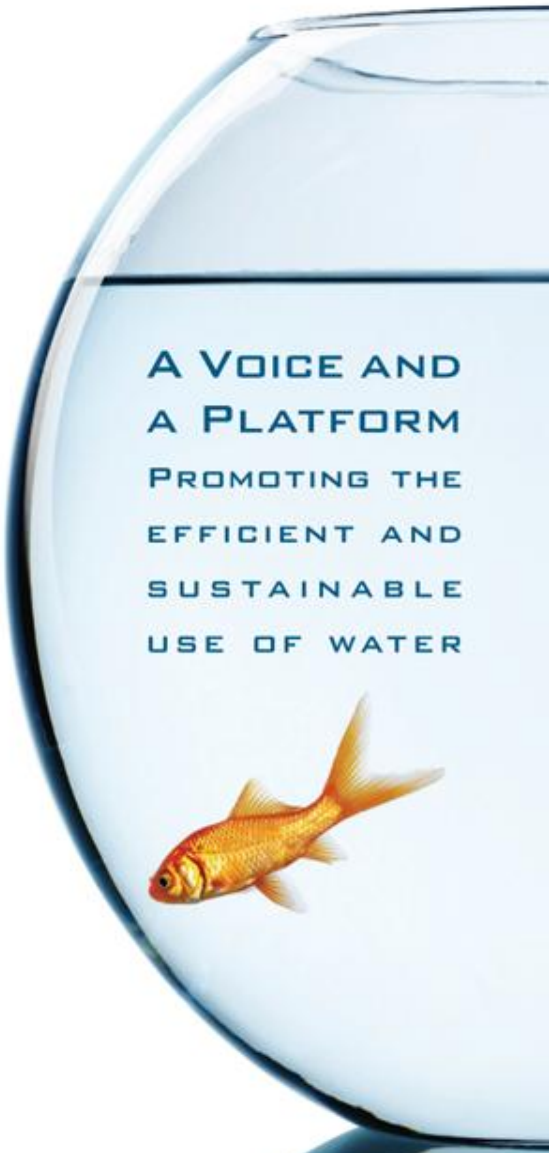
A National Perspective on Water Issues

Kane County Board
Committee of the Whole
November 28, 2011

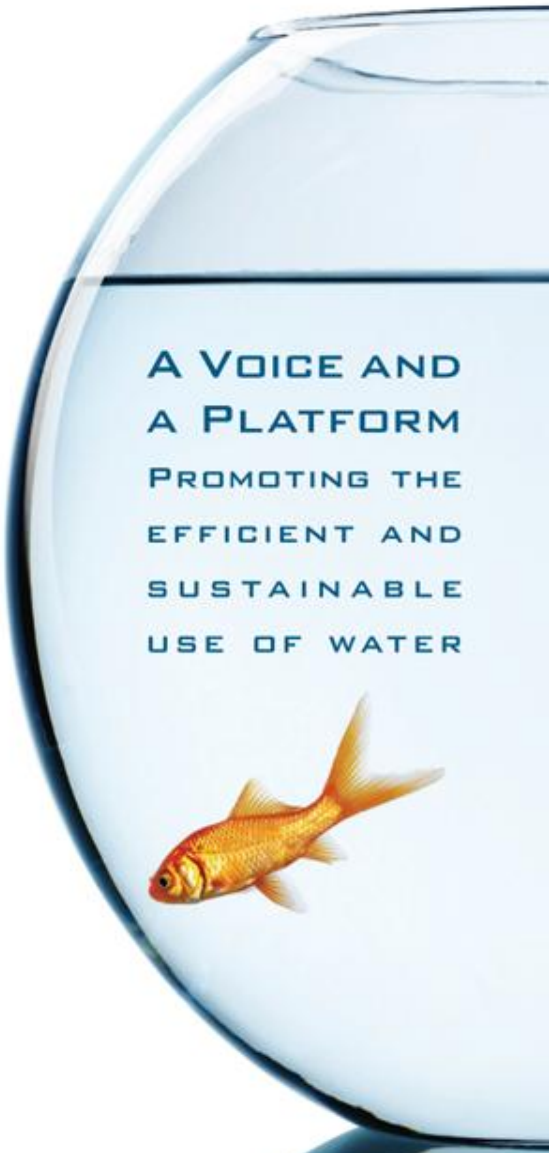
Mary Ann Dickinson, President and CEO



Alliance *for* Water Efficiency

Perspective #1:

Shortage Drives Different Utility Behaviors



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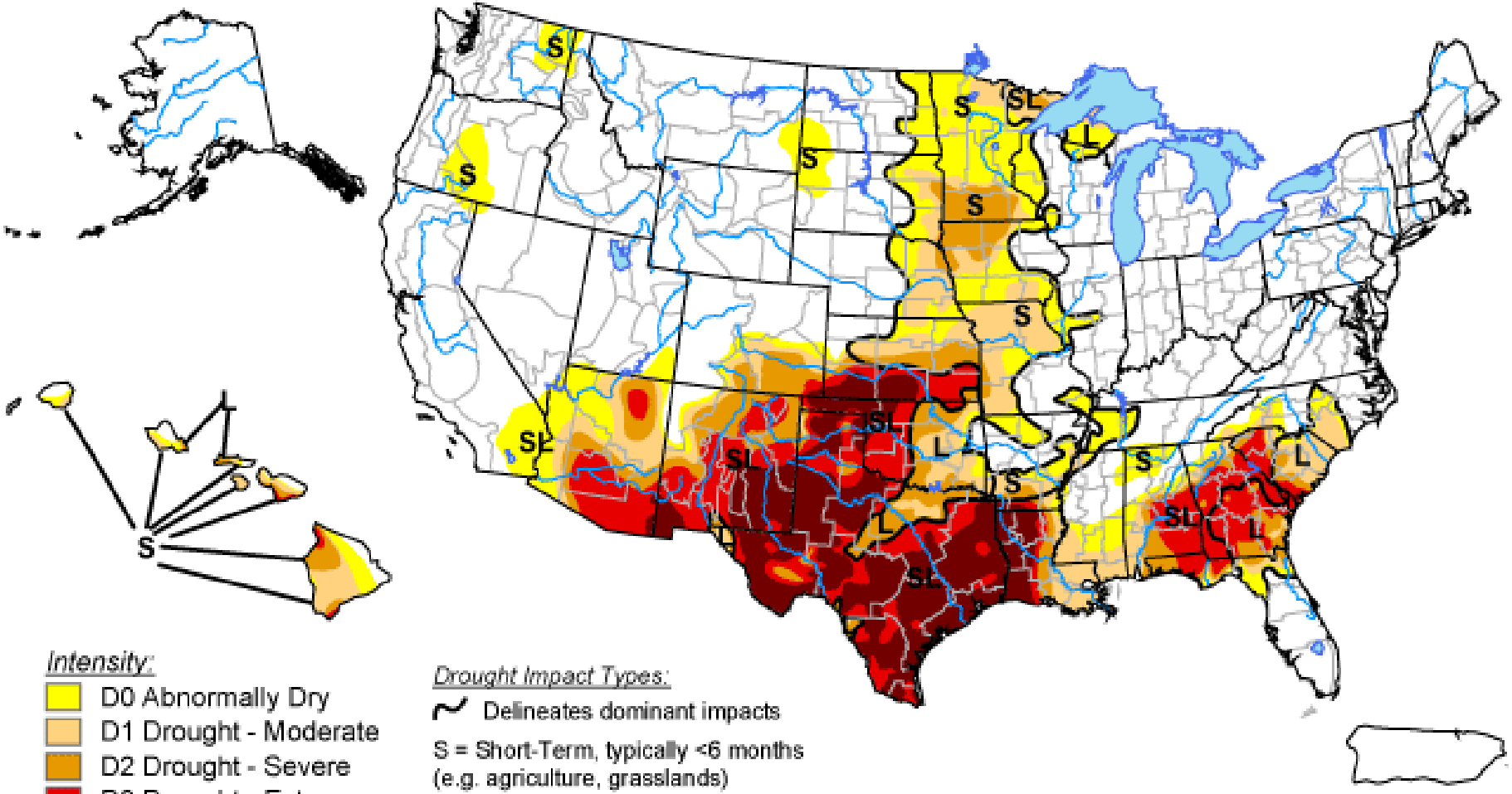
U.S. Drought Monitor

November 22, 2011
Valid 7 a.m. EST



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.

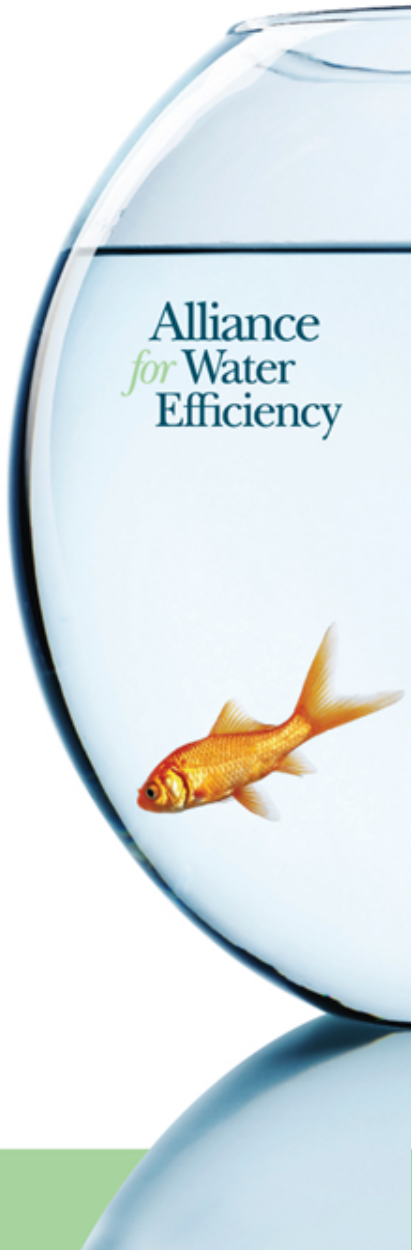
http://droughtmonitor.unl.edu/

Released Wednesday, November 23, 2011

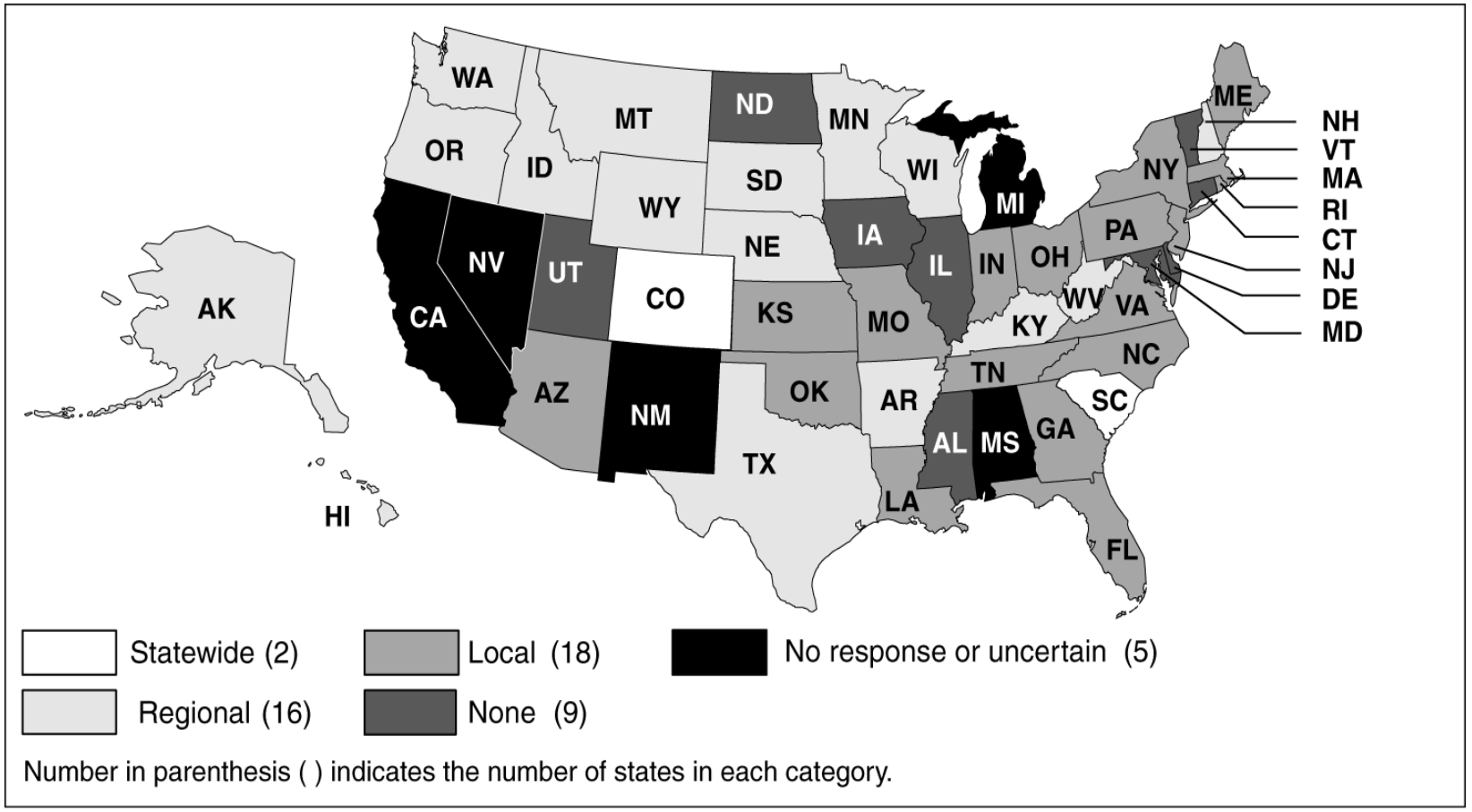
Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

When Not in Drought

- Water utilities across the country complain about not selling enough water and with resulting revenue loss
- Consumers expect the water bill to go down when supplies are available
- Conservation behavior often diminishes without a perceived drought crisis
- The costs avoided by the utility from conservation get forgotten in the drive to sell excess capacity

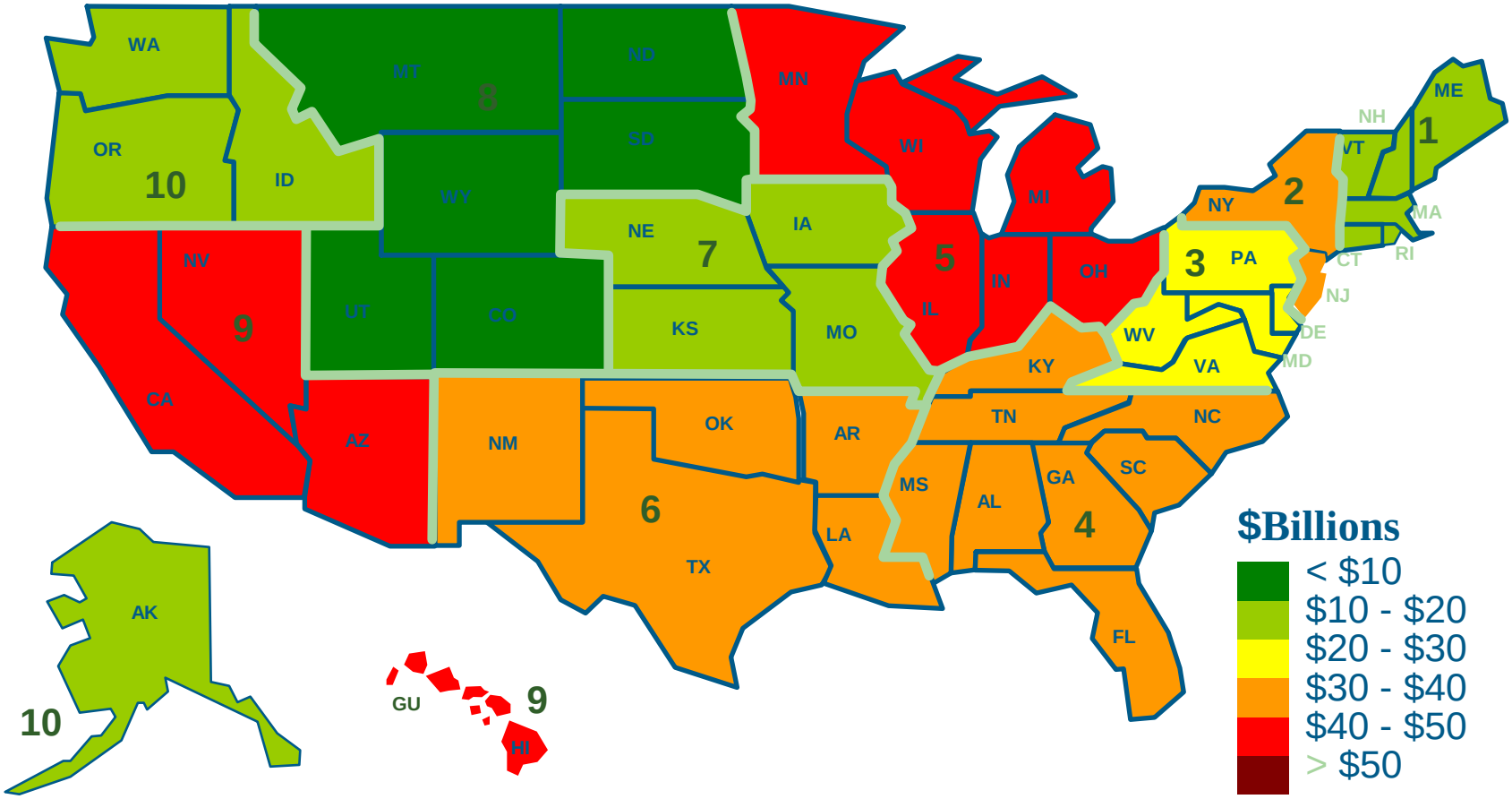


40 of the 50 States



Source: GAO analysis of state water managers' responses to GAO survey.

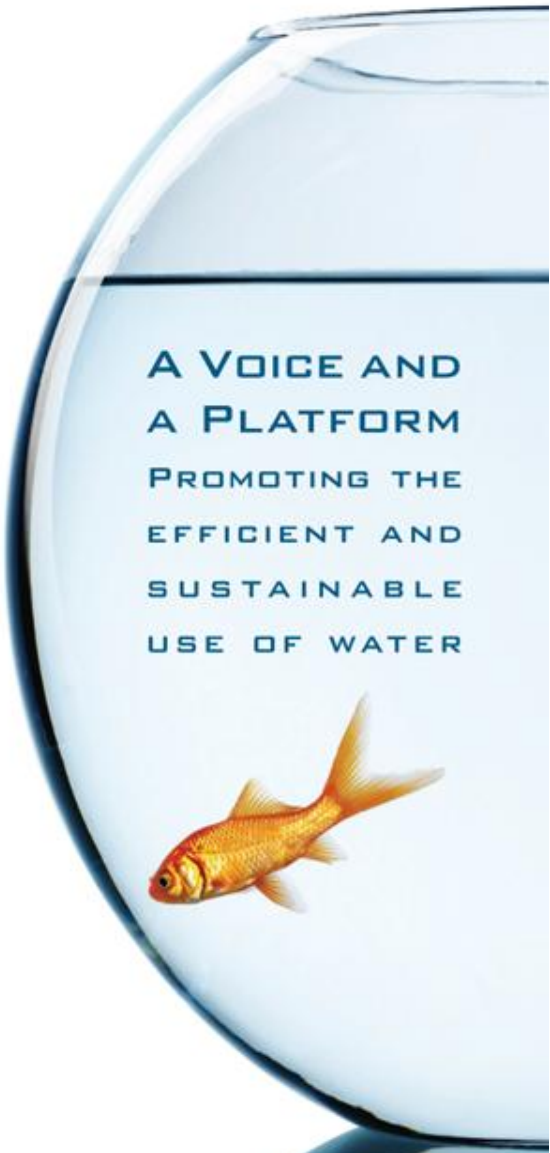
$533 Billion Shortfall by 2020



20 Year Drinking Water and Clean Water Infrastructure Needs by EPA Region

Perspective #2:

Energy is Becoming a Significant Factor



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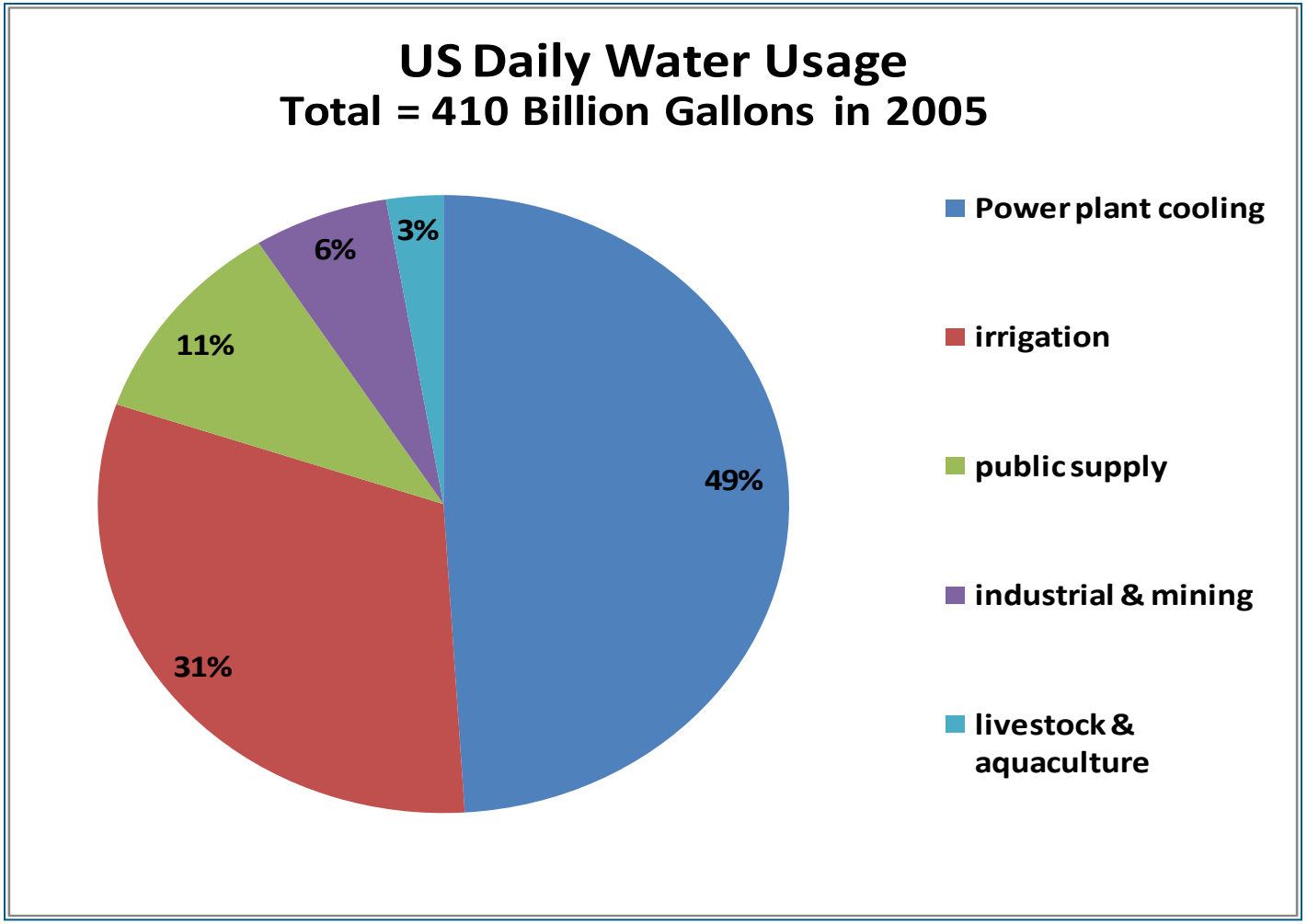
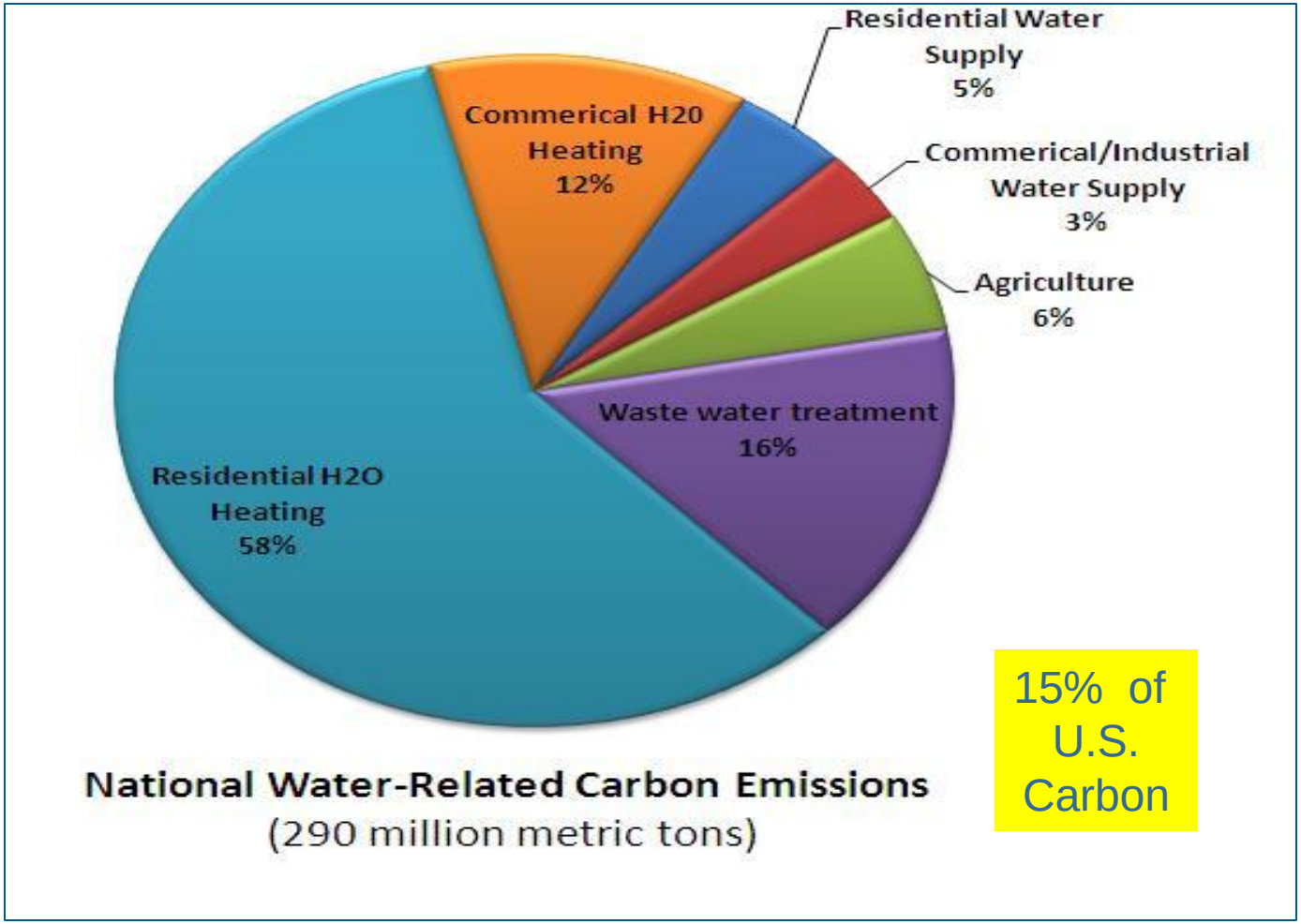
US Daily Water Withdrawals



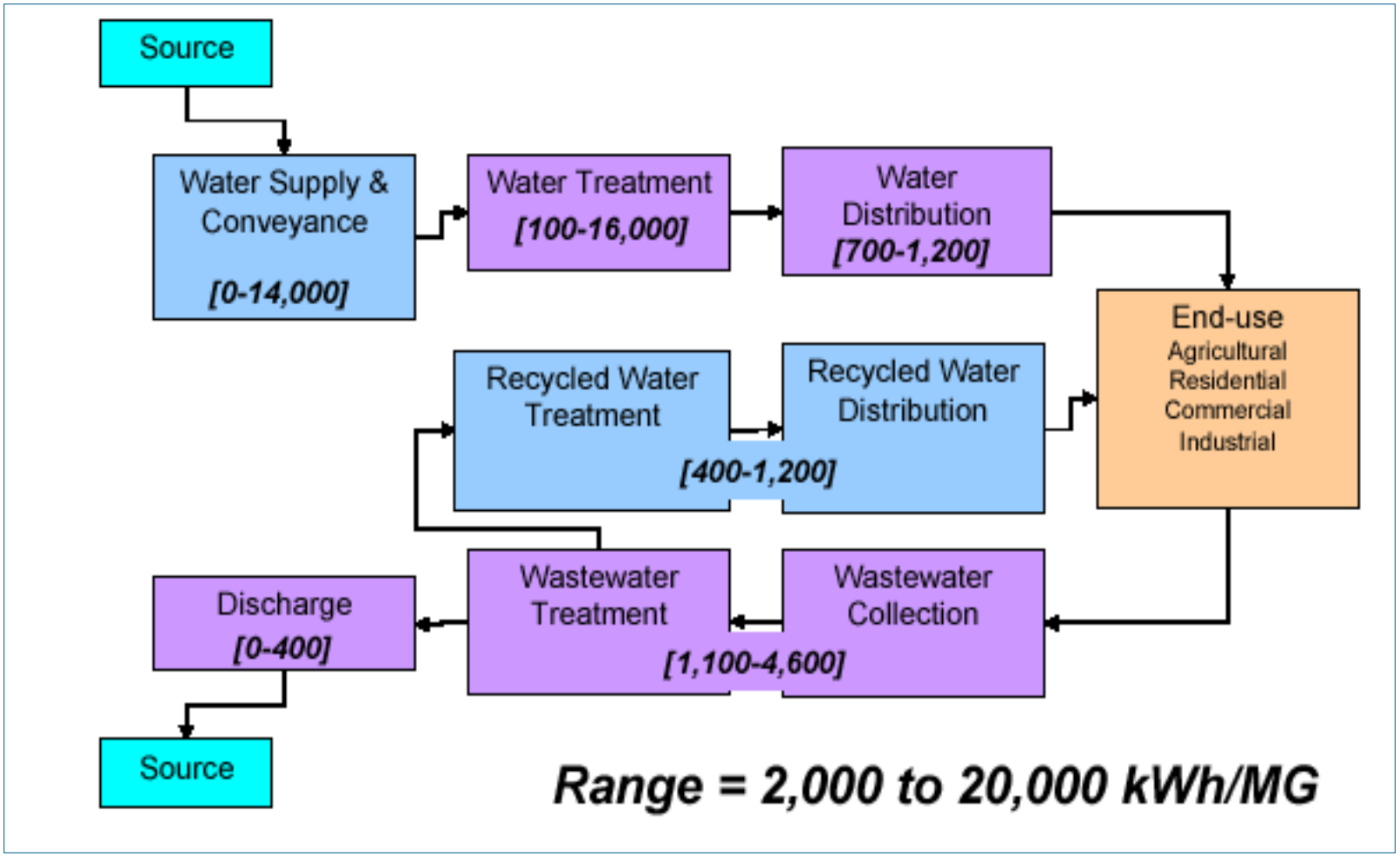
Source: US Geological Survey 2005

The Carbon Footprint of Water



River Network 2009

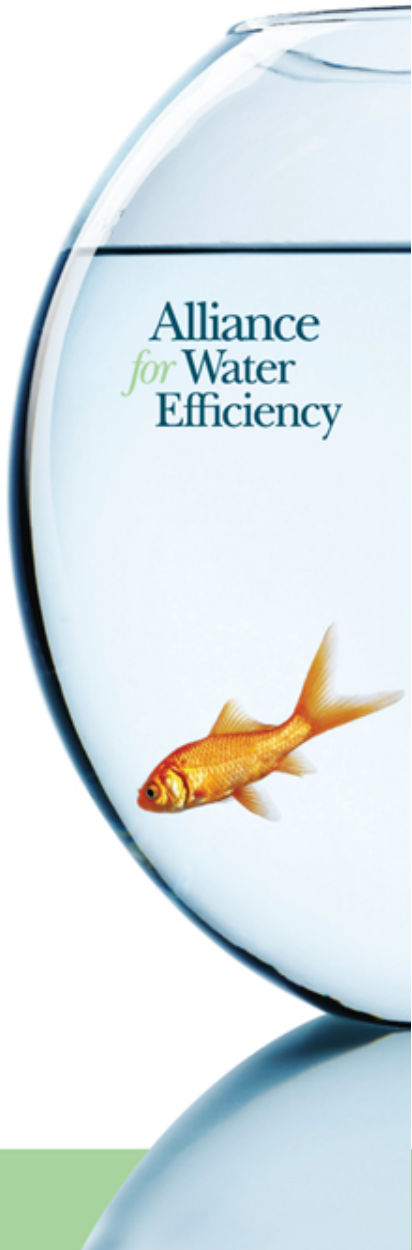
Embedded Energy



Source: California Energy Commission, 2005 IEPR

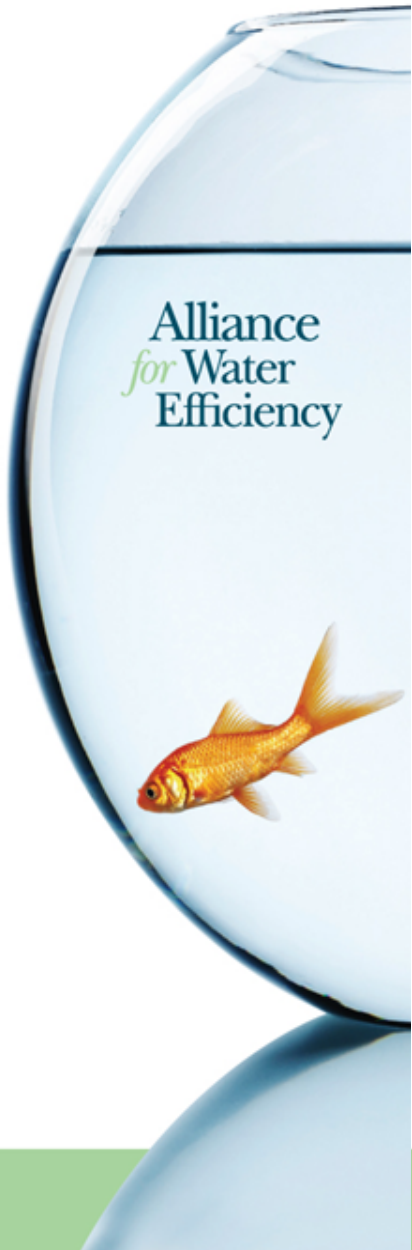
Local Data is Key

- Every type of water supply running through the utility system has a different embedded energy value
- Utilities need to know what their on-margin energy numbers are for their water supplies
- Wastewater should not be forgotten
- Water conservation programs can be targeted to reducing demand in the most beneficial manner to the system
- Numerous models exist to help analyze this (stay tuned)



Utility Opportunities

- System optimization for energy is important, but a large energy benefit can also come from customer demand side conservation
- Energy efficiency funding can be used to fund customer water efficiency programs when the energy benefit is calculated
- Need a better way for the water and energy communities to work together because we haven't in the past

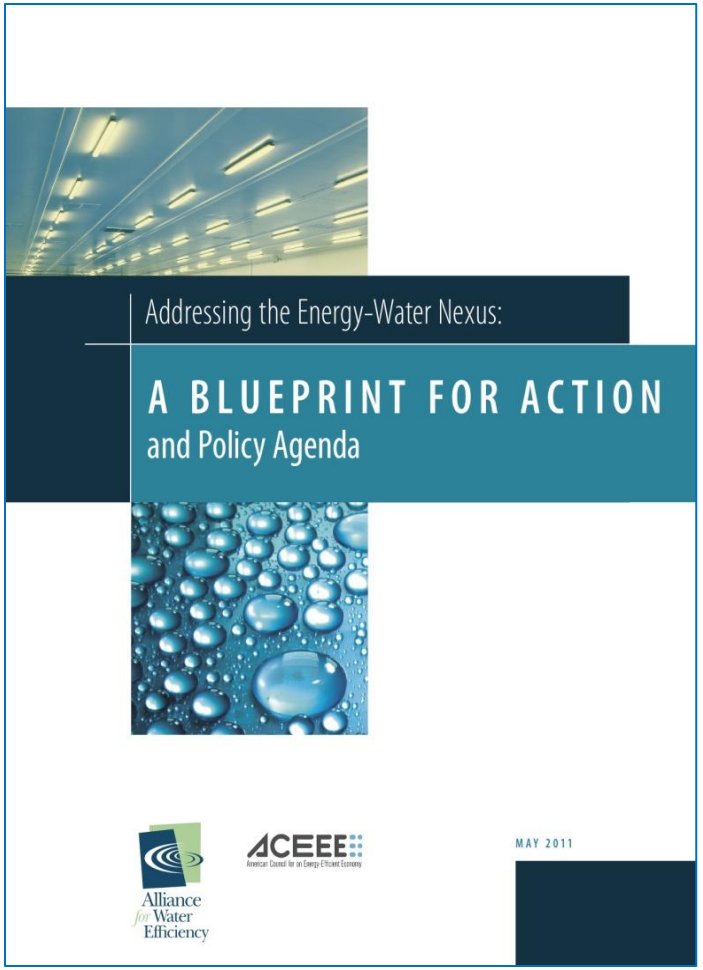


December 9, 2010 Workshop

- AWE and ACEEE got the stakeholders together
- Over 75 key organizations identified and invited
- 54 individuals from 41 groups
- 31 themes identified with votes on priority areas
- 8 Main Themes emerged with recommendations
- 5 Priority areas for immediate action identified

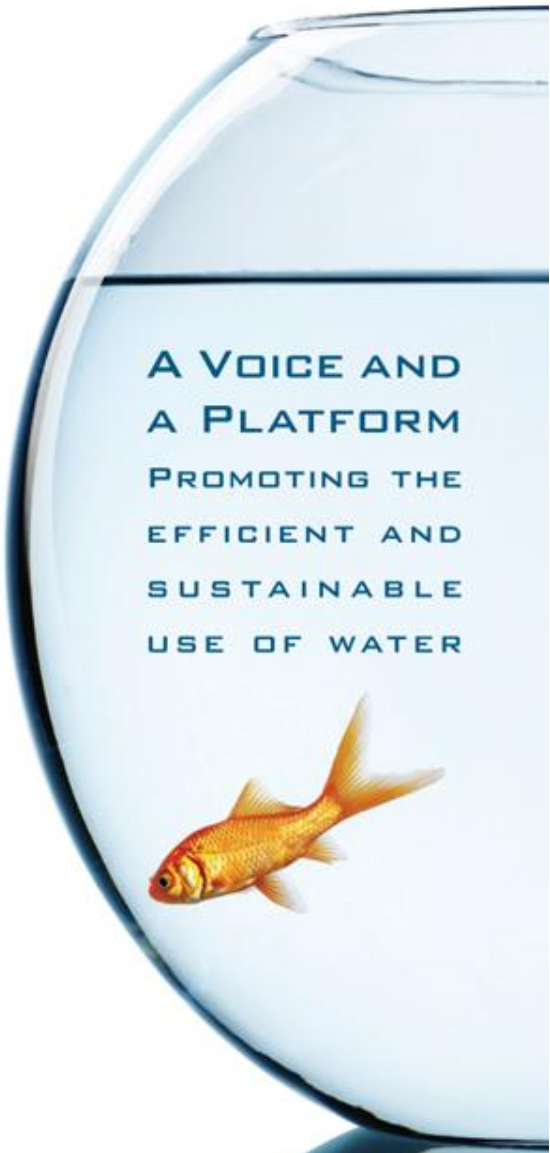
National Action Needed

- Blueprint document issued with over 50 recommendations from the stakeholder workshop
- Focused on state and national policies and programs
- www.a4we.org



Perspective #3:

Revenue Loss Is THE Big Issue All Across the Country

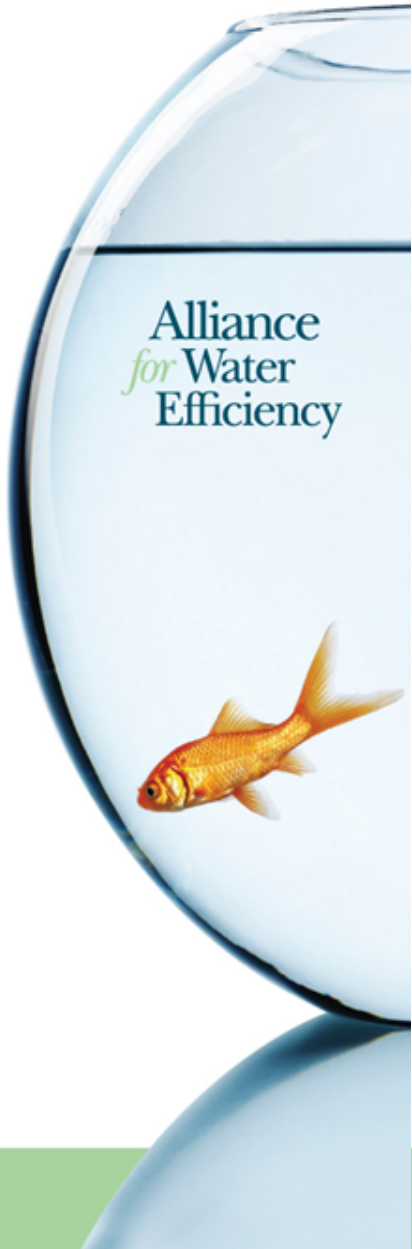


Alliance *for* Water Efficiency

Our Reality

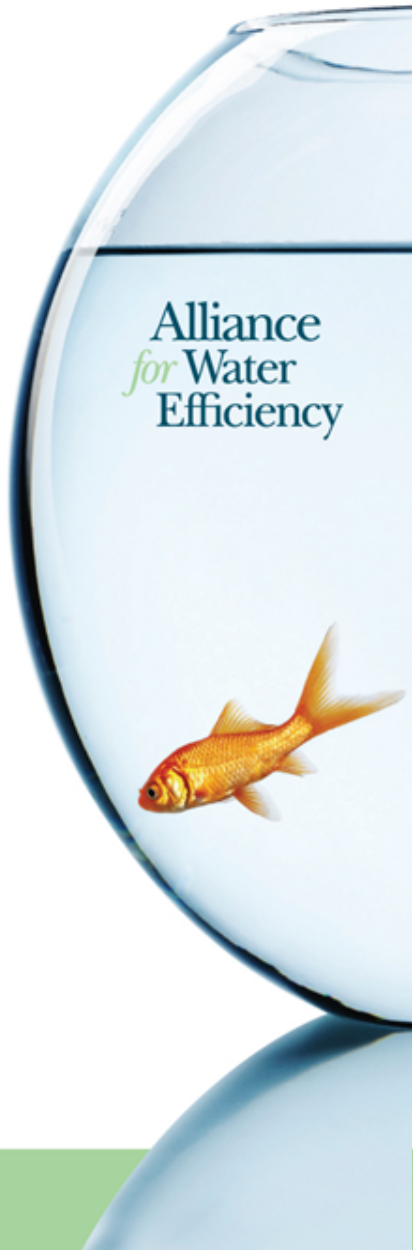
We don’t like to revise our rates

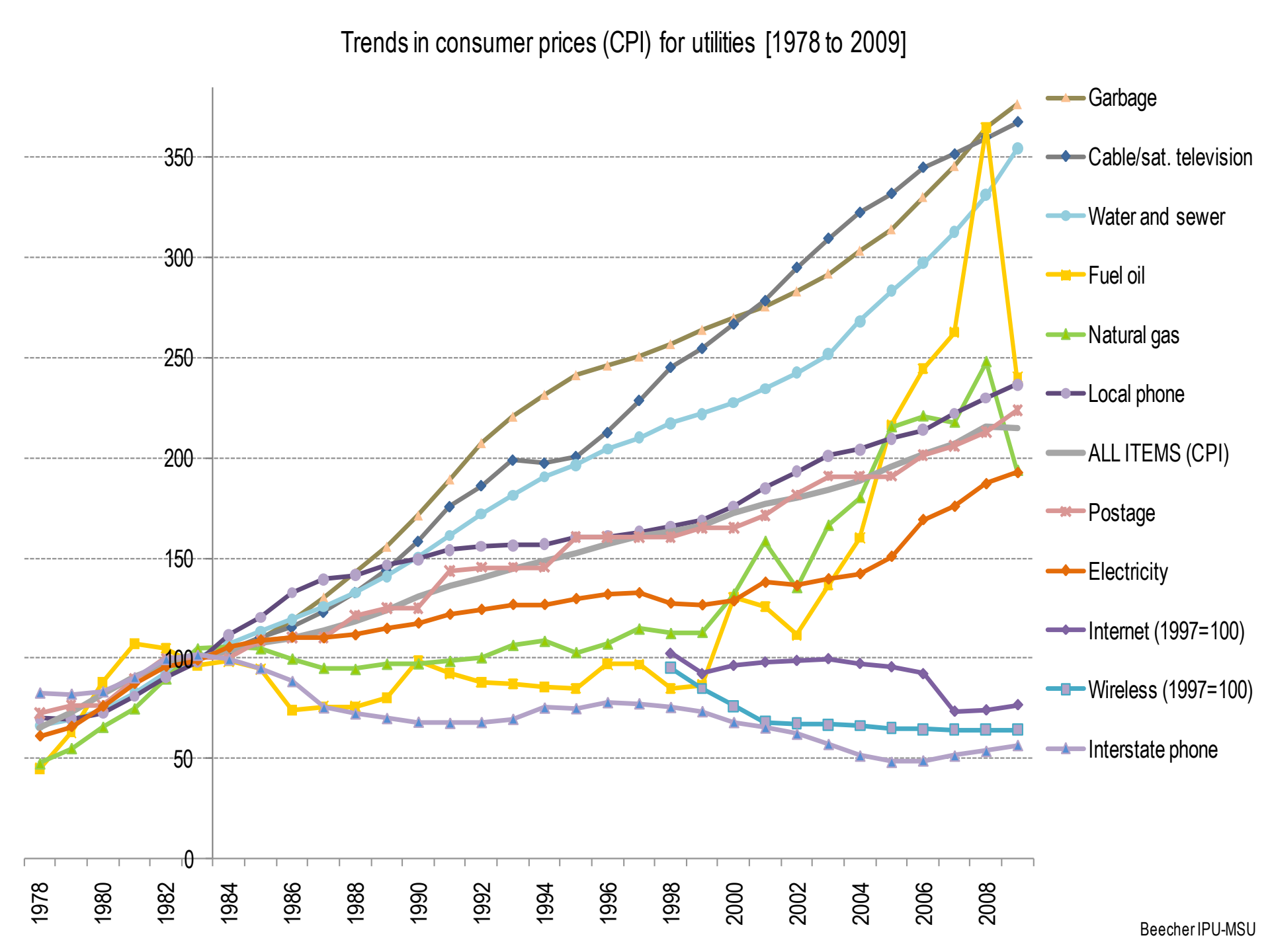
- It is politically unpopular, so rates are changed as little as possible
- The inevitable inflationary increase is postponed until it is a crisis
- Conservation is blamed as the culprit – even when the water utility or district is doing no active conservation programs at all!



All The Rate Drivers

- Reduced demand from efficient fixture replacement under the plumbing and appliance codes
- Reduced demand from active conservation programs
- Reduced demand from the recession: industrial shift layoffs, home foreclosures
- Reduced peak demand because of weather
- Need to maintain/renovate infrastructure
- **Inflation**
- **Rise in fixed costs**

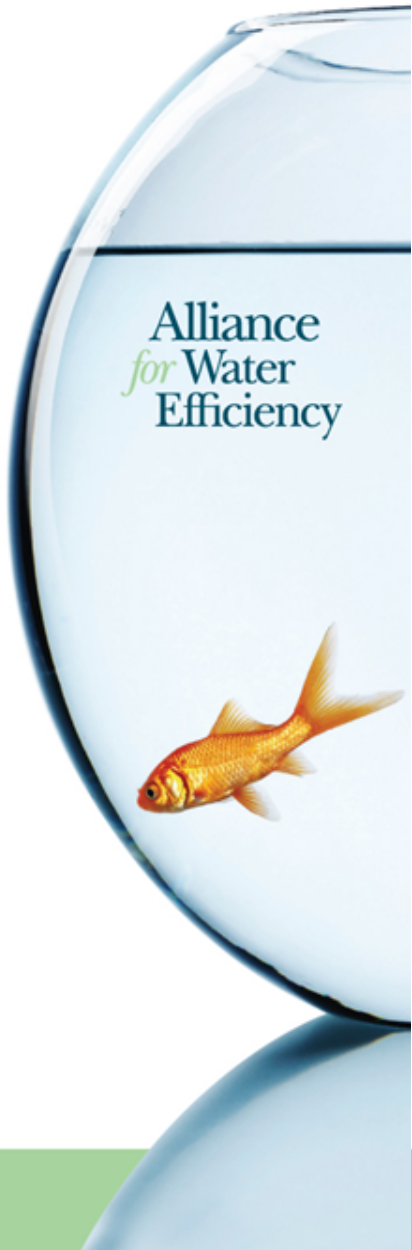



Trends in consumer prices (CPI) for utilities [1978 to 2009]
350
300
250
200
150
100
50
0
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Garbage
Cable/sat. television
Water and sewer
Fuel oil
Natural gas
Local phone
ALL ITEMS (CPI)
Postage
Electricity
Internet (1997=100)
Wireless (1997=100)
Interstate phone
Beecher IPU-MSU

The Anomaly

Water is still a bargain for the consumer

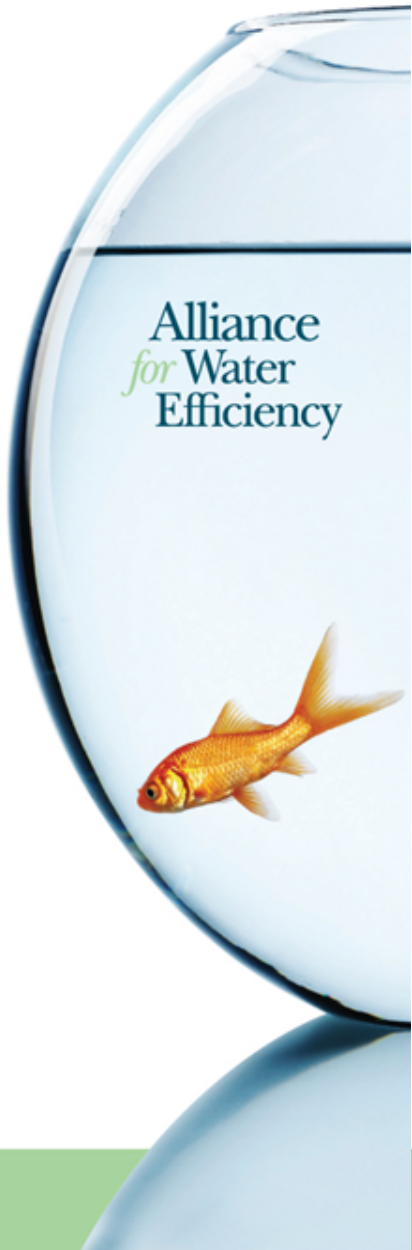
- A 30% rise in rates is often still no more than a $4 per month increase in the average customer bill
- The same consumer -- angry about rising water rates -- buys a 16 ounce bottle of water sold for $1.25, equivalent to $10.00 a gallon. People are willing to pay 10,000 times more for it when it comes in a bottle
- This perception is our fault – we have too long wanted to be the “silent provider”



The Utility Perspective

Utilities are in a boom or bust cycle.

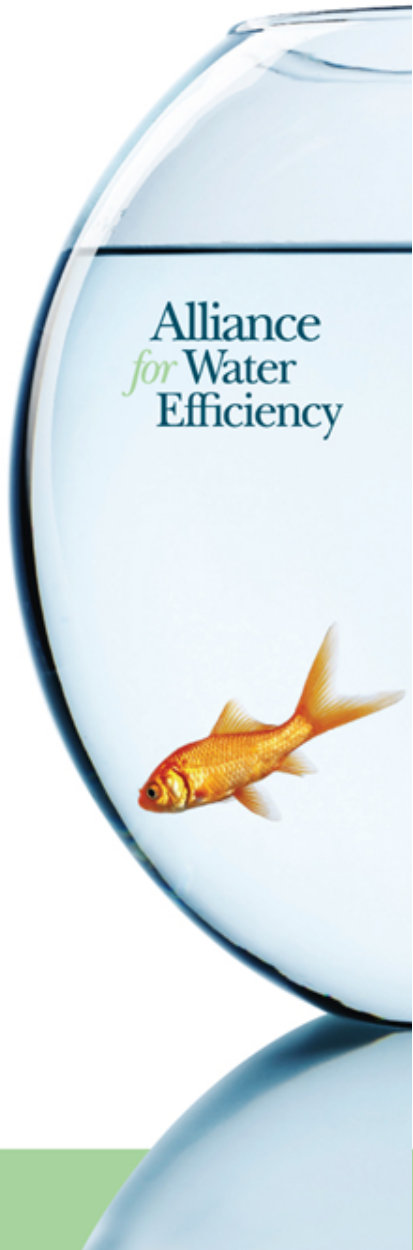
- When at overcapacity, they want to sell every drop to make their revenue goal
- When a drought occurs, they need the consumers to cut back but they actually sell more water
- Mixed messages to the customer
- Revenue structure cannot deal with these wide swings
- We need properly designed rate structures to stabilize systems



And Conservation?

It should still be a cost reducer to the utility

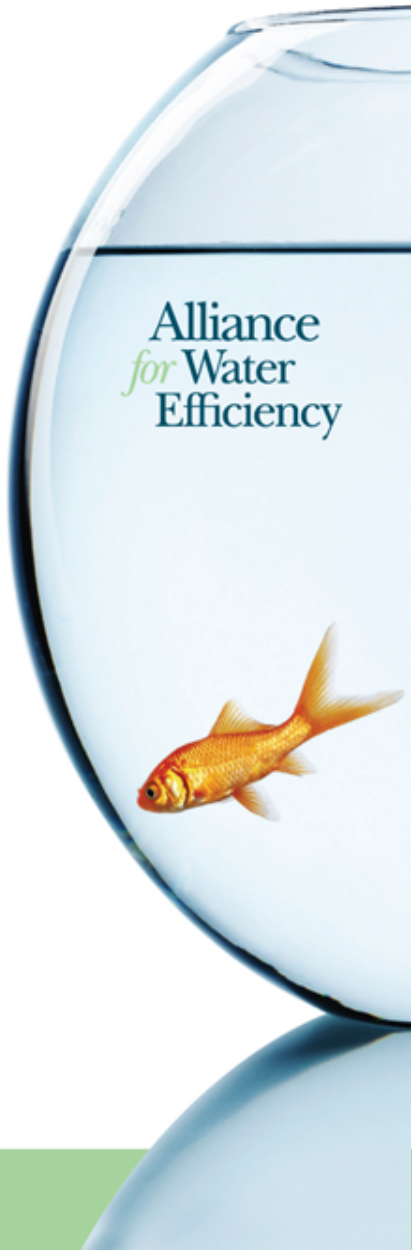
- Every gallon saved is water that does not have to be pumped and treated and delivered to the customer
- Reduced utility costs generally mean reduced rates for the customer on a long-term basis
- But the effects have to be planned for
- Conservation should not be the scapegoat for revenue loss due to other drivers



Bottom Line

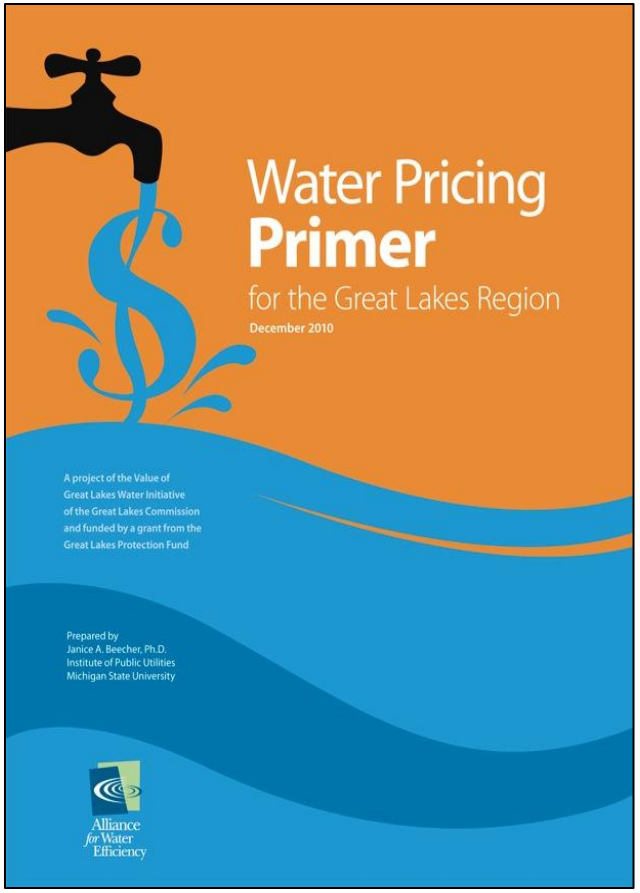
Wasting water should not make economic sense

- Water is a commodity with a lot of embedded treatment and energy cost in it
- If conserving water makes rates rise, it is more a failure to plan rather than a failure of economics
- It is also a failure of how we are structuring our rates



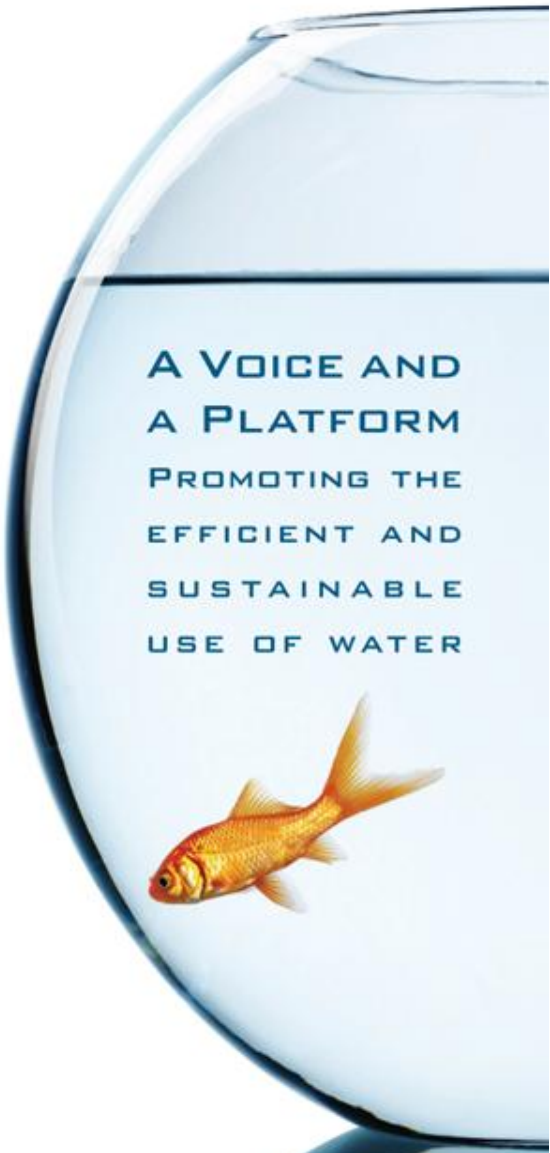
AWE Water Pricing Primer

- Introduction
- The Rationale for Efficiency
- Cost Knowledge
- The Cost of Water
- Cost-based Rates
- Pricing and Efficiency
- How Price Matters
- Rate Design
- Efficiency-oriented Rates
- Conservation and Revenues
- Implementing a Change in Rates
- Communication is Key



Perspective #4:

Customer Efficiency Has Benefits for Water and Wastewater Systems



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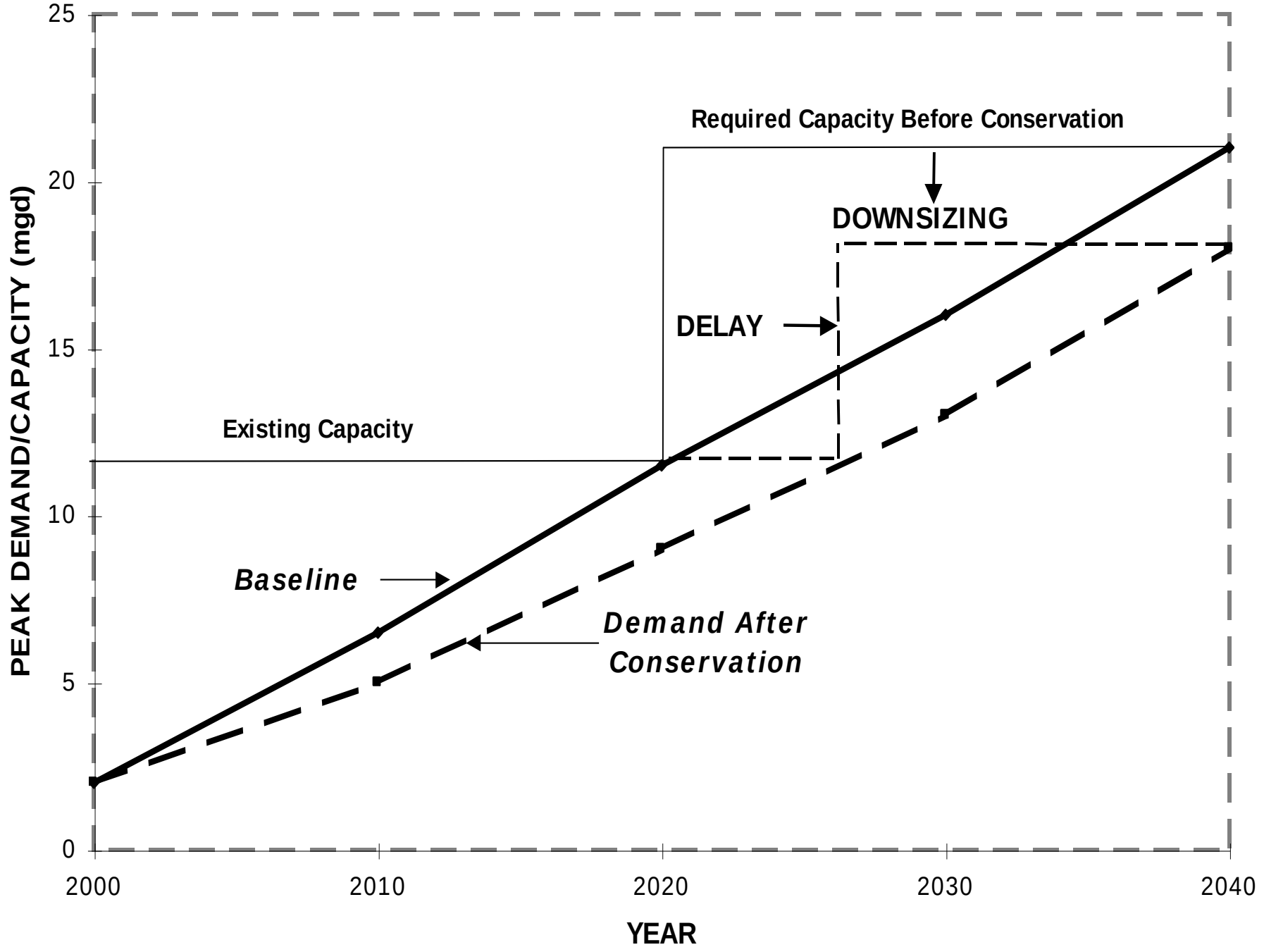

25
20
15
10
5
0
PEAK DEMAND/CAPACITY (mgd)
2000
2010
2020
2030
2040
YEAR
Required Capacity Before Conservation
DOWNSIZING
DELAY
Existing Capacity
Baseline
Demand After Conservation

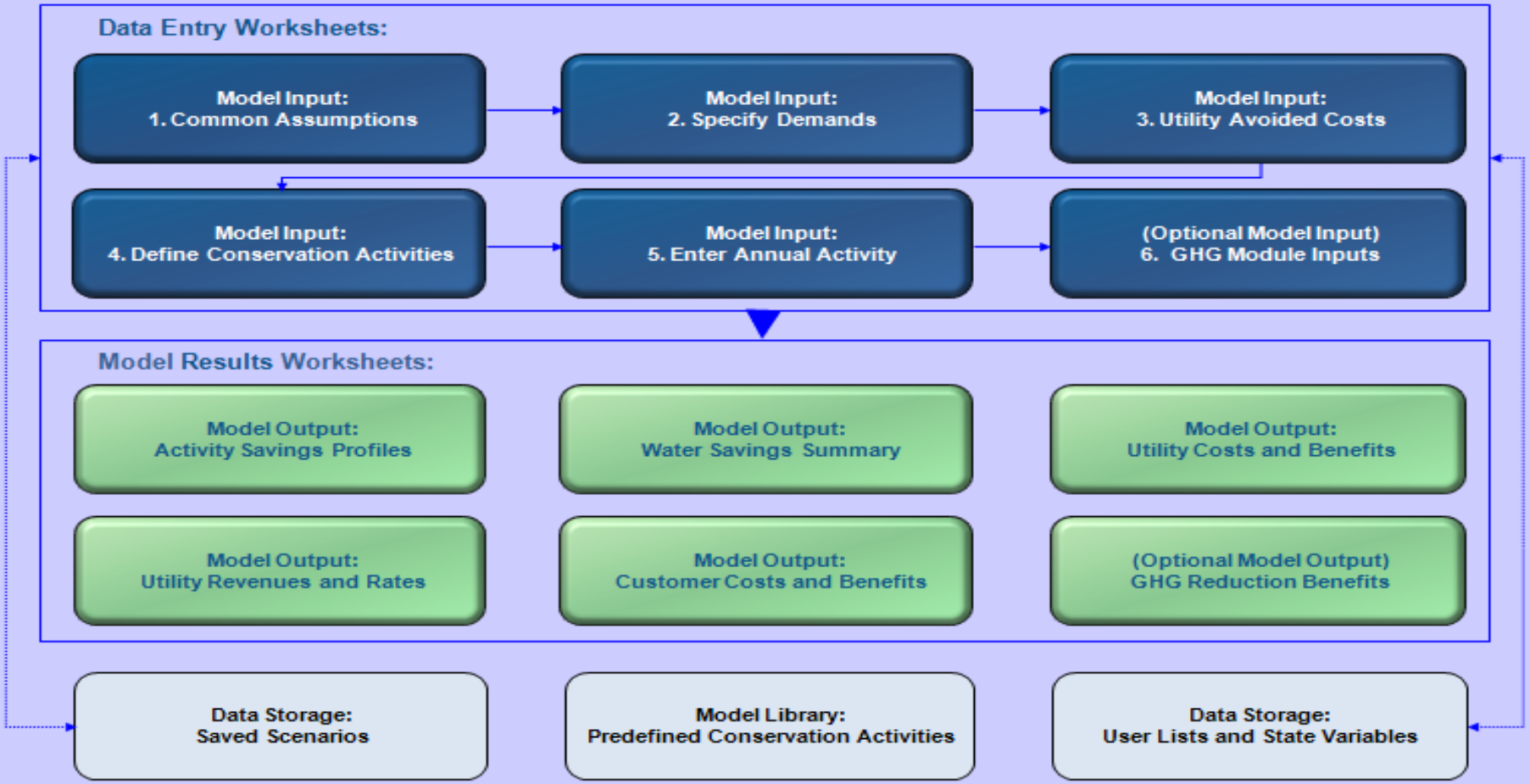
AWE CONSERVATION TRACKING TOOL

Version 2.0, Standard North American Edition

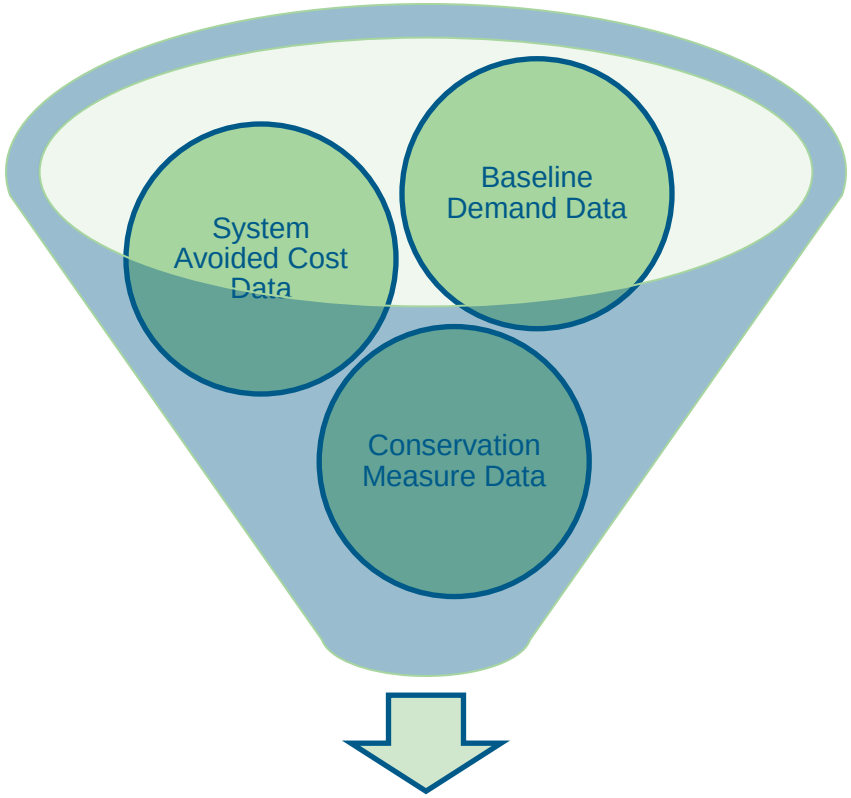
About Tracking Tool

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.



Tracking Tool Inputs and Outputs



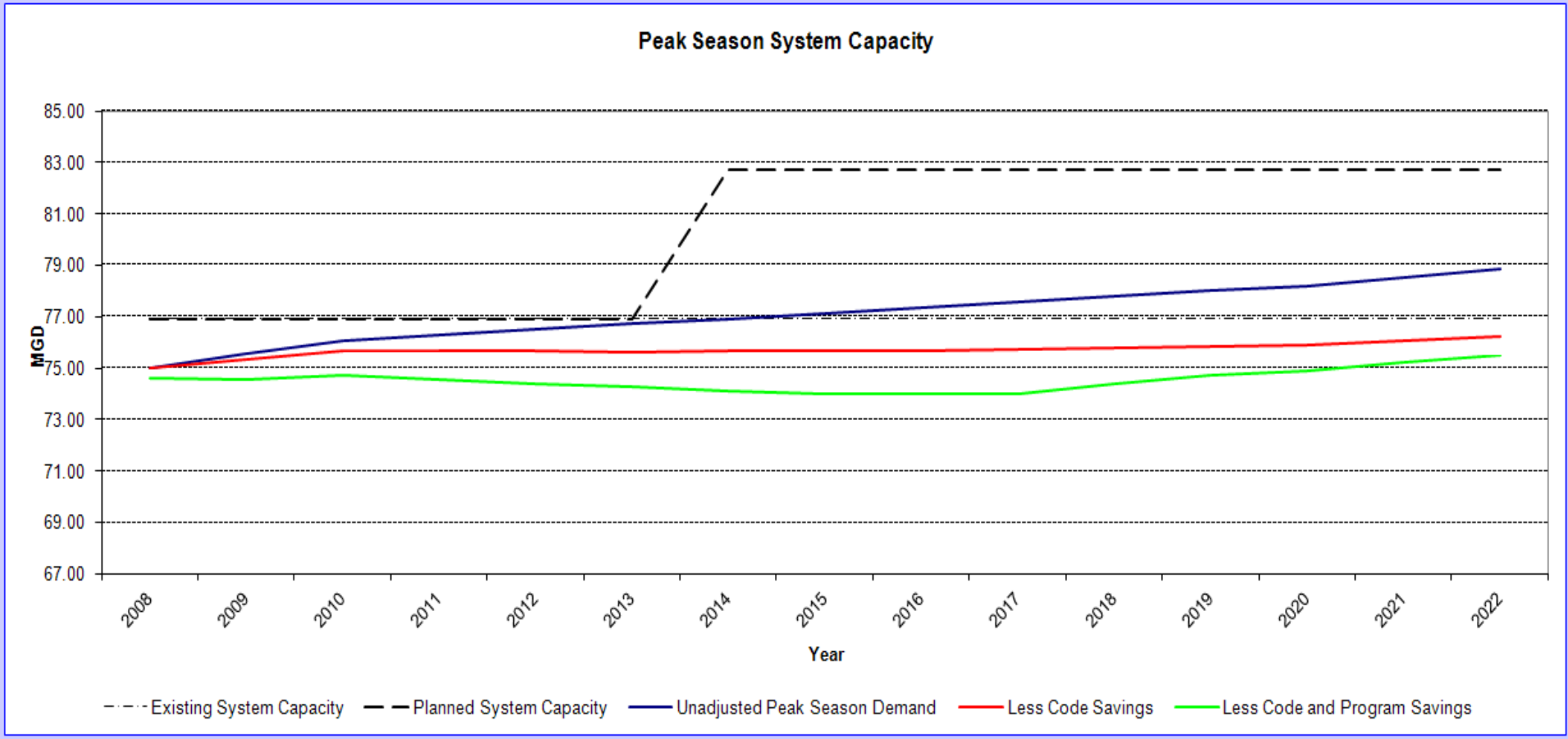
Capacity Deferral Analysis

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 Peak Season Capacity

No. of Years to Display 15 yrs

Chart Explanations



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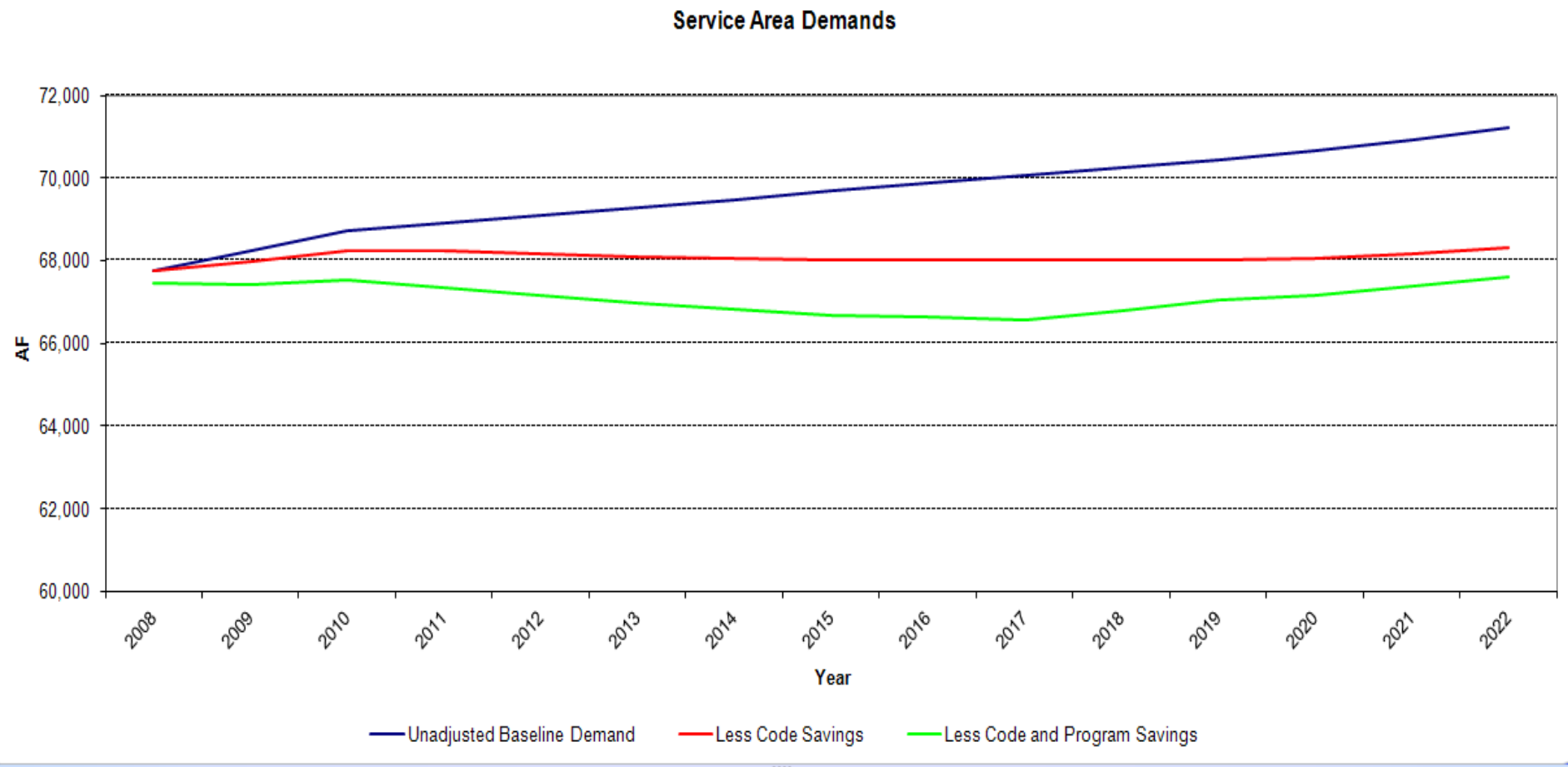
Baseline - Code Savings - Program Savings	**2027**	**13**	5.8	$11,231,717	0.0	$0

Select Chart to View

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



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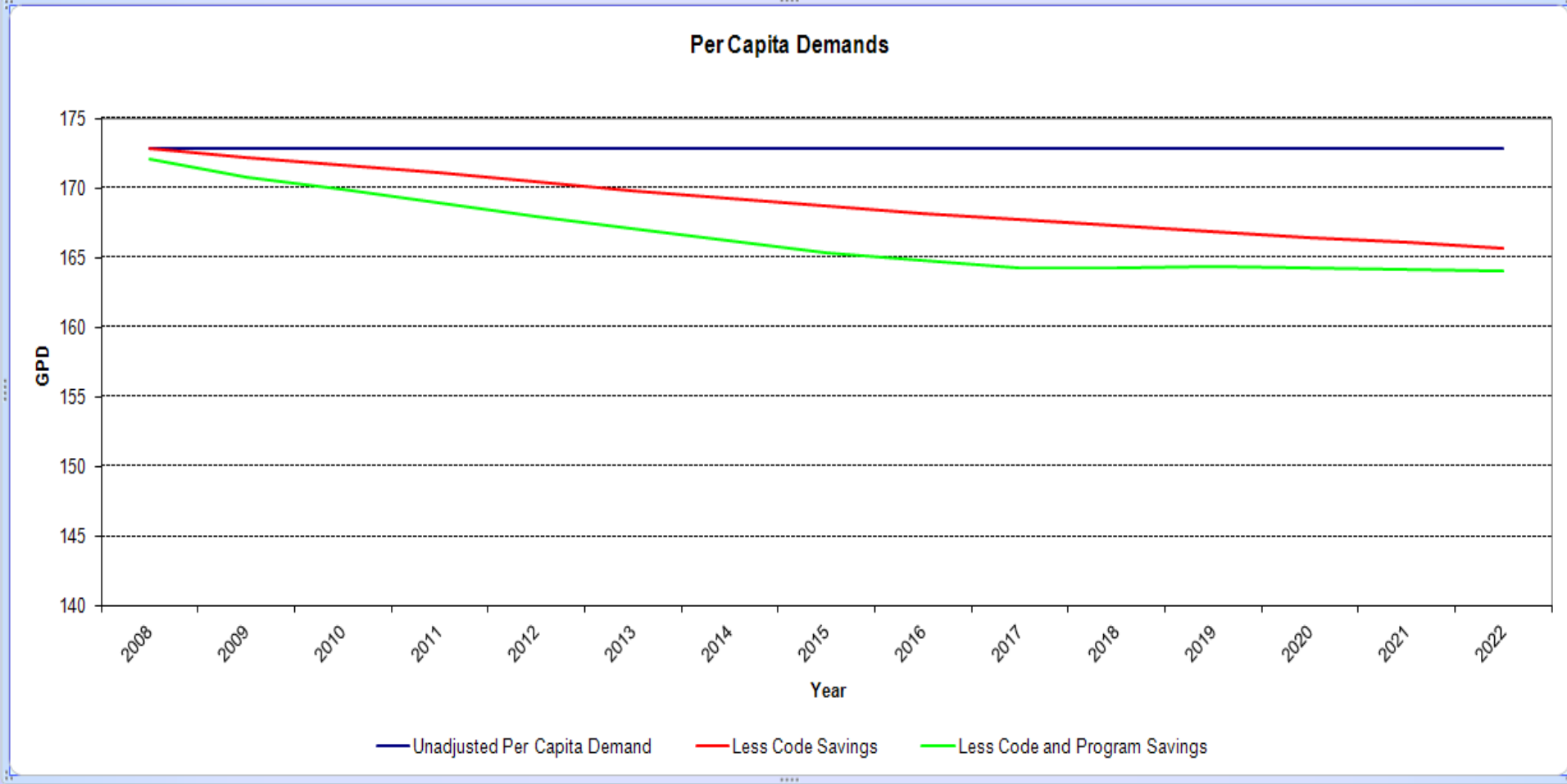
Baseline - Code Savings - Program Savings	**2027**	**13**	5.8	$11,231,717	0.0	$0

Select Chart to View

Per Capita Demands ▼ No. of Years to Display 15 yrs ▼ Chart Explanations



AWE CONSERVATION TRACKING TOOL: UTILITY COSTS & BENEFITS WORKSHEET

Show Budget Table

Return to Navigation Sheet Report Error

Conservation Program Cost Analysis (2010 Dollars)

Amort. Years: 20

Class	Activity Name	Unit Cost ($/AF)	PV Cost	Amortized Cost
Single Family	Residential Surveys, SF	$ 832	$ 1,469,277	$ 97,962
Single Family	Residential HE Toilets, SF	$ 403	$ 1,694,499	$ 112,979
CII	CII HE Toilet	$ 787	$ 4,220,334	$ 281,386
Single Family	Residential Irrigation Controller, SF	$ 783	$ 7,687,606	$ 512,563
Irrigation	Large Land. Irrigation Controller	$ 193	$ 2,520,977	$ 168,083
CII	CII Spray Rinse Valve	$ 324	$ 318,207	$ 21,216
CII	CII Cooling Tower	$ 201	$ 1,055,409	$ 70,368
Subtotal Conservation Activities		**$ 469**	**$18,966,309**	**$ 1,264,557**
Total With Overhead & Public Information		**$ 469**	**$18,966,309**	**$ 1,264,557**

Conservation Benefit Analysis (2010 Dollars)

Class	Activity Name	Unit Benefit ($/AF)	PV Benefit	Avoided Supply	Avoided Wastewater	Capacity Benefit
Single Family	Residential Surveys, SF	$ 662	$ 1,167,828	$ 898,505	$ 40,596	$ 228,728
Single Family	Residential HE Toilets, SF	$ 676	$ 2,841,271	$ 2,280,326	$ 240,463	$ 320,482
CII	CII HE Toilet	$ 676	$ 3,624,397	$ 2,908,842	$ 306,741	$ 408,815
Single Family	Residential Irrigation Controller, SF	$ 620	$ 6,089,920	$ 4,773,421	$ -	$ 1,316,499
Irrigation	Large Land. Irrigation Controller	$ 634	$ 8,295,971	$ 6,369,481	$ -	$ 1,926,490
CII	CII Spray Rinse Valve	$ 695	$ 683,579	$ 536,074	$ 57,006	$ 90,499
CII	CII Cooling Tower	$ 748	$ 3,927,857	$ 2,862,134	$ 303,931	$ 761,792
Total		**$ 658**	**$26,630,822**	**$20,628,782**	**$ 948,736**	**$ 5,053,304**

Utility Conservation Program NPV and B/C Ratio (2010 Dollars)

Class	Activity Name	NPV ($)	B/C Ratio
Single Family	Residential Surveys, SF	$ (301,449)	0.79
Single Family	Residential HE Toilets, SF	$ 1,146,772	1.68
CII	CII HE Toilet	$ (595,937)	0.86
Single Family	Residential Irrigation Controller, SF	$ (1,597,686)	0.79
Irrigation	Large Land. Irrigation Controller	$ 5,774,994	3.29
CII	CII Spray Rinse Valve	$ 365,371	2.15
CII	CII Cooling Tower	$ 2,872,448	3.72
Subtotal Conservation Activities		**$ 7,664,513**	**1.40**
Total With Overhead & Public Information		**$ 7,664,513**	**1.40**

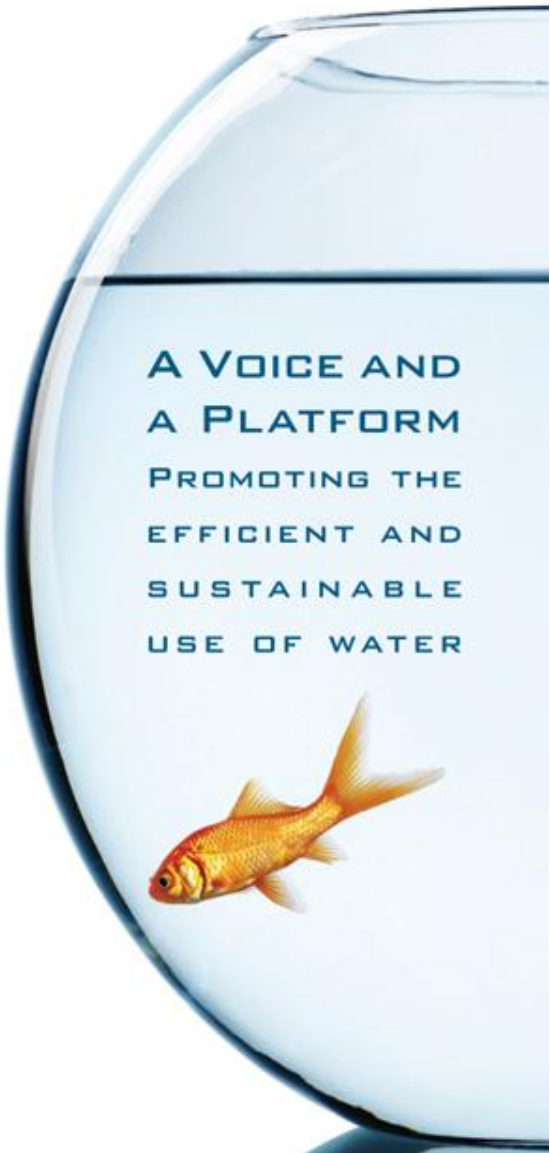
Select Chart to View

Unit Costs Sorted

Chart Explanations

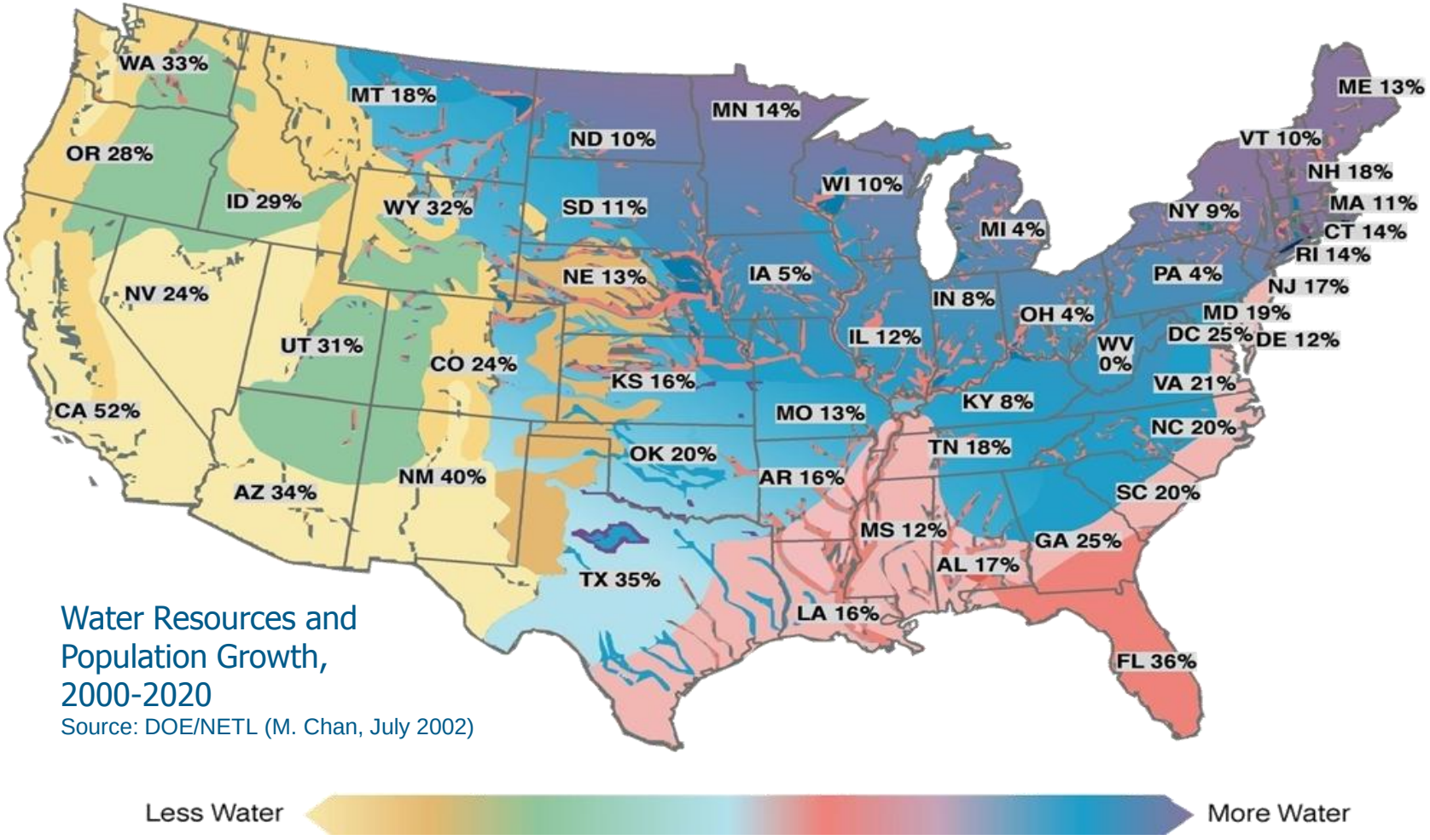
Perspective #5:

The First Class Utility Is No Longer Crisis-Driven



Alliance *for* Water Efficiency

Effects of Growth

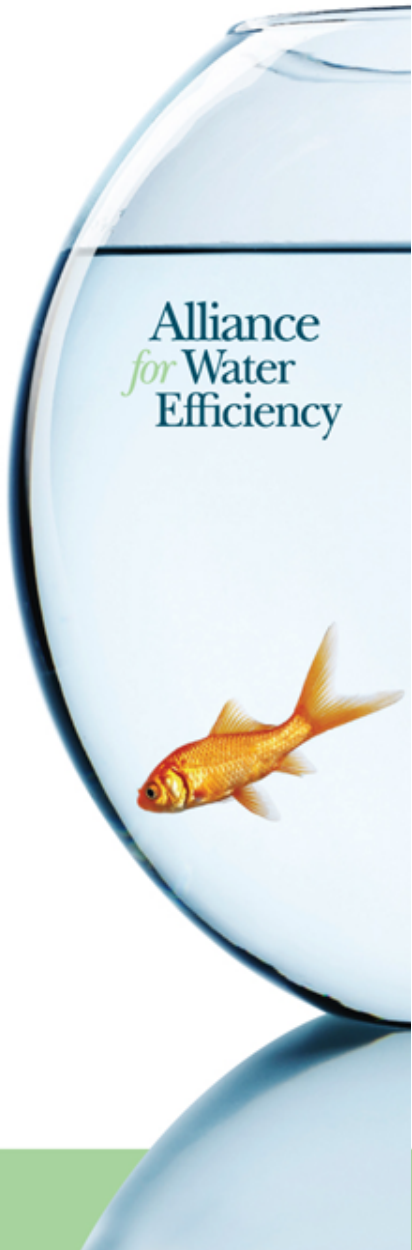


Water Resources and Population Growth, 2000-2020

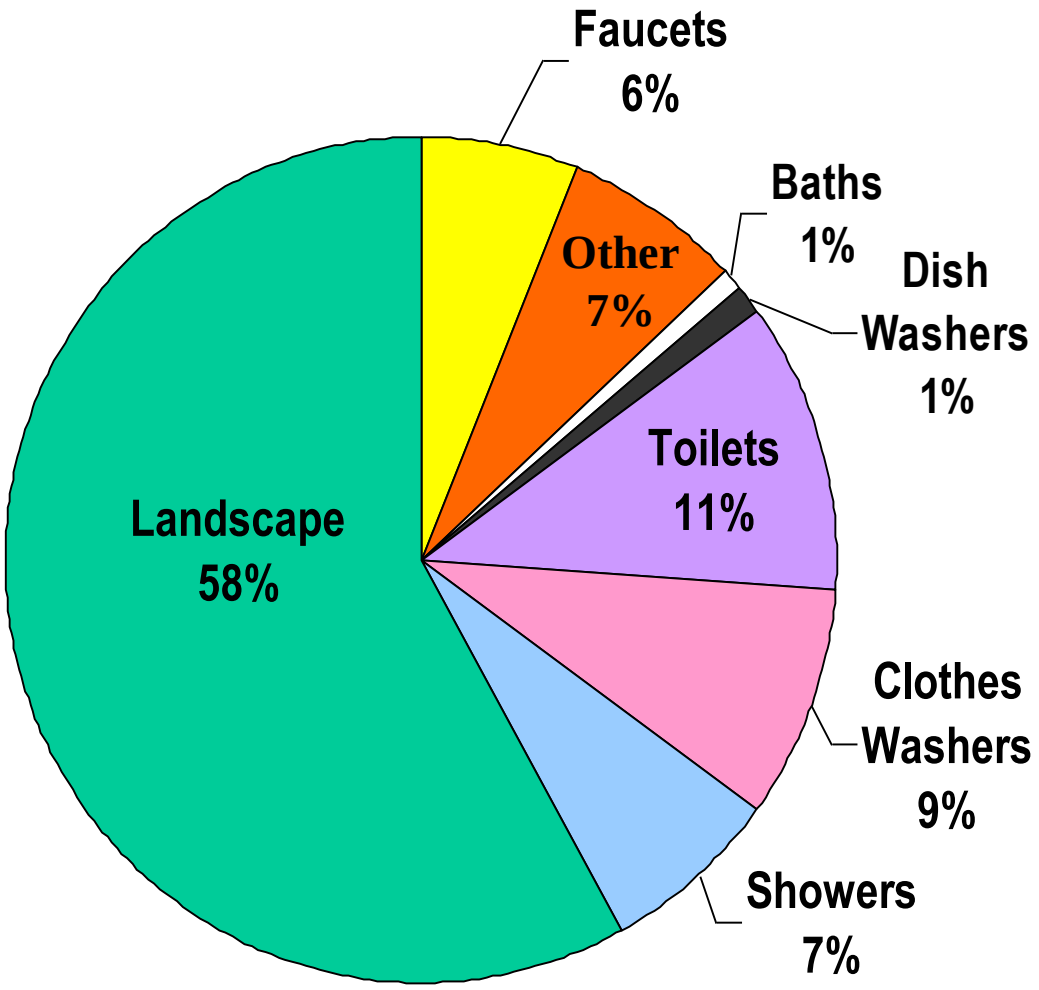
Source: DOE/NETL (M. Chan, July 2002)

Utilities Must Plan Differently

- Planning for sustainability and revenue stability is not the same now in 2012 as the typical utility growth planning of the past
- Cost-based rate structures must evaluate the future costs as well as the current and past ones
- The consumer must be a partner in this new planning paradigm



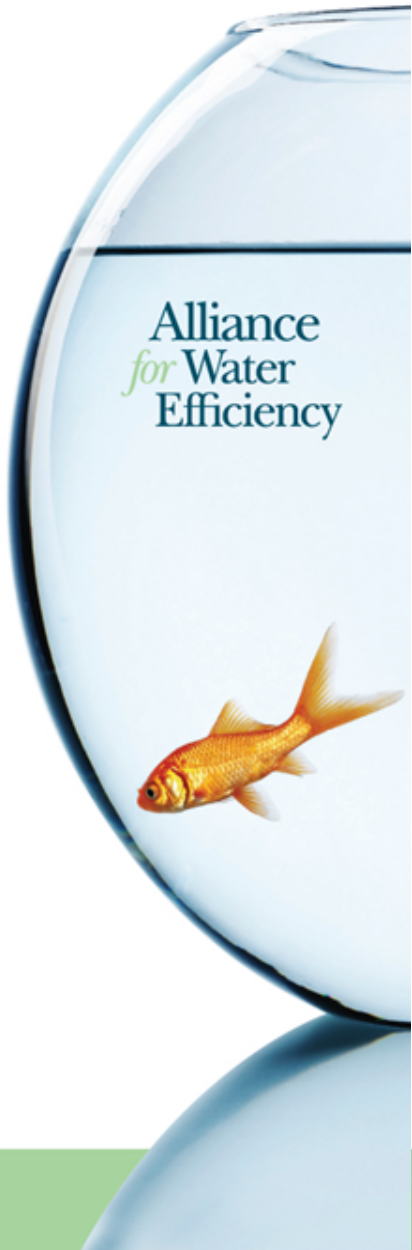
Urban Water Use



Source: AWWRF Residential End Uses of Water, 1999

Involving The Consumer

- The Problem: they are unaware of their own water usage levels
- They want the water bills to go down and not up
- Education on the level of their own water waste is critical
- Water IQ campaign and other media efforts
- AWE building consumer web site for linking to water utilities: Home Water Works



Home Water Works

- Residential consumer oriented web site
- Water Use Calculator
- Water saving tips
- Detailed info on:
  - Toilets
  - Clothes washers
  - Landscape design, installation, & maintenance
  - Irrigation
  - Faucets
  - Much more…

www.home-water-works.org

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

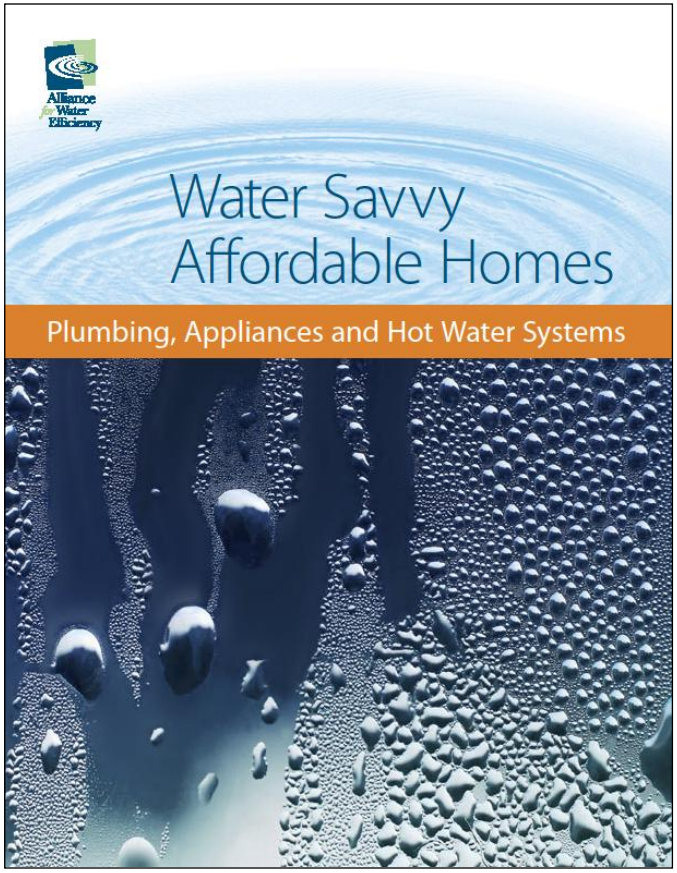
Carbon Footprint:

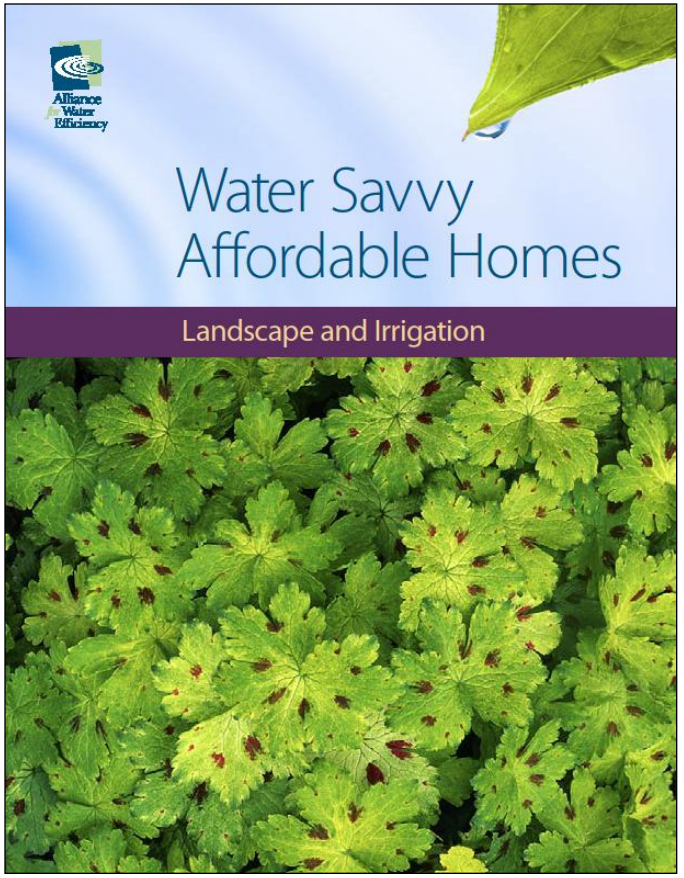
(lbs. CO2 /year)

Percent Complete

Areas to Complete
Roll over for number of questions

Affordable Home Design Guides





WaterSense Label

- **20%** more efficient
- Performance Tested
- Already labeled:
  - *Toilets*
  - *Faucets*
  - *Showerheads*
  - *Urinals*
  - *New Homes*
- New Labels:
  - *Irrigation controllers*
  - *Pre-rinse spray valves*

Alliance for Water Efficiency

Home | Calendar | News | Resource Library | WaterSense | Forum | Committees | Join | About

search Go

Great Lakes Rates Primer Released

AWE has released a report designed to provide water utilities and community stakeholders with an introduction to the key principles and concepts of sustainable ratemaking. Learn more here.

CLICK
JOIN OUR E-MAIL MAILING LIST
HERE

AWE Issues Media Campaign RFP

The Alliance for Water Efficiency is seeking qualified firms to design a consumer media campaign, to be used by member water utilities as well as the Alliance itself. Responses are due April 4, 2011 at 5:00 p.m. CDT. Click here to download the RFP.

PERC Welcomes a New Member

The Plumbing Efficiency Research Coalition welcomes the American Society of Plumbing Engineers as its sixth member. PERC was founded in 2009 to develop research projects that will support the development of water efficiency and sustainable plumbing products, systems and practices. Learn more here.

Calendar of Events

3/16/2011	AWWA Water Conservation Symposium
3/17/2011	WI Sedimentation and Erosion Control Inspector BMPs Class
3/23/2011	ILCA Natural Lawn Care Workshop
3/29/2011	6th IWA Specialist Conference of Efficient Use & Management of Water
4/7/2011	Watershed Planning Class

Latest Information

- Water Efficiency Watch Newsletter March 2011
- AWE Water Conservation Tracking Tool Released
- USGS Report - Estimated Use of Water in the U.S. in 2005
- Executive Order Sets Water Efficiency

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

Recent Library Updates

3/11/2011	Water and Water Efficiency Publications
3/9/2011	Water Efficiency Watch Listing
3/9/2011	Beecher (2011) Water Pricing Primer for the Great Lakes Region
3/9/2011	WRA (2010) Commonsense Solutions for Meeting Colorado Water Needs
3/9/2011	CEE (2010) Actual Savings and Performance of Tankless Water Heaters

AWE Library Sections

- Residential Water Use, Fixtures, and Appliances
- Landscape, Irrigation, and Outdoor Water Use
- Commercial, Institutional, and Industrial Water Users
- Non-Residential Fixtures, Appliances

Resource Library Home
Alliance Water Conservation Tracking Tool
Alternate Supply
CII Water Efficiency
Codes and Standards
Conservation Programs
Drought
Green Building
Landscape and Irrigation
Metering
Planning
Province Info (CAN)
Residential Efficiency
State Info (US)
Toilet Testing - MaP & UNAR
Water Loss Control
Water Rates

Great Lakes eleased

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provide water utilities
stakeholders with an
principles and conce
ratemaking. Learn m

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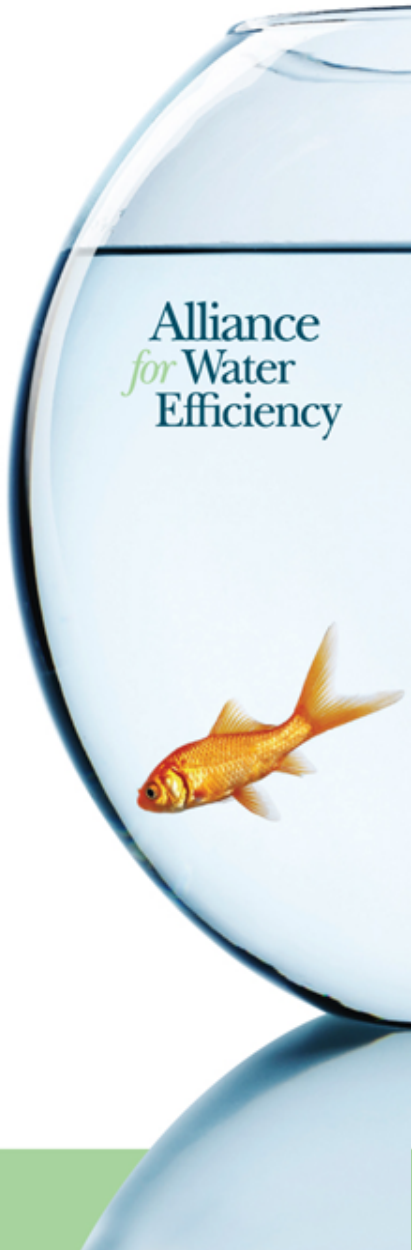
Online Resource Library

- Originally built in 2008 and use is growing
- Nearly **7 million** hits so far in 2011 with over **540,000** discrete users
  - Daily average hits: Over 24,000
  - Document downloads: over 200,000
  - Daily average downloads: over 2,000
- Content update now underway and will be completed in December, 2011
- Who uses it?

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Montana
North Dakota
Minnesota
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Oregon
Idaho
Wyoming
South Dakota
Wisconsin
Michigan
New York
Nebraska
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Arkansas
Tennessee
New Jersey
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Arizona
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Tucson
Juárez
Texas
Louisiana
Hermosillo
Chihuahua
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Torreón
Reynosa
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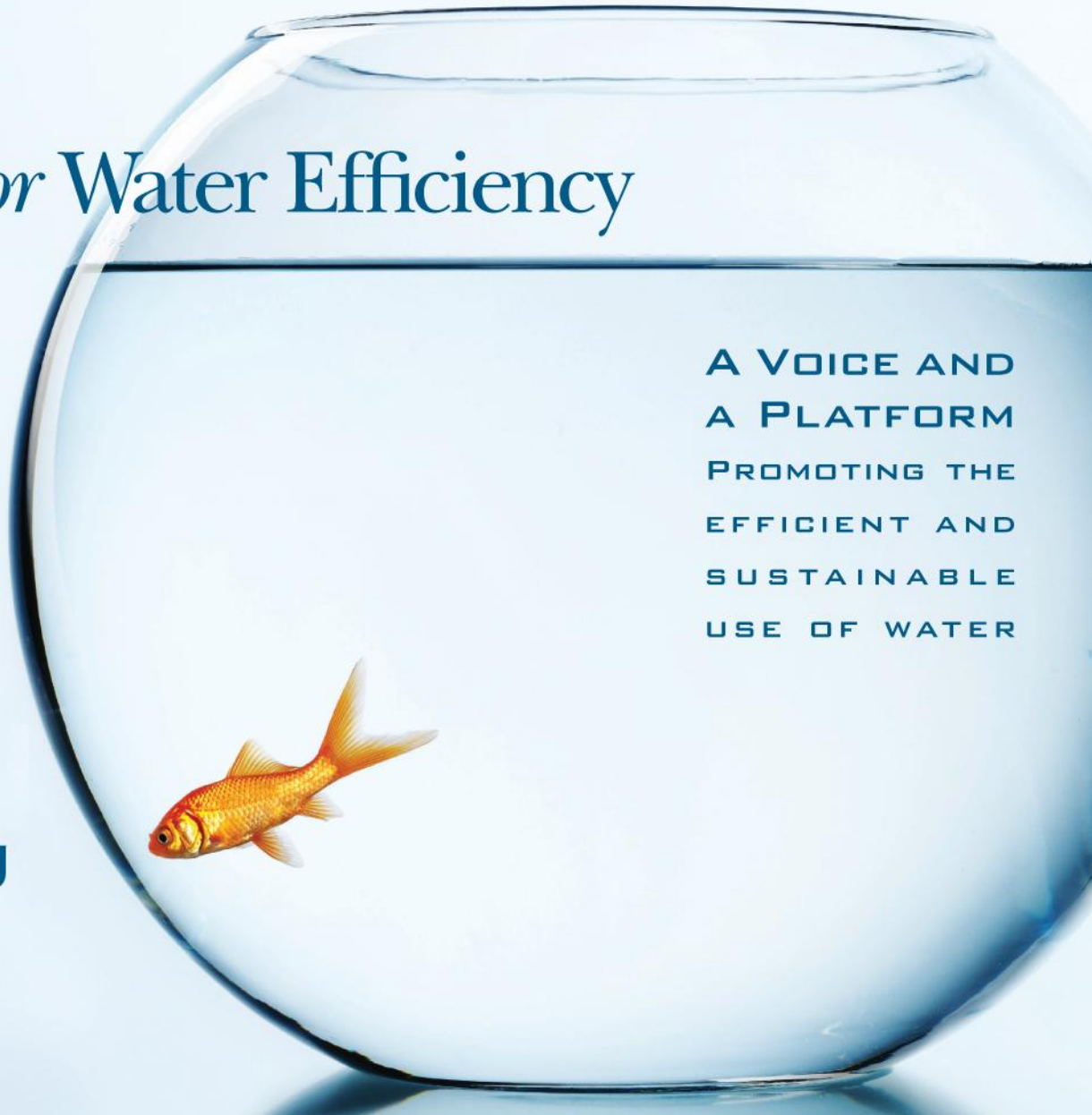
Alliance *for* Water Efficiency



A Voice and
a Platform
Promoting the
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use of water

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