



Chicago Metropolitan
Agency for Planning

Water Conservation BMPs: Wholesale Agency Assistance Programs

RWSPG Meeting
March 25, 2008

Presented by Ylida Piñeyro, CMAP

Presentation Overview

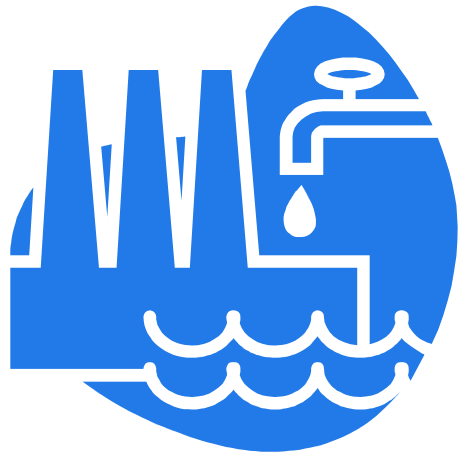
- About Wholesalers
- Benefits of Water Conservation Programs
- Wholesale Agency Assistance Programs
- Case Studies
- Recommendation Statements Discussion

Wholesale Water Agency

- Quasi-governmental agencies
- Import water large quantities of water, typically from remote sources, rivers and manmade reservoirs
 - Requires extensive water conveyance systems, like canals, aqueducts, and large transmission pipelines
- Provide a reliable and safe water source for local water agencies where the local supply is insufficient
- Each wholesale water agency sets the rates for purchased water to recover operational and maintenance expenses and infrastructure costs

Local Wholesalers in Our 11-County Region

- City of Chicago
- DuPage Water Commission
- Village of Bedford Park Water Department
- Oak Lawn Water Utility
- Central Lake County Joint Water Agency



Benefits of Water Conservation Programs

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Elements of Successful Water Conservation Programs

- Political leadership
- Stakeholder involvement in the planning and implementation stages
- A detailed policy outlining goals and conservation measures
- Detailed water data, demand forecasting, and monitoring
- Stable funding sources for water conservation initiative
- Sufficient staff and technical assistance to implement programs
- Broad-based education and outreach

(Hinkle, Keyes, Schmitt, 2004)

Benefits of Water Conservation Programs to the Wholesaler

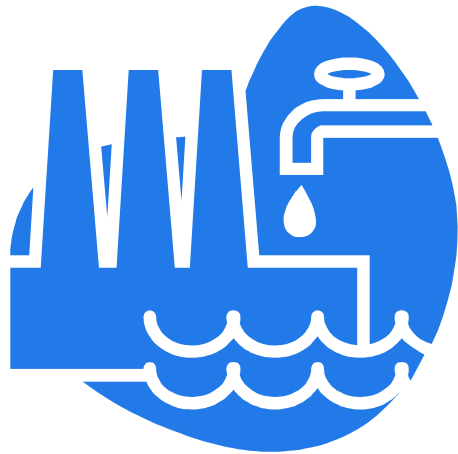
- Economies of scale for program implementation
- System-wide water savings
- Significant avoided costs of water
- Good environmental stewards
- Positive public perception

Benefits to Retailers Partnering with a Wholesaler

- Economies of scale for program participation
- Avoided costs of water
- Access to technical support
- Utilization of specialized staff
- Administrative savings
- Good environmental stewards
- Positive public perception

Additional Benefits

- Reduction in wastewater collection and treatment
- Energy savings – industry, customers, water providers, etc.
- Customer benefit – potentially lower bills through credits or rates
- Nature's benefit – water is a natural resource, abundant in some cases, but also finite



Wholesale Agency Assistance Programs

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Types of Assistance Programs

- Program Management
- Financial Support
- Technical Support
- Water Shortage Allocations

Program Management

- Develop regional goals in cooperation with partners
 - Water savings plan to be accomplished over a period of time, i.e., 10 years or 20 years
 - Water consumed per capita per day
 - Unaccounted for water loss (UAW)
- Identify effective measures and incentives
 - Conservation measures (delivery systems)
 - Incentives/disincentives (landscape rebates or rates structures)

Financial Support

- Provide financial incentives to advance water conservation efforts and effectiveness
 - Retrofit programs
 - Grant or matching programs
 - Low or no-interest loans

Technical Support

- Provide training or tools available to retail systems
 - Water Conservation Plans
 - Retail System Water Loss
 - Industrial Water Audits
 - Public Information and School Education
 - Drought/Emergency Contingency Plans
- Offer specialized staff, such as water conservation experts

Water Shortage Allocations

- Identify solutions with retail partners for long-term conservation policies and goals
- Drought allocation evaluations
 - Communities participating in conservation programs are not asked to conserve water twice during drought



Case Studies

Wholesale Water Agency Program Case Studies

- Metropolitan Water Resources Authority (MWRA) – Boston region
- Metropolitan Water District of Southern California (MWD) – Orange County region
- Seattle Public Utilities (SPU) – Seattle region

Massachusetts Water Resources Authority (MWRA)

Water Savings Results	
Total demand reduction (1987 – 1997)	85 MGD
Capacity reduction of planned treatment facility	95 MGD
Capital Savings Results (2002)	
Present value savings of deferring supply expansion	\$75-\$117 million
Present value savings of reducing treatment plant capacity	\$36 million
Total Savings (deferring water supply and reducing treatment plant capacity)	\$1.39 mil./MGD to \$1.91 mil./MGD
MGD= million gallons per day	

- Water Conservation Program
 - Leak detection surveys
 - Retrofitting plumbing devices
 - Public information and school education
 - Plumbing code updates
 - New rates structures for retailers
 - Water audits

(Source: EPA832-B-02-003 July)

Accomplishments of MWRA

- Initial leak detection saved 30 million gallons of water
- Since 1987, MWRA has seen a cost savings of \$700-\$800 million
- Water demand is well below reliable yield – 220 million gallons water per day
- Massachusetts Department of Environmental Protection requires conservation goals for water withdrawals
 - Current standards:
 - Residential goal – 85 gal/capita/day
 - System-wide – unaccounted for water loss to not exceed 15%
 - New Standards:
 - Residential goal – 65 gal/capita/day
 - System-wide – unaccounted for water loss to not exceed 10%
- MWRA exceeds the new standards for residential goal – 61 gal/capita/day

Metropolitan Water District of Southern California (MWD)

Conservation Program Activities and Water Savings Results (2001)	
# of pre-toilets replaced	2 million
# of high-efficiency showerheads distributed	3 million
# of faucet aerators distributed	200,000
# of clothes washer rebates issued	20,000
# of residential water-use surveys conducted	60,000
# of large landscape irrigation audits	2,000
# of commercial water use surveys conducted	1,000
Total water savings from conservation program	66,000 AFY (59.1 mgd)
AFY=acre-feet per year mgd=million gallons per day	

- Water Conservation Program
 - 50% of water conservation project or \$195 per acre-foot on conserved water or whichever is less
 - Education and training
 - Support for new legislative initiatives or improved fixture standards
 - Water efficiency surveys
 - Toilet retrofit and washing machine rebates, irrigation equipment improvements

(Source: EPA832-B-02-003 July)

Current Savings and Accomplishments

Metropolitan-Assisted Local Resources	
Active Conservation	
FY 2006/07 New Water Saved from Active Conservation Programs	8,300 acre-feet
FY 2006/07 Water Saved from New & Existing Active Conservation Programs	118,000 acre-feet
Cumulative Water Saved from Active Conservation Programs	977,000 acre-feet
FY 2006/07 Active Conservation Investment	\$15.4 million
Cumulative Active Conservation Investment	\$205 million
Total FY 2006-07 Conservation Investment	19.9 million

- MWD has invested about \$205 million in conservation activities, saving nearly 1 million acre-feet of water since 1990.
- MWD's plan goal for water conservation is 1.1 million acre-feet annually by 2025, with about 300,000 acre-feet available from incentive-based programs.

MWD's Water Savings Since 1991

Water Saved From New & Existing Active Conservation Programs (Acre-Feet)							
<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
300	15,400	12,600	17,800	20,100	31,000	50,800	51,200
<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
57,200	63,200	67,000	81,600	88,800	96,200	100,900	104,600

Cumulative Water Saved From Active Water Conservation Programs (Acre-Feet)							
<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
300	15,700	28,300	46,200	66,200	97,300	148,100	199,400
<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
199,400	256,600	319,700	468,400	557,200	653,300	754,200	858,900

Seattle Public Utilities

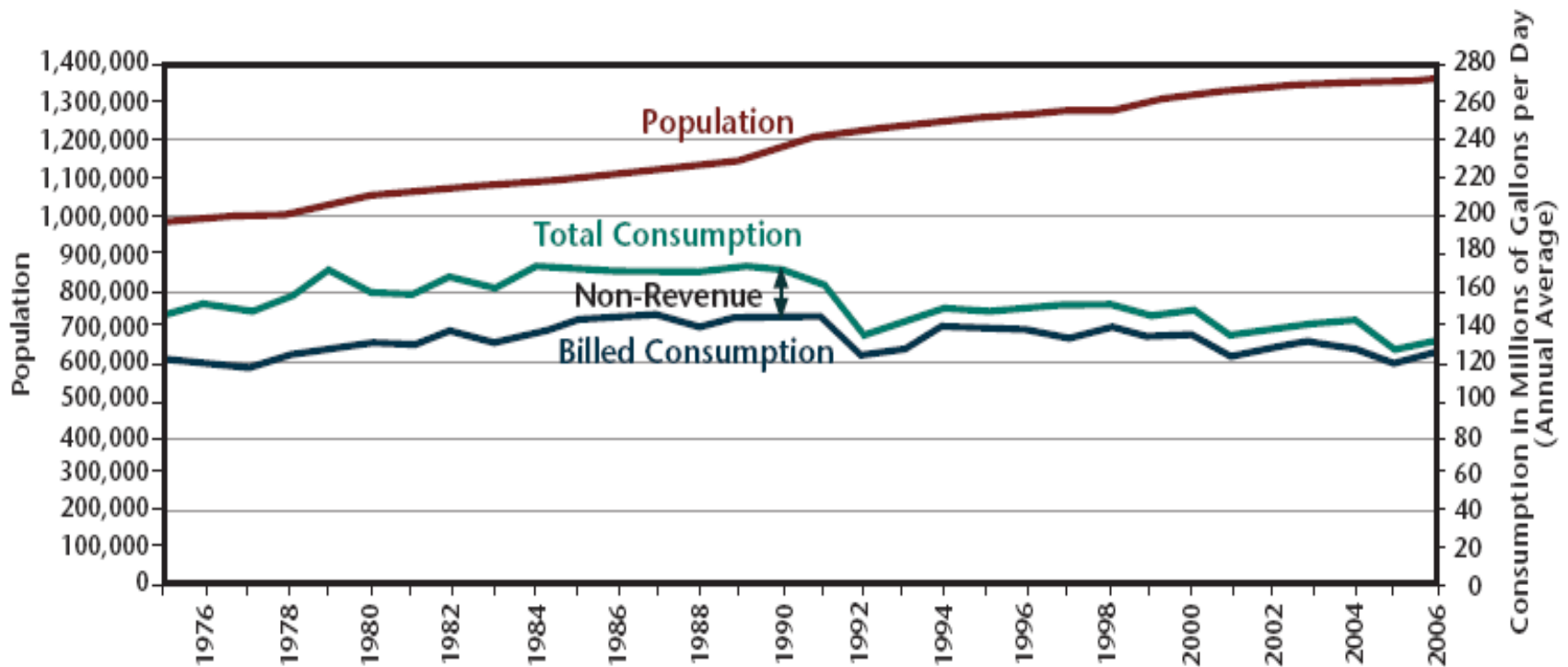
Regional 1% Conservation Program Savings and Cost		
	Annual Avg. MGD	Program Cost in Thousands
Residential indoor	0.21	\$1,196
Landscape	0.04	\$400
Commercial non-landscape	0.28	\$981
Behavior	0.40	\$542
Total in 2006	0.93	\$3,119
Other Long-term Savings		
Seattle Ordinance	0.05	-
Price Impact	0.23	-
Plumbing Code	0.74	-
Total in 2006	1.02	-

- 1% Water Conservation Program
 - Hardware incentives
 - Residential indoor
 - Landscape
 - Commercial non-landscape
 - Behavior
 - Pricing
 - Public information and education
 - Other Long-term Savings
 - Seattle ordinance
 - Price impacts
 - Plumbing code improvements

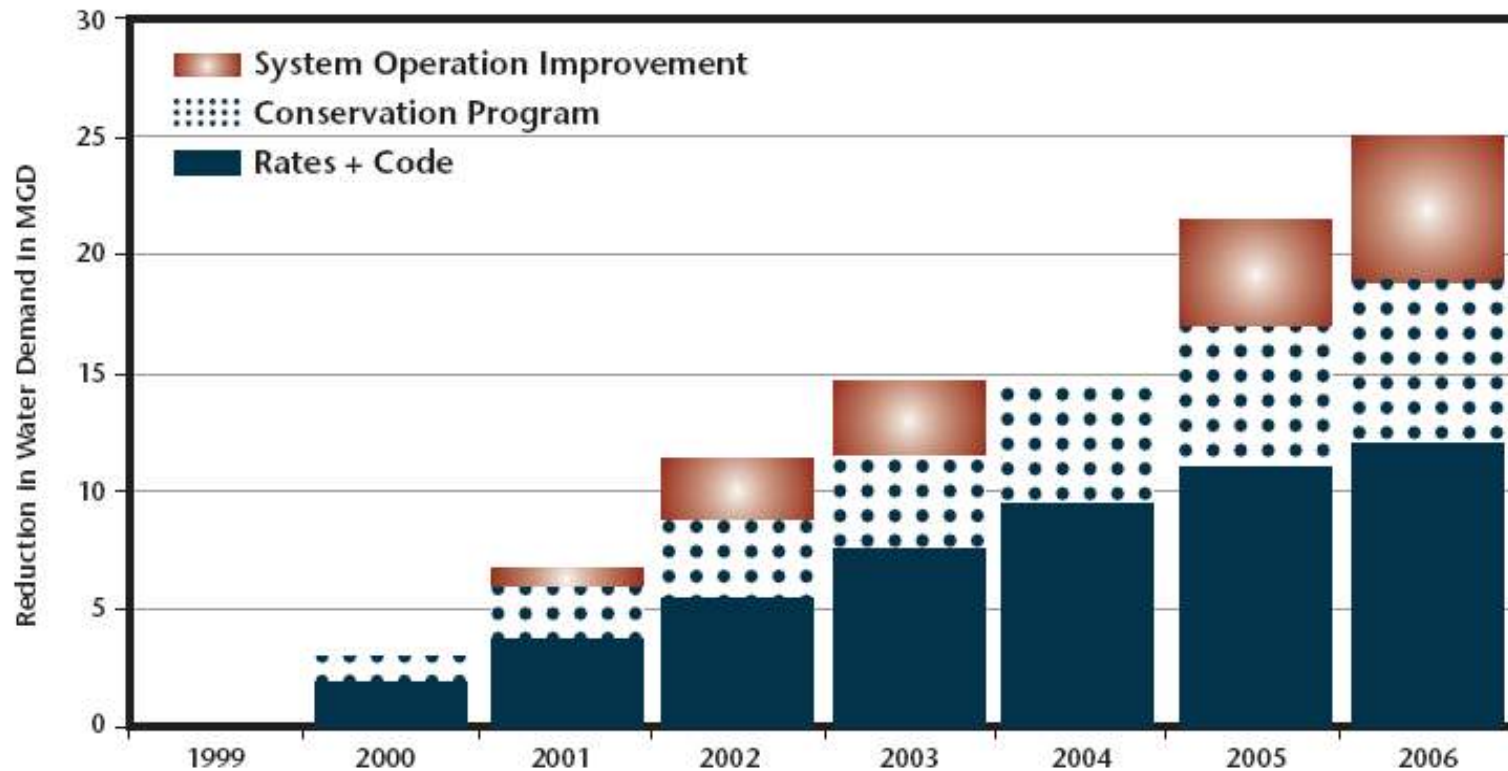
(Source: Saving Water Partnership 2006 Annual Report)

Growth in Population and Water Consumption

Seattle Regional Water System 1975-1006



Cumulative Water Savings Since 1999



¹Chart 3 provides historical progress rather than an absolute count of cumulative savings.
All program categories are shown as annual average savings.

Regional 1% Program Cumulative Savings

	2000-01 "Ramp-Up" (2-yr total)	2002	2003	2004	2005	2006	2007	2008	2009	2010
Actual 1% Savings Cumulative in MGD	2.1	3.1	3.7	4.4	5.3	6.2				
Target 1% Savings Cumulative in MGD	1.6	2.5	3.6	4.5	5.4	6.5	7.7	8.8	9.9	11.0

- Year-by-Year savings targets and actual accomplishments

Conclusions

- Significant avoided cost of water to wholesalers and retailers
- Goal-setting to address crisis or for precautionary measures
- Programs are a mix of various elements and change with new tools and technologies
- Water conservation programs require an investment similarly to large construction projects



Recommendation Statements

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- The Northeastern Illinois RWSPG and CMAP, in cooperation and coordination with other appropriate stakeholders should develop conservation potential assessment tool to determine cost, volume and reliability of conservation savings that will help to direct demand reduction programs toward the most cost-effective conservation strategies.
- Based on the conservation savings tool assessment wholesale water agencies, in cooperation with state and regional partners, should design and implement locally cost-effective BMP conservation programs for retail utilities.



**Questions or
Comments?**



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THANK YOU!

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Presented by Ylida Piñeyro, CMAP
ypineyro@cmap.illinois.gov
(312) 386-8670
