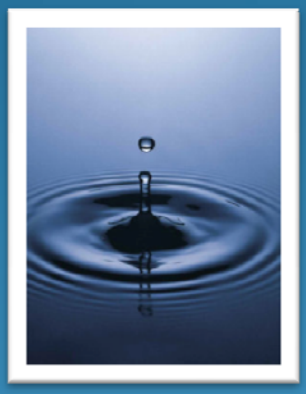
# Urban Water Conservation Accomplishments



## California Urban Water Agencies

December 2008

# Acknowledgements

This report was prepared by the California Urban Water Agencies Conservation Committee with assistance from Kennedy/Jenks Consultants.

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*Cover photos courtesy of: Contra Costa Water District, Rick Soehrn, and Microsoft*

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# Acronyms and Abbreviations

| | |
|---|---|
| AB | Assembly bill |
| ANSI | American National Standards Institute |
| ASME | American Society of Mechanical Engineers |
| BMP | Best management practice |
| CEC | California Energy Commission |
| CII | Commercial, industrial, and institutional |
| CUWA | California Urban Water Agencies |
| CUWCC | California Urban Water Conservation Council |
| Delta | Sacramento/San Joaquin Delta |
| DWR | California Department of Water Resources |
| East Bay MUD | East Bay Municipal Utility District |
| GIS | Geographical information system |
| IAPMO | International Association of Plumbing and Mechanical Officials |
| LADWP | Los Angeles Department of Water and Power |
| Los Angeles | City of Los Angeles |
| Metropolitan | Metropolitan Water District of Southern California |
| mgd | Million gallons per day |
| MOU | Memorandum of understanding |
| Sacramento | City of Sacramento |
| San Diego | City of San Diego |
| San Francisco | City of San Francisco |
| San Francisco PUC | San Francisco Public Utilities Commission |

# INTRODUCTION

The members of California Urban Water Agencies (CUWA) are pursuing aggressive water conservation programs to increase regional water supply reliability and to meet the demand of an increasing population in California. Our eleven members provide drinking water to over 23 million people in the Bay Area, Southern California, and Sacramento. CUWA's members have invested hundreds of millions of dollars over four decades to diversify their water supply portfolios to reduce dependence on imported water and to develop balanced, sustainable, and reliable water supplies. Water conservation benefits CUWA's members by reducing demand that typically rises over time with growth in population and commerce. This improves water supply reliability and reduces energy use for water treatment and pumping. This has the ancillary benefit of reducing greenhouse gas emissions. Conservation is a core element of CUWA's members' long-term water management strategies.

The objectives of this study are to:

- Provide an overview of historical conservation efforts undertaken by CUWA's members to provide policy makers and the public with information on how much water has been saved and how much money has been spent on conservation.

- Describe future activities to increase water conservation efforts.

# WATER CONSERVATION ACCOMPLISHMENTS

Although water efficient practices have been around since the 1960's, many water conservation programs were first initiated during the 1976-1977 drought to deal with an emergency situation in which water supplies throughout the state were at historic lows. The 1987-1992 long-term drought highlighted the need for additional conservation efforts. In the early 1990s the State Water Resources Control Board identified urban water conservation as part of a larger program to improve water supply reliability and ecosystem health in the Sacramento/San Joaquin Delta (Delta). CUWA and many of its members actively participated in work groups to develop conservation strategies. This led to the formation of the California Urban Water Conservation Council (CUWCC), development of the statewide Memorandum of Understanding (MOU) Regarding Urban Water Conservation, and the initiation of serious conservation efforts in California. All of CUWA's members are signatories to the MOU and most of them are original signatories. Our members continue to actively participate in many of the CUWCC activities, including funding CUWCC research.

During the early years of most water conservation programs, savings were achieved due to the active conservation programs of CUWA's members. Active conservation occurs through water agency sponsored programs such as rebates for ultra-low flush toilets, installation of low-flow showerheads, and education and outreach. CUWA's members have gone far beyond active conservation and have supported legislation and plumbing code changes that have resulted in water savings due to passive conservation. Passive conservation is defined by the Department of Water Resources (draft California Water Plan 2009 Update) as "*conservation that occurs*

*through gradual end-user upgrades in appliances and technologies, due to institutional changes such as plumbing codes, ordinances or device/appliance efficiency standards. Savings estimates are based on assumptions of future water price, family income, household size, and rate of end use upgrades.*" CUWA's members have contributed to passive conservation savings through their activities to affect plumbing codes, ordinances, and device/appliance efficiency standards. Increases in passive conservation savings have resulted through direct and indirect CUWA member education and outreach activities.

CUWA's members estimate that total annual water savings in 2005 due to both active and passive programs was nearly 700,000 acre-feet. Water conservation has been largely responsible for overall water demand in the San Francisco Bay Area and Los Angeles remaining level while population has grown substantially in both areas, as indicated in Figures 1 and 2. Water usage in the Bay Area is at the same level as 1986 despite a population gain of 1.3 million people. Water usage in Los Angeles is the same as it was nearly 25 years ago despite an increase in population of over a million people.

**Figure 1. Water Demand and Population Growth in the Bay Area**

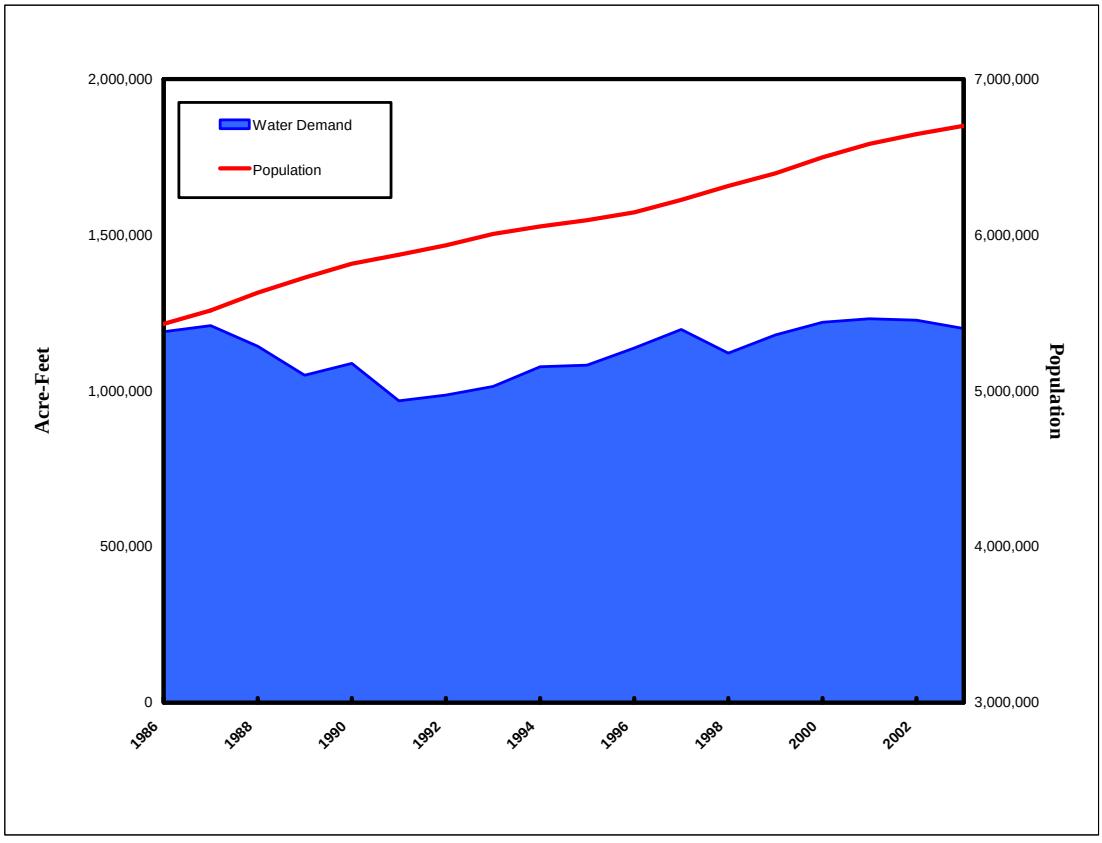
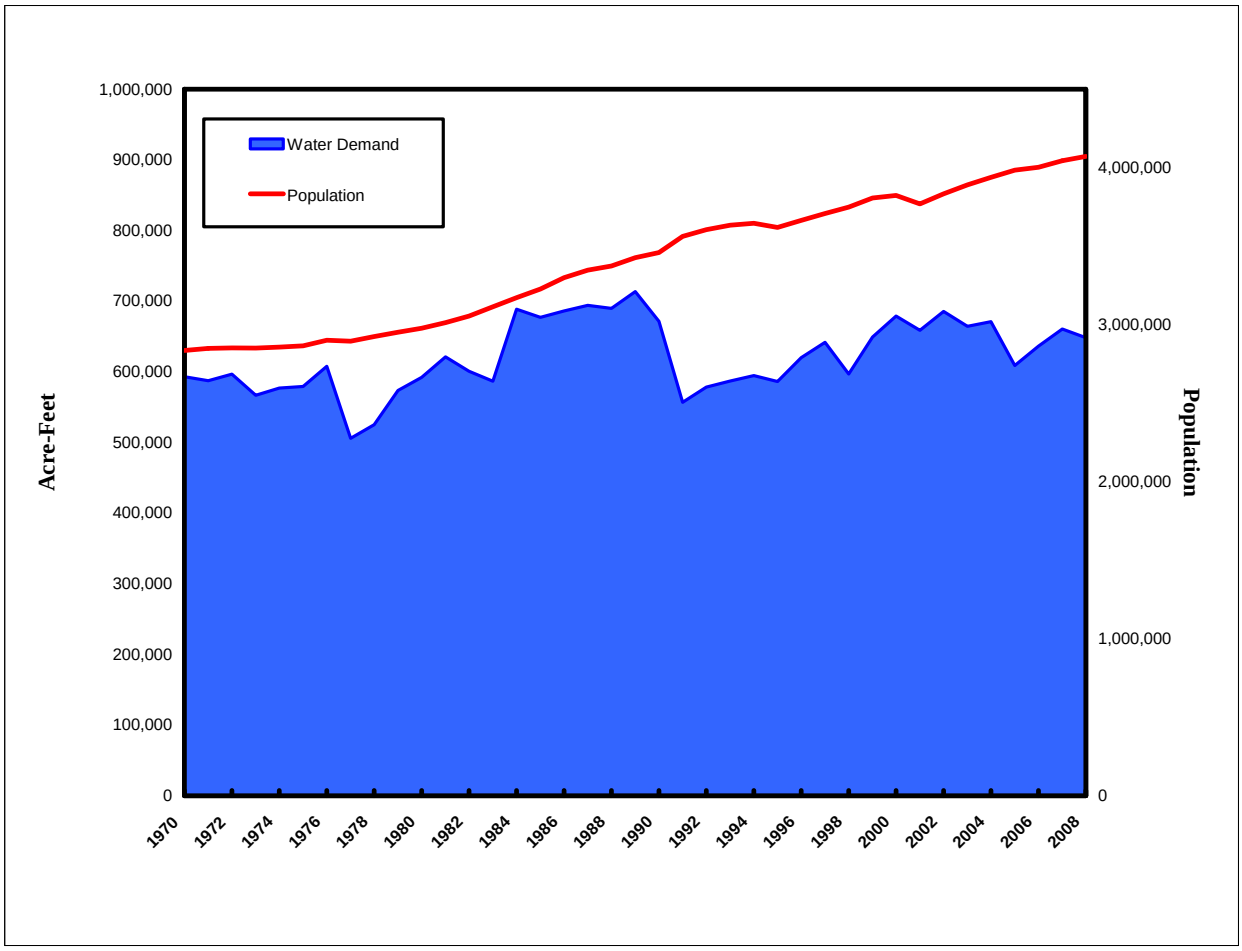


**Figure 2. Water Demand and Population Growth in Los Angeles**




## ACTIVE SAVINGS

CUWA's members were surveyed to determine which conservation measures have been implemented, the amount of water saved, and the cost of implementing conservation measures. All of CUWA's members are signatories to the CUWCC MOU and they have implemented many of the 14 best management practices (BMPs) included in the MOU. CUWA's members have also implemented many conservation measures that are not included in the MOU or tracked by the CUWCC. Table 1 lists the conservation measures that have been implemented by CUWA's members. Quantifiable measures are those activities for which water savings can be directly calculated and estimated. Non-quantifiable measures, such as school education programs, lead to conservation savings but the amount of water saved cannot be directly quantified.

## Table 1. Water Conservation Measures

| CUWCC BMPs | Other Measures |
|---|---|
| **Quantifiable** | **Quantifiable** |
| Residential water surveys (BMP 1) | High-efficiency toilet replacements |
| Residential plumbing retrofit (BMP 2) | High-efficiency urinal replacements |
| System water audits (BMP 3) | Waterless urinal replacements |
| Metering (BMP 4) | Faucet aerators |
| Large landscape programs (BMP 5) | Single family high water use notifications |
| Washing machine rebates (BMP 6) | Home leak detection kits |
| Commercial, industrial, institutional programs (BMP 9) | School toilet leak detection kits |
| Residential ultra-low flush toilet replacement (BMP 14) | High-efficiency washing machines |
| **Non-Quantifiable** | Pre-rinse spray valves |
| Public information programs (BMP 7) | Water brooms |
| School education programs (BMP 8) | High-efficiency commercial dishwashers |
| Wholesale assistance (BMP 10) | Connectionless food steamers |
| Conservation pricing (BMP 11) | Steam sterilizers |
| Conservation coordinator (BMP 12) | Dry vacuum pumps |
| Water waste prohibition (BMP 13) | Commercial ice machines |
| | Cooling tower conductivity controllers |
| | X-ray film processor recirculation systems |
| | Weather based “smart” timers |
| | Rotator spray heads |
| | Cash for grass programs |
| | Landscape rebates |
| | **Non-Quantifiable** |
| | Conservation studies and research |

Figure 3 shows the amount of water saved each year by CUWA’s members between 1991 when the CUWCC MOU was signed and 2006. There is a steadily increasing trend with up to 180,000 acre-feet of water saved in 2006 alone. These water savings were calculated by aggregating the various conservation measures funded by CUWA’s members and using a range of water savings for each measure. This resulted in both a high estimate and low estimate of water savings. Conservation measures include water-efficient product retrofits, new technology design and construction practices, and behavior modification. Water savings from conservation programs, especially those that rely on customer behavioral changes, are assumed to diminish over time. Water agency recommendations may have only a temporary influence on customer behavior, and savings from hardware changes may degrade due to product wear. Therefore, the estimated net savings of CUWA’s members were calculated with “decay factors” to account for the diminishment in water savings over time.

**Figure 3. Annual Water Savings from Quantifiable Measures**

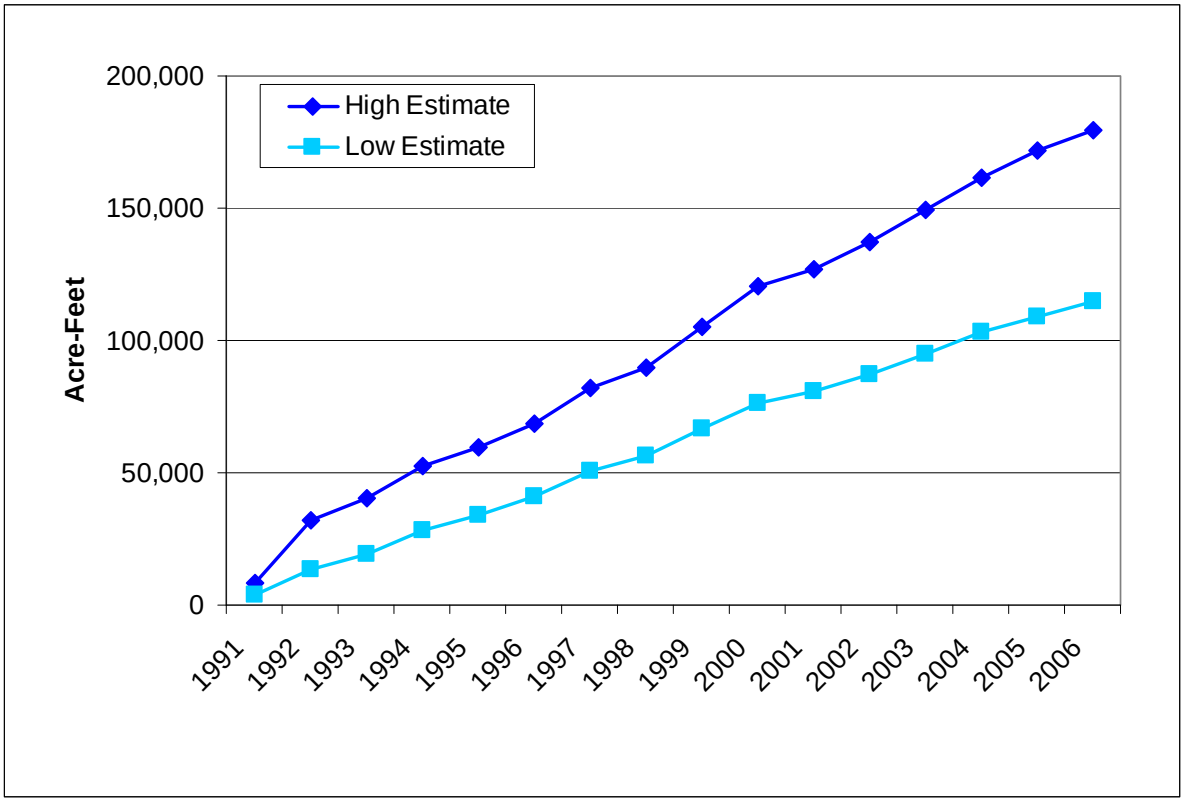
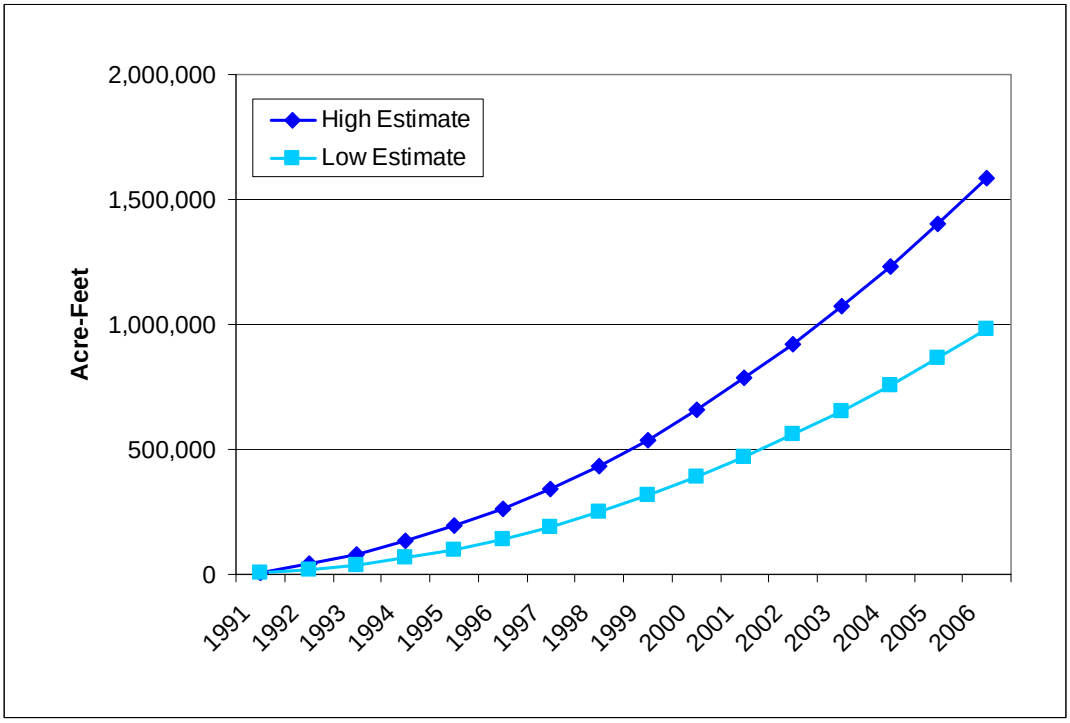


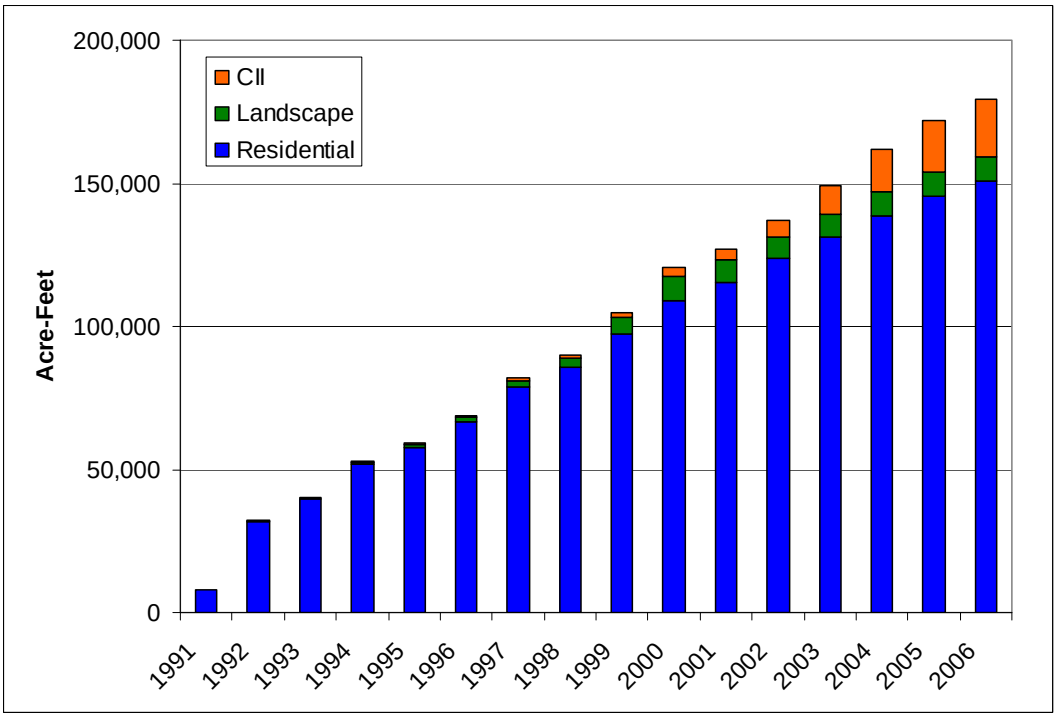

Figure 4 shows the total amount of water saved by quantifiable measures between 1991 and 2006 is between 1.0 million and 1.6 million acre-feet. These savings have been achieved through the expenditure of over $600 million since 1991. An additional $100 million has been spent on public information programs and other non-quantifiable measures. The actual CUWA member water savings and expenditures are likely even greater because data were not collected on water savings and expenditures in the early years of many CUWA members' conservation programs. In addition, several of our members are wholesale agencies; that is they provide water to retail water agencies who deliver the water to customers. In several cases, information was not available on the conservation efforts of the retail agencies.

Figure 5 demonstrates that in the early years, water savings programs were heavily focused on the indoor residential sector, primarily low-flow showerheads and ultra-low flush toilets. Generally, the residential sector is the single largest homogenous group of customers with similar water use practices that have helped to launch early conservation programs. With plumbing code changes now requiring consumers to install water conserving fixtures when remodeling or replacing broken fixtures, water agencies have shifted their focus in residential conservation to the installation of high-efficiency clothes washers and toilets. There is also a more general awareness among the population of the need to conserve water, in part due to the public education programs sponsored by CUWA members, so voluntary replacement of older fixtures results in more savings. In the last five years water agencies have placed greater emphasis on commercial, industrial, institutional, and landscape programs, as those market sectors have tremendous potential for conservation savings.

## Figure 4. Total Water Saved Due to Quantifiable Measures




## Figure 5. Annual Water Savings by Sector



## Residential Savings

CUWA's members have been directly responsible for saving 1.3 million acre-feet of water since 1991 due to residential conservation programs. Key components of the residential programs include:

- Nearly 3.4 million ultra-low flush toilets and high-efficiency toilets have been retrofitted or rebated
- Nearly 3.5 million low-flow showerheads have been installed
- Approximately 350,000 high-efficiency clothes washers have been rebated
- Approximately 325,000 faucet aerators have been distributed
- More than 680,000 water use surveys have been completed

*Photo courtesy of Santa Clara Valley Water District*

**Many CUWA agencies provide their customers with free residential surveys to evaluate indoor and outdoor water usage.**

Other programs that contributed water savings include toilet flapper valve replacements, water softener replacements, pipe leak repairs, and pool covers.

Examples of award-winning and highly regarded residential conservation programs include:

- Residential Surveys – Residents in Santa Clara County have been taking advantage of free residential water use home surveys since 1998. The Association of California Water Agencies award-winning program provides an indoor and outdoor water usage evaluation for residents, using trained auditors to test for leaks in toilets, install low-flow showerheads where needed and perform a thorough landscape irrigation analysis. To date, over 26,000 surveys have been completed through the Santa Clara Valley Water District program. Contra Costa Water District has implemented a full service single family home survey program since 1989, which has demonstrated a reduction in water use of more than 16 percent. During the survey, toilets are inspected for leaks and showerheads and faucets are tested and replaced with high-efficiency models. Landscape irrigation is also inspected and tested during the survey, and a site-specific monthly watering schedule is prepared and programmed into the sprinkler timer. The San Francisco Public Utilities Commission (San Francisco PUC) has a program similar to Contra Costa Water District's program, which covers both single and multiple family connections. Since 1994, the San Diego County Water Authority has performed over 30,000 residential surveys.

- High-Efficiency Clothes Washer Programs – East Bay Municipal Utility District (East Bay MUD) led the effort among CUWA members to obtain grant funding for a high-efficiency clothes washer program. CUWA members have partnered with Pacific Gas and Electric Company to provide rebates for the purchase of high-efficiency clothes washers. This innovative program is offered to more than 100 Bay Area communities and allows customers to complete a single rebate application for both a water and energy rebate. CUWA members participating in the program include Alameda County Water District, Contra Costa Water District, East Bay MUD, Santa Clara Valley Water District, San Francisco PUC, and Zone 7 Water Agency. San Diego County Water Authority started its high-efficiency clothes washer incentive program in 1994 and provided financial incentives that resulted in the installation of nearly 80,000 high-efficiency clothes washers. Through joint funding and marketing with San Diego Gas and Electric, in fiscal year 2008 alone, the program was responsible for the replacement of over 17,000 inefficient clothes washers with high-efficiency clothes washers. Metropolitan Water District of Southern California (Metropolitan) has provided rebates for high-efficiency clothes washers since 1995, and the City of Sacramento (Sacramento) has provided rebates to residential customers since 2004.

- Multi-Family High-Efficiency Toilet Replacement Programs – Contra Costa Water District successfully implemented a two-year program to install nearly 3,000 one-gallon per flush high-efficiency toilets free of charge in apartments throughout its service area. Santa Clara Valley Water District has installed over 4,750 high-efficiency toilets in multi-family dwelling units since 2004. To qualify for the program, the toilets to be replaced must have a flush volume of 3.5 gallons per flush or more. The new toilets installed in their place have a flush volume of 1.28 gallons per flush. Over the last two fiscal years, the San Diego County Water Authority's voucher incentive program was responsible for the installation of nearly 6,500 high-efficiency toilets.

- Low Income Program - In 2008, the San Francisco PUC, with grant funding from the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation, launched a high-efficiency toilet direct-install program aimed at low-income residents. Two thousand high-volume toilets located at low-income households and businesses will be replaced with high-efficiency models. San Francisco PUC is working with a local nonprofit organization as a means to cost-effectively implement the program and to create long-lasting benefits associated with community education and training in water conservation. The San Francisco PUC is employing residents from the communities being served to market the program, to pre-screen potential recipients to ensure that they qualify, and to provide free conservation inspections, education, and water savings devices.

- Regional Residential Program – Metropolitan is partnering with home supply stores such as Lowes and Home Depot in a "one stop shop" regional program to assist builders and homeowners in outfitting homes with water saving fixtures and appliances. The program offers a single application for indoor and outdoor residential rebates and a toll free number for all southern California residents.

- Single Family High Water Use Notification Program – Using a geographical information system (GIS), Alameda County Water District identifies single family customers whose water consumption is significantly higher than average compared to others in their area with similar lot sizes. A letter is sent to these customers each year listing the possible reasons for the high consumption and the district offers to help their customers identify measures to reduce consumption.

*Photo courtesy of Alameda County Water District*

**Aerial photos show which households in Alameda County Water District have a higher than average water consumption.**

- Home Leak Detection and Report Program – Leak detection is part of Alameda County Water District's bimonthly meter reading program. Meter readers are alerted to check for a leak if abnormally high water consumption is detected or if the meter indicates use while no one is home. If a leak is suspected, customers are notified in person or through a door hanger, and the district's Customer Service Department follows-up until re-checks confirm the leak has been repaired.

- School Toilet Leak Detection Kit Program – Alameda County Water District sponsors water conservation assemblies in schools throughout its service area. School children are provided with a toilet leak detection kit and tasked with testing their home toilets for leaks, then returning a postcard that indicates what they found. If they identify a leak they can request a flapper valve from the district through the reply postcard. Children win prizes for participation.

- Regional Water Authority – Sacramento and 21 other water agencies in the Sacramento metropolitan area work cooperatively to conserve water and obtain grant funding for water conservation programs. Notable programs that have achieved water efficiency on a regional scale include public outreach, school education, residential and commercial rebate programs and landscape programs.

*Photo courtesy of Contra Costa Water District*
**Installing high-efficiency clothes washers at laundromats has contributed to significant savings in the CII sector.**

## Commercial, Industrial, and Institutional Savings

Commercial, industrial, and institutional (CII) water savings total 84,000 acre-feet since 1991 due to the following programs:

- More than 150,000 ultra-low flush toilets and high-efficiency toilets have been installed
- More than 33,000 high-efficiency clothes washers have been rebated
- Approximately 29,000 pre-rinse spray valves have been distributed
- Nearly 23,000 interior water use surveys have been completed

Other programs that contributed water savings include cooling tower pH controllers, X-ray film processor recirculation systems, high-efficiency commercial dishwashers, air-cooled ice machines, water brooms, connectionless food steamers, steam sterilizers, dry vacuum pumps, and water free and high-efficiency urinals.

Examples of innovative CII conservation programs include:

- Regional CII Program - By combining all of their member agency CII programs into one large regional program more than seven years ago, Metropolitan designed one of the most comprehensive CII programs in the nation. Last year alone, the program expanded from 18,000 devices rebated to more than 43,000 devices rebated. Over 110,000 devices have been rebated since the regional program started. The regional design also allows Metropolitan and its member agencies to partner with the energy utilities such as Southern California Edison and Sempra on rebates for commercial clothes washers, food steamers, and other technologies.

- Water Savers Program - In 2006, San Francisco PUC launched a two-year pilot program called Water Savers, that offers payments for projects that provide long-term water savings through replacement of existing equipment or processes with new, high-efficiency equipment or systems. The Water Savers Program targets high users in the non-residential sector and moves from a device-based approach in which success is measured through the number of products rebated, to a water savings-based approach. The goal is to create an open market for water savings, with vendors bidding on a volume of water savings and proposing reasonable, lasting, and cost-effective ways to meet the savings goals. Payments are based on measured savings. As a result of the program, a number of projects were initiated including replacement of ice machines at a hotel, steam sterilizers at a hospital, and a filtration process for a local sprout grower. A total lifetime savings goal of 815 acre-feet at a cost of $400,000 was set and will likely be met.

- Restaurant Pre-Rinse Spray Nozzle Program – East Bay MUD was the lead agency among CUWA agencies in partnership with the CUWCC on a statewide effort to install high-efficiency pre-rinse spray nozzles in restaurants across the state. This program demonstrated tremendous water and energy savings. The San Diego County Water Authority partnered with San Diego Gas and Electric to offer a direct install program for pre-rinse spray nozzles. The program was responsible for the installation of nearly 600 pre-rinse spray nozzles over a six-month period.

*Photo courtesy of istockphoto.com*

**Pre-rinse spray nozzles are a cost effective way for restaurants to save water and energy.**

- Large Customer Program - Alameda County Water District worked with their largest customer, New United Motors Manufacturing, Inc. from 1990 through 2003 to reduce water demand by about 35 percent. On-site water use efficiency improvement projects included cooling water reclaim and vehicle wet sand rinse water recycling.

- Commercial High-Efficiency Toilet Program – Santa Clara Valley Water District initiated its High-Efficiency Toilet Direct Installation Program in 2004. With approximately 6,300 high-efficiency toilets installed, this is one of the most successful programs in the state due to the district's early adoption of this emerging technology. To qualify for the program, the toilets to be replaced must have a flush volume of 3.5 gallons per flush or more. The new toilets installed in their place have a flush volume of 1.28 gallons per flush.

- Water and Energy Audits - The San Diego County Water Authority and San Diego Gas and Electric have conducted water/energy audits since 2006. This effort has been expanded through the California Public Utilities Commission's water-energy pilot program to include the development of a template for conducting audits and encouraging implementation of the audit recommendations.

## Landscape Savings

A substantial amount of water is used for irrigation. Landscape conservation programs have only recently been implemented and the focus has been on the following programs:

- Nearly 90,000 landscape water use surveys have been completed

- More than 16,000 rotator spray heads have been distributed

- Nearly 10,000 weather-based "smart" irrigation timers have been distributed

*Photo courtesy of Saxon Holt Photography*

**Water agencies encourage customers to plant "California-friendly" plants like the penstemon which need less water to survive.**

Most of the water savings in this sector (70,000 acre-feet since 1991) has come from landscape water use surveys. Other measures currently being implemented by CUWA's members include turf removal rebates, synthetic turf, rain sensors, central irrigation controllers, high-efficiency golf course irrigation nozzles, and water budgets.

Recognizing that future residential water savings will come from outdoor water use, many of CUWA's members are increasingly focusing on this sector for future water savings.

- Geographic Information Systems Tools – Alameda County Water District uses GIS to link irrigation meters to parcels for customers with dedicated landscape accounts, including city parks. Parcels are digitized to determine landscaped area measurements and then these accounts are added to the district's water budget program. Water budget reports are sent to customers and their landscape contractors three times per year. District customers with a dedicated landscape water meter who remain within their water budget for the previous year are recognized. Participants and their landscape contractors receive an award certificate and their business name and landscape contractor are placed on a list that is published in the local newspaper one Sunday in May during Water Awareness Month.

- Water Smart Target Program - The San Diego County Water Authority developed a regional web-based water budget software program for use by its member agencies and their customers. The program can be accessed via the web and includes two parts. The first is a tool for measurement of landscape area using satellite imagery that was based on software developed by the City of San Diego (San Diego). The second part is a tool for comparing customer water use data to a water use target.

- Landscape Water Budget Programs – Contra Costa Water District provides landscape water budget site reports to its large landscape customers. The water budget program, which won the 2003 U.S. Bureau of Reclamation Commissioner's Water Conservation Award, prepares water budget reports using real-time weather data and site-specific landscape area measurements. The report compares the site's water budget to its actual water use in gallons and dollars.

*Photo courtesy of Saxon Holt Photography*

**Achillea is also considered a California-friendly plant.**

- Commercial Landscape Survey Program - San Diego's Commercial Landscape Survey Program is provided free of charge to CII customers with more than one acre of landscaped property in the city. Qualifying properties receive an audit of the irrigation system, practical advice, water-saving recommendations, a water-use budget, a written evaluation of the irrigation system's performance, aerial photos of the property, a water-use estimate for the upcoming year, and an irrigation controller

schedule for each month. In fiscal year 2008, 135 water budgets were produced with new water savings of 75,802 gallons per day with most properties reporting water savings between 20 and 40 percent.

- High Water Use Plant Removal - Metropolitan received a grant for $2 million from DWR and is funding an additional $5 million to begin a $7 million turf removal program for residential and commercial customers. The program will begin in January 2009 and offer customers $1 per square foot for removal of their turf and replacement with water efficient plants or permeable landscape. Santa Clara Valley Water District is providing rebates to businesses and residents for the replacement of high water using plants with climate appropriate/low water using plants and permeable hardscapes. Plants, mulch, and irrigation system hardware upgrades are all eligible for rebates through this program.

- Water Smart Landscape Contests - The San Diego County Water Authority and its member agencies sponsor an annual Water Smart Landscape Contest. Participation in the contest continues to increase every year. The contest provides excellent examples of attractive and water efficient landscapes in the community, and it encourages customers to change their attitudes and behaviors. Sacramento, with participation from the Sacramento Regional Water Authority, sponsored a Water Smart Garden Makeover Contest. The contest was aimed at helping local homeowners learn how to save water and money by incorporating low-water use plants, trees, and other water smart concepts into their landscaping.

- Water Conservation Garden - The San Diego County Water Authority and San Diego are partners in a Water Conservation Garden Joint Powers Authority. The Water Conservation Garden at Cuyamaca College provides excellent exhibits and classes on how to install water efficient landscaping and sponsors several events and festivals which attract thousands of San Diego area residents.

- Landscape Calculator - San Diego developed an award winning landscape calculator that is featured on its website and shared with other water agencies statewide. The online tool allows individuals to calculate an efficient irrigation schedule for their landscape based upon the specific climate zone, landscape size, irrigation system, and plant types input by the user.


*Photo courtesy of San Diego County Water Authority*

**Water conservation gardens are used as a learning center to teach residents about the importance of water conservation.**

- Smart Sprinkler Timer Incentive Programs - CUWA agencies are currently participating in the statewide Smart Sprinkler Timer Replacement Program Study. Water savings and customer satisfaction with the devices are being evaluated. In addition, the various types of incentive programs offered will be evaluated to determine which have more long-term viability. This large scale effort is intended to achieve immediate water

*Photo courtesy of Rick Soehrn*

**California friendly plants can result in significant water savings.**

savings and improve the quality of water saving devices for the future. Northern California program results indicate 30 percent water savings for participating sites.

## Non-Quantifiable Programs

CUWA's members make substantial investments in public information programs, educational programs in schools, and to fund conservation staff. These programs do not necessarily result in directly quantifiable water savings but have considerable effect on influencing the public to reduce water use and add to passive conservation savings. CUWA's members have conducted water conservation advertising, included inserts in bills, developed brochures, set-up conservation hotlines and speakers' bureaus, provided conservation information on their websites, and conducted school education programs in elementary, middle, and high schools. Several of our members have developed water conservation gardens that allow homeowners and landscape professionals to learn about native, drought tolerant plants that are suited to California's Mediterranean climate. These activities have resulted in tremendous water savings due to passive conservation by raising public water use awareness, increasing water conservation program visibility, and encouraging community involvement.

*Photo courtesy of the City of San Diego*

**Winners of a water conservation poster contest from a San Diego elementary school pose for a picture with City Council members.**

## Water System Losses

An efficient water distribution system is a key factor in ensuring efficient water use. The difference between the amount of water produced or purchased by an agency and the amount recorded as sold at customers' meters is referred to as non-revenue or unaccounted for water. Some amount of loss in distribution is unavoidable due to necessary, but un-metered uses such as fire fighting, main flushing, and storage facility cleaning. However, a portion of a system's losses can be controlled. CUWA's members invest heavily in programs to detect and repair leaks and improve efficiency of their distribution systems. The volumes of water saved and the cost of leak detection and repair were not determined in this study of CUWA members' conservation programs.


*Photo courtesy of the City of San Diego*

**CUWA members fund water conservation education programs throughout the state.**

## PASSIVE SAVINGS

As described in the preceding sections, CUWA's members have been directly responsible for programs that have resulted in water conservation savings of over 1 million acre-feet. In addition, they have been indirectly responsible for far greater savings due to their research and influence over plumbing code changes, appliance standards, third party testing to ensure high quality fixtures, ordinances and state legislation that have mandated conservation measures, efficiencies, or devices. By supporting research, urging manufacturers to develop high quality water conservation savings devices, providing incentives to customers to install these devices in their homes and businesses, and then supporting legislation which mandates conserving fixtures, CUWA's members have had a tremendous influence on water savings.

### Key Legislation

CUWA's members have been instrumental in the promotion of water conservation legislation. Key legislation supported by some of CUWA's members is listed in Table 2.

## Table 2. Key Water Conservation Legislation

| Year | Legislation |
|---|---|
| 1983 | AB 297 – Urban Water Management Planning Act – Requires Urban Water Management Plans to be periodically developed and updated. |
| 1990 | AB 325 – California Water Conservation in Landscaping Act – Strengthens the process by which local agencies adopt policies requiring water conservation in landscaping |
| 1992-2008 | Various Urban Water Management Planning Act amendments |
| 2001 | SB 221 – Land Use Planning and Water Supply – Prohibits a local agency from approving a development of more than 500 units unless sufficient water supply has been identified. |
| 2002 | AB 1561 – Washing Machine Efficiency Standards – Requires the California Energy Commission (CEC) to establish a water efficiency standard for residential washing machines. |
| | AB 2734 – Requirements for Landscaping and Plumbing (not enacted) – Imposes a variety of requirements relating to water efficient landscaping and water efficient plumbing. |
| 2004 | AB 2572 – Water Meters and Metered Rates – Requires urban water suppliers to install water meters by 2025 on all water service connections built prior to 1992. |
| | AB 2717 - Landscape Task Force – Establishes the state's Landscape Task Force to develop a model landscape ordinance. |
| 2006 | AB 1881 – Water Conservation in Landscaping – Enacts most of the recommendations from the Landscape Task Force and requires DWR to update the model landscape ordinance by January 1, 2009. Requires local agencies to adopt the model ordinance, or equivalent, by January 1, 2010. |
| 2007 | AB 566 - Update of Model Landscape Ordinance – Requires DWR to provide evapotranspiration data available statewide through the California Irrigation Management Information System. |
| | AB 1420 - Water Demand Management Measures: Grants and Loans – Requires implementation of water demand management measures as a condition for obtaining state grant funding. |
| | AB 1560 – Water Efficiency Standards – Requires the CEC to incorporate standards for water efficiency and conservation into the existing regulations governing energy efficiency. |
| 2008 | SB 1277 – Synthetic Turf – Requires a study comparing the effects of synthetic turf and natural turf on the environment and public health. |
| | AB 2270 – Water Recycling and Water Softeners – Requires additional reporting on recycled water use and allows local agencies to control salinity inputs, including water softeners, if needed to meet water quality objectives. |
| | AB 2882 – Pricing Structures – Authorizes and establishes guidelines for urban water suppliers to charge allocation-based conservation water pricing, to comply with requirements of Proposition 218. |
| | AB 2175 – 20 Percent by 2020 Demand Reduction (not enacted) – Requires the state to achieve a 20 percent reduction in urban per capita water use by 2020. |

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*Photo courtesy of istockphoto.com*

**Many water agencies provide customers with a hotline to report water waste.**

## Ordinances

CUWA's members have passed a number of ordinances that have had a substantial influence on water savings.

Water Waste - In general, retail water agencies and municipalities adopt water waste ordinances (represented by BMP 13 in the CUWCC MOU). Wholesale water suppliers generally do not have ordinance authority. Water waste ordinances usually apply to exterior water use practices, such as landscape irrigation, vehicle washing, washing off of hard exterior surfaces, and similar activities. They can also apply to fountains and other outdoor water features, commercial car washes and laundry systems, and various other uses as deemed necessary by the water supplier.

- Alameda County Water District adopted a water conservation ordinance that is in effect at all times. The ordinance prohibits the wasteful use of water, including activities that result in excessive run-off. Other prohibitions include single pass cooling systems in new connections, non-recirculating systems in new conveyor car washes and new commercial laundry systems, and non-recycling decorative water fountains.

- Contra Costa Water District enacted water waste regulations in 1993 that includes "Prevention of Water Waste" and "Encouraged Water Uses" as sections in their Water Service Regulations. The district has also implemented a program that minimizes response time for resolving water waste complaints.

- East Bay MUD has two regulations that prohibit water waste. The prohibition of wasteful use of water, adopted in 1988, is in effect at all times. A more stringent

regulation is invoked when a water shortage emergency is declared by the Board of Directors.

- The City of Los Angeles (Los Angeles) established a water conservation ordinance in 1990 to discourage water waste throughout the city. The ordinance was revised in August 2008 to add additional prohibited uses of water, increase penalties for non-compliance, and establish phases of additional mandatory water restrictions if necessary due to water supply conditions. These additional phases of prohibited uses primarily target outdoor water use.

- Metropolitan assisted its member and retail agencies in writing and adopting water efficiency ordinances. A draft model ordinance was crafted and then two regional workshops were conducted on the model ordinance with its member and retail agencies. The Metropolitan Board of Directors recently approved the model ordinance, and agencies can now use it as a template for their city or water agency.

- Sacramento placed limits on outdoor water use in an ordinance adopted in 1990 and revised the ordinance in 2001. The ordinance restricts lawn watering to 30 minutes per day with an automatic sprinkler and two and one-half hours per day for watering through a hose. Sacramento also suggests customers skip Mondays and practice an odd-even watering schedule.

*Photo courtesy of istockphoto.com*

**Some water waste ordinances place restrictions on lawn watering.**

- The City of San Francisco (San Francisco) enacted numerous water use restrictions and prohibitions in response to the severe water shortage during the 1987-1992 drought. With the ending of the drought in 1993, San Francisco decided to continue certain water use restrictions to prohibit water waste. In addition, San Francisco recently introduced an amendment to the Park Code to require the Recreation and Park Department to maximize water use efficiency and use recycled water where available for park irrigation needs.

- Santa Clara Valley Water District has limited authority to impose mandatory provisions restricting the wasteful use of water. As a wholesale water supplier, the district developed a set of model water use restrictions in 1989 and 1993 to assist the water retail agencies and cities in the development of their water waste prohibitions. The district works closely with the cities and retailers to encourage adoption and enforcement of the model Water Waste Ordinance

- Zone 7 Water Agency includes a water conservation clause in all contracts with its retail water supply agencies which states: “Zone 7 will undertake and support water

conservation programs. To that end, Zone 7 will develop, implement or participate in such programs and enter into agreements with Other Contractors, and other entities to make more efficient use of water supplies through water conservation programs so long as such agreements serve a beneficial purpose to the residents of Zone 7."

Retrofit on Resale - Additional significant ordinance authority regarding conservation can be vested in a retrofit on resale ordinance. This type of ordinance requires that when a property is sold (usually residential properties, but can also apply to commercial and industrial properties), all water-using interior fixtures are upgraded ("retrofitted") to meet the most recent plumbing code standards. These upgrades are required as a term of the escrow process. Some retrofit on resale ordinances can also apply to "expansion of use" or remodeling of existing properties, to require that all fixtures added or replaced meet the most recent standards. These types of ordinances have a significant positive effect on the rate and amount of savings achieved through time.

- Los Angeles adopted a plumbing retrofit ordinance in 1988 to mandate the installation of conservation devices in all properties and to require water efficient landscaping in new construction. The ordinance was amended in 1999, requiring the installation of ultra-low flush toilets and water saving showerheads in single-family and multi-family residences prior to resale. Los Angeles has assisted customers affected by the ordinance by offering free ultra-low flush toilets and low-flow showerheads, free installation of ultra-low flush toilets and showerheads, and rebates for ultra-low flush toilets purchased and installed. Los Angeles explored the expansion of the city's retrofit on resale ordinance to include nonresidential properties. However, such changes were determined to be infeasible due to concerns over the applicability of certain provisions of the Americans with Disabilities Act whereby the replacement of a toilet could trigger requirements for costly accessibility improvements.

*Photo courtesy of istockphoto.com*

**Retrofit on resale ordinances require plumbing fixtures to be upgraded to meet plumbing code standards, when a property is sold.**

- San Diego enacted an ordinance in 1991 which required water conserving plumbing fixtures to be installed in all new construction. In addition, the City Manager developed a separate ordinance requiring the replacement of existing toilets with ultra-low flush toilets when remodeling a bathroom or upon change of ownership of the property.

Green Buildings – San Francisco has requirements for new construction and major renovations.

- San Francisco PUC worked with San Francisco City and County Government to pass a green building ordinance in 2008 which sets the strictest municipal standards of their kind in the U.S. The standards apply to newly constructed commercial buildings over

5,000 square feet, new residential buildings that are taller than 75 feet, and building renovations that involve more than 25,000 square feet. The provisions in the ordinance will save 100 million gallons of drinking water in addition to reducing greenhouse gas emissions and providing other environmental benefits.

Landscape - Several of CUWA's members have passed landscaping ordinances.

- Los Angeles passed a plumbing retrofit ordinance in 1988 that included a requirement for customers with three acres or more of turf to reduce consumption by 10 percent from 1986 levels or face a 100 percent surcharge on their water bills. To help these customers comply with the ordinance, Los Angeles Department of Water and Power (LADWP) has sponsored free training courses specifically targeting the city's large turf customers. To further assist this group, LADWP developed a guidebook, "Improving Irrigation Performance" to demonstrate ways for enhancing existing irrigation systems. In 1996, the city adopted a landscape ordinance that includes requirements for water management and irrigation specifications, planting techniques, plant materials, and source reduction of waste. The city adopted this ordinance to comply with the California Water Conservation in Landscaping Act.

- San Francisco passed an ordinance in 1991 to promote efficient water use in new and renovated landscaping. The ordinance applies to any new commercial, governmental, or residential (two or more units) building on a lot exceeding 3,500 square feet with a landscaping area of more than 1,000 square feet. The ordinance requires that the Conservation Administrator approve landscape, irrigation, and soil amendment plans prior to having the meter approved for installation. The ordinance includes limitations on turf and water intensive plants and irrigation requirements.

- East Bay MUD has adopted a new water service regulation (Section 31) that identifies the types of water efficiency requirements for water service and a procedure for notification to applicants that water efficiency measures are required. Water service is not provided to any applicant for new or expanded service unless all the applicable water-efficiency measures described in Section 31 are installed at the applicant's expense. Applicants for expanded service may be required to retrofit existing water service facilities or uses to comply with these requirements. Applicants are required to maintain design documents and construction and installation records and furnish a copy of these documents and construction and installation records to East Bay MUD upon request. East Bay MUD may inspect the installation of water efficiency measures to verify that the items are installed and performing to the required water use levels.

- East Bay MUD has also adopted a new water service regulation (Section 3) affecting multi-family and multi-space commercial/industrial developments of less than four stories in height. Effective January 1, 2009, the new regulation will require a developer to plumb every unit or space so that it can be individually metered by East Bay MUD at an approved metering site. East Bay MUD will require individual metering of each separate unit in a structure of four stories or less in height whenever it is feasible in the opinion of East Bay MUD to do so. Individual metering of each unit or space would be

*Photo courtesy of istockphoto.com*

**Consumers expect water efficient plumbing fixtures, such as this high-efficiency toilet, to work as well as or better than the fixtures that use more water.**

required regardless of their number or how the hot water is supplied. For example, if the hot water to each apartment or commercial space is supplied by a common boiler, then the cold water supply for each unit must be metered by East Bay MUD at the approved metering site and hot water will be metered separately as a "house" or landlord meter.

## Water Efficiency Standards

CUWA's members have been instrumental in advocating for water efficiency standards. The major efforts have focused on the plumbing fixture industry and appliance manufacturers.

Plumbing standards are a key avenue to advancing water efficiency in plumbing fixtures. The National Energy Policy Act sets maximum flow standards for showerheads, faucets, urinals, and toilets, but how those standards are manifested in fixtures is a function of standard setting. Since 1994, water utilities, including CUWA members, have been more involved in this standard setting process.

The standards are developed and administered in a complex process. The American Society of Mechanical Engineers (ASME) and the International Association of Plumbing and Mechanical Officials (IAPMO) are both accredited by the American National Standards Institute (ANSI) to develop U.S. standards for plumbing fixtures and fittings. Within these organizations, the ASME A112 and IAPMO Z124 committees are developing and maintaining standards related to toilets, urinals, showerheads, faucets, pre-rinse spray valves, and other fixtures and fittings used in indoor plumbing systems.

Standards committees and project teams are comprised of a variety of stakeholder interests, and are required by ANSI to maintain a "balance" of those interests. These groups include representatives of manufacturers, laboratories, government, private sector consultants, and others, including CUWA members.

## Research

CUWA and CUWA's members actively support research and technical studies to enhance understanding of water use patterns, conservation potential, and the impacts of conservation measures and programs. CUWA's agencies have partnered with the American Water Works Research Foundation, the CUWCC, and other organizations to advance the state of knowledge in urban water conservation. Several of the key studies are highlighted in Table 3.

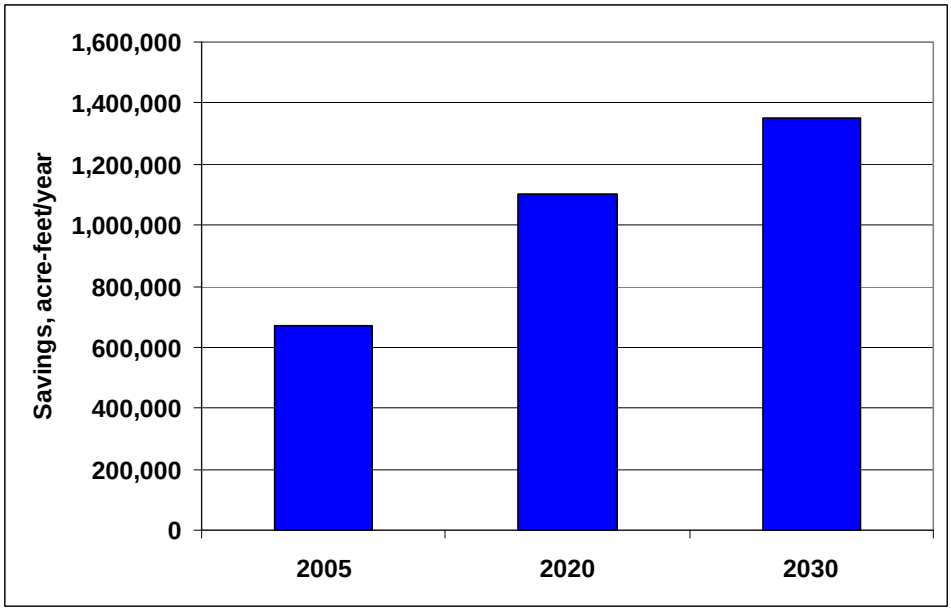
## Table 3. Water Conservation Research Activities

| |
|---|
| *Residential End Use of Water* – Several CUWA members are currently participating in a study to determine single family indoor and outdoor end uses of water at 1200 homes in California. |
| *Water Budgets and Rate Structures - Innovative Management Tools (2008)* – Examines water budgets and their potential value to water utilities and develops practical applications of the water budget concept that can be adapted to different conditions. |
| *Statewide Marketing Survey: Landscape Water Use Efficiency (2007)* – This market research project explored and analyzed customer behavior relating to landscape water use in the residential, multi-family, CII sectors so that California water suppliers can develop appropriate water conservation communication tools and strategies. |
| *Water Efficiency Programs for Integrated Water Management (2006)* – Identifies direct and indirect costs and benefits of water efficiency incentives and establishes the role of water efficiency programs as a component of an integrated water resources management strategy. |
| *Urban Water Conservation Implementation Challenges and Opportunities (2004)* – This study identified the challenges of implementing urban water conservation programs for various sectors. |
| *California Urban Water Agencies Urban Water Conservation Potential (2001)* – This study estimated potential savings for a subset of quantifiable BMPs for seven hydrologic regions in California. |
| *Commercial, Institutional, and Industrial Plan Review* – East Bay MUD was awarded a grant from DWR to develop a resource guidebook for reviewing plans of new CII developments for water use efficiency and to pilot a CII plan review program. |
| *Self-Adjusting Weather-Based Irrigation Controllers* – Several CUWA members are using funds from a Proposition 13 grant to install 2,600 state-of-the-art controllers within six counties in northern California. |
| *Performance Standards for Demonstrating Urban Water Conservation (1997)* – This report investigates the viability of a performance based approach to water conservation, i.e. identifying a specific savings target to be achieved over time versus actions-based requirements. |
| *Willingness to Pay for Household Water Savings Technology in Two California Service Areas (1995)* – This survey examines how much urban residential water users are willing to pay for particular water saving technological fixes, and how that willingness to pay varies with water availability. |
| *Ultra-Low Flush Toilets in Commercial Installations (1994)* – This report addresses concerns about the use of ultra-low flush toilets in CII settings. |
| *Guide to Customer Incentives for Water Conservation (1994)* – This report provides information on a variety of water conservation incentive programs to help water agencies design and evaluate programs on a systematic basis. |
| *Evaluating Urban Water Conservation Programs: A Procedures Manual (1992)* – This manual provides an evaluation of urban water conservation programs that fills the gap between the science of design and evaluation of water conservation programs and the interest and need for these programs. |
| *Modeling Water Conservation (1977)* – Assesses the impact of price and non-price variables on municipal water consumption. Presents a model of municipal water consumption and compares data from several metropolitan areas. |

## CONSERVATION IN THE FUTURE

Looking forward, CUWA's members will continue to make investments in conservation programs and expand their focus to landscape water use efficiency and conservation opportunities in the CII sector. Figure 6 demonstrates that CUWA's members plan to save 1.1 million acre-feet per year by 2020 and almost 1.4 million acre-feet per year by 2030. These are aggressive yet achievable goals. Each CUWA member has established goals and developed programs for its service area.

**Figure 6. Projected Conservation Savings**




- Alameda County Water District has a comprehensive water conservation program focusing on outdoor water use by all customers. The conservation program is a key component of the water supply portfolio, which includes groundwater banking, desalination, and recycled water to supplement the district's surface water supplies.

- Contra Costa Water District has established water conservation as an integral component of its Future Water Supply Plan. The district expects to achieve 30,000 acre-feet per year of savings by 2055.

- East Bay MUD established a goal of achieving a savings of 35 million gallons per day (mgd) (39,000 acre-feet per year) in 2020 due to conservation programs. This includes offsetting 2 mgd of demand generated by new developments.

- LADWP has set a goal of achieving 50,000 acre-feet of additional measurable conservation by 2030. This level of conservation will further lessen the city's reliance on imported water while providing a drought-proof resource that is not subject to weather conditions.

- Metropolitan is committed to the efficient use of water now and in the future. Their current Integrated Resources Plan update allows members and retail agencies to design the future direction of conservation, storm water runoff, greywater use, and recycling through technical work groups. Through their Innovative Conservation Program, Metropolitan studies the latest water conservation technologies (such as permeable paving) and adds them to their rebate menu, if warranted. Technologies such as food steamers, water brooms, and x-ray recirculation devices have been evaluated through the Innovative Conservation Program.

- Sacramento achieved a 7.5 percent water conservation savings in 2005 and has since established a goal of 18 percent water conservation savings for 2020 and 26 percent savings for 2030. These goals will be achieved by increasing the city's water conservation program and completing the city's meter installation program by 2025.

- San Diego adopted the City of San Diego Long-Range Water Resources Plan in 2002. This plan established long-range water conservation goals of 36,000 acre-feet by 2020 and 46,000 acre-feet by 2030.

- San Diego County Water Authority collaborated with San Diego and its other member retail water agencies, as well as business and community leaders, to develop a Blueprint for Water Conservation. The Blueprint serves as a framework to plan and implement future conservation programs to achieve permanent, long-term water savings.

- San Francisco PUC conducted a detailed cost-benefit study of 38 different conservation measures and from this developed a conservation program that will result in a reduction of demand of 14.5 mgd (16,000 acre-feet per year) by 2030 (4.5 mgd from "active" programs). This is about a 15 percent reduction over 2000 use when the study was conducted.

- Santa Clara Valley Water District was honored to receive the U.S. Environmental Protection Agency Water Use Efficiency Leadership Award in 2007. Winners were chosen by a panel of national water experts and based on three criteria: leadership, innovation and water saved. The application highlighted the district's and its retailers' effective water conservation programs which accounted for approximately 44,000 acre-feet of water saved in fiscal year 2007/2008 as well as the district's innovative Watts to Water report which details and quantifies the water and energy savings nexus. Santa Clara Valley Water District has also established aggressive long term goals and is working to achieve 100,000 acre-feet of water savings per year by 2030.

- Zone 7 Water Agency has significantly increased its public outreach program to promote water conservation in its service area.

These savings will be achieved through agency-sponsored active conservation programs and passive conservation resulting from plumbing code changes, ordinances, and changes in customer behavior. CUWA's members will continually examine their water conservation programs to assess progress toward their goals. Programs will be revised, and new programs

will be developed to increase conservation levels as water demand grows with increased population. It will be increasingly important to involve land use agencies, hardware manufacturers, building contractors, landscape architects, and others in promoting water conservation in the future. While water agencies have a significant role to play, they will need assistance from these other sectors to achieve these ambitious goals.

Integrated Regional Water Management Planning is a relatively new initiative for bringing together diverse stakeholder groups to find synergistic opportunities to promote water conservation and water supply reliability projects. For example, stormwater agencies and watershed groups are already promoting the reduction of over-irrigating to benefit the ecosystem. Combining forces to have integrated conservation efforts makes sense. Water agencies are also partnering with energy providers to save heated and cooled water with joint incentive programs.

Additionally, CUWA anticipates ancillary water conservation benefits from programs associated with the design of the Global Warming Solutions Act of 2006 (AB 32). Prioritizing urban infill programs will reduce more than just greenhouse gas emissions related to transportation. Densification of urban areas is expected to reduce irrigated landscaping areas per capita. Indeed, the state's mandate to reduce greenhouse gas emissions is expected to become a significant driver in promoting and accomplishing water conservation.

Water recycling, greywater systems, and stormwater capture/use are methods of reducing the demand for potable water. If the goal of conservation is to minimize the "taking" of water from natural systems and to ensure water supply reliability for communities, then clearly water recycling, greywater systems, and the capture and use of stormwater all help to meet those goals. Coastal communities benefit especially form the incorporation of these practices as they have no river into which they can return their treated effluent for beneficial downstream use.

## CUWA Agencies Take Conservation Online

**Visit these websites for more information on water conservation.**

**Alameda County Water District**
www.acwd.org/water_conservation.php5

**East Bay MUD**
www.ebmud.com/conserving_&_recycling/residential/

**Zone 7 Water Agency**
www.zone7water.com/index.php?Itemid=235&id=58&option=com_content&task=view

**San Francisco PUC**
www.sfwater.org/msc_main.cfm/MC_ID/13/MSC_ID/168

**Los Angeles Department of Water and Power**
http://www.ladwp.com/ladwp/cms/ladwp001257.jsp

**Metropolitan Water District of Southern California**
www.bewaterwise.com

**Contra Costa Water District**
http://www.ccwater.com/conserve/

**San Diego County Water Authority**
http://www.sdcwa.org/manage/conservation.phtml

**The City of San Diego**
http://www.sandiego.gov/water/conservation/

**Santa Clara Valley Water District**
http://www.valleywater.org/conservation/

**The City of Sacramento**
http://www.cityofsacramento.org/utilities/water/water-conservation.cfm

*Photo courtesy of DWR*

**Lake Oroville is one of the many lakes in California affected by the drought.**

## DROUGHT RESPONSE ACTIVITIES

California is currently in the midst of a drought. The last two years were classified by DWR as dry and critically dry. The 2008 water year that ended on September 30 was the ninth driest year on record. Initial forecasts from the National Weather Service are for another dry year in 2009. In addition, court-ordered pumping restrictions in the Delta have greatly reduced this source of supply for many of CUWA's members. Many water agencies are facing serious water shortages. As a result, CUWA's members are addressing the problems created by the drought and regulatory restrictions by calling for more conservation.

- East Bay MUD declared mandatory water rationing for all customers, seeking a 15 percent overall reduction in water use and setting reduction goals for specific types of customers. Drought water rates include a 10 percent increase in volume charges for all customers and a surcharge for each unit of water used above a customer's individual allocation. East Bay MUD's drought program also includes a set of water use restrictions prohibiting a number of actions including: using water for decorative ponds, lakes and fountains except those that recycle the water; washing sidewalks, patios, and similar hard surfaces; and irrigating outdoors on consecutive days or more than three days a week. The district's Drought Help Center is an online resource that provides information about personal water use and rate schedules as well as conservation tips.

- LADWP re-launched the Drought Busters program, first initiated during the drought of the early 1990s. The program includes the Drought Busters team which patrols communities looking for wasteful uses of water and educating customers about the importance of water conservation.

- The Metropolitan Board of Directors issued a Water Supply alert for its six-county service area, urging local jurisdictions to adopt and implement water conservation ordinances and to significantly increase efforts and programs to conserve water.

*Photo courtesy of DWR*

**Reservoirs throughout the state are drawn down due to the drought.**

Metropolitan initiated a special $15 million Public Sector Program specifically for public agencies in response to the drought. The program offers increased incentives upfront to public agencies who install water efficient plumbing and landscape equipment; funding to public agencies who switch from potable to recycled water to irrigate parks, medians, or schools; and free water conservation audits for the agencies. Metropolitan's Board has authorized funding to continue this program into 2009.

- The San Diego County Water Authority and its member agencies, including San Diego, issued a 20-Gallon Challenge. The challenge is part of a region-wide voluntary conservation effort to reduce water use by 20 gallons, or 10 percent, per person per day. The challenge was made through a comprehensive advertising campaign, community outreach, outreach to business and industry, and recognition of partners that pledge to support the 20-Gallon Challenge. Visit www.20gallonchallenge.com for more information.

- The San Diego County Water Authority worked with its member agencies to develop a regional model drought ordinance. As a result, most of the Water Authority's member agencies have up-to-date drought ordinances or are on track to adopt an ordinance. San Diego recently adopted a drought ordinance establishing clear triggers for enacting three stages of mandatory conservation as needed. The ordinance includes a perpetual water waste prohibition. The San Diego County Water Authority also developed a model drought rate structure for member agencies and encouraged discussion among member agencies regarding drought rates. Many of the Water Authority's member agencies are moving forward with rate structures that will help encourage conservation and keep the agency revenue neutral.

*Photo courtesy of San Diego County Water Authority*

**The San Diego County Water Authority's 20-Gallon Challenge asks customers to reduce their daily consumption by 20 gallons.**

- San Francisco PUC worked with the San Francisco City and County Government to issue an executive order requiring all city departments and governmental units to reduce their water consumption by 10 percent and requesting voluntary conservation efforts from local residences and businesses. City departments must designate a departmental contact for water conservation efforts to the San Francisco PUC Water Conservation Administrator. In 2007, the request for voluntary conservation efforts resulted in a 12 percent reduction in overall water consumption. In the summer of 2008, San Francisco

PUC reiterated the need to reduce water usage by 10 percent and the mayor issued an executive order directing all municipal departments to conduct a number of activities to reduce water usage by 10 percent.

- Contra Costa Water District has successfully implemented a water conservation awareness campaign resulting in a 10 percent voluntary reduction in 2008 summer water use. An outreach campaign delivered the message to "Beat the Drought" and materials produced included bill inserts, customer newsletters, banners, table tents, mirror stickers in gyms and public restrooms, weekly tips in regional newspapers, and an electronic newsletter. In addition, Contra Costa Water District created a Water Savings Team to receive reports of water waste and implement immediate action and resolution.

- CUWA agencies in the Bay Area partnered with other Bay Area agencies and organizations to begin the Water Saving Hero Program. *Watersavinghero.com* is an interactive website where people can access information about conservation programs in their area, play conservation games, and share "real world" conservation stories about how they are fighting the drought in their home or business.

- Alameda County Water District, Santa Clara Valley Water District, and Zone 7 Water Agency asked their customers to voluntary reduce their water use by 10 percent.

- Since the passage of SB 610 and SB 221, water agencies have been required to perform *Water Supply Assessments* for any proposed new development project of a certain size. As the state faces drought situations, water agencies have worked with developers on innovative new programs to assure sufficient water supplies in the future. The concept of "net zero growth" continues to be explored and employed statewide. It is important to note that inasmuch as the developers scope in the water conservation improvements into the design of their projects and they are not financed by the water agency, the associated water savings are typically not counted by water agencies and are not included in the projected water conservation future savings.

# CONCLUSIONS

**CUWA's members are the leaders in California in urban water conservation.** Our members have invested almost $700 million since 1991 and have achieved considerable water savings due to active conservation programs and their influence over passive conservation. The conservation efforts of CUWA's members have resulted in a showcase of water conservation projects and have shaped the way conservation is viewed in California.

**CUWA's members have established ambitious conservation goals.** CUWA's members are intensifying their conservation efforts and plan to save 1.1 million acre-feet by 2020 and almost 1.4 million acre-feet by 2030. As conservation efforts intensify, some flexibility to further reduce water use in dry years is lost. CUWA's members will continue to evaluate their existing water conservation programs to identify additional opportunities for local and regional implementation. The combination of hardware-based demand reduction programs, education, and the use of price signals to encourage efficient water use will allow CUWA's members to meet conservation goals. CUWA's members are participating in the program to implement the Governor's goal of reducing urban per capita water usage by 20 percent by 2020. Our members are working hard to achieve substantial urban water conservation to assist the state in achieving this goal.

**The responsibility for conservation must be broadened.** Water agencies have a major role to play in achieving conservation in the future; however, conservation must be embraced by many others. Land use planning agencies must play a significant role. Hardware manufacturers, retail outlets, landscape designers, nurseries, and CII customers must become more involved in conservation to produce the significant savings that will be required in the future.

Water agencies will increasingly rely on Integrated Regional Water Management Planning to promote water conservation and water supply reliability projects on a region-wide scale. Water agencies are already partnering with energy providers to save heated and cooled water with joint incentive programs. These programs must be strengthened in the future to provide both water conservation and greenhouse gas reduction benefits.

The "low hanging fruit" of urban conservation has been picked. Achieving greater savings in the future will require behavioral changes and a broad-based water savings ethic.

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