

# This presentation premiered at WaterSmart Innovations

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# Tracking, Benchmarking and Reporting Water Loss in Wisconsin

WaterSmart Innovations

October 9, 2014

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# What is the PSC?

*"The Public Service Commission of Wisconsin (PSC) is an independent regulatory agency dedicated to serving the public interest. The agency has been responsible for the regulation of Wisconsin public utilities, including those that are municipally-owned, since 1907."*



# Wisconsin Landscape

- Almost 600 water utilities
- Primarily municipally owned, but still treated as stand-alone businesses just like private utilities
- 60% have <1,000 customers
- Some with <50 customers




# Annual Reporting Requirements = Good Data Set

- Annual reports required for past 100+ years
- Based on standard Uniform System Of Accounts (USOA)
- Standard reporting format
- Since 1997, utilities file electronically using program developed in-house

UTILITY NO. 10  
Class D

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3015 (01-06-12)

**ANNUAL REPORT**

OF

Name: ABBOTSFORD MUNICIPAL WATER UTILITY

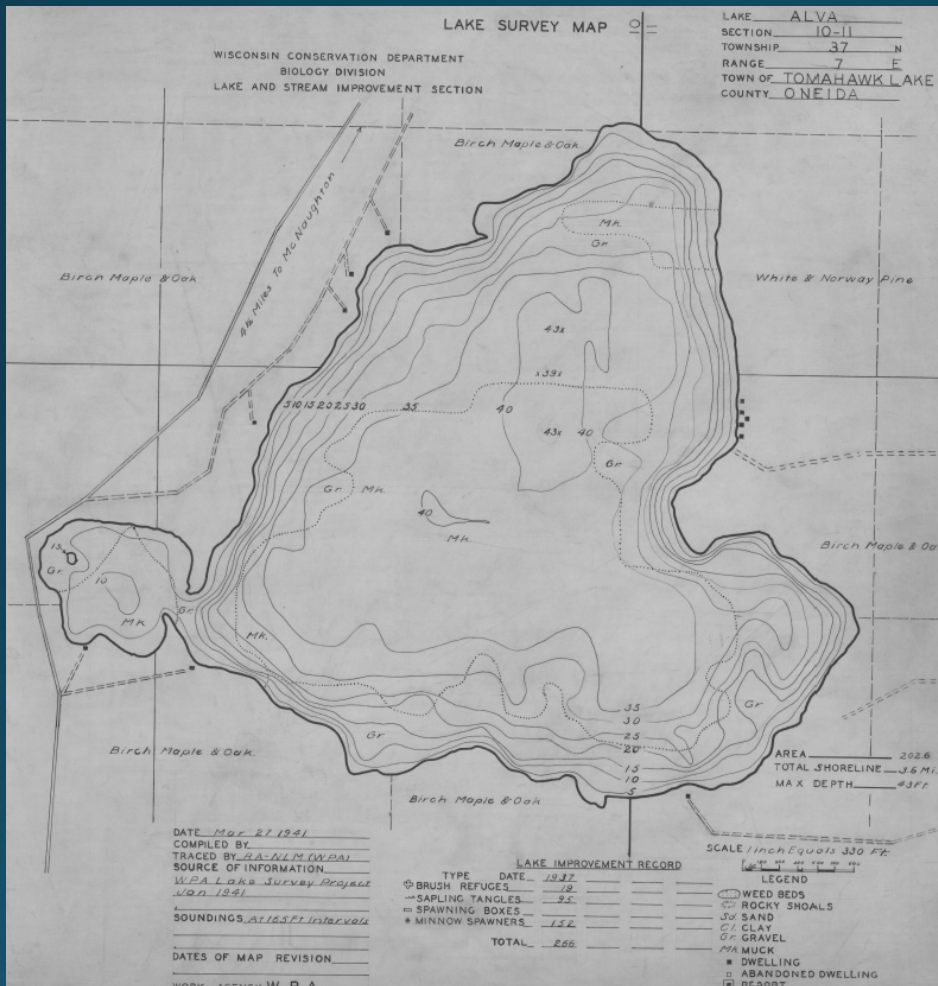
Principal Office: 203 NORTH FIRST STREET  
P.O. BOX 589  
ABBOTSFORD, WI 54405-0589

For the Year Ended: DECEMBER 31, 2011

WATER, ELECTRIC, OR JOINT UTILITY  
TO  
PUBLIC SERVICE COMMISSION OF WISCONSIN

P.O. Box 7854  
Madison, WI 53707-7854  
(608) 266-3766

# Wisconsin's Water Resources



# Major Watersheds

Great Lakes basin  
includes 1/3 of land  
area and 50  
percent of the  
state's population



Mississippi River basin  
has no public utility  
withdrawals from the  
river itself

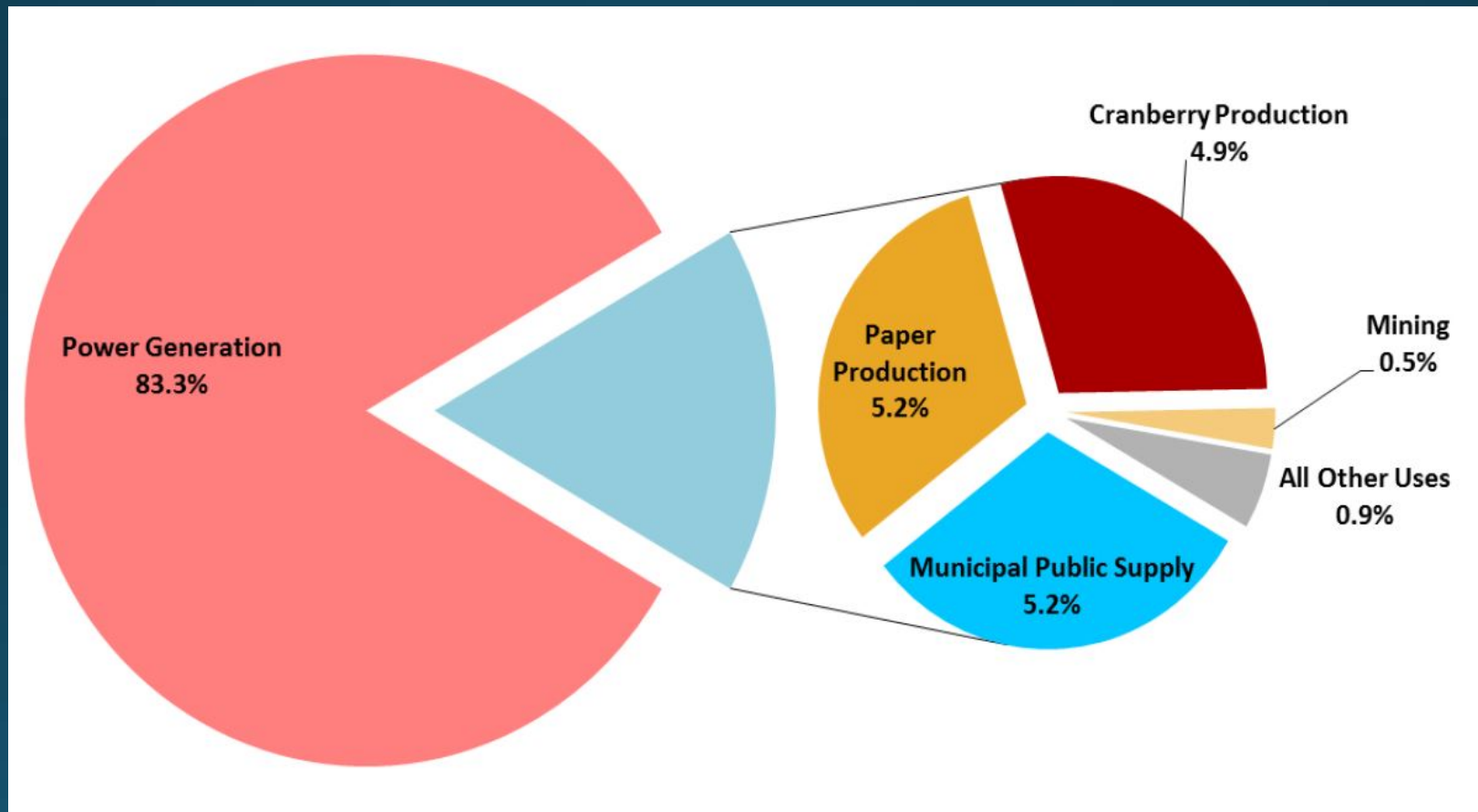
# Why Conservation in a Great Lakes State?

- Local/regional scarcity
- Aging infrastructure
- Rising operating costs
- Increasing public interest
- Great Lakes Compact regulates “new and increased” withdrawals – surface and groundwater
- Compact resulted in statewide water conservation program and water supply planning





# 2012 Wisconsin Surface Water Withdrawals

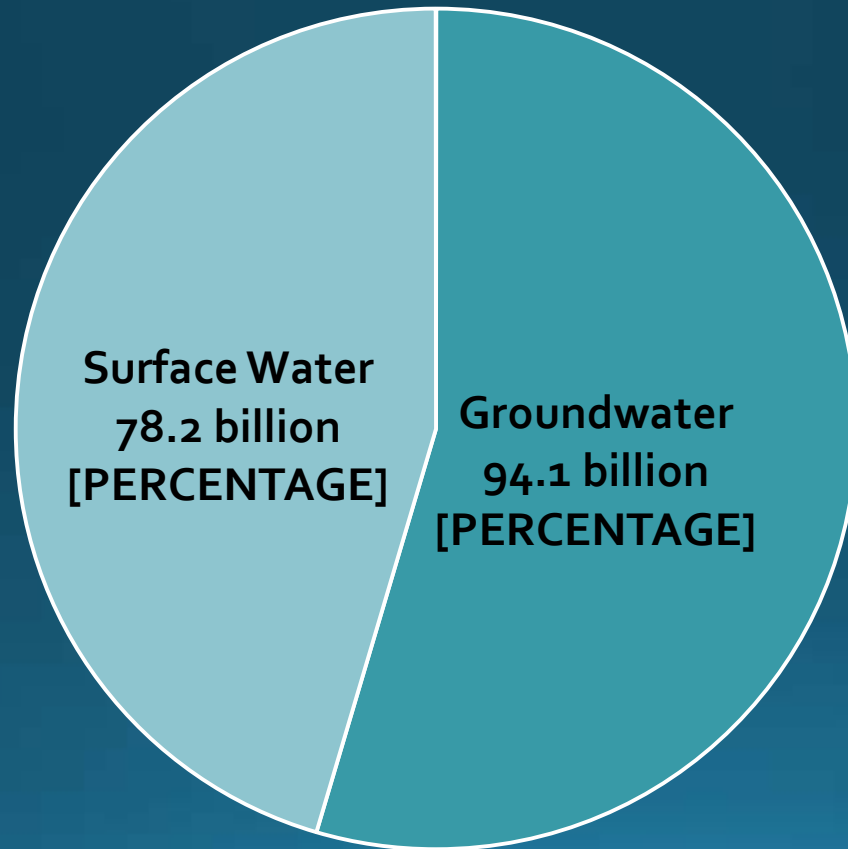


*Source: Wisconsin Water Use 2012 Expanded Withdrawal Summary, Wisconsin Department of Natural Resources*

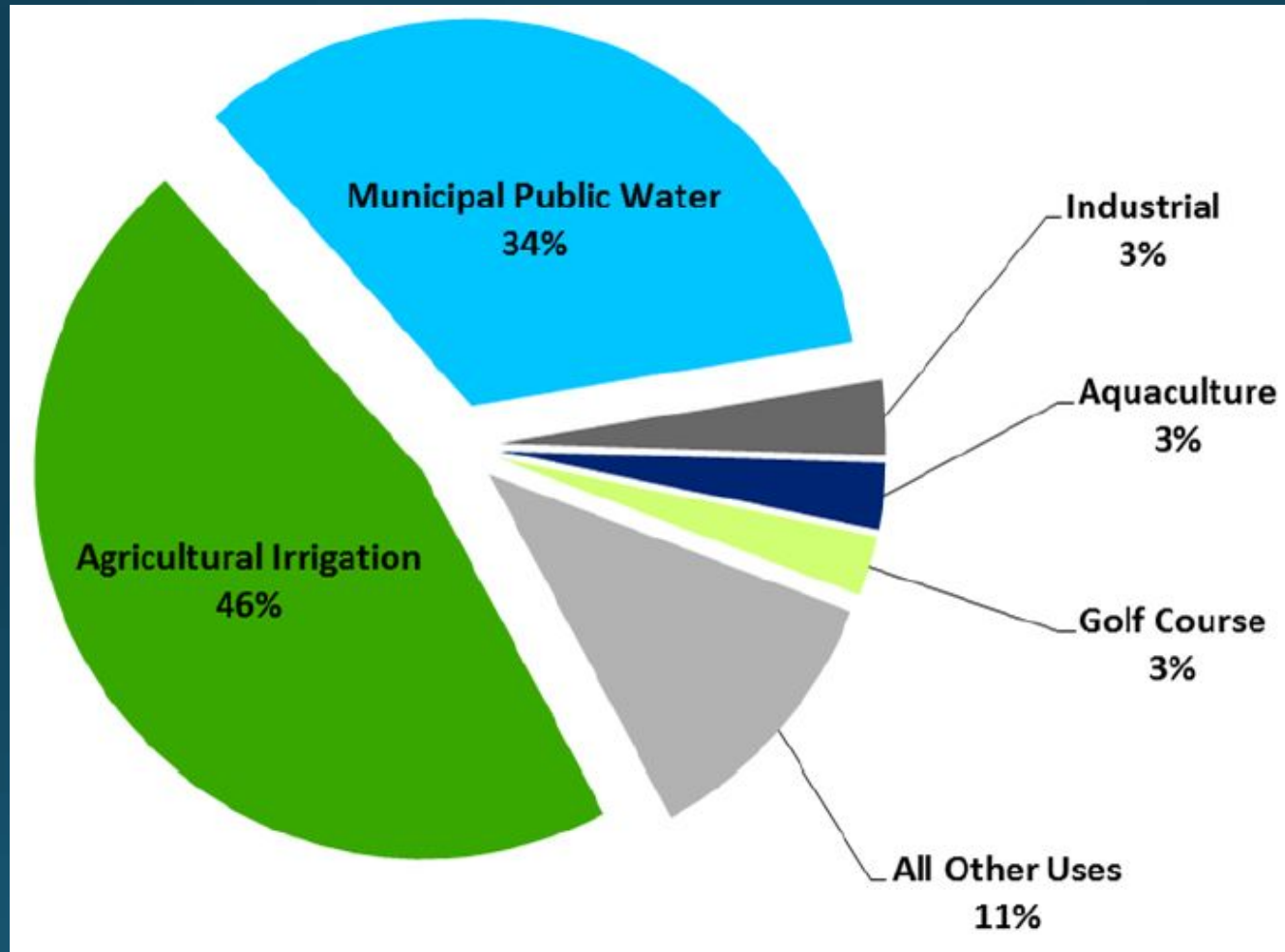
# Regional Water Scarcity in Wisconsin



# Source of Public Utility Water Supply in Wisconsin (2013)



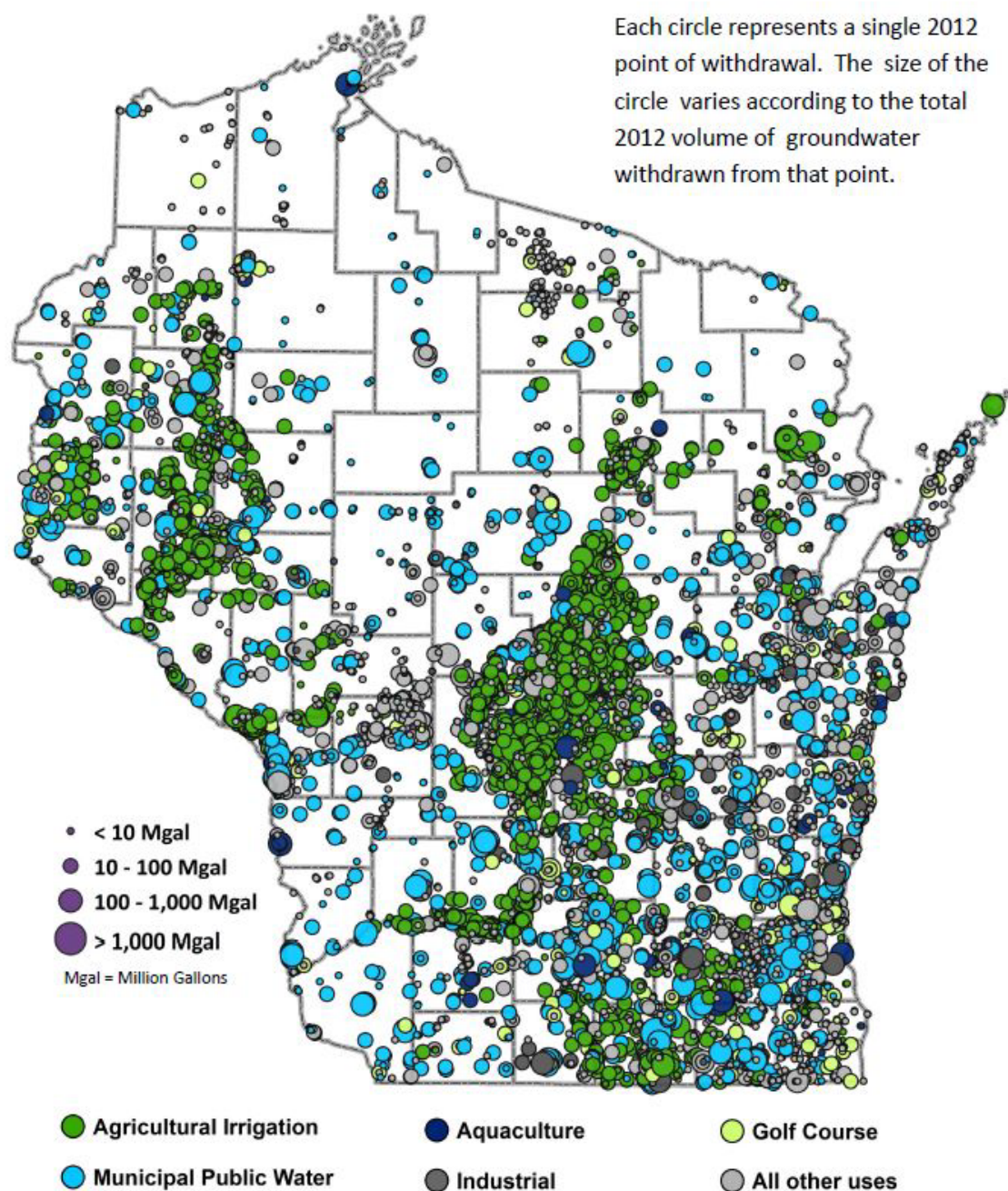
# 2012 Wisconsin Groundwater Withdrawals



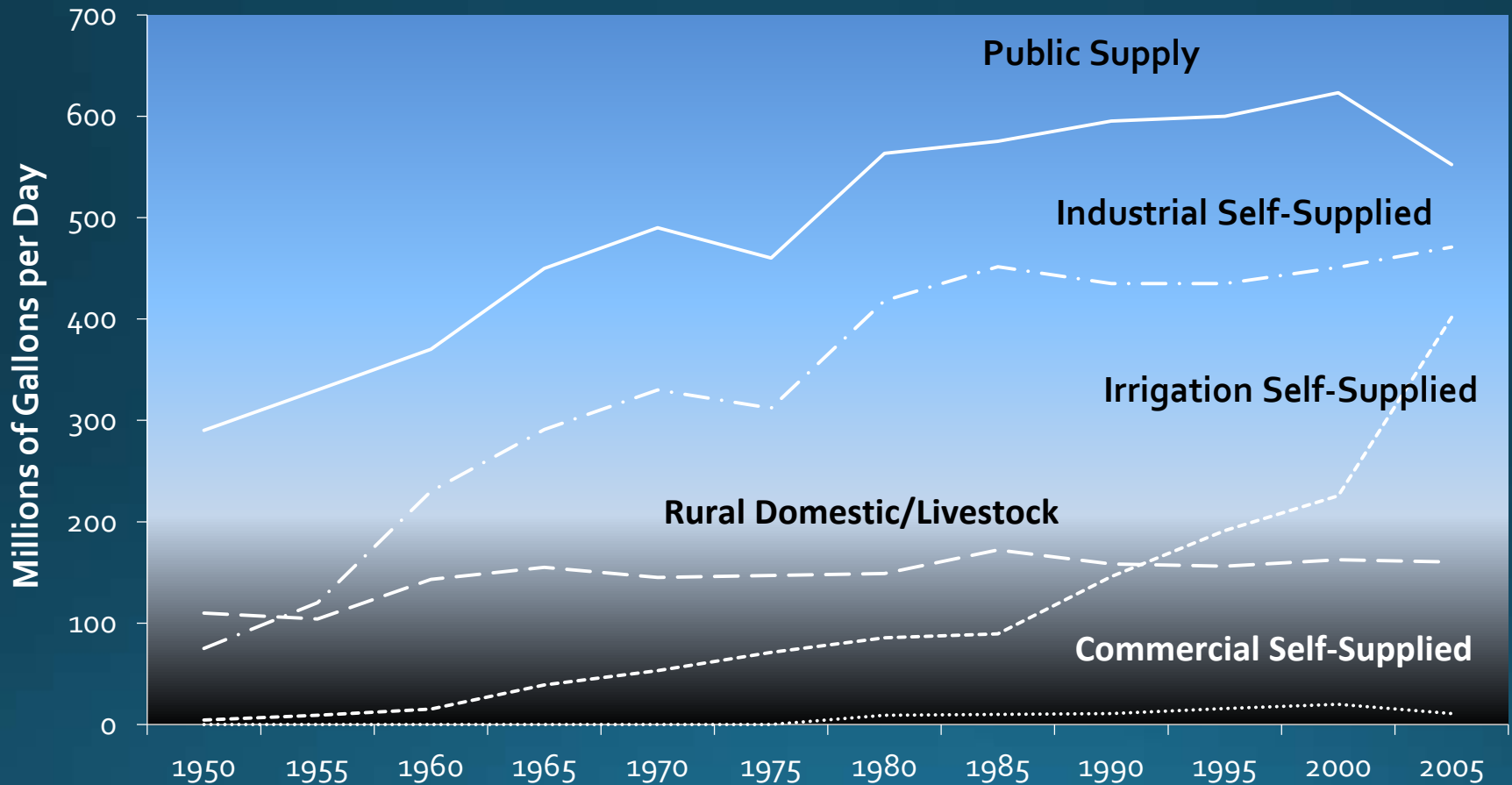
*Source: Wisconsin Water Use 2012 Expanded Withdrawal Summary, Wisconsin Department of Natural Resources*



# 2012 Groundwater Withdrawals in Wisconsin

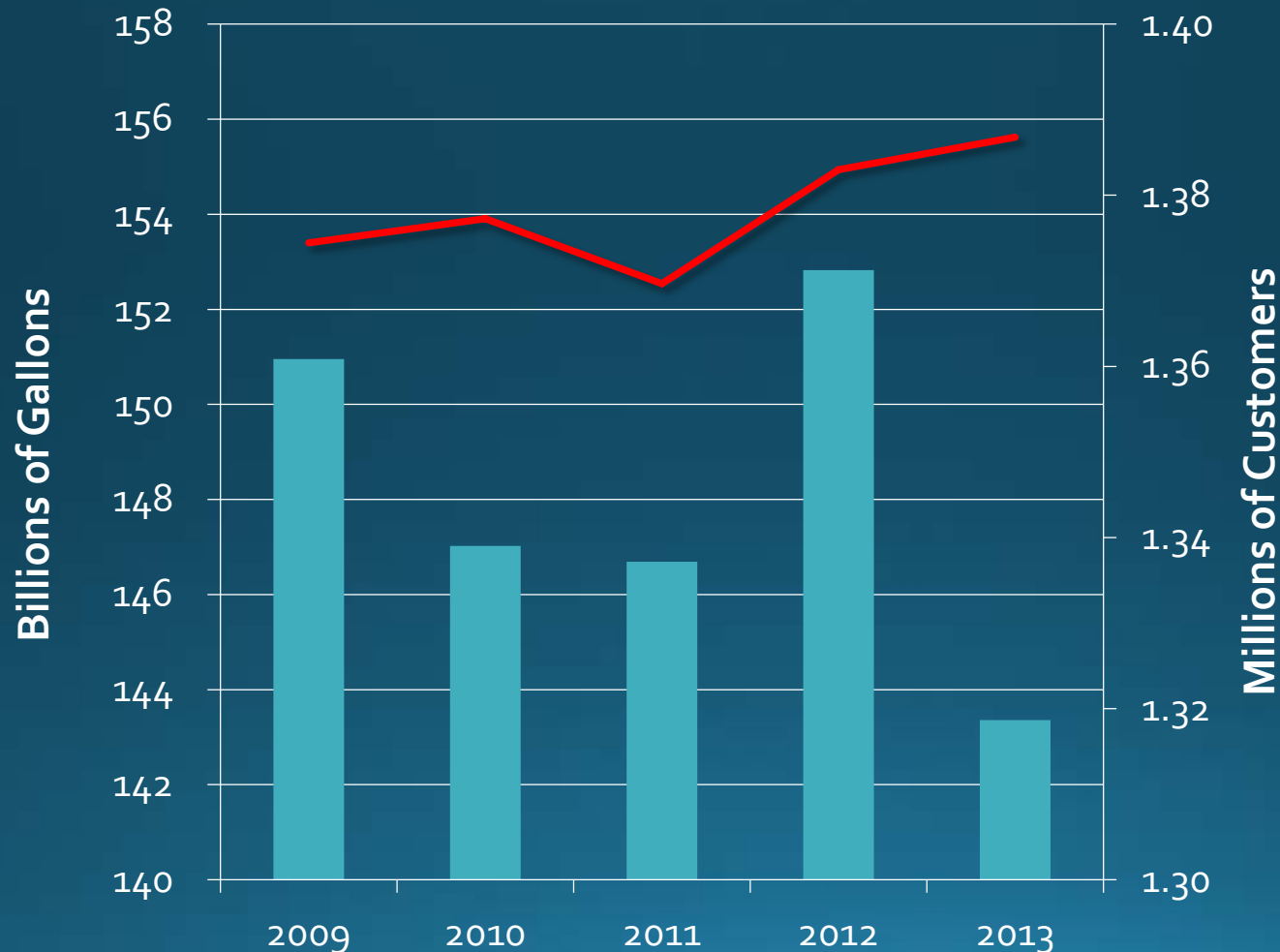


# Water Use Trends in Wisconsin

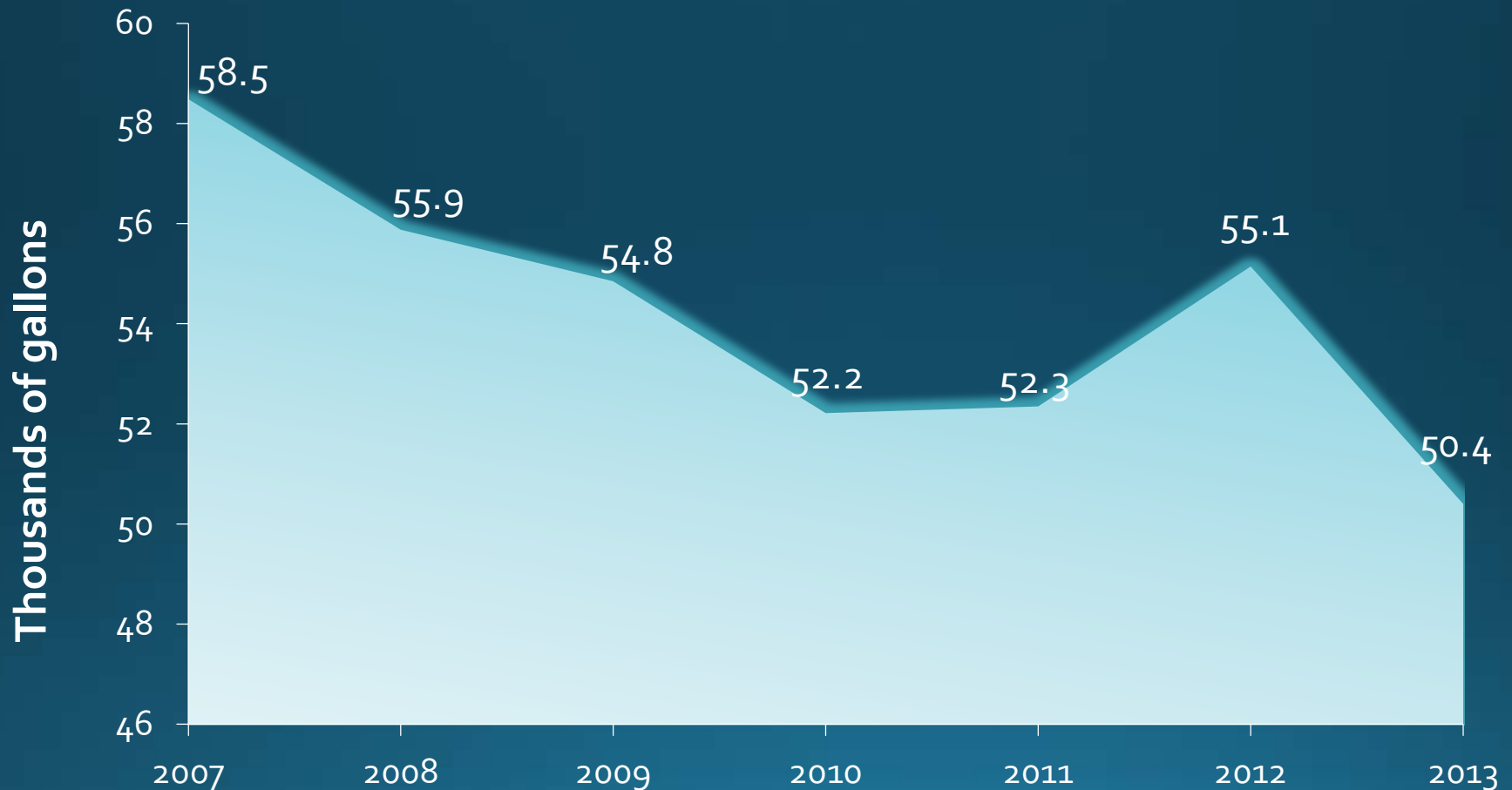


Source: Buchwald, C.A, 200, Water Use in Wisconsin, 2005, US Geological Survey Open-File Report 2009-1076, 74 p.

# Wisconsin Retail Water Sales and Metered Customers



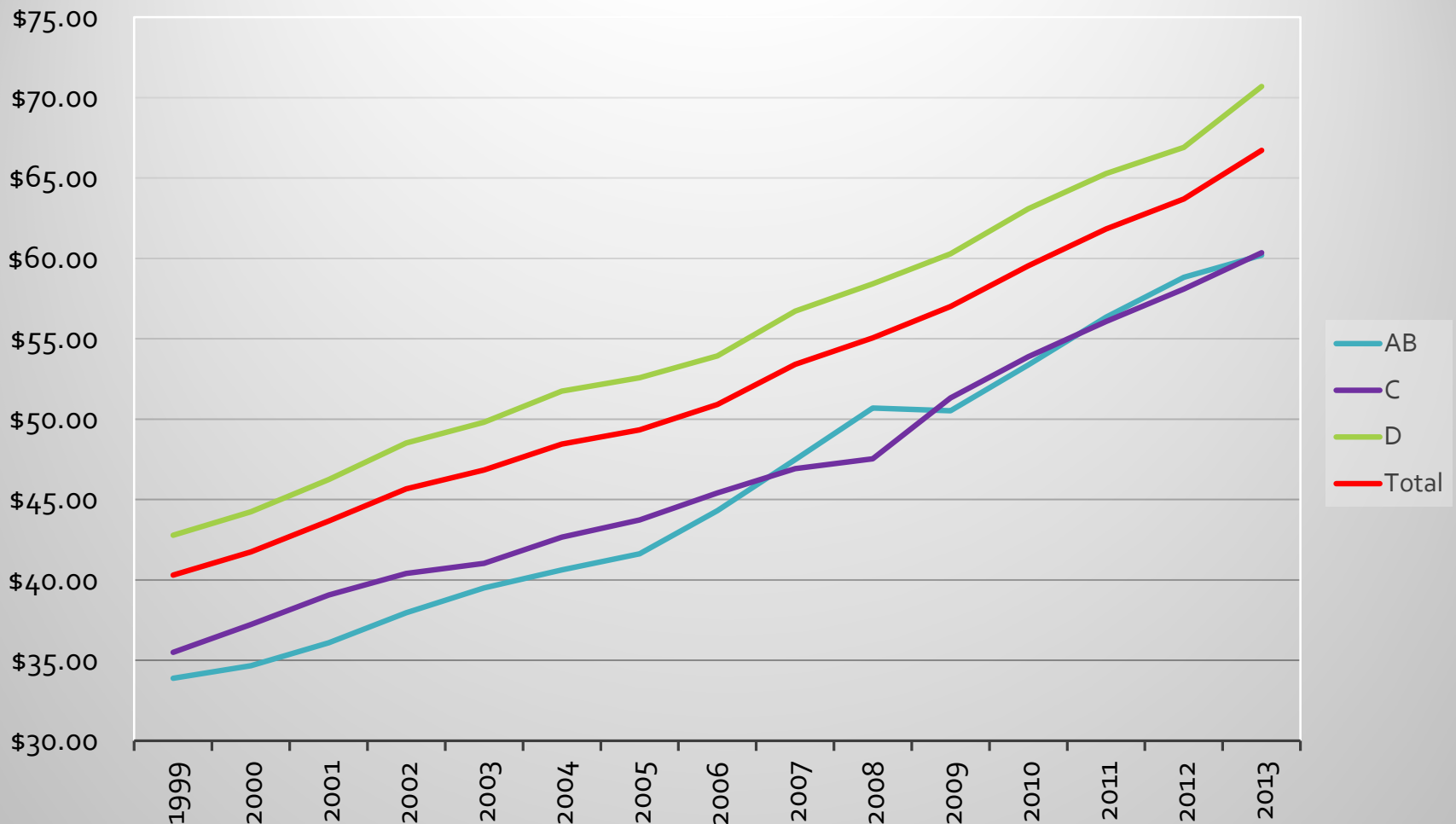
# Residential Sales Volume per Customer (Statewide Average)





# Water Bills in Wisconsin

Average Quarterly Bill for 12,000 Gallons

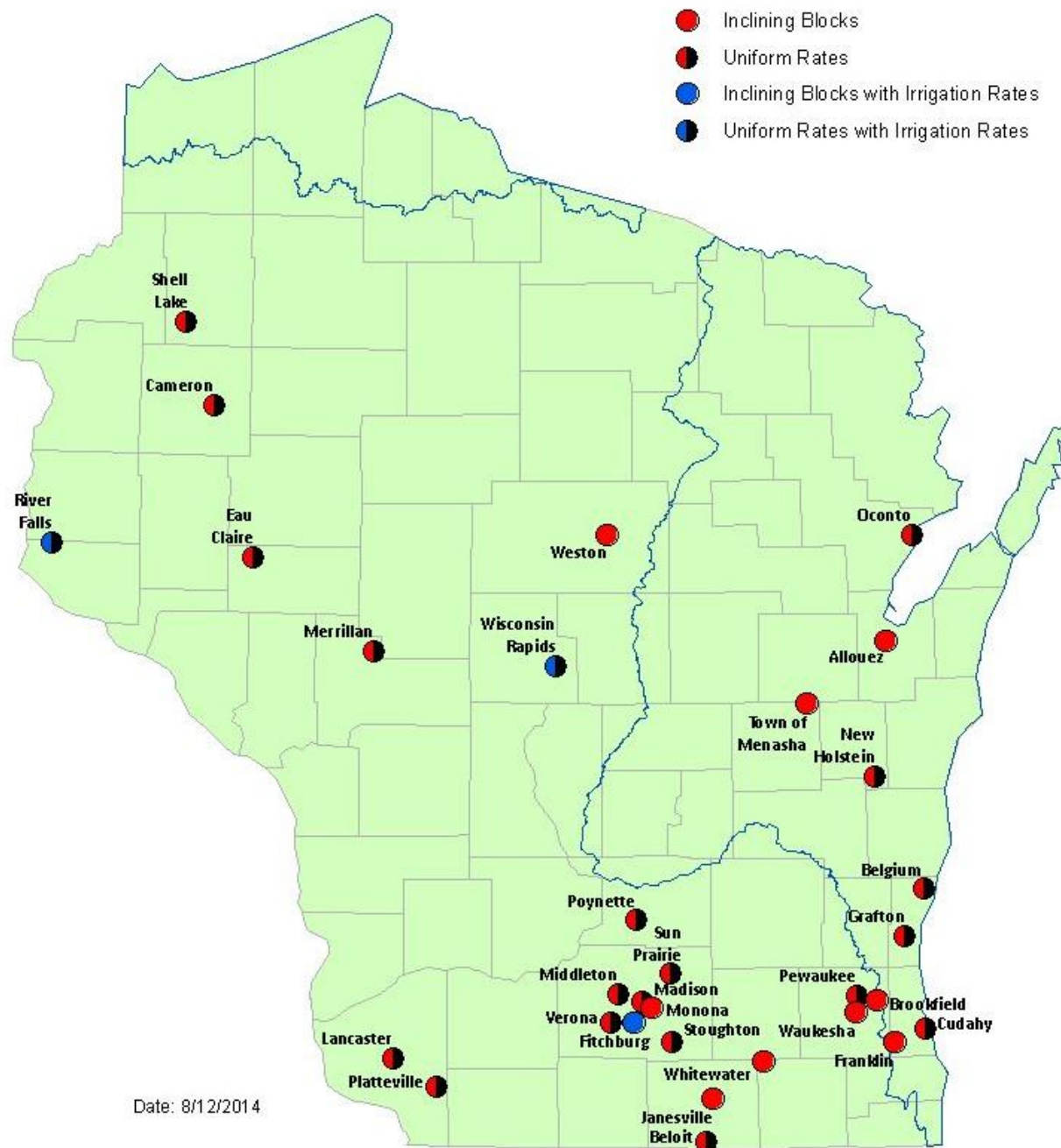


# Components of PSC's Conservation and Efficiency Initiative

- Promote conservation and efficiency
- Water loss control standards
- Conservation rates
- Review and approval of utility water conservation programs
- Conservation integrated into PSC construction review for new wells & supply sources

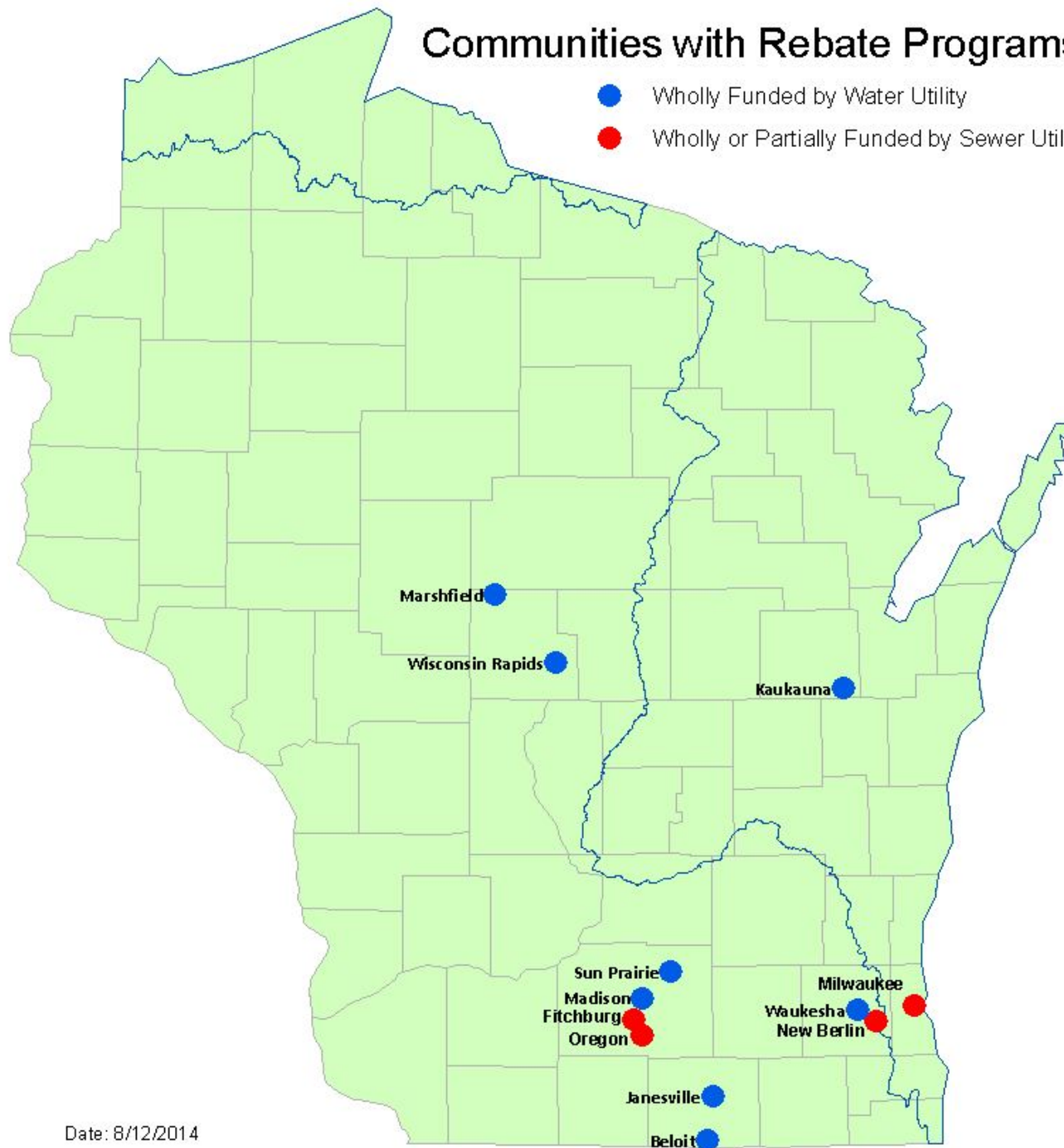


# Utilities with Conservation Rates for Residential Customers



# Communities with Rebate Programs

- Wholly Funded by Water Utility
- Wholly or Partially Funded by Sewer Utility



Date: 8/12/2014

# Annual Report: Page W-27

Year ended: December 31, 2013 Utility No. 3420 - MARSHFIELD UTILITIES

Copy 1 of Page W-27

## WATER CONSERVATION PROGRAMS

1. List all water conservation-related expenditures for the reporting year. Include administrative costs, customer outreach education, other program costs, and payments for rebates and other customer incentives.
2. If the Commission has approved conservation program expenses, these should be charged to Account 186. Otherwise, these expenses are reported in Account 906 on Schedule W-05 (Account 691 for class D utilities).

Item (a)	Expenditures (b)	Number of Rebates (c)
<b>Administrative and General Expenses</b>		
Program Administration	9,496	1
Customer Outreach & Education	12,819	2
Other Program Costs		3
<b>Subtotal Administrative and General Expenses</b>	<b>22315</b>	
<b>Customer Incentives</b>		
Residential Toilets	3,200	64 *
Multifamily/Commercial Toilets		5
Faucets		6
Showerheads		7
Clothes Washers		8
Dishwashers		9
Cost Sharing Projects (Nonresidential Customers)		10
Other Incentives		11
<b>Subtotal Customer Incentives</b>	<b>3200</b>	
<b>Total Conservation Expenditures</b>	<b>25515</b>	



## Milwaukee hit by 50 water main breaks since Saturday



# **WATER EFFICIENCY POTENTIAL STUDY FOR WISCONSIN**

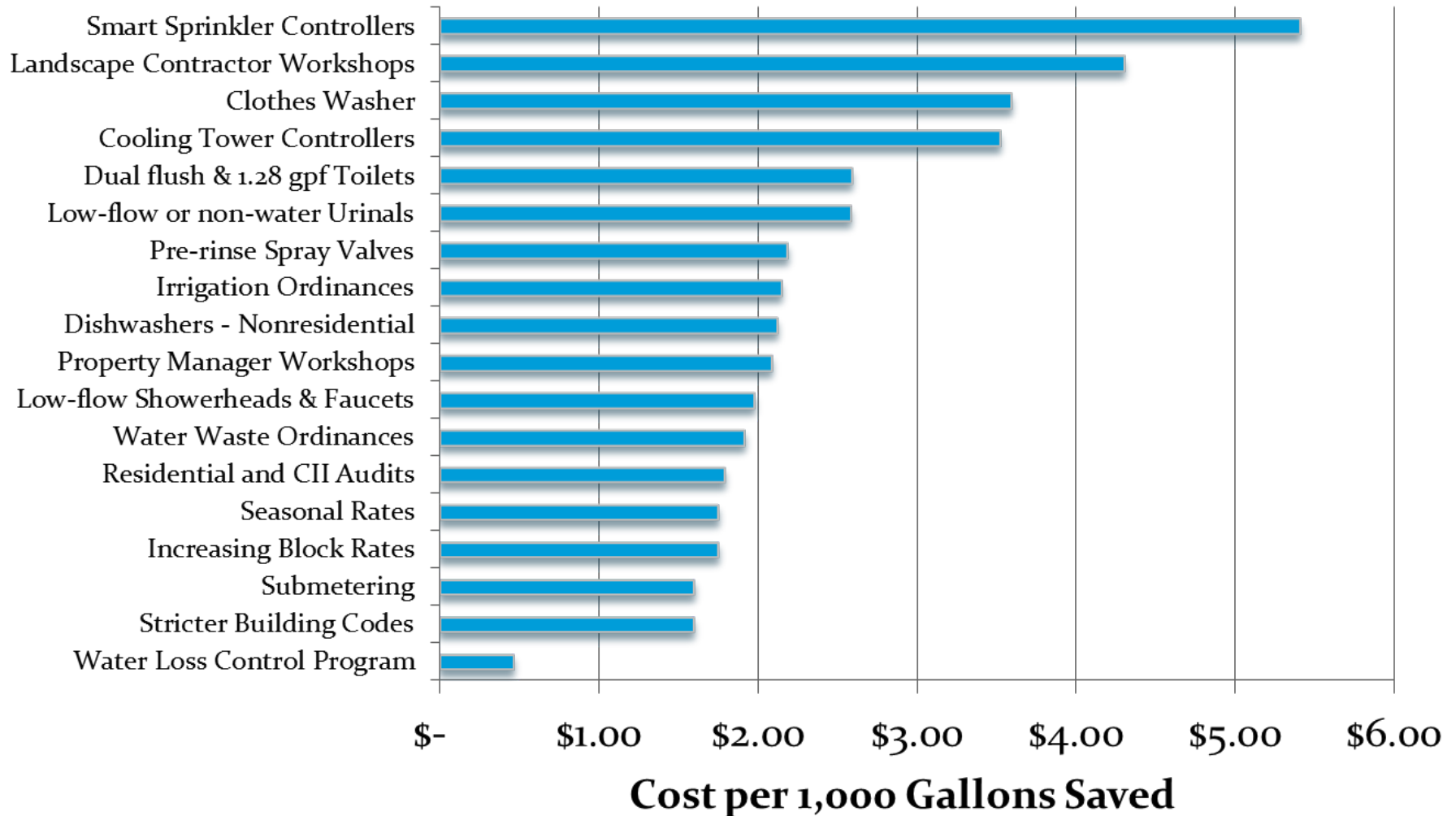
Prepared for the  
  
**Public Service Commission of Wisconsin  
and  
Wisconsin Department of Natural Resources**

**Camp, Dresser & McKee, Inc.**  
Milwaukee, WI  
and  
**Water Accountability, LLC**  
Sussex, WI

December 1, 2011



# Statewide Average Cost of Conservation Measures





## Study Identifies Potential Water Conservation Savings and Costs

*Utilities could save more than 164 million gallons per day by 2030*

MADISON— (December 1, 2011) **Reducing distribution system leaks and losses is the most cost-effective way for Wisconsin water utilities to achieve water savings,** according to a recently released report. The study evaluated the costs and benefits of implementing various conservation measures, such as toilet rebates and other customer incentives, sub-metering customers, updating plumbing codes, conducting customer water audits, implementing conservation-based water pricing.

The Public Service Commission (PSC) and the Wisconsin Department of Natural Resources (DNR) jointly funded the year-long investigation into potential statewide water savings under several water conservation scenarios. According to the final report, Wisconsin water utilities could save at least 164 million gallons per day by 2030 by implementing cost-effective and technically achievable water conservation measures.

# Annual Report : Page W-15

## WATER AUDIT STATISTICS

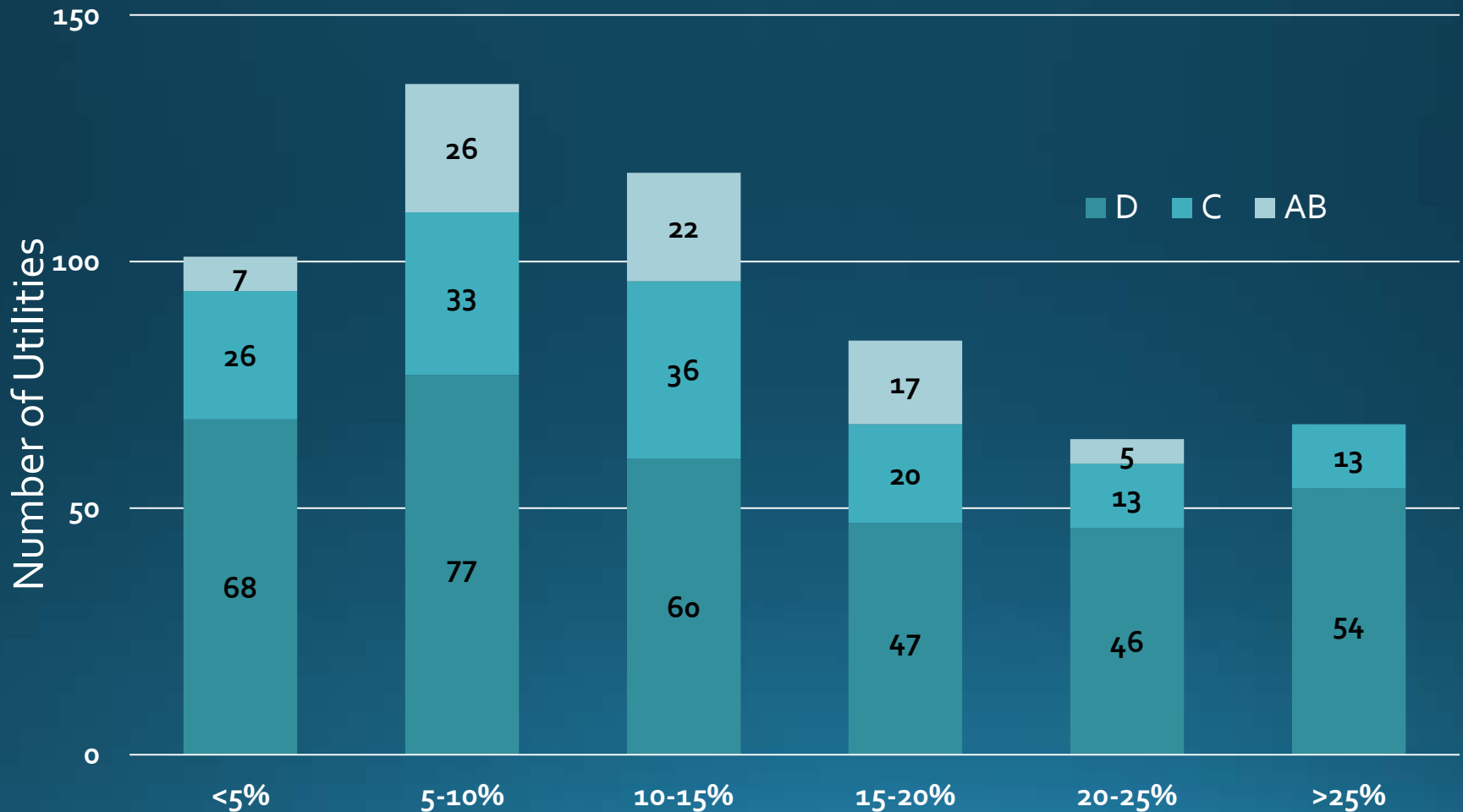
Source of Water Supply Statistics - Total Annual Pumpage (000's):	1,517,642
Less: Gallons (000's) used in the treatment process:	158,463
Subtotal: Gallons (000's) entering distribution system:	<b>1,359,179</b>
Less: Gallons (000's) sold (Revenue Water):	1,214,963
Gallons (000's) entering distribution system but not sold (Non-Revenue Water):	<b>144,216</b>
Authorized System Uses:	
Gallons (000's) used to flush mains:	43,814
Gallons (000's) used for fire protection:	1,773
Gallons (000's) used to prevent freezing of distribution system:	18,126
Gallons (000's) used for other system uses:	4,501
Subtotal Authorized System Uses:	<b>68,214</b>
Water Losses (Real and Apparent):	
Gallons (000's) lost due to main leaks or breaks:	17,150
Gallons (000's) lost due to service leaks or breaks:	1,200
Gallons (000's) lost due to hydrant leaks, tank overflows and pressure reducing valves:	
Gallons (000's) for unauthorized usage such as vandalism and theft:	
Gallons (000's) unknown/not accounted for:	<b>57,652</b>
Subtotal Water Losses:	<b>76,002</b>
Percentage of water entering distribution system so lost:	<b>89%</b>
Percentage of Real and Apparent Losses:	<b>6%</b>
If water losses exceed 15%, indicate causes:	
If water losses exceed 15%, identify actions taken to reduce water loss:	

# Page W-15, continued

## OTHER STATISTICS

Maximum gallons pumped by all methods in any one day during reporting year (000 gal.)	6,345
Date of maximum:	07/10/2013
Cause of maximum:	Hot summer day
Minimum gallons pumped by all methods in any one day during reporting year (000 gal.)	1,844
Date of minimum:	11/29/2013
Total KWH used by the utility (include pumping, treatment facilities and other utility operations	2,931,036
If water is purchased:	
Vendor Name:	
Point of Delivery:	
What percentage of purchased water is surface wa	
Number of main breaks repaired this year:	24
Number of service breaks repaired this year:	21
Population served (estimate the number of individuals within service ar	
Inside municipality?	40,000
Outside municipality?	100

# Estimated Water Loss: Wisconsin Utilities (2013)



# Water Usage History

ID	10	Utility	ABBOTSFORD MUNICIPAL WATER UTILITY							Class			D
Year	Total Pumped	Treated	Distribution	Water Sold	Water Not Sold	Unaccounted	Water Loss	Non Revenue Percent	Water Loss Percent	Water Loss Cause	Main Breaks	Service Breaks	Plan To Improve
2000	115,375		115,375	110,173	5,202	5,202	0	4.5	4.5	The administrator of public works and his employees are taking a hard look at the system to determine exactly where the loss could be coming from. At this point they are not quite sure where the lost water is going.			
2001	119,753		119,753	99,606	20,147	20,089	0	16.8	16.8				
2002	126,955		126,955	88,407	38,548	37,538	210	30.4	29.6				
2003	112,092		112,092	101,740	10,352	10,142	0	9.2	9.1				
2004	102,894		102,894	83,755	19,139	18,499	140	18.6	18.0				
2005	108,590		108,590	105,123	3,467	3,393	50	3.2	3.1				
2006	100,073		100,073	99,464	609	544	50	0.6	0.5				
2007	117,715		117,715	106,736	10,979	10,914	50	9.3	9.3				
2008	141,581		141,581	136,521	5,060	4,653	4,700	3.6	3.3		4	0	
2009	146,779		146,779	132,672	14,107	13,720	13,797	9.6	9.4		4	0	
2010	145,588		145,588	126,107	19,481	19,036	19,121	13.4	13.1		3	2	
2011	139,834		139,834	120,058	19,776	19,416	19,416	14.1	13.9				
2012	144,670		144,670	128,611	16,059	15,699	15,699	11.1	10.9		4	0	
2013	139,427		139,427	124,670	14,757	14,392	14,392	10.6	10.3		2	0	

ID	Name			Year	Actual Class	Reporting Class	Customers	
10	ABBOTSFORD MUNICIPAL WATER UTILITY			2012	D	D	853	
Energy (KWH)	Total Gallons Pumped (000)	Water Sold (1,000 Gallons)	Percent Water Sold	Authorized Unmetered Usage		Water Loss (1,000 Gallons)	Pumped Not Sold (PNS) (000)	
544,387	144,670	128,611	88.9	360		15,699	16,059	
Purchased Water	Fuel and Power Costs	Chemical Expense	Total Primary Cost of Water	Cost per 1,000 Gallons	Water Loss Cost	PNS Cost	Main Breaks Repair	Service Breaks Repair
\$0	\$77,770	\$32,231	\$110,001	\$0.76	\$11,937	\$12,211	4	0
Water Loss Explanation								
Plan to Improve Percent of Water Sold								

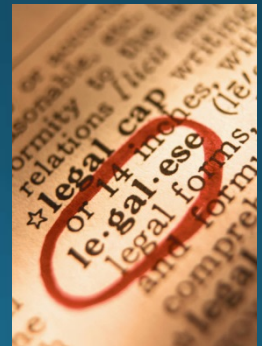
ID	Name			Year	Actual Class	Reporting Class	Customers	
10	ABBOTSFORD MUNICIPAL WATER UTILITY			2013	D	D	824	
Energy (KWH)	Total Gallons Pumped (000)	Water Sold (1,000 Gallons)	Percent Water Sold	Authorized Unmetered Usage		Water Loss (1,000 Gallons)	Pumped Not Sold (PNS) (000)	
302,681	139,427	124,670	89.4	365		14,392	14,757	
Purchased Water	Fuel and Power Costs	Chemical Expense	Total Primary Cost of Water	Cost per 1,000 Gallons	Water Loss Cost	PNS Cost	Main Breaks Repair	Service Breaks Repair
\$0	\$92,934	\$14,385	\$107,319	\$0.77	\$11,078	\$11,359	2	0
Water Loss Explanation								
Plan to Improve Percent of Water Sold								

# Wisconsin Water Loss Control Benchmarks

- Water loss control plan required:
  - Non-revenue water > 30%; or
  - Water loss > 15% for utilities with more than 1,000 customers or >25% for utilities with fewer customers
- Leak detection program may be required:
  - For 3 consecutive years: water loss > 15% for utilities with more than 1,000 customers or >25% for utilities with fewer customers

# Wisconsin Water Loss Control– Other Compliance Mechanisms

- PSC's Financial Viability Project
- Authorization of Construction
- Authorization of Rates
- Water loss control efforts linked to utility meter replacement programs

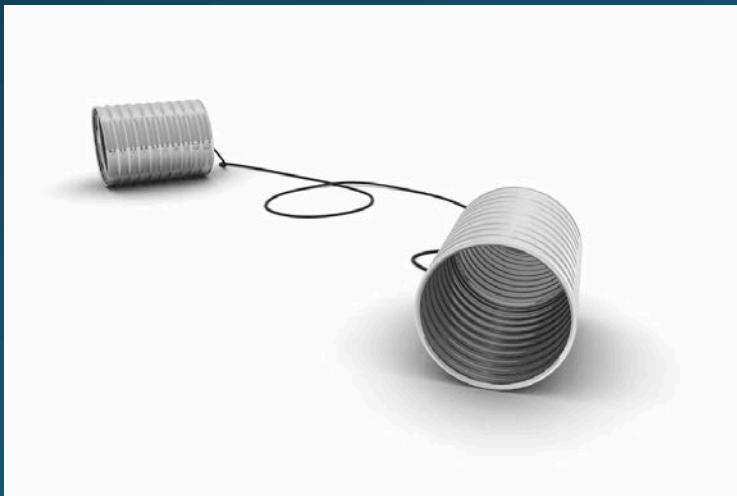




# Financial Viability Project

## 5 Benchmarks

- Operating Loss
- Water Loss
- Rate of Return
- Debt as a Percent of Capital Structure
- Date of Last Rate Case



# Construction Authorization: Projects Involving New Source of Supply

- Describe need for the project, including why it is being proposed at this time.
- Could the proposed project be reasonably avoided or mitigated by reducing the water loss?
- Could the project be reasonably avoided or mitigated through conservation programs?
- Has the utility examined other alternatives to this project, including cooperative arrangements with neighboring systems?

# Example: Madison Water Utility

- Customer Service
  - *"I have to say, as an owner of these properties, I do appreciate this type of ability on your end **to inform us right away of possible leaks or dripping issues.**" – **landlord customer***
  - *"It helps me as a homeowner to better realize the benefits of an automated metering system. **We appreciate the notification and being able to stop the excess usage.**" – **appreciative customer***
- Next phase: district metering, customer bill portal
- New conservation-oriented cost of service study and rate design



# Winter 2013/2014

- Utilities across the state issued “run water to avoid freeze up” notices
- Many issued credits on bills

*“There was a big ice wall coming from the first and second floor. Water had just come up so high that it finally burst out the siding. They had an ice dam all the way down the side of the house.”*



# Where Do We Go From Here?

- Working toward web-based annual reporting
- Targeted assistance to systems
- Education and outreach: audit validation training?
- Revise Page W-15: replace with AWWA spreadsheet ?
- Revise benchmarks?
- Require water loss reporting on CCR?
- Tie benchmarks to construction authorization and or rates?
- Other ideas?



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