This presentation premiered at WaterSmart Innovations

watersmartinnovations.com

watersmart
INNOVATIONS

30+ Years of Progress

What's next?

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watersmart INNOVATIONS 2017 10 YEARS

A look back at…

- Residential indoor water use
- WaterSmart Innovations Conference

Efficiency vs. Conservation

- ef·fi·cien·cy (noun): the ratio of the effective or useful output to the total input in any system; the ratio of the energy delivered by a machine to the energy supplied for its operation.

- con·ser·va·tion (noun): the act or process of conserving; the protection, preservation, management, or restoration of wildlife and of natural resources such as forests, soil, and water.

TABLE 2-A. WATER CONSUMPTION BY WATER-USING PLUMBING PRODUCTS AND APPLIANCES – 1980 TO 2012

Water-using Fixture or Appliance	1980s Water Use	1990 Requirement	EPAct 1992 Requirement	2009 Baseline Plumbing Code	2012 'Green Code' Requirement	% Reduction in avg water use since 1980s
Residential Bathroom Lavatory Faucet	3.5+ gpm	2.5 gpm	2.2 gpm	2.2 gpm	1.5 gpm	57%
Showerhead	3.5+ gpm	3.5 gpm	2.5 gpm	2.5 gpm	2.0 gpm	43%
Toilet – Residential	5.0+ gpf	3.5 gpf	1.6 gpf	1.6 gpf	1.28 gpf	74%
Toilet - Commercial	5.0+ gpf	3.5 gpf	1.6 gpf	1.6 gpf	1.6 gpf[1]	68%
Urinal	1.5 to 3.0+ gpf	1.5 to 3.0 gpf	1.0 gpf	1.0 gpf	0.5 gpf	67%
Commercial Lavatory Faucet	3.5+ gpm	2.5 gpm	2.2 gpm	0.5 gpm	0.5 gpm	86%
Food Service Pre-rinse Spray Valve	5.0+ gpm	No requirement	1.6 gpm (EPAct 2005)	No requirement	1.3 gpm	74%
Residential Clothes Washer	51 gallons/load	No requirement	26 gallons/load (2012 standard)	No requirement	16 gallons/load	67%
Residential Dishwasher	14 gallons/ cycle	No requirement	6.5 gallons/cycle (2012 standard)	No requirement	5.0 gallons/cycle (ASHRAE S191P)	64%

gpm: gallons per minute
gpf: gallons per flush

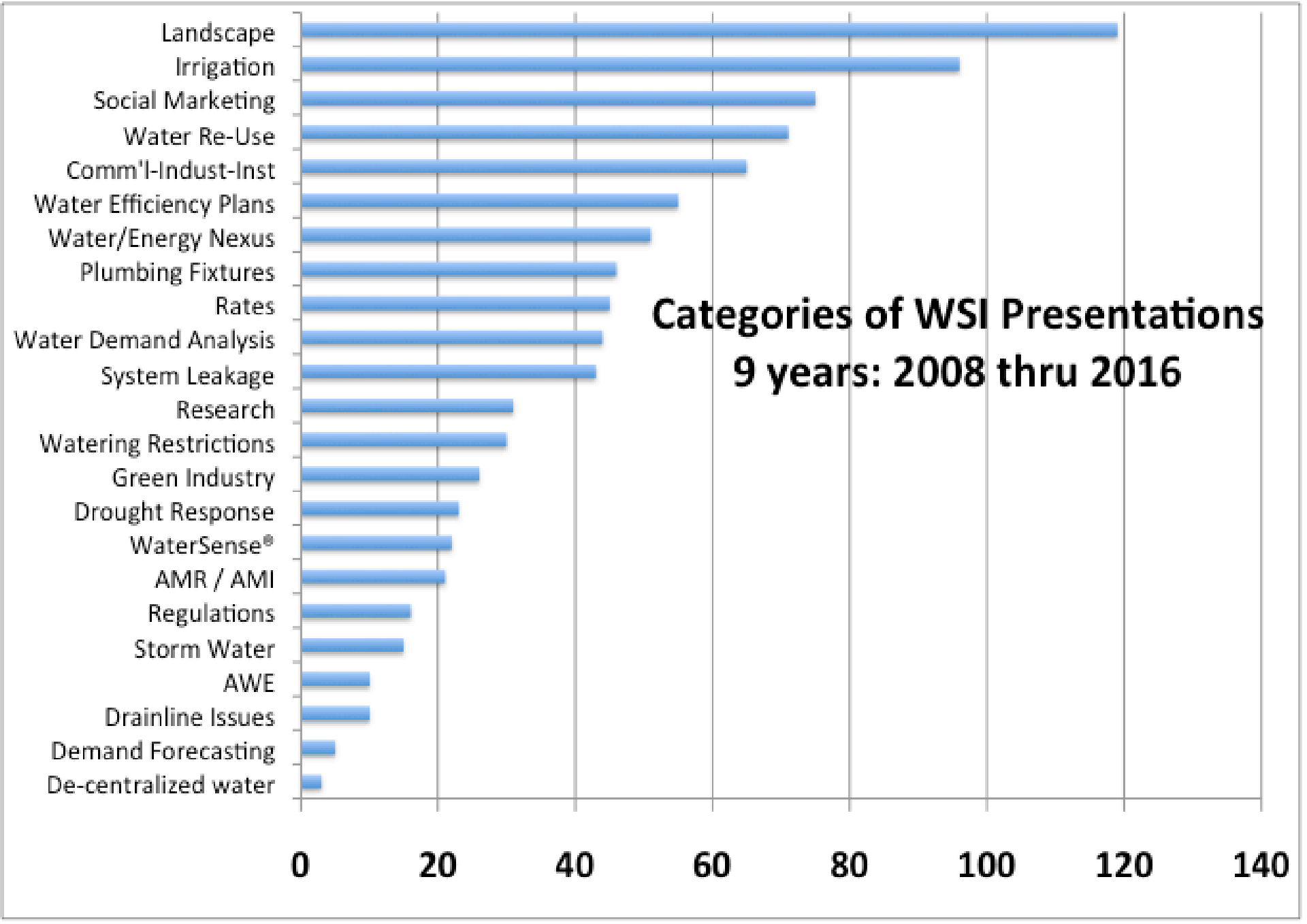
Results

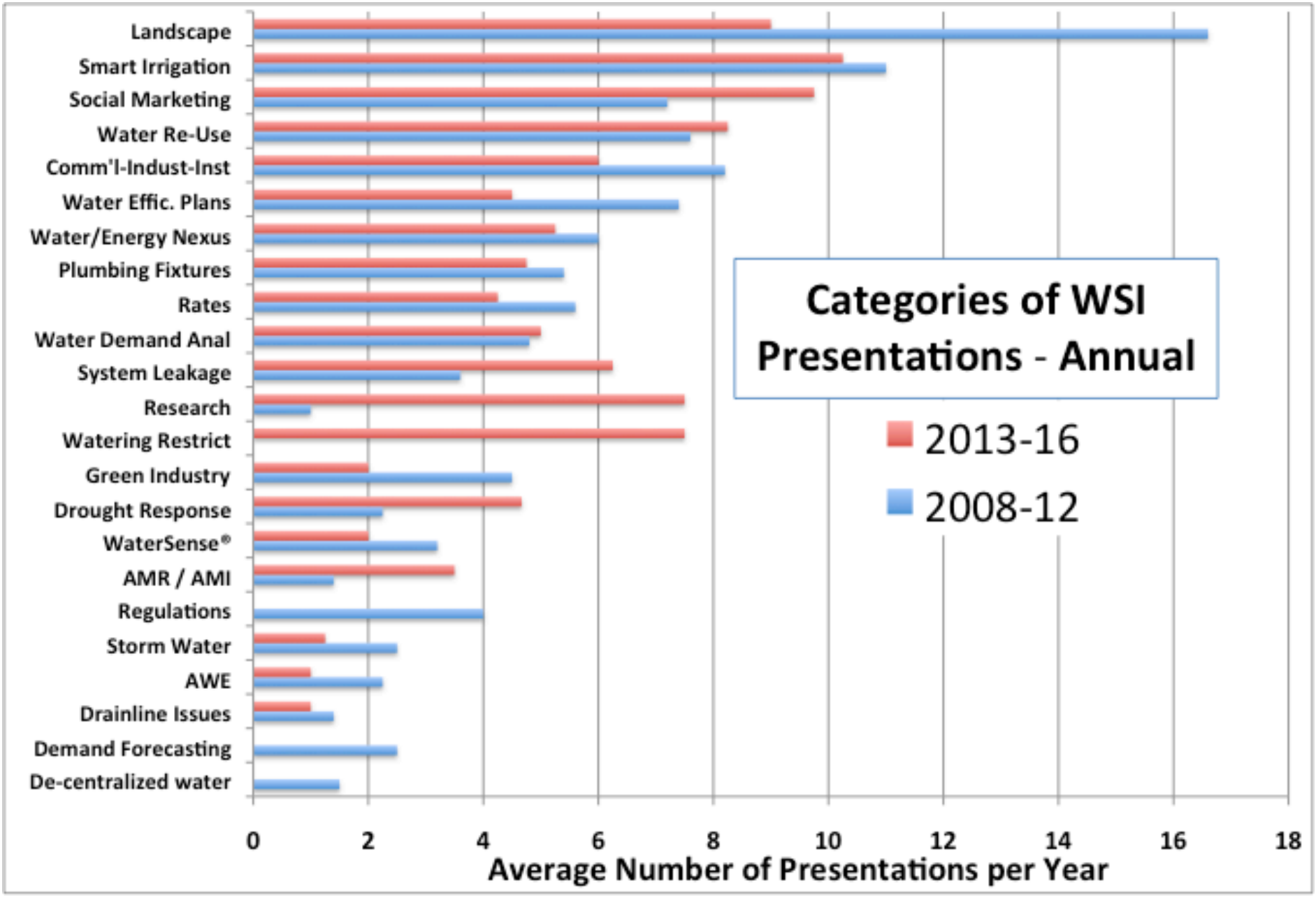
- Significant reductions in consumption
- *BUT* => unintended consequences:
  - Reduced liquids in drains & sewers
  - Increased drainline stoppages
  - Inattention to safety
  - Increases in pathogens
  - Wastewater treatment insufficiencies

WaterSmart Innovations

- 9 years of history!

- 1,122 different presentation sessions
  - ✓ 2008 thru 2012 – 132/year
  - ✓ 2013 thru 2016 – 116/year


Landscape
Irrigation
Social Marketing
Water Re-Use
Comm'l-Indust-Inst
Water Efficiency Plans
Water/Energy Nexus
Plumbing Fixtures
Rates
Water Demand Analysis
System Leakage
Research
Watering Restrictions
Green Industry
Drought Response
WaterSense®
AMR / AMI
Regulations
Storm Water
AWE
Drainline Issues
Demand Forecasting
De-centralized water
Categories of WSI Presentations
9 years: 2008 thru 2016
0
20
40
60
80
100
120
140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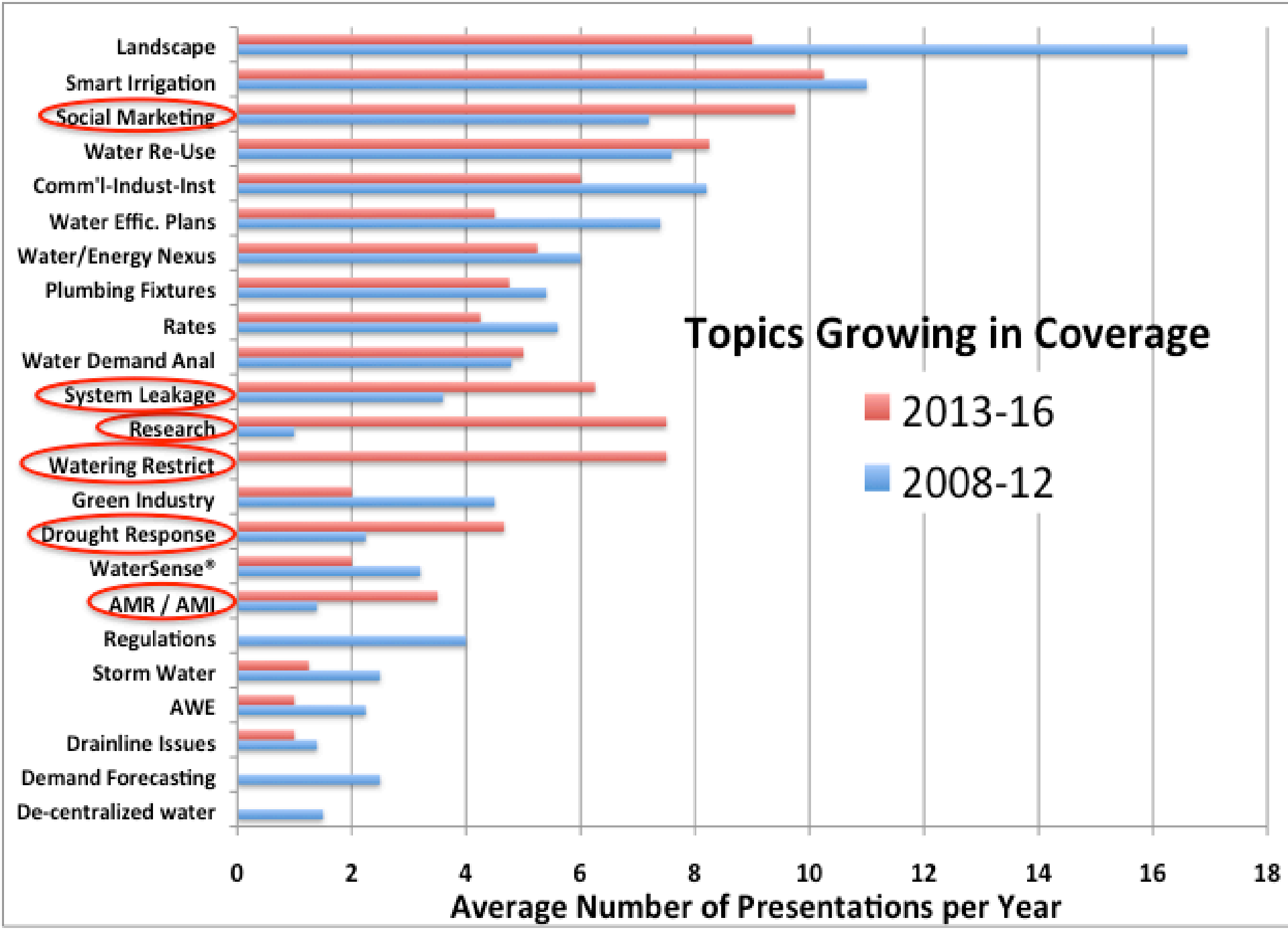
Categories of WSI Presentations - Annual
2013-16
2008-12
0
2
4
6
8
10
12
14
16
18
Average Number of Presentations per Year


Topics Growing in Coverage
2013-16
2008-12
Landscape
Smart Irrigation
Social Marketing
Water Re-Use
Comm'l-Indust-Inst
Water Effic. Plans
Water/Energy Nexus
Plumbing Fixtures
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WSI – category trends

9 years: 2008 thru 2016

Increased coverage

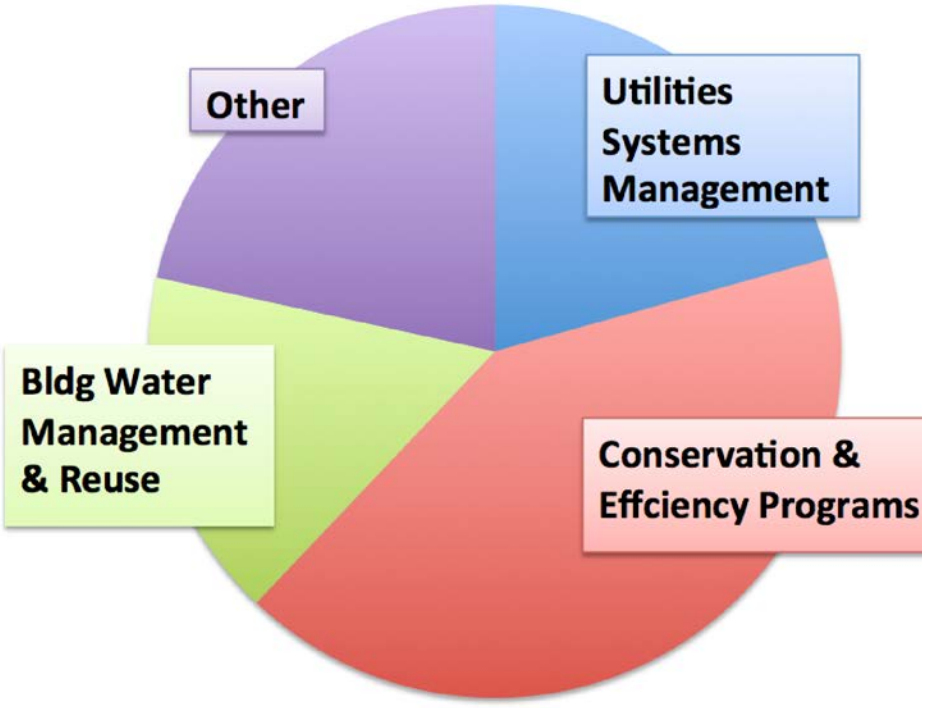
- Social marketing
- Utility system leakage
- Research
- Watering restrictions
- Drought response
- AMR / AMI

Decreased coverage

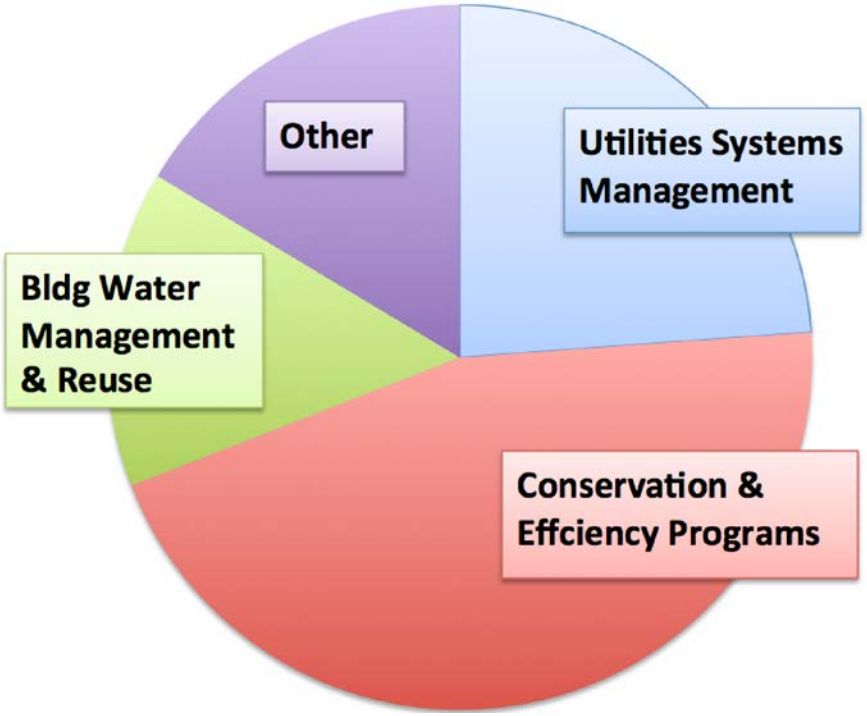
- Demand forecasting & water efficiency planning
- Landscape
- Comm'l-Industrial-Institut
- Regulations
- 'Green' industry (codes, stds., guidelines)

Topic Areas

2008 to 2012



2013 to 2016



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So, where do we go next?

- Further incremental reductions in indoor water consumption (fixtures, appliances, & process equipment) beyond what has already been achieved?
  - Recognize drainline transport issues
  - Recognize health & safety issues
  - Will further reductions yield water savings without performance sacrifices?

So, where do we go next?

- Increased emphasis upon on-site water reuse (graywater, process water, cooling water, etc.)?
  - ‘Dry drains’ - starving drainage systems of water
  - Recognize diminishing graywater quantities
  - Economic feasibility of systems operation
  - Recognize health & safety issues - on-site treatment

So, where do we go next?

- Move conservation program focus from residential toward commercial-industrial applications?
  - Fully ‘saturated’ residential sector?
  - Recognize sector potential for water use reductions
  - Recognize new innovative and ground-breaking process technologies
  - Greater pool of resources available

So, where do we go next?

- Other areas deserving increased focus…
  - Provide more customer tools – AMR-AMI, metering & sub-metering, technical assistance, dashboards
  - Water supply system leakage reduction
  - Health & safety – research & implementation of improved practices
  - Standards, codes, & regulations

Your feedback?

Thank you...

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