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An American National Standard

Water Efficiency and Sanitation Standard for Use In and Around Buildings

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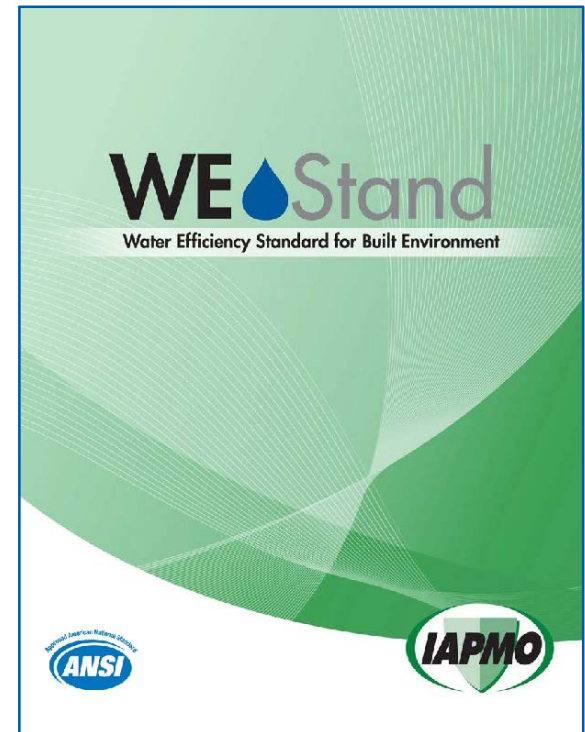
Executive Vice President of Advocacy and Research

International Association of Plumbing and Mechanical Officials (IAPMO)

Agenda



- Brief Introduction to the IAPMO Group
 - Our Work In Context
- **WE**💧Stand
 - Why is it needed?
 - What's in it?
 - Who did it?
 - Where and How does it happen?
 - When does it happen?
 - What's next?
- Q&A



The IAPMO Group – Our Work in Context



Complete International Service Organization

- Code Development
- Standards Development
- Training and Education
 - From market access to capacity building
- Accredited Industry Leading Compliance Programs
- Test Labs, 3rd Party Certification Program, Continuous Compliance Inspection Program
- We Focus On Where Water Meets People



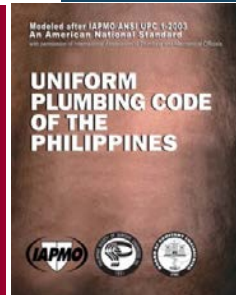
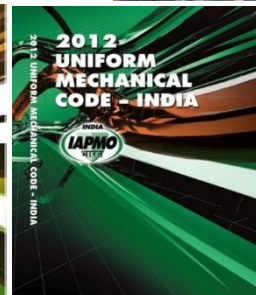
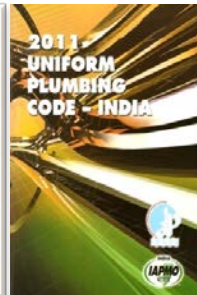
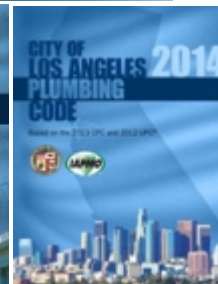
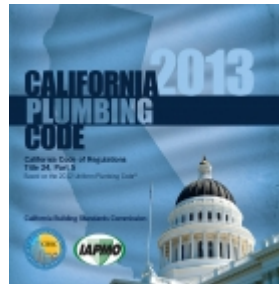
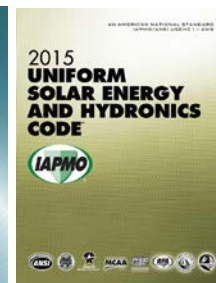
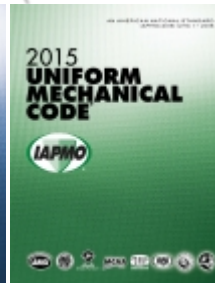
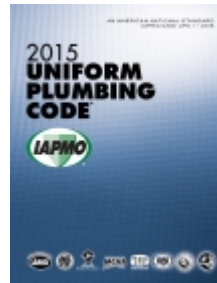
IAPMO Global Presence



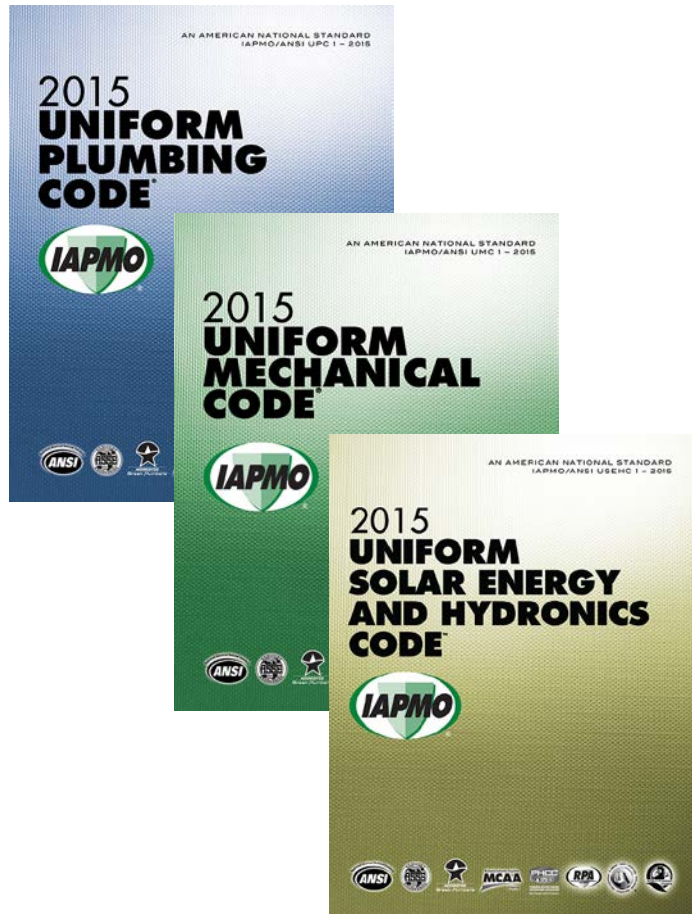
International Reach



- USA
 - UPC, UMC, USPC, USEC (American National Standards)
- India
- Philippines
- Vietnam
- Kuwait
- Jordan
- Indonesia



IAPMO Baseline Codes



- Installation code of practices
- References hundreds of product standards
- ANSI accredited consensus process – fair, balanced, transparent, all stakeholders have a vote throughout the entire development process
- Addresses both energy and water efficiency
- 2012 UPC – 1st model code in the USA with provisions for rainwater catchment, gray water and reclaimed water in the body of the code



An American National Standard

Water Efficiency and Sanitation Standard for Use In and Around Buildings

All Codes & Standards Are NOT Created Equal



- IAPMO Codes are published as American National Standards (ANSI standards)
- Requires a strict set of development procedures and a balanced development committee - no interest group can dominate the development process
- Public review requirements insure all submitted comments are properly addressed and considered
- Vigorous appeals process, including ultimate direct appeal to ANSI
- Standards not designated as ANSI standards do not need to comply with such strict requirements
- It's left to the SDO to determine the procedures and actual level of consensus



Why is WE Stand Needed?

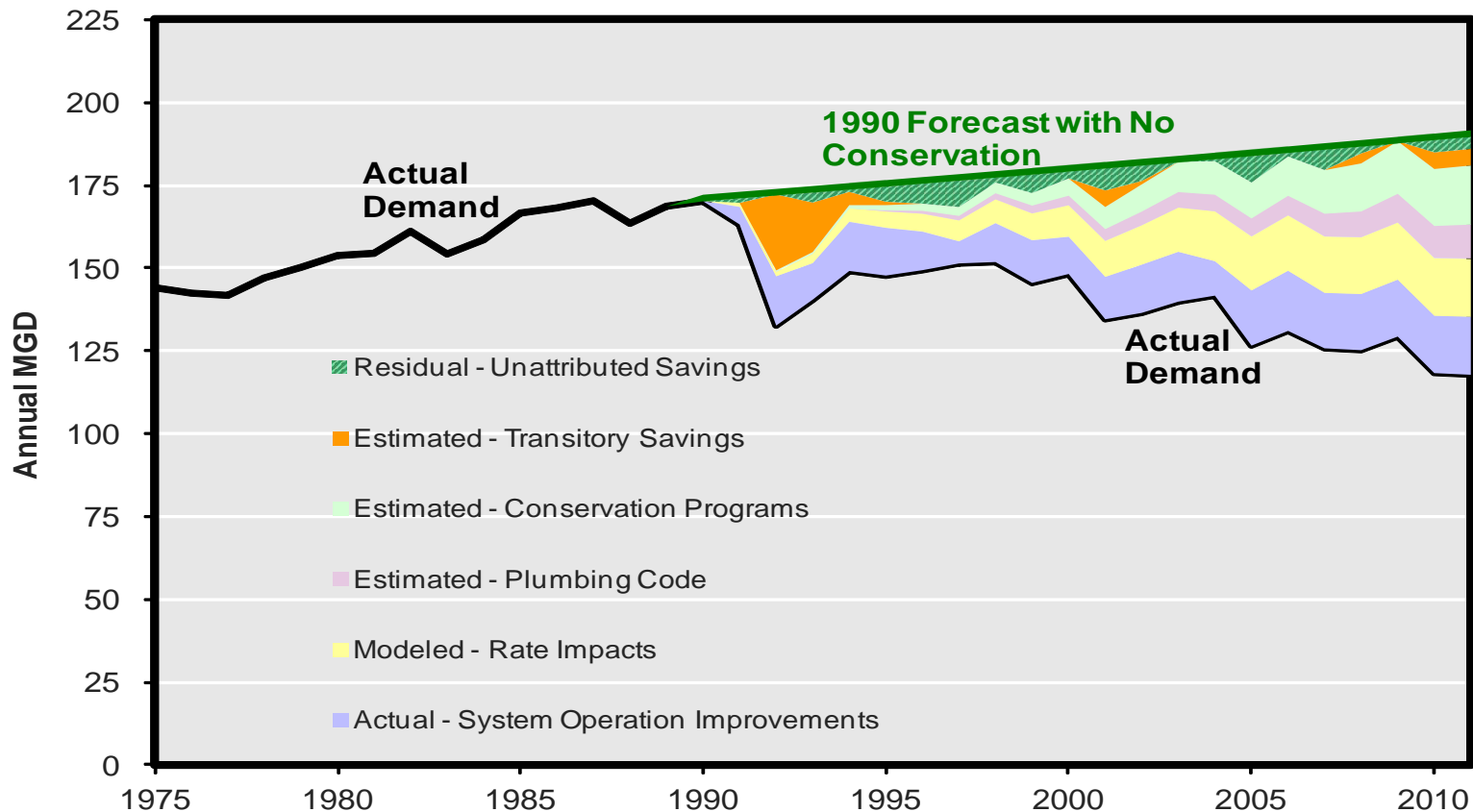


Why is WE[💧]Stand Needed?

How We Use Water Is Changing



Impact of Conservation on Historical Water Demand
Components of Conservation Savings Since 1990



Example from Seattle Public Utilities

Why is WE💧Stand Needed

Need, Purpose and Scope Statement



With increasing demand, constrained infrastructure and supplies, and pervasive droughts globally, there is a critical need to reduce water consumption attributed to the built environment through conservation and reuse. With this comes increased risks to public health, safety, and building systems performance. This ANS would provide minimum requirements that optimize built environment water use practices and corresponding provisions that maintain protection to public health, safety, and welfare.

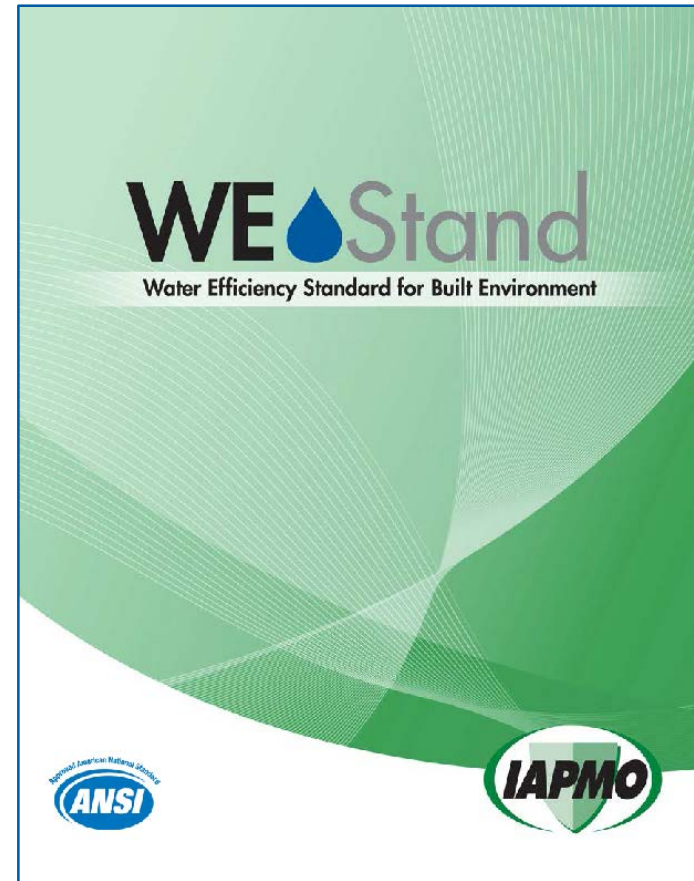
The purpose of this standard is to provide progressive codified requirements to optimize water use practices attributed to the built environment while maintaining protection of the public health, safety and welfare.

WE💧Stand applies to both residential and commercial construction.

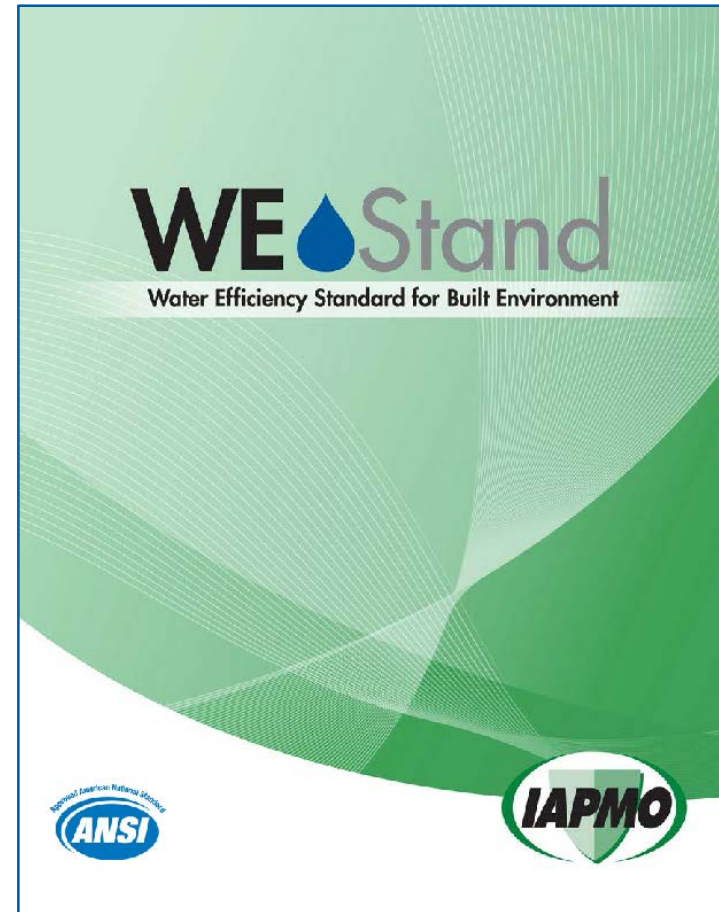
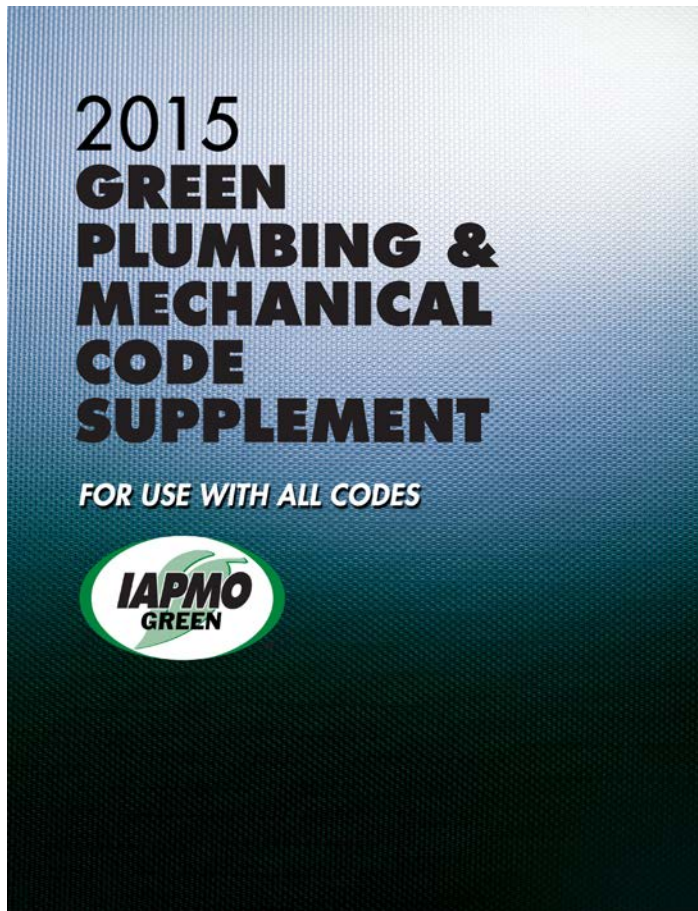
Why is WE💧Stand Needed



- Fills a need for an American National Standard that focuses solely on Water Efficiency
- Publication as a standard allows for multiple means of adoption by States and municipalities
- Allows for bringing together the best minds in the water efficiency industries to develop a robust and comprehensive standard



WE[💧]Stand Will Replace the IAPMO GPMCS



Who Did It?

Organization of WE💧Stand



- **Executive Committee**

IAPMO CEO, IAPMO COO, and Senior VP of Advocacy and Research who govern the Technical Committee

- **Secretariat (IAPMO)**

Maintains records and roster, publishes reports, oversees compliance with Regulations

- **Technical Committee**

Responsible for developing the **WE💧Stand**. Need to be balanced by interest categories

- **Task Groups**

Created by the TC to address specific topics or problems.

- **Technical Correlating Committee**

Responsible to resolve conflicts, correcting errors and omissions

Who Did It?

The WE[♾]Stand Technical Committee Affiliations



- **Alliance for Water Efficiency**
 - L.A. Department of Water and Power
 - National and Illinois PHCC
 - Kohler Company
 - American Society of Plumbing Engineers
 - Irrigation Association
 - The Association of Pool and Spa Professionals
 - California Pipe Trades Council
 - The Water Institute of UNC
 - Water Quality Association
 - **Southern Nevada Water Authority**
 - CA Department of Housing and Community Development
 - United Association
 - Greywater Action
 - Plumbing Manufacturers International
 - Koeller and Company
 - City of Santa Monica
 - Haines, Jones, and Cadbury
 - California Energy Commission
-

The WE💧Stand Supporting Organizations



What's In It?

WE💧Stand Contents



- Administration
- Definitions
- General Regulations
- Water Efficiency and Conservation
- Alternate Water Sources for NonPotable Applications
- Nonpotable Rainwater Catchment Systems
- Water Heating Design, Equipment and Installation
- Installer Qualifications
- Referenced Standards
- Appendices

Potable Rainwater Catchment Systems

Vacuum Drainage Systems

What's In It?

Indoor & Outdoor Water Efficiency



- Fixtures, Fittings & Appliances – Thoughtful provisions for safe and efficient consumption and flow rate requirements
- Composting – Contains the first set of comprehensive codified requirements for composting and urine diversion toilets – for commercial and residential applications.
- Leak detection – Important new safety provisions for leak detection systems
- Landscape Irrigation – Important new provisions for system inspection and performance.
- New pool pumps requirements for energy efficiency

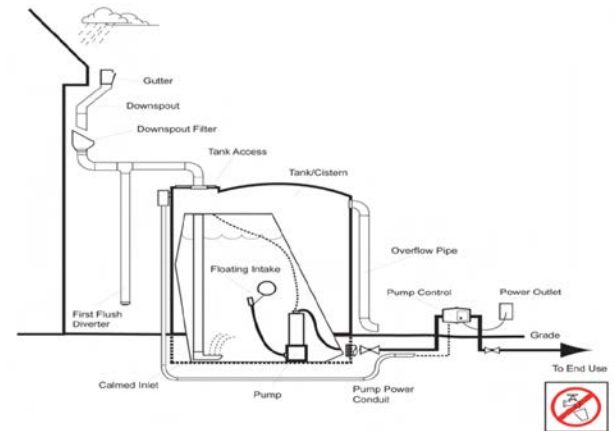


What's In It?

Alternate Water Sources



- Progressive provisions for uses of gray water generated from clothes washers in landscape irrigation.
- New requirements that reduce the cost of retrofitting gray water systems in single family homes.
- Allows for the installation of rainwater catchment systems up to 5000 gallons for non-potable uses without requiring inspections under certain conditions, reducing costs to owners



What's In It?

Hot Water Efficiency and Pipe Sizing



- New: Flow Through Design Fittings - reduce stagnation, help keep systems free from biofilm growth, improve hot water delivery efficiencies.
 - Big News!! New water supply pipe sizing method and demand calculator
 - The first comprehensive pipe sizing method advancement since Hunter's Curve
 - Works with all pipe materials and residential systems of all sizes, even multifamily.
 - Easy to use Demand Calculator determines pipe size based on today's plumbing fixtures and appliances and usage patterns.
 - Results in: improved scouring action in water pipes – inhibits biofilm growth; shorter water dwell times in premise plumbing systems – improves water quality; faster hot water delivery times throughout the plumbing system – saves energy, water and \$; Reduced construction costs
-

The Future of Residential Water Distribution and Sizing

Water Demand Calculator



[A] FIXTURE		[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bathtub	0	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	1	5.5	3.5	3.5
5	Combination Bath/Shower	1	5.5	5.5	5.5
6	Dishwasher	1	0.5	1.3	1.3
7	Kitchen Faucet	1	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	1	2.0	1.5	1.5
10	Shower, per head	0	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	1	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures 6

99th PERCENTILE DEMAND FLOW = 8.5 GPM

RESET

RUN WATER
DEMAND
CALCULATOR

Applying a new statistical-based method to safely reduce pipe diameters in homes reduces cost, improves both water and energy efficiency and helps to mitigate biofilm development in water pipes, improving water quality and the potential for opportunistic pathogens to grow.

Where and How Does It Happen?

WE♠Stand Development Process



All WE♠Stand meetings are convened in Ontario, CA

Two Stages of Development

1. Proposal Stage

- a) Call for submission and publication of proposals
- b) Open meeting for TC actions on the proposals
- c) Letter Ballot affirmation on TC actions
- d) Publication of the Report on Proposals

2. Comment Stage

- a) Call for public comments on TC actions in the ROP
 - b) Open meeting for TC actions on the public comments
 - c) Letter ballot affirmation on TC actions
 - d) Publication of the Report on Comments
-

When Does It Happen?

2020 WE💧Stand Code Cycle (3 Year Development Cycle)



October 16 2017	Call for TC Applications (45 days)
January 5, 2018	Call for Task Group Members (45 days)
March 5, 2018 – December 14, 2018	Task Group Activity
June 5, 2018	WEStand Development Process via WebEx Teleconference
October 1, 2018	Call for Proposals
January 29, 2019	Deadline for Submission of Proposals
March 1, 2019	Distribution of Proposals to Committee (Proposal Monograph)
April 9-10, 2019	Technical Committee Meetings
April 25, 2019	Initial Ballot to Technical Committee
May 9, 2019	Receipt of Initial Ballots and Circulation of Comments
May 23, 2019	Final Closing Date for Ballots and Includes Receipt of Vote Changes Based on Re-Circulated Comments

What's Next?

Here's what the TC has teed up for the 2020 WE⁺Stand Code Cycle



- Alternate Water Sources
 - New requirements for **stormwater** treatment and uses
 - New requirements for **black water** treatment and uses
 - The safe reuse of **commercial kitchen effluent**
- Net Zero Water and Waste
 - Considerations for safely attaining **net-zero water and waste** performance in buildings

Commercial Food Service

- Consideration of **new water efficiency provisions** for **convenience stores** (i.e. Slurpee Machines)
 - Food waste management – **new biological and composting technologies**
 - RO efficiency markers for **reject water**
-

What's Next?

Here's what the TC has teed up for the 2020 WE⁺Stand Code Cycle



- Composting
 - Informative Appendix on the proper installation and maintenance of composting toilets
 - Installer Qualifications
 - New certification recommendations – helps ensure proper installation of water efficient technologies
 - Premise Water Supply Systems
 - Efficient Arrangement of plumbing fixtures – Compact Distribution Strategies – improves water and energy efficiency and water quality
 - Investigation into minimum and maximum water flow velocities in premise plumbing
 - Appropriate uses and maximum length requirement for 3/8" diameter tubing
 - Sustainable Drinking Water Treatment
 - New references of industry standards addressing water treatment technologies
-

WE💧Stand Web Page – Visit and Get Involved!



Click on “Technical Committee” to download application

IAPMO > WEStand

- Document Information
- Technical Committee
- Articles/Community
- Green Plumbing and Mechanical Code Supplement

WE💧Stand

In November 2017, IAPMO's Water Efficiency and Sanitation Standard (WE•Stand) will publish as an American National Standard, replacing the *Green Plumbing and Mechanical Code Supplement*. The publication of WE•Stand is noteworthy, as it is the first-ever ANSI standard that focuses solely on achieving safe and efficient water use in both residential and non-residential buildings.

The WE•Stand Technical Committee (TC): The on-time publication of WE•Stand is a result of the excellent work of the dedicated WE•Stand TC. Comprised of 29 leading industry experts, the provisions contained in the standard reflect the centuries of collective experience and knowledge of the committee. The TC worked under a tight development deadline to finish its work per the abbreviated published timeline. With representation from code officials, manufacturers, plumbing engineers, contractors, the plumbing trades, water-efficiency proponents, water utilities, landscape irrigation experts, representatives of other associations and academia, the contents contained in the 2017 WE•Stand contains the latest comprehensive provisions aimed at achieving safe and reliable water efficiencies in and around buildings. IAPMO sincerely appreciates the efforts of the WE•Stand TC!

What's in it? See below for just a few of the significant new provisions contained in the inaugural edition of WE•Stand:

New Water Demand Calculator: Big news! WE•Stand provides a new alternative to Hunter's Curve when estimating water supply demand for residential buildings! This achievement represents the first practical application of an improved method since the 1940s that does not result in excessive over design and oversizing pipes. The method is applicable for both single- and multi-family dwellings. A complimentary, easy-to-use Demand Calculator estimates the supply demand for the whole building, as well as cold and hot water branches and risers for indoor water use based on today's plumbing fixtures and appliances and usage patterns. The Water Demand Calculator works in conjunction with any commonly accepted rules and procedures for sizing the water supply system. This results in: improved scouring action in water pipes, inhibiting biofilm growth; shorter water dwell times in premise plumbing systems, improving water quality; faster hot water delivery times throughout the plumbing system, saving energy, water and money; and reduced construction costs. Is this a big deal? You bet it is. Plumbing systems designed utilizing the new method will deliver water and energy efficiencies for the entire life of the plumbing system, at a reduced cost! It is now available for use with any baseline plumbing code.

Region	Spatial Scale	Range for $H(n,p)$	Method
A	Small	$0 < H(n,p) < 0.25$	Exhaustive Enumeration; $q_1 + q_3$
B	Small to Intermediate	$0.25 \leq H(n,p) < 1.25$	Exhaustive Enumeration
C	Intermediate to Large	$1.25 \leq H(n,p) < 5.00$	Modified Wistort Method
D	Large	$H(n,p) \geq 5.00$	Wistort Method

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For more information visit <http://www.iapmo.org/WEStand/Pages/default.aspx>

WE Thank you!!

WE  Stand

An American National Standard

Water Efficiency and Sanitation
for the Built Environment
