This presentation premiered at WaterSmart Innovations

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INNOVATIONS

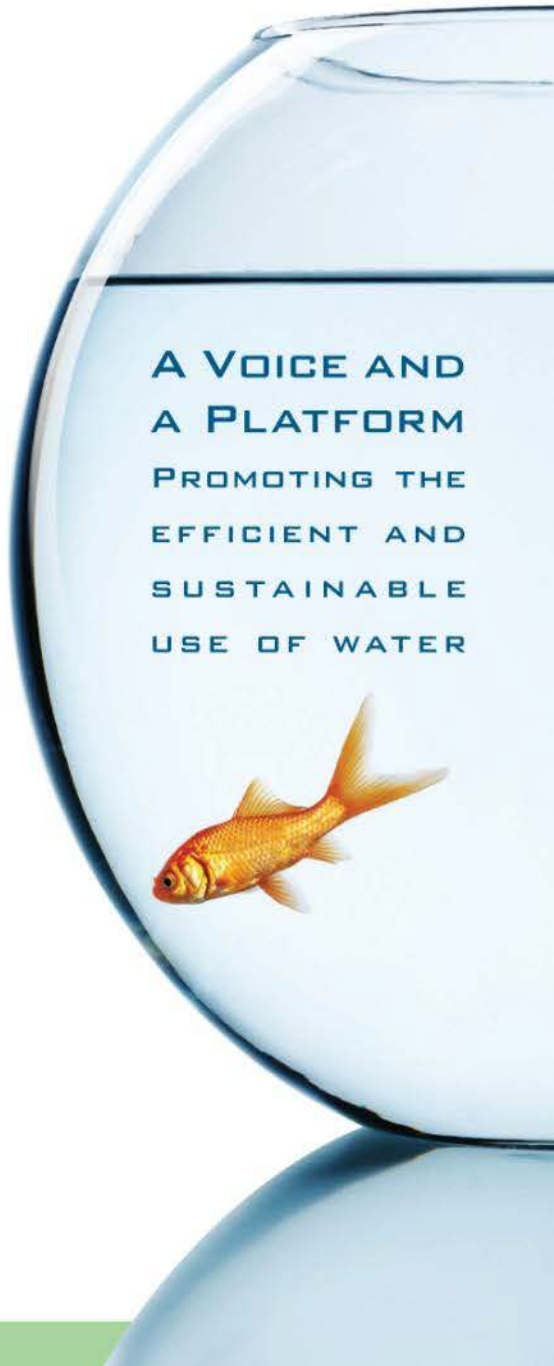
Declining Water Sales and Utility Revenues:

What are Some Practical Solutions for Conservation?

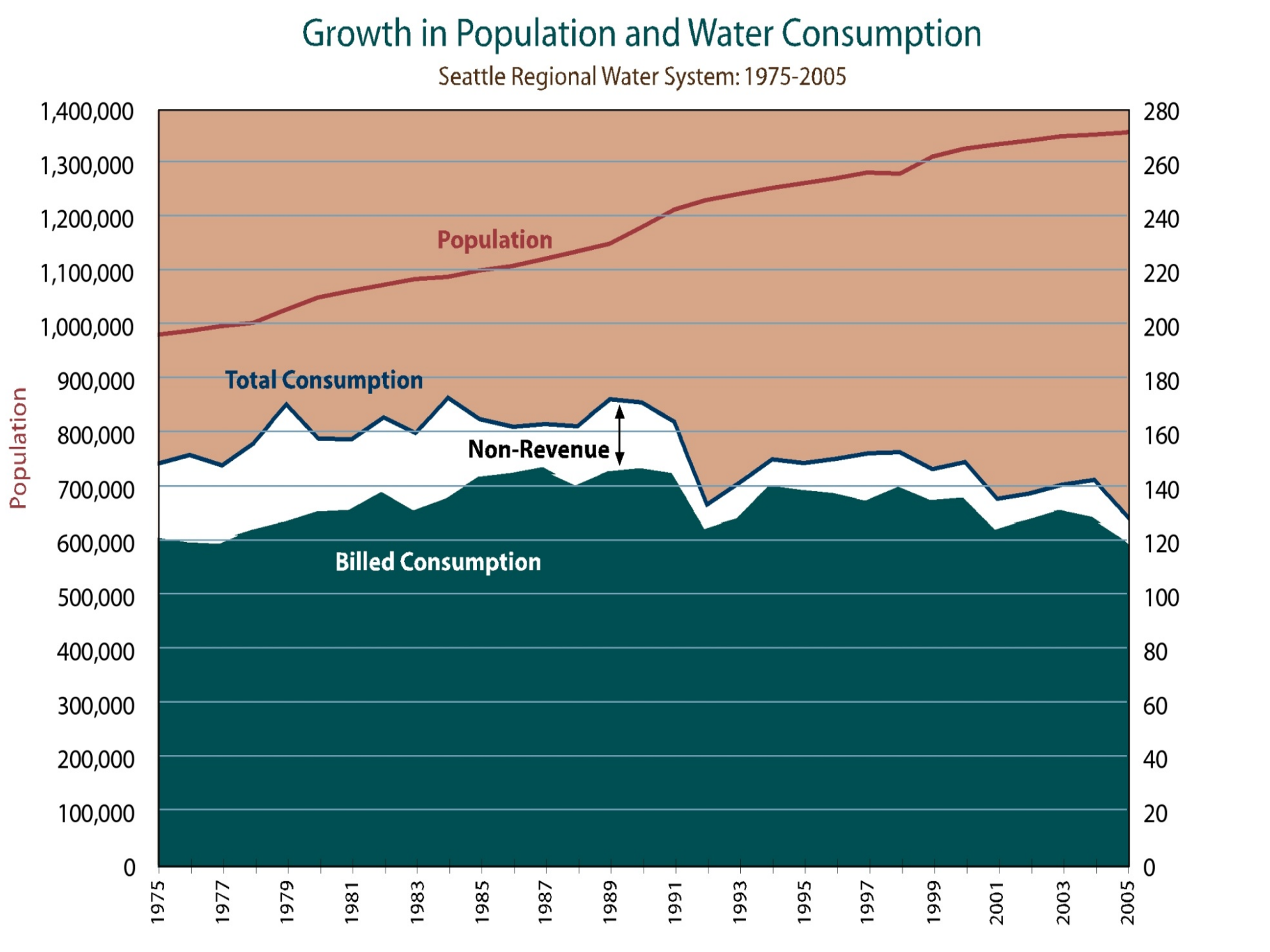
Mary Ann Dickinson

Water Smart Innovations Conference

October 4, 2013

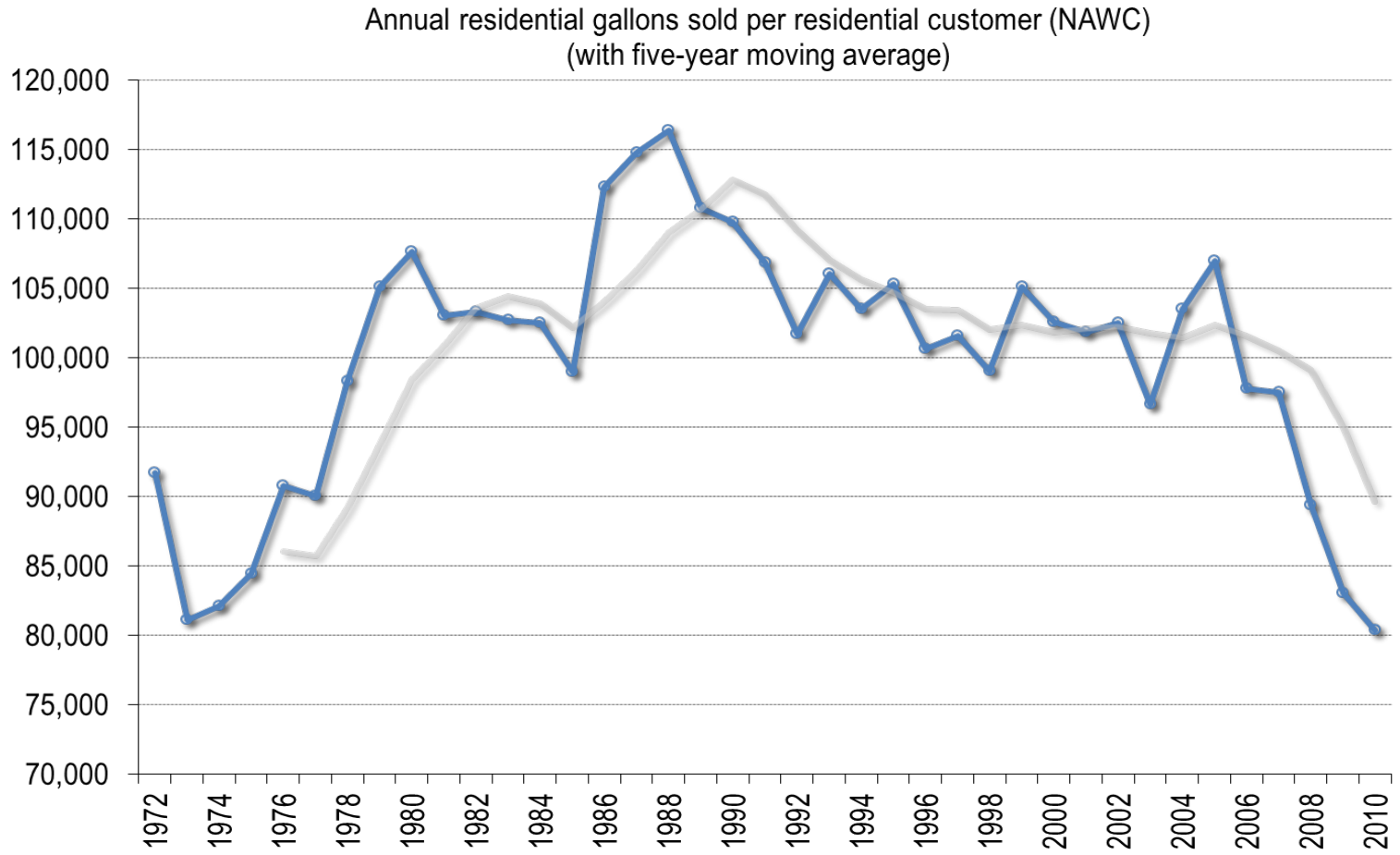


Alliance *for* Water Efficiency


Growth in Population and Water Consumption
Seattle Regional Water System: 1975-2005
Population
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Population
Total Consumption
Non-Revenue
Billed Consumption
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005

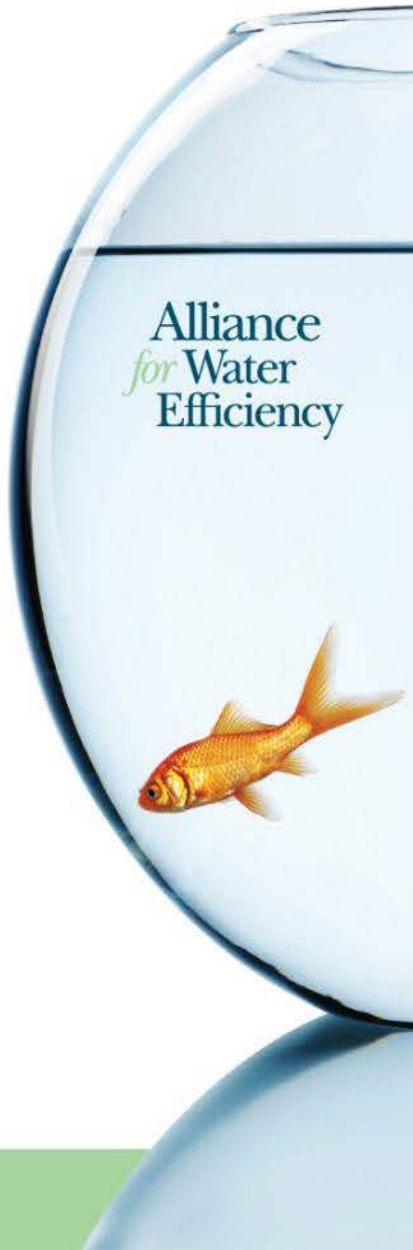
Residential Water Sales

(National Association of Water Companies)



Isn't this a Success Story?

- *Yes, but with side effects.*
- Lowered demand can mean reduced sales revenue for the water utility
- Reduced sales revenue can mean not fully collecting fixed costs
  - ✓ Short-run variable costs (water, pumping energy, chemicals)
  - ✓ Long-run capacity costs (supply, transmission, storage, treatment)
- Revenue stability therefore becomes an issue and conservation gets blamed as prices rise



CONSERVATION DRIVING UP WATER RATES

Environmental concerns challenge bottom line at Louisville Water Co.

SUNDAY EXCLUSIVE

By James Bruggers
jbruggers@courier-journal.com
The Courier-Journal

Louisville Water Co. officials never talk about conservation — not that it has mattered. Water use has declined on its own.

While that may sound like a good, green development for a city seeking a more sustainable future, there's a downside to the declining consumption: It's helping to drive up customers' rates — raising them more than 80 percent since 1999.

As Louisville's economy has shifted from a water-needy industrial base to a service-based one, and as water efficiency increasingly has become a national priority, the declining consumption has helped raise rates even faster than the rate of inflation.

See WATER, Page A10

ONLINE

Watch a video of environmental reporter James Bruggers discussing Louisville's changing water picture at **www.courier-journal.com/green.**


PARKER
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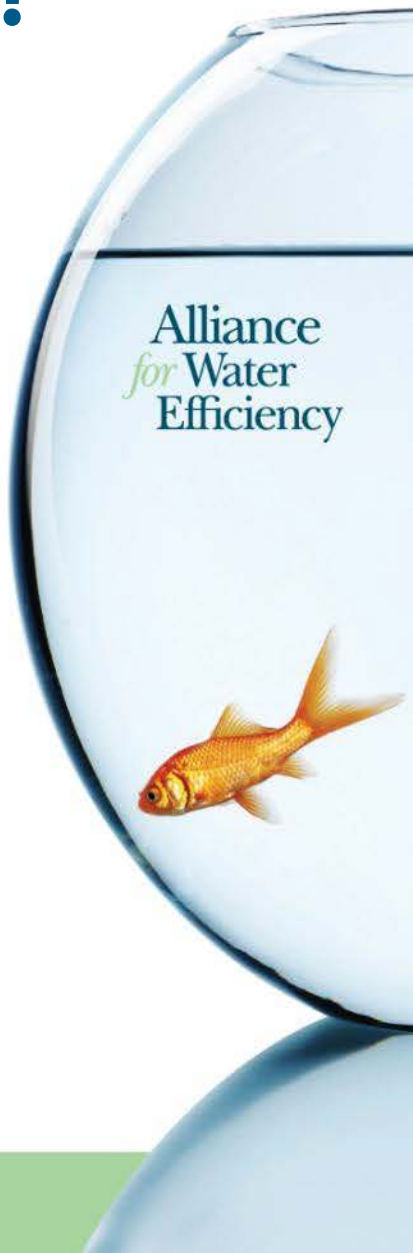
AND YOU THOUGHT THE DWINDLING SUPPLY OF OIL WAS BECOMING A PROBLEM...
WATER TREATMENT PLANT
SURFACE WATER
3.25
GROUND-WATER
3.67
DESALINIZED
4.01
CITY

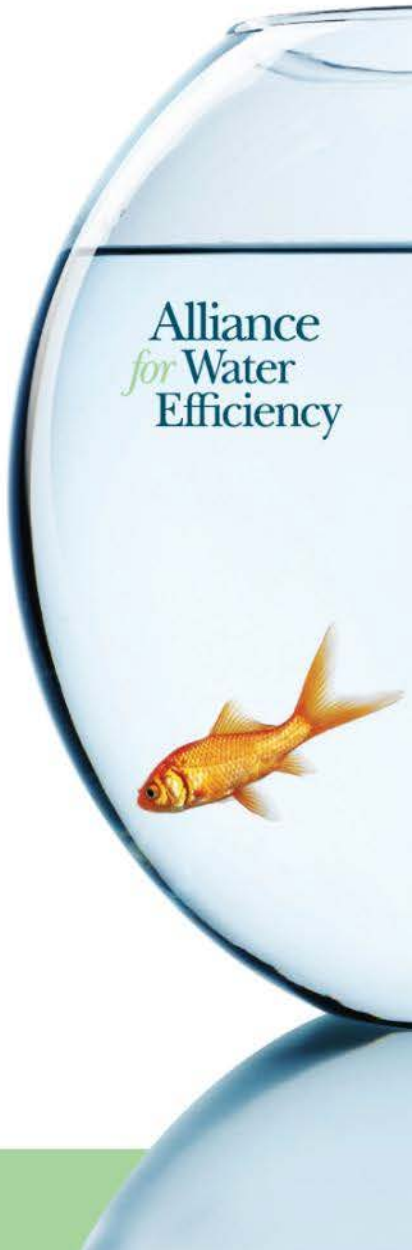
What Causes Revenue Instability?

- Reduced demand from:
  - ✓ efficient fixture replacement under the plumbing and appliance codes
  - ✓ active conservation programs
  - ✓ the recession: industrial shift layoffs, home foreclosures
- Reduced peak demand in wet years
- Increased infrastructure costs
- Rise in other fixed costs
- Continuing Inflation



Effects of Revenue Instability

- Water prices inevitably must rise
- Great work being done by Dr. Janice Beecher at Michigan State University, Institute of Public Utilities
- Tracking Trends in Consumer Prices and utility planning
- http://www.ipu.msu.edu/



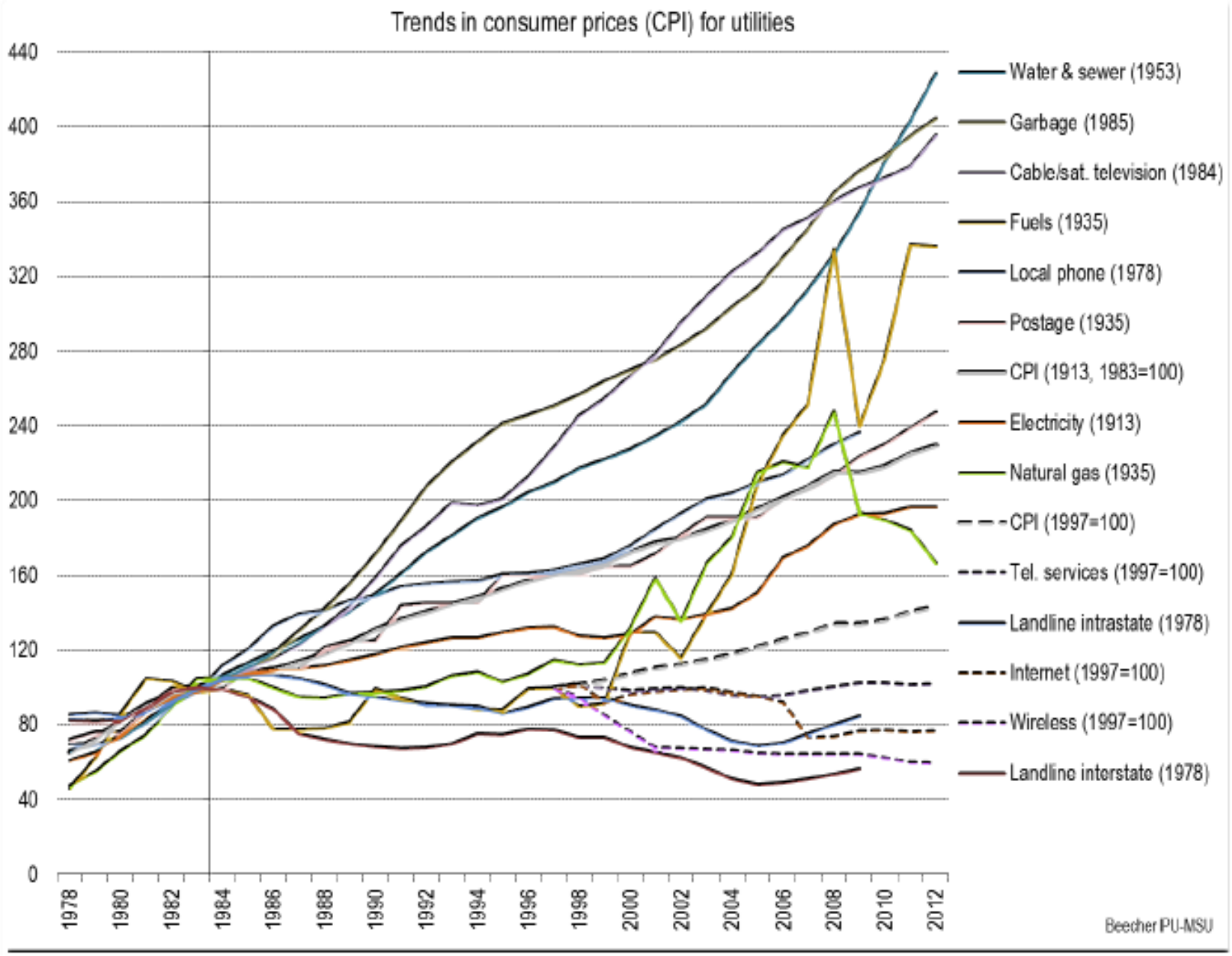
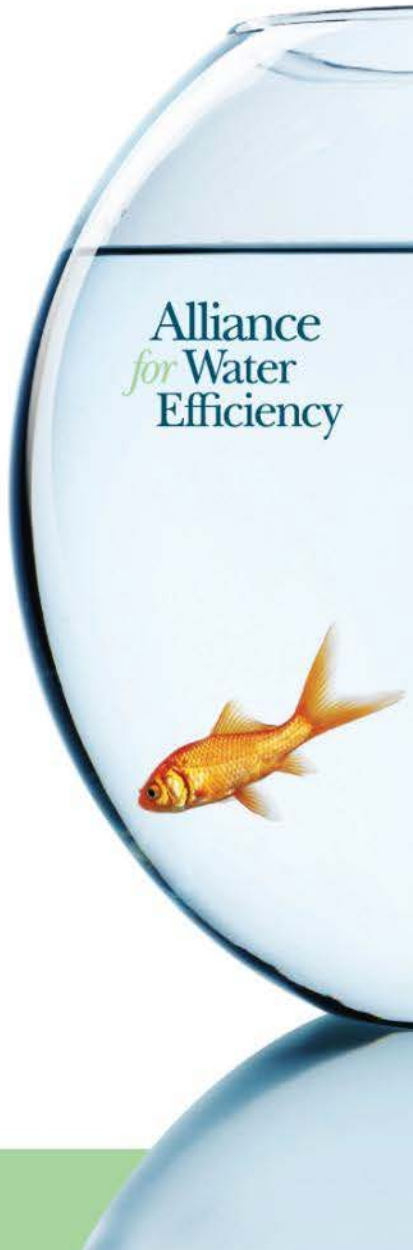


Exhibit 3. Trends in the Consumer Price Index for utilities (detailed, 1978-2012).
The index is set to 100 for 1982-1984 except for telephone, wireless, and internet services, where the index is set to 100 for 1997. Year () indicates start of series.

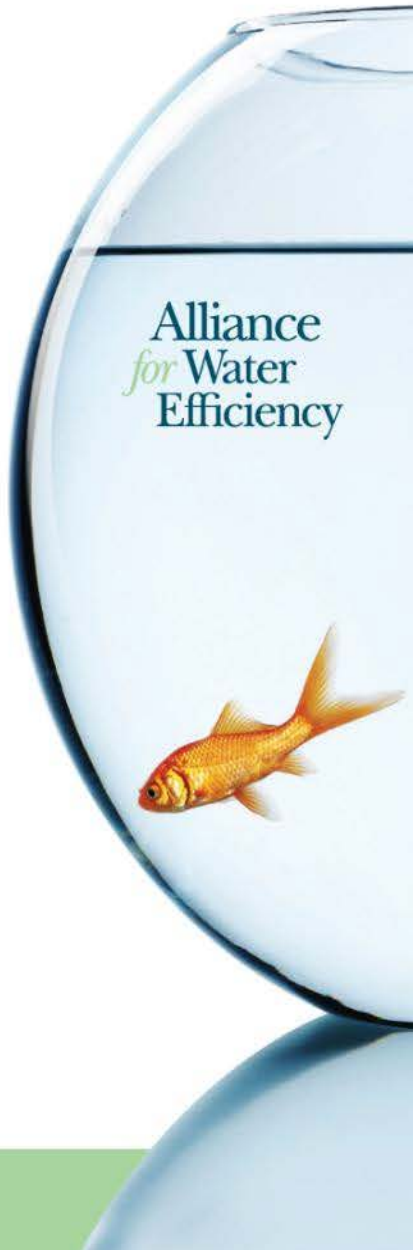
The Problems

- The extent of the reduced demand, and therefore reduced sales, is catching many utilities by surprise
- Water costs are rising faster than for other utilities like energy, telephone, and cable, so rates must rise too
- The "bundling" of other services into "the water bill" makes the rise in the customer bill worse in the eyes of the customer
- The customers understand very little about their rates, or bills, or shortages and with auto-pay are understanding even less



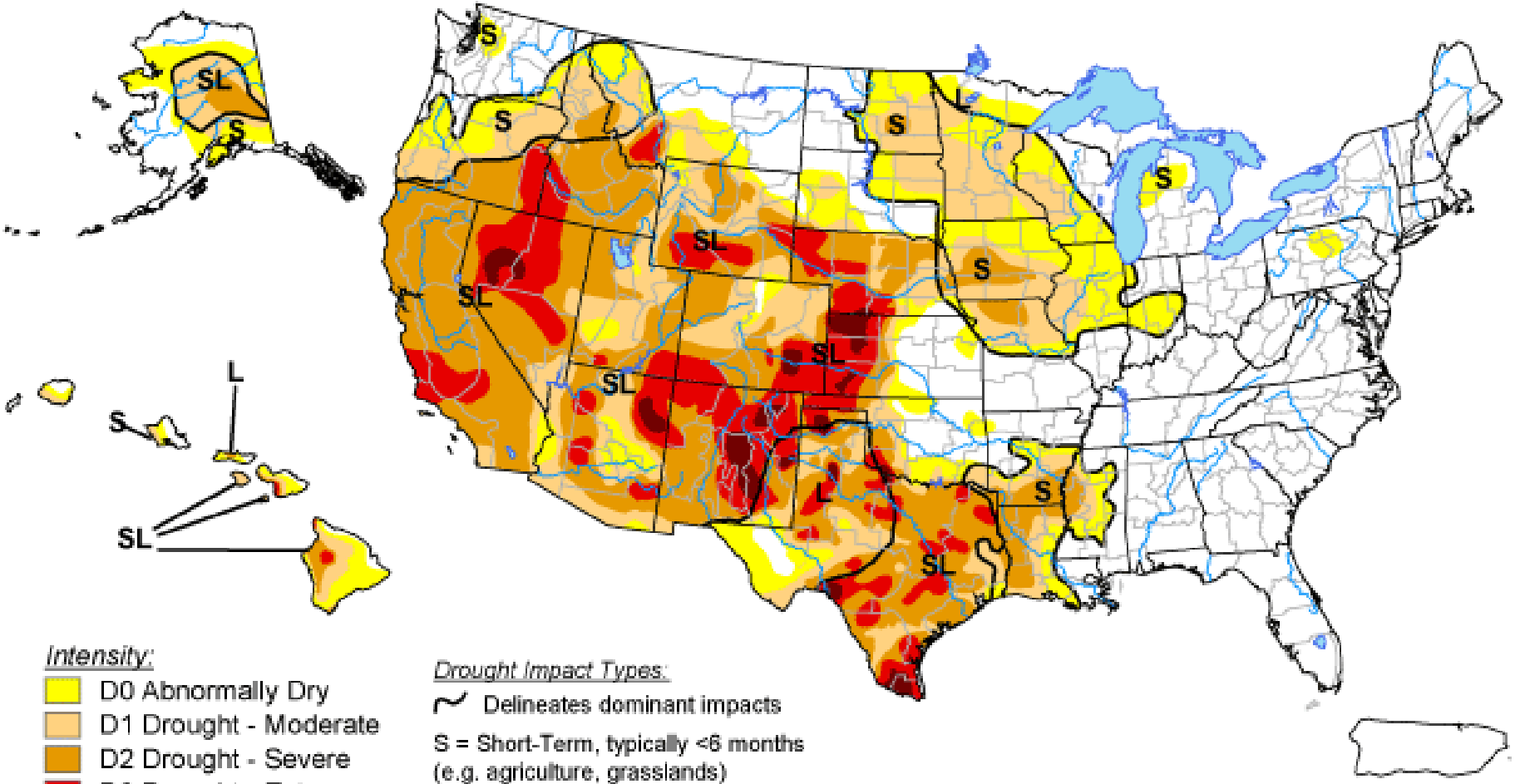
Compare with Energy

- Electricity powers lifestyles: microwaves, TVs, computers, coffee makers, phone chargers
- Water is not the same kind of service. We do not have products to promote the value of water. Our water-using products are traditional: clothes washers, dishwashers, plumbing, swimming pools
- The water industry can't tout more channels, higher speeds, greater definition or increased mobility to ease the pain of higher prices. It is the same service as before.



U.S. Drought Monitor

August 27, 2013
Valid 7 a.m. EDT



Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

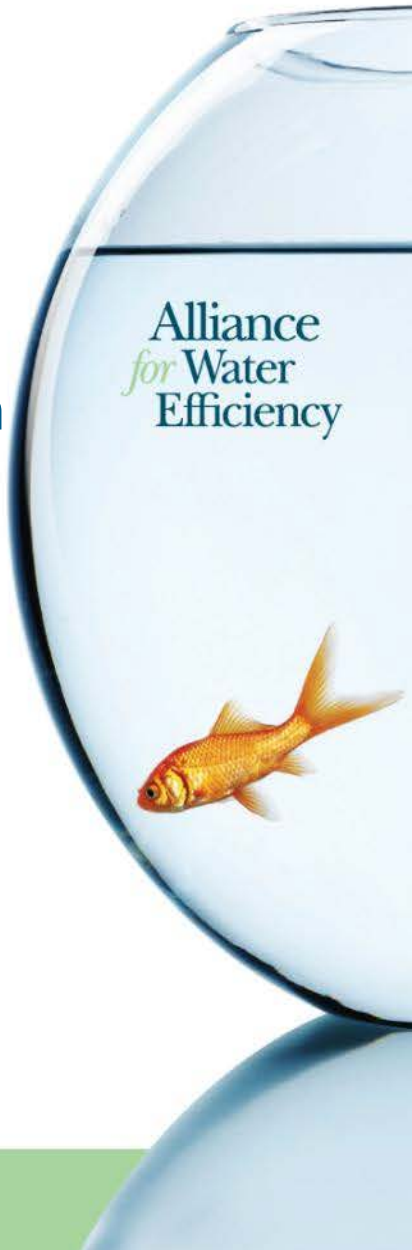
http://droughtmonitor.unl.edu/

Released Thursday, August 29, 2013

Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

And in Wet Years?

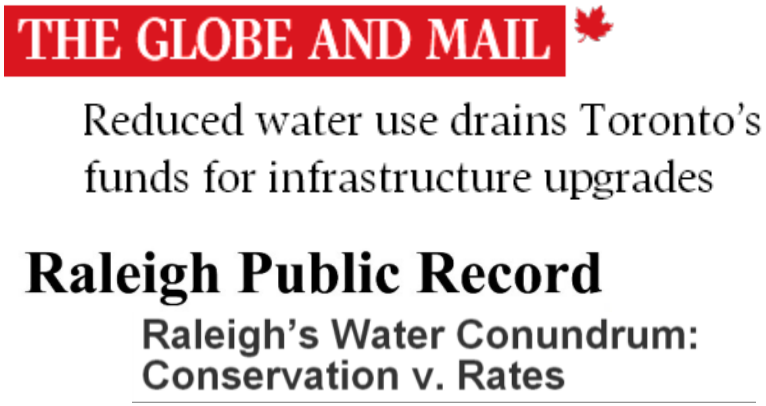
- Outdoor water use is lower
- Water suppliers then complain about not selling enough water to meet fixed costs
- The costs avoided by the utility from conservation get forgotten in the drive to sell excess capacity
- Consumers expect the water bill to go **down** not **up** when supplies are available
- We need properly designed rate structures to stabilize systems



The Political Reality

We don't like to revise our rates

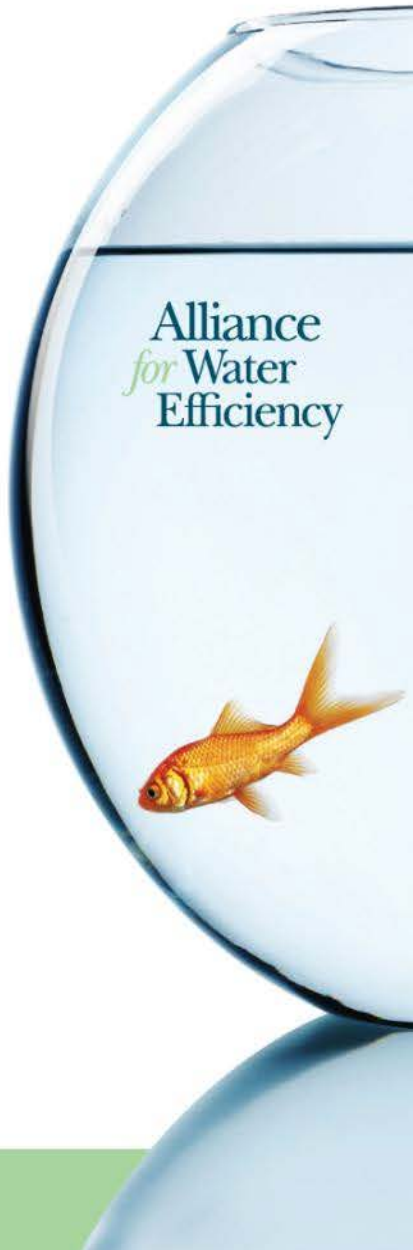
- It is politically unpopular, so rates are changed as little as possible
- The inevitable inflationary increase is postponed until it is a crisis, much less increases in other costs
- Conservation is often blamed for financial challenges – even when there are no active conservation programs in place!
- This sends the wrong message to consumers



And Conservation?

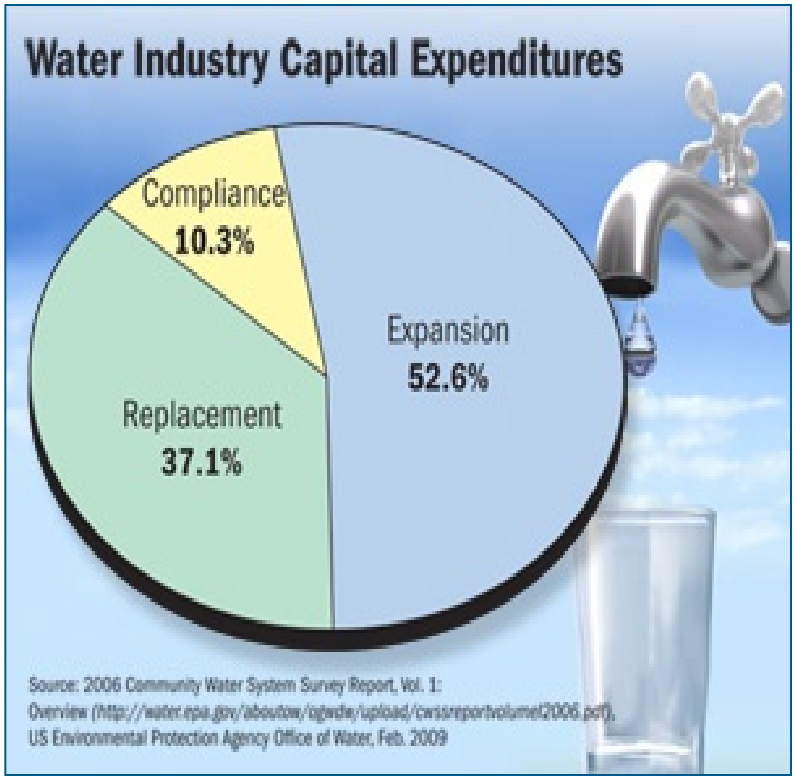
Conservation is still part of the solution

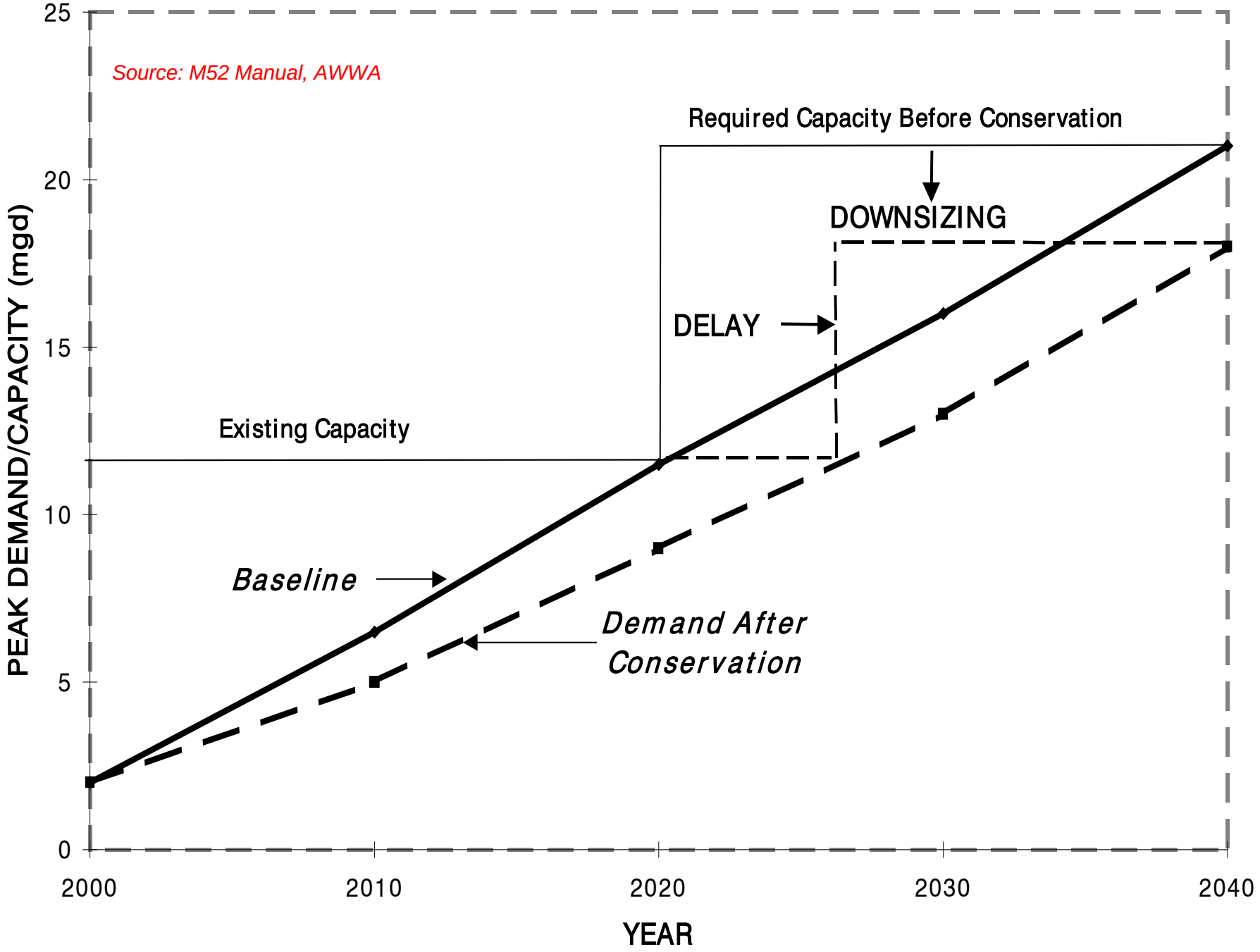
- It is a long-term cost reducer to the utility
- Revenue loss is often due to other drivers
- Every gallon saved is water that does not have to be pumped, treated and delivered
- Reduced utility costs generally mean reduced customer rates in the long-term due to avoided infrastructure
- Conservation is an investment and short-term effects must be planned for
- Programs are being cut or reconsidered



Yet Systems Are Still Growing

- 2006 EPA Study showed that 52.6% of community water system capital improvement expenditures were for expansion, not just repair and replacement
- Conservation programs help reduce expansion costs and stretch supplies
- Long-term planning is critically important




Source: M52 Manual, AWWA
Required Capacity Before Conservation
DOWNSIZING
DELAY
Existing Capacity
Baseline
Demand After Conservation
PEAK DEMAND/CAPACITY (mgd)
YEAR
0
5
10
15
20
25
2000
2010
2020
2030
2040

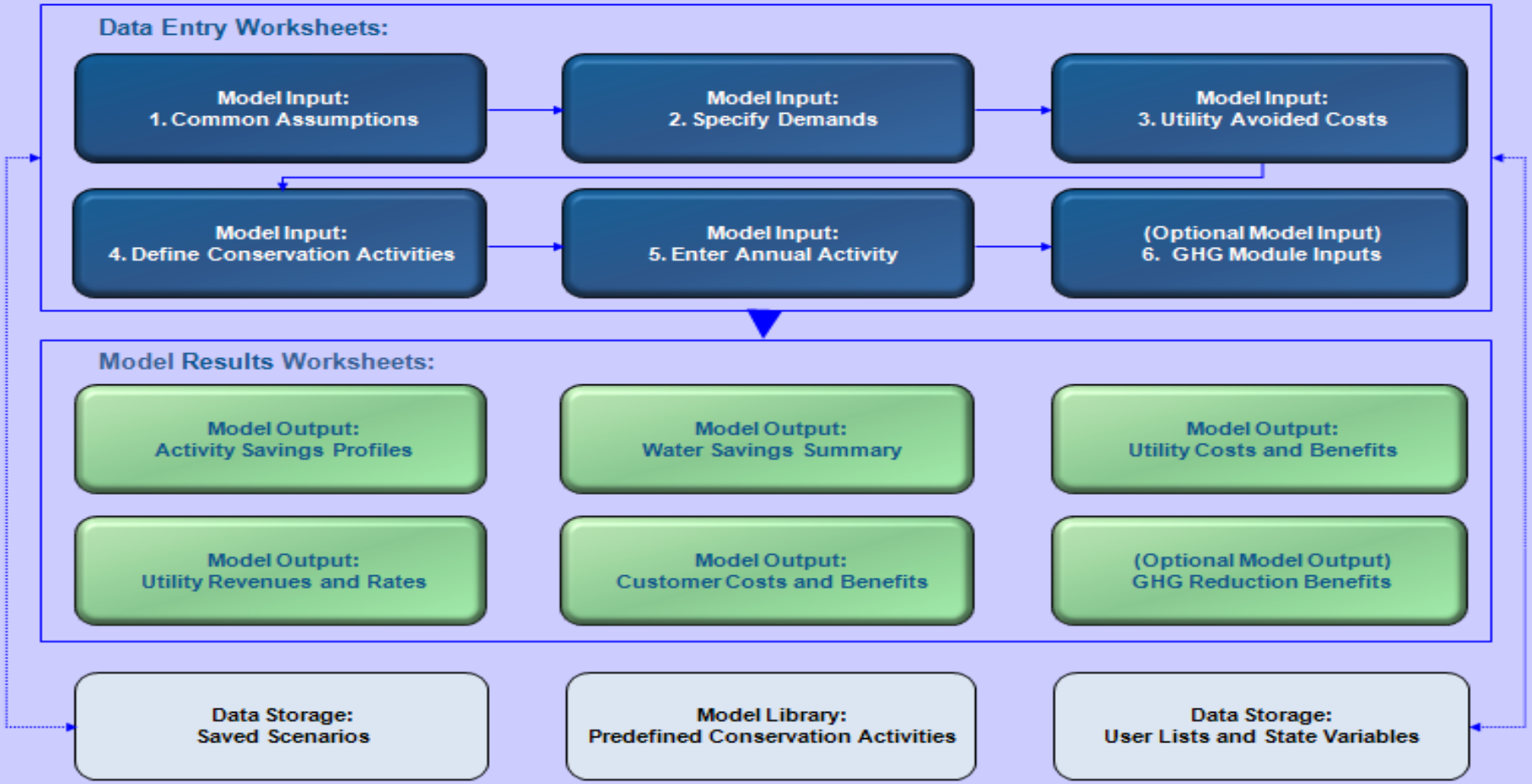
AWE CONSERVATION TRACKING TOOL

Version 2.0, Standard North American Edition

About Tracking Tool

Getting Started:

1. The model uses a simple worksheet tab color code:
   - Blue Tabs = User Data Entry
   - Green Tabs = Model Outputs/Results
   - Grey Tabs = Data Storage and Library
2. First provide informaton about your system, customers, and water demands. This is done on data entry worksheets 1 thru 3.
3. Next define or import conservation activities and set their annual activity levels. This is done on data entry worksheets 4 and 5.
4. You can save conservation activity scenarios at any time. You access the scenario manager on the Common Assumptions worksheet.
6. You can navigate to model worksheets by clicking on the model schematic below or by clicking on the worksheet tabs at the bottom of the screen.
7. Data entry cells on input worksheets look like this: xx,xxx Only enter data in cells with this color coding.



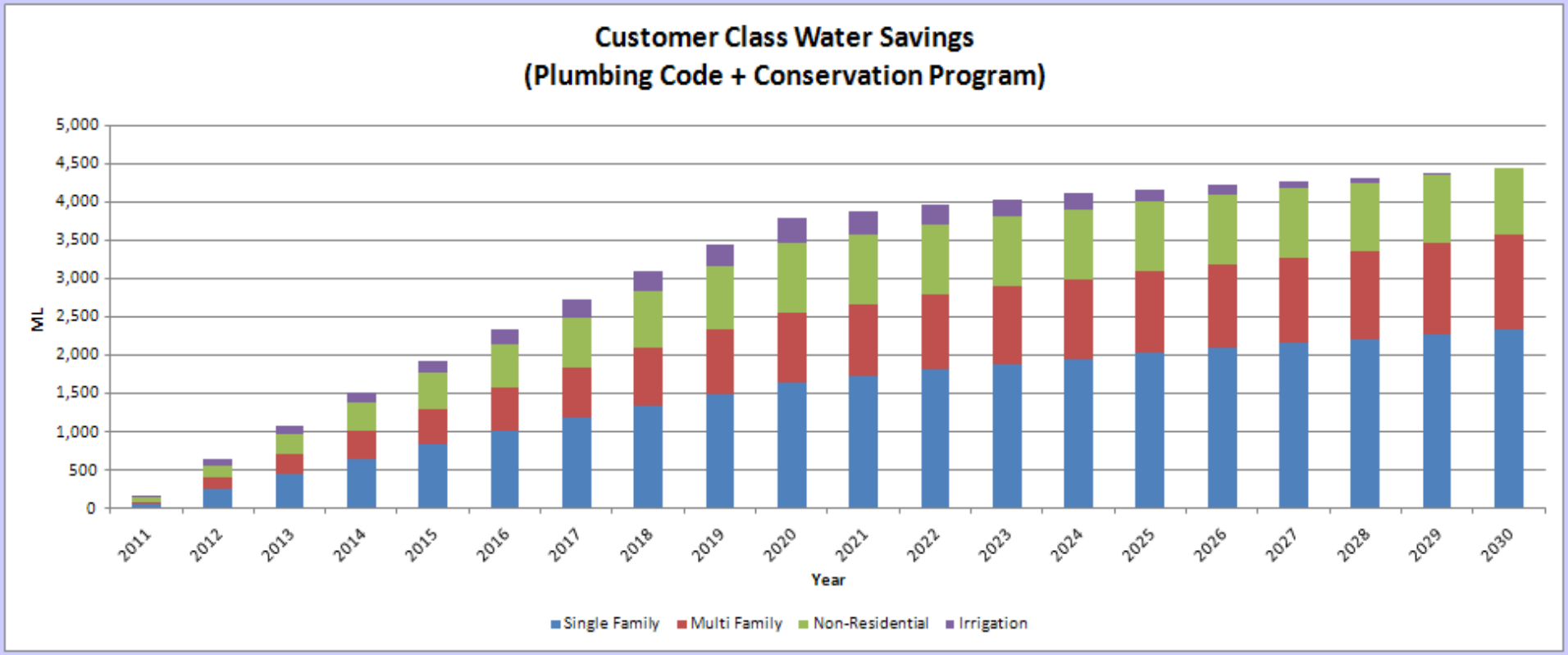
Year forecasted peak season demand equals existing peak season delivery capacity		Deferred Expansion (Years)	Deferred Capacity (kL/D)	Benefit of Deferred Expansion ($)	Avoided Capacity (kL/D)	Benefit of Avoided Expansion ($)
Unadjusted Baseline Demand	**2020**	N/A	N/A	N/A	N/A	N/A
Less Conservation Program Savings	**2025**	**5**	15,421	$2,944,923	0.0	$0

Select Chart to View

Total Class Savings

No. of Years to Display: 20 yrs

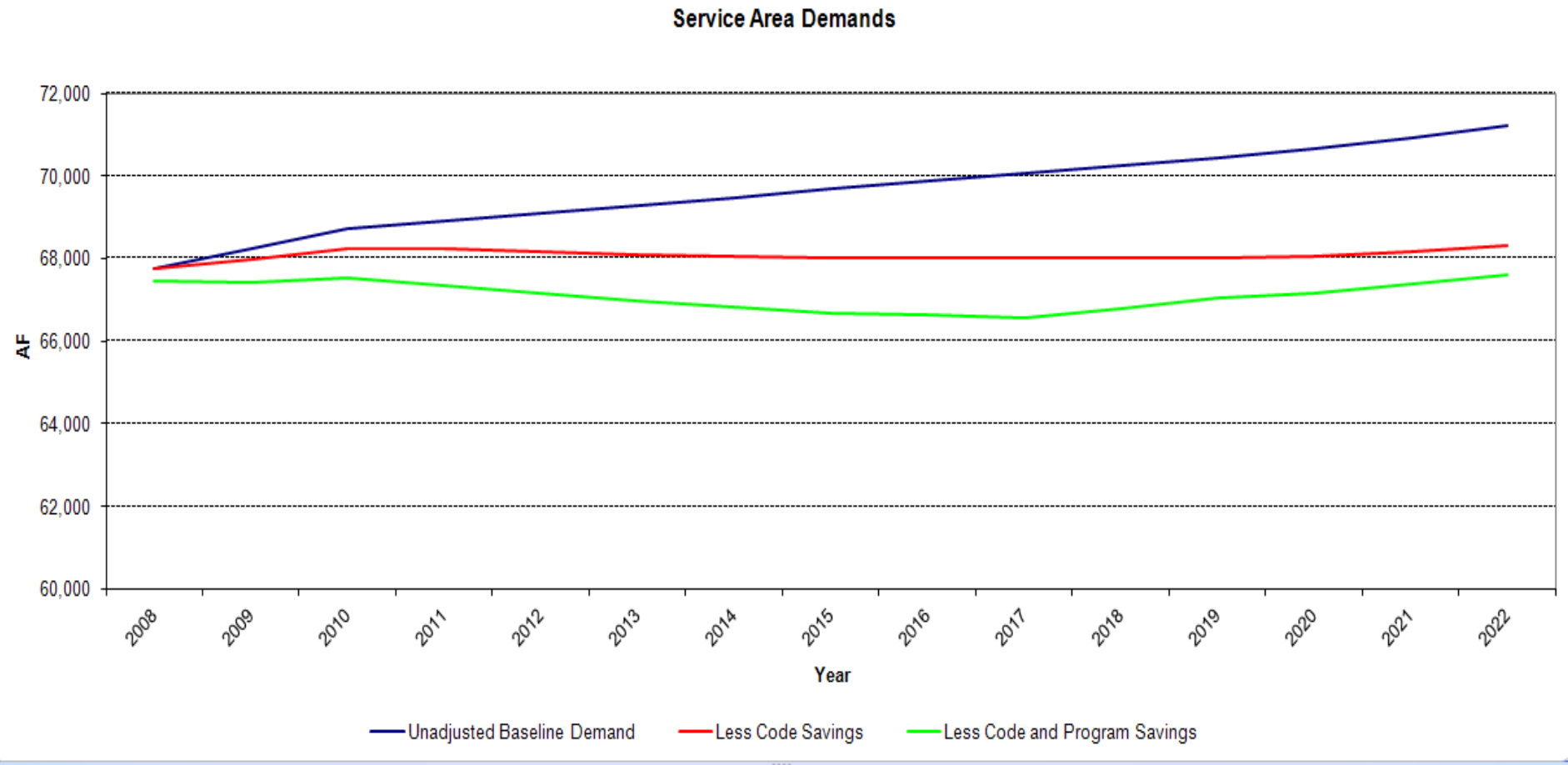
Chart Explanations



Year forecasted peak season demand equals existing peak season delivery capacity		Deferred Expansion (Years)	Deferred Capacity (MGD)	Benefit of Deferred Expansion ($)	Avoided Capacity (MGD)	Benefit of Avoided Expansion ($)
Baseline Demands	**2014**	N/A	N/A	N/A	N/A	N/A
Baseline - Code Savings	**2025**	**11**	5.8	$9,764,491	0.0	$0
Baseline - Code Savings - Program Savings	**2027**	**13**	5.8	$11,231,717	0.0	$0

Select Chart to View

Service Area Demands | No. of Years to Display: 15 yrs | Chart Explanations



AWE CONSERVATION TRACKING TOOL: UTILITY REVENUES & RATES WORKSHEET

Last Loaded Scenario: "Sample Scenario (English Units)" loaded on 9/16/2011 11:58:00 AM

Return to Navigation Sheet Report Error

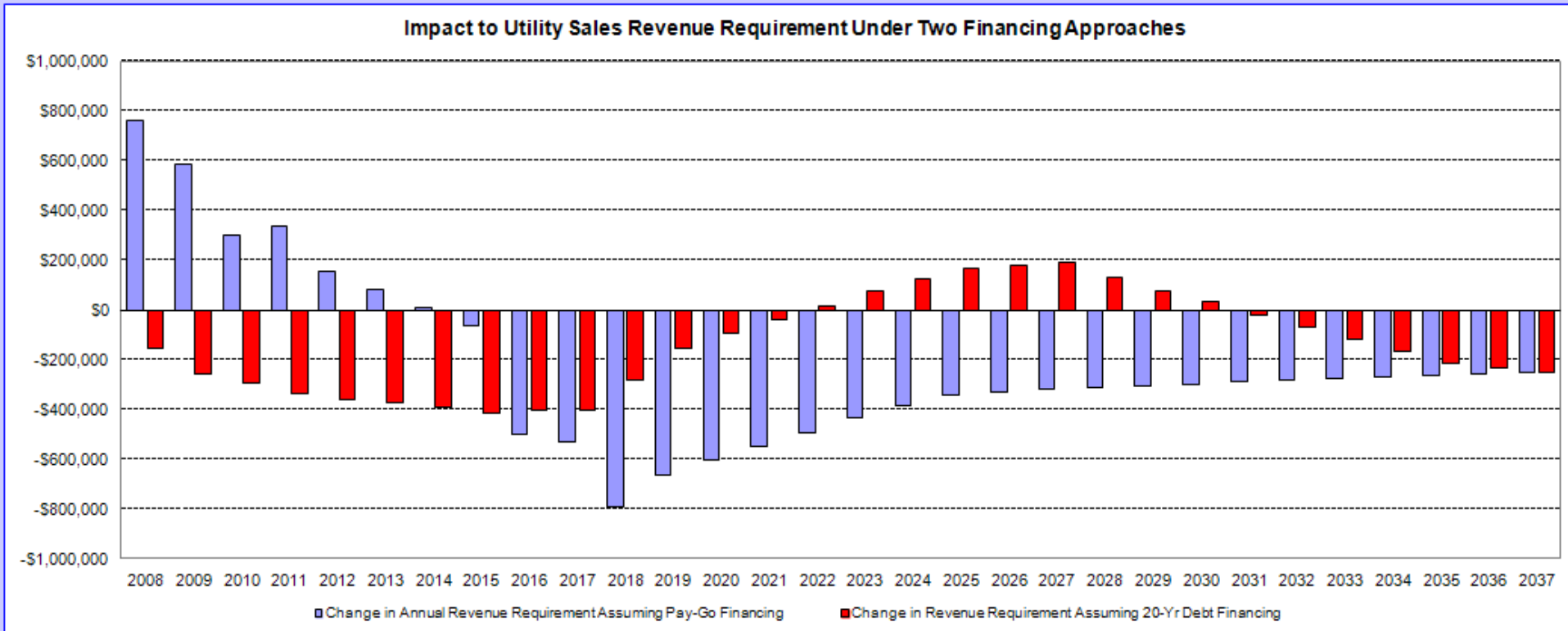
Utility Revenue Requirement and Rate Impacts

Program Impact on...	Baseline	With Conserv.	Change to Baseline
Water Utility Annual Sales Revenue Requirement	49,742,591	$49,562,581	($180,010)
		% change from baseline	-0.36%
Avg. Water Rate ($/Thou Gal)	$2.17	$2.29	$0.13
		% change from baseline	5.86%
Annualized Bill Impact ($/Mo.)	46.86	$46.69	($0.16)
		% change from baseline	-0.35%

Select Impact Chart to View

Revenue Requirement

Chart Explanations



AWE CONSERVATION TRACKING TOOL: UTILITY REVENUES & RATES WORKSHEET

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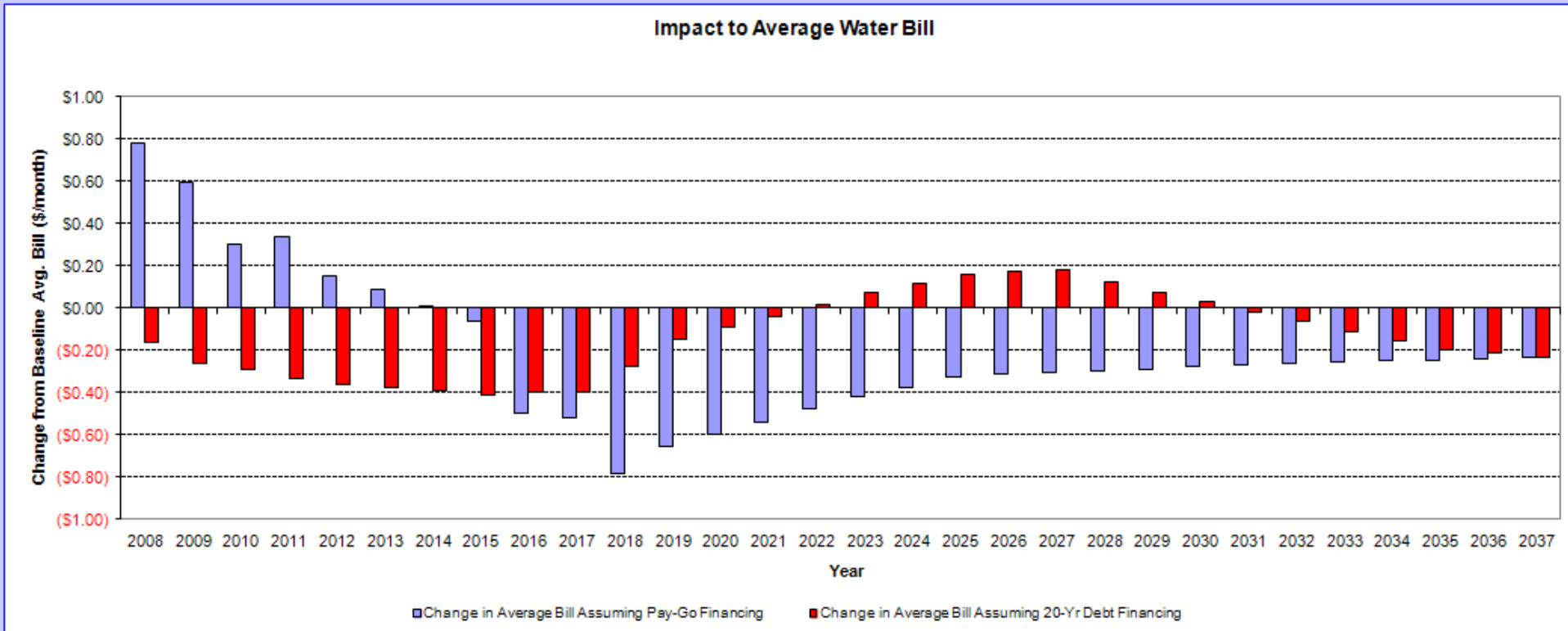
Select Impact Chart to View

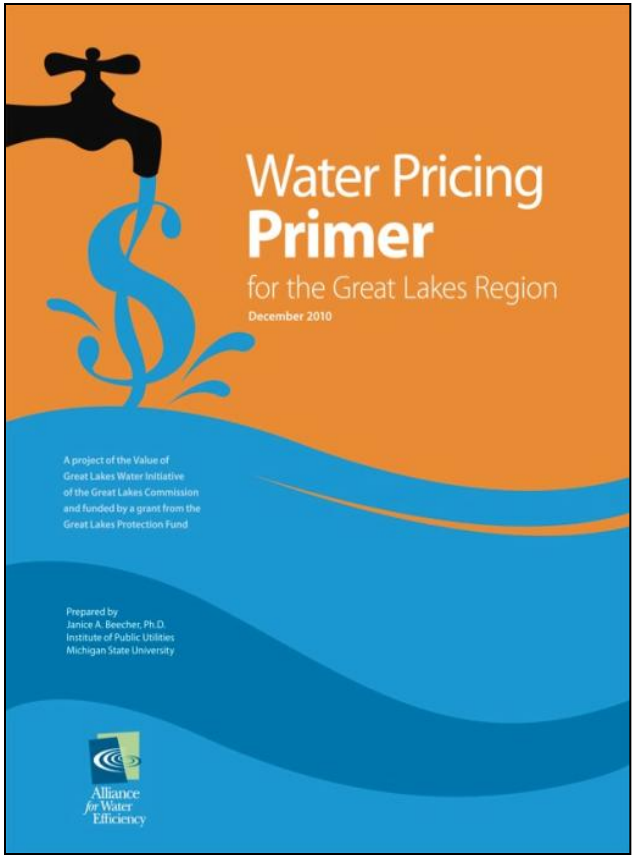
Avg. Water Bill

Chart Explanations



AWE's First Foray into Rates

- Rates and Water Pricing Project in the Great Lakes Region
- Workshops held in 2010
- Primer published 2011 and posted at www.a4we.org
- Author: Dr. Janice Beecher, Institute for Public Utilities, Michigan State University
- Practical advice for water board elected officials, managers, and consumers

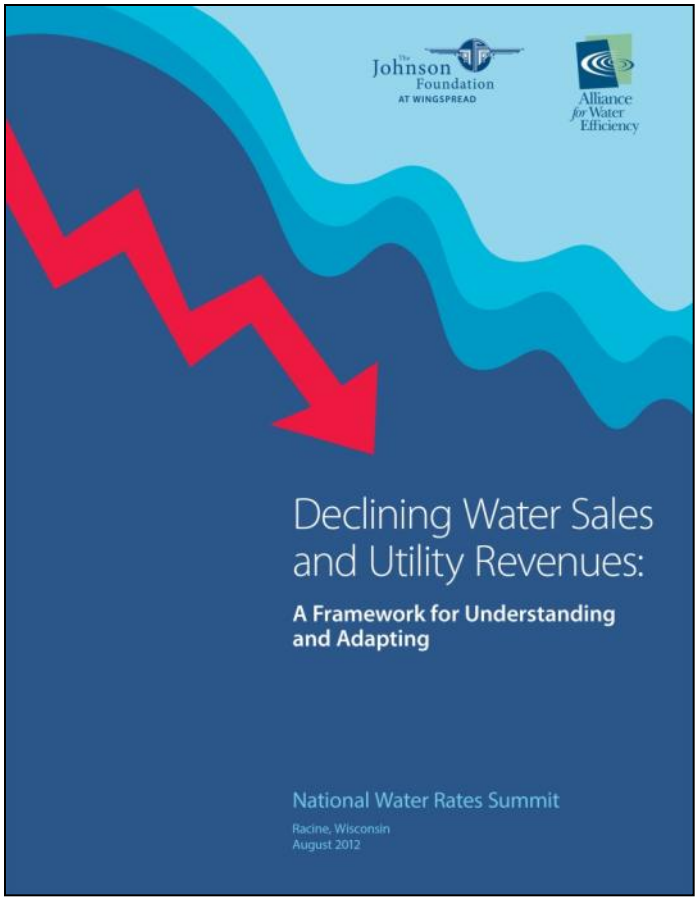


Declining Water Sales Summit

- Held August, 2012
- Hosted by AWE & the Johnson Foundation at Wingspread
- Funded by Walton Family Foundation
- 30 Attendees including utility CEO's, CFO's, regulators, rates experts, economists, non-profit advocates

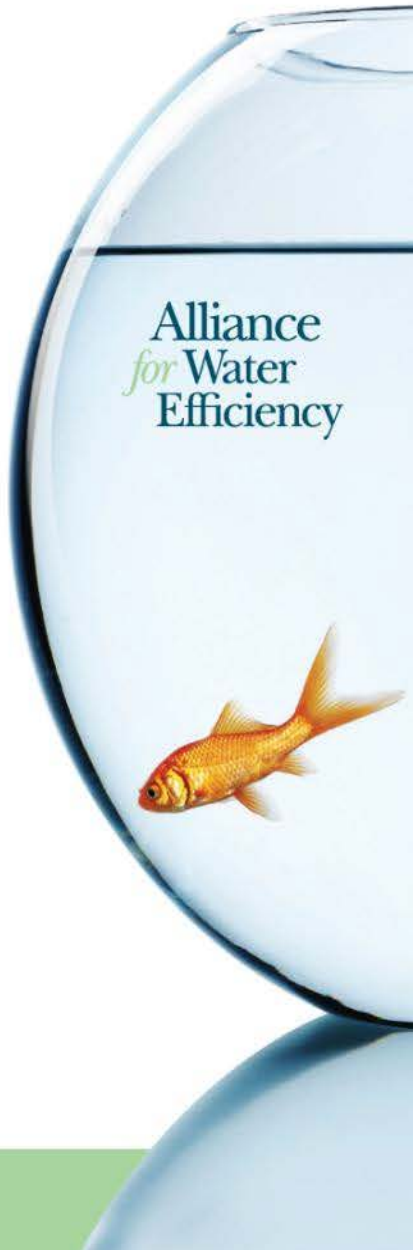
Summit Summary

- Results of August, 2012 Rates Summit
- Detailed Summary and background Framing Paper
- Available free of charge and posted at **www.a4we.org**



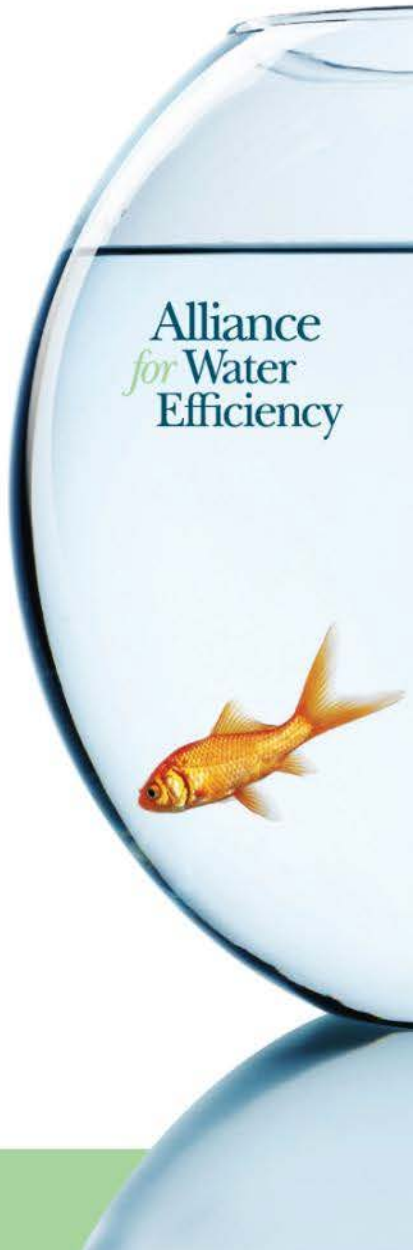
Summit Discussion Areas

1. How and why are water sales declining?
2. Are water utility revenues falling short of revenue requirements?
3. Do water utilities and the conservation community have a messaging problem?
4. What methods are available to repair revenues and improve fiscal stability?
5. What role do industry standards, practices, and policy reforms play?



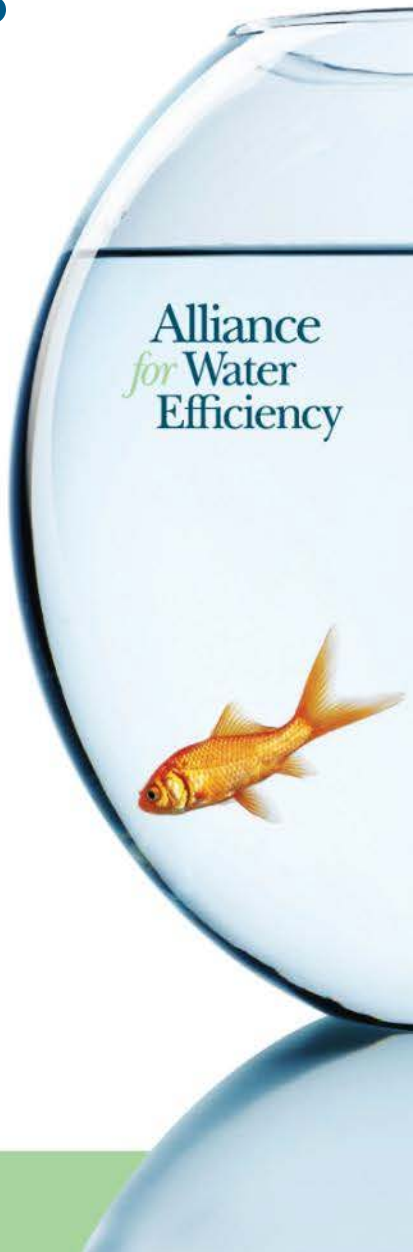
Address the revenue shortfall

- Rate adjustments
- Improved cost forecasting
- Improved demand forecasting
- Weather normalization
- Cost-adjustment mechanisms
- Cost indexed rates
- Demand-repression adjustment
- Revenue-stable rate design
- Property-based fire-protection charge



Improvement Recommendations

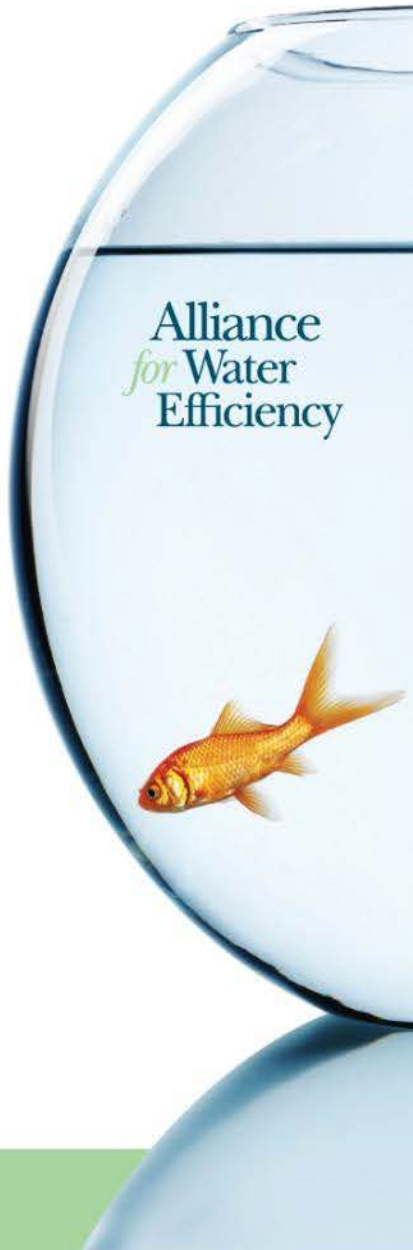
- Forecast demand to assess water use reductions from codes and standards
- Compensate for the uncertainty of future sales with a risk compensation strategy
- Quantify the response of water demand to changes in rates and other external factors
- Adjust revenue collection annually
- Account for the water savings actually achieved by conservation programs
- Estimate future cost-effective potential
- Educate the consumer



What's Next at AWE?

AWE is developing solutions to assist water suppliers to set water rates that help:

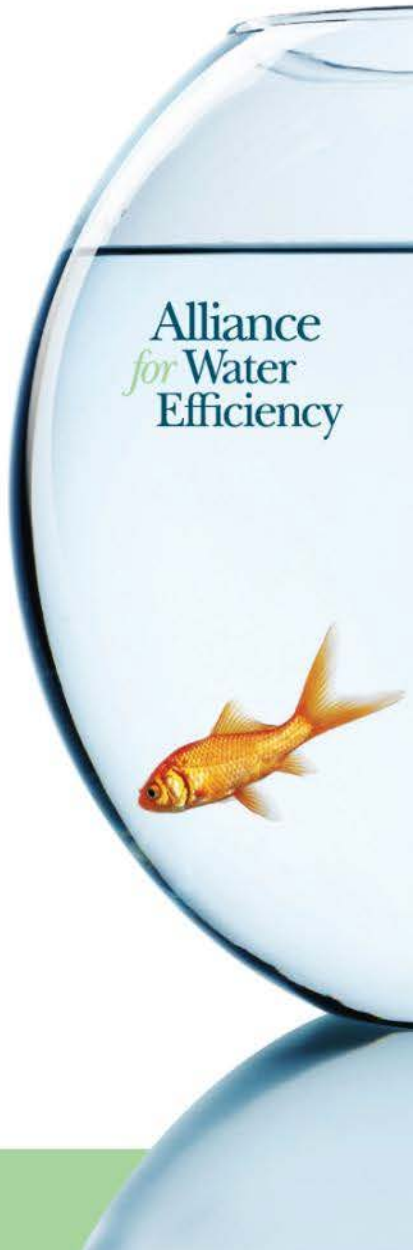
- Provide clean drinking water at rates that are fair and affordable for customers today and in the future
- Support long-term financial sustainability of water systems and utilities
- Stretch and protect water supplies to fuel growing, urbanizing and industrializing communities



Stay Tuned for New Resources

Coming in 2014 / 2015:

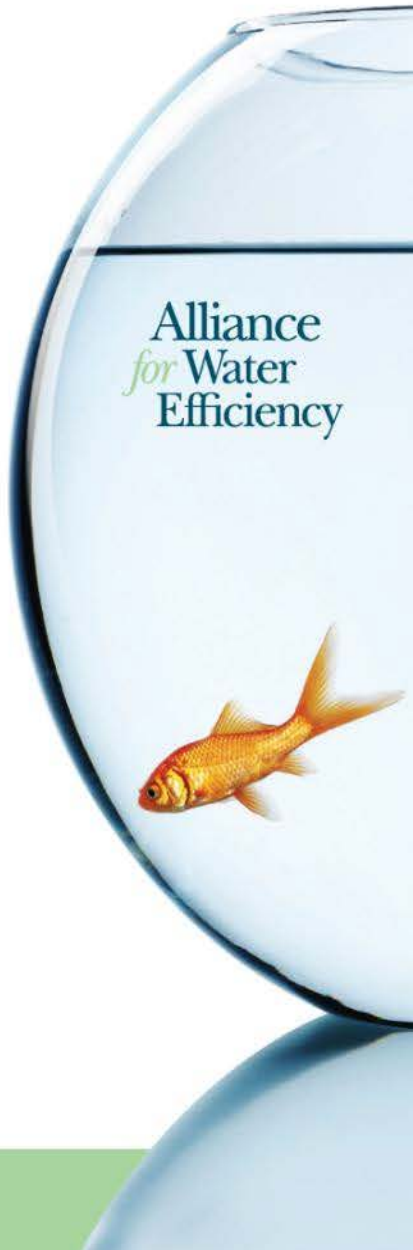
- Handbook for Efficiency-Oriented Rates to balance sustainability and financial goals
- User-friendly rate spreadsheets
- Stanford Rates Modeling with utility data sets
- Second "Solutions Summit" at Wingspread
- Online Resource Hub with new case studies and tools to design, implement and communicate rate changes
- Training and education opportunities for utility staff



Be Part of the Solution

We can partner with you to:

- Model, test or pilot new rate designs
- Help with better demand forecasting or cost of service analyses
- Engage your community and consumers around water pricing and value
- Incorporate conservation programs into planning and finance for the long-term
- Email **megan@a4we.org** to learn more about this project & become a partner with us



homewaterworks

A project of the Alliance for Water Efficiency

Calculator | Water Conservation Tips | Indoor Water Use | Landscape & Irrigation | Water & Energy | About Us | Blog

Explore Water Conservation With Our Water Use Calculator

Want to conserve water? Not sure where to start? Our Water Calculator quickly estimates how much water your household uses and compares it to a similar average and a highly efficient home.

The Water Calculator also shows you where to begin your home water conservation efforts. Throughout Home Water Works, you'll find useful tips and resources for saving water and money without sacrificing comfort or convenience.

Get the bottle that will **CHANGE THE WAY** you think about **WATER.**

Join our Never Waste Campaign. Click Here ▶

Does Your Landscape Have a Drinking Problem?

Read about **outdoor water conservation** for helpful information on how to keep your landscape looking beautiful while staying water efficient.

Quick & Easy Tips For Saving Water at Home and Work

Looking for quick and easy ways to save water? Read our **water conservation and saving tips** to see how easy it can be to conserve water at home and in the workplace!

How much water do you use?

Let's Get Started!

Click an area on the home to input how much water you use, and learn how you can conserve water there. Answer for yourself only, and assume you are in your home for a 24-hour cycle.

My Daily Usage
Roll over for results

Carbon Footprint:

(lbs. CO2 /year)

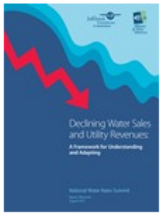
Percent Complete

Areas to Complete
Roll over for number of questions

Assessing Industrial Water Use Efficiency

The Alliance for Water Efficiency, with funding from the Great Lakes Protection Fund, assessed five representative industries within the Great Lakes watershed that are supplied with treated drinking water and that discharge to a local wastewater utility. Both water conservation savings and environmental benefits were documented. Learn more here.

AWE Publishes Results of Declining Water Sales Summit



In August 2012, AWE and The Johnson Foundation at Wingspread co-hosted a summit with water utility mangers, rate experts, price regulators, economists, and advocacy groups to explore the issues surrounding declining water sales, utility revenue losses, and the impact on conservation programs. A report including the summit results, as well as a detailed background framing paper, can be downloaded here.

Supply Shortages Looming: Colorado River Basin Water Supply & Demand Study

The Colorado River - lifeblood of 7 western U.S. states - will not provided enough water to meet future demand according to a new study. The Colorado River Basin Water Supply and Demand was released by the U.S. Bureau of Reclamation in December after three years of research. The study forecasts a significant gap between available supply and the expected demands of a growing population within 50 years. Learn more here.

Calendar of Events

1/9/2013	WEAN-CRB Webinar: Water Efficiency and the Colorado River Basin Study Options
1/15/2013	IWA Efficient 2013 Conference Submission of Abstracts Deadline
1/15/2013	U.S. Water Alliance Webinar: Knowing Your Watershed and Assessing Potential Environmental, Economic, and Social Impacts
1/16/2013	PERC Webinar: Drainline Transport of Solid Waste in Buildings
1/18/2013	WSI 2013 Submission of Abstracts Deadline

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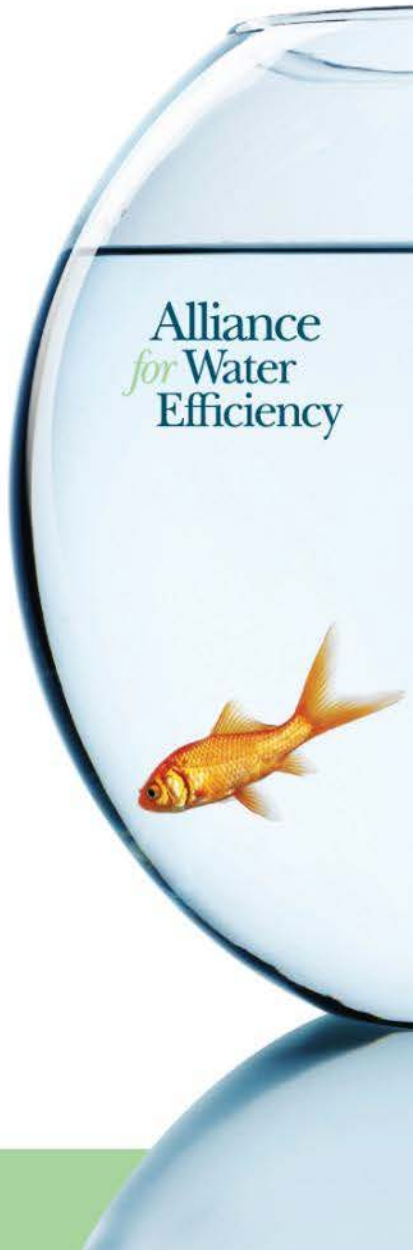
Latest Information

- Water Efficiency Watch Newsletter November 2012
- Colorado River Basin Water Supply & Demand Study Released
- JOBS BOARD
- AWE Water Conservation Tracking Tool
- ISAWWA Water Utility Survey Report March 2012
- FedCenter.gov Announces New Water Efficiency Program Area
- USGS Report - Estimated Use of Water in the U.S. in 2005
- Executive Order Sets Water Efficiency Goal for Federal Agencies
- Water Use Efficiency Guide for New

Port Angeles, Washington

- Sold less and pumped less water in 2012 than in 2011
- But their revenue increased by $200,000
  - How did they do it?
    a) Rate increase
    b) Rebate and/or loan programs
    c) Lotto ticket winnings
    d) None of the above



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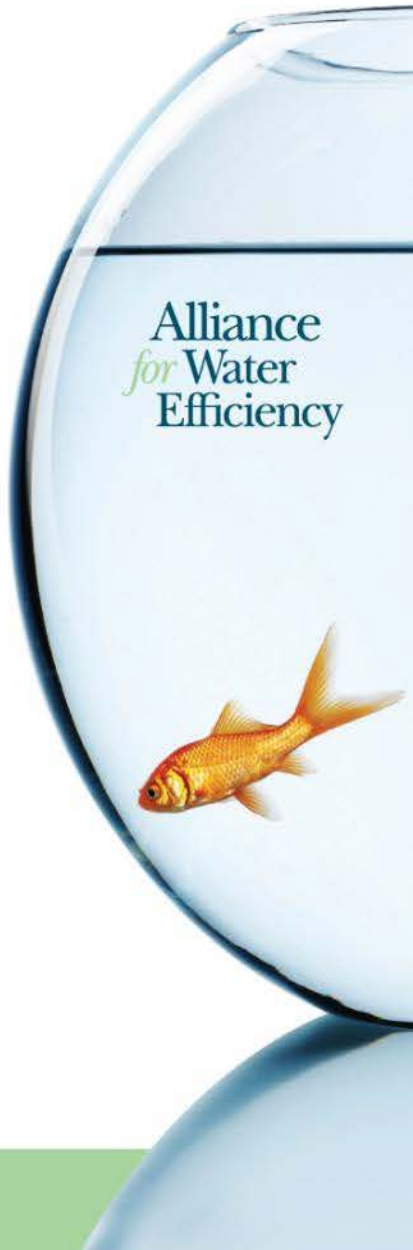

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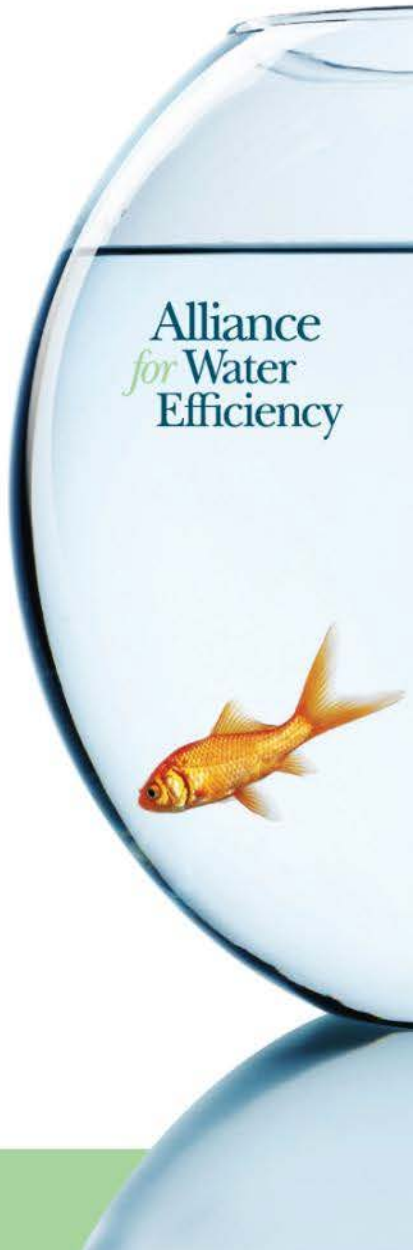
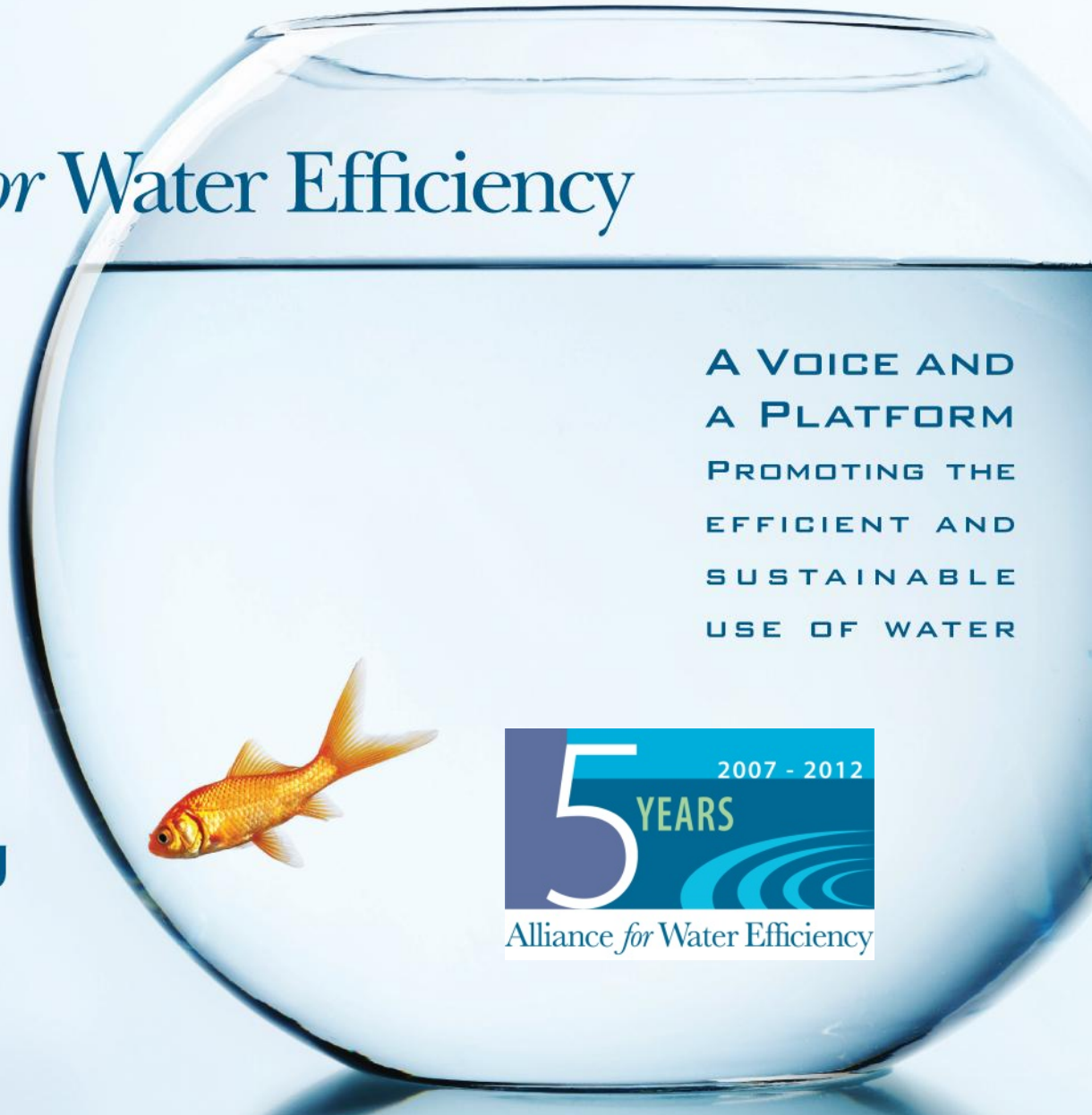
      - Replaced 305 meters (1 ½" to 8")



Alliance *for* Water Efficiency



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