

CHAPTER 8. WATER DEMAND MANAGEMENT MEASURES

MANAGEMENT MEASURES

This chapter describes the following:

- An overview of water conservation programs and measures
- The relationship of the WFA Best Management Practices (BMPs) to the CUWCC's BMPs and the UWMP Act Demand Management Measures (DMMs)
- A description of the City's current and planned activities and budget allocations for each BMP/DMM
- Determination of DMM implementation
- Evaluation of DMMs not implemented

OVERVIEW OF WATER CONSERVATION PROGRAMS AND MEASURES

The Urban Water Management Planning Act requires that an urban water management plan address water DMMs. This discussion must address, at a minimum, the fourteen DMMs:

1. Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers
2. Residential Plumbing Retrofit
3. System Water Audits, Leak Detection and Repair
4. Metering With Commodity Rates for All New Connections and Retrofit of Existing Connections
5. Large Landscape Conservation Programs and Incentives
6. High-Efficiency Washing Machine Rebate Programs
7. Public Information Programs
8. School Education Programs
9. Conservation Programs for Commercial, Industrial and Institutional Accounts
10. Wholesale Agency Programs
11. Conservation Pricing
12. Water Conservation Coordinator
13. Water Waste Prohibition
14. Residential Ultra-Low-Flush Toilet Replacement Program



Even though the City possesses a reliable long-term water supply, the City is committed to reducing the demand for potable water through conservation.

In 1991, the City became a signatory to the CUWCC's MOU Regarding Urban Water Conservation in California. The purpose of the MOU was to expedite implementation of reasonable water conservation measures in urban areas and to establish appropriate assumptions for use in calculating estimates of reliable future water conservation savings. The 1991 MOU originally listed sixteen BMPs for water conservation. In 1999, the MOU was revised to include fourteen BMPs. These fourteen BMPs are substantially similar to the fourteen DMMs listed in the Urban Water Management Planning Act (see above). In accordance with the MOU, the City files annual reports with the CUWCC to report on BMP implementation. Copies of the City's CUWCC Annual Reports for 2003 and 2004 are contained in Appendix F of this UWMP.

The City is a member of the Sacramento Water Forum, which is comprised of water utilities, environmental and other groups interested in long-term management of Sacramento County's water resources. In April 2000, the members of the Sacramento Water Forum approved the Water Forum Agreement, which contains seven elements which all signatories to the Water Forum Agreement agreed to endorse and, where appropriate, participate in. The seven elements are:

1. Increased surface water diversions
2. Actions to meet customers' needs while reducing diversion impacts in drier years
3. Support for an improved pattern of fishery flow releases from Folsom Reservoir
4. Lower American River habitat management element
5. Water conservation element
6. Groundwater management element
7. Water Forum successor element

The Water Conservation Element of the Water Forum Agreement was negotiated among all stakeholders and published in August 1997. The Water Conservation Element requires the development and implementation of a water conservation plan which includes fourteen BMPs.¹ These fourteen BMPs are similar to the DMMs listed in the Urban Water Management Planning Act and the BMPs listed in the CUWCC MOU.

The City is also a member of the RWA, which is a joint powers authority that serves and represents the interests of over twenty water providers and associated agencies in the greater Sacramento area. The RWA has a Water Efficiency Program, which is a large-scale effort designed to help participating agencies fulfill commitments to implement their Water Forum water conservation plans. The program provides services with oversight via an advisory committee. Through this regional effort, purveyors are better able to manage BMP implementation projects through coordination and training of staff, regional marketing of services to customers and leveraging resources. Program components include regional public outreach and school education programs, large landscape irrigation efficiency and leak detection



programs, and partnerships with other agencies and organizations for toilet replacement rebates and distribution of water-efficiency products targeting the restaurant and food service industry.

COMPARISON OF DMMS, CUWCC BMPS AND WATER FORUM BMPS

As summarized above, an urban water management plan’s discussion of DMMS must include, at a minimum, the fourteen DMMS specifically identified in the Urban Water Management Planning Act. The CUWCC MOU includes fourteen BMPS that are substantially similar to the DMMS. The Water Forum Agreement includes fourteen BMPS, which are similar to the DMMS and CUWCC BMPS. Table 8-1 shows the relationship of the DMMS, CUWCC BMPS and Water Forum BMPS.

Table 8-1. Relationship of the DMMS, CUWCC BMPS and Water Forum BMPS

Urban Water Management Planning Act & CUWCC MOU		Water Forum Agreement	
DMM/BMP Number	DMM & BMP Description	BMP Number ^(a)	BMP Description
1	Water survey programs for single-family residential and multi-family residential customers	1	Interior and exterior water audits and incentive programs for single family and multi-family residential and institutional customers
2	Residential plumbing retrofit	2	Plumbing retrofit of existing residential accounts
3	System water audits, leak detection and repair	3	Distribution system water audits, leak detection and repair
4	Metering with commodity rates for all new connections and retrofit of existing connections	4	Non-residential meter retrofit
			Residential meter retrofit
5	Large landscape conservation programs and incentives	5	Large landscape water audits and incentives for commercial, industrial, institutional (CII) and irrigation accounts
		6	Landscape water conservation requirements for new and existing commercial, industrial, institutional and multi-family developments
		12	Landscape water conservation for new/existing single family homes
6	High-efficiency washing machine rebate programs	No corresponding Water Forum Agreement BMP	
7	Public information programs	7	Public information
8	School education programs	8	School education



Urban Water Management Planning Act & CUWCC MOU		Water Forum Agreement	
DMM/BMP Number	DMM & BMP Description	BMP Number ^(a)	BMP Description
9	Conservation programs for commercial, industrial and institutional accounts	9	Commercial and industrial (CI) water conservation
9a	Commercial, industrial and institutional ultra-low flow toilet replacement program	16	Ultra-low flush toilet replacement program for non-residential customers
10	Wholesale agency programs	No corresponding Water Forum Agreement BMP	
11	Conservation pricing	11	Conservation pricing for metered accounts
12	Water conservation coordinator	14	Water conservation coordinator
13	Water waste prohibition	13	Water waste prohibition
14	Residential ultra-low-flush toilet replacement program	16	Ultra-low flush toilet replacement program for residential customers

^(a) The Water Forum Agreement BMP #10 (New Commercial/Industrial Account Water Use Review) and BMP #15 (Financial Incentives) are no longer included in the Water Conservation Element of the Water Forum Agreement.

DESCRIPTION OF DMM IMPLEMENTATION

As described above, the City files annual reports with the CUWCC to report on BMP implementation. Copies of the City’s CUWCC Annual Reports for 2003 and 2004 are contained in Appendix F of this UWMP.

A brief description of the City’s activities with respect to each DMM is provided below. Specific data was obtained from the City’s Water Conservation Coordinator, the City’s CUWCC Annual Reports for 2001 through 2004 and the Water Forum Annual Reports.

DMM 1: Water Survey Programs for Single Family and Multi-Family Residential Customers

Corresponding BMPs

- CUWCC BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers
- Water Forum BMP 1: Interior and Exterior Water Audits and Incentive Programs for Single Family and Multi-Family Residential, and Institutional Customers

Description

The City began offering single-family and multi-family residential customers water surveys in 2002. Water survey programs typically involve residential interior and exterior water use reviews, whereby staff assist homeowners in identifying potential leaks and areas for water savings. Interior fixtures are checked and leak tested, and irrigation systems and timers are



evaluated. Residents are generally provided with recommendations for improvements, plumbing retrofit kits and water conservation literature. Table 8-2 summarizes the number of surveys offered (advertised) and completed from 2001 through 2005.

Table 8-2. Number of Residential Surveys Offered and Completed^(a)

Type of Account	Survey Status	Calendar Year				
		2001	2002	2003	2004	2005
Single Family	Offered	0	104,406	107,112	110,867	113,850
	Completed	0	215	203	998	798
Multi-Family	Offered	0	10,371	10,928	10,768	10,800
	Completed	0	2	6	24	12

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004. The 2005 data was provided by the City.

Implementation Schedule

- Program Start: January 2002
- Program Status: On-going. Offers made annually to single-family and multi-family residential customers. Program advertised using bill inserts and water conservation newsletter, “Water Spots”.

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$33,800

FY 2004/05: Budgeted: \$43,000

DMM 2: Residential Plumbing Retrofit

Corresponding BMPs

- CUWCC BMP 02: Residential Plumbing Retrofit
- Water Forum BMP 2: Plumbing Retrofit of Existing Residential Accounts

Description

Under this program, water-conserving devices such as high-quality low-flow showerheads, toilet-displacement devices, toilet flappers and faucet aerators are distributed to customers. Although the City’s residential plumbing retrofit program is offered to all customers, the City’s program targets neighborhoods built before 1991, and low or moderately low income areas.

Table 8-3 summarizes the number of low-flow devices distributed from 2001 through 2005.



Table 8-3. Number of Low-Flow Devices Distributed^(a)

Type of Account	Device Type	Calendar Year				
		2001	2002	2003	2004	2005
Single Family	Low-Flow Showerheads	300	300	3,382	3,038	1091
	Toilet-Displacement Devices	300	600	3,382	3,038	1091
	Toilet Flappers	0	0	0	0	0
	Faucet Aerators	600	1,500	6,764	6,076	2,182
Multi-Family	Low-Flow Showerheads	0	6	18	132	12
	Toilet-Displacement Devices	0	6	18	132	12
	Toilet Flappers	0	0	0	0	0
	Faucet Aerators	0	10	36	264	24

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004. The 2005 data was provided by the City.

Implementation Schedule

- Program Start: 2001
- Program Status: Distribution of plumbing retrofit kits on-going

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$18,633

FY 2004/05: Budgeted: \$35,000

DMM 3: System Water Audits, Leak Detection and Repair

Corresponding BMPs

- CUWCC BMP 03: System Water Audits, Leak Detection and Repair
- Water Forum BMP 3: Distribution System Water Audits, Leak Detection and Repair

Description

The City’s approach for implementation of this DMM is different for the City’s unmetered connections and metered connections. The City’s infrastructure that delivers water to retail customers is the same as the infrastructure that delivers water to wholesale customers.

For unmetered connections, the City’s program includes the following:



- An annually updated system map of type, size and age of pipes, pressures and leak history
- Installation of devices or use of other methods designed to identify areas with greater than 10 percent losses
- An on-going meter calibration and replacement program for all production and distribution meters
- An on-going leak detection and repair program focused on high probability leak areas identified by the system map (based on pipe age and material type)
- A complete system-wide leak detection program, repeated no less often than every ten years, unless there are special circumstances, such as age of system or planned main replacement

For metered connections, the City's program includes the following:

- An annual system water audit, determining the difference between production and sales (to determine quantity of unaccounted-for water)
- An annually updated system map of type, size and age of pipes, pressures and record of leaks and other historic data
- An on-going meter calibration and replacement program
- An on-going leak detection/repair program focused on high probability leak areas identified by the system map (based on pipe age and material type)
- A complete system-wide leak detection program, repeated when the system water audit determines losses to be greater than 10 percent, or when the losses are less than 10 percent if the program is determined to be cost effective

The City also encourages customers to report leaks and, in 2004, responded to approximately 2,000 leak repair calls from residential and commercial customers.²

Implementation Schedule

- Water System Audit: Conducted annually for areas with metered connections
- Leak Detection and Repair Program: On-going for both unmetered and metered connections
- System-wide Leak Detection/Repair Program: When water system audit determines losses to be greater than 10 percent, or when determined to be cost effective



Annual Budget/Expenditures

(Includes only costs for Water Conservation Office. Does not include budget or expenditures by General Distribution Operations and Maintenance which is not available at this time)

FY 2003/04: Expenditures: \$731

FY 2004/05: Budgeted: \$250,000

DMM 4: Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections

Corresponding BMPs

- CUWCC BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections
- Water Forum BMP 4: Non-Residential Meter Retrofit & Residential Meter Retrofit

Description

As shown in Table 8-4, most of the City’s residential water service accounts are unmetered and are billed at a graduated flat rate based on the number of rooms in the residence receiving the water service. As shown in Table 8-4, 76 percent of the City’s commercial water service connections are metered, and the City has an ongoing commercial meter retrofit program.

Table 8-4. Summary of Flat Rate and Metered Accounts in Fiscal Year 2004/2005^(a)

Account Type	Flat Rate	Metered	Total	Percent Metered
Residential ^(b) /Multi-Family	124,252	398	124,650	0.3%
Commercial ^(c)	2,812	8,885	11,697	76.0%
Total	127,064	9,283	136,347	6.8%
Percent of Total	93.2%	6.8%	100%	

^(a) Data obtained from page 39 of the Operational Statistics Report for Fiscal Year 2004/2005.

^(b) All residential services are charged a graduated flat rate that uses the number of rooms as a surrogate for water consumption. Of those, 11,708 residential customers have a meter installed in accordance with California Water Code Section 525 (post January 1, 1992 new connections).

^(c) Includes industrial, institutional and irrigation accounts.

Between 2001 and 2004, the City has had a voluntary residential meter retrofit program. This program was voluntary because Section 11 of the Sacramento City Charter prohibits the installation of water meters on residential water service pipes, and did not allow the City to require residential meter retrofits. Table 8-5 summarizes the number of voluntary meter retrofits from 2001. The voluntary meter retrofit program was discontinued on December 31, 2004.



Table 8-5. Number of Meter Retrofits Completed^(a)

Type of Account	Calendar Year				
	2001	2002	2003	2004	2005
Non-Residential	40	95	87	73	ND ^(b)
Residential (Voluntary)		47	18	84	N/A ^(c)

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004. Data on voluntary residential retrofits provided by City.

^(b) ND = No data available.

^(c) N/A = Not applicable. Voluntary retrofit program was discontinued on December 31, 2004.

Section 11 of the City Charter has now been completely superseded by State law, specifically the passage of SB 229 and AB 2572. Under Water Code Section 525, all new residential connections installed after January 1, 1992 have been provided with a meter. Since SB 229 did not require metered billing, however, these meters have been used for tracking purposes only and all residential customers are currently billed based on a monthly flat rate.

In 2004, AB 2572 enacted Water Code Section 527, that now requires an urban water supplier to: (1) install water meters on all service connections located within its service area on or before January 1, 2025; and (2) charge metered rates to customers that have water service connections for which meters have been installed, beginning not later than January 1, 2010 (provided that metered billing may be delayed for one annual seasonal cycle of water use for services being converted from flat rate to metered billing). AB 2572 became effective January 1, 2005.

The requirements of SB 229 and AB 2572 have superseded the prohibition specified in Section 11 of the City’s Charter, because these state laws address a subject matter of statewide concern. In November 2005, the City adopted an ordinance (Ordinance No. 2005-090) amending the Sacramento Municipal Code (Chapter 13.04, Article III) to implement AB 2572. The estimated total cost to fully implement AB 2572 through January 1, 2025, is \$190 million. Ordinance No. 2005-090 became effective on December 1, 2005. A copy of Ordinance No. 2005-090 is provided in Appendix H.

Wholesale Water Deliveries

Wholesale water deliveries are metered and wholesale customers pay for water based on the amount they receive.

Implementation Schedule

- Non-Residential Water Meter Retrofit Program: On-going
- Billing at Commodity Rates: On-going for non-residential customers (see DMM 11)
- Voluntary Residential Water Meter Retrofit Program: Discontinued since the passage of AB 2572.



- Phased Meter Installation Program for All Service Connections that existed without Meters as of January 1, 2005: Scheduled for completion not later than January 1, 2025, in compliance with AB 2572.
- Metered Billing Rate Structure for All Service Connections with Meters: Being developed for implementation not later than January 1, 2010, in compliance with AB 2572.

Annual Budget/Expenditures

(Includes only costs for Water Conservation Office. Does not include budget or expenditures by General Distribution Operations and Maintenance which is not available at this time)

FY 2003/04: Expenditures: \$3,113

FY 2004/05: Budgeted: \$568,000

DMM 5: Large Landscape Conservation Programs and Incentives

Corresponding BMPs

- CUWCC BMP 05: Large Landscape Conservation Programs and Incentives
- Water Forum BMP 5: Large landscape water audits and incentives for CII and irrigation accounts
- Water Forum BMP 6: Landscape water conservation requirements for new and existing commercial, industrial, institutional and multi-family developments
- Water Forum BMP 12: Landscape water conservation for new/existing single family homes

Description

In 2003, the City started a large landscape conservation program. The City's program for large landscape conservation includes: conducting landscape surveys for customers with large landscapes (primarily parks, schools and golf courses), including irrigation system checks and review and development of irrigation schedules; providing landscape irrigation training; offering financial incentives to improve landscape water use efficiency; and providing information to customers regarding watering guidelines and regulations, and tips on landscape design, plant selection and other free programs.

Table 8-6 summarizes the number of large landscape surveys offered and completed from 2001 through 2005.



Table 8-6. Number of Large Landscape Surveys Offered and Completed^(a)

Survey Status	Calendar Year				
	2001	2002	2003	2004	2005
Offered	0	0	2,000	2,000	2,000
Completed	0	0	39	72	37

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004. 2005 data provided by City.

The City has adopted water conserving landscape requirements which are specified in the City Municipal Code (Title 15 Building and Construction, Chapter 15.92 Landscaping Requirements for Water Conservation). These requirements define standards and procedures for the design, installation and management of landscapes in order to utilize available plant, water, land and human resources to the greatest benefit of the people of the City. A copy of the water conserving landscape requirements is provided in Appendix H of this UWMP.

Implementation Schedule

- Landscape Surveys: On-going
- Financial Incentives to Improve Landscape Water Use Efficiency: On-going
- Water Conserving Landscape Requirements: On-going

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$21,396

FY 2004/05: Budgeted: \$25,000

DMM 6: High-Efficiency Washing Machine Rebate Programs

Corresponding BMPs

- CUWCC BMP 06: High-Efficiency Washing Machine Rebate Programs
- Water Forum Agreement: No corresponding BMP

Description

High-efficiency washing machines use about 50 percent less water than conventional machines, using only 20 to 30 gallons of water per load, compared to 40 to 45 gallons for conventional top-loading washers. The estimated annual savings for a typical household is about 5,000 gallons per year.



The City does not currently have its own residential rebate program, however, customers in the City's water service area may be eligible for rebates from either the area's electric utility, SMUD, or gas utility, Pacific Gas & Electric (PG&E). SMUD offers rebates of \$75 to \$125 for energy-efficient clothes washers for customers who have electric water heaters. PG&E offers rebates of \$35 to \$75 for energy-efficient clothes washers for customers who have gas water heaters. The City is currently planning to implement a pilot program in coordination with SMUD in 2006. For the pilot program, the City will provide a \$50 rebate in addition to the rebate provided by SMUD. SMUD will continue to administer the program.

For the last two years, the City has participated in CUWCC's LightWash Program, which offers washing machine rebates of up to \$400 for qualifying washing machines for multi-family or institutional common area laundry facilities, businesses with on-premise laundries or coin laundry stores. California energy utility ratepayers under the auspices of the California Public Utilities Commission primarily fund the program. The City provides partial funding. In fiscal year 2004, 20 commercial washing machine rebates were issued. In fiscal year 2005, 65 rebates were issued.³

Implementation Schedule

- SMUD Program: On-going
- PG&E Program: On-going
- City Pilot Program: To start in 2006
- City Participation in CUWCC's LightWash Program: Ended December 2005

Annual Budget/Expenditures

FY 2004/05: Expenditures: \$10,000

DMM 7: Public Information Programs

Corresponding BMPs

- CUWCC BMP 07: Public Information Programs
- Water Forum BMP 7: Public Information

Description

The City coordinates and participates with the California Water Awareness Campaign, Water Education Foundation and the RWA in developing and conducting its public information programs. Water conservation messages are conveyed to customers using utility bill inserts, displays at City Hall, employee classroom presentations, distribution of a semi-annual newsletter called "Water Spots", messages occurring on the July through September customer billing statements, radio advertisements, television appearances, presentations at community meetings and booths at various community events.



Table 8-7 provides a summary of the number of public information events that the City Water Conservation staff participated in from 2001 through 2005.

Table 8-7. Number of Public Information Events Conducted^(a)

Type of Event	Calendar Year				
	2001	2002	2003	2004	2005
Paid Advertising	0	3	170	190	ND ^(b)
Public Service Announcements	1	1	1	0	ND ^(b)
Bill Inserts, Newsletters and Brochures	4	12	5	7	4
Special Events, Media Events	2	2	8	6	20
Speaker's Bureau	0	0	2	2	3

^(a) Source: City's CUWCC Annual Reports for 2001, 2002, 2003, and 2004. 2005 data provided by City.

^(b) ND = No data available.

In addition to these public information events, there are a number of water conserving demonstration gardens in and around the City's service area. These gardens, sponsored by the City and other local water suppliers, demonstrate the use of water conserving plants and landscaping practices. The water conserving gardens include the following:

- William Land Park Rock Garden, sponsored by the City of Sacramento Parks and Recreation Department
- American River Water Education Center, sponsored by the U.S. Bureau of Reclamation
- Water Efficient Landscape Garden, sponsored by San Juan Water District
- Donna M. Dean Water Conservation Garden, sponsored by Sacramento County Water Agency and Southgate Recreation and Park District
- Antelope Gardens, sponsored by Sacramento Suburban Water District

Implementation Schedule

- Paid Advertising: On-going
- Public Service Announcements: On-going
- Water Bill Inserts, Newsletters and Brochures: On-going
- Special Events, Media Events: On-going



- Speaker's Bureau: On-going
- Demonstration gardens: On-going

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$41,868

FY 2004/05: Budgeted: \$130,000

DMM 8: School Education Programs

Corresponding BMPs

- CUWCC BMP 08: School Education Programs
- Water Forum BMP 8: School Education

Description

In 2002, the City's Water Conservation staff launched a school outreach program designed to teach children in second through sixth grades about the importance of water conservation. The hour-long program includes a water conservation video, various interactive activities and free materials such as activity booklets, stickers, pencils and water bottles.

Since 1995, the City has supported two school education programs. One is the Newspaper in Education (NIE) program which involves the Sacramento Bee newspaper and local teachers. The goal of the NIE program is to provide teachers, students and parents with innovative tools to teach and motivate students to learn while having fun with real life activities. Students have the opportunity to learn about the stock market, consumer math, advertising, environmental issues (including water conservation) and much more while discovering the connection between the classroom and the real world. The second program involves the Sacramento Theater Company, which performs skits at school assemblies regarding water conservation and stormwater issues.

Implementation Schedule

- School Outreach Program: On-going
- Support of NIE Program: On-going
- Support of Sacramento Theater Company assemblies: On-going

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$13,193

FY 2004/05: Budgeted: \$40,000



DMM 9: Conservation Programs for Commercial, Industrial and Institutional Accounts

Corresponding BMPs

- CUWCC BMP 09: Conservation Programs for Commercial, Industrial and Institutional Accounts
- Water Forum BMP 9: CI Water Conservation

Description

Since 2003, the City has offered and performed water use surveys for its commercial, industrial and institutional customers. The surveys include a site visit, evaluation of all water-using apparatus and processes and a report identifying recommended efficiency measures.

Table 8-8 summarizes the number of surveys offered and completed from 2003 through 2005.

Table 8-8. Number of Commercial, Industrial and Institutional Surveys Offered and Completed^(a)

Type of Account	Survey Status	Calendar Year				
		2001 ^(b)	2002 ^(b)	2003	2004	2005
Commercial /Industrial	Offered	N/A	N/A	8,232	7,994	7,604
	Completed	N/A	N/A	170	55	209
Institutional	Offered	N/A	N/A	606	656	479
	Completed	N/A	N/A	0	41	53

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004. 2005 data provided by the City.

^(b) N/A = Not applicable; program stated in 2003.

The City has also participated in RWA’s “Rinse and Save” program. Under this program, high-velocity, high-performance pre-rinse nozzles are installed free of charge in restaurants. Use of these nozzles reduces the amount of hot water needed to pre-rinse dishes for the dishwasher. According to RWA, participating Sacramento-area restaurants have saved an average of \$400 per year in water and energy costs.⁴

Implementation Schedule

- Commercial, Industrial and Institutional Water Use Surveys: On-going
- Regulations for Air Conditioning and Swimming Pools: On-going
- City Participation in RWA’s Rinse and Save Program: On-going



Annual Budget/Expenditures

FY 2003/04: Expenditures: \$23,489

FY 2004/05: Budgeted: \$35,000

Commercial, Industrial and Institutional Ultra-Low Flow Toilet Replacement Program

BMPS

- CUWCC BMP 09a: Commercial, Industrial and Institutional Ultra-Low Flow Toilet Replacement Program
- Water Forum BMP 16: Ultra-Low Flush Toilet Replacement Program for Non-Residential Customers

Description

In 2003, the City began a CII ultra-low flow toilet (ULFT) replacement program which involved rebates from both the City and the County Sanitation District. The City advertised the program by direct letter, bill inserts, newsletter, print media, trade shows and special events. To date, the program has not been successful, partially due to the fact that a building permit is required to replace commercial toilets. In 2003, no customers participated in the program.⁵ In 2004, 90 toilets were replaced and 570 toilets were replaced in 2005.

Implementation

- CII Ultra-Low Flow Toilet Replacement Program: On-going

Annual Budget/Expenditures

Budget and expenditure includes both commercial and residential ULFT programs.

FY 2003/04: Expenditures: \$8,929

FY 2004/05: Budgeted: Information not available

DMM 10: Wholesale Agency Programs

Corresponding BMPs

- CUWCC BMP 10: Wholesale Agency Programs
- Water Forum Agreement: No corresponding BMP

Description

As described in Chapter 6, the City's water system serves primarily retail customers, with only 1.9 percent of current water demand attributable to wholesale customers (see Table 6-6), although this percentage is anticipated to increase in future years as more wholesale water supply



agreements are approved. The City’s wholesale customers that currently receive water from the City are California American (as successor to Citizens Utilities), Sacramento Suburban Water District, and the Sacramento County Water Agency (serving Zone 50 and the Sacramento International Airport). All of these entities are members of the Water Forum, and have recently implemented their own water conservation programs, which are being regionally coordinated through the RWA Regional Water Efficiency Program Advisory Committee, of which the City is a member.

Implementation

The City’s wholesale water service agreements have a built-in conservation incentive since the wholesale water charges are determined based on the amount of water delivered at a metered rate. In addition, all of the City’s wholesale customers administer their own retail water conservation programs as noted above. The City provides conservation assistance to its wholesale customers via participation in the RWA’s Regional Water Efficiency Program (Program). The City pays annual dues to the RWA; a portion of the dues goes to funding the Program. The City actively participates in the Program, and the City’s water conservation coordinator is the Chairperson of the Program Advisory Committee. The Program leverages resources (communications, financial, technical, and staff) of all purveyors to reach customers with repeated and consistent marketing messages and incentives that will motivate the customers to participate in BMP services.

The Program provides products and services that:

- Assist water suppliers to meet BMPs of the Water Forum, U.S. Bureau of Reclamation CVPIA and DWR UWMP commitments.
- Provide liaison with Water Forum Successor Effort compliance coordination and potential BMP updates.
- Attract residential, business and government customers to accept BMP services.
- Improve awareness of the need for Water Use Efficiency in the region.
- Prepare for potential CALFED Certification.

Annual Budget/Expenditures

Dues paid by the City to the Program are presented in Table 8-9.

Table 8-9. RWA Dues from City

	2002 ^(a)	2003 ^(a)	2004 ^(b)	2004/05 ^(c)	2005/06 ^(c)
Dues paid by the City of Sacramento to the Regional Water Authority	\$14,040	\$33,600	\$16,800	\$34,009	\$34,009

(a) Calendar Year
 (b) First six months of Calendar Year 2004
 (c) Fiscal Year



DMM 11: Conservation Pricing

Corresponding BMPs

- CUWCC BMP 11: Conservation Pricing
- Water Forum BMP 11: Conservation Pricing for Metered Accounts

Description

As described for DMM 4, only about 7 percent of the City’s total customer accounts are metered and billed based on usage. This is primarily because the City Charter has, until recently superseded by State law (as discussed above), prohibited the metering of residential accounts. For the City’s unmetered customers (primarily single-family and multi-family residential), the City currently bills a graduated flat monthly water rate based on the number of rooms in the residence. Non-residential unmetered customers are currently billed a flat monthly water rate depending on the type and size of establishment, although 76 percent of the City’s non-residential accounts currently receive metered service, as indicated in Table 8-4.

For the City’s metered customers (including commercial, industrial, institutional and irrigation), the City has a uniform water rate structure which includes a monthly basic service charge based on water meter size and a monthly water use charge based on actual monthly water use (see Table 8-10).

Table 8-10. City of Sacramento Water Rates for Metered Service for FY06^(a)

Water Meter Size	Monthly Basic Service Charge (\$/service)	Monthly Water Quantity Charge
5/8-inch	6.54	<ul style="list-style-type: none"> • For irrigation of landscaping on parks and medians owned and operated by the City: \$0.0968 per 100 cubic feet • For irrigation of landscaping at the Governor’s Mansion State Historic Park and Sutter’s Fort State Historic Park: \$0.3764 per 100 cubic feet • For emergency supply at the California State Fair and Exposition: \$0.6453 per 100 cubic feet (Monthly service charge: \$109) • For all other metered water services: \$0.6453 per 100 cubic feet • For water supply to operate SMUD cogeneration facilities: \$0.4082 per 100 cubic feet
¾-inch	6.54	
1-inch	6.54	
1 ½-inch	8.72	
2-inch	10.90	
3-inch	16.35	
4-inch	21.80	
6-inch	43.60	
8-inch	70.85	
10-inch	109.00	
12-inch	163.50	

^(a) Source: City of Sacramento Website: www.cityofsacramento.org, downloaded December 18, 2005.



Sewer service rates also have a similar structure. Unmetered residential and other customers are billed based on a flat monthly sewer rate based on the number of rooms in the residence or type and size of establishment. Metered customers are billed based on a uniform sewer rate structure based on water meter size and actual monthly water use (see Table 8-11).

Table 8-11. City of Sacramento Sewer Rates for Metered Services for FY06^(a)

Water Meter Size	Quantity of Sewage Allowed Without Additional Payment, cubic feet	Monthly Sewer Quantity Charge, \$ per 100 cubic feet of water use
5/8-inch	1,200	5.78
3/4-inch	1,700	8.19
1-inch	2,100	10.11
1 1/2-inch	3,700	17.82
2-inch	6,200	29.86
3-inch	12,500	60.19
4-inch	21,800	104.98
6-inch	50,000	240.78
8-inch	106,200	511.41
10-inch	168,700	812.39
12-inch	262,500	1,264.09

^(a) Source: City of Sacramento Website: www.cityofsacramento.org, downloaded December 18, 2005.

As described in DMM 4, State law requires installation of water meters on all new connections (Water Code Section 525), as well as the retrofit of all existing unmetered connections not later than January 1, 2025 (Water Code Section 527). Section 527 also requires that urban water suppliers charge metered rates to customers that have water service connections for which meters have been installed, beginning not later than January 1, 2010 (provided that metered billing may be delayed for one annual seasonal cycle of water use for services being converted from flat rate to metered billing).

Implementation

- Residential Accounts: Until recently, metering of residential accounts has been prohibited by City Charter; billed based on flat monthly rate.
- Non-Residential Accounts: Most billed based on actual water consumption based on uniform rate structure
- Metered Billing Rate Structure for All Service Connections with Meters: Being developed for implementation not later than January 1, 2010, in compliance with AB 2572.



Budget/Expenditures

As noted above, the estimated cost to implement AB 2572 is \$190 million.

DMM 12: Water Conservation Coordinator

Corresponding BMPs

- CUWCC BMP 12: Water Conservation Coordinator
- Water Forum BMP 12: Water Conservation Coordinator

Description

When the City signed the CUWCC MOU in 1991, the position of Utility Services Inspector was created to fulfill the duties of a Water Conservation position for the City's Department of Utilities. In 2000, the City recruited a Water Conservation Administrator. This full-time position was filled in March 2001. The Water Conservation Administrator manages the City's water conservation program and supervises a water conservation program staff of seven people, including the Utility Services Inspector, as well as clerical and field personnel.

The City provides conservation assistance to its wholesale customers via participation in the RWA Regional Water Efficiency Program ("Program") Advisory Committee. The City actively participates in the Program, and the City's water conservation coordinator is the Chairperson of the Program Advisory Committee.

Implementation Schedule

- Water Conservation Coordinator: On-going

Annual Budget/Expenditures

Only includes budget and expenditures for Water Conservation Coordinator position.

FY 2003/04: Expenditures: \$83,758

FY 2004/05: Budgeted: \$83,144

DMM 13: Water Waste Prohibitions

Corresponding BMPs

- CUWCC BMP 13: Water Waste Prohibition
- Water Forum BMP 13: Water Waste Prohibition



Description

The Sacramento City Code (Title 13 Public Services, Chapter 13.04 Water Service System, Article XI Water Conservation) prohibits the waste or runoff of water, establishes various limits on outdoor water use, and specifies applicable penalties. The City originally adopted this ordinance in 1990 (Ordinance No. 90-017) and later revised it in 2001 (Ordinance No. 2001-033). A copy of the pertinent sections of the Municipal Code is provided in Appendix H.

The City also has a Water Waste hotline and responded to 1,009 water waste calls in 2004 and 879 calls in 2005.

Implementation Schedule

- Water waste prohibitions: On-going
- Additional drought restrictions: Would be enacted by the City if water supply conditions required additional conservation measures (see Chapter 9 Water Shortage Contingency Plan).

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$17,713

FY 2004/05: Budgeted: \$49,417

DMM 14: Residential Ultra-Low Flush Toilet Replacement Programs

Corresponding BMPs

- CUWCC BMP 14: Residential Ultra-Low-Flush Toilet Replacement Program
- Water Forum BMP 13: Ultra-Low Flush Toilet Replacement Program For Residential Customers

Description

In 2003, the City started a residential ultra-low-flush toilet replacement program in coordination with RWA. This program encourages the installation of ultra-low-flush toilets in older homes by offering a rebate for each replaced toilet. Up to a \$125 rebate is available, \$75 from the City and \$50 from the Sanitation District. The program requires a pre-inspection and a post-inspection.

Table 8-12 summarizes the number of residential toilet replacements from 2003 through 2005.



Table 8-12. Number of Residential Toilet Replacements^(a)

Type of Account	Calendar Year				
	2001	2002	2003	2004	2005
Single-Family	0	0	103	197	573
Multi-Family	0	0	0	0	ND ^(b)

^(a) Source: City’s CUWCC Annual Reports for 2001, 2002, 2003, and 2004.

^(b) ND = No data available.

Implementation Schedule

- Residential Ultra-Low Flush Toilet Retrofit Program: On-going

Annual Budget/Expenditures

FY 2003/04: Expenditures: \$26,655

FY 2004/05: Budgeted: \$75,000

SUMMARY OF DMM IMPLEMENTATION

As discussed above and as detailed in the City’s BMP reports to the CUWCC (see Appendix F), the City has been actively implementing all of the DMMs to the extent allowed under the City Charter and as staffing and financial resources allow. Table 8-13 provides a summary of the implementation of the DMMs. In FY 2004/2005, the City’s Water Conservation Department budgeted \$1,343,561 for water conservation programs.

Table 8-13. Summary of DMM Implementation

DMM No.	DMM Description	Implementation Status
1	Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers	Full Program in Place
2	Residential Plumbing Retrofit	Full Program in Place
3	System Water Audits, Leak Detection and Repair	Full Program in Place
4	Metering With Commodity Rates for All New Connections And Retrofit of Existing Connections	Full Program in Place for Non-Residential Accounts Only Until recently, City Charter has prohibited metering for Residential Accounts. In accordance with City Ordinance No. 2005-090, the City will develop and implement a phased program for water meter



DMM No.	DMM Description	Implementation Status
		installation in accordance with State Water Code Section 527. ^(a)
5	Large Landscape Conservation Programs And Incentives	Full Program in Place
6	High-Efficiency Washing Machine Rebate Programs	Full Program in Place by SMUD and PG&E. City Pilot Program to be implemented in 2006 in conjunction with SMUD. ^(b) Participated in CUWCC's LightWash Program in 2004 and 2005.
7	Public Information Programs	Full Program in Place
8	School Education Programs	Full Program in Place
9	Conservation Programs for Commercial, Industrial and Institutional (CII) Accounts	Full Program in Place
9a	Commercial, Industrial and Institutional (CII) Ultra-Low-Flush Toilet Replacement Program	Full Program in Place Participation has been poor, primarily because permits are required for commercial toilet replacement
10	Wholesale Agency Programs	The City's wholesale water service agreements have a built-in conservation incentive since the wholesale water charges are determined based on the amount of water delivered at a metered rate. All of the City's wholesale customers administer their own retail water conservation programs which are being regionally coordinated through the RWA Regional Water Efficiency Program ("Program") Advisory Committee. The City provides conservation assistance to its wholesale customers via participation in the Program. The City pays annual dues to the RWA; a portion of the dues goes to funding the Program. The City actively participates in the Program, and the City's water conservation coordinator is the Chairperson of the Program Advisory Committee.
11	Conservation Pricing	Full Program in Place for Non-Residential Accounts Only Until recently, the City Charter has prohibited metering for Residential Accounts. In accordance with City Ordinance No. 2005-090, the City will develop and implement a metered rate structure for all metered accounts in accordance with State Water Code Section 527. ^(a)
12	Water Conservation Coordinator	Full Program in Place



DMM No.	DMM Description	Implementation Status
13	Water Waste Prohibition	Full Program in Place
14	Residential Ultra-Low-Flush Toilet Replacement Program	Full Program in Place

- (a) Full implementation of DMM 4 (Metering With Commodity Rates For All New Connections And Retrofit Of Existing Connections) and DMM 11 (Conservation Pricing) has, until recently, been restricted by the City Charter, which prohibited metering of residential connections. However, as discussed in DMM 4 above, the adoption of AB 2572 now mandates a phased meter installation program to be fully implemented by January 1, 2025, and metered billing for all metered connections beginning in 2010. Implementation of these requirements will fulfill the requirements of DMM 4 and DMM 11.
- (b) The City is currently working on implementation of DMM 6 (High-Efficiency Washing Machine Rebate Programs), and plans to implement a pilot program in 2006 in conjunction with SMUD. Under the pilot program, the City will provide a rebate of \$50, in addition to the current SMUD rebate. SMUD will continue to administer the program.

As shown above, all DMMs are either being implemented or are scheduled for implementation.

EXISTING CONSERVATION SAVINGS

Because most of the City’s water customers are not metered, it presently is not possible to quantify individual water savings by all customers. However, based on the City’s annual water production, the City calculates its water conservation savings each year, comparing annual water production to water production in 1986 (a pre-drought year), adjusted based on current population. Table 8-14 provides a summary of estimated annual water conservation savings for the past five years.

Table 8-14. Estimated Annual Water Conservation Savings

Type of Account	Calendar Year				
	2001	2002	2003	2004	2005
Adjusted 1986 Water Production (adjusted for population), af ^(a,b)	137,695	141,654	144,614	147,564	150,408
Annual Water Production, af ^(c)	140,140	138,864	140,281	146,827	138,974
Percent Conserved ^(d)	0%	2.0%	3.0%	0.5%	7.6%

- (a) See Table 6-1 for historic water production data for 1986 (109,446 af).
- (b) See Table 3-2 for historic population data.
- (c) See Table 6-1 for historic water production data.
- (d) “Percent Conserved” is calculated based on comparison of annual production to 1986 production (adjusted for population increase).



As shown in Table 8-14, the estimated water conservation savings during the last five years has ranged from zero percent to 7.6 percent, when compared to historic 1986 water production. The effect of a 7.5% water conservation savings on the City's ability to reduce future demand is analyzed in Chapter 6 of this Plan.



REFERENCES

¹ In 1997 there were 16 BMPs, four of which are no longer on the current list. The current list also has two new BMPs, so that there are now 14 BMPs.

² Water Forum, Year-Four Water Conservation Report, (January 1, 2004 – December 31, 2004)

³ January 23, 2006, e-mail from Angela Anderson, City Water Conservation Coordinator.

⁴ Regional Water Authority website: www.rwah2o.org, downloaded January 30, 2006.

⁵ City CUWCC 2003 Annual Report