

1 WHOLESALE SUPPLIER ASSISTANCE PROGRAMS

As described in the 2020 UWMP Section 9, MWDOC provides financial incentives, conservation-related technical support, and regional implementation of a variety of demand management programs. In addition, MWDOC is providing assistance with compliance of the Conservation Framework and conducts research projects to evaluate implementation of both existing programs and new pilot programs. On behalf of its member agencies, MWDOC also organizes and provides the following:

- Monthly coordinator meetings
- Marketing materials
- Public speaking
- Community events
- Legislation compliance assistance

The many programs that MWDOC offers to Orange County on behalf of retail water agencies is described in detail in the following sections.

1.1 Landscape Ordinance

The Water Conservation in Landscaping Act (Assembly Bill 1881, Laird) was passed in 2006 to increase outdoor water use efficiency. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the State's Model Water Efficient Landscape Ordinance (Ordinance) through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015.

This legislation required cities and counties to adopt a Water Efficient Landscape Ordinance by December 1, or adopt their own ordinance, which must be at least as effective in conserving water as the State's Ordinance. Local agencies working together to develop a regional ordinance had until February 1, 2016. MWDOC worked in partnership with the Orange County Division of the League of Cities, the County of Orange, Orange County cities, retail water providers, building industry, landscape architects, and irrigation consultants to develop an Orange County Model Water Efficient Landscape Ordinance specific to the needs of Orange County. The foundation of the Orange County Model Ordinance was based on the State Model Ordinance.

This collaborative, regional approach has ensured that local ordinances are consistent from city to city, and has limited the cost and complexity of implementing the mandate. Based on the Orange County model ordinance, cities and unincorporated areas have adopted local ordinances that set guidelines for designing and approving landscape projects. The new ordinance imposes a lower Maximum Applied Water Allowance (MAWA) that new and rehabilitated landscapes must be designed to meet.

Through this effort, cities throughout Orange County have adopted and are implementing landscape ordinances that are consistent with the requirements of the updated Water Conservation in the Landscape Act.

Today, MWDOC continues to provide the County and city planning departments with training on administering the Landscape Ordinance. This is done in partnership with the California Department of Water Resources, Metropolitan Water District of Southern California and California Landscape Contractors Association (Orange County Chapter). Additionally, MWDOC acts as a communication channel to disseminate reporting requirements and workshop notices from DWR to local ordinance administrators.

1.2 Metering

Metering with commodity rates by wholesale and retail agencies has been an industry standard throughout Orange County for many years. All customers are metered and billed based on commodity rates either monthly or bi-monthly.

With the sale of the Allen-McColloch Pipeline to Metropolitan in 1995, MWDOC no longer owns or operates a distribution system. Water purchased and sold by MWDOC is distributed through Metropolitan's system to the MWDOC retail agencies.

1.3 Conservation Pricing

MWDOC promotes conservation pricing and has helped water retailers shift away from uniform rates in Orange County. In 2008, MWDOC was awarded an Urban Drought Assistance grant from Department of Water Resources to assist Orange County retailers examine and implement budget-based tiered rates. This included assistance with irrigable area mapping, rate stud development, billing system modifications, and more. Progress and results from this project have been monitored up to the present. Table 1-1 shows the progression of agencies shift away from uniform rates towards conservation-based pricing, such as budget-based tiered rates.

Table 1-1: Summary of Rate Structure Types Used in Orange County

Types of Rate Structure	Number of Agencies Utilizing Different Rate Structure Types						
	1990	1995	2000	2005	2010	2015	2020
Declining Block	0	0	0	0	0	0	0
Uniform or Flat	22	23	19	16	8	9	10
Inclined Block	13	9	10	12	14	-	12
Seasonal Inclined Block	1	2	3	3	6	-	1
Seasonal Flat	-	-	-	-	-	-	1
Budget Based Tiered Rate	0	1	1	1	2	-	5

1.4 Public Information, Education, and Outreach

Municipal Water District of Orange County (MWDOC or District) develops, coordinates, and delivers a substantial number of public information, education, and outreach programs aimed at elevating water agency and consumer awareness and understanding of current water issues as well as efficient water use and water-saving practices, sound policy, and water reliability investments that are in the best interest of the region. As water is a necessary resource to all life, these efforts encourage good water stewardship that benefit all Orange County residents, businesses, and industries across all demographics.

MWDOC is steadfast in its mission to keep Orange County involved and up to date on current water news, water-saving opportunities, and pending policy matters through its award-winning public information programs and activities. A few examples are described below.

Print and Electronic Materials

MWDOC offers a variety of print and electronic materials that are designed to assist Orange County water users of all ages in discovering where their water comes from, what the District and other water industry professionals are doing to address water challenges, how to use water most efficiently, and more. Through the District's robust social media presence, award-winning website, eCurrents newsletter, media tool kits, public service announcements, flyers, brochures, and other outreach materials, MWDOC ensures that stakeholders are equipped with sufficient information and subject knowledge to assist them in making good behavioral and civic choices that ultimately affect the quality and quantity of the region's water supply.



Figure 1-1: Samples of Print and Electronic Outreach Materials

Public Events

Each year, MWDOC hosts an array of public events intended to engage a diverse range of water users in targeted discussions and actions that homes in on their specific interests or needs. Some of these public events include:

MWDOC Water Policy Forums and Orange County Water Summit are innovative and interactive symposiums that bring together hundreds of business professionals, elected officials, water industry stakeholders, and community leaders from throughout the state for a discussion on new and ongoing water supply challenges, water policy issues, and other important topics that impact our water supply, economy, and public health.

Inspection Trips of the state's water supply systems are sponsored each year by MWDOC and Metropolitan Water District of Southern California. Orange County elected officials, residents,

business owners, and community leaders are invited to tour key water facilities throughout the state and learn more about the critical planning, procurement, and management of southern California's water supply, as well as the issues surrounding delivery and management of our most precious natural resource – water.

Community Events and Events Featuring MWDOC Mascot Ricky the Rambunctious Raindrop provide opportunities to interact with Orange County water users in a fun and friendly way, offer useful water-related information or education, and engage them in important discussions about the value of water and how their decisions at home, at work, and as tax- or ratepayers may impact Orange County's quality and quantity of water for generations to come.



Figure 1-2: Left to Right - MWDOC Water Policy Forum | Inspection Trip of Hoover Dam | Ricky the Rambunctious Raindrop at a Water Smart Community Event

Education Programs and Initiatives

Over the past several years, MWDOC has amplified its efforts in water education programs and activities for Orange County's youngest water users. This is accomplished by continuing to grow professional networks and partnerships that consist of leading education groups, advisors, and teachers, and by leading the way for the District and its 28 member agencies to be key contributors of both southern California and Orange County water-centric learning. Several key water education programs and initiatives include:

Environmental Literacy is an individual's awareness of the interconnectedness and interdependency between people and natural systems, being able to identify patterns and systems within their communities, while also gathering evidence to argue points and solve problems. By using the environment as the context for learning, K-12 students gain real-world knowledge by asking questions and solving problems that directly affect them, their families, and their communities. This approach to K-12 education builds critical thinking skills and promotes inquiry, and is the foundation for all MWDOC education programs, initiatives, and activities.

MWDOC Choice School Programs have provided Orange County K-12 students water-focused learning experiences for nearly five (5) decades. Interactive, grade-specific lessons invite students to connect with, and learn from, their local ecosystems, guiding them to identify and solve local water-related environmental challenges affecting their communities. Choice School Programs are aligned with state standards, and participation includes a dynamic in-class or virtual presentation, and pre- and post-activities that encourage and support Science

Technology Engineering Arts and Mathematics (STEAM)-based learning and good water stewardship.

Water Energy Education Alliance (WEEA) is a coalition of education and water and energy industry professionals led by MWDOC that works together to build and bolster Career Technical Education programs (CTE) for southern California high school students. These CTEs focus on workforce pathways in the Energy, Environment, and Utility Sectors, and connections established through this powerful southern California alliance assist stakeholders as they thoughtfully step up their investment in the education and career success of California's future workforce.

MWDOC Water Awareness Poster Contest is an annual activity developed to encourage Orange County's K-12 students to investigate and explore their relationship to water, connect the importance of good water stewardship to their daily lives, and express their conclusions creatively through art. Each year, MWDOC receives hundreds of entries, and 40 winners from across Orange County are invited to attend a special awards ceremony with their parents and teachers, and Ricky the Rambunctious Raindrop.

Boy Scouts Soil and Water Conservation Merit Badge and Girl Scouts Water Resources and Conservation Patch Programs guide Orange County Scouts on a learning adventure of where their water comes from, the importance of Orange County water resources, and how to be water efficient. These STEAM-based clinics are hosted by MWDOC and include interactive learning stations, hands-on activities, and a guided tour of an Orange County water source, water treatment facility, or ecological reserve



Figure 1-3: Left to Right - MWDOC Choice School Program Assembly | Girl Scouts Water Resources and Conservation Patch Clinic - Soil and Water Testing | Boy Scouts Soil and Water Conservation Merit Badge Clinic - Tour of a Water Treatment Plant

Partnerships are an integral part of achieving water-related goals that impact all Orange County water users. MWDOC's partner list is extensive, and acts as a collective catalyst for all those involved to grow and prosper. Some of the District's most recognized partners include local, regional, state, and federal legislators, educators, water and energy industry leaders, environmental groups, media, and business associations all focused on the common goals of water education, water use efficiency, and advocacy on behalf of the region.



Figure 1-4: Left to Right - MWDOC/Wyland Public Service Announcement | California Next Generation Science Standards State Rollout – Panel Participation with Local and State Education Partners | Orange County Department of Education and Bioneers STEM Symposium – Co-Presentation with Metropolitan Water District of Southern California

1.5 Programs to Assess and Manage Distribution System Real Loss

With the sale of the Allen-McColloch Pipeline to Metropolitan in 1995, MWDOC no longer owns or operates a distribution system. Water purchased and sold by MWDOC is distributed directly from Metropolitan's system into the MWDOC retail agency systems. However, MWDOC does help member agencies evaluate and reduce their distribution systems' real and apparent losses through comprehensive Water Loss Control Programs.

In October 2015, the MWDOC Board of Directors authorized staff to begin implementing a Water Loss Control Technical Assistance Program (TAP) to support member agency compliance with Senate Bills 1420 and 555, both of which address distribution system Water Loss. The TAP program established a menu of technical assistance that water retailers can elect to participate in. These programs connect water retailers with industry experts who provide one on one technical assistance through data analysis, agency specific advising and assessment. The TAP services include:

- Water Balance Compilation
- Component Analysis of Real and Apparent Losses
- Source/Production Meter Accuracy Testing
- Billing Data Chain Assessment
- Internal Water Loss Committee Planning

MWDOC's Water Loss Control TAP has a very positive impact on building knowledge of water loss recovery strategies by all retail water agencies in the County and implementation of those strategies. To date MWDOC has hosted 30 Water Loss Work Group Meetings with approximately 35 agency representatives' attending each meeting. A total of 137 Annual Water Balances have been compiled and validated over the last five years, vastly improving water agency understanding of volumes of real and apparent losses, strategies to recovery losses and value of losses.

Because the OC area retailers were so receptive to the TAP, MWDOC began to consider other services that would assist in controlling water loss. MWDOC sent out a survey to OC retailers in 2018 to collect information on what services were most needed and would be the most beneficial. In 2019, the MWDOC Board authorized the implementation of a Water Loss Control Shared Services Business Plan (Business Plan) based on the needs outlined in the survey and the direction of the Water Loss Control Performance Standards currently in development.

The following are guiding tenets of MWDOC's Water Loss Control Shared Services:

- Offer shared services at a competitive or lower cost than the same services provided by the private sector
- Provide quality shared services on par with or better than the same services provided by the private sector
- Realize economies of scale for these services by providing services at a regional level that cannot be justified at many local levels
- Continue collaboration and shared learning among all agencies throughout this process
- Phase implementation of new shared services over time, starting with the services that have the highest level of interest or demand by water agencies
- Integrate program administration and data management to share results and customize program offerings to the unique conditions of each member agency

The Business plan included hiring specialized MWDOC staff to provide services directly to retail water suppliers in OC. These services include:

- Water Balance Validation
- Customer Meter Accuracy Testing
- Distribution System Pressure Surveys
- Distribution System Leak Detection
- Suspected Leak Investigations
- No Discharge Distribution System Flushing

Since the start of the shared services program in August 2019, more than 780 miles of distribution system leak detection has been completed which resulted in discovery of 373 hidden leaks that have been repaired or are in the process of being repaired. These leak repairs result in recovering more than 84.5 million gallons of water valued at more than \$300,000 per year. A total of 1,439 water meter accuracy tests have been completed by 6 agencies improving agency knowledge of meter performance and accuracy of water balance results. A total of thirty-two sites have been monitored during pressure surveys for three agencies that were used to calculate average system pressure, calibrate hydraulic models and investigate pressure anomalies. And lastly, 12 miles of distribution system mains have been flushed resulting in improved water quality for consumers and recovery of 176,200 gallons of water that was filtered and returned to the distribution system for beneficial use.

1.6 Water Conservation Program Coordination and Staffing Support

MWDOC's Water Use Efficiency Department is comprised of five (5) full time equivalent (FTE) positions and three (3) student intern positions. Heading the department is the Water Use Efficiency (WUE) Director. Beneath him on the department organizational chart are Water Use Efficiency Supervisor, Senior Water Use Efficiency Analyst, Water Use Efficiency Analyst II, and Water Use Efficiency Analyst I. The department also employs three part-time student interns who function in a support role to the full time staff. The department works together in a collaborative nature, assisting one another in the implementation of the many Water Use Efficiency Programs.

MWDOC's WUE Department has a rich history of writing successful grant proposal from both State and Federal sources. State granting agencies include the SWRCB, DWR, and Natural Resource Conservation

Service (NRCS); most state funding is procured through IRWM processes. Federal granting agencies include the United States Bureau of Reclamation (USBR). Local Funding is also a core component of MWDOC's WUE programs. This funding comes from two sources: Metropolitan Water District of Southern California and MWDOC's retail water agencies. MWDOC, as a regional wholesaler of imported water, is one of Metropolitan's member agencies, and through water rates paid to Metropolitan, MWDOC recoups funding for water efficiency programs through Metropolitan's Conservation Credits program. Metropolitan establishes a bi-yearly funding budget for both WUE programs and devices, and MWDOC, in turn, establishes its own WUE programs using Conservation Credit funds. MWDOC assists Orange County retail agencies by implementing an array of regional and local water use efficiency programs and projects. All retail agencies elect to participate in the MWDOC programs and several provide funding of their own for select devices or services.


MWDOC's WUE department has a long standing practice of conducting regular investigations of program effectiveness via statistical program process and impact evaluations. The process evaluations are utilized to ensure administrative quality control and ease of access to consumers. An adaptive management approach is taken to implement efficiency practices or to correct for identified process deficiencies. The impact evaluations utilize robust statistical methodologies to measure the actual water saving achieved in comparison to the expected industry water savings estimates. Results from impact evaluations have provided insight relating to those devices and programs that yield the best water savings in relationship to program administrative effort, cost effectiveness, and appropriate rebate levels.

1.6.1 Residential Conservation Implementation (non-landscape)

MWDOC assists its retail water agencies to implement residential DMMs by making available the following programs aimed at increasing landscape and indoor water use efficiency for residential customers. MWDOC has implemented successful water use efficiency programs for residential customers for over 30 years. This began with our highly successful Ultra-Low-Flush Toilet Rebate Program, continued on through the High Efficiency Washer Program, and now continues with the High Efficiency Toilet Programs and more.


High Efficiency Clothes Washer Rebate Program

The High Efficiency Clothes Washer (HECW) Rebate Program provides residential customers with rebates for purchasing and installing HECWs that. Approximately 15% of home water use goes towards laundry, and HECWs use 35-50 percent less water than standard washer models, with savings of approximately 10,500 gallons per year, per device. Devices must meet or exceed the Consortium for Energy Efficiency (CEE) Tier 1 Standard, and a listing of qualified products can be found at ocwatersmart.com. There is a maximum of one rebate per home. Since 2011, MWDOC has facilitated the installation of over 122,000 high efficiency clothes washers saving over 4,220 AFY. Funding for this rebate comes from Metropolitan and Orange County retailers.

 <p>High Efficiency Clothes Washers</p>	<p><u>Standard Incentive:</u> \$85 per washer</p> <p><u>Enhanced Incentive:</u> up to \$285</p> <p><u>Per Unit Savings:</u></p> <p>29 gallons per day (GPD)</p> <p>14 year useful life</p> <p>.46 AF lifetime savings</p> <p><u>Cost per AF:</u> \$185 with base rebate; \$621 with enhanced rebate</p>
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Premium High Efficiency Toilet Rebate Program

The largest amount of water used inside a home, 30 percent, goes toward flushing the toilet. The Premium High Efficiency Toilet (HET) Rebate Program offers incentives to residential customers for replacing their toilets using 1.6 gallons per flush or more. Premium HETs use just 1.1 gallons of water or less per flush, which is 20 percent less water than WaterSense standard toilets. In addition, Premium HETs save an average of 9 gallons of water per day while maintaining high performance standards. Since 2005, MWDOC has facilitated the installation of over 60,000 high efficiency toilets saving more than 2,240 AFY. Funding for this rebate comes from Metropolitan and Orange County retailers.

 <p>Premium High Efficiency Toilets</p>	<p><u>Standard Incentive:</u> \$40 per toilet</p> <p><u>Enhanced Incentive:</u> up to \$100 per toilet</p> <p><u>Per Unit Savings:</u></p> <p>9 GPD</p> <p>20 year useful life</p> <p>.21 AF lifetime savings</p> <p><u>Cost per AF:</u> \$190 per AF</p>
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Pressure Regulating Valve Pilot Program

The Pressure Regulating Valve (PRV) Pilot Program seeks to test and replace broken residential PRVs. A PRV is a plumbing device typically installed on the intake pipe between the street and the front hose bib in homes in high pressure zones and is used to moderate high water pressure coming into the home. A failed PRV allows water to enter a home at a higher rate may increase the rate of leaks and cause appliances and fixtures to use more water when operated. This pilot will be used to determine the potential water savings associated with replacing failed PRVs. To date 135 PRVs have been assessed. Funding for this pilot comes from Metropolitan and DWR.

 <p>Pressure Regulation Valve Pilot Program</p>	<p><u>Standard Incentive:</u> Test & Replacement free to public</p> <p><u>Enhanced Incentive:</u> none</p> <p><u>Per Unit Savings:</u> To be determined by Pilot Study</p> <p>20 year useful life</p> <p>.21 AF lifetime savings</p> <p><u>Cost per AF:</u> \$190 per AF</p>
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1.6.2 Conservation Programs for Commercial, Industrial and Institutional Accounts (non-landscape)

MWDOC provides a variety of financial incentives to help Orange County businesses, restaurants, institutions, hotels, hospitals, industrial facilities, and public sector sites achieve their efficiency goals. Water users in these sectors have options to choose from a standardized list of water efficient equipment/devices or may complete customized projects through a pay-for-performance where the incentive is proportional to the amount of water saved. Such projects include high efficiency commercial equipment installation and manufacturing process improvements.

Water Savings Incentive Program

The Water Savings Incentive Program (WSIP) is designed for non-residential customers to improve their water efficiency through upgraded equipment or services that do not qualify for standard rebates. WSIP is unique because it provides an incentive based on the amount of water customers actually save. This “pay-for-performance” design lets customers implement custom projects for their sites.

Projects must save at least 10 million gallons of water to qualify for the Program and are offered from \$195 to \$390 per acre foot of water saved. Examples of successfully projects include but are not limited to changing industrial process system water, capturing condensation and using it to supplement cooling tower supply, and replacing water-using equipment with more efficient products. Thirty-eight customized water efficiency improvements have been completed since 2008 saving more than 1,280 AFY. This Program is funded by Metropolitan and supplemental funding is provided by DWR, Orange County retailers and US Bureau of Reclamation.

On-site Retrofit Program

The On-site Retrofit Program provides another pay-for-performance financial incentive to commercial, industrial and institutional property owners, including Homeowner Associations, who convert potable water irrigation or industrial water systems to recycled water use.

Projects commonly include the conversion of mixed or dedicated irrigation meters using potable water to irrigate with reclaimed water, or convert industrial processes use to recycled water, such as a cooling towers. Financial incentives of up to \$1,300 per AF of potable water saved are available for customer-side on the meter retrofits. Funding is provided by Metropolitan, USBR, and DWR. Since 2015, 166 projects have been completed saving 3,489 AFY.

Multi-Family Premium High Efficiency Toilet Incentive Program


MWDOC makes an effort to reach all water-users in Orange County. For the Multi-Family Premium High Efficiency Toilet Rebate Program, MWDOC targets multi-family buildings in both disadvantaged communities (DAC) and non-DAC communities, in addition to targeting all commercial buildings, and single-family residential homes through Premium HET device rebates.


MWDOC offers the DAC Multi-Family HET Program, a special version of the High Efficiency Toilet Program, to ensure regardless of economic status all water-users in Orange County can benefit from the rebate. This Program targets 3.5 gallon per flush (gpf) or greater toilets to replace them with WaterSense Labeled 1.1 gpf or less. For this purpose, DAC are referenced as communities facing economic hardship. This is defined using criteria established by DWR and the County of Orange, which includes communities where the median household income (MHI) is less than 85% of the Orange County MHI.

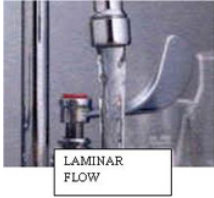

The DAC Multi-Family Program is contractor-driven, where a contractor works with building owners to replace all of the toilets in the building(s). To avoid any cost to tenants, the rebate is \$200 per toilet paid to the contractor, essentially covering the contractor's cost; therefore, there is little to no charge to the building owners that may be passed through to tenants. This process was formed after consulting contractors and multi-family building owners in Orange County. To serve those in multi-family buildings outside of designated DAC locations, MWDOC offers \$75 per toilet through the same contractor-driven format. An additional option is available through SoCalWater\$mart, which offers up to \$250 per toilet to multi-family buildings that were built before 1994, therefore targeting buildings built before legislation required low-flow plumbing fixtures in new construction.

Device Retrofits

MWDOC offers additional financial incentives under the SoCal Water\$mart Rebate Program which offers rebates for various water efficient devices to CII customers. Core funding is provided by Metropolitan and supplemental funding is sourced from MWDOC via grant funds and/or retail water agencies.

 <p>Ultra Low Water / Zero Water Urinals</p>	<p><u>Standard Incentive:</u> \$200 Enhanced Incentive: up to \$310 <u>Per Unit Savings:</u> 110 GPD 20 year useful life 2.45 AF lifetime savings <u>Cost per AF:</u> Standard Incentive: \$81–\$127 per AF</p>
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 <p>High Efficiency Toilet (HETs)</p>	<p><u>Standard Incentive:</u> \$40</p> <p><u>Enhanced Incentive:</u> up to \$150</p> <p><u>Per Unit Savings:</u></p> <p>9 GD</p> <p>20 year useful life</p> <p>0.21 lifetime savings</p> <p><u>Cost per AF:</u> \$190–\$750 per AF</p>
 <p>Connectionless Food Steamers (aka Boiler- less)</p>	<p><u>Standard Incentive:</u> \$485 per compartment</p> <p><u>Enhanced Incentive:</u> up to \$985</p> <p><u>Per Unit Savings:</u></p> <p>223 GPD</p> <p>10 year useful life</p> <p>2.5 AF lifetime savings</p> <p><u>Cost per AF:</u> \$194–\$394 per AF</p>
 <p>Air-Cooled Ice Machines</p>	<p><u>Standard Incentive:</u> \$300 per machine</p> <p><u>Enhanced Incentive:</u> Up to \$1,050</p> <p><u>Per Unit Savings:</u></p> <p>137 GPD</p> <p>10 year useful life</p> <p>1.54 AF lifetime savings</p> <p><u>Cost per AF:</u> \$195–\$682 per AF</p>
 <p>Standard Cooling Tower Conductivity Controller</p>	<p><u>Standard Incentive:</u> \$625 per controller</p> <p><u>Enhanced Incentive:</u> up to \$1,325</p> <p><u>Per Unit Savings:</u></p> <p>575 GPD</p> <p>5 year useful life</p> <p>3.22 AF lifetime savings</p> <p><u>Cost per AF:</u> \$195–\$411 per AF</p>
 <p>pH-Cooling Tower Controller</p>	<p><u>Standard Incentive:</u> \$1,750 per controller</p> <p><u>Enhanced Incentive:</u> up to \$2,750</p> <p><u>Per Unit Savings:</u></p> <p>1,735 GPD</p> <p>5 year useful life</p> <p>9.72 AF lifetime savings</p> <p><u>Cost per AF:</u> \$180–\$283 per AF</p>

 <p>Laminar Flow Restrictors</p>	<p><u>Incentive:</u> \$10 per restrictor</p> <p><u>Per Unit Savings:</u></p> <p>21 GPD</p> <p>5 year useful life</p> <p>0.115 AF lifetime savings</p> <p><u>Cost per AF:</u> \$86 per AF</p>
 <p>Dry Vacuum Pumps</p>	<p><u>Incentive:</u> \$125 per 0.5 Horse Power</p> <p><u>Per Unit Savings:</u></p> <p>82 GPD</p> <p>7 year useful life</p> <p>0.64 AF lifetime savings</p> <p><u>Cost per AF:</u> \$195 per AF</p>

1.6.3 Residential and CII Landscape Conservation Programs and Incentives

One of the most active and exciting water use efficiency sectors MWDOC provides services for are those programs that target the reduction of outdoor water use. With close to 60 percent of water consumed outdoors, this sector has been and will continue to be a focus for MWDOC. MWDOC has pioneered numerous landscape water use efficiency programs aimed at both residential, commercial, and public agency water users that takes a holistic, sustainable approach to saving water that produces additional benefits to the watershed. Such benefits include reductions in dry and wet weather runoff and associated non-point source pollution, energy savings, green-waste reductions, and increases in biomass and carbon sequestration.

Water Efficiency Programs


Turf Removal Program

The Orange County Turf Removal Program offers incentives to remove turf grass from residential, commercial, and public properties throughout the County. This program is a partnership between MWDOC, Metropolitan, and local retail water agencies. The goals of this program are to increase water use efficiency through sustainable landscaping practices that result in multi-benefit projects across Orange County. Participants replace their turf grass with drought-tolerant, CA Friendly, or CA Native landscaping, and retrofit their irrigation systems to high efficiency equipment, such as drip, or remove it entirely, and are encouraged to utilize smart irrigation timers. Furthermore, projects are required to include a stormwater capture feature, such as a rain garden or dry stream bed, and have a minimum of three plants per 100 square feet to increase plant density and promote healthy soils. These projects save water and also reduce dry and wet weather runoff, increase urban biomass, and sequester more carbon than turf landscapes. Examples of projects are listed in Figure 1-5 below. Through December 2020, Orange County residents and commercial properties removed 23.2 million square feet of turf,

resulting in approximately 3,245 AFY of water savings. This Program is funded by Metropolitan, DWR, USBR, and retail water agencies.



Figure 1-5: Examples of completed Turf Removal Projects as a residential home (left) and a City center median strip (right).

 <p>Turf Removal Program</p>	<p><u>Standard Residential & Commercial Incentive:</u> \$2 per ft²</p> <p><u>Enhanced Residential & Commercial Incentive:</u> up to \$4 per ft²</p> <p><u>Per Unit Residential & Commercial Savings:</u></p> <p>0.121 GPD per square foot</p> <p>10 year useful life</p> <p>0.001 AF lifetime savings per square foot</p> <p><u>Cost per AF:</u></p> <p>Residential \$1,538–\$3,077per AF</p>
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Landscape Design and Maintenance Plan Assistance Programs

To maximize the water efficiency and quality of Orange County's Turf Removal Program Projects, MWDOC offers free landscape designs and free landscape maintenance plans to participating residential customers. The Landscape Design Assistance Program is offered at the beginning stages of their turf removal project so that customers may receive a customized, professionally designed landscape to replace their turf. Landscape designs include plant selection, layout, irrigation plans, and a stormwater capture feature. These designs help ensure climate appropriate plants are chosen and planted by hydrozone, that appropriate high efficiency irrigation is properly utilized, that water savings are maximized as a result of the transformation. An example design is shown in Figure 1-6. Additionally, generic designs are available for free on MWDOC's website as an additional landscape resources. The Landscape Maintenance Assistance Plan provides a post-installation care plan to help ensure that the new landscape is properly cared for and is not overwatered. Approximately 375 participants have

received customized Design templates and 87 participants have received customized maintenance plans.

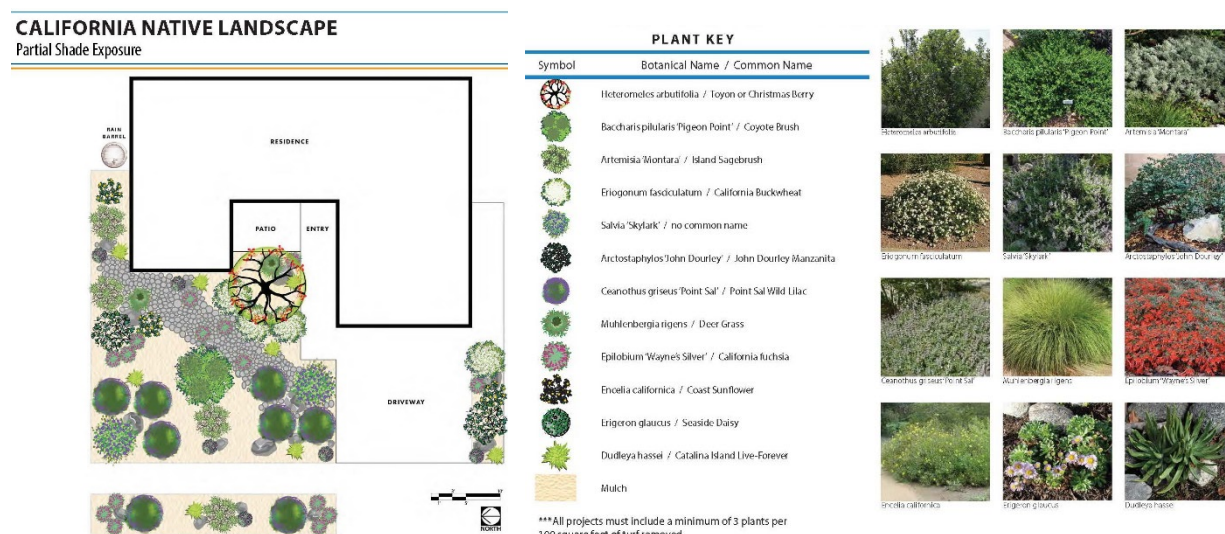


Figure 1-6: Examples of completed Turf Removal Projects as a residential home (left) and a City center median strip (right).


Spray-to-Drip Rebate Program

The Spray to Drip Rebate Program offers residential, commercial, and public agency customers rebates for converting areas irrigated by traditional high-precipitation rate spray heads to low-precipitation rate drip irrigation. Drip irrigation systems are extremely water-efficient. Rather than spraying wide areas subject to wind drift, overspray and runoff, drip systems use point emitters to deliver water to specific locations at or near plant root zones. Water drips slowly from the emitters either onto the soil surface or below ground. As a result, less water is lost to wind, evaporation, and overspray, saving water and reducing irrigation runoff and non-point source pollution.

MWDOC pioneered drip conversion programs with the start of the Spray to Drip Pilot Program in 2012. In 2017, MWDOC evaluated its Spray-to-Drip Pilot Program through a processes and impact evaluation. Over 70% of survey participants reported observed water savings and positive impacts to their landscape since completing their project. The statistical impact analysis found that the average residential project saved over 31,000 gallons saved per site annually and 44 gallons per year to square foot of irrigated area converted. Commercial projects, on average, saved more than 4 million gallons per site annually and 35 gallons per year per square foot. Based on the positive pilot program results, MWDOC has continued to offer the successful Spray-to-Drip Program to Orange County and through December 2020 has converted 1.1 million square feet of inefficiently irrigated landscapes to drip irrigation saving approximately 132 AFY. Based on MWDOC's positive results, drip conversion programs are now becoming an industry standard landscape rebate with quantifiable and reliable water savings. See Figure 1-7 for projects installing dripline before being covered with mulch. Funding for this Program is provided by Metropolitan, DWR, USBR, and Orange County Retailers.



Figure 1-7: Examples of completed drip line installed through the Spray-to-Drip Program.

 <p>Spray-to-Drip Irrigation</p>	<p><u>Standard Residential Incentive:</u> \$0.25 per ft²</p> <p><u>Standard Commercial Incentive:</u> \$0.20 per ft²</p> <p><u>Enhanced Residential & Commercial Incentive:</u> up to \$0.70 per ft²</p> <p><u>Per Unit Residential Savings:</u></p> <p>0.121 GPD per square foot</p> <p>10 year useful life</p> <p>0.001 AF lifetime savings per square foot</p> <p><u>Per Unit Commercial Savings:</u></p> <p>0.095 GPD per square foot</p> <p>10 year useful life</p> <p>0.001 AF lifetime savings per station</p> <p><u>Cost per AF:</u></p> <p>Residential \$188–\$368 per AF</p> <p>Commercial \$195–\$470 per AF</p>
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Smart Timer Rebate Program

Smart Timers are irrigation clocks that are either weather-based irrigation controllers (WBIC) or soil moisture sensor systems. WBICs adjust the irrigation schedule automatically (usually daily) to reflect changes in local weather and site-specific landscape needs, such as sun exposure, soil type, slopes, and plant material, prompting turf and plants to receive the proper amount of water throughout the year. During the fall months, when property owners and landscape professionals often overwater, Smart Timers can save significant amounts of water. Soil moisture sensors determine the amount of water in the soil by way of sensors placed in the actual root zone of a given landscape area. This measurement of water is then relayed back to the controller and through the controller's programming, and the correct amount of water is then applied. MWDOC has been a pioneer of smart irrigation technology, which is

not an industry standard landscape program that is associated with quantifiable and reliable water savings. MWDOC has conducted and disseminated several water savings research studies of Smart Timer Programs over the last sixteen years. Water savings predictive ellipses based on MWDOC's numerous research studies are shown in Figure 1-8. This representation is useful to visualize the correlation between water savings in gallons per day and savings as a percent of the site's overall water use, and also the mean of residential and commercial studies. Since 2004, MWDOC has facilitated the installation of close to 30,000 timers saving over 9,000 AFY.

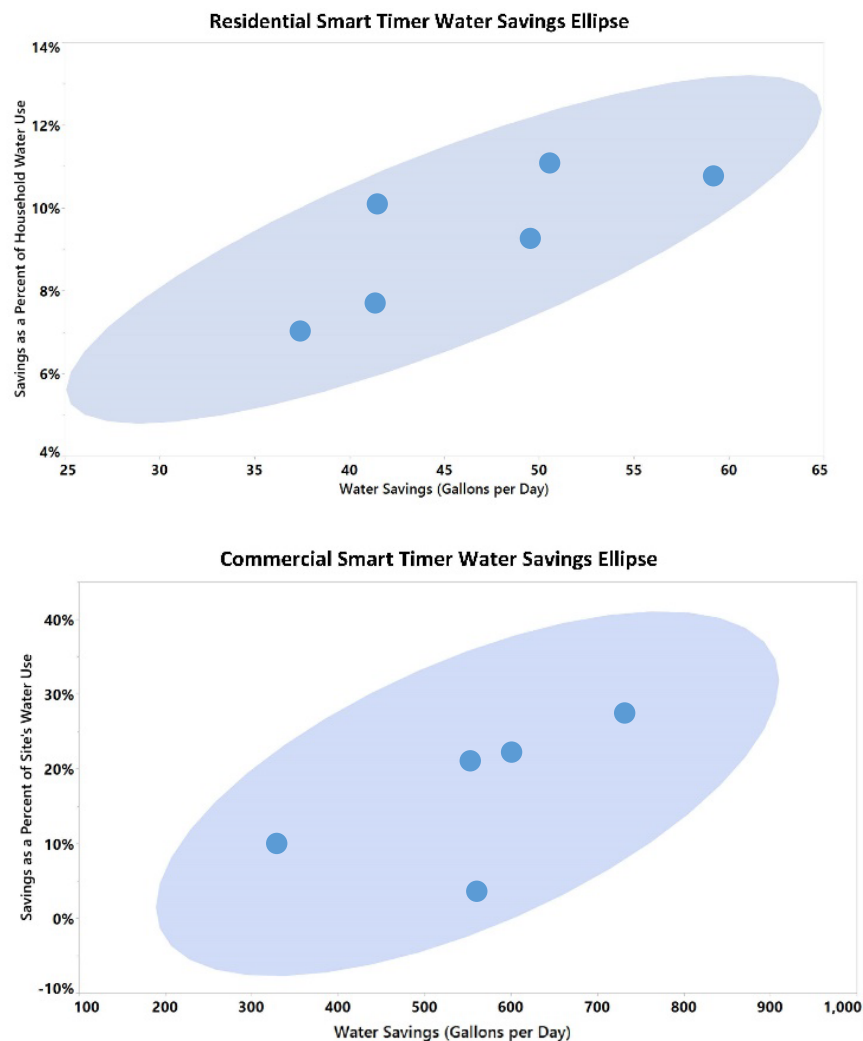




Figure 1-8: Water savings predictive ellipses based on MWDOC's smart irrigation timer research. Dark blue points represent results from MWDOC studies, the light blue ellipses represent the predicted location of a new observation, at 95% confidence.

 <p>Smart Controllers (Weather-Based Irrigation Controllers and Soil Moisture Sensor Systems)</p>	<p><u>Standard Residential Incentive:</u> \$80 per controller</p> <p><u>Enhanced Residential Incentive:</u> Up to \$330 per controller</p> <p><u>Standard Commercial Incentive:</u> \$35 per station</p> <p><u>Enhanced Commercial Incentive:</u> \$75 per station</p> <p><u>Per Unit Residential Savings:</u></p> <p>37 GPD</p> <p>10 year useful life</p> <p>0.41</p> <p><u>Per Unit Commercial Savings:</u></p> <p>16 GPD per station</p> <p>10 year useful life</p> <p>0.179 AF lifetime savings per station</p> <p><u>Cost per AF:</u></p> <p>Residential \$193–\$1,844 per AF</p> <p>Commercial \$195–\$419 per AF</p>
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Rotating Nozzles Rebate Program

The Rotating Nozzle Rebate Program provides incentives to residential and commercial properties for the replacement of high-precipitation rate spray nozzles with low-precipitation rate multi-stream, multi-trajectory rotating nozzles. The rebate offered through this Program aims to offset the cost of the device and installation. MWDOC has pioneered high efficiency rotating nozzle programs, which are now an industry standard landscape program associated with quantifiable and reliable water savings. Since 2007, MWDOC has facilitated the installation of over 570,000 high efficiency rotating nozzles, savings approximately 2,790 AFY. This Program is funded by Metropolitan and Orange County retailers.

 <p>High Efficiency Rotating Nozzles</p>	<p><u>Incentive:</u> \$2 per nozzle for residential, commercial</p> <p><u>Enhanced Incentive:</u> up to \$6 per nozzle for residential, commercial</p> <p><u>Per Unit Savings:</u></p> <p>2.36 GPD per nozzle</p> <p>5 year useful life</p> <p>0.013 AF lifetime savings</p> <p><u>Cost per AF:</u> \$152 per AF</p>
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Additional Device Retrofits

MWDOC also offers additional financial incentives under the SoCal Water\$mart Rebate Program for a variety of other water efficient landscape devices.

 <p>Central Computer Irrigation Controllers</p>	<p><u>Standard Incentive:</u> \$35 per station</p> <p><u>Per Unit Savings:</u></p> <p>Same as standalone smart controllers</p> <p>16 GPD per station</p> <p>10 year useful life</p> <p>0.179 AF lifetime savings per station</p> <p><u>Cost per AF:</u> \$196 per AF</p>
 <p>Large Rotary Nozzles</p>	<p><u>Standard Incentive:</u></p> <p>\$13 per set of two nozzles</p> <p><u>Per Unit Savings:</u></p> <p>16 GPD per set of two nozzles</p> <p>10 year useful life</p> <p>0.18 AF lifetime savings per set of two nozzles</p> <p><u>Cost per AF:</u> \$72 per AF.</p>
 <p>In-Stem Flow Regulators</p>	<p><u>Standard Incentive:</u></p> <p>\$1 per flow regulator</p> <p><u>Per Unit Savings:</u></p> <p>2.7 GPD per device</p> <p>5 year useful life</p> <p>0.015 AF lifetime savings per station</p> <p><u>Cost per AF:</u> \$67 per AF.</p>
 <p>Rain Barrels (50-99 gal.)</p> <p>Cisterns Small (200-500 gal.)</p> <p>Cistern Medium (501-999 gal.)</p> <p>Cistern Large (1,000+ gal.)</p>	<p><u>Standard Incentive:</u></p> <p>Rain Barrel: \$35 per barrel</p> <p>Cistern Small: \$250 per cistern</p> <p>Cistern Medium: \$300 per cistern</p> <p>Cistern Large: \$350 per cistern</p> <p><u>Enhanced Incentive:</u></p> <p>Rain Barrel: \$75 per barrel</p> <p><u>Per Unit Rain Barrel Savings:</u></p> <p>1.7 GPD per barrel</p> <p>10 year useful life</p> <p>0.010 AF Saved</p>

	<u>Per Unit Cistern Small Savings:</u> 6.8 GPD per cistern 10 year useful life 0.076 AF Saved <u>Per Unit Cistern Medium Savings:</u> 8.4 GPD per cistern 10 year useful life 0.094 AF saved <u>Per Unit Cistern Large Savings:</u> 9.6 GPD per cistern 10 year useful life 0.108 AF Saved <u>Cost Per AF:</u> Rain Barrel: \$1,837-\$3,947 Cistern Small: \$3,289 Cistern Medium: \$3,191 Cistern Large: \$3,241
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Water Efficiency Landscape Classes, Certifications, and Resources

Landscape Training Classes

The California Friendly and Native Landscape Training and the Turf Removal and Garden Transformation Workshop provide education to residential homeowners, property managers, and professional landscape contractors on a variety of landscape water efficiency practices that they can employ and use to help design a beautiful garden using California Friendly and native plant landscaping principles. The California Friendly and Native Landscape Class demonstrates how to: implement storm water capture features in the landscape; create a living soil sponge that holds water; treat rainwater by a resource; select and arrange plants to maximize biodiversity and minimize water use; and control irrigation to minimize water waste, runoff and non-point source pollution.

The Turf Removal and Garden Transformation Workshop teaches participants how to transform thirsty turfgrass into a beautiful, climate-appropriate water efficient garden. This class teaches how to: evaluate the landscape's potential; plan for garden transformation; identify the type of turfgrass in the yard; remove grass without chemicals; build healthy, living soils; select climate-appropriate plants that minimize water use and maximize beauty and biodiversity; and implement a maintenance schedule to maintain the garden.

Qualified Water Efficient Landscape Certification (Commercial)

Since 2018, the Municipal Water District of Orange County (MWDOC), along with participating MWDOC member agencies, has offered free Qualified Water Efficient Landscaper (QWEL) certification classes designed for landscape professionals. Classes are open to any city staff, professional landscaper, water district employee, or maintenance personnel that would like to become a Qualified Water Efficient Landscaper. The QWEL certification program provides 20 hours of instruction on water efficient areas of

expertise such as local water supply, sustainable landscaping, soil types, irrigation systems and maintenance, as well as irrigation controller scheduling and programming. QWEL has received recognition from EPA WaterSense for continued promotion of water use efficiency. To earn the QWEL certification, class participants must demonstrate their ability to perform an irrigation audit as well as pass the QWEL exam. Successful graduates will be listed as a Certified Professional on the WaterSense website as well as on MWDOC's landscape resources page, to encourage Turf Removal participants or those making any landscape improvements to hire a QWEL certified professional.

Started in December 2020, a hybrid version of QWEL is available in conjunction with the California Landscape Contractors Association's Water Management Certification Program. This joint effort allows landscape industry an opportunity to obtain two nationally recognized EPA WaterSense Professional Certifications with one course and one written test. This option is offered through Metropolitan Water District of Southern California.

OC Water Smart Gardens Resource Page

MWDOC's OC Water Smart Gardens webpage provides a surplus of helpful guides and fact sheets, as well as an interactive photo gallery of water-saving landscape ideas. The purpose of this resource is to help Orange County residents find a broad variety of solutions for their water efficient landscaping needs. This includes a detailed plant database with advanced to search features; photo and/or video-based garden tours; garden gallery with images organized into helpful landscape categories such as back yards, hillsides, full sun, and/or shade with detailed plant information; and the ability to select and store plants in a list that the user can print for use when shopping.

Additional technical resources are available such as a watering calculator calibrated for local evapotranspiration rates, and a garden resources section with fact sheets on sustainable landscape fundamentals, water and soil management, composting, solving run-off, and other appropriate topics. Web page is accessible through mwdoc.com and directly at www.ocwatersmartgardens.com.