and certified to IAPMO IGC 207 or NSF 350.
 - Effluent of RWH systems must meet minimum water quality parameters and testing

Efficient HW Systems



- Simplified maximum hot water volume calculations
 - No recirculation or heat trace- 32 oz (1/4 gal) max from WH to fixture fitting
 - Recirculation or heat trace – 16 oz (1/8 gal) max for run out



Source: Gary Klein

Efficient HW Systems



- Recirculation pump control options:
 - On demand
 - Time clocks with temperature sensing
 - 15 minute max operation time
 - Sensors stop circulation when set temperature reached

Landscape Irrigation



- New comprehensive section addressing landscape irrigation systems
- Does not establish limits on landscape area or plant material
- Req'rs irrigation controls to respond to climate or soil conditions
- Sensor to shut off system during rain event



Landscape Irrigation



- System performance requirements:
 - Designed to prevent run off
 - No supply line drainage
 - Irrigation water is not permitted to be applied to non-target areas such as:
 - Adjacent property
 - Impervious surfaces
 - Buildings
 - Sprinkler head performance requirements
 - Designers, installers and contractors must demonstrate competency

Plumbing Water Efficiency Performance Path



- 2010 established consumption limits on plumbing fixtures and fixture fittings
- 2012 –Performance path being considered
 - aggregate reduction in consumption of at least 20% to be calculated
 - Baseline is EPACT and ASME A112.18.1

New Fixture Fitting Flow Rate Limits



- Kitchen sink faucet
 - 1.8 gpm maximum
 - May temporarily increase the flow to a maximum of 2.2 gpm
 - Must default to a maximum flow rate of 1.8 gpm
 - Still debating default trigger



New Fixture Fitting Consumption Limits



- Prerinse spray valve –
 - Reduced from 1.6 gpm to 1.3 gpm
- Dipper well faucets –
 - Metered flow not to exceed 2.2 gpm
 - Continuous flow- not to exceed capacity of well in 1 minute



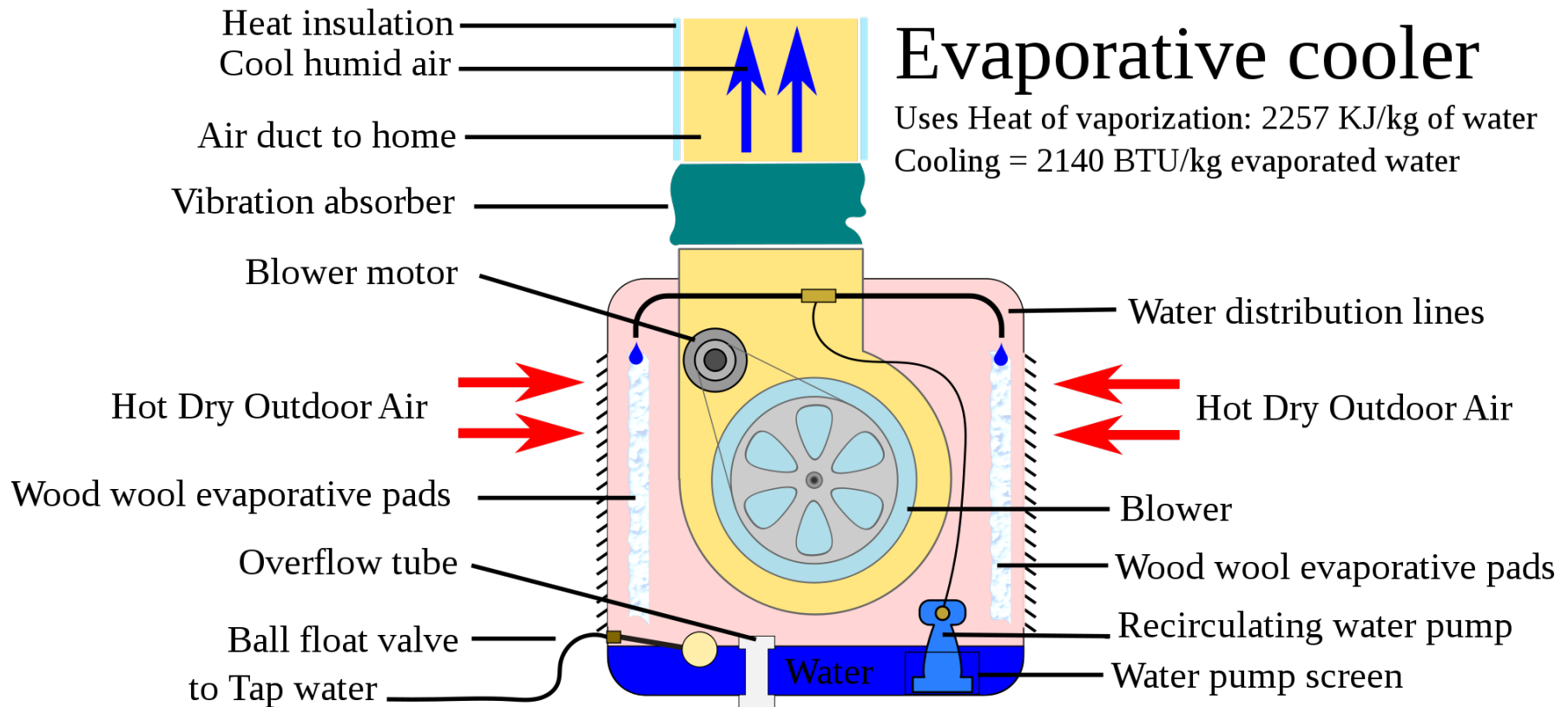
Automated Vehicle Wash Facilities



- 40 gallons max for automatic in-bay car washing
- 35 gallons max for conveyor car washing
- Recycle spot free rinse
- 3.0 gpm for spray wands and foamers



Evaporative Cooler Water Use (Swamp Cooler)



Evaporative Cooler Water Use (Swamp Cooler)



- 3.5 gal max per ton of cooling
- Consumption shall be indicated on equipment
- Overflow alarm
- Auto pump shut off
- Continuous discharge prohibited
- Discharge reuse in AWSS, where available

2012 UPC



- IAPMO philosophy - turnkey document
- Greenest plumbing code ever published
- New Chapter 17 addressing RWH
- Chapter 16 completely updated to incorporate the AWSS from GPMCS
 - Expanded use of gray water
 - Addition of on-site treated nonpotable water sources
- New appendix including GPMCS provisions

2012 UMC



- Greenest mechanical code ever published
- New section on geothermal systems
- New appendix including GPMCS provisions

Thank You



Visit web page at:

www.iapmogreen.org

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