

2013 Water Management Workshop Series



Metropolitan  **Planning Council**



Chicago Metropolitan
Agency for Planning

**Managing Indoor and Outdoor
Water Use— July 31, 2013**

Course ID 7255



DuPage Water Commission is Preserving Every Drop



Workshop series overview

Give conservation coordinators tools to educate and encourage customers to conserve water by emphasizing the importance of conservation and the role it plays in utility management, regulations and ordinances, water and revenues.

- 1. May 29: Utility planning and asset management**
- 2. June 26: Regulations and ordinances**
- 3. July 31: Indoor and outdoor water use**
- 4. August 28: Water rates and revenue**



Key takeaways

- 1. Understand the role of managing indoor and outdoor water use in water conservation and sustainable water management.**
- 2. Design customer water conservation programs to be cost-effective and targeted for the most impact.**
- 3. Learn how to prioritize and track the performance of water conservation initiatives.**
- 4. Become familiar with existing resources to help water utilities encourage water conservation by their customers.**



Importance of Indoor and Outdoor Water Conservation

Jared Teutsch, Alliance for the Great Lakes



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The Importance of Indoor and Outdoor Water Conservation in the Great Lakes

Jared Teutsch
Water Policy Advocate
jteutsch@greatlakes.org

The Alliance at a Glance

Mission

To conserve and restore the world's largest freshwater resource using policy, education and local efforts, ensuring a healthy Great Lakes and clean water for generations of people and wildlife.

Supporters

More than 12,000 supporters throughout the region back the Alliance's efforts in a variety of ways.

Why Now?

The Great Lakes contain nearly 20 percent of the earth's surface fresh water, providing drinking water to more than 40 million people. Threats to the Great Lakes today are many, however, ranging from pollution and invasive species to wasteful water use and climate change. All demand our attention and commitment.

Sustainable water use



More than 30 million people living in the Great Lakes basin rely on the lakes for drinking water.

A one-time gift from the glaciers, the Great Lakes form the largest surface freshwater system on earth - **a vast but largely non-renewable resource**. As the pressure on fresh water mounts around the world, the Alliance is working to ensure that these waters are maintained and protected.

Great Lakes – St. Lawrence River Basin Water Resources Compact: Summary

- Binding agreement ratified between the states to protect water resources against diversions and excessive withdrawals
- Three implementation deadlines (two have passed)
 - By December 2010, each state must developed water conservation goals and objectives.
 - By December 2011, each state must report water use baseline data.
 - By December 2013, all states must have implemented all the requirements of the Compact- including water withdrawal permitting programs.

Indoor and Outdoor Conservation Strategies

- Illinois is unique in its consumption of water from the Great Lakes basin with a cap on total amount
 - Developing strategies that target indoor and outdoor use are highly beneficial for controlling consumption
 - Collaboration with businesses, universities and nonprofits
 - Other states are taking the lead but where?
 - Using water?
 - Conservation?
 - Protection & Restoration of the resource?

Indoor Water Use: Is it conservation or efficiency?

- Efficiency of appliances is the top driver for reducing indoor water use nation-wide
 - New efficient appliances reduce water use by almost 50%
 - Water audits and rebate programs produce significant water savings
 - Local ordinances can mandate appliance replacement
 - Is it the same for residential and commercial?

Water Efficiency – Rebate and Replace

- Mandatory Toilet Replacement:
 - Solutions:
 - Increase toilet rebates
 - Require all properties to bring plumbing fixtures up to plumbing code on transfer of title
 - Require all properties to bring plumbing fixtures up to code upon transfer/creation of utility account
 - Require all Multi-family and Commercial properties built before 1992 to bring plumbing fixtures up to plumbing code standards

Outdoor Water Use Strategies

- Utilities (water & energy production) require large amounts of water for municipal supply and energy creation.
 - The water-energy nexus is the challenge facing most utilities today
 - Large amounts of water are needed for energy production (especially cooling towers) yet large amounts of energy are needed to treat, move and supply clean water
 - Challenge: aging infrastructure must be confronted and fixed. We must also look to dual use and reuse of water (remove the term “wastewater”)

Outdoor Water Use Strategies

- The full hydrologic cycle, particularly stormwater runoff, needs to be considered and managed
- Engage landscapers with water conservation landscaping
 - utilize certification
- Minimize water use for irrigation
 - Install smart technology
 - Limit irrigation to twice a week or every third day

What is the role of regulation/governance?

- What have states done to promote water sustainability?
 - Great Lakes Compact creates a level playing field
 - Overall Great Lakes states have not done a good job on water conservation
 - The impacts of water use can only be considered at a local level
- Develop technical assistance
 - States have flexibility to customize programs
- Financial assistance with water infrastructure
- Local municipalities are leading in sustainability initiatives

POLICY RECOMMENDATIONS

1. To comply with the Great Lakes Compact, Illinois should develop a water conservation and efficiency program that targets water use for all users, across multiple sectors.
2. Development of tools for users in a water-rich region should be a priority.

Alliance Connections

Learn more about the Alliance: www.greatlakes.org

LIKE us on Facebook: www.facebook.com/allinaceforthegreatlakes

Follow us on Twitter: www.twitter.com/a4gl

Questions?

Jared Teutsch
Water Policy Advocate
jteutsch@greatlakes.org

Identifying and Prioritizing Top Water Users and How to Work with Commercial and Industrial Customers on Managing Water Use

Karl Johnson, MWH Global



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Developing Strategies To Improve Non-Residential Water Efficiency



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Non-Residential Customers

- Typically 30% of utility water demands
- Fewer customers – only 10%
- Higher demands per customer
- Potential higher water savings per customer
- Can represent significant financial savings for customers
- Increasing trend of sustainability/water awareness for businesses

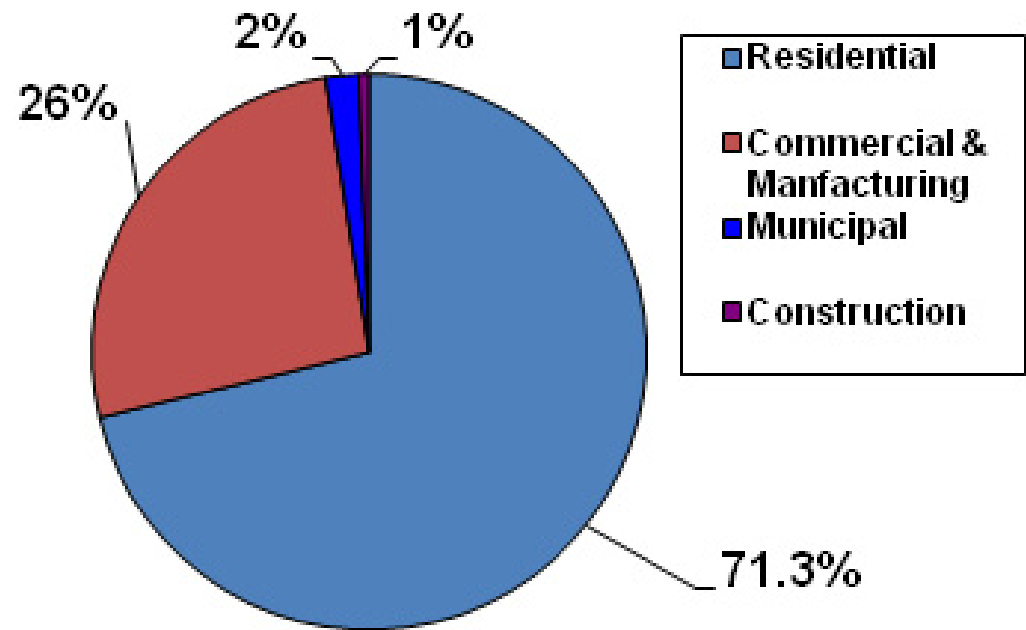
Difficulty in programs

- High variability in customer types
 - Long-list of subsectors in this sector (commercial, industrial, outdoor) with varying end uses
- Variability in water demands
 - Large customers
 - Medium
 - Small
- Loss in water utility income
- Uptake/implementation by customers – high resistance to change, often do not benchmark so unaware of potential savings

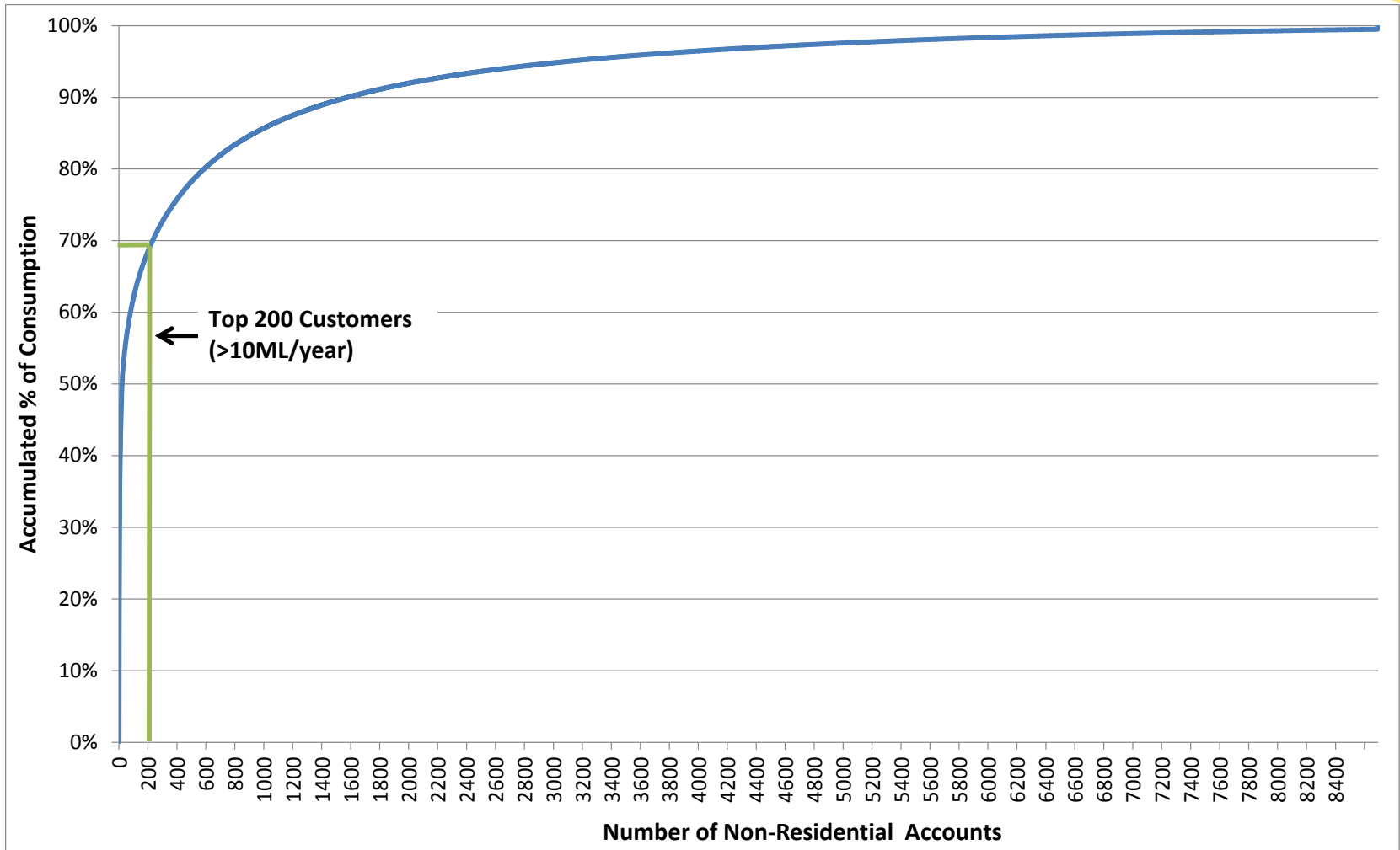
Non-Residential Customer Categories

- Facility types include:

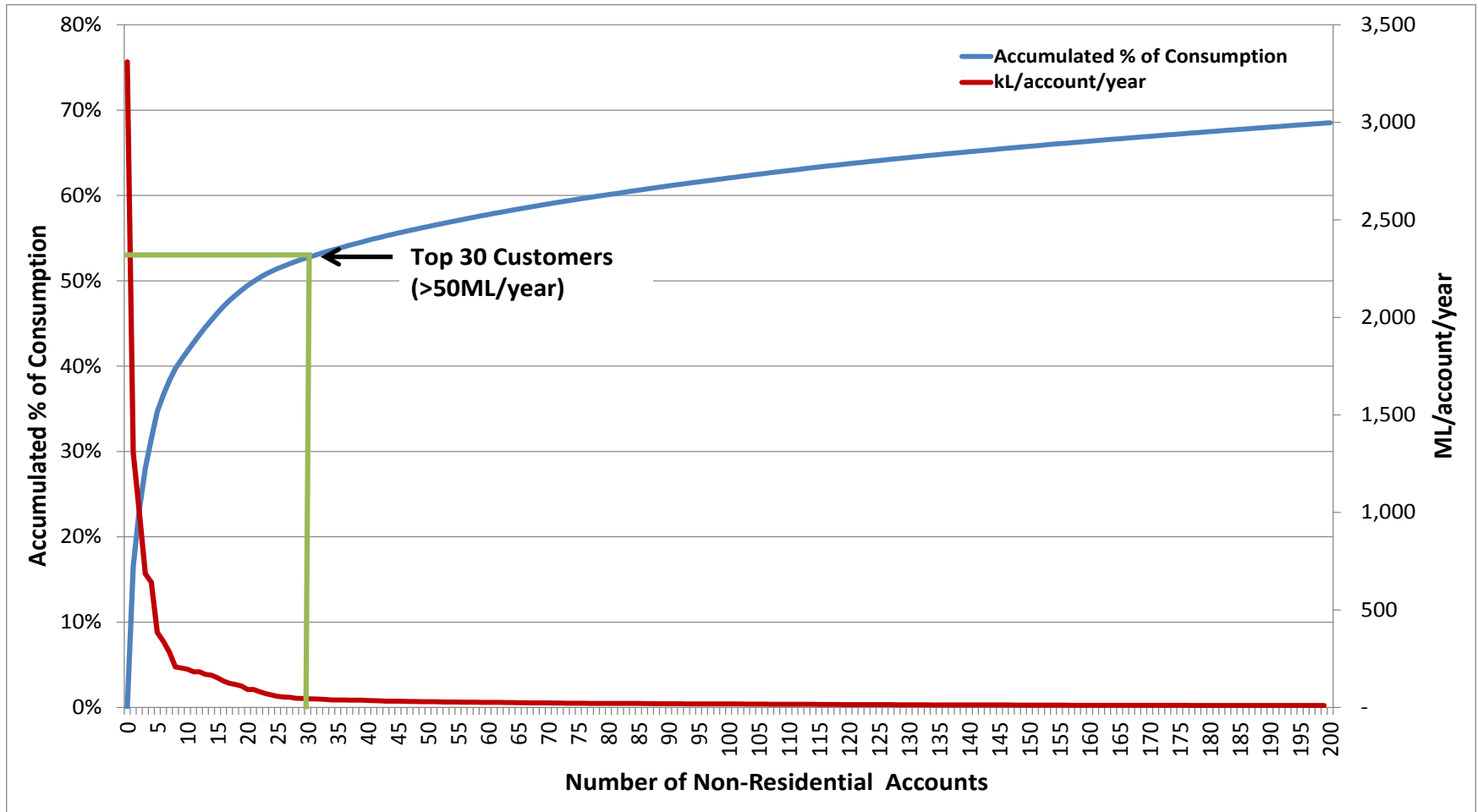
- Office buildings
- Hospitals
- Hotels
- Restaurants
- Educational
- Industrial



Large Customers > 2 MG/year



Major Users > 10 MG/year



Potential demand management programs

- Retrofit and rebate
- Regulations
- Educational programs
- Source substitution
- Water pricing adjustments

Retrofits, rebates and regulations

- Customers offered opportunity to replace existing water-using fixtures and appliances
 - Trigger-spray nozzles
- Regulations - water using appliances are regulated to ensure water efficient

Education Programs

- Change of behaviors through education and increased awareness
- Customers encouraged to voluntarily practice water efficiency
- Example: LEED Certification

Source Substitution

- Alternative water supply to supplement non-drinking water demands:
 - Rainwater harvesting
 - Stormwater harvesting
 - Wastewater recycling
 - Process water reuse

Water pricing

- Pricing should be set to promote water conservation
- Customers should not pay less per gallon for using more water
- Tier water price for using over a set limits – increased charge

Typical customer analysis

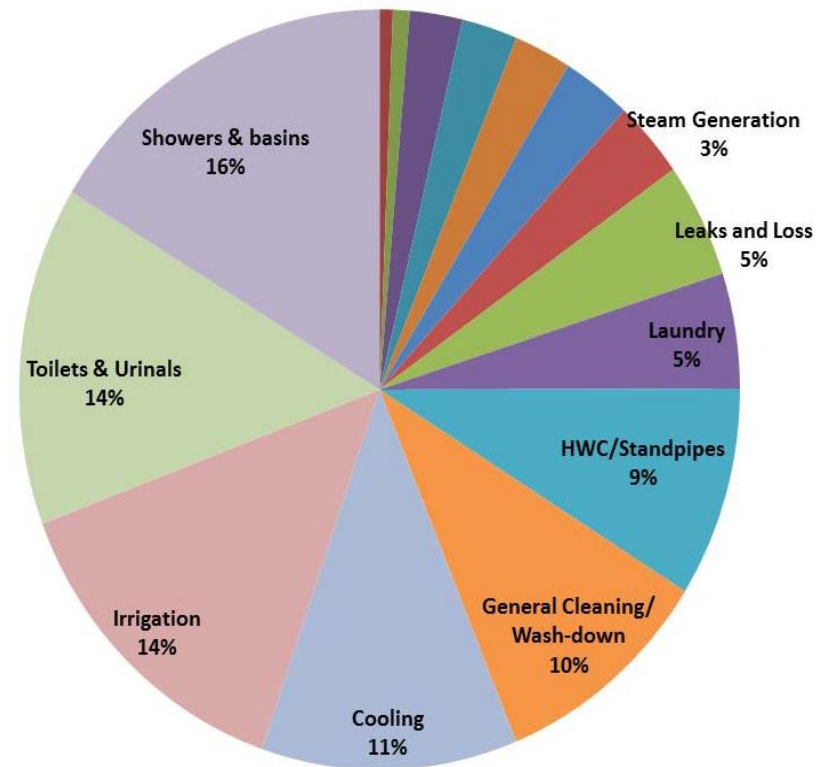
- Determine historic water consumption
- Group according to demands
 - Major – Top users >10 MG/year
 - Large – between 2 and 10 MG/year
 - Medium size – between 0.5 to 2 MG/year
 - Small – less than 2 MG/year
- Categorize by customers type:
 - Commercial
 - Industrial
 - Municipal
 - Other

Benchmarking

- Benchmarking - KPI for each customer basis unit of unit per Commercial Activity Measure (CAM)
 - i.e. # of hotel rooms, floor space
- Need additional info from customers – floor space, production, hotel rooms, etc. Not all businesses willing to give information.
- Customer water savings potential identified as “high”, “average” or “low”

End-use Assessment

- End-use assessment of customers to identify and target specific water uses
- Based data on different categories
- Used to calculate potential savings



Program Analysis

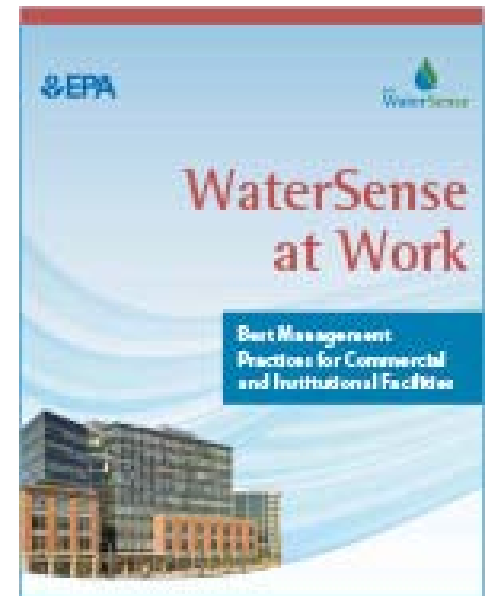
- Cost benefit analysis to evaluate programs:
 - Water savings calculated to forecast the impact of programs on future water consumption
 - Program costs estimated to assess the feasibility and cost effectiveness of each shortlisted programs
 - Overall ranking of programs based on volumetric cost effectiveness (\$/gal)
 - Potential energy savings
 - Implementation risks
 - Considered cost to both the utility and customer

Demand management programs considered

- Water savings audits for major users - subsidies to promote implementation
- Cooling tower audits for large customers
- Fixture replacement – i.e. pre-rinse spray valves
- Water conservation toolkits for industry and end-uses
- Smart metering for large customers

EPA WaterSense

- www.epa.gov/watersense/commercial
- WaterSense at Work document
- Best management practices
- Fact sheets for various building types. Includes:
 - Water use breakdown
 - Water saving tips
- Additional resources



Alliance for Water Efficiency

- Resource library for a range of commercial and industrial activities
- Information on commercial and industrial water use and conservation savings
- Links to the latest research and information
- www.allianceforwaterefficiency.org

Sydney Water Corporation

- Sydney Water's Every Drop Counts Business Program – targeted non-residential customers using > 50 ML/year
 - Saved 22,500 ML over 10 years
 - 10 times greater savings than any other non-residential SWC program
- Best practice guidelines (commercial buildings, shopping centres, aquatic centres, irrigation)
- www.sydneywater.com.au

Queensland Water Commission

- Queensland Water Commission WEMP program – 70% of water savings by targeting large customers (> 20 ML/year)
- Cooling tower efficiency requirements
- Best practice guidelines (commercial washers, car wash, hotels, playing surfaces irrigation)

Conclusions

- Non-residential customers present high savings through minimal effort: fewer accounts, higher consumption per account
- Large customers should be targeted in any program – biggest bang for the buck for the first instance
- “Wide-net” approach for medium and smaller customers

Thank You!

Questions?

Karl.Johnson@mwhglobal.com

How to Work With Residential Users on Managing Indoor and Outdoor Water Use

Karl Johnson and Hillary Homes, MWH Global



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Home Water Audits



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Introduction

- Home water audits are a simple program you can set up to improve water efficiency for residential customers
- Purpose: To determine: present water uses, losses and conservation practices
- <http://www.preservingeverydrop.org/EducationandResources/WaterCalculator/tabid/101/Default.aspx>

Step 1: Gather Existing Info

- Water bills
- Calculate daily use in gallons/day
- Info on household (occupants, hours, size)
- Compare to benchmark data
- Seasonal variation (summer peak)

Step 2: Perform the water audit

- Catalog water-using devices: number and type of each fixture
- Calculate flow rate for each device
- Multiple flow rate by how many times/length each device is used
- Note any leaks and try to determine how much water is loss
- Check to see if any unknown leaks – turn off all water using fixtures and check to see if water meter “spins”

Step 3: Analyze audit results

- Determine how and where water is used in the house
- Identify areas where you can save water
- Help calculate cost of water leaks and water savings
- Determine savings new conservation measures will provide
- Calculate payback period for water efficiency measures

Calculator on DWC web-site

<http://www.preservingeverydrop.org/EducationandResources/WaterCalculator/tabid/101/Default.aspx>

Thank You!

Questions?

Karl.Johnson@mwhglobal.com

DuPage Water Commission
2013 Water Management
Workshop Series - Workshop #3
July 31, 2013

Water Bill Legibility



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Agenda

- Frame the discussion – dream vacation
- Purpose of a water bill
- Barriers to understanding
- Reframing Line Items
- Goals for bills



Dream Vacation?

- Budget
- Increases financial



Purpose of a Water Bill

- Currently: collect revenues, let people know how much water they used
- Opportunity to communicate



What do you want to communicate?

- Special events
- Water related issues: RPZ, flushing programs, etc
- Use compared to other customers
- Proactive customer service approaches, rebate programs
- What else is included in the bill
- Funds distribution



Barriers to Understanding Bills

- Billing units
- Not bothering to look at it
- Property owners get the bill but the users do not
- Cubic feet vs. gallons
- A month's worth of water use vs. how much water is actually coming out of the tap
- Aversion to math
- Wording of charges
- Reaching all users



Reframing Line Items

Base Rate

Units (100s cf)

Capital Improvements

Water

Sewer

Stormwater

- Water Availability (?) ; Connection charge; Minimum Rate
- Uniformity; Example somewhere on the bill
- Maintenance; System Improvements/Upgrades; Where is the revenue going?; Water Security; Infrastructure replacement
- Use or Consumption; add bar graph; comparison
- Water Reclamation; Collection and Treatment
- Property Runoff; Flood Control; Maintenance



UNDERSTANDING YOUR NEW UTILITY BILL

UTILITY BILL



Village of Downers Grove
 801 Burlington Ave.
 Downers Grove, IL 60515
 www.downers.us

Account Number:	C.1234.5678.91
Customer Name:	CUSTOMER 1
Service Address:	1234 MAIN ST
Billing Date:	6/29/2012
Due Date:	7/23/2012

SAMPLE

2

Service Period	Read Date	No. of Days	Meter Reading		Consumption History	
			Previous	Current	Current	Last Year
4/25/2012 to 6/26/2012	6/24/2012	63	1172	1191	19	14

ACCOUNT SUMMARY

Previous Balance 87.78
 Payment – Thank You (4/4/2012) -87.78

WATER

Bi-Monthly Water Fixed Charge: 9.31
 Current Water Usage Charges: 78.47

Meter Size: 5/8"

Subtotal Water Charges: 87.78

STORMWATER

Bi-Monthly Stormwater Utility Fee: 16.80

Parcel 0901234567 ERU 1.00

Subtotal Stormwater Charges: 16.80

TOTAL AMOUNT DUE: 104.58
 Due Date July 23, 2012



Description	Rate per 1,000 gals	Present Read Date	Previous Read Date	Present Meter Reading	Previous Meter Reading	Read Code	Usage	Charge					
WATER	5.75	03/04/2013	02/05/2013	72127	72127	A		5.75					
SEWER	2.85	03/04/2013	02/05/2013					2.85					
CAPITAL IMPROVEMENTS	1.95	03/04/2013	02/05/2013					1.95					
RED TAG FEE		03/15/2013	02/19/2013					15.00					
WATER TURN ON FEE		03/15/2013	03/07/2013					25.00					
Last Payment Amount		Last Payment Date				Amount Due							
50.55		03/14/2013				\$.00							
HISTORY PERIOD	CURR	02/13	01/13	12/12	11/12	10/12	09/12	08/12	07/12	06/12	05/12	04/12	03/12
BILLED USAGE	0	311	0	0	35	0	21	0	3	0	0	12	0

SPECIAL MESSAGES:

**GO GREEN!! REQUEST UTILITY E-BILLS FROM THE VILLAGE AT
WWW.ROSELLE.IL.US/PAYMENTS.**

* READ CODE :
A ACTUAL READ
C CUSTOMER READ
E ESTIMATED READ
F FINAL READ
O OTHER READ
S METER EXCHANGE



AUT05-DIGIT 60190 7 PS5 67706AA14-A-1
 1858 1 AV 0.340



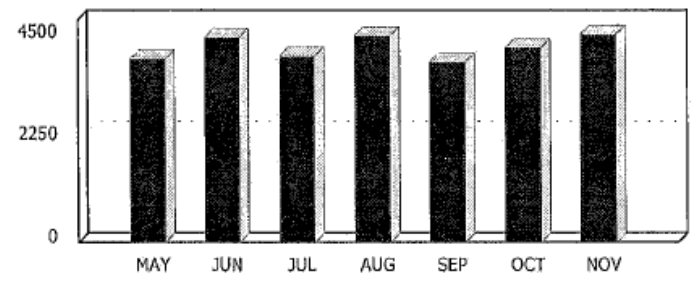
[Redacted Address]

WINFIELD IL 60190-1934



Billing Inquires?
 Water Billing Department: (630) 933-7112
 Office Hours: Monday - Friday 8:00 am - 4:30 pm

YOUR MONTHLY WATER USAGE (IN 1,000 GALLONS)



Current Month

VILLAGE ANNOUNCEMENTS

METER READ INFORMATION

Current Reading	Previous Reading	Usage
250060	245860	4200

CURRENT CHARGES

Service Description	Amount
WATER	32.59
SEWER	26.67
TOTAL CURRENT CHARGES	59.26

AMOUNT DUE

PAST DUE	0.00
TOTAL CURRENT CHARGES	59.26
TOTAL AMOUNT DUE BY 12/05/11	59.26
TOTAL AMOUNT DUE AFTER 12/05/11	59.26

Water Bill Goal

- Use water efficiently
- Communicate with customers well
- Raise awareness of water use
- Conservation tips
- Give customers tools to see benefits of conservation



Questions/Discussion

Hillary Holmes

hillary.holmes@mwhglobal.com



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Credit: Goetz, Melanie. "Framing transparency: Crafting the utility bill to promote the real value of water." Journal AWWA. August 2012. 70-72.

Program Design and Performance Tracking for Water Conservation Initiatives

Bill Christiansen, Alliance for Water Efficiency



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AWE Water Conservation Tracking Tool: *Planning and Evaluating Cost-Beneficial Water Conservation Programs*

Bill Christiansen
Program Planner

A VOICE AND
A PLATFORM
PROMOTING THE
EFFICIENT AND
SUSTAINABLE
USE OF WATER



Alliance *for* Water Efficiency



Household Water Calculator 2.0 Available

AWE has released an updated version of its Household Water Calculator, now adapted for water users in Canada using Canadian postal codes and climate data. The new calculator is also more accurate, compatible with tablets and smart phone use, and offers faster load times and a more intuitive interface to provide a more seamless experience for users. [Learn more here.](#)



AWE & ACEEE Report on Water-Energy Nexus Research Needs

AWE and its partner the American Council for an Energy-Efficient Economy have released a report, Water-Energy Nexus Research: Recommendations for Future Opportunities, which assesses existing research on this nexus and identifies priority research areas for investments to enhance integrated resource management and support overall efficiencies. [Learn more here.](#)

Texas Governor Signs Landmark Water Legislation

The Texas Assembly has passed and Governor Perry of Texas has signed House Bill 4, a bill which is a milestone for water conservation policy. The \$2 billion fund supports various water supply projects and includes 20 percent (\$400 million) slated for water conservation and

Calendar of Events



- 8/20/2013** AWE Water-Energy Nexus Webinar
- 8/23/2013** 7th Annual San Bernardino County Water Conference
- 9/18/2013** Wisconsin Water Association Annual Conference & Expo
- 9/23/2013** USWA: One Water Leadership Summit
- 9/24/2013** Energy & Environmental Building Alliance: Excellence in Building Conference & Expo

How Much Water Do You Use?



[Click Here to Learn More](#)

Latest Information



Water Efficiency Watch Newsletter - July 2013

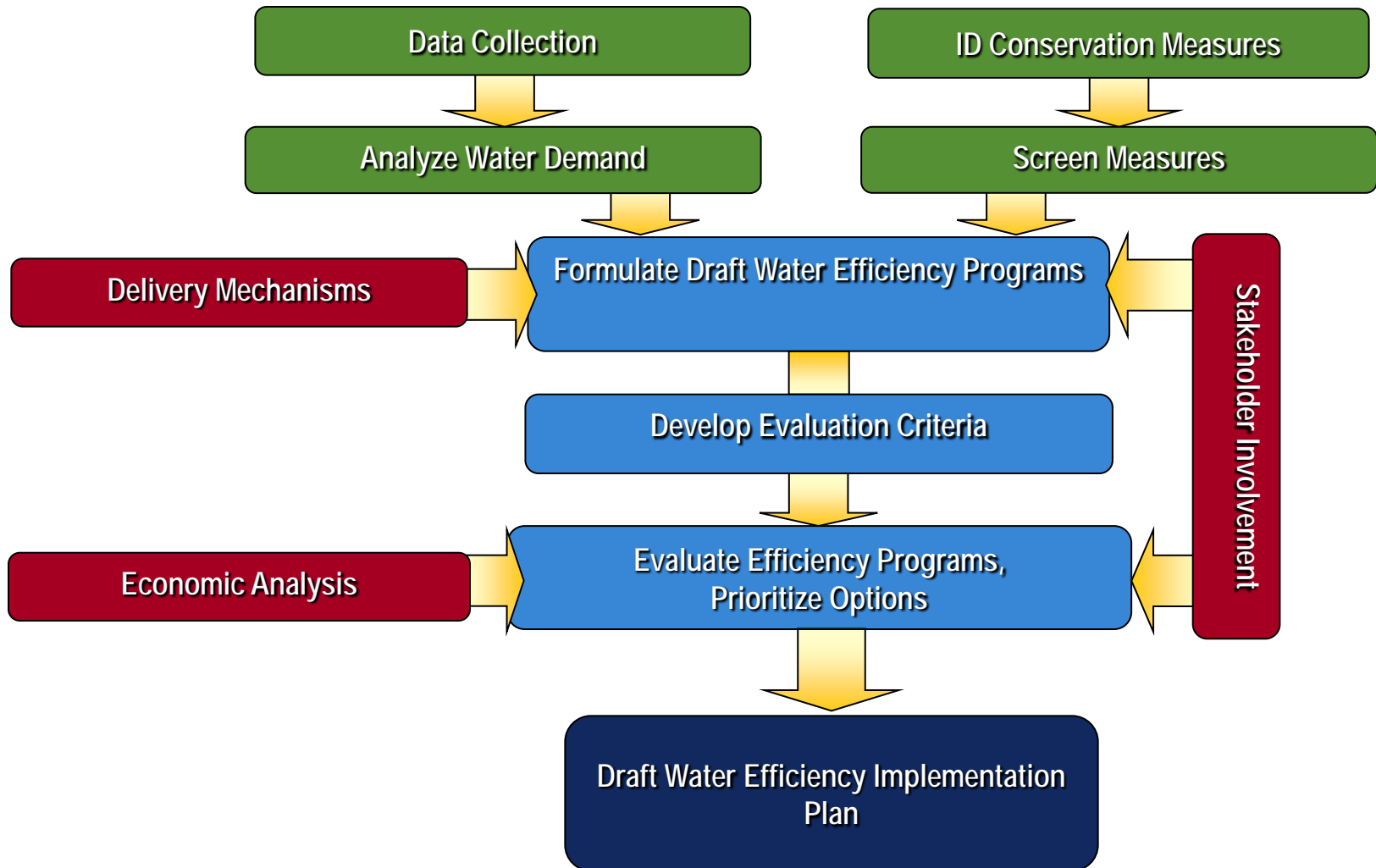


Colorado River Basin Water Supply & Demand Study Released



JOBS BOARD

Constructing a Water Efficiency Plan



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

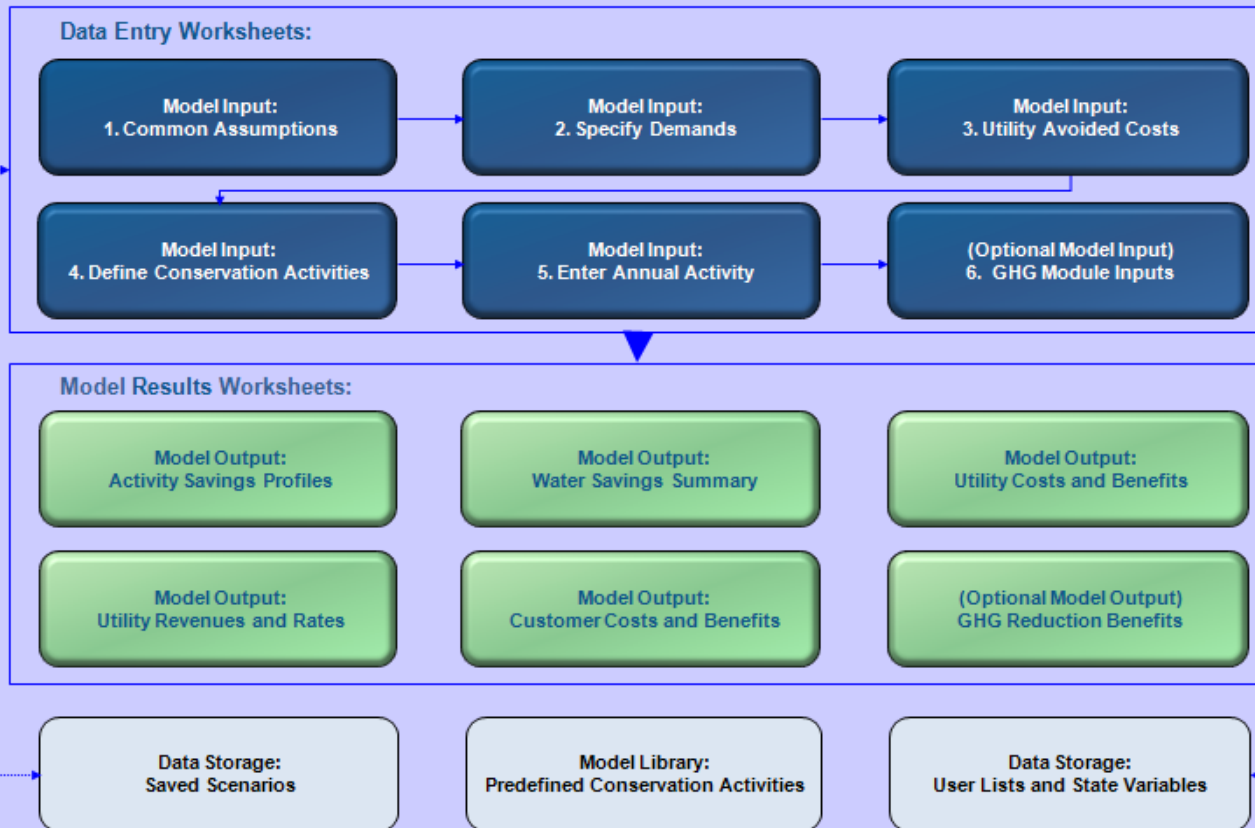
2. First provide information about your system, customers, and water demands. This is done on data entry worksheets 1 thru 3.

3. Next define or import conservation activities and set their annual activity levels. This is done on data entry worksheets 4 and 5.

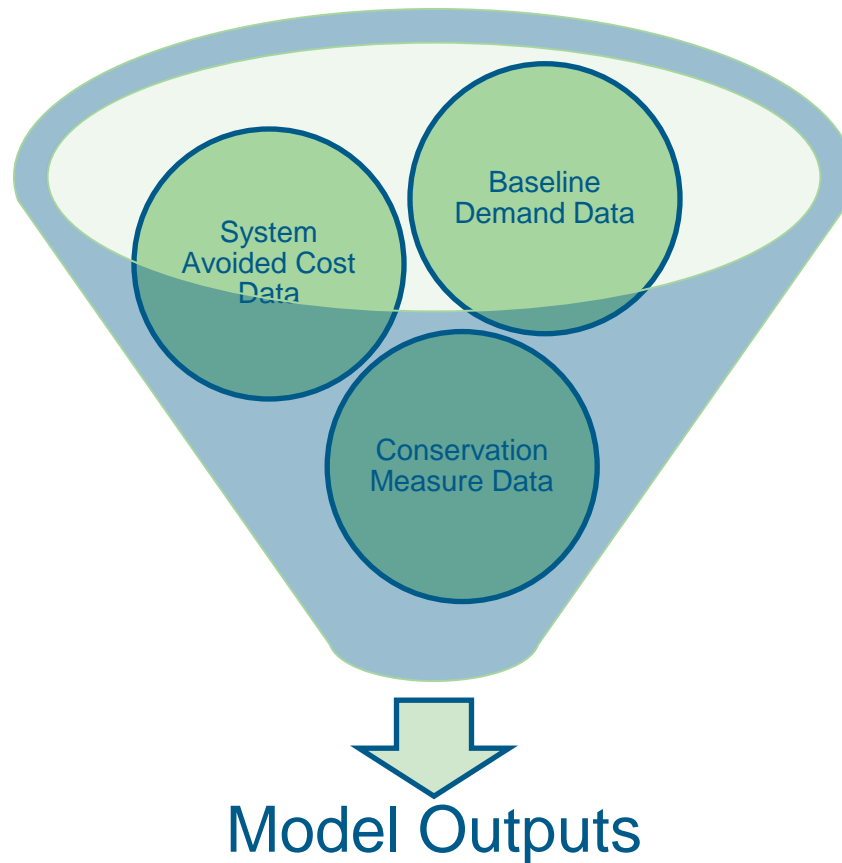
4. You can save conservation activity scenarios at any time. You access the scenario manager on the Common Assumptions worksheet.

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: Only enter data in cells with this color coding.



Tracking Tool Inputs and Outputs



Savings Analysis Benefit-Cost Analysis Revenue/Rate Impacts Energy Savings

Common Assumptions

AWE CONSERVATION TRACKING TOOL: COMMON ASSUMPTIONS WORKSHEET

ENTER COMMON ASSUMPTIONS:

Manage Scenarios

Analysis Start Year	2008	2010	2020	2030	2040
Service Area Population	350,000	355,000	365,000	380,000	395,000
Service Area Population in 1990	300,000				

Peak-Season Start Date (month/day)	31-May
Peak-Season End Date (month/day)	31-Oct

Nominal Interest Rate	6.00%
Inflation Rate	3.00%
Year in which to Denominate Costs & Benefits	2010

Persons Per Household - SF	2.25
Persons Per Household - MF	1.50

Full Bathrooms Per Household - SF	1.75
Half Bathrooms Per Household - SF	0.75

Full Bathrooms Per Household - MF	1.00
Half Bathrooms Per Household - MF	0.25

SF Housing Units Built <i>before 1994</i>	100,000
MF Housing Units Built <i>before 1994</i>	50,000

Reference ET (inches/yr)	57.33
Avg. Annual Rainfall (inches/yr)	7.67

Show Bathroom Lookup Table

CHOOSE VOLUME UNITS:

Water Volume Units

Million Gallons (MG)

Acre-Feet (AF)

Million Cubic Meters (MCM)

Flow Units Will Be: MGD

SELECT REGION:

US-West

Last Loaded Scenario:

"Sample Scenario (English)"

Last Saved Scenario:

"Sample Scenario (English)"

[Return to Navigation Sheet](#)

[Report Error](#)

Select Water User Classes

Class Names

Single Family
Multi Family
Residential
CII
Commercial
Industrial
Institutional
Irrigation
Other

Add >

Selected Classes

Single Family
Multi Family
CII
Irrigation

Move Up

Move Down

Delete

OK

Cancel

SELECT CUSTOMER CLASSES:

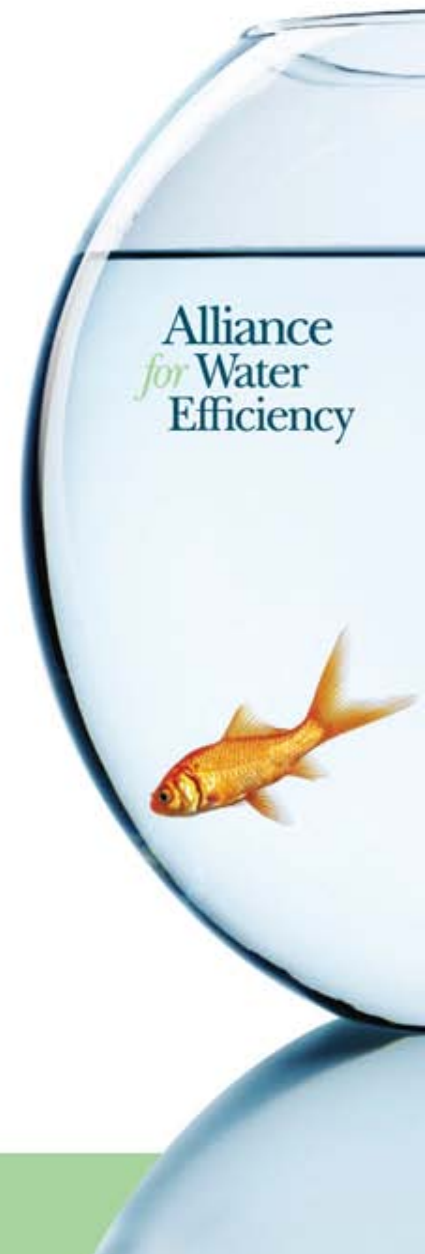
Select Water User Classes

ENTER UTILITY RATE INFORMATION:

Water User Classes in Model	Customer Utility Rates (2010 Dollars)				Nominal Rate of Increase			
	Water Rates (\$/Thou Gal)	Sewer Rates (\$/Thou Gal)	Electric Rates (\$/KWh)	Gas Rates (\$/Therm)	Water Rates (%/Yr)	Sewer Rates (%/Yr)	Electric Rates (%/Yr)	Gas Rates (%/Yr)
Single Family	\$2.50	\$0.70	\$0.15	\$1.50	3.0%	3.0%	3.3%	3.3%
Multi Family	\$2.30	\$0.70	\$0.15	\$1.50	3.0%	3.0%	3.3%	3.3%
CII	\$2.00	\$0.70	\$0.15	\$1.50	3.0%	3.0%	3.3%	3.3%
Irrigation	\$2.30	\$0.70	\$0.15	\$1.50	3.0%	3.0%	3.3%	3.3%

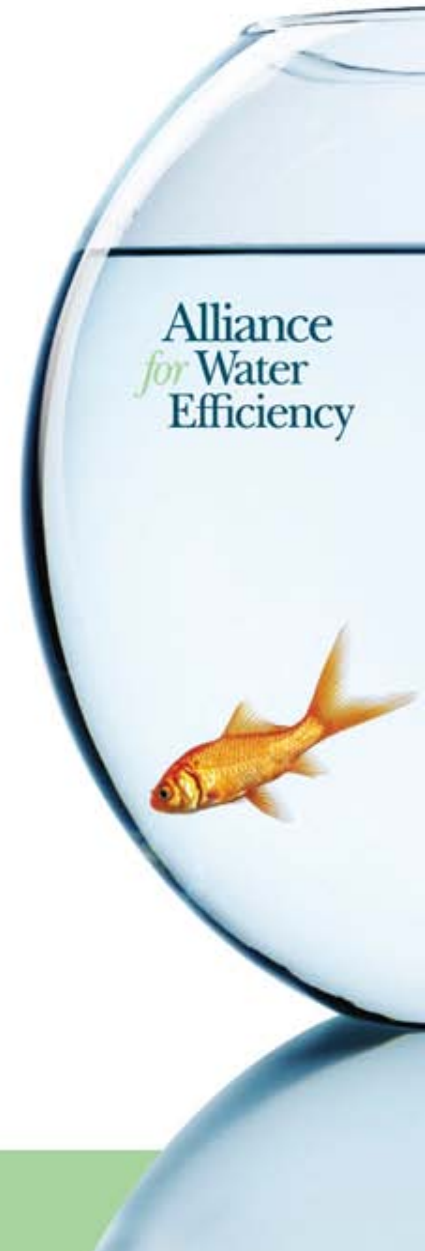
Baseline Demands

- Two Data Entry Options
 - *Enter or link to an existing demand forecast*
 - *Use model to grow current demand by population*
- Plumbing/Energy Code Adjustment
 - *Model can adjust for impact of existing plumbing/energy codes as necessary*
- Demand Disaggregation
 - *Peak/Off Peak Seasonal Demands*
 - *Customer Class Disaggregation*



Avoided Costs

- Two Data Entry Options
 - *Enter or link to an existing avoided cost forecast*
 - *Use model's avoided cost calculator*
- Model's Avoided Cost Calculator
 - Short-run avoided O&M
 - *Water Supply*
 - *Wastewater Treatment*
 - Long-run avoided or deferred capacity
 - *Calculates present value of delaying and/or downsizing peak season capacity expansion*



Capacity Deferral Analysis

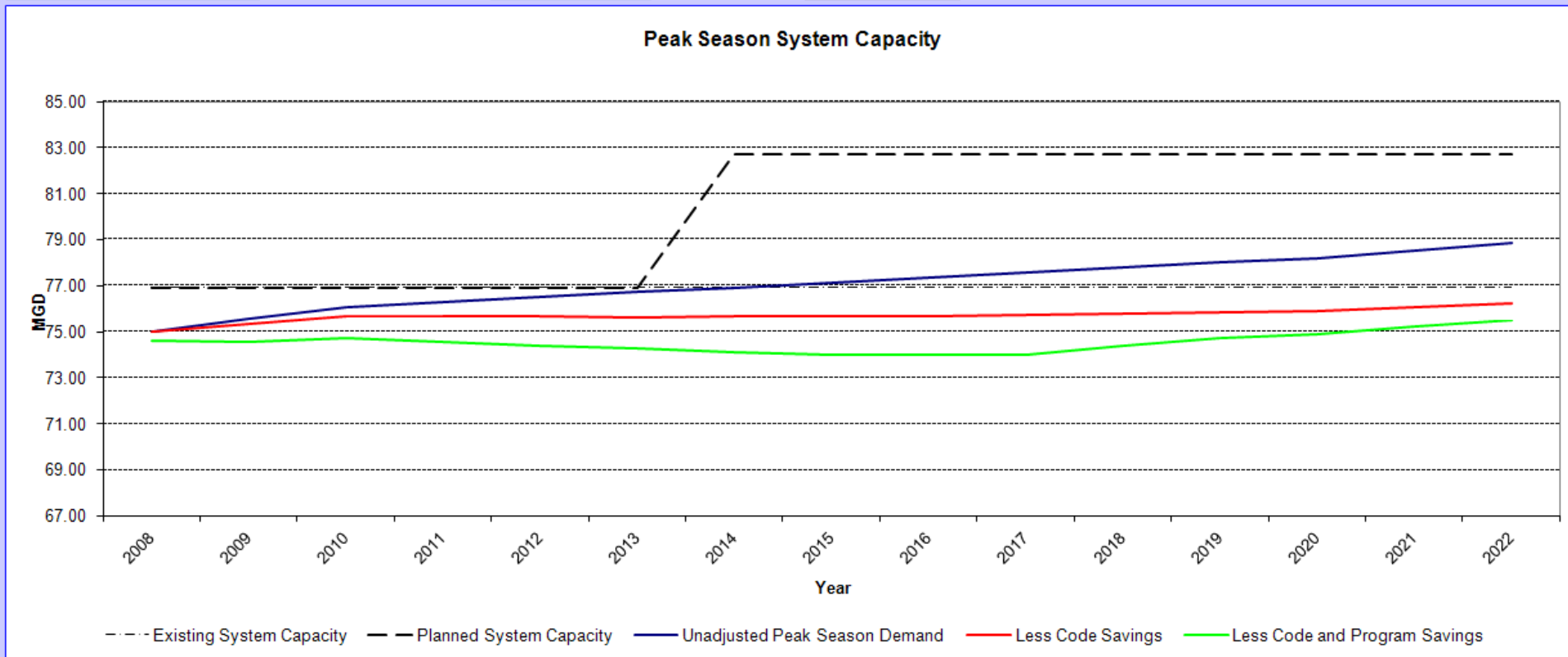
Year forecasted peak season demand equals existing peak season delivery capacity	Deferred Expansion (Years)	Deferred Capacity (MGD)	Benefit of Deferred Expansion (\$)	Avoided Capacity (MGD)	Benefit of Avoided Expansion (\$)
Baseline Demands	2014	N/A	N/A	N/A	N/A
Baseline - Code Savings	2025	11	\$9,764,491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

Select Chart to View

Peak Season Capacity

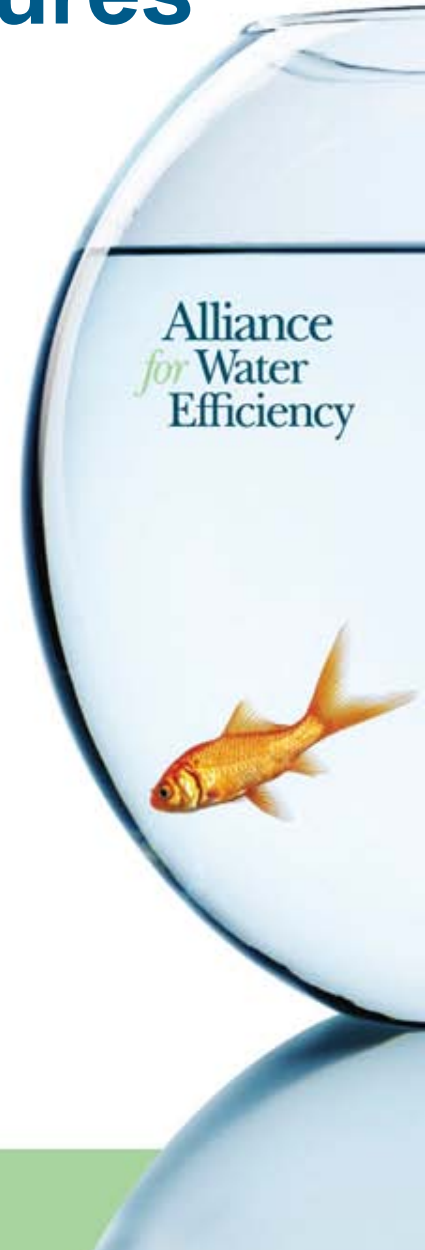
No. of Years to Display

Chart Explanations



Setting Up Conservation Measures

- Two Specification Options
 - *Build from scratch*
 - *Import pre-defined measures from library*
 - *Pre-defined measures can be customized*
- Library currently includes 25 measures
 - *13 residential measures*
 - *8 CII measures*
 - *4 large landscape measures*



Defining a New Conservation Measure

AWE CONSERVATION TRACKING TOOL: DEFINE CONSERVATION ACTIVITIES WORKSHEET

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

[Return to Navigation Sheet](#)

[Report Error](#)

Define Conservation Program Activities

Define/Edit/Delete Conservation Activities

Hide Table of Activities in Model

Warning: Only use the form to edit or delete activities. Editing/deleting activities directly in the table may result in model errors!

Activity ID	Activity Name	Class	Savings, Per Unit (gpy)	Savings, Annual Rate of Decay (%)	Savings, Peak Period (% of Annual Savings)	Savings, Useful Life (yrs)	Savings, Participant Free Riders (% of Participants)	Utility Costs, Year Denominated	Utility Costs, Initial Fixed (\$)	Utility Costs, Variable (\$/unit)	Utility Costs, Years of Follow-up (yrs)	Utility Costs, Fixed (\$)
1	Residential Surveys, SF	Single Family	12373	20%	68%	5	0%	2011	\$2,000.00	\$95.00		
2	Residential HE Toilets, SF											
3	CII Tank-Type HE Toilet											
4	Residential Irrigation Controller, SF											
5	Large Land Irrigation Controller											
6	Residential LF Showerhead, SF											
7	Residential LF Showerhead, MF											
8	Residential HE Washer, SF											
9	Residential HE Washer, MF											
10	CII Spray Rinse Valve											
11												
12												
13												
14												
15												
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25												
26												
27												
28												

Define Conservation Activities

Activity Name: Residential HE Toilets, SF

Affected Customer Class: Single Family

Unit Water Savings | Utility Costs | Participant Costs | Participant Non Water Benefits | Plumbing Code

Unit Water Savings (Gal/Yr): 9,072.0

Annual Rate of Savings Decay (%/Year): 0.00%

Peak Period Savings (% of Annual): 41.92% Peak days = 42% of days in a year.

Useful Life (Years):

Participant Freeriders (% of Participants): 0.00%

Import an Activity from the Library

Close Form

Previous Activity

Next Activity

New Activity

Delete Activity

Activity Savings Profile Worksheet

AWE CONSERVATION TRACKING TOOL: ACTIVITY SAVINGS PROFILES WORKSHEET

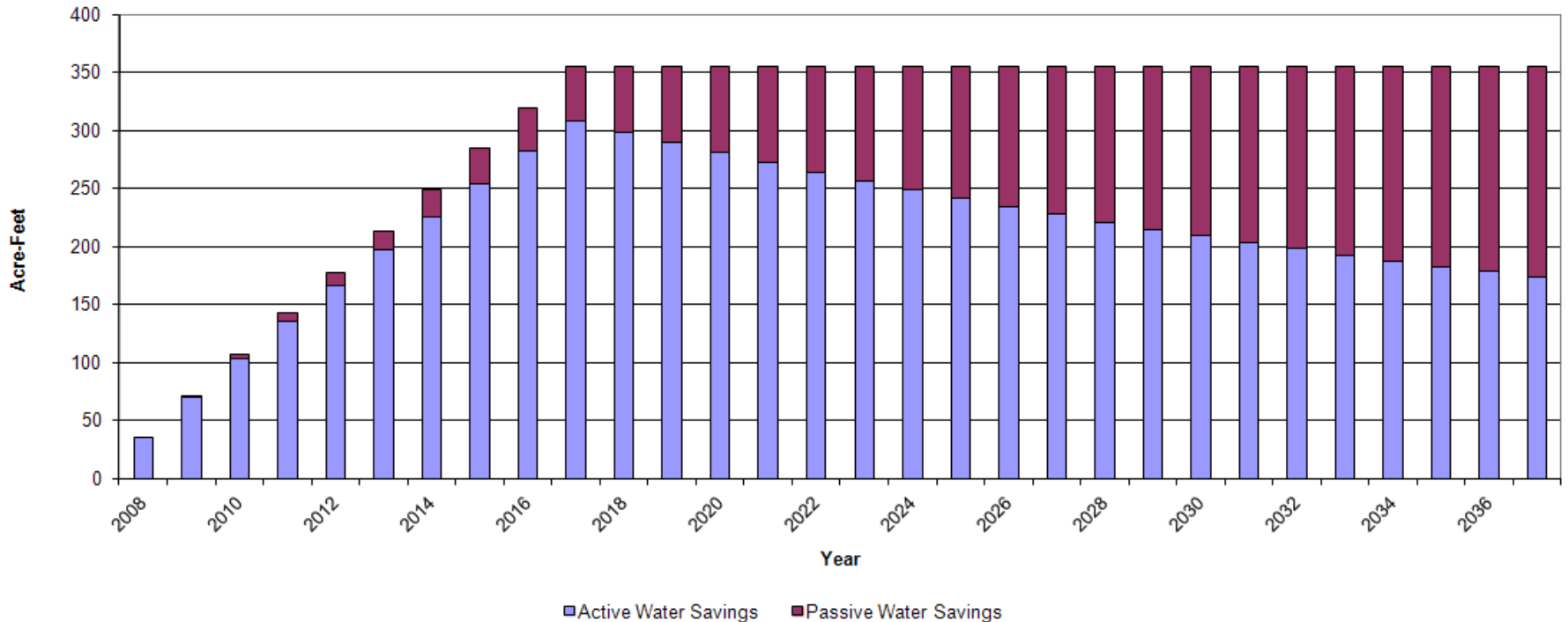
Last Loaded Scenario: "Sample Scenario (English Units)" loaded on 9/16/2011 11:58:00 AM

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Activity Name: CII Tank-Type HE Toilet

CII Tank-Type HE Toilet Annual Water Savings



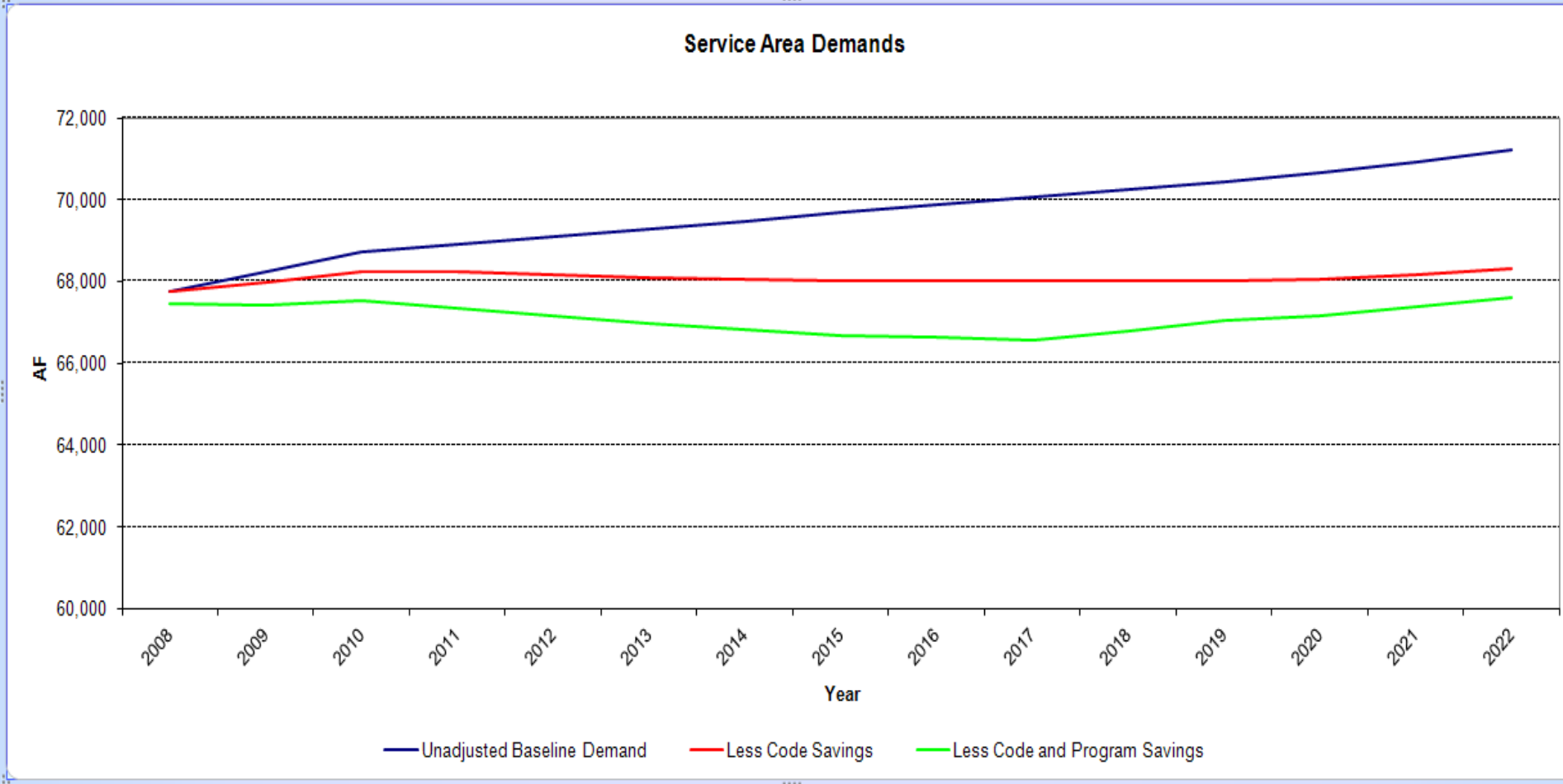
CII Tank-Type HE Toilet	Gross	Active	Passive
Lifetime Water Savings (AF)	19,711	10,150	9,561
Average Annual Water Savings (AF)	329	169	159

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



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

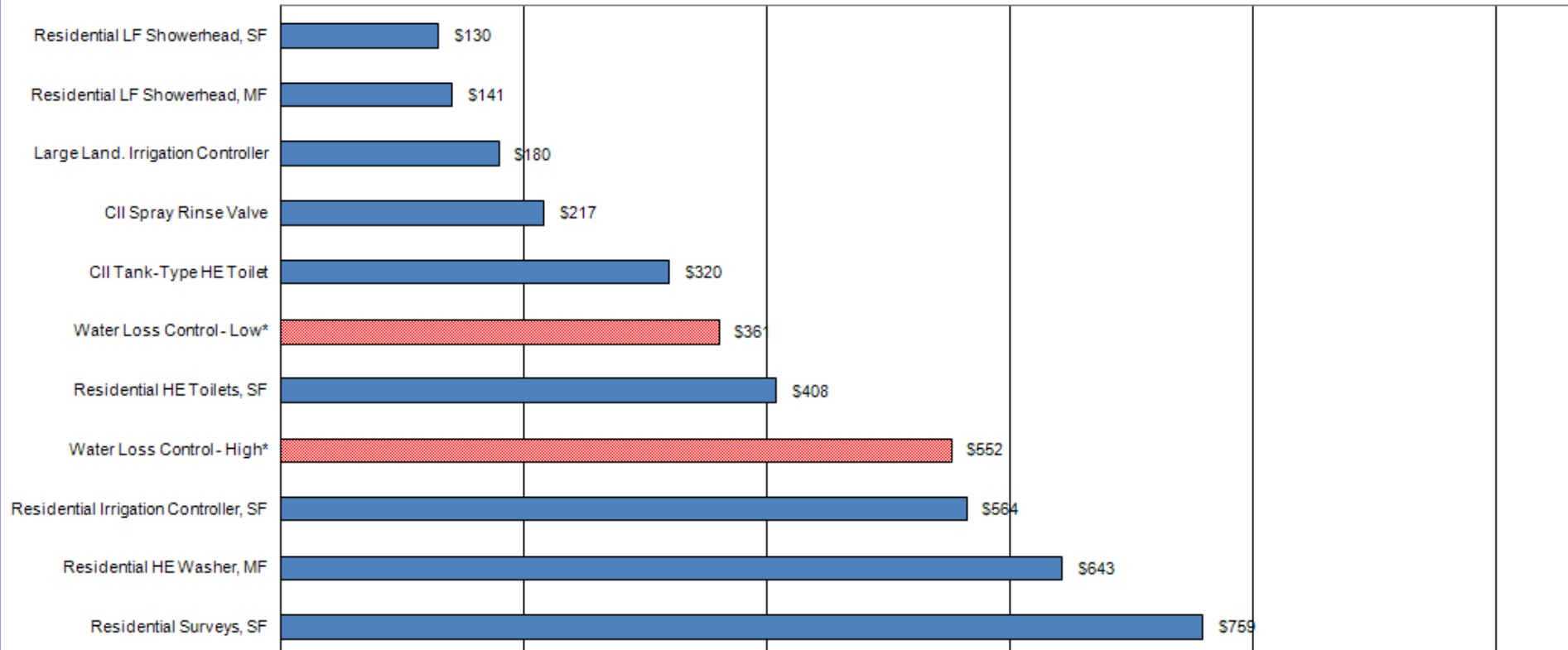
Class	Activity Name	NPV (\$)	B/C Ratio
Single Family	Residential Surveys, SF	\$ (36,168)	0.90
Single Family	Residential HE Toilets, SF	\$ 1,344,835	1.78
CII	CII Tank-Type HE Toilet	\$ 2,187,962	2.28
Single Family	Residential Irrigation Controller, SF	\$ 417,318	1.20
Irrigation	Large Land. Irrigation Controller	\$ 1,081,885	3.72
Single Family	Residential LF Showerhead, SF	\$ 54,101	5.40
Multi Family	Residential LF Showerhead, MF	\$ 48,813	4.97
Single Family	Residential HE Washer, SF	\$ (45,846)	0.73
Multi Family	Residential HE Washer, MF	\$ 25,293	1.08
CII	CII Spray Rinse Valve	\$ 146,203	3.25
Subtotal Conservation Activities		\$ 5,224,396	1.76
Total With Overhead & Public Information		\$ 5,224,396	1.76

Select Chart to View

Unit Costs Sorted

Chart Explanations

Conservation Activities Sorted by Utility Unit Cost



AWE CONSERVATION TRACKING TOOL: UTILITY REVENUES & RATES WORKSHEET

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

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Utility Revenue Requirement and Rate Impacts

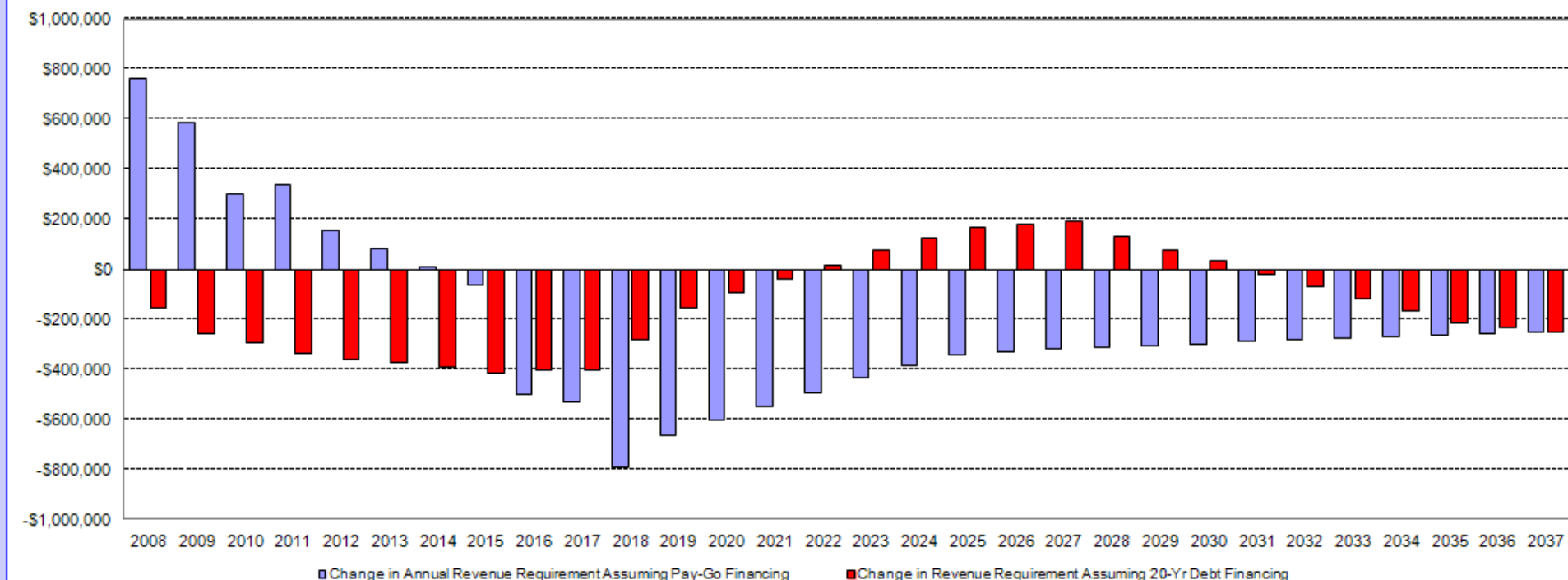
Program Impact on...	Baseline	With Conserv.	Change to Baseline
Water Utility Annual Sales Revenue Requirement	49,742,591	\$49,562,581	(\$180,010)
% change from baseline			-0.36%
Avg. Water Rate (\$/Thou Gal)	\$2.17	\$2.29	\$0.13
% change from baseline			5.86%
Annualized Bill Impact (\$/Mo.)	46.86	\$46.69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

Select Impact Chart to View

Revenue Requirement

Chart Explanations

Impact to Utility Sales Revenue Requirement Under Two Financing Approaches



Select eGRID Region:

In which eGRID Region are you located? (See map) **RFCE**

Average Generation Emission Rates	lb/MWhr
CO ₂	1,139
CH ₄	0.03027
SO ₂	7.7918
NO _x	1.6307
N ₂ O	0.01871
Hg	0.0000387

Energy Used for Water Supply and Wastewater Treatment:

Average Energy Intensity For:	KWh/AF
Water Supply Withdrawal, Treatment, and Distribution	2,200
Wastewater Pumping and Treatment	850

Tables for Estimating Water and Wastewater Embedded Energy

Water Supply, Treatment, and Distribution Energy Intensity Default Values

Local Water Supply Sources	KWh/AF	% of Local Supply
Local Surface Water	222	40%
Groundwater	624	40%
Brackish Desalination	528	0%
Recycled Water	730	10%
Seawater Desalination	4,497	10%
Total:		100%

Average Energy Intensity of Local Water Supply **861** KWh/AF

Imported Water Supply Sources	KWh/AF	Default Value
Select the imported water energy intensity level	High	
Average Energy Intensity of Imported Water Supply		2,473 KWh/AF
Imported Water Supply as % of Total Supply	40%	
Local Water Supply as % of Total Supply	60%	

Average Energy Intensity per AF of Total Supply **1,506** KWh/AF

	% of Total Supply

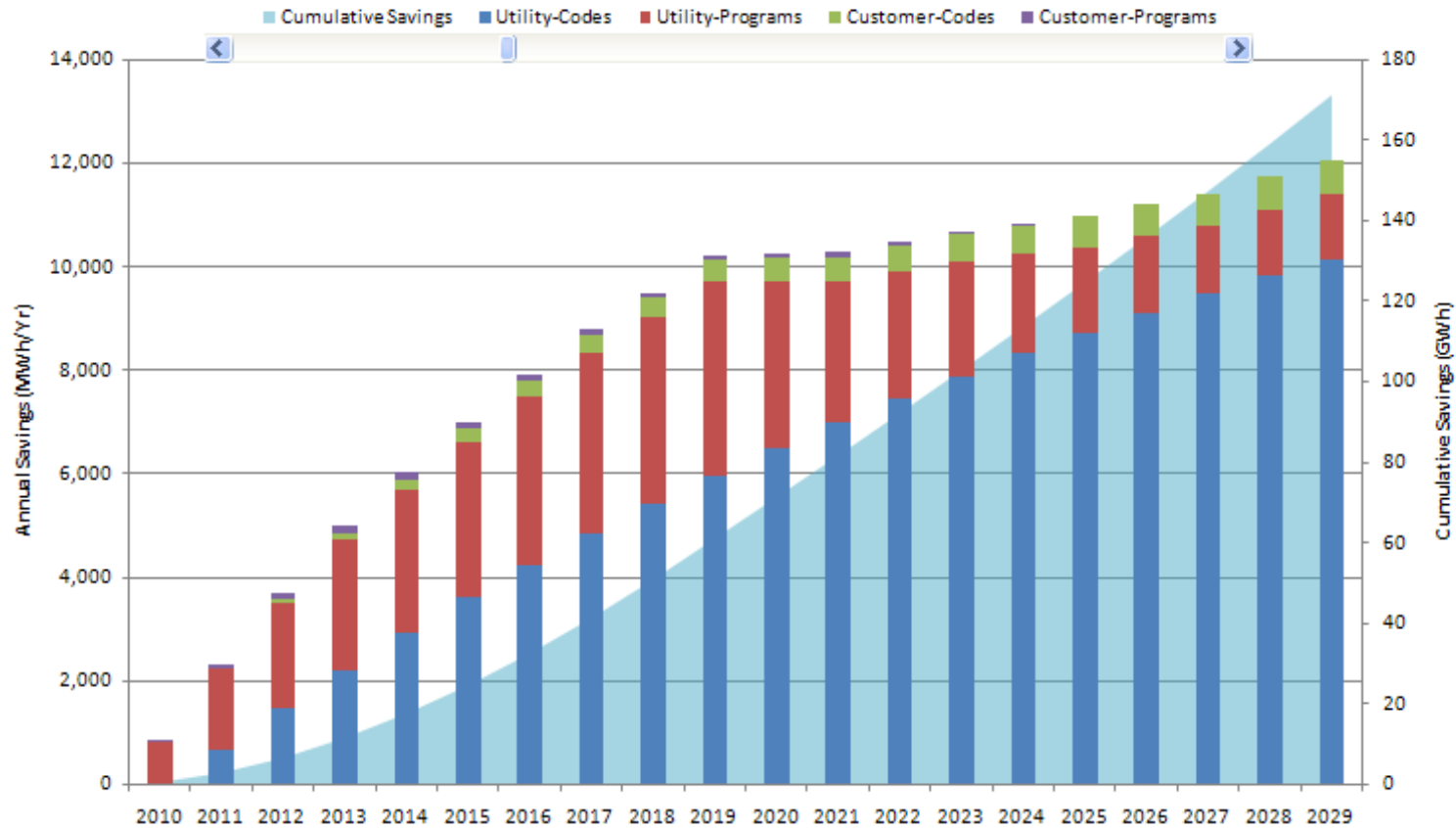
eGRID Subregion Representational Map



Imported Water Energy Intensity Key

- Low** - Transmission mostly via gravity with limited pumping. More likely raw than treated.
- Moderate** - Some transmission pumping required. Source may be groundwater.
- High** - Transmission involves significant pumping. Source may be groundwater.

Annual and Cumulative Electricity Savings



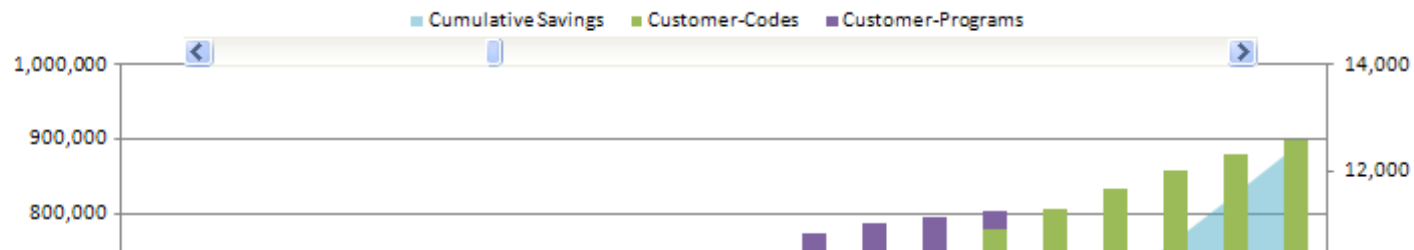
Show Series

- Utility-Codes
- Utility-Programs
- Customer-Codes
- Customer-Program
- Cumulative Savings-All

Years to Display:

Use the slider in the chart to set the number of years to display. Or enter a whole number between 5 and 60 in the box above.

Annual and Cumulative Gas Savings



Show Series

- Customer-Codes
- Customer-Program
- Cumulative Savings-All

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Businesses pitch waterline

by Elizabeth Dunbar, MPR

10:08 AM, July 1, 2013

LISTEN

EMBED | HELP

Businesses located near
water in an effort aimed
recover.

The lake dropped six feet
the U.S. Geological Survey
lake earlier this year. Bes
the amount of water being pumped from the aquifer below
the lake has doubled since 1980.

White Bear Area Chamber of Commerce President Scott
Mueller said a group of local leaders concerned about the
lake came up with six options for restoring the lake.
Conservation was the one solution that didn't require
expensive changes to infrastructure, he said.

"When you start talking about conservation, it's not really very
exciting. And everybody always thinks, well if I conserve but my
neighbor doesn't, then what I do is just a drop in the bucket.



Docks extend into White Bear Lake, where water levels have steadily decreased over the last decade, in White Bear Lake, Minn. September, 2011. (MPR Photo/Jeffrey Thompson)

CLOSE X

last decade, in White Bear Lake, Minn.
September, 2011. (MPR Photo/Jeffrey
Thompson)

AUDIO

[Businesses pitch in to slow White Bear Lake's plunging waterline \(program audio\)](#)

On the radio

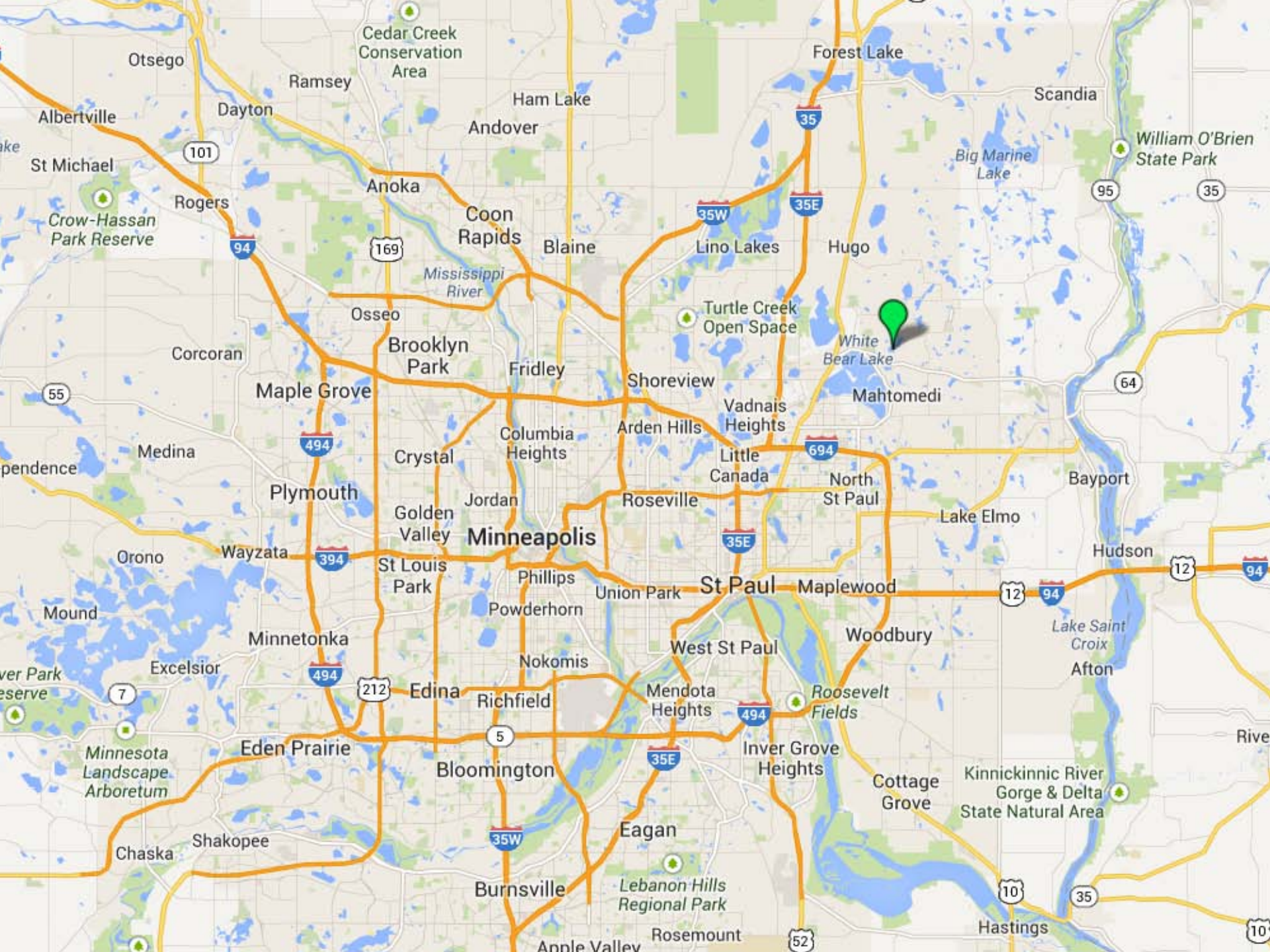
Scott Mueller: President, White Bear
Area Chamber of Commerce

LISTEN NOW

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and programs you love



White Bear Lake

Minneapolis

St Paul

Maplewood

Woodbury

Roosevelt Fields

Inver Grove Heights

Eagan

Lebanon Hills Regional Park

Kinnickinnic River Gorge & Delta State Natural Area

Lake Saint Croix

Afton

Lake Elmo

Bayport

64

Scandia

William O'Brien State Park

Big Marine Lake

Forest Lake

Ham Lake

Coon Rapids

Blaine

Lino Lakes

Hugo

Turtle Creek Open Space

Shoreview

Arden Hills

Vadnais Heights

Little Canada

North St Paul

Roseville

Columbia Heights

Golden Valley

Minneapolis

Union Park

Phillips

Powderhorn

Nokomis

West St Paul

Woodbury

Mendota Heights

Richfield

Bloomington

Eden Prairie

Edina

Minnetonka

Excelsior

Mound

Wayzata

Plymouth

Medina

Corcoran

Maple Grove

Osseo

Brooklyn Park

Fridley

Otsego

Ramsey

Dayton

Albertville

St Michael

Crow-Hassan Park Reserve

Rogers

Anoka

Andover

Forest Lake

Scandia

35

95

35

35E

35W

101

169

55

494

694

12

94

394

35E

12

94

12

94

494

212

7

494

35E

5

212

35W

52

10

35

10

Anne Valley

Rosemount

Hastings

Shakopee

Chaska

Minnesota Landscape Arboretum

Over Park Reserve

pendence

lake



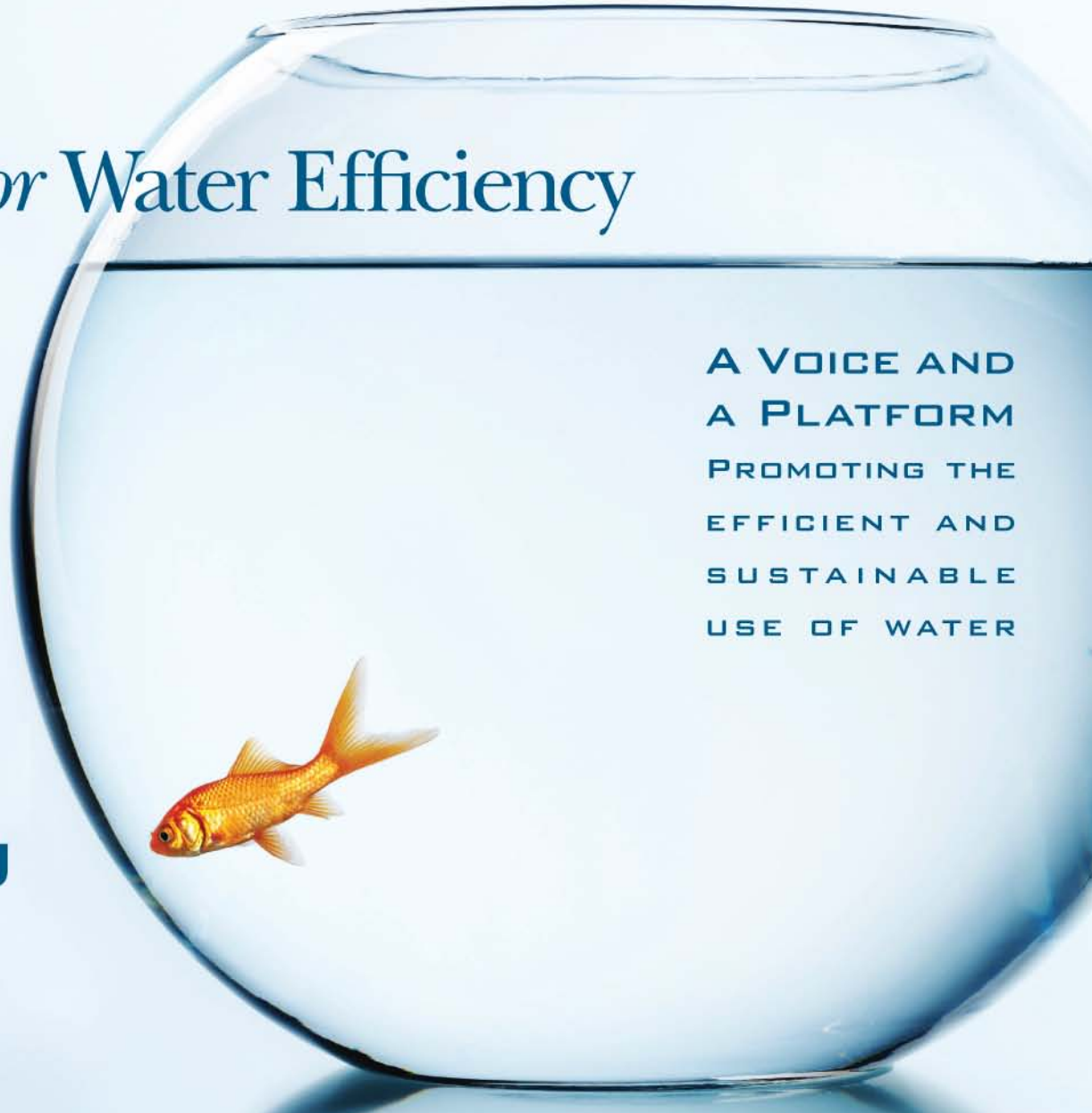
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CHICAGO



Discussion: Internal & External Communications and Outreach Strategies

Abby Crisostomo, Metropolitan Planning Council



DuPage Water Commission is Preserving Every Drop



Water Conservation and Protection Program (WCAPP), DuPage Water Commission

PRESERVING EVERY DROP

Welcome to Preserving Every Drop, the website developed to promote the DuPage Water Commission's Water Conservation and Protection Program (WCAPP). The purpose of the WCAPP is to provide all water users in DuPage County with a consistent message about water conservation and provide DWC customers with the tools needed to be good stewards of our finite water supply. The program's overall goal is to achieve a 10% reduction in water use per person within 10 years. [CLICK HERE to learn how YOU can help.](#) Learn more about DuPage Water Commission by visiting www.dpwc.org.

Are you conserving water inside and outside?
Find out how you can help preserve every drop.

learn more

Category	Percentage
Outdoor	31%
Indoor	69%
Toilets	26%
Leaks	14%
Other Domestic	2%
Washing Machine	22%
Showers	17%
Faucets	16%
Baths	2%
Dishwasher	1%

Recent News & Upcoming Events

- Order Rain Barrels Online at a New Lower Price!**
The Conservation Foundation has dropped their rain barrel price for the 2013 season! Order yours today for \$58.50 (plus tax). [Click the link above for more information.](#)
- 2013 Water Management Workshop Series**
[Click above for information on DWC's Water Management Workshop Series for municipal employees.](#)
- Elmhurst Green Fest**
Elmhurst Green Fest is back at Wilder Park on Saturday, August 3, 2013 from 10AM-3PM. [Click the link above for more information.](#)
- WCAPP Attends Clarendon Hills Public Works Open House**
[Click above to read about the Water Conservation and Protection Program attending Clarendon Hills Open House.](#)
- WCAPP Presents at ISAWWA In the Plant Training**
[Click the link above to read about WCAPP's presentation at an ISAWWA In the Plant Training.](#)
- 2011 WCAPP Annual Report**
[Click above to view the 2011 WCAPP Annual Report.](#)
- For more information about upcoming and recent events**
[click here](#)

Wasting Water is Weird
Build a Better Bathroom!

Take the I'm for Water Pledge!

See what happened in DuPage County for Fix a Leak Week 2010.

See how you can fix leaks all year round!


As much as **50 percent** water is wasted from inefficient watering methods and systems.

look for inefficient watering methods and systems. **Curb your water waste!**

Did you know watering your lawn for just 20 minutes is the equivalent of taking 150 showers? Be water-smart. Know when and how much to water.

Why waste...

Lawn to Lake, *Illinois-Indiana Sea Grant*



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LAWN TO LAKE


Lawn to Lake is a collaborative program promoting healthy lawn and landscape practices to protect water resources in the Great Lakes region. The Great Lakes are a globally important natural resource. They represent approximately 20 percent of the world's fresh surface water and provide habitat for over 100 species of globally rare plants and animals. Additionally, 42 million people depend on the Great Lakes for their drinking water.

Lawn to Lake Pledge


Natural Lawn Care
101




Retailers: Growing Naturally



Professional Workshops



Master Gardeners and Teachers



The Lawn to Lake effort in the Lake Michigan Basin is an outreach and training program to protect water in the Great lakes by facilitating a switch to landscape practices that reduce pollution. With funding from the Great Lakes Restoration Initiative, these partners are coordinating a prevention campaign that address the needs of the professional landscapers, municipalities and homeowners.

Illinois-Indiana Sea Grant | Lake Champlain Sea Grant
University of Illinois Extension | Safer Pest Control Project
Northwestern Indiana Regional Planning Commission
Chicago Metropolitan Agency for Planning

Latest News

The HELM: Large sprawling yards can lead to more runoff

Happy summer? Happy, healthy lawns!

Natural lawn care summit brings in nationwide experts

Lawn to Lake program promotes natural lawn care

Get the latest Lawn to Lakes publications!

Contacts

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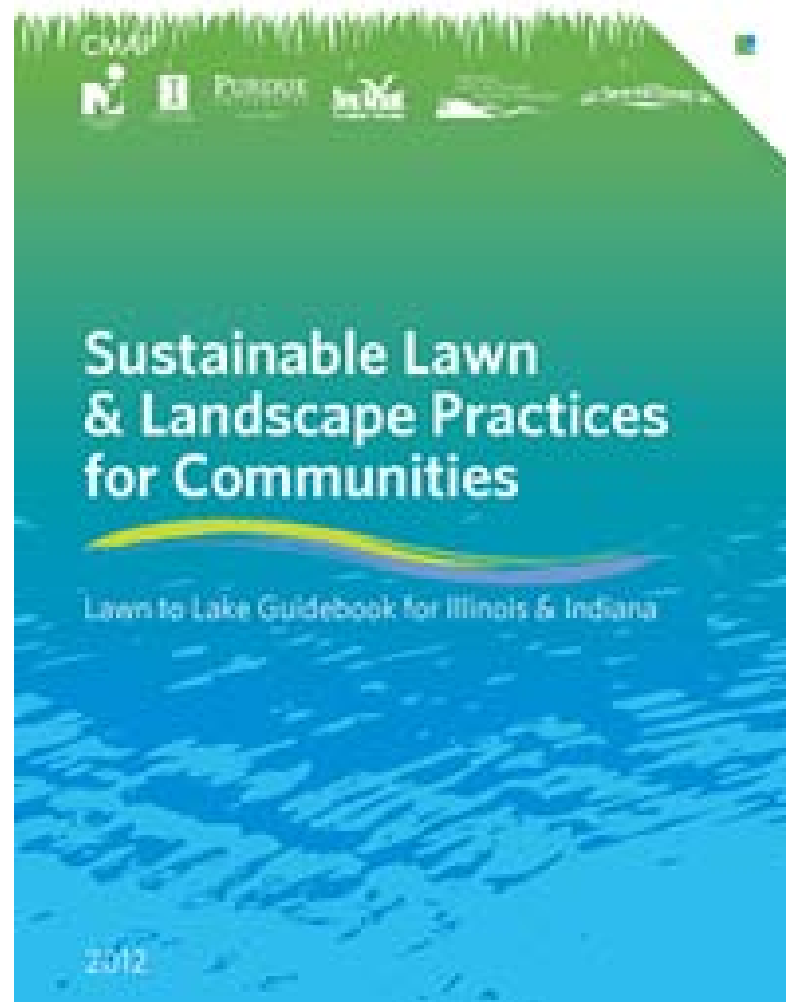
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Topics

- Aquaculture
- Aquatic Invasive Species
- Climate Change
- Coastal Restoration
- Fish Consumption

Sustainable Lawn & Landscape Practices for Communities, *Illinois-Indiana Sea Grant*



WaterSense, U.S. EPA

EPA United States Environmental Protection Agency

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- FIND REBATES NEAR YOU
- START AT HOME
- WaterSense FOR KIDS

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Learn more about WaterSense and what you can do to help make every drop count.

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WaterSense, U.S. Environmental Protection Agency, Office of Wastewater Management (4204M), 1200 Pennsylvania Avenue, N.W. Washington, D.C. 20460

Never Waste, *Alliance for Water Efficiency*



NEVER WASTE: Take a shorter shower. Each minute you cut back saves 8 of these bottles.

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The Way You Think About Water.

Join the Blue Revolution and get the Never Waste water bottle from the Alliance for Water Efficiency to show your support for wise water use. Each purchase advances critical work to help water-stressed North American communities and businesses conserve water. This high-quality, 20 ounce, stainless steel, BPA-free, double-walled, vacuum insulated bottle helps you stay hydrated and educated with fun facts about the amount of water we waste **for the low price of \$19.95**. Stay in touch by scanning the QR-code, which will keep you informed with the latest tips on smart water use.

Interested in more information on the Never Waste campaign itself and on customized, bulk purchases of the bottles? [Click here.](#)

ORDER
HERE



Water is Limited.
Never Waste.

Know Your Water
Footprint.

Help Change The Way
America Thinks.

What Our Water's Worth, MPC



MetropolitanPlanningCouncil



OUR WATER IS WORTH MORE THAN WE THINK

From Lake Michigan to the Fox River, how we use our water resources—including what we conserve, how much we waste, and what we choose to invest in water quality—is up to all of us. What Our Water's Worth is an ongoing campaign led by the Metropolitan Planning Council and Openlands to raise awareness about the value of water in northeastern Illinois and northwestern Indiana.

Water stories

How can we advance the Great Lakes region over the next 100 years? Five experts weigh in

By Rachel Carnahan, videos by Ryan Griffin-Stegink In 100 years—2113—the Chicago region is sure to be a dramatically different place. People, technology and even our changing climate will reinvent our city and region, perhaps several times over. Lake Michigan will be among the few constants. Yet even “our” Great Lake will undergo shifts. Skidmore, Owings & Merrill's (SOM) Great Lakes Century initiative calls for a comprehensive 100-year vision for the Great Lakes region. Metropolitan Planning Council (MPC) jumped at the opportunity to contribute by submitting our own ideas for what Chicago and the Great Lakes should look like in 100 years to SOM's Great Lakes, Great People series. We wer... [Continue »](#)

[Read more water stories »](#)

The WOWW factors

95,000 **42**

SQUARE MILES
of the Earth are covered by the Great Lakes

MILLION
people rely on the Great Lakes for drinking water

4th

LARGEST GDP
where the Great Lakes region would rank globally if it were a nation



Where does the water go?: A visit with the water level wizards at the Metropolitan Water Reclamation District



It's not easy selling green (infrastructure)



The Twelve Months of Water Stories



How soon is now? The future of water reuse becomes reality at an Oak Park home



Seizing the Rain in Blue Island



Lurie Garden thrives in drought, pointing at-home green thumbs to native plants



Turf's up: Maintaining a healthy lawn during drought

Other resources?



Resource List

- **Water Conservation and Protection Program (WCAPP), *DuPage Water Commission***

<http://preservingeverydrop.org/>

- **Lawn to Lakes, *Illinois-Indiana Sea Grant***

<http://www.iisgcp.org/l2l/index.html>

- **Sustainable Lawn & Landscape Practices for Communities Manual, *Illinois-Indiana Sea Grant***

<http://www.iiseagrant.org/catalog/l2l/guidebook.html>

- **WaterSense, *U.S. Environmental Protection Agency***

<http://www.epa.gov/watersense/>

- **Never Waste, *Alliance for Water Efficiency***

<http://www.home-water-works.org/neverwaste/>

- **Water Conservation Tracking Tool, *Alliance for Water Efficiency***

<http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx>

- **What Our Water's Worth, *Metropolitan Planning Council***

<http://www.chicagolandh2o.org/>



Wrap-up, Questions, Announcements



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DuPage Water Commission is Preserving Every Drop



Workshop 4: Water Rates and Revenue

Aug. 28, 2013, 8:30 am to noon, DuPage Water Commission

- Financing options for water infrastructure investments
 - Traditional Options: Gerry Bakker and Andy Bielanski, *U.S. EPA*
 - Innovative options: Ted Hamer, *KPMG*
- Role of rates and full-cost pricing in conservation and water supply management
 - Margaret Schneemann, *Illinois-Indiana Sea Grant/Chicago Metropolitan Planning Council*
 - Effects of conservation on revenue, savings from avoided costs and implementing new rates
 - **Interactive discussion: attendees bring in water rates, pumpage by user by month and capital improvement plans.**



DuPage Water Commission is Preserving Every Drop

