Water Efficiency: How to Make Green Building More Blue

Mary Ann Dickinson
Executive Director
Alliance for Water Efficiency
40 of the 50 States

Number in parenthesis ( ) indicates the number of states in each category.

Source: GAO analysis of state water managers’ responses to GAO survey.
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm
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Released Thursday, September 3, 2009
Author: Brad Rippey, U.S. Department of Agriculture
$533 Billion by 2020

20 Year Drinking Water and Clean Water Infrastructure Needs by EPA Region
Where Will the $ Come From?

- $787 Billion in ARRA Stimulus Funding
- Only $6 Billion for water infrastructure
- $533 Billion required by 2020
- $6 Billion in ARRA: $531 Billion to go!
- 20% “green” set-aside for water & energy efficiency and innovative environmental projects
- But green projects still not getting funded
Water Resources and Population Growth, 2000-2020
Source: DOE/NETL (M. Chan, July 2002)
The Sobering Facts

- ½ of homes that will exist in 2030 have not yet been built
- Studies are showing that new homes are using **12-80%** more water than their existing counterparts
- High water use not just high-end homes
  - *Hot Water Delivery*
  - *Shower “systems”*
  - *Unmanaged irrigation*
Mattapoisett River, Mattapoisett
October 19, 2007
At Last: A Water Label

- Program announced June, 2006
- Voluntary program only
- Energy Star companion
- 20% more efficient
- Performance Tested
- Toilets, Faucets, Urinals
- Irrigation Equipment
- New Homes for “Green Building”
What IS “Green Building”? 

According to U.S. EPA:

- Increasing the efficiency with which buildings and their sites use and harvest energy, **water**, and materials; and
- Protecting and restoring human health and the environment, throughout the building life-cycle: siting, design, construction, operation, maintenance, renovation and deconstruction.”
What IS “Green Building”? 

According to Wikipedia: 

- “A sustainable or green building focuses on increasing the efficiency of resource use -- energy, water, and materials -- while reducing building impacts on human health and the environment during the building's lifecycle, through better siting, design, construction, operation, maintenance, and removal.”
Historical Activity

- USGBC LEED would award points for efficient fixtures required by the Energy Policy Act plumbing code
- Water considered as an infiltration opportunity to prevent storm water runoff
- Very few points awarded for water
- Green roofs irrigated with potable water
- 30-60% of urban water consumption is unmanaged outdoor irrigation
- Opportunity for green building to be more water-responsive
“Green Building” Guidelines

- USGBC LEED Program: “LEED 2009”
- U.S. EPA WaterSense for New Homes
- CHPS - Collaborative for High Performance Schools
- GGHC - Green Guide for Health Care™
- Built Green™
- Florida Water Star
- Environments for Living® (Masco)
- Build-it-Green™
ANSI Standard

1. **Green Globes Building Initiative (GBI)**
   - GBI American National Standard 01-200XP: Green Building Assessment Protocol for Commercial Buildings” (above 3 stories)

2. **American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)**

3. **Nat. Assciation of Home Builders (NAHB)**
   - National Green Building Standard
   - International Code Council, ASHRAE co-sponsors
   - For homes & lodging: single & multi-family, hotels & motels, new construction & remodeling
<table>
<thead>
<tr>
<th>Applications</th>
<th>Guidelines or standard?</th>
<th>Code-adoptable language?</th>
<th>Minimum thresholds or points?</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>USGBC LEED-NC et.al.</td>
<td>Guidelines</td>
<td>No</td>
<td>Points</td>
<td>LEED 2009 mandates 20% reduction from baseline</td>
</tr>
<tr>
<td>USGBC LEED-Homes</td>
<td>Guidelines</td>
<td>No</td>
<td>Both</td>
<td>Active</td>
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<tr>
<td>Green Globes – Green Bldg Initiative 01-200XP</td>
<td>ANSI Standard</td>
<td>Yes</td>
<td>Points</td>
<td>Public comment period closed; final draft to be issued</td>
</tr>
<tr>
<td>ASHRAE S189.1 – High Performance Buildings</td>
<td>ANSI Standard</td>
<td>Yes</td>
<td>Minimum thresholds</td>
<td>Public comment period closed; final draft to be issued</td>
</tr>
<tr>
<td>ASHRAE S191 – Water Efficiency</td>
<td>ANSI Standard</td>
<td>Yes</td>
<td>Minimum thresholds</td>
<td>Process began July 1, 2008; provisions being drafted</td>
</tr>
<tr>
<td>NAHB Green Bldg Standard for Homes</td>
<td>ANSI Standard</td>
<td>Yes</td>
<td>Points</td>
<td>Process complete; standard is ANSI approved</td>
</tr>
<tr>
<td>IAPMO Green Plumbing &amp; Mechanical Code Supplement</td>
<td>ANSI Standard (future)</td>
<td>Yes</td>
<td>Minimum Thresholds</td>
<td>1st draft released for public comment on Aug 28, 2009</td>
</tr>
<tr>
<td>WaterSense for New Homes</td>
<td>Guidelines</td>
<td>No</td>
<td>Minimum thresholds</td>
<td>Final to be issued by year end</td>
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</table>
USGBC LEED Program

- Covers nearly all types of buildings except SF residential
- Water Efficiency Technical Advisory Group
- LEED 2009 added an important water prerequisite...
  1. Mandatory 20% reduction in water use from a calculated baseline
  2. Cumulative across all EPAct plumbing products
  3. Baseline is EPAct 1992 for all plumbing, EXCEPT lavatory faucets
USGBC LEED Program

- Faucets were set by EPAct 1992 at 2.2 gpm maximum
- Superseded by model plumbing codes for commercial at 0.5 gpm = baseline
- Earn 1 point for achieving 30%, another 1 point for 40% reduction
- LEED 2012 is in development
WaterSense for New Homes

- Guidelines for water-efficient new homes (3 stories & less)
- Revised draft specification released May 2009
- Inspection guidelines a part of the program
- Water efficiency is 100% of the program - minimum thresholds
WaterSense for New Homes

- WaterSense HETs required
- Other water-using equipment & designs: appliances, water treatment systems, structured plumbing, landscape & landscape irrigation
- Provides a common basis or template for governments adopting “green building” programs for new homes
- Pilot Homes built
- Final specification likely to be issued by EPA by end of 2009
Green Globes - GBI

- Standard 01-200XP: “Green Building Assessment Protocol for Commercial Buildings”
- More aggressive than LEED in water efficiency
- Proposed as an ANSI National Standard
- Numerous public review drafts - hundreds of comments
- Points-based (NO prescriptive thresholds)
Green Globes - GBI

- Covers commercial and residential
- **Does not cover** single family homes or low-rise MF (1 to 3 stories)
- HETs encouraged; includes all plumbing & appliances
- Focuses on water reuse for landscape & landscape irrigation
- Competes directly with ASHRAE S189.1
Nat. Assoc of Homebuilders

- NAHB National Green Building Standard
- ANSI national standard for new & remodeled homes, hotels, motels that are 3 stories & less
- Points-based
- Water efficiency a small part (6% to 9%)
Nat. Assoc of Homebuilders

- WaterSense HETs required
- Other water-using equipment & designs: urinals, faucets, showers, appliances, structured plumbing, landscape & landscape irrigation, graywater reuse, leak detection-automatic shut-off
- To provide a basis for home builders to build “green”
ASHRAE

- Standard 189.1 for High-Performance Buildings
- Developed in conjunction with USGBC
- Proposed as an ANSI National Standard
- Numerous public review drafts - hundreds of comments
Covers “high performance” buildings, including 4-story residential & higher
  • HETs required; includes all plumbing & appliances
  • Focuses on water reuse
  • Focuses on landscape & landscape irrigation

Does not cover single family homes or low-rise MF (1 to 3 stories)

Competes directly with Green Building Initiative (GBI)
IAPMO Green Plumbing & Mechanical Code

- Meant as a supplement to existing codes
- Sections may be adopted in whole or in part by jurisdictions
- Can supplement any code: UPC, IPC, UMC, other local codes
- **Does not cover** single family homes or low-rise MF (1 to 3 stories)
IAPMO

- Covers all areas of indoor water use efficiency
  - Plumbing systems and fixtures
  - Appliances and equipment
  - Alternate sources of water (gray, reclaimed, recycled, rain, condensate, other)
- 1st draft for public review just released (Aug 09)
- Will likely soon compete with a similar document from ICC
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<td>Guidelines</td>
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<td>USGBC LEED-Homes</td>
<td>Single Family Residential</td>
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Internet Resources

www.allianceforwaterefficiency.org
www.cuwcc.org
www.epa.gov/owm/water-efficiency/
www.epa.gov/watersense/ (WaterSense)
www.usgbc.org/
www.environmentsforliving.com/
www.floridawaterstar.com/
www.nahb.org/
www.fishnick.com (Food Service Technology Center)
Energy Bill Balancing Energy Production and Water Efficiency Advances

Congress acted on a comprehensive energy bill last week as the Senate Energy and Natural Resources Committee advanced legislation. The legislation highlights the nexus between water resources and energy production and begins to integrate decision-making related to both resources. Learn more here.

AWE Testifies Before Senate Subcommittee on Water and Wildlife

The Alliance for Water Efficiency urged Congress to ramp up the funding for WaterSense, the federal government's three-year-old program to promote and label more water efficient appliances and plumbing products. Learn more here.

American Recovery and Reinvestment Act Signed by President Obama

The Act signed by President Obama allocates $6 billion for local clean and drinking water infrastructure improvements. For more information on taking action to seek stimulus funding for your water utility visit here.
Resource Library

Welcome to the Alliance for Water Efficiency's Resource Library. AWE strives to provide the best on-line resources on water conservation and efficiency. Search through our collection and discover the wealth of useful technical information assembled. Enter keyword(s) in the search box below or select an library section from the list on the right. Search instructions and tips are available here.

Resource Library Search Tool

Use the tool below to search the Alliance for Water Efficiency library.

Basic Search  Advanced Search

Site  Search

Definition of Terms