

Reaching our Potential: Tapping Water Conservation Opportunities in Wisconsin and Beyond

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Agenda for Today

- Background – Why Do We Care About Water Conservation in Wisconsin?
- Overview of Potential Study Project
- Results & Recommendations
- So What? – Next Steps and Implementation

Public Service Commission's Mission

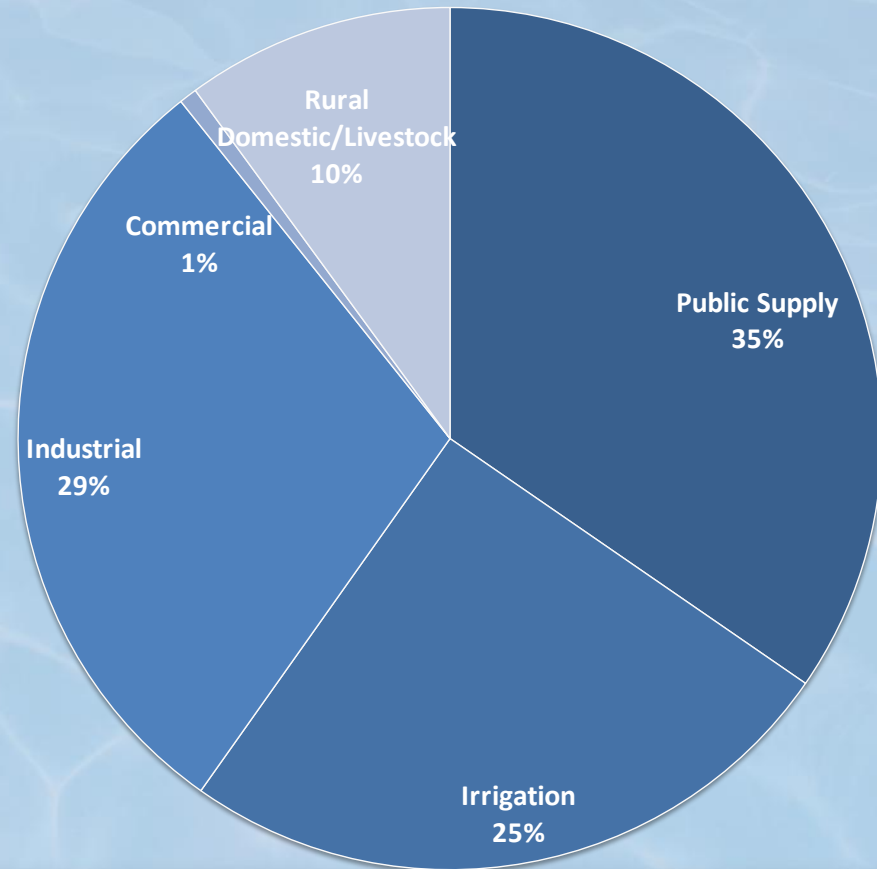
- Financial regulation of utilities (natural monopolies) in the absence of competition
- Set rates and service standards for water, electric, gas, and some telephone and wastewater utilities
- Promote energy efficiency and water conservation to reduce costs

Water Use in Wisconsin

Millions of Gallons per Day

- Public Supply 552.4
- Industrial 470.9
- Irrigation 401.8
- Rural Supply 160.2
- Commercial 10.7

Source: USGS 2005

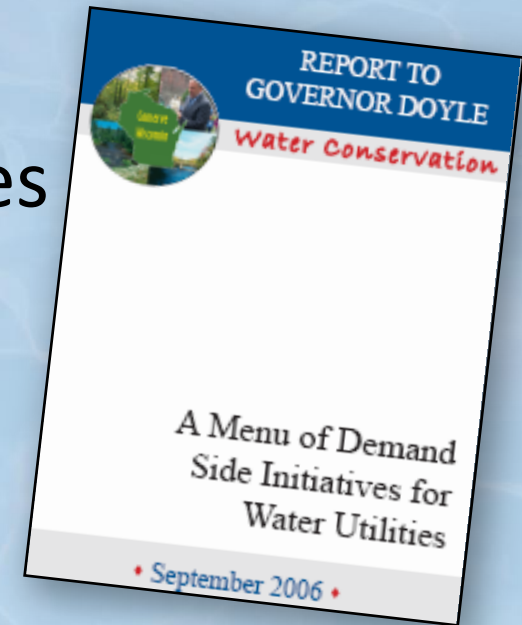


Water Supply Challenges in WI

- Local & regional water shortages (water quality and water quantity)
- New regulations - Great Lakes Compact & Groundwater Law (2003 Act 310)
- Aging infrastructure & rising costs
- Increasing public interest in water conservation

PSC Water Conservation Initiative

- Control Water Loss
- Demand Reduction Initiatives
 - Education and outreach
 - Water use accountability
 - Conservation rate structures
 - Water-saving hardware
 - Reuse and recycling



<http://psc.wi.gov/conservation/documents/WaterConservationReport.pdf>

Reasons for Conservation

- Conservation is ALWAYS the cheapest source of new supply
- Reduce operating expenses (electricity and chemicals)
- Defer or eliminate capital costs for new infrastructure – appropriate sizing of facilities
- Minimize waste & maximize water sales
- Meet regulatory requirements (Great Lakes & groundwater)

Declining Sales

In no particular order

Economy

More efficient appliances

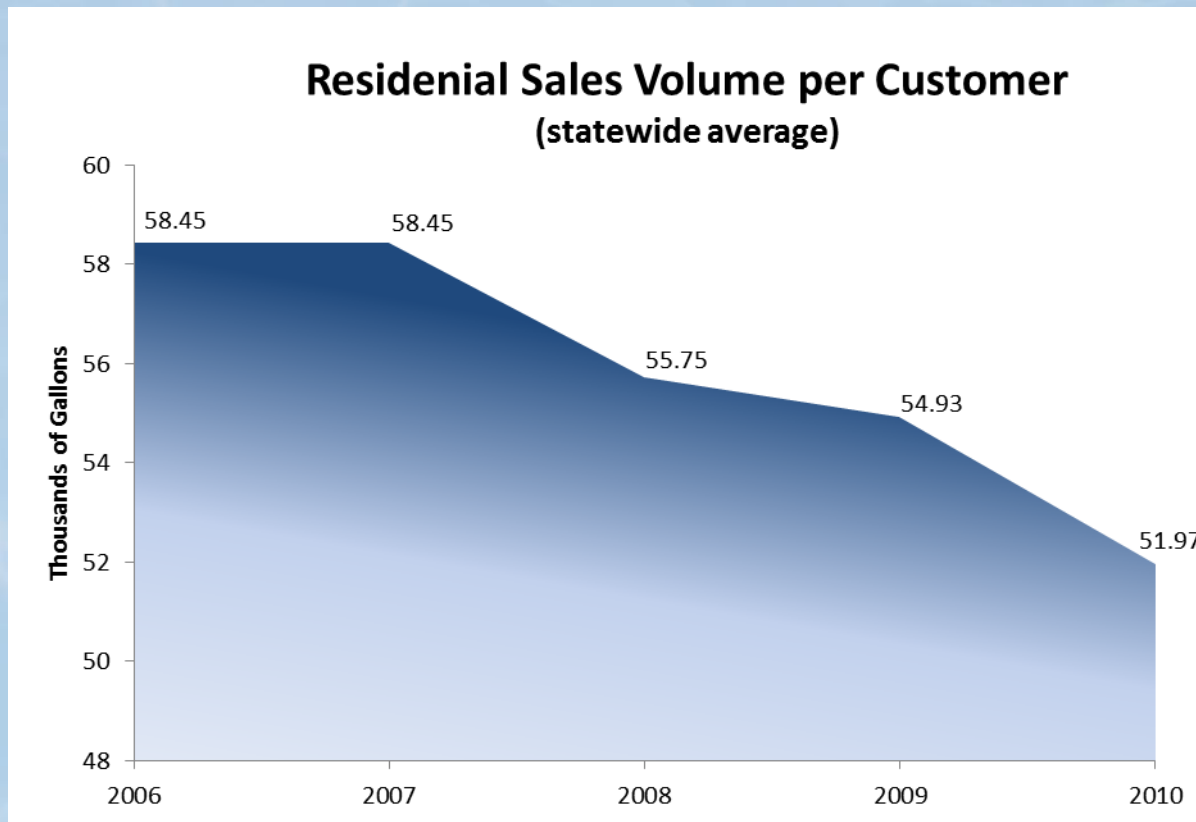
Fewer people per household

Fixture replacement

Water conservation

Weather

Statewide Avg. Residential Usage



Increasing Costs

In no particular order

Electricity & chemicals

Infrastructure replacement

New supply development

Regulations

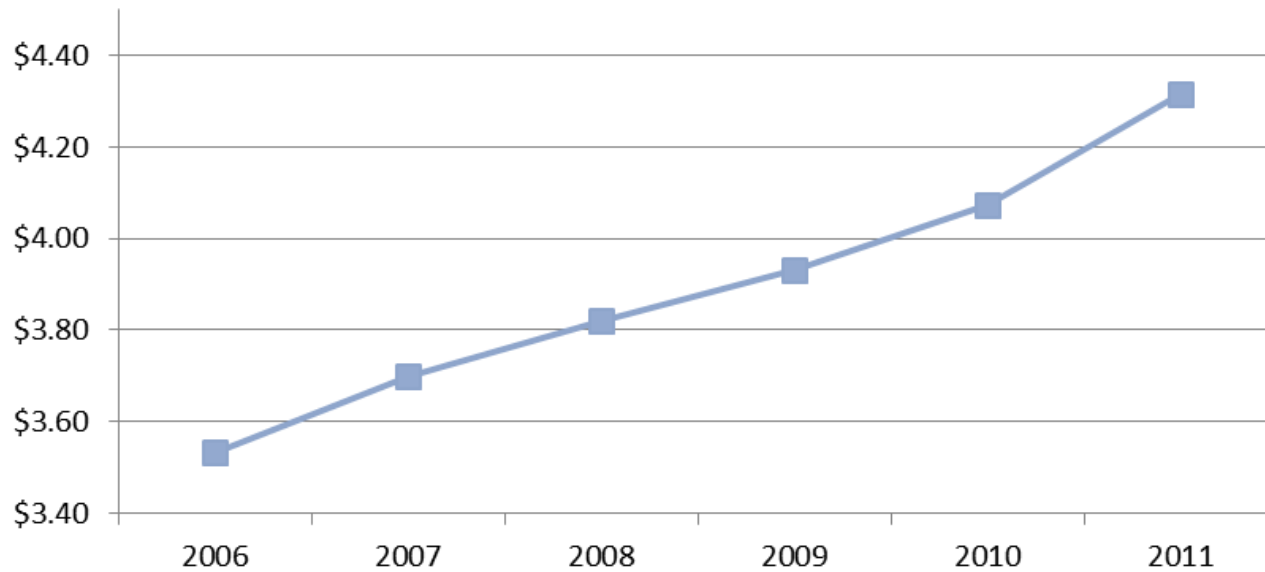
Labor

Tax equivalent

Rising Costs of Water

Equivalent Cost per 1000 Gallons

(Service charge + Volume charge for 18,750 gallons)



2011 Statewide Average Residential Bill = \$80.90/Quarter

Water Conservation Potential Study

- **Purpose:** Identify cost-effective water efficiency and conservation potential in Wisconsin communities
 - Next step in implementing recommendations from 2006 “Menu” report to Governor
- **Funding:** DNR & PSC share cost, PSC manages project, CDM is the primary contractor

Project Objectives

- Statewide, independent analysis of urban water users (i.e., public utilities)
- Identify and quantify technical, economic, and achievable potential water savings in Wisconsin
- Include both demand reduction and water loss control measures
- Inform policy-makers on future program direction

Potential Water Savings

- **Technical** – theoretical maximum water savings, assuming implementation of all available measures
- **Economic** – implementation of all cost effective measures
- **Achievable** – realistic savings assuming aggressive program implementation
- Include both short (5 yrs) and longer (>10 yrs)

Measures Evaluated

- Measures identified in 2006 “Menu”
 - Residential & non-residential
 - Additional measures added
- Include water loss control for comparison
- Evaluate customer satisfaction & acceptability of measures

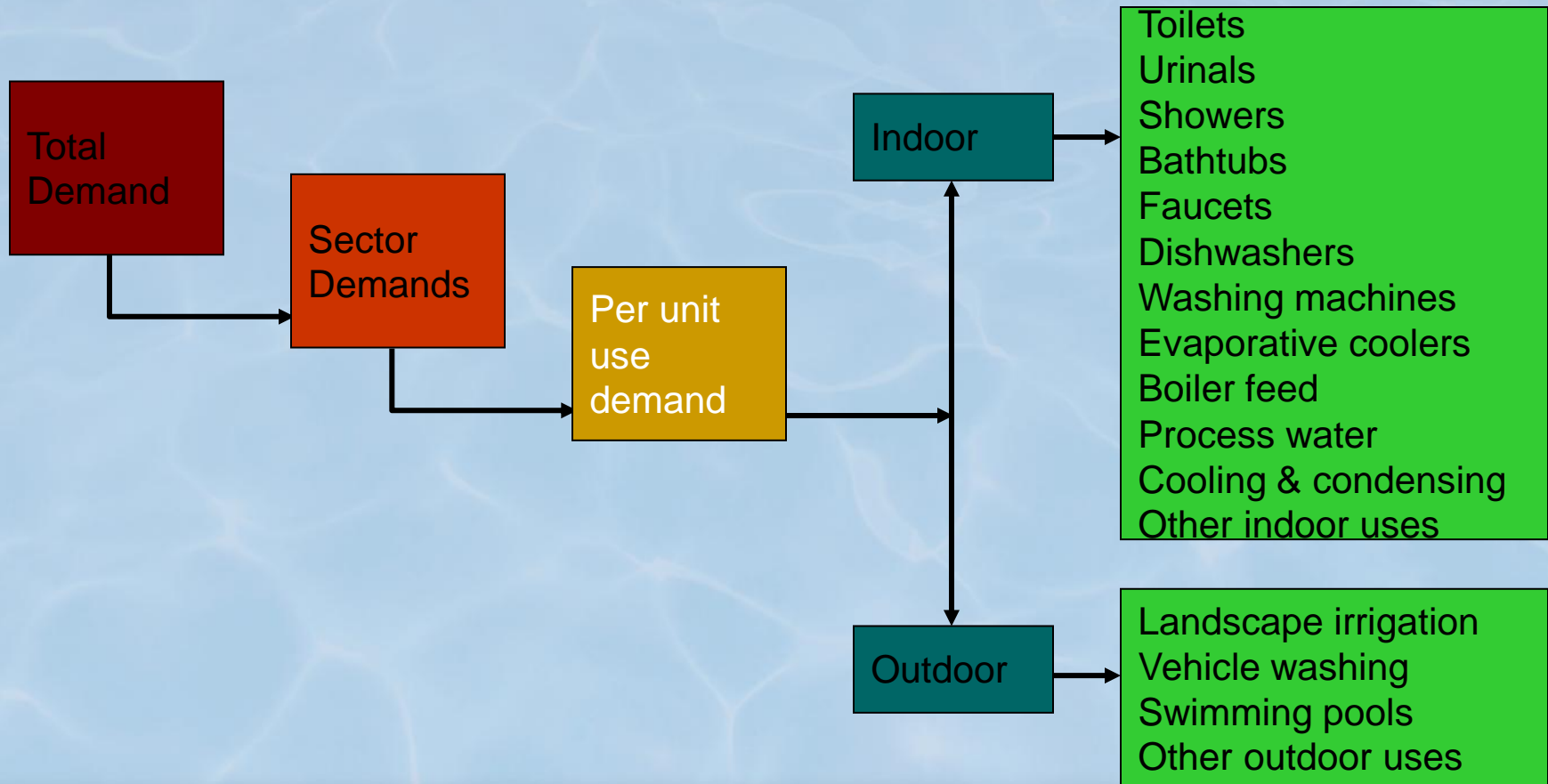
Evaluation Methodology

- Develop generic statewide system profiles
- Quantify savings and costs for each measure
- Evaluate economic performance
- Assess social acceptability
- Rank measures
- Estimate statewide potential savings & costs

Generic Statewide System Profiles

System	N	Average Production MGD	Average Number of Accounts		Average GPD per Account	
			Residential	Non-residential	Residential	Non-residential
AB	72	5.7	11,158	1,473	161	1,614
C	130	0.6	1,827	268	131	1,001
D	318	0.1	371	64	116	741

Estimated Water Use by End Use



Quantify Measures

- Sector affected
- End uses affected
- Water savings per participant
- Start/end years
- Participation rate
- Incentives to customers
- Costs to customers
- Costs to utility
- Customer bill savings
- Customer energy savings

Potential Water Savings

- **Technical** – theoretical maximum water savings, assuming implementation of all available measures

	AB	C	D	Statewide
Costs	\$	\$	\$	\$
Savings	MGD	MGD	MGD	MGD
	KWh	KWh	KWh	KWh

Economic Parameters

- Deferred cost of water supply
- Deferred capital expansion costs
- Deferred operating costs
- Discount rates

Economic Indicators

	Customer	Utility
Benefit-Cost Ratio	✓	✓
Net Present Value	✓	✓
Unit Cost		✓

Benefit-cost ratio greater than 1.0
 Net present value is positive
 Unit cost less than cost of new water

Yes	Marginal	No

Potential Water Savings

- **Economic** – implementation of all cost effective measures

	AB	C	D	Statewide
Costs	\$	\$	\$	\$
Savings	MGD	MGD	MGD	MGD
	KWh	KWh	KWh	KWh

Survey of Measure Acceptability

- Email/web survey of all systems statewide
 - Sent to utility managers & clerks
 - 50% response rate (286/569)
- Description of each measure
- Likely impact on customer satisfaction
 - Mostly positive (+2) to Mostly negative (-2)
- Has measure been implemented in service area

Notable Survey Findings

Most respondents believe that conservation measures will likely have a positive effect on customer satisfaction

	Positive	Negative
Res	11	5
Nonres	12	4

Voluntary conservation measures (i.e., incentives) will have the most positive effect

Positive	5
Achievable	4
Indifferent	5
Negative	5

1/3 of utilities currently provide conservation education and information programs for their customers



Ranking of Measures

Measure	Customer BCR	Customer NPV	Utility BCR	Utility NPV	Utility Unit Cost	Satisfaction
1	Green	Green	Green	Green	Green	Green
2	Green	Green	Green	Green	Green	Green
3	Yellow	Green	Green	Green	Green	Yellow
4	Green	Green	Green	Green	Yellow	Green
5	Green	Green	Yellow	Yellow	Green	Green
6	Green	Green	Green	Green	Green	Yellow
7	Yellow	Yellow	Green	Green	Green	Yellow
8	Yellow	Yellow	Yellow	Green	Red	Yellow
10	Yellow	Red	Yellow	Green	Yellow	Green
11	Yellow	Yellow	Green	Yellow	Red	Yellow
12	Yellow	Red	Yellow	Yellow	Yellow	Red
13	Yellow	Red	Yellow	Yellow	Yellow	Green
14	Yellow	Yellow	Yellow	Red	Green	Yellow
15	Yellow	Yellow	Yellow	Yellow	Red	Red
16	Yellow	Green	Red	Red	Green	Red
17	Yellow	Green	Red	Red	Red	Yellow
18	Red	Red	Red	Red	Green	Red
19	Red	Red	Red	Red	Green	Red

Potential Water Savings

- **Achievable** – realistic savings assuming aggressive program implementation

	AB	C	D	Statewide
Costs	\$	\$	\$	\$
Savings	MGD	MGD	MGD	MGD
	KWh	KWh	KWh	KWh

Findings

- Identify top ranked measures (by utility class)
- One-size doesn't fit all – identify differences
- Water efficiency can be cost-efficient, energy efficient, and achievable
- State policies and incentives can boost water and energy savings

Next Steps

- Report presented to DNR/PSC
- Utilities can fine-tune analysis to assess appropriate measures for implementation in their communities
- Report available on PSC website at:

<http://psc.wi.gov/water>

Questions?

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