MEETING OF THE BOARD OF DIRECTORS OF THE
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY
Jointly with the
PLANNING & OPERATIONS COMMITTEE
October 2, 2023, 8:30 a.m.

This meeting will be held in person at 18700 Ward Street, Fountain Valley, California, 92708 (Conference Room 101). As a convenience for the public, the meeting may also be accessed by Zoom Webinar and will be available by either computer or telephone audio as indicated below. Because this is an in-person meeting and the Zoom component is not required, but rather is being offered as a convenience, if there are any technical issues during the meeting, this meeting will continue and will not be suspended.
Computer Audio: You can join the Zoom meeting by clicking on the following link:
https://zoom.us/j/8828665300

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	(877) 853 5247 Toll-free
Webinar ID:	**882 866 5300#**

P&O Committee:
Director McVicker, Chair
Director Nederhood
Director Seckel

Staff: H.De La Torre, J. Berg, V. Osborn, T. Dubuque, D. Micalizzi, H. Baez, M. Baum-Haley, C. Busslinger, T. Baca

Ex Officio Member: Director Yoo Schneider

MWDOC Committee meetings are noticed and held as joint meetings of the Committee and the entire Board of Directors and all members of the Board of Directors may attend and participate in the discussion. Each Committee has designated Committee members, and other members of the Board are designated alternate committee members. If less than a quorum of the full Board is in attendance, the Board meeting will be adjourned for lack of a quorum and the meeting will proceed as a meeting of the Committee with those Committee members and alternate members in attendance acting as the Committee.

ROLL CALL

PUBLIC COMMENTS - Public comments on agenda items and items under the jurisdiction of the Committee should be made at this time.

ITEMS RECEIVED TOO LATE TO BE AGENDIZED - Determine there is a need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda. (Requires a unanimous vote of the Committee)

ITEMS DISTRIBUTED TO THE BOARD LESS THAN 72 HOURS PRIOR TO MEETING -- Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection in the lobby of the District's business office located at 18700 Ward Street, Fountain Valley, California 92708, during regular business hours. When practical, these public records will also be made available on the District's Internet Web site, accessible at http://www.mwdoc.com.

ACTION ITEMS

1. LETTER OF INTENT – WEROC EMERGENCY OPERATIONS CENTER

DISCUSSION ITEM

2. MWDOC LEGISLATIVE POLICY PRINCIPLES ANNUAL UPDATE

3. INFORMATION REGARDING RECENT ORANGE COUNTY NITRIFICATION EVENT

4. WATER USE EFFICIENCY POTENTIAL AND OPPORTUNITIES STUDY RESULTS

INFORMATION ITEMS (The following items are for informational purposes only – background information is included in the packet. Discussion is not necessary unless requested by a Director.)

5. 2023 OC WATER SUMMIT UPDATE

6. PUBLIC AFFAIRS HIGHLIGHTS

7. MWDOC K-12 CHOICE SCHOOL PROGRAMS UPDATE

8. DEPARTMENT ACTIVITIES REPORTS
   a. Ongoing MWDOC Reliability and Engineering/Planning Projects
   b. WEROC
   c. Water Use Efficiency Projects
   d. Public and Government Affairs

9. REVIEW OF ISSUES RELATED TO PLANNING OR ENGINEERING PROJECTS, WEROC, WATER USE EFFICIENCY, FACILITY AND EQUIPMENT MAINTENANCE, WATER STORAGE, WATER QUALITY, CONJUNCTIVE USE PROGRAMS, EDUCATION, PUBLIC AFFAIRS PROGRAMS AND EVENTS, PUBLIC INFORMATION PROJECTS, PUBLIC INFORMATION CONSULTANTS, DISTRICT FACILITIES, and MEMBER-AGENCY RELATIONS

ADJOURNMENT

NOTE: At the discretion of the Committee, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated, and may be subject to action by the Committee. On those items designated for Board action, the Committee reviews the items and makes a recommendation for final action to the full Board of Directors; final action will be taken by the Board of Directors. Agendas for Committee and Board meetings may be obtained from the District Secretary. Members of the public are advised that the Board consideration process includes consideration of each agenda item by one or more Committees indicated on the Board Action Sheet. Attendance at Committee meetings and the Board meeting considering an item consequently is advised.

Accommodations for the Disabled. Any person may make a request for a disability-related modification or accommodation needed for that person to be able to participate in the public meeting by telephoning Maribeth Goldsby, District Secretary, at (714) 963-3058, or writing to Municipal Water District of Orange County at P.O. Box 20895, Fountain Valley, CA 92728. Requests must specify the nature of the disability and the type of accommodation requested. A telephone number or other contact information should be included so that District staff may discuss appropriate arrangements. Persons requesting a disability-related accommodation should make the request with adequate time before the meeting for the District to provide the requested accommodation.

Item No. 1

ACTION ITEM
10/18/2023

TO: Board of Directors

FROM: **Planning & Operations Committee**
(Directors McVicker, Nederhood and Seckel)

Harvey De La Torre, Interim General Manager

Staff Contact: Vicki Osborn

SUBJECT: **Letter of Intent – WEROC Emergency Operations Center**

STAFF RECOMMENDATION

Staff recommends the Board of Directors approves Option #1 authorizing the Interim General Manager to enter into the agreement.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

Board action is required to approve a Letter of Intent with the Moulton Niguel Water District (MVWD) to develop a license agreement allowing for the use of MNWD facilities as a regional WEROC Emergency Operations Center (EOC).

MWDOC is responsible for the execution of the Water Emergency Response of Orange County (WEROC) to support the local water agencies in Orange County in preparation for and during emergencies impacting the water and wastewater systems. WEROC currently utilizes its headquarters facility in Fountain Valley as its primary EOC. For several years, WEROC has also utilized a facility at a nearby site owned by the El Toro Water District. However, that facility is no longer functional and WEROC has been exploring alternative options for a secondary EOC.

Budgeted (Y/N):	Budgeted amount:	Core __	Choice __
Action item amount:	Line item:		
Fiscal Impact (explain if unbudgeted):			

MNWD is in the process of preparing improvement plans for Building “E” located at the MNWD headquarters facility. Currently, it is being utilized primarily for equipment storage. The improvements anticipated in Building “E” will allow the facility to support MNWD operations more effectively. During emergencies, the MNWD building has established its multi-purpose room in Building “A” as its designated EOC. Which means, that during emergencies, Building “E” would be available for WEROC to utilize as an EOC should the need arise.

Discussion with MNWD:

MWDOC/WEROC Staff met with MNWD staff to discuss the potential for allowing WEROC to utilize Building “E” as an EOC through development of a license agreement.

This is also timely considering MNWD ongoing work to develop improvement plans for the site. Staff from both agencies developed the attached Letter of Intent that clarifies the goal of both agencies to develop a license agreement for future consideration by both agency Boards of Directors. Development of a license agreement would allow both agencies to articulate the terms of use for the EOC. MNWD staff believes that a license agreement for the use of Building “E” as an EOC for WEROC would provide mutual benefits to both the MNWD and WEROC. If the LOI is approved, MNWD staff will work with MWDOC/WEROC over the next 6 months to draft a license agreement. As such, staff is recommending the Board of Directors approve the Letter of Intent allowing the Interim General Manager to execute on behalf of the WEROC program.

Attachments
A – Letter of Intent
B – Map of MNWD

BOARD OPTIONS

Option #1: Approve the Letter of Intent with the Moulton Niguel Water District, subject to non-substantive changes approved by legal counsel and; authorize the General Manager to execute the Letter of Intent
Fiscal Impact: Approval of the Letter of Intent does not bind MWDOC to expending any funds for the development of the Emergency Operations Center.
Business Analysis: This option increases the capabilities pf the WRPC program to support its 36-member agencies in which the primary EOC in Fountain Valley is not available.

Option #2: Do not approve Letter of Intent
Fiscal Impact: None
Business Analysis: WEROC does not have a redundancy location in the event Fountain Valley is not available,

LETTER OF INTENT

THIS LETTER OF INTENT ("**LOI**"), is entered into as of this ____ day of September, 2023 by and between the Municipal Water District of Orange County, a public agency ("**MWDOC**") and the Moulton Niguel Water District, a public agency ("**MNWD**"). MWDOC and MNWD are sometimes individually referred to herein as **Party** and collectively as **Parties**.

I. PURPOSE

The Water Emergency Response Organization of Orange County ("**WEROC**"), is administered by MWDOC and supports and manages countywide emergency preparedness, planning, response, and recovery efforts among Orange County water and wastewater utilities. WEROC maintains Emergency Operations Centers ("EOC") that are used to coordinate emergency response operations during large scale disasters. Any and all rights and obligations of WEROC under this LOI shall be deemed to the rights and obligations of MWDOC.

The purpose of this LOI is to establish a non-binding mutual understanding as the Parties work collaboratively to develop a potential license agreement for the use of MNWD facilities for a WEROC EOC. The potential improvement to, and use of, MNWD facilities for establishment and operation of a WEROC EOC are collectively referred to herein as the "**Project**." This LOI is not a commitment to execute a license agreement by either Party or to otherwise proceed with the Project.

II. OVERVIEW OF THE POTENTIAL PROJECT

a. MNWD intends to make improvements to its Building "E" located at the MNWD Headquarters facilities at 26161 Gordon Road, Laguna Hills, CA 92653 ("**Building E"**) as further described in Exhibit "A" attached hereto and incorporated herein by reference.

b. Upon completion of the improvements, Building E would be used as a WEROC EOC during a state of emergency in order to respond to, and support, Orange County water agencies. MNWD would continue to own, operate, and maintain Building E in connection with MNWD's activities as a provider of water and wastewater services. A license agreement would set forth the priorities and procedures by which Building E would be used by both Parties for their respective activities.

c. Since MNWD's own emergency operations center is located in a separate building on the MNWD Headquarters property, Building E could be made available for use by WEROC as an EOC.

d. It is anticipated that MNWD would fund the improvements to Building E as part of MNWD's capital improvement program, which may include roof replacement, HVAC upgrades, and building entrance modifications.

e. MNWD would develop construction documents for Building E based on its operational needs as a water and wastewater provider. MNWD would then meet with MWDOC to review the plans and to consider, in its discretion, any additional or modified plans which MWDOC may request. MWDOC would fund any additional or modified improvements beyond the improvements planned and constructed by MNWD.

III. DEVELOPMENT OF A POTENTIAL LICENSE AGREEMENT

a. The Parties will work toward development of a license agreement to identify the terms and conditions for the use of Building E as a WEROC EOC and for ingress and egress to Building E on or through MNWD Headquarters. Key terms and conditions in the license agreement may include, but will not be limited to:

   i. License agreement term;

   ii. Access to and from Building E and MNWD Headquarters;

   iii. Terms for use of Building E;

   iv. Process for requests by MWDOC for future modifications or upgrades to Building E;

   v. Fees and charges to be imposed on MWDOC for use of, and access to, Building E and MNWD Headquarters; and

   vi. Other terms and conditions to be developed by the Parties.

b. The Parties will meet and work to finalize a license agreement for consideration by their respective governing bodies.

c. MNWD will continue to work with MWDOC to make facilities available for on-site training opportunities which may arise from time to time and which have been conducted prior to this LOI.

IV. TERM AND TERMINATION

a. The term shall begin upon the full execution of this LOI by both Parties ("Effective Date") and shall expire upon: (1) full execution of a license agreement by both Parties; or (2) the date which is one year from the Effective Date, whichever is sooner.

b. This LOI serves as a basis for the preparation of a potential license agreement and shall not constitute a formal binding agreement. Notwithstanding any other terms contained

in this LOI, either Party may unilaterally withdraw and terminate this LOI by giving written notice of such termination to the other Party unilaterally at any time.

By signing below, the undersigned represent that they are duly authorized to bind their respective Parties to this LOI.

MOULTON NIGUEL WATER DISTRICT

By: Date:

Joone Kim-Lopez
for Moulton Niguel Water District

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

By: Date:

Harvey De La Torre
for Municipal Water District of Orange County

Exhibit "A" Location Map

Item No. 2

DISCUSSION ITEM
October 2, 2023

TO: Board of Directors

FROM: **Planning and Operations Committee**
(Directors McVicker, Nederhood, and Seckel)

Harvey De La Torre
Interim General Manager

Staff Contact: Heather Baez

SUBJECT: **MWDOC LEGISLATIVE POLICY PRINCIPLES ANNUAL UPDATE**

STAFF RECOMMENDATION

Staff recommends the committee review and discuss the draft MWDOC legislative policy principles and provide feedback to staff on any suggested or requested updates.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

BACKGROUND

MWDOC maintains a set of legislative policy principles that serve as guidelines for staff and our legislative advocates on issues that are of importance to the District. These policy principles represent a culmination of policies developed and refined over many years, receiving input from the Board, MWDOC staff, and our member agencies.

At the September P&O Committee, there was discussion about the purpose as well as the intended and practical use of the legislative and regulatory policy principles. It was suggested that staff work with the Board to refine and streamline the policies to directly reflect the District's mission.

To ensure that the member agencies were able to provide feedback on the policy principles annual update, their input was solicited as well. Two agencies, Mesa Water District and

Budgeted (Y/N): n/a	Budgeted amount: n/a	Core X	Choice __
Action item amount: n/a	Line item:		
Fiscal Impact (explain if unbudgeted):			

Santa Margarita Water District provided redline edits to the 2023 policies and are attached for your review.

REPORT

After receiving direction from the Board, staff worked with Director Crane, who expressed interest in reviewing the policies, with an intent of streamlining and simplifying them. As a result, the following was recommended for the Committee's review:

Revision of the MWDOC Policy Principles for 2024:

- MWDOC's Legislative and Regulatory Policy Principles aim to guide the Government Affairs Department (GA) when assessing and influencing legislative and regulatory proposals. While reviewed and refined annually, they are possibly less than utilitarian in their present form. The document is long, oddly specific in places, somewhat more historical rather than contemporary in others, and often arguably irrelevant to our mission. It is also overly time consuming to read, use, and update.

- One result is rather than use the adopted legislative policy principles to guide GA in influencing and advising as intended, the current practice is for GA to bring all significant legislative and regulatory discussions directly to the Board for review and action. The adopted legislative policy principles are rarely used in place of active Board input and direction.

- The practice of openly addressing such matters has many advantages. These include improved communication and transparency with MWDOC member agencies, and keeping the Board engaged regarding pressing policy debates and official District legislative positions. It is not expected that less reliance on the current policy principles list would create workload issues for GA, as it is little used now. It might well do the opposite.

- Rather than invest more time revising the document annually, consider the following draft proposal to enhance our mission statement in the form of a few stronger, yet adaptable strategic guidelines. It is recommended that, should the Board adopt these streamlined legislative policy principles, it be done on a trial basis for one year. Next year, the Board can evaluate their value and determine if the updated policies and operating procedures therein should be used on an ongoing basis.

The focus of this month's discussion is for staff to receive input and direction from the committee on these revised draft policy principles (along with the input received from our member agencies) and advance them to the Board for adoption next month. The objective of discussion is to ensure that these recommended legislative and regulatory policy principles adequately and succinctly represent the District's mission.

Attached: **Proposed Streamlined Legislative Policy Principles**
Mesa Water District Proposed Updates
Santa Margarita Water District Proposed Updates

Municipal Water District of Orange County
Legislative and Regulatory Policy Principles

Our Policy Principles inform MWDOC's engagement on federal, state, and local legislative and regulatory activities. They expand on the key strategic areas of the District's mission statement.

1. Imported Water Supply

MWDOC supports policies to develop, protect and conserve imported water supplies and water quality for its member agencies from two primary sources - the Colorado River Aqueduct, and the California State Water Project.

2. Regional Water Resource Management

MWDOC collaborates with member agencies and Metropolitan Water District of Southern California to plan for future water supply demands and challenges via reliable, cost-effective, equitable, and sustainable policies and practices. These include supporting local and regional resource development, advancing water use efficiency, ensuring emergency preparedness capacity, and supporting ecosystem protection and restoration.

3. Resiliency, Adaptation, and Innovation

MWDOC supports robust and innovative policies to improve water system adaptation to the changing environmental landscape. The District strives to fulfill the demands of the current generation without environmentally or economically compromising the needs of future generations.

Municipal Water District of Orange County
Legislative and Regulatory Policy Principles

OVERALL POLICY

Legislation and regulations concerning water resource management should focus on high-level goals and defer to local water managers on matters of implementation, and in determining which options to conserve water and secure a reliable water supply best fit their district or region. Legislation and regulations should also respect private property rights and not attempt to dictate specific actions to conserve water to property owners.

IMPORTED WATER SUPPLY

It is MWDOC's policy to support legislation, regulations, and administrative actions that:

1) Implement a Sacramento-San Joaquin Delta Improvement program, such as the Delta Conveyance Project, ~~that~~ which addresses the co-equal goals of reliable water supply~~;~~, improved water quality, and ecosystem restoration, and related policies to provide a long-term, comprehensive solution~~s.~~ to:

a) Improve~~s~~ the reliability and quality of water delivered through the Delta;

b) Employ~~s~~ validated sound scientific research and evaluation;

c) Expedite~~s~~ the completion of the State Water Project and EcoRestore through the use of state, federal and user funding sources;

d) Encourage~~s~~ regular infrastructure maintenance and upkeep of the levees; and,

e) ~~Deals with the issue of~~Compensate for the loss of storage of water in the mountain areas in the form of snow.

2) Resolve supply conflicts on the Colorado River, protect~~s~~ Metropolitan's and California's rights to supply and storage, ~~and~~ allow~~s~~ flexibility, ~~promote~~ improve long term balance between supplies and demands, promote funding, ~~promote~~ further coordination between states for the salinity control program, and support funding to resolve issues with the Salton Sea.

3) Support~~s~~ the completion of the Central Valley Project (CVP), which may include the construction of conveyance facilities in the Sacramento-San Joaquin Bay Delta.

LOCAL WATER RESOURCES

It is MWDOC's policy to support legislation and regulation~~s~~ that:

1) Support~~s~~ the development of, provide~~s~~ funding for, and authorize~~s~~ and/or facilitate~~s~~ the development and expanded use of local water resources, such as cost-effective~~,~~ water recycling, potable reuse, conservation, water use effici~~ency, gr~~improved, oundwater recovery

and recharge, storage, brackish and ocean water desalination, and surface water development projects where water supply quality and/or reliability is improved and the beneficiaries of the project pay for the portions of the project not funded by state or federal funds.

2) Reduces and/or streamlines regulatory burdens. I, including those on augmented or alternative water supply projects, and provides protections for the use of these supplies during water supply shortages, through incentives, exemptions, or provisions of credit during state-mandated reductions.

3) Supports ecosystem restoration to improve the water resources, increased stormwater capture where the capture avoids impact to others, and advance sediment management activities that are cost-effective, and enhance the quality and/or reliability of water supplies.

4) Support the inclusion of environmental infrastructure projects which the Army Corps of Engineers must consider in its Report to Congress.

5) Recognizes that desalinated water, recycled water, and potable reuse are important components of water use efficiency and drought resiliency.

6) Promote science-based and peer-reviewed standards; , take economic feasibility and impact into consideration, respect existing water rights, include reasonable time for implementation and compliance, and, be subject to Legislative oversight and review biennially—.

7) Authorizes, promotes, and/or provides incentives for the development of extraordinary emergency water supplies for voluntary use by local water agencies during times of drought or water shortages.

WATER STORAGE

It is MWDOC's policy to support legislation and regulations that:

1) Supports the "beneficiaries pay" principle for water storage that to ensure full cost recovery at a minimum.

2) Supports the siting and construction of surface storage in Southern California, which is sited to receive either State Water Project (SWP) or Colorado River Aqueduct (CRA) supplies—.

3) Supports funding at the state and federal levels for surface and groundwater storage to deal with compensate for the loss of storage in the mountains in the form of snow, including reauthorization and expansion of the WIIN Water Storage Program, and bifurcation of Surface and Groundwater Storage Funding at the state and federal levels.

4) Supports the development of both a state and federal funding program to provide funding for local and regional dam safety/improvement projects and programs to repair conveyance facilities that have been damaged due to subsidence.

WATER USE EFFICIENCY AND DISTRIBUTION SYSTEM WATER LOSS

It is MWDOC's policy to support legislation and regulations that:

1) Further~~s~~ ~~increasing~~ reasonable water use efficiency in California~~, throughout the state~~, and water conservation for local, regional, or statewide emergencies.

2) Would allow flexibility and foster~~s~~ local and regional collaboration to develop and implement options for compliance in achieving statewide water ~~reduction~~ use efficiency goals. (Note: "reduction" sounds like decreasing the amount of water supplies)

3) Seek~~s~~ to cost-effectively improve water efficiency standards and policies for water-using devices such as, but not limited to, the EPA Water Sense Program and Cal Green Building Standards.

4) Reasonably improve~~s~~ Commercial, ~~Institutional~~Institutional, and Industrial (CII) water use efficiency programs while preserving community choice and the local economy.

5) Provide~~s~~ financially appropriate incentives, funding, and other assistance to facilitate market transformation and gain wider implementation of water-efficient indoor and outdoor technologies and practices.

6) Recognize~~s~~ and protect~~s~~ local control~~,~~ and ~~recognizes~~ past investments, and incentivize~~s~~ future investments by agencies and customers in water use efficiency measures, especially from the demand-hardening perspective, including ~~that, which~~support for decreasing~~es~~ non-beneficial outdoor water use.

7) Provide~~s~~ federal and state tax exemptions for water conservation or efficiency incentives for measures including, but not limited to, turf replacement, devices, and other measures to reduce consumption of water or enhance the absorption and infiltration capacity of the landscape.

It is MWDOC's policy to oppose legislation or regulations that:

2) ~~1)~~ Place unreasonable conservation measures on residential, commercial, industrial and institutional customers that would negatively impact water affordability, quality or reliability, water recycling, reuse or wastewater treatment processes and technology, ~~or limit the potential for~~ economic or academic activities, or the standard of living and quality of life ~~growth~~for residents.

2) Require water efficiency standards or performance measures that are infeasible, not practical, or fail to have a positive cost-benefit ratio when comparing the cost of meeting the standard or implementing the performance measure with the value of the volume of water saved.

WATER QUALITY AND ENVIRONMENTAL IMPACTS

It is MWDOC's policy to support:

1) Legislation that protects the quality of surface water and groundwater including salinity management and the reduction of salt-loading to groundwater basins.

2) The establishment and/or implementation of standards for water-borne contaminants based on sound science and with consideration ~~for~~ to cost-effectiveness.

3) A science-based regulatory process that has been established under the Safe Drinking Water Act and that considers feasibility, ~~benefits~~benefits, and cost, and is the best approach for any consideration and development of drinking water regulations to address any contaminant or family of contaminants, including per- and polyfluoroalkyl (PFAS).

4) The investment in the development of analytical methods to more reliably and accurately measure various contaminants, including PFAS, in drinking water.

5) Administrative/legislative actions to improve clarity and workability of CEQA, and eliminate other duplicative state processes.

6) Streamlining water, recycled and desalinated water, ~~wastewater ,~~wastewater, and/or environmental restoration projects, from the California Environmental Quality Act (CEQA).

7) Administrative, legislative, and/or regulatory actions that provide liability protections to public water districts, and related wholesale water providers, seeking to consolidate with or serve as the administrator for troubled water systems that cannot consistently demonstrate that they are able to provide safe~~, clean~~ and reliable water supplies to their customers.

8) State-funded groundwater basin contamination studies and associated economic or environmental impacts.

9) Efforts by the water industry to promote policies that enhance the pace and scale of headwaters and forest management, including improved planning, coordination~~,~~ and implementation~~;~~, and increased financing, research~~,~~ and resources to protect water supply and quality~~;~~, to bring management practices in line with modern challenges~~;~~ and provide multiple benefits to the State's water users.

10) The eradication and prevention of invasive species from becoming established in or around water supplies.

11) Legislation and/or regulations that enforce against cannabis growers' water theft and/or negative impacts to water quality.

It is MWDOC's policy to oppose:

1) Legislation or regulations that would mandate an unscientifically supported federal or state maximum contaminant level, or that would mandate an artificial deadline for promulgating a maximum contaminant level for drinking water~~.~~.

2) Legislation, regulations, or other ~~polic~~policies~~y~~ that would hold drinking water and wastewater facilities liable for PFAS contamination caused by third parties~~;~~, or that does not clearly state that the party directly responsible for the PFAS pollution is solely liable for the costs associated with the contamination cleanup.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

It is MWDOC's policy to oppose legislation or regulations that:

1) Compromise~~s~~ the existing governance structure and the representation of member agencies on the Metropolitan Water District Board of Directors.

2) Would restrict MET's rate-making ability.

WATER TRANSFERS

It is MWDOC's policy to support legislation and regulations that:

1) Encourages and facilitates voluntary water transfers, or streamlines the transfer approval process.

2) Provides appropriate protection or mitigation for impacts on the environment, aquifers, water-rights holders, and third-partiesthird parties to the transfer, including those with interests in the facilities being used.

It is MWDOC's policy to oppose legislation or regulations that:

1) Undermines the operations and maintenance of the conveyance system conveying the water.

2) Interferes with the financial integrity of a water utility, or compromises water quality and/or reliability.

WATER INFRASTRUCTURE FINANCING AND PROJECT FUNDING

It is MWDOC's policy to support legislation and regulations that:

1) Employs a "beneficiary pays" principle that establishes a clear nexus between the costs paid to the direct benefit received.

2) Reduces the cost of financing water infrastructure planning and construction, and establishes grants or other funding and finance opportunities.

3) Considers local investments made in infrastructure, programs, mitigationmitigation, and restoration
in determining appropriate cost-shares for water infrastructure, and project investments.

It is MWDOC's policy to oppose legislation or regulations that:

1) Establishes a fee or tax that does not result in a clear and proportional benefit to the District, its member agencies, and their customers.

2) Would reduce the total available water infrastructure financing measures such as WIFIA, state-revolving funds, and others.

ENERGY

It is MWDOC's policy to support legislation or regulations that:

1) Facilitates the development and expansion of clean, and cost-effective renewable energy in California, and recognizes hydroelectric power as a clean, renewable energy source and that its generation and use meets the greenhouse gas emission reduction compliance requirements called for in the Global Warming Solutions Act of 2006 (AB 32 and SB 100).

2) Facilitates voluntary and cost-effective local investments in renewable energy, energy management and storage, and energy efficiency which improve the water-energy nexus and reduce local agency costs.

3) Provides water agencies greater flexibility to run backup generators to support critical facilities during energy crises, de-energization, and PSPS events.

FISCAL POLICY

It is MWDOC's policy to support legislation or regulations that:

1) Allows retail water providers to voluntarily offer localized Water Rate Assistance Programs that comply with Proposition 218 of California's Constitution (Articles XIII C and XIII D) and/or that are funded either voluntarily or via non-restricted/non-water-rates revenues.

2) Supports Proposition 13 as embodied in Article XIII A of the California Constitution, and oppose the "split roll" efforts that would increase property taxes on businesses.

3) Changes how inverse condemnation liability is determined for water service providers in order to limit water agency liability for impacts of wildfire.

It is MWDOC's policy to oppose legislation or regulations that:

1) Is Are inconsistent with the District's current investment policies and practices.

2) Pre-empts the District's or its member agencies' ability to impose or change cost-of-service-based water rates, fees, or assessments, or requires them to submit their rates or charges to any state agency for approval.

3) Impairs the District or its member agencies' ability to maintain levels of reserve funds that they deem necessary and appropriate.

4) Makes any unilateral reallocation of District revenues, or those of its member agencies, by the state unless the state takes compensatory measures to restore those funds.

5) Mandates a specific rate structure for water agencies.

6) Imposes a "public goods charge" "water user fee", " or "water tax" on public water agencies or their ratepayers.

GOVERNANCE

It is MWDOC's policy to support legislation or regulations that:

1) Advance~~s~~ good government practices and public transparency measures in a manner that does not take a "one-size-fits-all" approach, respects local government control, and facilitates technological efficiencies to meet state reporting and disclosure requirements.

2) Support~~s~~ or facilitate~~s~~ responsible programs, procedures, and methods that promote collaboration, ~~transparency~~transparency, and open government~~.~~.

It is MWDOC's policy to oppose legislation or regulation~~s~~ that:

1) Impose~~s~~ unnecessarily broad burdens or new costs upon all local governments, or that mandate new unfunded operational practices which add cost burdens or time delays to work conducted by essential public utilities, absent a clear and necessary benefit.

2) Reduce~~s~~ or diminish~~es~~ the authority of the District to govern its affairs.

3) Resolve~~s~~ state budget shortfalls through shifts in the allocation of property tax revenue or through fees for which there is no direct nexus to benefits received.

PUBLIC EMPLOYEE PENSION REFORM

It is MWDOC's policy to support legislation that:

1) Seeks to contain public employee pension and other post-employment benefit (OPEB) cost obligations that are borne by public agencies via taxpayers and ratepayers.

EMERGENCY RESPONSE

It is MWDOC's policy to support legislation that:

1) Increases coordination on Homeland Security and emergency response efforts among the federal, state, and local governments with clearly defined roles and responsibilities for each~~.~~.

2) Provides continued funding to enhance and maintain local Homeland Security infrastructure, including physical and cyber protection of critical infrastructure~~.~~.

3) Ensures adequate funding for expenditures related to disaster response and all phases of emergency management~~;~~, including an Emergency Operations Center, the earthquake early notification system, and efforts to enhance water infrastructure resiliency.

4) Strengthens intergovernmental planning and preparation coordination for emergency response and drills.

5) Enhances protection of information and cyber security for critical infrastructure through policy and funding for local efforts.

6) Supports water utility capability to notify customers of emergency protective measures through mass notification systems.

7) Properly recognizes water agencies' role in emergency response to wildfires and other natural disasters, where water service is needed or may be impacted, because water and wastewater services are essential public utilities that ensure public health and safety.

Municipal Water District of Orange County
Legislative and Regulatory Policy Principles

OVERALL POLICY

Legislation and regulations concerning water resource management should focus on high-level goals and defer to local water managers on matters of implementation, and in determining which options to conserve water and secure a reliable water supply best fit their district or region. Legislation and regulations should also respect private property rights and not attempt to dictate specific actions to conserve water to property owners.

IMPORTED WATER SUPPLY

It is MWDOC's policy to support legislation, regulations, and administrative actions that:

1) Implement a Sacramento-San Joaquin Delta Improvement program, such as the Delta Conveyance Project that addresses the co-equal goals of reliable water supply, improve water quality, and ecosystem restoration, and related policies to provide long-term, comprehensive solutions.

a) Improves the reliability and quality of water delivered through the Delta;

b) Employs validated sound scientific research and evaluation;

c) Expedites the completion of the State Water Project (SWP) and EcoRestore through the use of state, federal and user funding sources;

d) Encourages regular infrastructure maintenance and upkeep of the levees;

e) Deals with the issue of loss of storage of water in the mountain areas in the form of snow.

2) Resolves supply conflicts on the Colorado River, in a manner to protects Metropolitan's and California's rights to supply and storage and allows flexibility, promote long term balance between supplies and demands, promote funding, promote coordination between the Colorado River states and the U.S Department of Interior – Bureau of Reclamation for the salinity control program, and support funding to resolve issues with the Salton Sea.

3) Supports the completion of the Central Valley Project (CVP), which may include the construction of conveyance facilities in the Sacramento-San Joaquin Bay Delta.

LOCAL WATER RESOURCES

It is MWDOC's policy to support legislation, and regulations, and administrative actions that:

Commented [AS1]: Should this include "and administrative actions" like above in imported water?

1) Supports the development of, provides funding for, and authorizes and/or facilitates the development and expanded use of local water resources, such as cost-effective~~,~~ water recycling, potable reuse, conservation, water ~~-~~use efficiency, groundwater recovery and recharge, storage, brackish and ocean water desalination, and surface water development projects where water supply quality and/or reliability is improved and the beneficiaries of the project pay for the portions of the project not funded by state or federal funds.

2) Reduces and/or streamlines regulatory burdens. Including those on augmented or alternative water supply projects and provides protections for the use of these supplies during water supply shortages, through incentives, exemptions or provisions of credit during state-mandated reductions.

3) Supports ecosystem restoration to improve the water resources, increased stormwater capture where the capture avoids impact to others, and sediment management activities that are cost-effective and enhance the quality and/or reliability of water supplies.

4) Supports the inclusion of environmental infrastructure projects the Army Corps of Engineers must consider in its Report to Congress.

5) Recognizes that desalinated water, recycled water, and potable reuse are important components of water ~~-~~use efficiency and drought resiliency.

6) Promotes science-based and peer-reviewed standards; take economic feasibility and impact into consideration, respect existing water rights, include reasonable time for implementation and compliance, and, be subject to Legislative oversight and review biennially.

7) Authorizes, promotes, and/or provides incentives for the development of extraordinary emergency water supplies for voluntary use by local water agencies during times of drought and/or water shortages.

8) Ensures federal and state endangered species regulations do not unduly delay or prevent a water supply.

9. Advocates for additional funding for Army Corps of Engineers Environmental Infrastructure to ensure projects proceed swiftly.

It is MWDOC's policy to oppose legislation, regulation, and administrative actions that:

4) Would infringe on the rights of water rights holders, remove due process, or increase water supply uncertainty

Commented [AS2]: This would be a good spot to also include "Ensure federal and state endangered species regulations do not unduly delay or prevent a water supply project

Commented [AS3]: Could also add here "Advocate for additional funding for Army Corps of Engineers Environmental Infrastructure account to ensure projects to proceed swiftly."

Commented [AS4]: Should this include "and administrative actions" like above in imported water?

WATER STORAGE

It is MWDOC's policy to support legislation, ~~and~~ regulation, and administrative actions that:

1) Supportss "beneficiaries pay" for water storage that ensure full cost recovery.

2) Supportss the siting and construction of surface storage in Southern California, which is sited to receive either State Water Project (SWP) or Colorado River Aqueduct (CRA) supplies.

3) ~~Supports funding at the state and federal level for surface and groundwater storage to deal with the loss of storage in the mountains in the form of snow,~~ Supports funding at the state and federal levels for surface and groundwater projects at levels adequate to properly address the loss of storage in the mountains and need for proper storage to prepare for periods of drought. ~~including~~ Further, seeks reauthorization and expansion of the WIIN Water Storage Program and bifurcation of Surface and Groundwater Storage Funding at the state and federal levels.

4) Support~~s~~ the development of both a state and federal funding program to provide funding for local and regional dam safety/improvement projects and programs to repair conveyance facilities that have been damaged due to subsidence.

WATER ~~-~~USE EFFICIENCY AND DISTRIBUTION SYSTEM WATER LOSS

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~It is MWDOC's policy to support legislation and regulation that:~~

1) Furthers increasing reasonable water use efficiency, throughout the state, and water conservation for local, regional, or statewide emergencies.

2) ~~Would a~~Allows flexibility and fosters local and regional collaboration to develop and implement options for compliance in achieving statewide water reduction goals.

3) Seeks to cost-effectively improve water efficiency standards and policies for water-using devices such as, but not limited to, the EPA Water Sense Program and Cal Green Building Standards.

4) Reasonably improves Commercial, Institutional and Industrial (CII) water ~~-~~use efficiency programs while preserving community choice and the local economy.

5) Provides financially appropriate incentives, funding, and other assistance to facilitate market transformation and gain wider implementation of water-efficient indoor and outdoor technologies and practices.

6) Recognizes and protects local control, and recognizes past investments, and incentivizes future investments by agencies and customers in water ~~-~~use efficiency measures, especially from the demand-hardening perspective including that, which decreases non-beneficial outdoor water use.

7) Provides federal and state tax exemptions for water conservation or efficiency incentives for measures including, but not limited to, turf replacement, devices, and other measures to reduce consumption of water or enhance the absorption and infiltration capacity of the landscape.

It is MWDOC's policy to oppose legislation, ~~or~~and regulations, and administrative actions that~~that:~~

1) Places unreasonable conservation measures on residential, commercial, industrial and institutional customers that would negatively impact water affordability and/or limit the potential for economic growth.

2) Requires water efficiency standards or performance measures that are infeasible~~, not practical~~ or fail to have a positive cost-benefit ratio when comparing the cost of meeting the standard or implementing the performance measure with the value of the volume of water saved.

WATER QUALITY AND ENVIRONMENTAL IMPACTS

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support:**~~

1) ~~Legislation that p~~Protects the quality of surface water and groundwater including salinity management and ~~the~~ reduction of salt-loading to groundwater basins.

2) ~~The e~~Establishes~~ment~~ and/or implements ~~ation of~~ standards for water-borne contaminants based on sound science and with consideration for cost-effectiveness.

3) Implements a ~~A~~ science-based regulatory process that has been established under the Safe Drinking Water Act and that considers feasibility, benefits and cost, and is the best approach for any consideration and development of drinking water regulations to address any contaminant or family of contaminants, including per- and polyfluoroalkyl (PFAS).

4) ~~The i~~Invest~~ment~~ in the development of analytical methods to more reliably and accurately measure and treat various contaminants, including PFAS, in drinking water.

5) Implements ~~A~~administrative/legislative actions to improve clarity and workability of CEQA, and eliminate other duplicative state processes.

6) Streamlines~~ing~~ water, recycled and desalinated water, wastewater , and/or environmental restoration projects, from the California Environmental Quality Act (CEQA).

7) ~~Administrative, legislative and/or regulatory actions that~~ Pprovides liability protections to public water districts, and related wholesale water providers, seeking to consolidate with or serve as the administrator for troubled water systems that cannot consistently demonstrate that they are able to provide safe, clean and reliable water supplies to their customers.

8) Initiates State-funded groundwater basin contamination studies and associated economic or environmental impacts.

9) Supports ~~E~~efforst by the water industry to promote policies that enhance the pace and scale of headwaters and forest management, including improved planning, coordination, and implementation; increase financing, research, and resources to protect water supply and quality; bring management practices in line with modern challenges; and provide multiple benefits to the State's water users.

10) Supports ~~T~~the eradication and prevention of invasive species from becoming established in or around water supplies.

11) ~~Legislation and/or regulations that e~~Enforces against cannabis growers' water theft and/or negative impacts to water quality.

It is MWDOC's policy to oppose legislation, regulation, and administrative actions that:

Commented [AS5]: To be consistent with the other categories should this read: "It is MWDOC's policy to support legislation, regulations, and administrative actions that:"

Commented [AS6]: Could reiterate here the need to collaboratively address salinity on the Colorado River

Commented [AS7]: If updating the subheading this can be removed

Commented [AS8]: Although noted as an opposition action below, this would be a good spot to note Support for action that would protect water and wastewater districts from CERCLA liability related to PFAS and the contamination caused by others.

:

1) ~~Legislation or regulation that w~~Would mandate an unscientifically supported federal or state maximum contaminant level, or that would mandate an artificial deadline for promulgating a maximum contaminant level for drinking water.

2) ~~Legislation, regulation or other policy that w~~Would hold drinking water and wastewater facilities liable for PFAS contamination caused by third parties; or that does not clearly state that the party directly responsible for the PFAS pollution is solely liable for the costs associated with the contamination cleanup.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

It is MWDOC's policy to oppose legislation, ~~or~~and regulation, and administrative actions that:

1) Compromises the existing governance structure and the representation of member agencies on the Metropolitan Water District Board of Directors.

2) Would restrict ~~MET's~~Metropolitan's rate-making ability.

WATER TRANSFERS

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~It is MWDOC's policy to support legislation and regulation that:~~

1) Encourages and facilitates voluntary water transfers, or streamlines the transfer approval process.

2) Provides appropriate protection or mitigation for impacts on the environment, aquifers, water-rights holders, and third-parties to the transfer, including those with interests in the facilities being used.

It is MWDOC's policy to oppose legislation, ~~or~~and regulation, and administrative actions that:

1) Undermines the operations and maintenance of the conveyance system conveying the water.

2) Interferes with the financial integrity of a water utility, or compromises water quality and/or reliability.

WATER INFRASTRUCTURE FINANCING AND PROJECT FUNDING

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~It is MWDOC's policy to support legislation and regulation that:~~

1) Employs a "beneficiary pays" principle that establishes a clear nexus between the costs paid to the direct benefit received.

2) ~~2)~~ Reduces the cost of financing water infrastructure planning and construction, and establishes grants or other funding and finance opportunities.

~~2)~~3) Streamlines the state and federal grant application process to programs are swiftly implemented and funds deployed.

3) Considers local investments made in infrastructure, programs, mitigation and restoration in determining appropriate cost-shares for water infrastructure, and project investments.

It is MWDOC's policy to oppose legislation, ~~orand~~ regulation, and administrative actions that:

1) Establishes a fee or tax that does not result in a clear and proportional benefit to the District, its member agencies, and their customers.

2) Would reduce the total available water infrastructure financing measures such as WIFIA, state-revolving funds, and others.

3) ~~Federal legislation and regulation that w~~Would restrict and/or delay existing and infrastructure under development with implementation that dissuades the use of federal grant programs.

Commented [AS9]: Such as the new build America, buy America rules

ENERGY

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support legislation orand regulation that:**~~

1) Facilitates the development and expansion of clean, and cost-effective renewable energy in California, and recognizes hydroelectric power as a clean, renewable energy source and that its generation and use meets the greenhouse gas emission reduction compliance requirements called for in the Global Warming Solutions Act of 2006 (AB 32 and SB 100).

2) Facilitates voluntary and cost-effective local investments in renewable energy, energy management and storage, and energy efficiency which improve the water-energy nexus and reduce local agency costs.

3) Provides water agencies greater flexibility to run backup generators to support critical facilities during energy crises, de-energization and PSPS events.

FISCAL POLICY

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support legislation orand regulation that:**~~

1) Allows retail water providers to voluntarily offer localized Water Rate Assistance Programs that comply with Proposition 218 of California's Constitution and/or are funded either voluntarily or via non-restricted/non-water-rates revenues.

2) Supports Proposition 13 as embodied in Article XIII A of the California Constitution, and oppose the "split roll" efforts that would increase property taxes on businesses.

3) Changes how inverse condemnation liability is determined for water service providers in order to limit water agency liability for impacts of wildfire.

It is MWDOC's policy to oppose legislation, ~~or~~and ~~r~~regulation, and administrative actions that:

1) ~~Is i~~I Are inconsistent with the District's current investment policies and practices.

2) Pre-empts the District's or its member agencies' ability to impose or change cost-of-service-based water rates, fees, or assessments, or requires them to submit their rates or charges to any state agency for approval.

3) Impairs the District or its member agencies' ability to maintain levels of reserve funds that they deem necessary and appropriate.

4) Makes any unilateral reallocation of District revenues, or those of its member agencies, by the state unless the state takes compensatory measures to restore those funds.

5) Mandates a specific rate structure for water agencies.

6) Imposes a "public goods charge" "water user fee", or "water tax" on public water agencies or their ratepayers.

7) Imposes barriers to obtain public financing support from voters for large infrastructure projects.

GOVERNANCE

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support legislation orand regulation that:**~~

1) Advances good government practices and public transparency measures in a manner that does not take a "one-size-fits-all" approach, respects local government control, and facilitates technological efficiencies to meet state reporting and disclosure requirements.

2) Supports or facilitates responsible programs, procedures, and methods that promote collaboration, transparency and open government.

It is MWDOC's policy to oppose legislation, ~~and~~or ~~r~~regulation, and administrative actions that:

1) Imposes unnecessarily broad burdens or new costs upon all local governments absent a clear and necessary benefit.

2) Reduces or diminishes the authority of the District to govern its affairs.

3) Resolves state budget shortfalls through shifts in the allocation of property tax revenue or through fees for which there is no direct nexus to benefits received.

PUBLIC EMPLOYEE PENSION REFORM

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support legislation that:**~~

1) Seeks to contain public employee pension and other post-employment benefit (OPEB) cost obligations that are borne by public agencies via taxpayers and ratepayers.

EMERGENCY RESPONSE

It is MWDOC's policy to support legislation, regulation, and administrative actions that:
~~**It is MWDOC's policy to support legislation that:**~~

1) Increases coordination on Homeland Security and emergency response efforts among the federal, state, and local governments with clearly defined roles and responsibilities for each.

2) Provides continued funding to enhance and maintain local Homeland Security infrastructure, including physical and cyber protection of critical infrastructure.

3) Ensures adequate funding for expenditures related to disaster response and all phases of emergency management; including an Emergency Operations Center, the earthquake early notification system and efforts to enhance water infrastructure resiliency.

4) Strengthens intergovernmental planning and preparation coordination for emergency response and drills.

5) Enhances protection of information and cyber security for critical infrastructure through policy and funding for local efforts.

6) Supports water utility capability to notify customers of emergency protective measures through mass notification systems.

7) Properly recognizes water agencies' role in emergency response to wildfires and other natural disasters, where water service is needed or may be impacted, because water and wastewater services are essential public utilities that ensure public health and safety.

Item No. 3

COMMITTEE DISCUSSION ITEM
October 2, 2023

TO: **Planning & Operations Committee**
(Directors McVicker, Nederhood and Seckel)

FROM: **Harvey De La Torre, Interim General Manager**

Staff Contact: Charles Busslinger
Sarina Sriboonlue

SUBJECT: **Information Regarding Recent Orange County Nitrification Event**

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee review the presentation.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

DETAILED REPORT

MWDOC staff have been actively working with agencies in South Orange County and Metropolitan staff since August 17, 2023, on resolving nitrification issues on the Allen McColloch Pipeline (AMP), Orange County Feeder (OCF), East OC Feeder No.2 (EOCF#2), and pipelines downstream of EOCF#2 Coastal Junction (CM-10 & CM-12 connections); which serve the Joint Transmission Main (JTM) and the Aufdenkamp Transmission Main (ATM) respectively. Nitrification events have occurred in MET pipelines in Orange County in previous years, but the nitrification issues were exacerbated after a pronounced drop in imported water demands resulting from Tropical Storm Hilary August 19-21, 2023. Demands on the entire MET system for August 2023 were extremely low for the month (lowest August demands for MET since 1978). In Orange County, demands on the AMP dropped by 75% during and right after the August 19-21st storm vs. demands immediately prior to the event: resulting in increased detention time. Similarly, demands on EOCF#2 CM-10 connection (serving the JTM), dropped 82% during and right after the storm vs. demands immediately prior to the event: also resulting in increased detention time. Water temperature can also be a contributing factor in nitrification, and temperatures during the storm event remained relatively warm. Additionally, prior to the nitrification event,

Budgeted (Y/N): N/A	Budgeted amount: n/a	Core	
Action item amount: n/a	Line item:		
Fiscal Impact (explain if unbudgeted):			

all of MET's Water Treatment Plants were on a high blend of State Water Project (SWP) to Colorado River Aqueduct (CRA) water. SWP water is high in organics (a contributing factor to nitrification) whereas CRA water is high in Total Dissolved Solids (TDS). MET instituted several management actions at the Diemer Water Treatment Plant (Diemer) as well as initiated flushing at several locations beginning Augst 23, 2023 which continued at various locations through September 21, 2023.

Flushing at CM-01 at the terminus of the OC Feeder

In addition to continuous flushing and daily water quality monitoring, MET carried out progressive operational changes, including increasing pH of treatment plant effluent to maintain chlorine residuals, reduced the SWP blend at Diemer from 77% to 50%, and then down to 25% as the ozone disinfection units were taken offline to reduce the potential of organics entering into the treatment plant effluent. As a result of all of these actions and a return of demands, total chlorine levels improved, and nitrite levels reduced steadily.

South Coast Water District (SCWD), as operator of the JTM, began flushing the JTM and mobilized a temporary chloramine booster station for the JTM on August 24th with continuous flushing and boosting of chloramines through Monday August 28th. Total Chlorine residuals improved, and nitrite levels declined. MET, MWDOC, and the retail agencies continue to monitor and take actions as needed.

Looking to the Future

MET experienced similar nitrification events at multiple locations on the western side of the MET system. This event has highlighted challenges of running the imported water system in

the future as Southern California moves to more local water resources and lower imported demands. It has also highlighted limitations on the available tools to counter nitrification events. MWDOC has been working with MET to identify and implement chloramine boosting stations for the AMP and EOCF#2. MET has identified OC-88 as a good location on the AMP for one such chloramine boosting station. Injection pumps are on order and a storage tank is being installed at OC-88. MET is also looking to hold a Board workshop on nitrification this Fall.

Item No. 4

COMMITTEE DISCUSSION ITEM
October 2, 2023

TO: **Planning & Operations Committee**
(Directors McVicker, Nederhood and Seckel)

FROM: **Harvey De La Torre, Interim General Manager**

Staff Contact: J. Berg, Director of Water Use Efficiency

SUBJECT: **Water Use Efficiency Potential and Opportunities Study Results**

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee review and discuss.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

In 2018, the California State Legislature (Legislature) enacted two policy bills, Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman), to establish a new foundation for long-term improvements in water efficiency. These bills are collectively known as the Conservation as a California Way of Life Framework (Framework) and amend existing law to replace the 20% by 2020 framework adopted in 2009 (SBx 7-7).

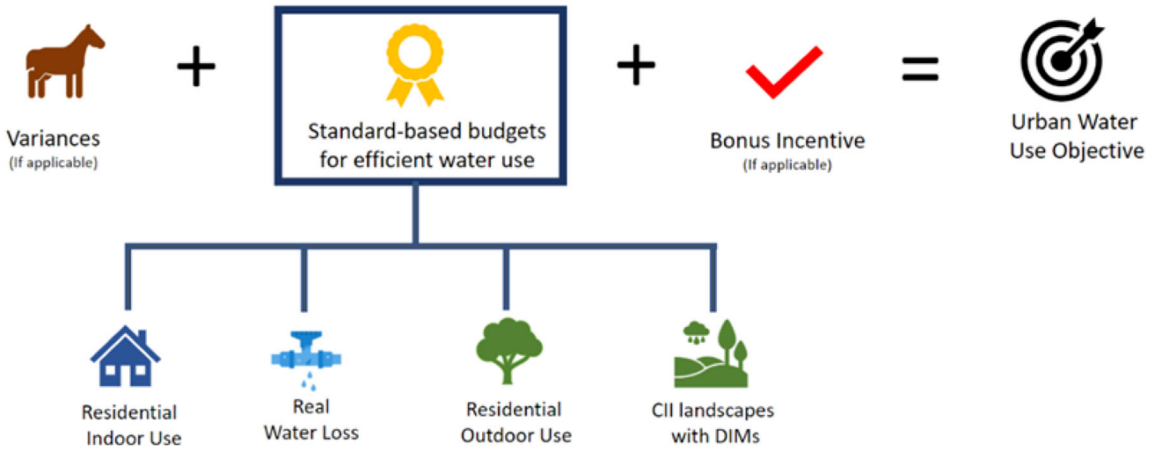
The Framework is focused on urban retail water suppliers serving 3,000 customers or 3,000 acre-feet of water annually. Wholesale water agencies, like MWDOC, are not subject to the Framework. However, MWDOC can continue to provide water use efficiency program implementation and grant acquisition to assist agencies with compliance.

The new Framework calls for efficiency standards for per capita indoor residential water use, outdoor residential water use, dedicated irrigation meter water use, and distribution system water loss. The Framework will allow agencies to apply for a variety of variances that will account for unique water uses like dust control, seasonal population, evaporative cooling, and fire suppression to name a few. A Bonus Incentive for potable

Budgeted (Y/N):	Budgeted amount: n/a	Core	
Action item amount: n/a	Line item:		
Fiscal Impact (explain if unbudgeted):			

reuse (indirect or direct potable reuse) is also included in the Framework for water supply projects, such as the Groundwater Replenishment System. Each of these standards, variances, and the bonus incentive are aggregated into one Water Use Objective (WUO), as shown in Figure 1. Annually, urban water suppliers will report their WUO and Actual Water Use (AWU) to the State Water Board to gauge compliance with the Framework. If an agency's AWU is less than their WUO, they would be considered in compliance. Conversely, if an agency's AWU is more than their WUO, they would not be in compliance and would be subject to a graduated enforcement starting with Information Orders, then advancing to Written Notices and Conservation Orders, and concluding with Civil Liability (fines).

Figure 1: How a supplier calculates its urban water use objective



DETAILED REPORT

In July 2021, the Board authorized a contract with Flume, Inc. to prepare a Residential Water Use Efficiency Potential and Opportunities Study to evaluate remaining water saving potential after decades of efficiency program implementation and guide future program implementation to maximize water savings opportunities and cost effectiveness of program implementation.

The Study evaluated the saturation of existing water efficiency measures in single-family homes in Orange County, verified that significant water savings potential still exists and charts a course for future water efficiency program implementation to maximize the available cost-effective water savings. The Study provides recommendations for MWDOC to assist retail agencies with Framework compliance and includes recommendations for retail water agencies to prepare for and achieve compliance.

A draft of the Orange Couty Residential Water Use Efficiency Potential and Opportunities Study is provided as Attachment A for your review.

Maureen Erbeznik with Erbeznik and Associates and Peter Mayer with Water Demand Management will provide the Planning & Operations Committee with a presentation summarizing the findings of the Study at the October 2nd Planning & Operations Committee meeting.

Attachment A

Orange County Residential Water Efficiency

Potential and Opportunities Study

Prepared for:
Municipal Water District of Orange County

Prepared by:
Flume Inc.

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EXECUTIVE SUMMARY

BACKROUND

With the seeming permanence of climate change conditions in California--indicated by severe swings in drought cycles followed by torrential rains and flooding—a State regulatory framework to "make conservation a California way of life" was passed in 2018 through Assembly Bill (AB) 1668 and Senate Bill (SB) 606.

In response to this legislation, Governor Newsom in August 2022 released "California's Water Supply Strategy" with plans to recycle, de-salt and conserve more water, as well as expand overall water storage capacity within the state. Making conservation a way of life is an integral part of this strategy.

In the past decades, water organizations utilized a full array of conservation tactics and watering restrictions to weather drought cycles. These efforts proved successful and achieved steady improvements in efficiency and overall reductions in Gallons Per Capita Per Day (GPCD). Over the last 30 years, the Municipal Water District of Orange County (MWDOC) region has notably reduced its per capita water use by nearly half, from 222 to 112 gallons per day. Yet, population growth has outpaced efficiency and there has been an overall rise in water use.

Recognizing the criticality of California's water supply situation, the State has developed hard-hitting, long-term Water Use Objectives (WUOs) to be delivered through the actions of California's Retail Water Agencies-- with penalties in place for non-compliance. Although the outdoor standards have not been fully finalized by the State, there is a general understanding that the cut to present day outdoor usage will be formidable for many Retail Agencies.

Intensifying climate conditions, state efficiency mandates, and the a rise in total water demand due to population growth led MWDOC to explore the potential for more aggressive, deeper, and accelerated levels of efficiency, moving forwards.

Unquestionably, the Water Use Objective poses considerable operational and financial challenges to most Retail Water Agencies.

While some of the Retail Agency members of MWDOC will already be compliant with State WUOs (once the finalized adopted standards are determined), many Agencies will not. These agencies will need to develop and fund customized local plans with programs and support services to target inefficient water use.

It is highly likely that these MWDOC Retail Agencies will have to significantly expand their budgets, staffing, and program response to meet WUO requirements. State Objectives require robust Water Use Efficiency plans and detailed annual reporting, as well as heightened technical capabilities in water consumption analysis, loss control, and advanced targeted outreach.

RESEARCH STUDY

For this study, consultants Flume Data Labs, WaterDM, and Maureen Erbeznik and Associates, were contracted to identify current baseline water use and determine the remaining potential for efficiency. Additionally, the study sought to identify the best water efficiency measures to reach mandated efficiency objectives and the best path forward to do so.

The goals of this study were threefold:

1. Quantify the remaining water savings potential in the Orange County residential market.
2. Identify the most promising and cost-effective methods for reducing residential demand.
3. Make recommendations on how best to direct financial and technical assistance to Retail Agencies and consumers for implementing residential water efficiency upgrades.

Through device metering, analysis, software modeling, and customer surveys, the consultant team acquired the data and knowledge necessary to report the requested findings in response to the goals of the study.

RESEARCH FINDINGS

1. The Customer Survey of over 2,000 participants revealed strong customer interest in water efficiency, particularly in outdoor water use reduction.
2. Results derived from the MWDOC Residential Water Use Study identified sufficient conservation opportunities to reduce use.

Strong customer interest was deemed a positive finding since, over past years, Retail Water Agencies worked diligently to educate customers about the importance of outdoor water efficiency despite initial low interest from most customers.

Through education and current events, customers now understand climate change is a reality and a threat to humans and the environment. This realization may be the impetus for boosted customer interest in water efficiency.

Significant potential for turf replacement was identified, with 51% of survey respondents asserting that they have some remaining grass areas at their properties, although many others have removed part, or all, of their lawns.

The Customer Survey revealed the following major findings:

Survey Findings
Customers believe climate change is real and water conservation is important.
Customers state they want to learn more about water efficiency. The majority of customers specifically expressed interest in obtaining more information about low water use landscapes and efficient irrigation equipment.
A large portion of customers state that they have installed drip irrigation systems.
A significant percentage of customers state they have taken out part, or all, of their lawn.

Consultants were asked to determine the acre-foot reduction and feasibility of reaching two distinct water reduction scenarios within the residential market sector, as suggested by the State Water Resources Control Board on March 15, 2023.

- **LEVEL ONE**

Water efficiency requirements to reach compliance with the recommended 2030 State Water Use Objectives

- **LEVEL TWO**

Maximum achievable water savings beyond the State WUO, understanding that this would be challenging to accomplish, but "doable" with appropriate funding, sound planning, and skillful execution

As shown in the chart below, Level One achievement requires that the current residential 85 gallons per capita per day (GPCD) be reduced to 71.8 GPCD. The residential GPCD represents both indoor and outdoor water use. This will entail successful execution of a program plan to reduce the region's overall demand by 27,000 Acre-Feet (AF) by the year 2030.

To reach Level Two goals the residential GPCD would need to be reduced to 61.2 with an overall demand reduction of 55,000 AF by 2035.

	R-GPCD	Residential Demand (AF)	Acre-feet Reduction
Baseline	**85**	**222,572**	**--**
Passive	**82.4**	**215,627**	**6,600 by 2030**
Level 1	**71.8**	**187,848**	**27,000 by 2030**
Level 2	**61.2**	**160,254**	**55,000 by 2035**

Passive conservation, outside the scope of the plan, is estimated to reduce total demand by 3.1% and factored into bottom line savings projections.

To meet the more aggressive Level Two goal, indoor and outdoor use would need to be decreased by up to 22.1% and 34.7%, respectively, under this scenario.

Unlike the earlier SBx7-7 law, which permitted regional compliance, the updated legislation mandates that each retail water agency meet their agency-specific WUO.

With the local Retail Water Agencies shouldering the responsibility for goal achievement, there will need to be a shift from the traditional planning efforts of the past where MWDOC, the regional provider, generated a regional plan with input from the Retail Agencies.

For Retail Agencies, this will now require them to take the lead to generate highly refined local plans and secure dramatically increased funding for water use efficiency initiatives.

To address this shift from the traditional approach, the recommended approach is as follows:

1. **Retail Agencies develop and fund comprehensive local plans** based upon their unique Water Use Objectives and the specific characteristics of their service area. Some agencies will need to greatly expand their staffing and resources well beyond existing levels. Many agencies must take a different approach to customer outreach in order to pinpoint inefficient users and best direct resources. To achieve efficiency goals, agencies must provide more robust customer education and support.

2. **MWDOC (formerly the lead of the water efficiency planning processes) transitions to a supporting role.** This may include provision of expert technical services, tools, and resources for Retail Water Agencies across the region and continuation of regional water efficiency programs with participation as desired by each Retail Agency.

Promising interventions include water budget programs, targeting customers shown to be over budget, leak detection, turf replacement, along with the required support services.

Research indicates that there still are opportunities for measures like high-efficiency toilets and washers, smart timers, spray-to- drip irrigation, and direct installation of plumbing fixtures for underserved communities.

Implementing the recommended strategies in this report will require high commitment levels and unprecedented funding to meet the ambitious water savings goals. The annual program costs alone are estimated be almost $31 million for the Level One plan and just under $57 million for the Level Two scenario. The overall size of the estimated budgets for water efficiency programs are unlike any seen before. Despite this great challenge, the cost per Acre-foot is projected to be under $900, regardless of which plan is referenced, as shown in the chart on the right.

Level 1: Water Savings, Cost, Cost per AF

Water Use Reduction by 2030	**27,900 AF**
Annual Program Costs	**$31,754,484**
Annual Administration Costs	**$4,128,083**
Total Costs	**$35,882,567**
Cost per AF	**$732**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2030 = **$251,177,969**

Level 2: Water Savings, Cost, Cost per AF

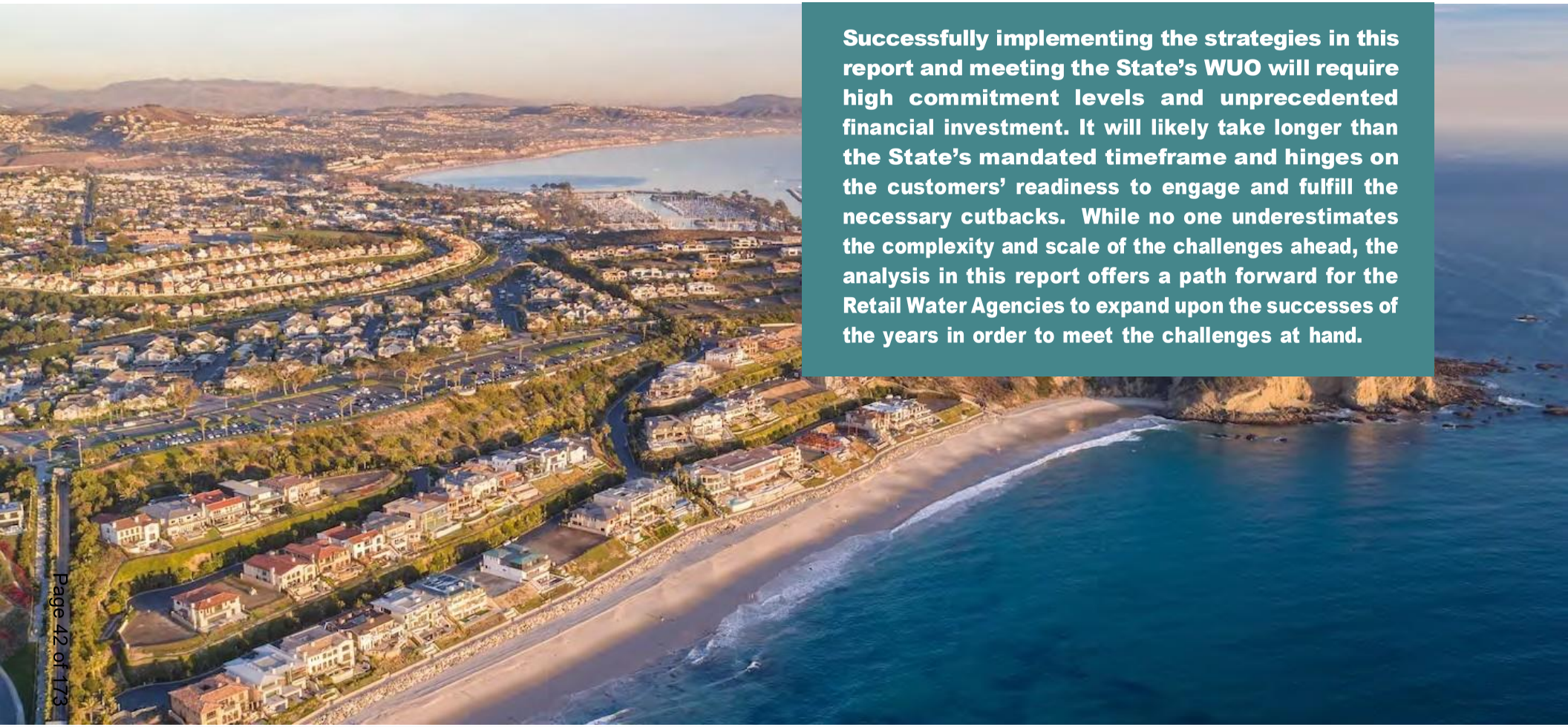
Water Use Reduction by 2035	**56,000 AF**
Annual Program Costs	**$56,872,152**
Annual Administration Costs	**$7,393,380**
Total Costs	**$64,265,532**
Cost per AF	**$876**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2035 = **$771,186,384**

No matter the level of the water savings goals, the strategy remains the same—the same targeting and outreach strategies, program offerings, device measures, and support services. The difference is the level of scale for each.

The recommendations in the study focus on achievable efficiency measures. These are the programs, services, and devices that work effectively in the Orange County customer market and should form the foundation of any future water efficiency program.



Successfully implementing the strategies in this report and meeting the State's WUO will require high commitment levels and unprecedented financial investment. It will likely take longer than the State's mandated timeframe and hinges on the customers' readiness to engage and fulfill the necessary cutbacks. While no one underestimates the complexity and scale of the challenges ahead, the analysis in this report offers a path forward for the Retail Water Agencies to expand upon the successes of the years in order to meet the challenges at hand.

Section 1: Introduction

Known for decades of leadership and innovation, Municipal Water District of Orange County and its Retail Agencies continue to advance water efficiency in Southern California. MWDOC and its Retail Agencies have achieved industry leadership through creative thinking and demonstration of bold action. By challenging customers as well as peer agencies to drive for change, a number of program initiatives that once seemed radical are now the norm.

Over the past three decades, significant advancements in water efficiency have led to a remarkable reduction in the region's gross gallons per capita per day (GPCD). In 1990, the GPCD was 222; by 2020, this figure had halved to 112. It's worth mentioning that the population grew by over 750,000 people during this period.

This 50% decrease is a testament to the collective efforts of water customers throughout the service area, coupled with the dedication and diligence of MWDOC and its Retail Agencies.

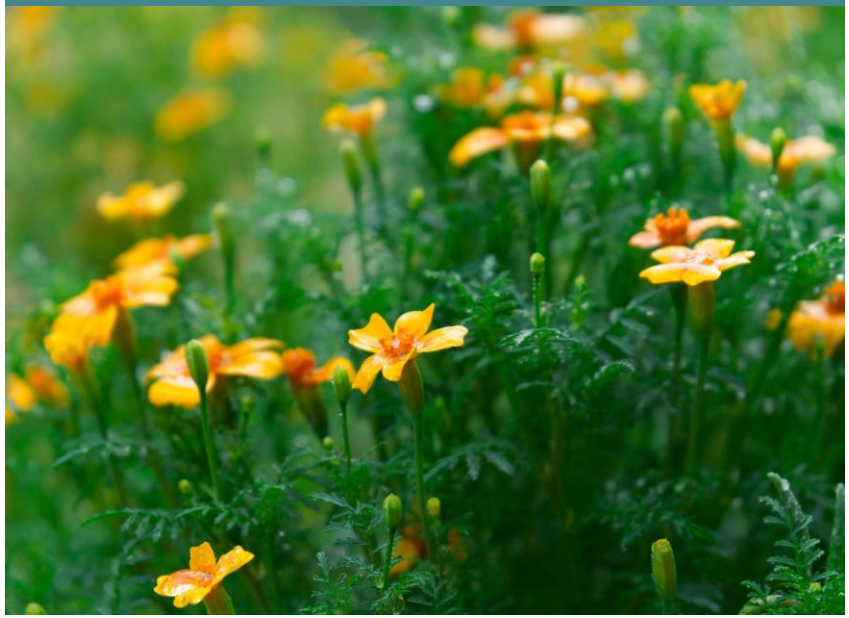
In an effort to make California more resilient to the impacts of future droughts and climate change, in 2018 the State passed Senate Bill 606 and Assembly Bill 1668. These bills call for Retail Agencies to further increase urban efficiency for indoor and outdoor uses, as well as water lost to leaks.

Although much has been accomplished, MWDOC's Retail Agencies now face future challenges and stringent State Compliance levels put forth by these bills, thus creating a pivotal point in water efficiency planning and implementation.

In the future, MWDOC's Retail Agencies will be required to maintain actual water use at, or below, an Urban Water Use Objective (WUO) as mandated by the State. The Water Use Objective is the aggregate efficient water use of indoor and outdoor residential, commercial landscape irrigation, and distribution system water loss with credits for indirect potable recycled water.

MWDOC, as a wholesaler, is not subject to the mandated new standards. Regardless, MWDOC sees it as its mission and obligation to support the Retail Agencies, the region, and Orange County customers in further driving down of GPCD. MWDOC recognizes that Retail Agency goal attainment ensures:

- Minimized purchases of imported water, thereby maintaining lower water costs
- Improved resiliency throughout the region for protection against future droughts
- Assurance of reliable future water supplies



THE CHALLENGE OF WUO COMPLIANCE

Achieving the Water Use Objective, as currently proposed by the State Water Resources Control Board (SWRCB) will be challenging and costly for all retail water agencies. As stated before, unlike previous legislation, the new legislation requires each retail water agency meet their area-specific WUO. Retail agencies will need to provide resources and funding at levels far beyond what has been invested in the past. Each agency will need to evaluate compliance, create local Water Use Efficiency (WUE) plans, and provide extensive annual reporting to the State. They will also need technical resources to measure irrigated areas, analyze consumption, establish water budgets, carry out focused outreach, and control for water loss. These tasks are highly technical and labor-intensive. Furthermore, to achieve the required demand reductions, retail agencies must improve existing programs, develop new initiatives, enhance customer support, and boost incentive funding.

PURPOSE OF THE STUDY

Understanding the criticality of the WUO challenges facing the region, MWDOC contracted with Flume Data Labs, Maureen Erbeznik & Associates, and WaterDM to measure and assess the level of existing water efficiency across Orange County and quantify the achievable and maximum potential demand reductions in the residential sector.

In addition, the study aimed to determine the best methods and strategies to meet these demand reductions and the level of investment required.

The specific objectives of this study were to:

- Measure the level of existing water efficiency across Orange County.
  - Measure current residential plumbing fixture efficiency levels including toilet flush volumes, flow rates of showerheads, and load volume of clothes washers, and dishwashers.
  - Examine application of irrigation water on residential landscapes.
- Survey residential customers to understand current landscape and irrigation practices:
  - Evaluate plant materials and use of California Friendly plant palates.
  - Evaluate irrigation practices, and irrigation hardware including smart timers, drip irrigation, low precipitation sprinkler nozzles.
- Assess two levels of conservation potential:
  - Level One- Water efficiency requirements for compliance with the recommended 2030 State Water Use Objectives.
  - Level Two- Maximum achievable water savings.
- Identify the most promising and cost-effective methods for reducing residential demand in Orange County.
- Make recommendations to MWDOC and Metropolitan Water District on how best to direct financial and technical assistance to Retail Agencies for implementing water use efficiency initiatives.

The goals of this study were to:

1. Quantify the remaining water savings potential in the Orange County residential market.
2. Identify the most promising and cost-effective methods for reducing residential demand.
3. Make recommendations on how best to direct financial and technical assistance to Retail Agencies and consumers for implementing residential water efficiency upgrades.

Modification of Goal 2 and 3:

Understanding that the WUO is an aggregate of residential indoor and outdoor use, commercial outdoor water use, and water loss, it was determined that the study should also include recommendations for water efficiency measures for commercial landscape water efficiency as well as water loss.

Additionally, Flume Data Labs and WaterDM prepared a companion report, the *MWDOC Residential Water Use Study, Q1 2020 thru Q3 2022* documenting residential water demand patterns and efficiency levels. Results from this end use study, and new data and analysis from Flume are included in this report. Also essential in preparing this report, was MWDOC's recent *Water Use Efficiency Standards Economic Analysis*, prepared by Water Systems Consulting, Inc., and M.Cubed.

Section 2: The Study Approach

The purpose of this study is to identify the remaining water savings potential for the Orange County residential market and to chart a course for future water efficiency program implementation. The following section describes the methodology used in the study.

STUDY APPROACH

Step 1 — Assess Orange County Water Use and Past Water Use Efficiency Efforts

In order to identify market potential and the best opportunities for water efficiency improvements, one must first look at water demand over previous years as well as water efficiency program performance. The study gathered information on:

- Water demand and population from 1990-2020
- Water use by customer segment
- Housing trends
- Per capita water use and impacting events
- Water efficiency programs from 1990s to present
- Current water efficiency programs and annual activity
- Emerging technologies and innovative delivery mechanisms

Step 2 — Analyze Water Demand and End Use Data

This study used multiple approaches to examine the existing level of water efficiency and to assess potential future demand reductions including:

- Residential consumption and population data compiled in the Water Use Efficiency Standards Economic Analysis, and other published reports.
- High-resolution disaggregated water use data from over 1,000 single-family residential customers in Orange County, collected and analyzed by Flume Data Labs.

These data provided both a high-level assessment of residential water demand across Orange County and a property-level analysis of current water use and efficiency.

The two primary means are detailed below:

• *Historic Consumption and Population Data*

Water demand and population data used in this study came from three sources:

- MWDOC staff records compiled by MWDOC Senior Water Resources Analyst.
- Water Use Efficiency Standards Economic Analysis (2022 Draft) prepared by Water Systems Consulting, Inc., and M.Cubed.
- Water Agency Annual Electronic Reports submitted to the State Water Resources Control Board.

These data set and reports provided historic demand and population data shown in Figure 1. The *2022 Water Use Efficiency Standards Economic Analysis* provided a useful baseline demand utilizing 2017-2019 consumption data. This report also projected the demand reductions and Residential-GPCD required to meet the 2030 Water Use Objective for each Retail Agency and the region. This forecast provided the basis for the Level 1 estimate developed in this study.

• *End Use Analysis*

An end use analysis was done for Orange County residential properties in the companion report, the *MWDOC Residential Water Use Study, Q1 2020 thru Q3 2022* prepared by Flume Data Labs and WaterDM. This study included data from more than 1,000 Orange County homes. This study provided information on plumbing fixture and appliance water usage and overall irrigation efficiency compared with climate conditions. Central findings on residential water demand patterns and efficiency levels from that report are summarized in Section 4 of this study.

It should be noted that the flume flow monitoring devices and the Flume Data Lab algorithms provide the industry with disaggregated water use data on a broad scale. Previous end use studies were limited in size and scope. For example, the *MWDOC Residential Water Use Study* included a sample of more than 1,000 homes with data collected over two years. The Water Research Foundation *Residential End Uses of Water*, Version 2 (2016) had a sample size of 763 homes with just 2-weeks of high-resolution flow data.

Data Source	Data Provided
Consumption and Population Analysis	• Current R-GPCD • Future R-GPCD • Quantified indoor and outdoor use
End Use Analysis	• Saturation and efficiency levels for residential plumbing fixtures and appliances • Flow rates, volumes and durations for toilets, faucets, showerheads, dishwashers, and clothes washers

Step 3

Survey Customers' Landscape and Irrigation Practices

An important part of this study was a detailed residential customer survey completed by 2,396 respondents. This on-line survey took 8 – 10 minutes to complete and utilized a direct-to-customer methodology to learn more about landscape composition, irrigation equipment and practices, as well as attitudes and interests regarding water efficiency.

Water agencies that participated in implementing the survey were:

- **Golden State Water Company** - serving North Orange County
- **Santa Margarita Water District** - serving South Orange County.
- **South Coast Water District** - serving South Orange County.

Each agency sent the survey invite and link to customers with existing emails. The survey was available via both web browser and mobile devices and was offered in English.

Data analysis for this survey consisted primarily of descriptive statistics.

Step 4

Calculate Residential Demand Reduction Potential

The next step of the study was to determine the water efficiency potential of the existing residential customer base in the MWDOC region. Two future water efficiency scenarios were modeled:

- **Level 1** – Full compliance with the States' recommended standards for the 2030 Water Use Objectives
- **Level 2** – Maximum achievable water savings by 2035

WaterDM prepared a water demand reduction forecasting model. The 2022 Water Use Efficiency Standards Economic Analysis Study provided a baseline demand. This report also projected the demand reductions and R-GPCD required for each Retail Agency to meet the recommended 2030 WUO. Indoor use was forecast to reduce to 42 GPCD by 2030. Outdoor use was forecast to reduce to an ET factor* of 0.63 by 2030. This forecast provided the basis for the Level 1 scenario.

As part of the Level 1 analysis, WaterDM developed an estimate of the passive water savings (e.g. water savings that will occur through 2030 without incentives) based on the expected useful life of fixtures and appliances and a gradual acceleration of landscape transformation through awareness and social influence.

The Level 2 scenario was developed by further reducing indoor and outdoor water use beyond the recommended 2030 WUO. Indoor use was forecast to reduce to 35 GPCD by 2035. Outdoor use was forecast to reduce to an ET factor of 0.55 by 2035. Additional outdoor reductions beyond this level may be possible, but the health and well-being of the Orange County tree canopy and the environment should be carefully considered. The volume of passive savings was assumed to be the same as in Level 1.

*The ET factor, in the context of water management and landscaping, refers to the Evapotranspiration adjustment factor. Evapotranspiration (ET) itself is the sum of evaporation and plant transpiration from the Earth's surface to the atmosphere. It's an essential metric when considering water needs for landscapes.

The ET factor is a scale between 0 and 1 used to adjust the reference evapotranspiration (ETo) to reflect the water needs of specific plants or landscapes. The ET factor is often used to determine the appropriate amount of water to apply to a landscape to ensure plant health while promoting water efficiency.

In the realm of water efficiency, the ET factor is also termed the Landscape Efficiency Factor. It signifies enhanced efficiency and decreased water consumption for landscapes.

Step 5 — Identify Measures to Meet Water Savings

The Consultant team then identified the water savings measures most likely to gain customer participation and achieve significant water savings. Utilizing the Alliance for Water Efficiency's Tracking Tool, a spreadsheet model created specifically for evaluating conservation program implementation, the team built a portfolio of programs to model the Level 1 and Level 2 water savings estimates. Each model identifies:

- Measures and required annual activity levels
- Program cost per measure
- Water savings per measure
- Annual and overall budgets
- Cost per Acre-foot per measure
- Total program portfolio cost per Acre-foot

Step 6 — Develop Strategy to Deliver Water Savings

As the study was being developed it became apparent that MWDOC's WUE strategy needed to be different than in previous planning efforts.

In the past, MWDOC would have developed a regional plan and taken the lead to deliver the required activities to meet regional savings levels. It will now be the individual Retail Water Agency's responsibility to meet their agency-specific Water Use Objectives, making a one-size-fits-all approach unsuitable. For instance, Agency A might require a robust municipal water loss program, while Agency B may need to focus on commercial landscape water efficiency, and Agency C might have only minimal reduction requirements that could be easily met through current efforts.

With this insight, the team formulated a strategic plan outlining steps for Retail Agencies to follow in order to achieve their WUOs, along with recommended support and actions from MWDOC.

Section 3: Orange County Water Efficiency – A Look Back

It's important to understand how water is consumed within the region based upon data such as population, housing, and end uses in order to predict future trends and identify potential opportunities. The performance of water efficiency programs must be looked at to determine the most effective measures and delivery mechanisms moving forwards. The following section examines water usage in Orange County, housing patterns, and the evolution of water efficiency initiatives throughout the years.

CURRENT WATER USE IN ORANGE COUNTY

Local water supplies meet nearly half of Orange County's total water demand. To meet the remaining demand, MWDOC purchases imported water from Northern California and the Colorado River through the Metropolitan Water District (Metropolitan). As a Metropolitan member agency, MWDOC delivers imported water to its 27 Retail Agencies, which provide retail water services to the public.

MWDOC serves a 2020 population of 2,342,740 in a 600-square-mile service area.

Total annual water use in the region has increased over the last 30 years, starting at 179,241 AF in 1990 when the population was 1.7 million, as shown in Figure 1. Use has increased as of 2020, with total annual consumption of 266,527 AF for a population of 2.3 million. Demand peaked in 2008 with water use at 300,799 AF for a population of 2.1 million.

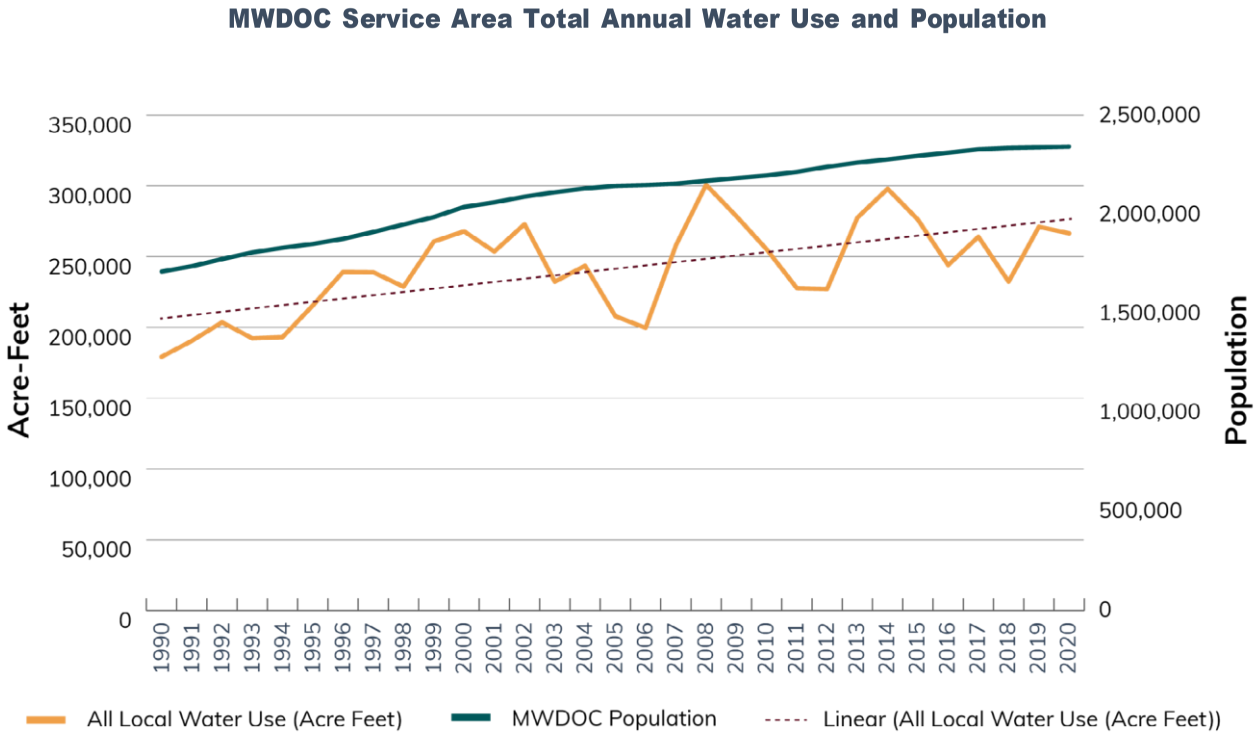
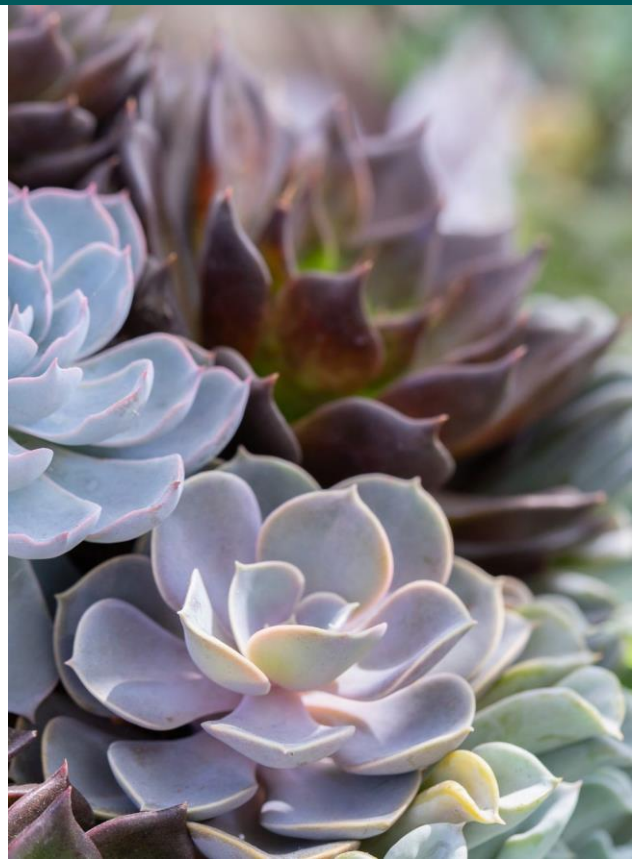


Figure 1: *MWDOC Total Annual Water Use and Population*

As shown in Table 1 and Figure 2, in any given year, single-family water use makes up approximately 60% of total usage, and therefore will be the major focus for further water use reduction opportunities.



	2020 (AF)	Percent
Single Family Residential	**294,000**	**58%**
Multi-family Residential	**93,000**	**18%**
Commercial, Industrial, and Institutional	**122,000**	**24%**
Total	**509,000**	

Table 1: *2020 Annual Water Use in MWDOC Service Area*

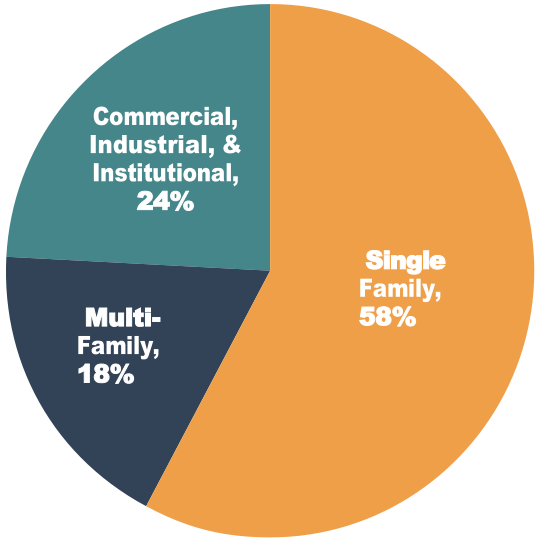


Figure 2: *2020 Water Demand in MWDOC Service Area*

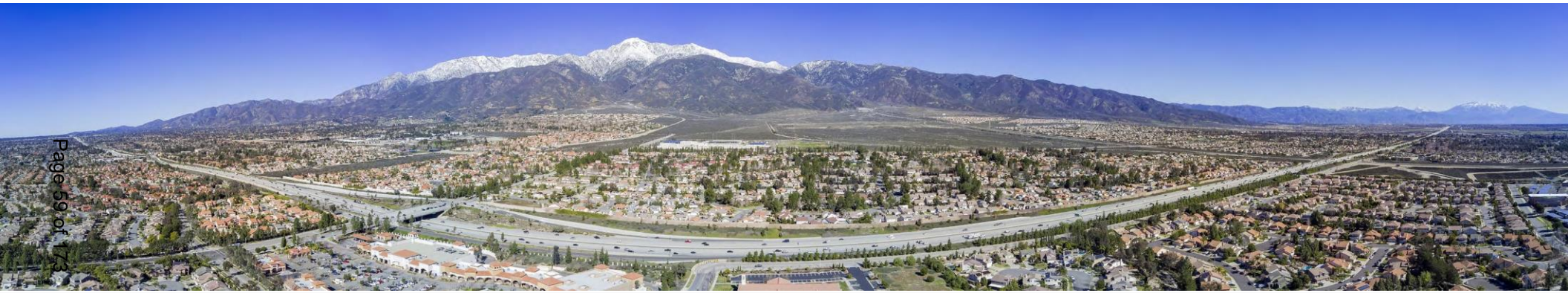
ORANGE COUNTY HOUSING

Generally, housing within MWDOC's service area is gradually becoming denser with the addition of new residential units. This is apparent in many of the cities located in the northern and central areas of MWDOC's service area. Whereas in the southern portion of MWDOC's service area, there still remains open land suitable for further development and growth. As shown below in Table 2, the total number of dwelling units in the MWDOC service area is expected to increase by 7.4 percent in the next 25 years from 870,800 units in 2020 to 934,984 units in 2045.

Dwelling units	2020	2025	2030	2045
Total	**870,800**	**894,953**	**906,260**	**934,984**
Single Family	**435,011**	**438,288**	**440,878**	**445,872**
All Other	**435,789**	**456,665**	**465,328**	**489,112**

Table 2: *Orange County Dwelling Units*

Future dwelling units are expected to be built to the most recent plumbing codes that are considered to be highly efficient. Additionally, the State Model Water Efficiency Landscape Ordinance (MWELO) requires that future landscaping and irrigation be designed to a standard that aligns with the recommended WUO standards.



GROSS PER CAPITA WATER USE

MWDOC's gross per capita water use has decreased from 222 gallons per capita per day in 1990 to 112 in 2020 as shown in Figure 3, **an impressive decrease of nearly 50% over the past 30 years**. While GPCD has declined substantially, as shown in Figure 1, because of growth, population and land development, total demand has increased over this time period.

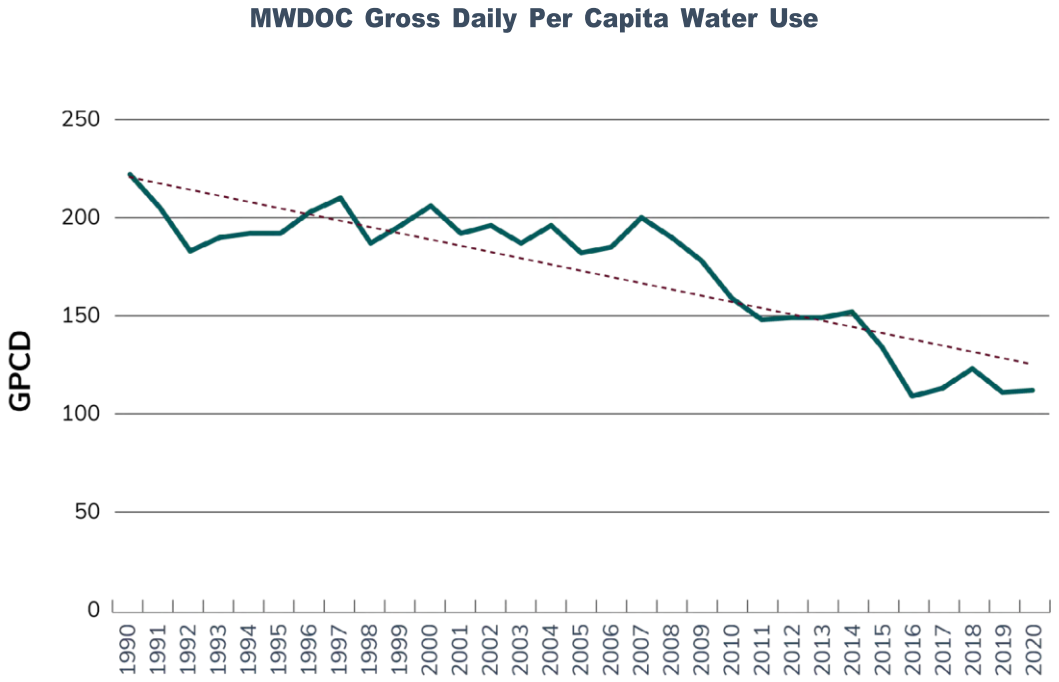
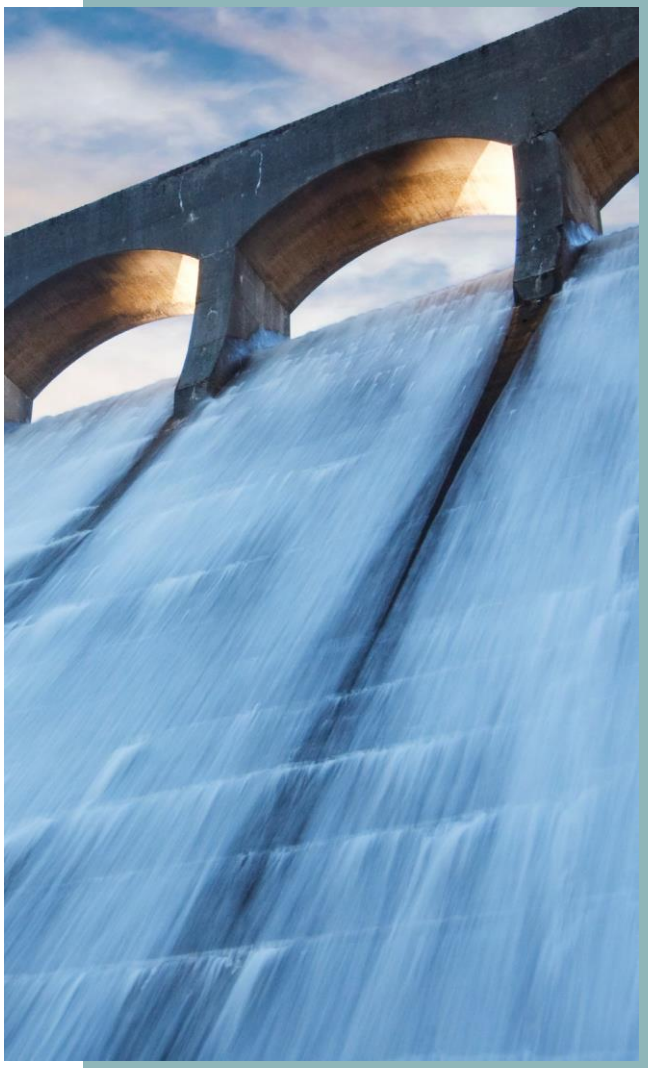


Table 3: *MWDOC gross daily per capita water use*



IMPACTING EVENTS

It's useful to show GPCD in relation to drought cycles, legislative changes, economic conditions, and MWDOC WUE programs. As shown Figure 4, in the 2009/10 timeframe there was a significant drop in GPCD. This is likely due the recession and consumers' and businesses' belt-tightening measures and postponement of expenditures. The next major drop in GPCD occurred in 2015.

At this time, consumers understood the severity and long-term nature of the 2014 – 2017 drought and did their part to cut usage. Post drought period, there was a slight bounce back as can be expected. Since that time, GPCD has been maintained at lower levels as customers have reached a new level of awareness and continued participation in WUE programs. The data for drought years 2021 – 2022 has been not uniformly reported and therefore was not included. It is likely that water use has gone down across all markets.

MWDOC GPCD | OVER THE YEARS

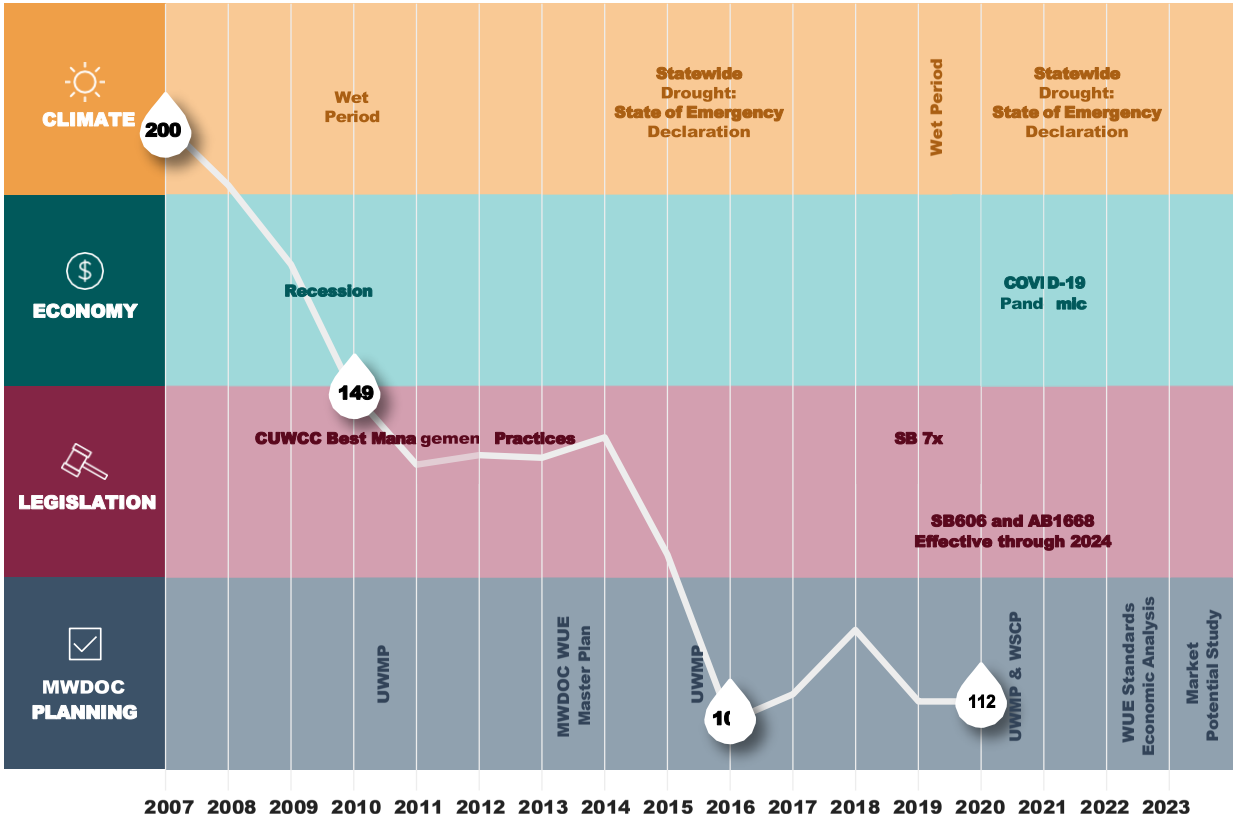
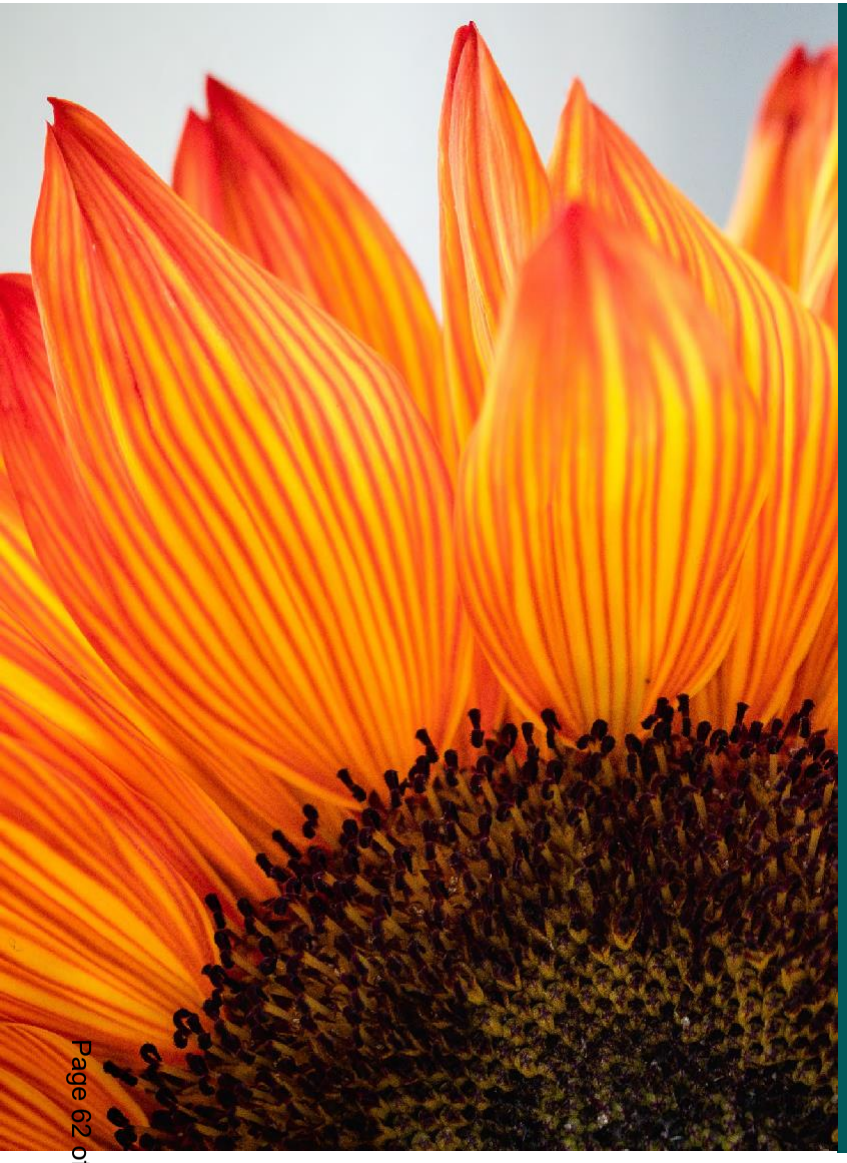


Figure 4: *MWDOC per capita use and drought events*



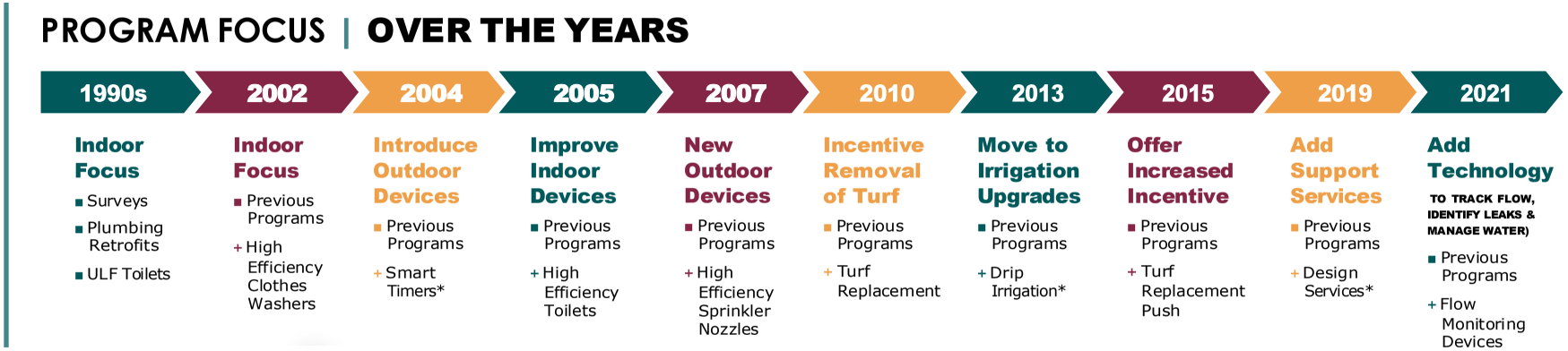
EFFICIENCY PROGRAMS OVER THE YEARS

As a wholesaler, MWDOC facilitates implementation of water use efficiency programs throughout Orange County. MWDOC's efforts focus on the following four areas:

- Securing funding from Metropolitan and grant sources
- Regional Program Implementation
- Local Program Assistance
- Research and Evaluation

MWDOC implements regional programs on behalf of all Retail Water Agencies in Orange County. This approach minimizes confusion to consumers by providing the same programs with the same participation guidelines, maintains a consistent message to the public to use water efficiently, and provides support to Retail Water Agencies by acting as program administrators for the region. In addition, MWDOC provides support tools and assistance on a variety of local programs including, but not limited to the Water Loss Control and Management Program, Public Outreach, and Choice K-12 School Programs. Figure 5 shows a timeline of MWDOC water conservation program implementation.

SHIFT IN MWDOC PROGRAMS OVER THE YEARS



**Water efficiency technology and support services pioneered by MWDOC.*

Figure 5: *MWDOC water efficiency programs over the years*

Since the 1990s, MWDOC has offered educational classes, water use surveys, and a variety of consumer incentives for water-efficient devices. In the 1990s, incentives were primarily for indoor plumbing retrofits including toilets, faucets, and showerheads. As saturation of indoor devices increased, MWDOC began a shift in 2004 to outdoor devices by the introduction of smart irrigation timer rebates.

Over time, technology improvements became available and MWDOC offered incentives for these new measures such as high efficiency toilets in 2005 and high efficiency sprinkler nozzles in 2007.

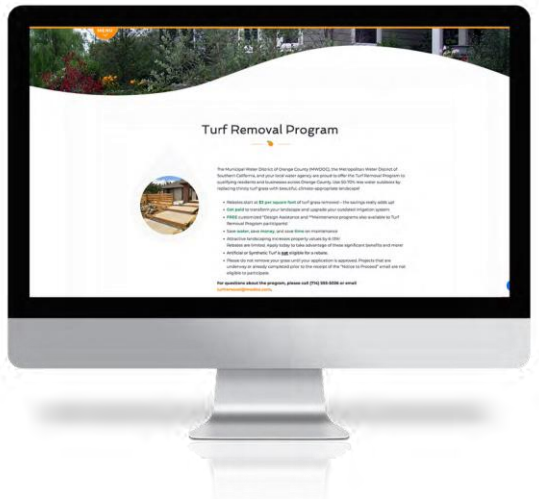
A major change in program offerings occurred in 2010, with the introduction of turf replacement rebates, creating a primary focus on outdoor water use efficiency. To further promote outdoor water efficiency, MWDOC began offering incentives for drip, design services, and heightened incentive levels for turf replacement. In 2021, MWDOC added incentives for flow monitoring and leak detection devices. These advanced tools not only alert customers of leaks in their homes, but also provide deeper insight into their water usage for better management.

Through the various efficiency programs, it is estimated that **MWDOC and its Retail Agencies have reduced consumption by more than 18.6 billion gallons of water each year.**[1]

1 Source: Orange County Water Use Efficiency Programs Savings and Implementation Report (P&O Tbls)

CURRENT PROGRAMS

Currently, MWDOC offers its residential customers water efficiency rebates, support services, and online resources.



TURF REPLACEMENT

Turf Replacement ($3+/sq ft): Replacing turf with a California Friendly yard including low use plants and efficient irrigation.

IRRIGATION EQUIPMENT REBATES

- **Drip Irrigation** ($0.50 sq ft)– Converting spray heads to drip irrigation.
- **Smart Sprinkler Timers** ($180+/property) – Installing timers that adjust watering based on weather and soil conditions.
- **High Efficiency Sprinkler Nozzles** ($2/nozzle) – Replacing old nozzles with nozzles that water more efficiently and uniformly.
- **Soil Moisture Sensors** ($80/device)- Burying moisture sensors in the root zones to determine if and how long to water. Soil Sensors can be stand-alone controllers or add-on devices to existing controllers.
- **Rain Barrels and Cisterns** ($35/Barrel; $250/Cistern) – Installing rain barrels and cisterns that help capture rain that falls onto your roof to reuse in your garden.

INDOOR DEVICE REBATES

- **High Efficiency Clothes Washers** ($85/washer) – Purchasing eligible high efficiency washers that use up to 55% less water than standard washers.
- **Premium Efficiency Toilets** ($40/toilet) – Installing toilets that use 1.06 gallons per flush or less.
- **Flow Monitoring Devices** ($100/device) – installing devices that monitor flow, detect leaks, and provide notifications of anomalies in use.

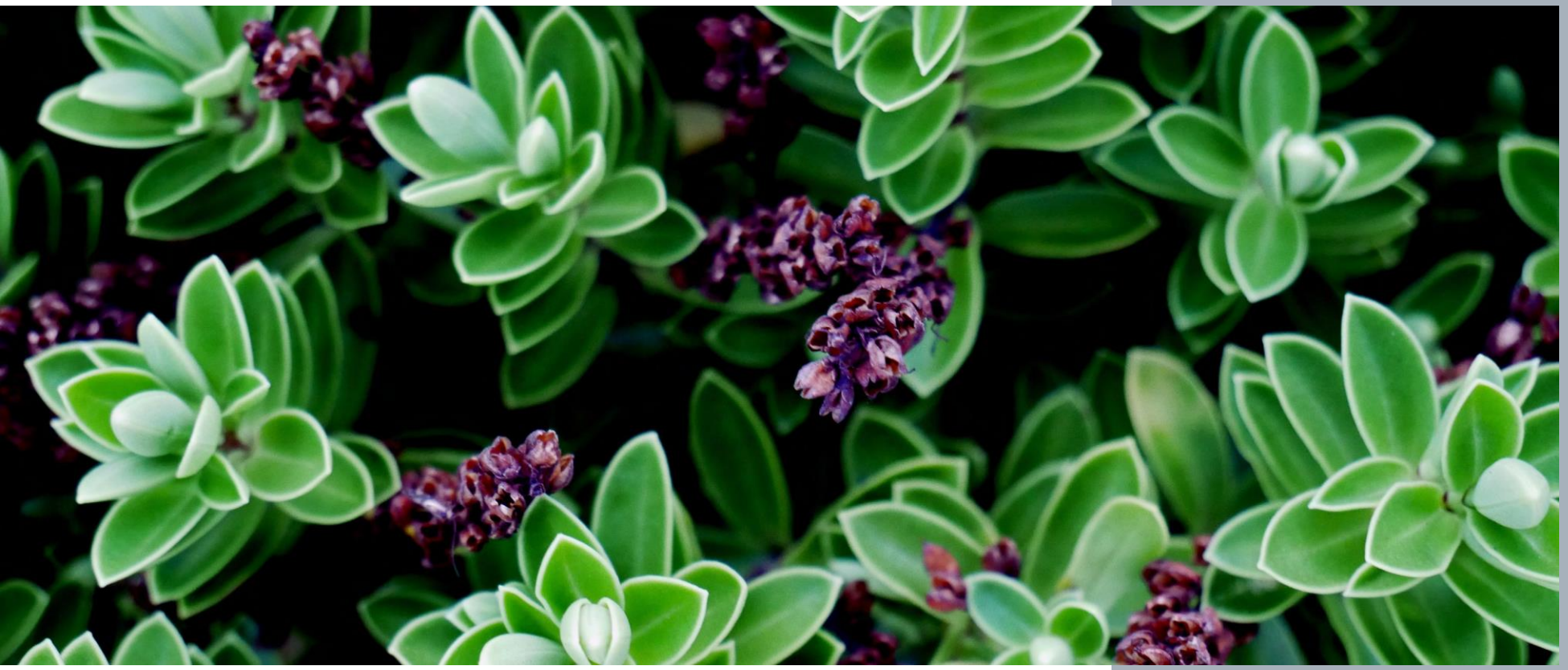
SUPPORT SERVICES PROGRAMS

Assistance programs are focused on helping residents make smart choices about how they use and save water. The focus of these programs may change as customer needs change. As of February 2023, the following programs are available:

- **Free Landscape Designs** - Top landscape designers are available to create free landscape designs for residents. The designs provide examples of landscapes that thrive in Southern California's semi-arid climate.
- **California Friendly Landscape Classes** - Virtual classes offered through Metropolitan Water District including topics like landscape design, irrigation, plant selection and care, controller programming, and more.
- **Landscape Maintenance Plans** - Plans to assist customers with caring for and preserving a water efficient landscape over time.

ONLINE RESOURCES

MWDOC maintains a compilation of water use efficiency online resources to help residents learn about and save water including: OC Water Smart Gardens, OC Garden Friendly Program, Sunset's Magazine's Plant Finder, Home Water Use Calculator, and more.



Section 4: Findings from End-Use Analysis

Now with the understanding of overall water use in the region, the consultant team analyzed the disaggregated water use data from over 1,000 single-family residential customers in Orange County, provided by Flume Data Labs. This analysis established a foundation for determining the water conservation potential within the region. Additionally, the data revealed which specific end uses present the greatest opportunities for further water use reductions.

FINDINGS OF WATER EFFICIENCY LEVELS ACROSS ORANGE COUNTY

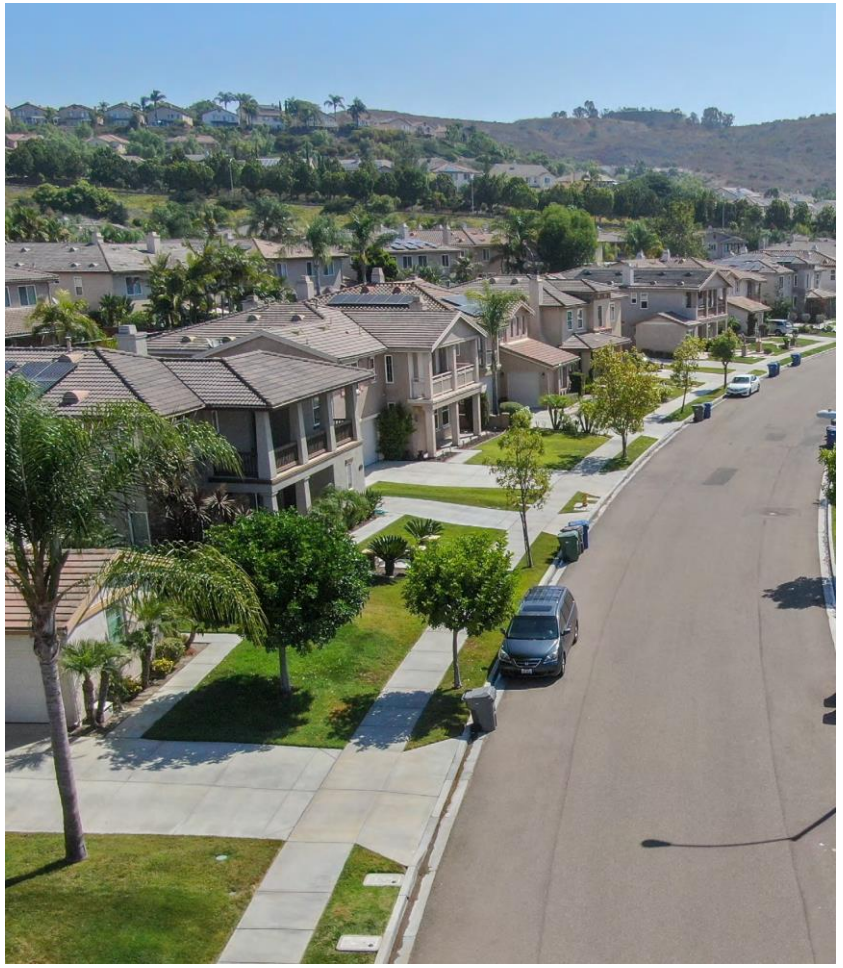
CURRENT INDOOR EFFICIENCY

The average reported residential indoor gallons per capita per day across Orange County for 2017-2019 was 54 GPCD.

The companion report, MWDOC Residential Water Use Study, Q1 2020 thru Q3 2022 found that in 2020 the average indoor use among Flume customers was 53.2 GPCD. This is quite close to the average of reported residential indoor gallons per capita per day across Orange County for 2017-2019, which was 54 GPCD. However, in subsequent years indoor use among Flume customers was reduced to 43.7 GPCD in 2021 and 41.6 GPCD in 2022 as shown in Table 3. This change is largely due the changed/increased occupancy during the COVID-19 pandemic and the ongoing impact of the Flume device in detecting leaks and assisting customers in finding ways to reduce demand.

Year	Average Indoor	Source
2017 – 2019	**54.0**	**Reported to SWRCB**
2020	**53.2**	**Flume Data Labs**
2021	**43.7**	**Flume Data Labs**
2022	**41.6**	**Flume Data Labs**

Table 3: *Indoor Residential GPCD 2017-2022*



EFFICIENCY OF INDOOR END USES

The saturation of residential plumbing fixtures and appliances was analyzed in the companion report, the *MWDOC Residential Water Use Study, Q1 2020 thru Q3 2022* prepared by Flume Data Labs and WaterDM. Central findings are summarized here.

Figure 6 shows indoor water use by end use. Toilets have the highest usage at 35.8%. Showers is the second largest category at 26.6%, followed by Miscellaneous usage which includes faucets. Clothes washers, dishwashers, leaks, and water softeners represent the remaining usage at 16%.

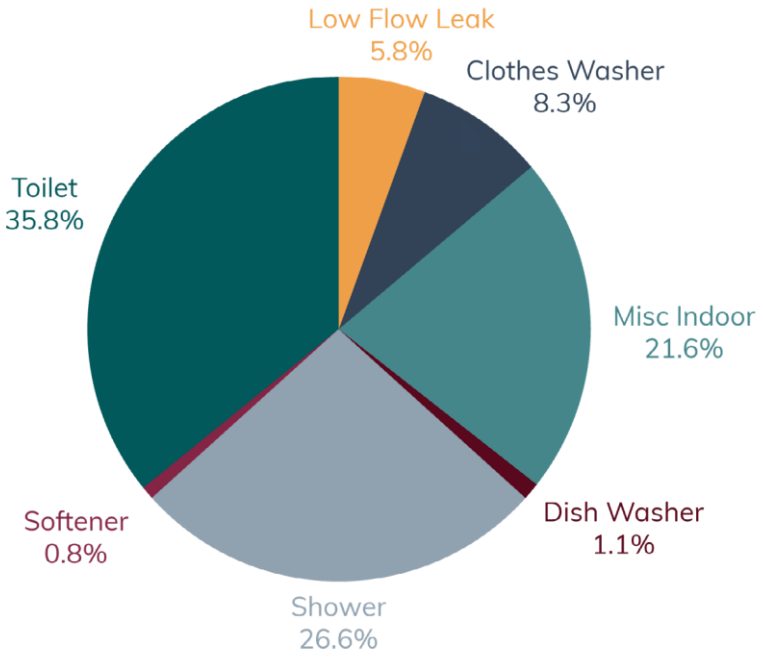


Figure 6: *Indoor Water Use by Fixture – MWDOC Q3 2022 Flume Residential End Use Study*

TOILETS

The average flush volume was 2.1 gallons per flush across the Orange County research group of 1,066 households. The median flush volume was 1.7 gallons. The complete set of toilet statistics are shown in Table 4 and the distribution of flush volumes is shown as a histogram in Figure 7.

Measure	Value
Avg. Volume (gal)	**2.1**
Median Volume (gal)	**1.7**
Avg. Duration (min)	**0.9**
Median Duration (min)	**0.8**
Number of Households	**1,066**
Number of Events	**3,106,919**

Table 4: *Toilet Flush Rates - Orange County Flume Users, Q2 and Q3 2022.*

The Flume data show that **50% of the toilet flushes are higher than 1.7 gallons**. Almost **17% of toilets are flushing at 3 gallons or more** which is twice the 1992 EPAct Standard. Focusing on these extremely inefficient toilets would deliver significant savings.

It should be noted that some of the higher flush volumes are likely double flushes or stuck toilet flappers. It is also probable that there are poorly functioning ULF toilets flushing at higher rates. One last consideration is that the flush volumes may be inflated by faucet use for washing of hands that occurs simultaneously while the toilet is refilling.

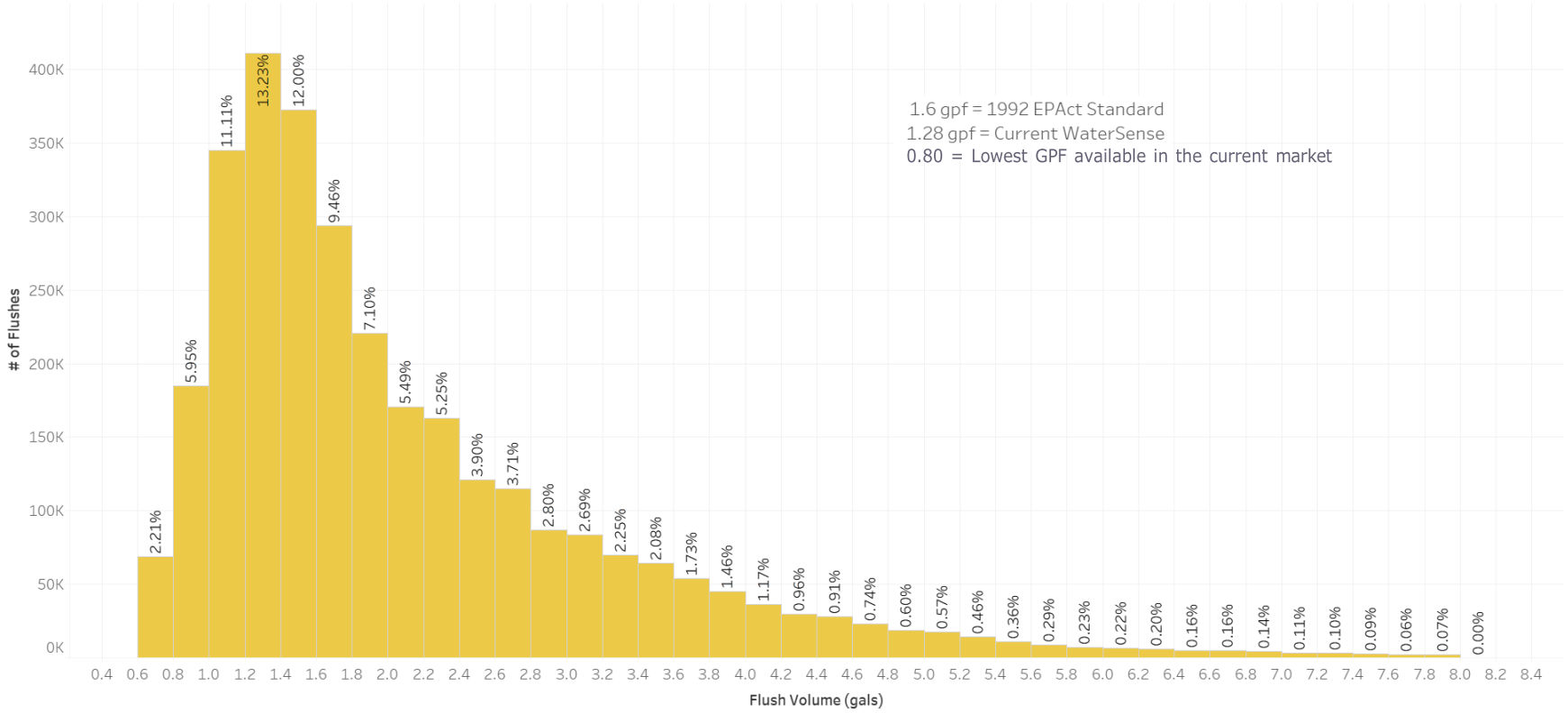


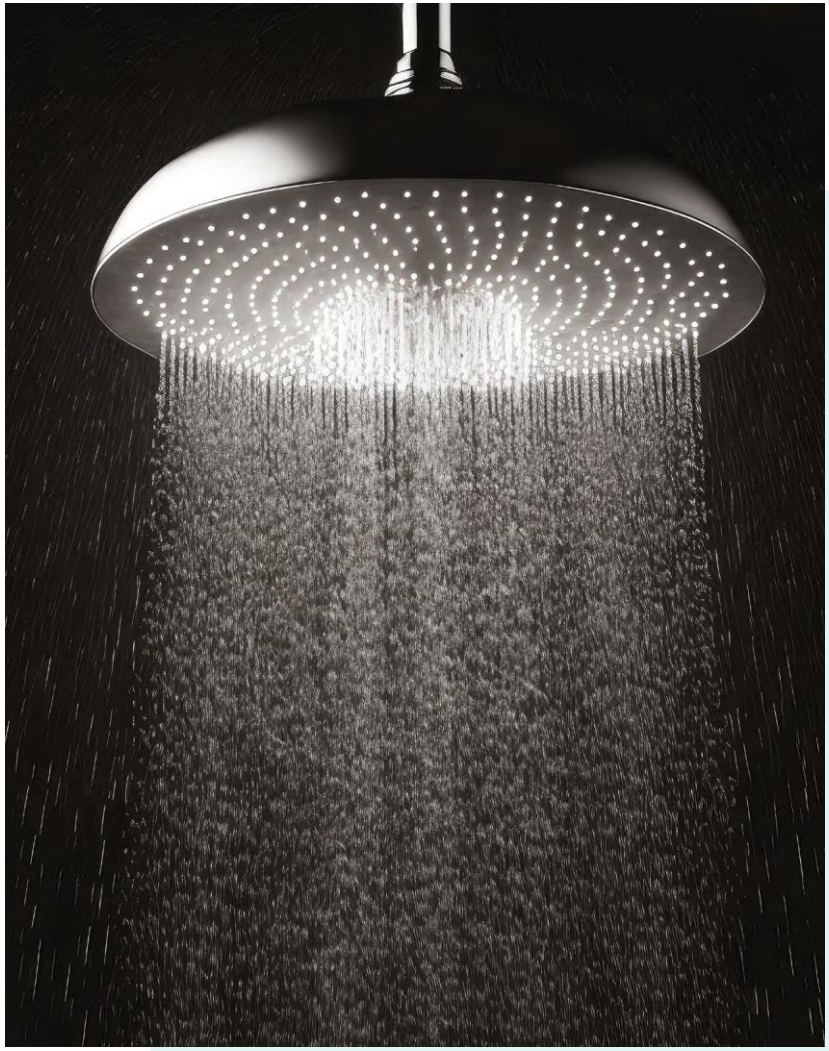
Figure 7: *Distribution of Toilet Flush Volumes - MWDOC Q3 2022 Flume Residential End Use Study*

Showerheads

The average shower volume was 11.5 gallons across the Orange County research group of 1,058 households. The median shower volume was 8.8 gallons. The complete set of shower statistics are shown in Table 5 and the distribution of shower flow rates is shown as a histogram in Figure 8.

Measure	Value
Avg. Volume (gal)	11.5
Median Volume (gal)	8.8
Avg. Flow Rate (gpm)	1.9
Avg. Duration (min)	6.1
Median Duration (min)	4.8
Number of Households	1,058
Number of Events	420,826

Table 5: *Shower Flow Rates - Orange County Flume Users Q2 and Q3 2022*



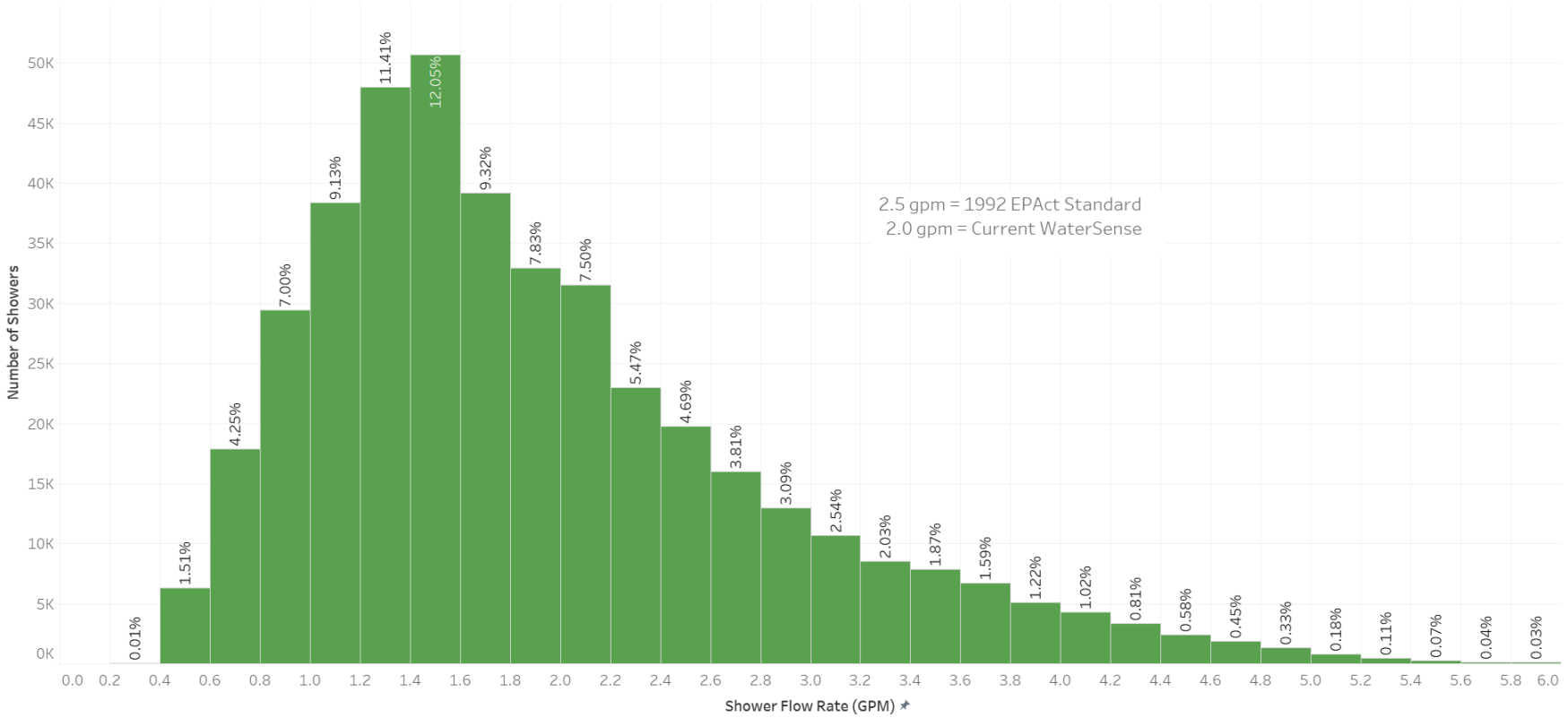


Figure 8: *Distribution of Flow Rates (gpm) - MWDOC Q3 2022 Flume Residential End Use Study*

The Flume data show that there are still higher flow showers occurring. However, approximately 80% of showers are flowing at or below the Energy Policy Act regulated flow rate of 2.5 gpm. California's 2017 Title 24 building code requires faucets flow at not more than 1.2 GPM. Twenty percent are flowing above 2.5 gpm and almost 9% at over 3.5 gpm. To capture the maximum savings, the objective would be to locate and replace all showerheads over 2.0 gpm.

Clothes Washers

The average clothes washer run volume was 31.5 gallons per load across the Orange County research group of 1,058 households. The median clothes washer run volume was 27.1 gallons per load. The complete set of clothes washer statistics are shown in Table 6 and the distribution of clothes washer volumes is shown as a histogram in Figure 9.

Measure	Value
Avg. Volume (gal)	31.5
Median Volume (gal)	27.1
Avg. Duration (min)	41.6
Median Duration (min)	36.7
Number of Households	1,007
Number of Events	48,391

Table 6: *Clothes Washer Volume Statistics - Orange County Flume Users Q2 and Q3 2022*

Clothes Washer Disclaimer

The Flume disaggregation of clothes washer data appears to be missing clothes washers that use less than 15 gallons per load. Usage from these devices looks similar to other end uses (mostly toilets) and is likely being miscategorized. There are numerous 13.5 gallon washers in the market and it is likely that some of the Flume homes have these washers.

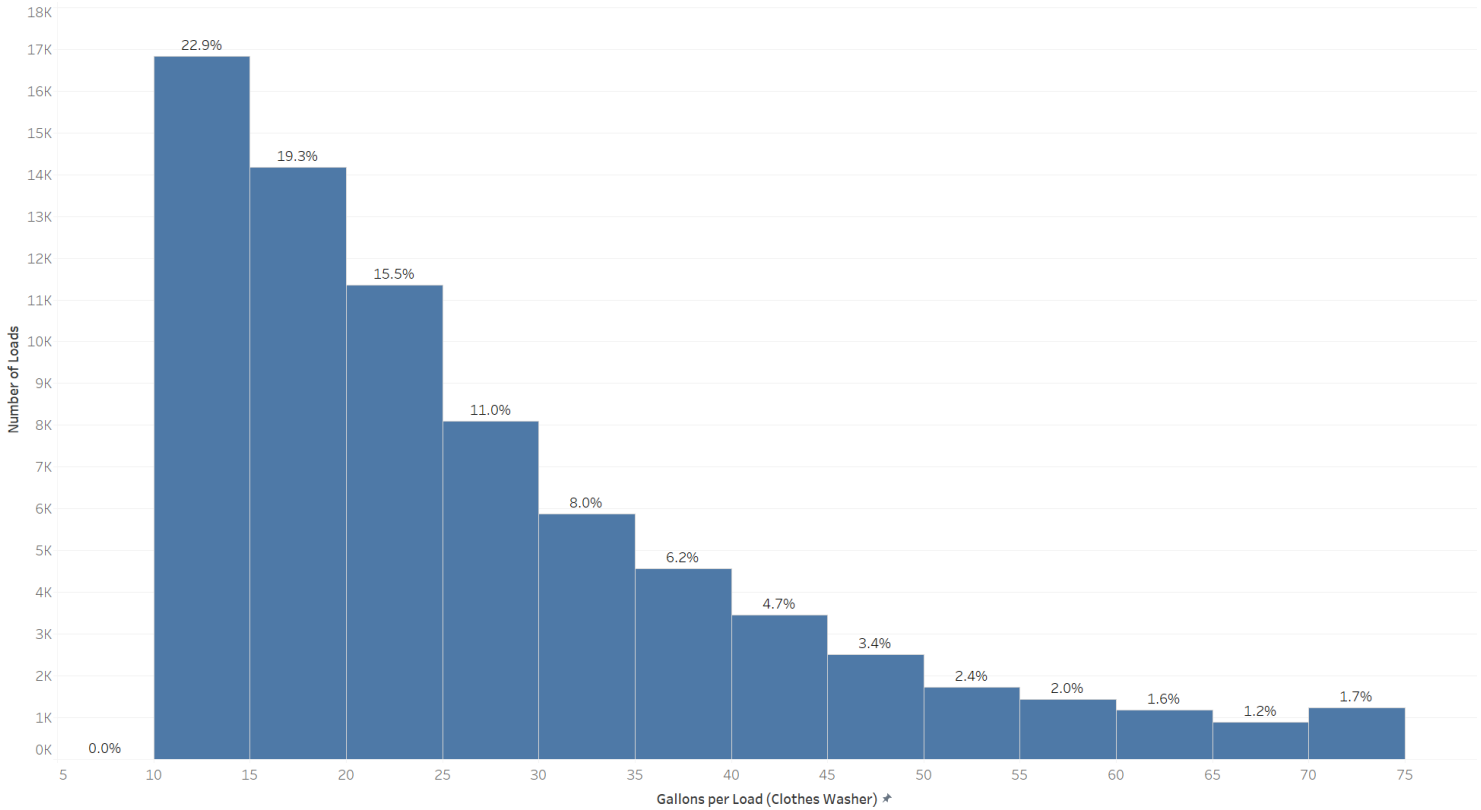


Figure 9: *Distribution of Clothes Washer Run Volume - MWDOC Q3 2022 Flume Residential End Use Study*

The average clothes washer volume of 31.5 gallons per load demonstrates an opportunity for further water reduction. The majority of high efficiency washers in the market today use 13.5 gallons or less per load.

More than 50% of washers used over 25 gallons per load, and 11% had loads using over 50 gallons. Reducing the average clothes washer volume down to 13.5 gallons would result in significant savings.

Dishwashers

The average dishwasher run volume was 3.6 gallons per load across the Orange County research group of 924 households. The median dishwasher run volume was 3.1 gallons per load. The complete set of dishwasher statistics are shown in Table 7 and the distribution of clothes washer volumes is shown as a histogram in Figure 10.

Measure	Value
Avg. Volume (gal)	3.6
Median Volume (gal)	3.1
Avg. Duration (min)	51.5
Median Duration (min)	48.9
Number of Households	924
Number of Events	52,638

Table 7: *Dishwasher Run Volume Rates - Orange County Flume Users Q2 and Q3 2022*

The average dishwasher run volume of 3.6 gallons per load is low and is unlikely to be improved much. Dishwashers, as compared to hand washing, are considered a well-established water efficiency measure. Little opportunity remains for significant savings from this appliance. Agencies can promote the use of dishwashers versus hand washing to reduce indoor water use.

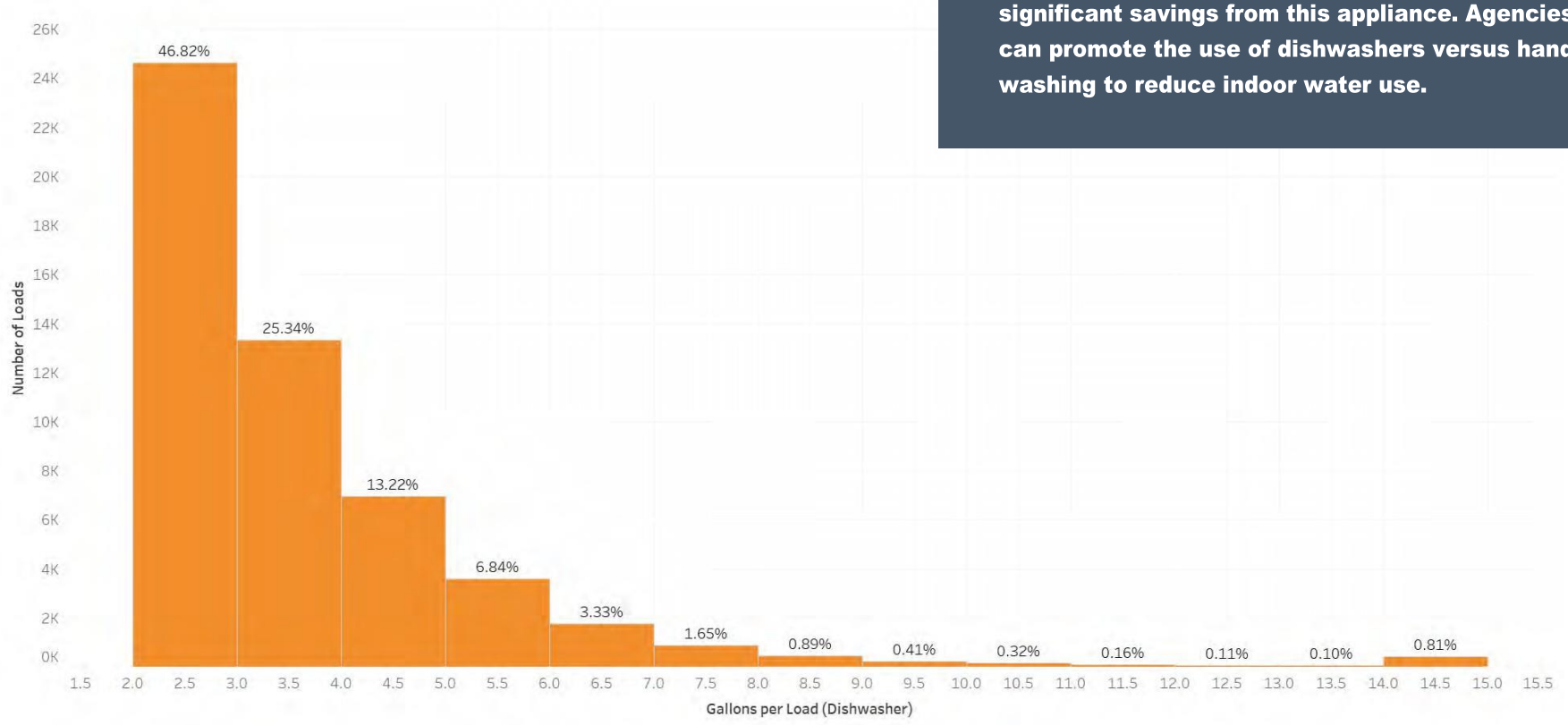


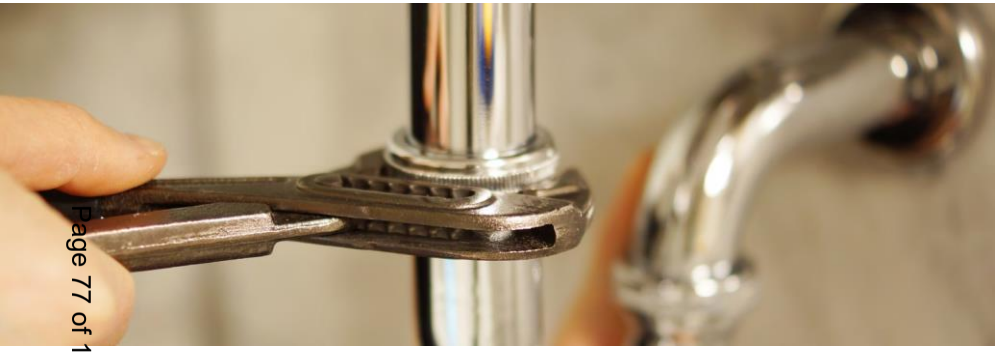
Figure 10: *Distribution of Dishwasher Run Volume - MWDOC Q3 2022 Flume Residential End Use Study*

Leaks

Through the Flume data analysis, leaks represented an average of 5.8% of overall water consumption.

Customers who install the Flume sensor receive the accompanying Flume app which provides continuous leak detection and leak notifications. As a result of this feature, Flume customers are likely to have lower levels of leakage and greater awareness of their overall water use than the general population. It is likely that the general population has a higher percentage leakage level.

Previous end use studies have shown leaks representing 10-12% of total water use. Flume's own research suggests indoor savings of 14% through installation of the device. Increasing market saturation of these devices not only provides leak detection services, but also provides customer and water providers information regarding each end use. This allows retail agencies to provide more focused services and customers to better manage their water use.



Other Indoor End Uses

Additional indoor end uses include faucets, baths, ice makers, and water softeners.

Reductions in faucet flow rates in bathrooms and kitchen sinks have been driven by the 1992 Energy Policy Act, Title 24 building code, and the voluntary WaterSense program. Reducing flow rates below these levels in the future is less likely and could be undesirable from the consumer experience. Many faucet uses are for fixed volumes (such as filling a pot or a glass) or require a minimum flow rate or water force (such as cleaning). Reducing flow rates increases the time spent waiting for the pot to fill and may not provide the cleaning impact desired.

Compared to showers, baths are taken infrequently and require a fixed amount of water that typically cannot be impacted by water efficiency standards.

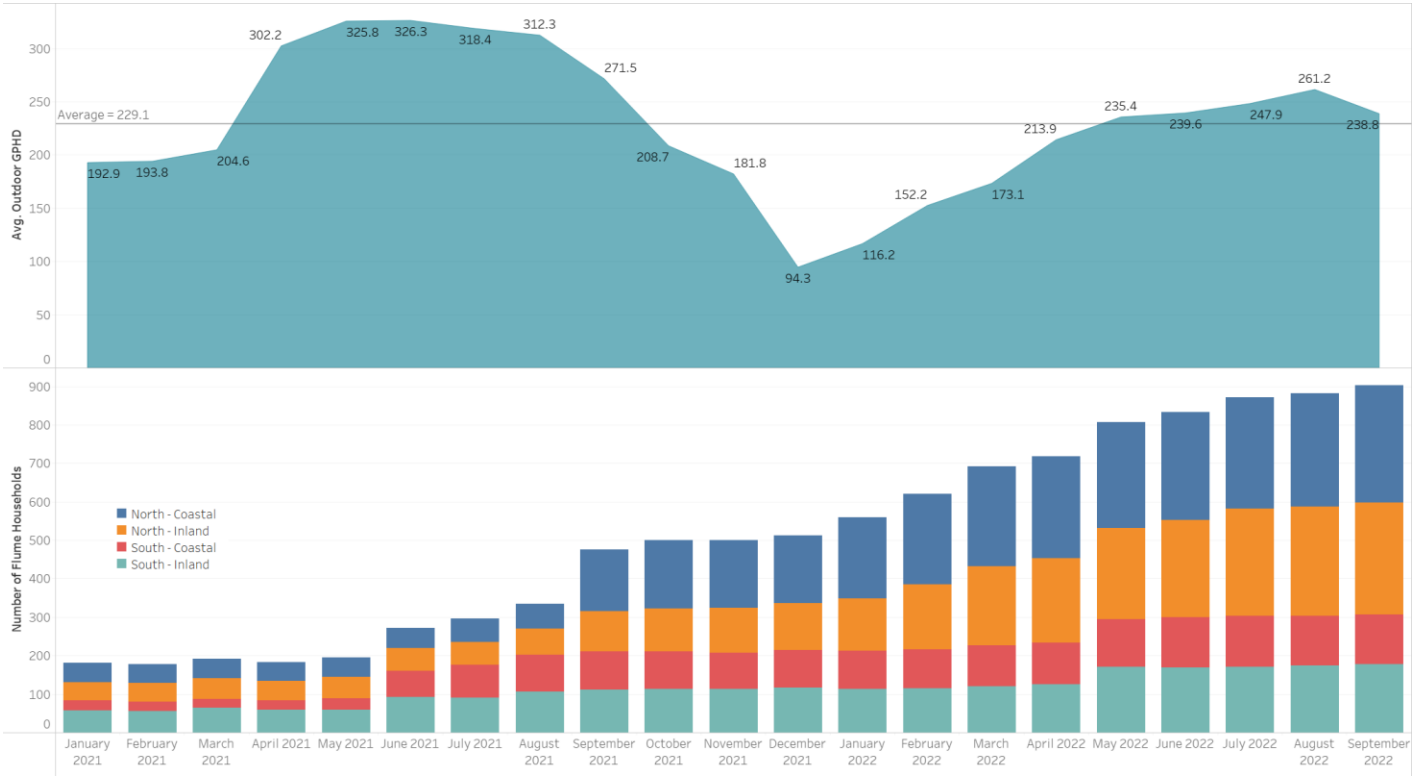
Water softeners typically use a 55-75 gallons of water per week. There are limited opportunities (if any) for reducing the amount of water used by these devices. Many communities are choosing to eliminate use of softeners through regulation. This is typically driven by the negative impacts of salt on the wastewater system.

Other end uses include evaporative coolers, humidifiers, misters, and home reverse osmosis. However, these devices are seen fairly infrequently in Orange County and therefore offer limited opportunity for water savings.

CURRENT OUTDOOR EFFICIENCY

Flume devices throughout Orange County measured actual application of irrigation water on residential landscapes from January 2020 – September 2022.

The average outdoor water use of Flume customers from January 2021 through September 2022 was **229 gallons per household per day (GPHD)**. There was a wide span in the monthly usage numbers from a high of 326 GPHD in June of 2021, to a low of 94 GPHD in December of 2021. The high occurred during a hot, dry month of a drought year, and the low occurring during a high rainfall period.



This data was compiled and divided into four quadrants based on climate: North Coastal, North Inland, South Coastal, and South Inland. Figure 12 shows the distribution of Flume devices throughout these 4 climate quadrants.

Blue and Orange = GS Water

Red = SCWD

Green = SMWD

Figure 11: *Monthly average outdoor use and number of Flume households*

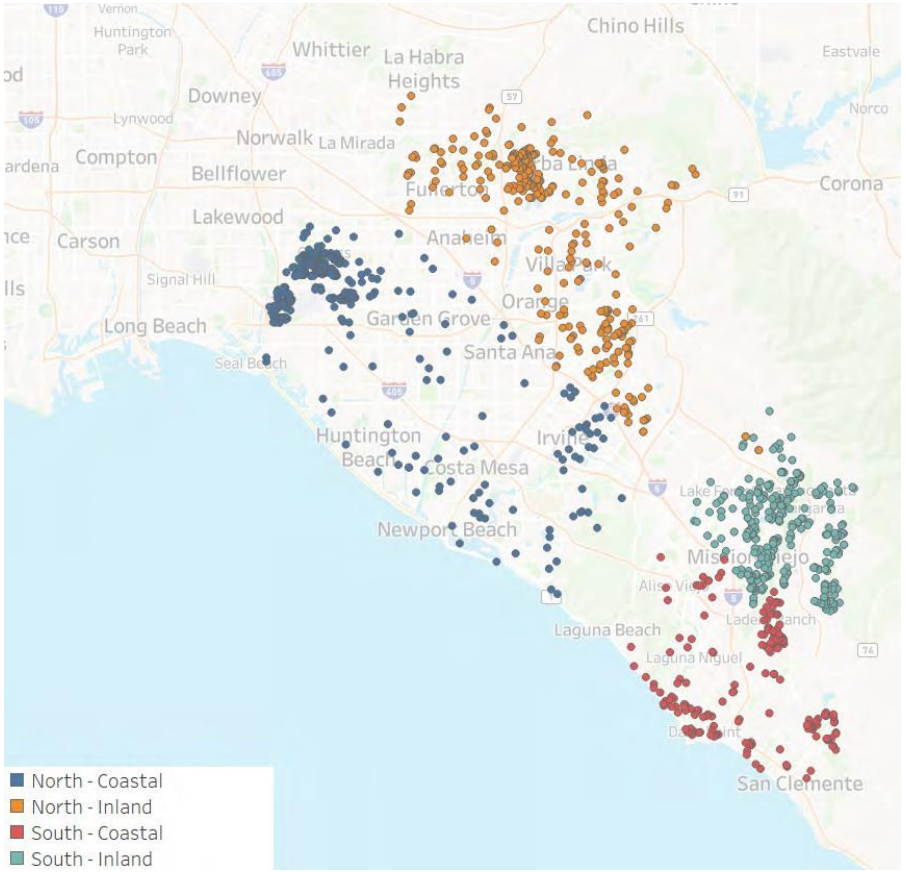


Figure 12: *Distribution of Flume Devices*

The State Water Resources Control Board's recommended outdoor Water Use Objective be calculated based on several factors:

- Landscape area
- Local evapotranspiration and effective precipitation levels (Spatial CIMIS and Irvine CIMIS precipitation data was utilized in modeling)
- Irrigation efficiency or ET adjustment factor (ETF)
  - o 0.80 ETF 2025 through 2029
  - o 0.63 ETF 2030 through 2034
  - o 0.55 ETF 2035 and after

Combining these variables, SWRCB has recommended an "outdoor objective" which represents the least (most efficient) amount of water needed to maintain the landscape. This "outdoor objective" is represented by the orange line in Figure 13 . This line is variable depending on the day (days shown along x axis) due to weather variations. An average outdoor objective per year was also calculated which provides a more complete view of outdoor water needs.

Figure 9 shows the average outdoor objective at a 0.8 ETF for 2020 - 2022. The figure also shows the actual outdoor usage as measured by Flume devices as a blue line. Again, the daily actual usage varies based on local weather with the average over the year represented by a horizontal line.

In 2020, the average actual usage was 437 GPHD which was much higher than the average objective of 339 GPHD. It should be noted that the sampling size is small, which may not be representative of the larger Orange County population. Another consideration is that water use may have been higher due to the COVID-19 pandemic. However, the actual usage per household per day fell consistently after 2020 with an average of 247 GPHD in 2021 and 213 GPHD in 2022, well below the recommended 2025 water use objective. Note that the Objective Objective is calculated on an annual scale, the chart below shows daily use.

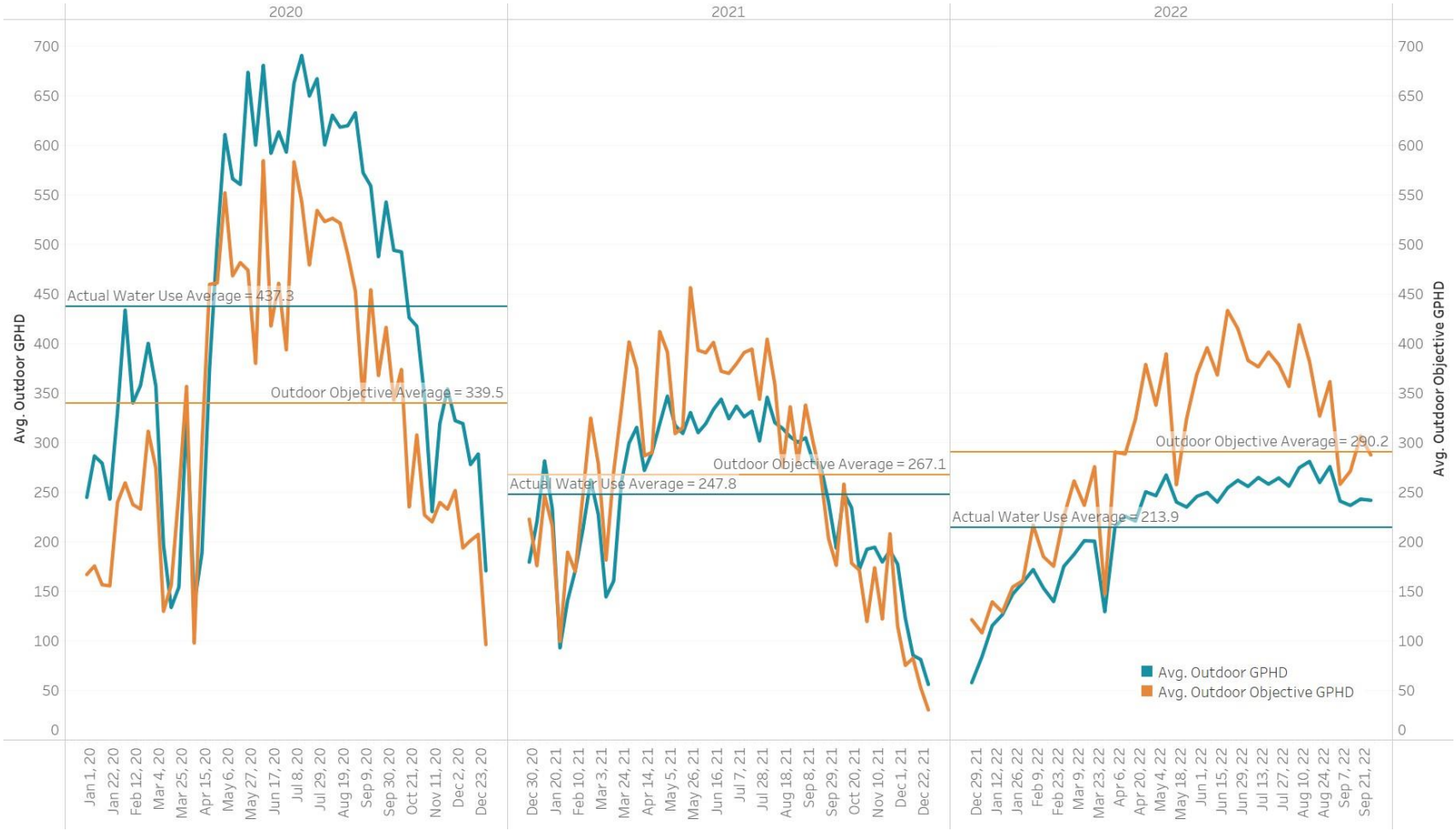


Figure 13: *Average per Household Outdoor Use Compared with 0.8 ETF Objective - MWDOC Q3 2022 Flume Residential End Use Study*

All quadrants in Orange County were able to meet the average per household outdoor use objective at 0.8 ETF. However, this changed when the ETF was adjusted to 0.63 ETF. None of the 4 quadrants are currently meeting the outdoor objective average at 0.63 ETF.

The quadrant farthest from meeting the future outdoor objective is the South Inland quadrant. Their average actual usage in 2022 was 197 gallons and the objective is 162 gallons (Figure 14).

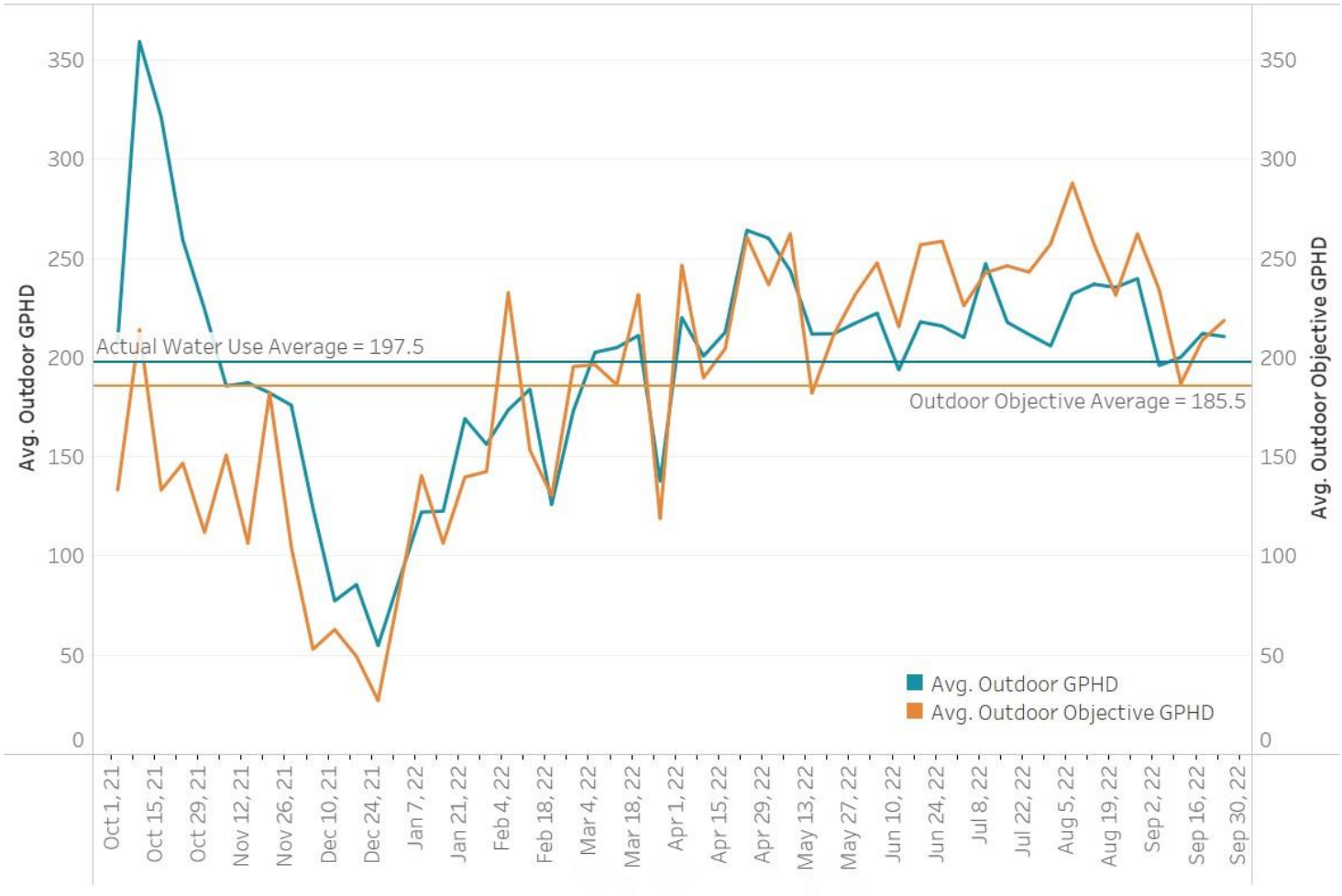


Figure 14: *Average per Household Outdoor Use Compared with 0.8 ETF Objective – South Inland Quadrant*

The North Inland quadrant is the second farthest from meeting the upcoming 2030 objective, over by 16 GPHD. Their average actual usage in 2022 was 257 gallons and the objective is 272 gallons (Figure 15).

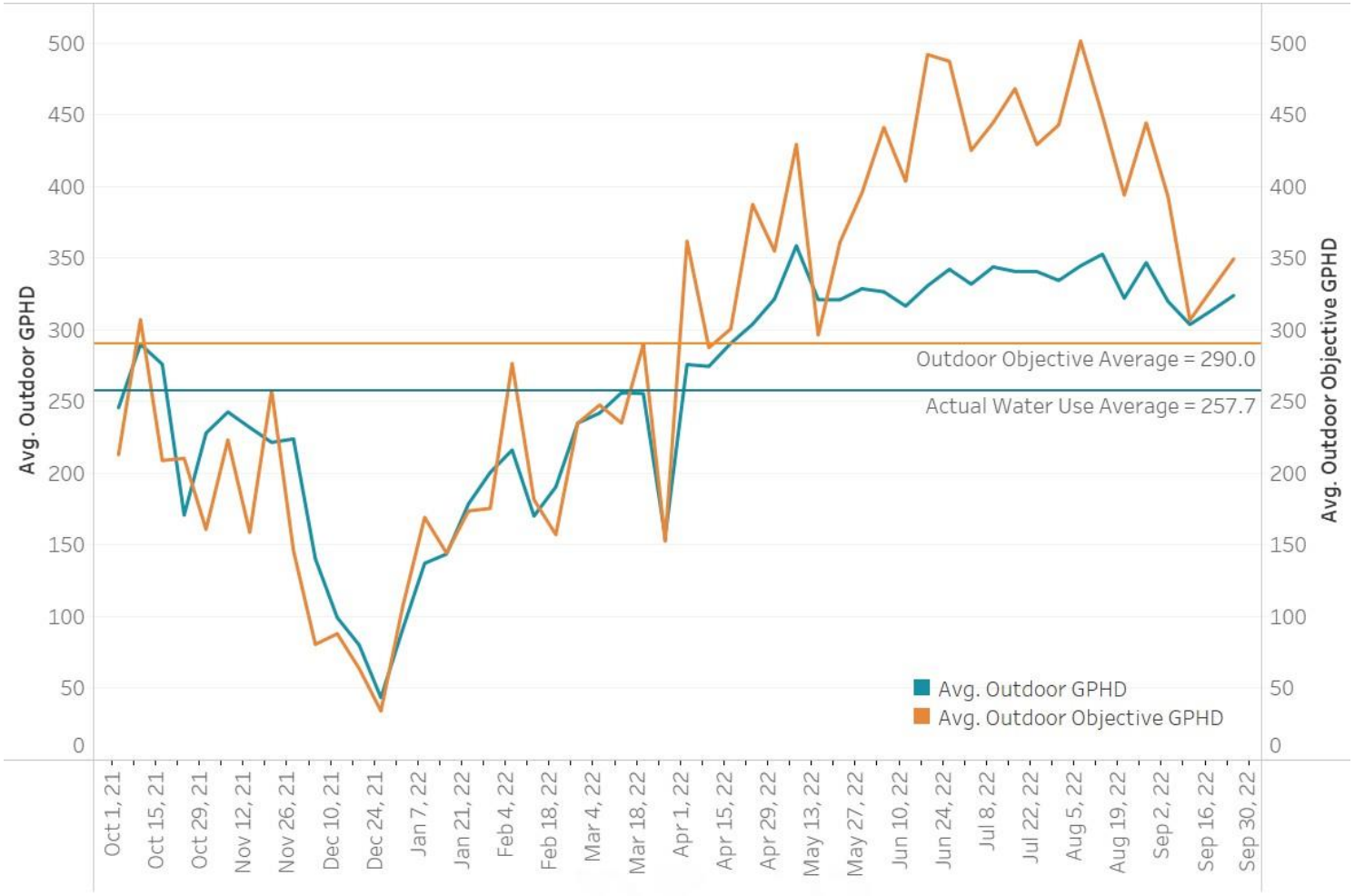


Figure 15: *Average per Household Outdoor Use Compared with 0.8 ETF Objective – North Inland Quadrant*

The North Coastal (Figure 16) and South Coastal (Figure 17) Regions were closer to meeting the 2030 objective goals however, would still require some increased efficiency.

The average actual usage in 2022 for the North Coastal quadrant was 242.3 gallons and the objective is 238.1 gallons (Figure 16). The average actual usage in 2022 for the South Coastal area was 159.2 gallons and the objective is 152.3 gallons (Figure 17).

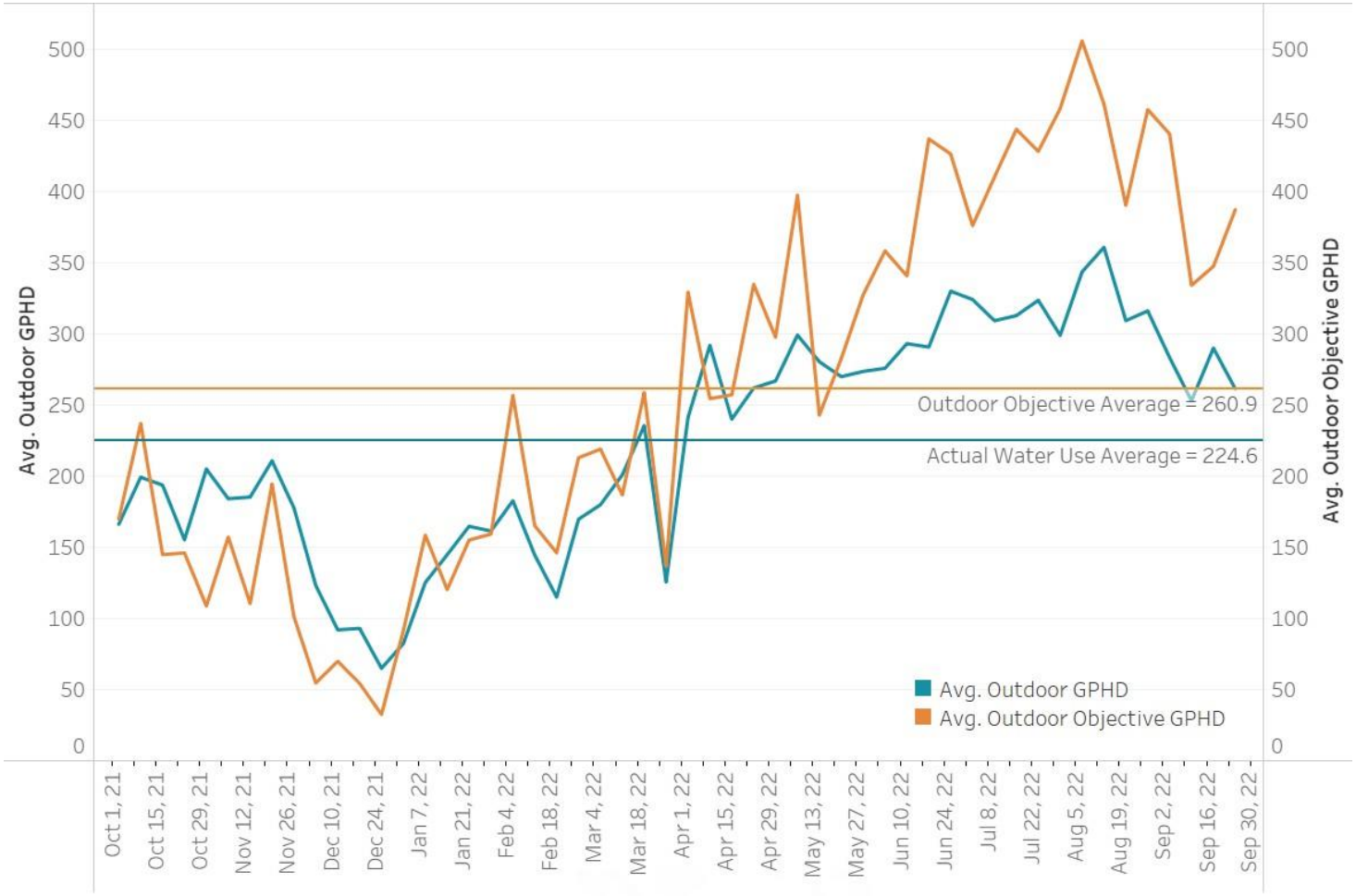


Figure 16: *Average per Household Outdoor Use Compared with 0.8 ETF Objective – South Coastal Quadrant*

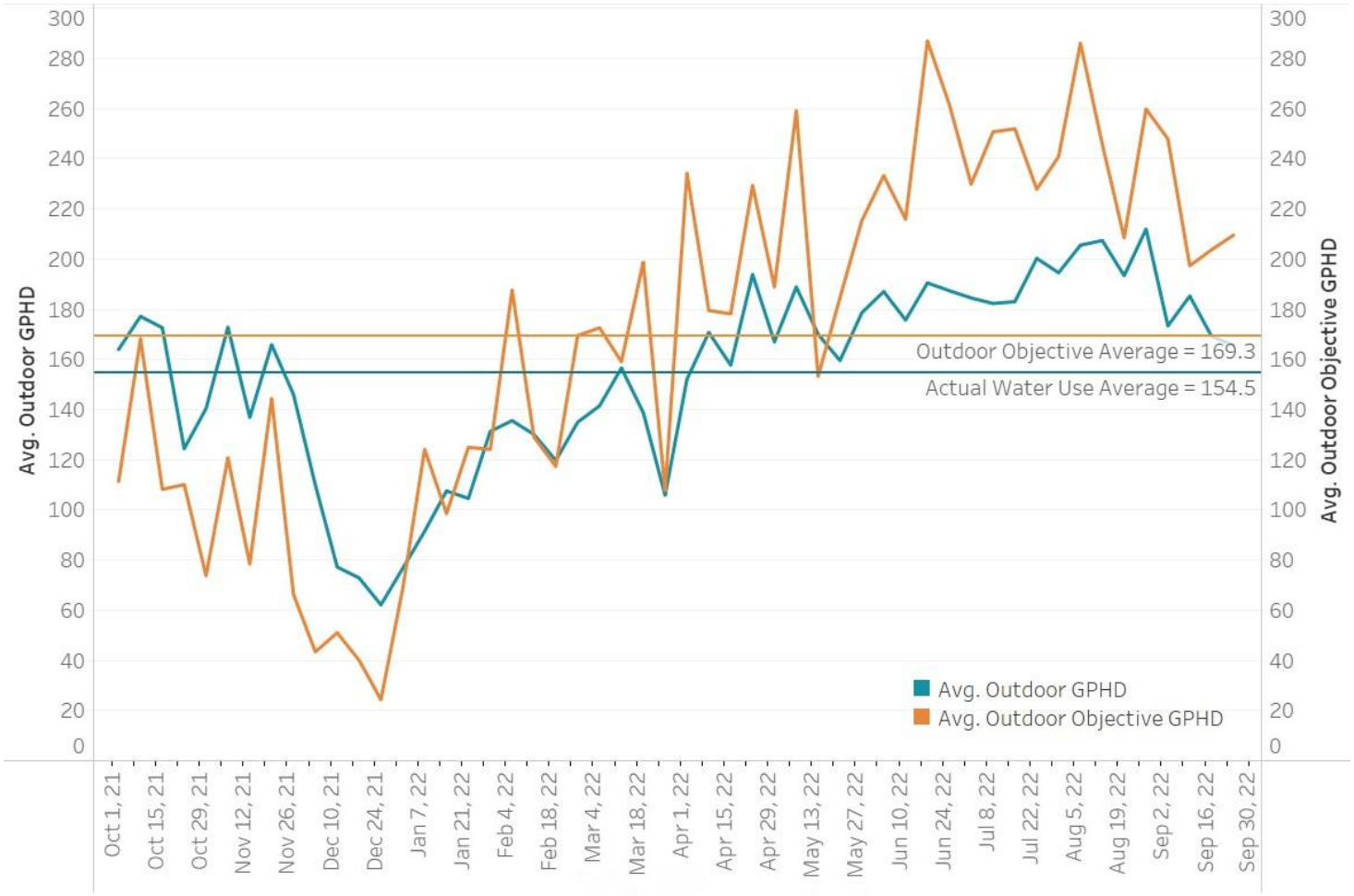


Figure 17: *Average per Household Outdoor Use Compared with 0.8 ETF Objective – North Coastal Quadrant*

FINDINGS FROM END USE ANALYSIS

Below is a list of the key findings from the MWDOC Residential Water Use Study. Possible program considerations are identified per end use.

Indoor Water Use

End Use	Average Use	Findings	Considerations
Toilets	2.1 GPF	• 50% of flushes are more than 1.7 GPF • Most toilets leak therefore are flushing at higher rate • 17% of flushes are 3 GPF or more	• Offer toilet leak detection device incentives • Continue to offer rebates for premium efficiency toilets • Target pre-1994 properties
Showers	11.5 Gallons	• Average shower used 11.5 gallons • 80% of showerheads flow at 2.5 GPM or below • 9% are over 3.5 GPM	• Limited opportunity for significant savings • Opportunity with new technologies for shower recirculating systems
Clothes Washers	31.5 Gallons/Load	• 50% of washers operate over 25 gallons per load • 11% operate over 50 gallons per load	• Continue offering incentives for the highest efficiency washers • Future opportunity is gray water recycling of laundry water
Dishwashers	3.6 Gallons/Load	• Average run volume of 3.6 gallons per load	• No reasonable opportunity exist for dishwasher water savings • Promote use of dishwasher over hand washing
Faucets	NA	NA	• Limited opportunity due to existing efficient code and potential customer dissatisfaction with lower flows
Water Softeners	55-75 gallons/week	• Softeners run on average 1 time per week, using 55-75 gallons	• Limited opportunity due to limited use and presence of softeners • Consider banning based on salt impact to wastewater system • Promote use of off-sink regenerative softeners
		• 5.8% of overall indoor use • The 5.8% from Flume customers is likely	• Continue to offer incentives for leak detection devices

Leaks	NA	lower than the general population. Previous end use studies have shown a 10-12% reduction	• Consider offering leak repair program specifically for underserved communities

Outdoor Water Use

The *Residential Water Use Study* did not disaggregate each outdoor water using device however, the data does illuminate several key findings that are useful when developing water efficiency strategies.

Findings		Considerations
62.5% of water was used outdoors in 2021.	→	Focusing WUE programs on outdoor measures offer the highest opportunity for water savings.
All Flume customers in the four Orange County quadrants were able to meet the average per household outdoor objective at 0.8 ETF. None of the customer quadrants are currently meeting the outdoor objective average at 0.63 ETF.	→	Higher levels of efficiency will require a major focus on outdoor measures specifically with reduction/elimination of turf as a key measure. It will be important for agencies to evaluate how the proposed outdoor standards may impact local environmental health including the Orange County tree canopy.
Inland communities use more water outdoors.	→	As opposed to broad program outreach, future programs will need to target communities that have higher outdoor use and specifically target customers over their property-specific water budget within those communities.
Variability in use shows customers are reducing watering during winter and rainy months.	→	Programs do not need to focus on rain shut-off sensors. The focus should be on: • Turf replacement • Efficient irrigation and smart controllers • Irrigation system repairs
Reduced use from 2020 to 2022 shows customer do respond to drought occurrences* and make major reductions in water use.	→	Customers are learning, responding, and maintaining higher levels of efficiency. Customers will need to understand there is continued water scarcity that requires dogged action by each customer to reach increasing levels of efficiency.

**It should be noted that water use in 2020 was likely higher due to stay-at-home mandates during the COVID-19 pandemic.*

Section 5: Findings from Online Survey of Customers

The Flume disaggregated data (discussed in Section 4) provided in-depth insight regarding indoor end use statistics and general outdoor water consumption. It did not, however, offer details about existing landscape makeup, irrigation equipment, and customer practices. For these reasons, a customer survey was designed to provide more insight about the following:

- Current plant materials and amount of turf, if any, replaced
- Existing irrigation hardware including smart timers, drip irrigation, and low precipitation sprinkler nozzles
- Irrigation practices and watering schedules
- Customer attitudes and opinions about climate change and water efficiency
- Customer interest in water efficient landscapes

The following section describes the findings from the online survey. The survey yielded responses from 2,396 customers from the three participating agencies.

The full findings from the customer survey can be found in the Orange County Water Survey and Orange County Survey Dataset provided as appendices.

ONLINE SURVEY DEMOGRAPHICS

Below are the general demographics of the survey responses. As expected, a clear majority of respondents (92%) were homeowners.

Sex

49% Male
45% Female
4% No answer
1% Self-describe

Income

<5% under $69k
6% $70k - 89k
11% $90k - 149k
12% $150k - 199k
10% $200k - 340k
7% $250k - 340k
<5% above $350k

Home Ownership

92% Homeowners
7% Renters
<1% Other living arrangement

Education

14% High school or less
46% Associate's or Bachelor's Degree
36% Graduate Degree

Race*

70% White
17% Asian
10% Hispanic
3% other

**It's important to highlight that the racial composition of survey respondents differs from that of Orange County's overall population. In Orange County, approximately 35% are White, 34% are Hispanic, 24% are Asian, and 7% belong to other racial groups.*

***Figure 18:** Survey Demographics*

CUSTOMER ATTITUDES AND BELIEFS REGARDING CLIMATE CHANGE AND WATER EFFICIENCY

Most respondents (96%) are aware that climate change poses a risk to human health, society, and the environment.

Most respondents (81%) stated that water conservation is very/extremely important.

How much of a risk do you believe climate change poses to human health, society, and the environment?

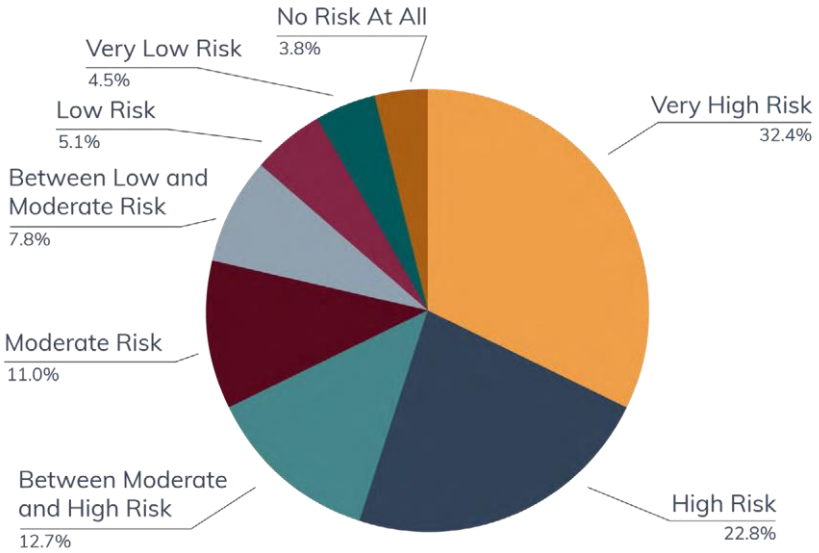


Figure 19: *Climate Change Risk*

How important is water conservation to you?

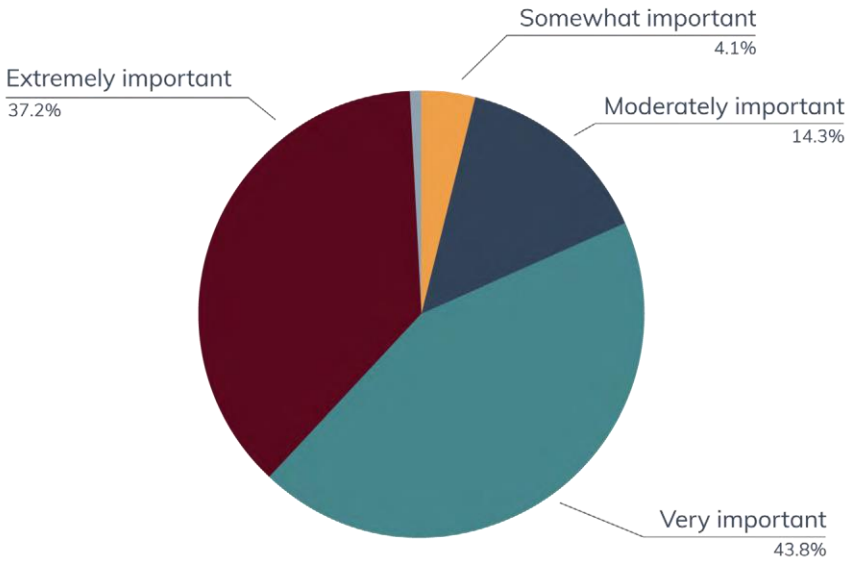


Figure 20: *Water Conservation Importance*

Nearly ¾ of respondents demonstrated a strong interest in learning about different programs and rebates to help reduce outdoor water use.

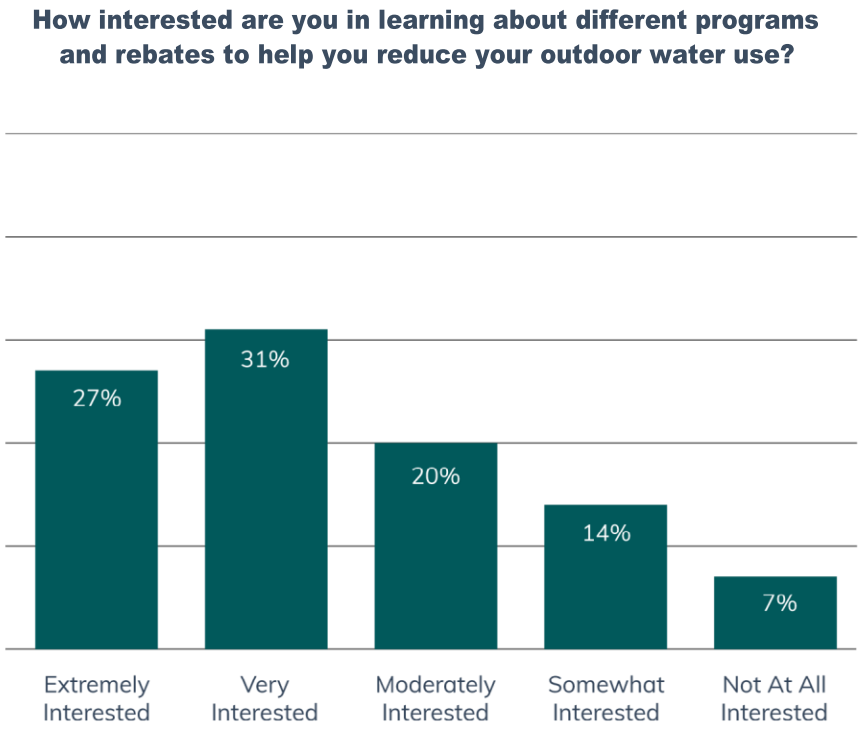
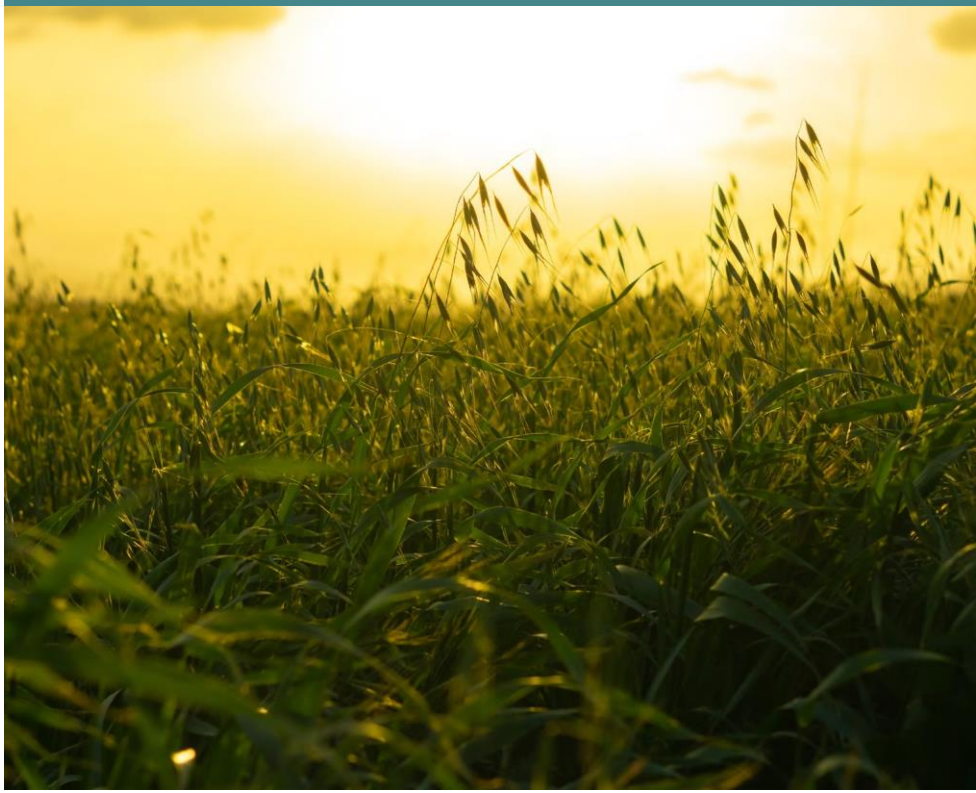


Figure 21: *Interest in Learning About Water Use Efficiency Programs*

The survey concluded:

- **Customers believe climate change is a risk to the environment and humans,**
- **They believe water conservation is important, and add a risk to humans and the environment,**
- **They want to learn more about water efficiency.**



PLANT MATERIALS

More than half of respondents (51%) report having at least some grass lawn, indicating there is still a substantial opportunity for turf replacement. The responses when asked to describe their lawn were:

27%...half or less grass lawn

24%...mostly grass lawn

22%...mostly low-water-use landscaping

10%...mostly artificial turf lawn

7%...no lawn and little other vegetation

4%...half or less artificial turf lawn

6%...other

When asked what replaced their grass lawn, the most common response (29%) was low or no-water-use landscape. Other responses included:

20%...artificial lawn

19%...concrete/patio

18%...nothing

3%...deck

11%...other

Of those who had not yet replaced their grass lawns, 28% are "very" or 'extremely" interested in doing so.

IRRIGATION HARDWARE AND PRACTICES

The survey also asked customers about their irrigation hardware. Forty six percent of respondents reported that they had some drip irrigation installed (Figure 18).

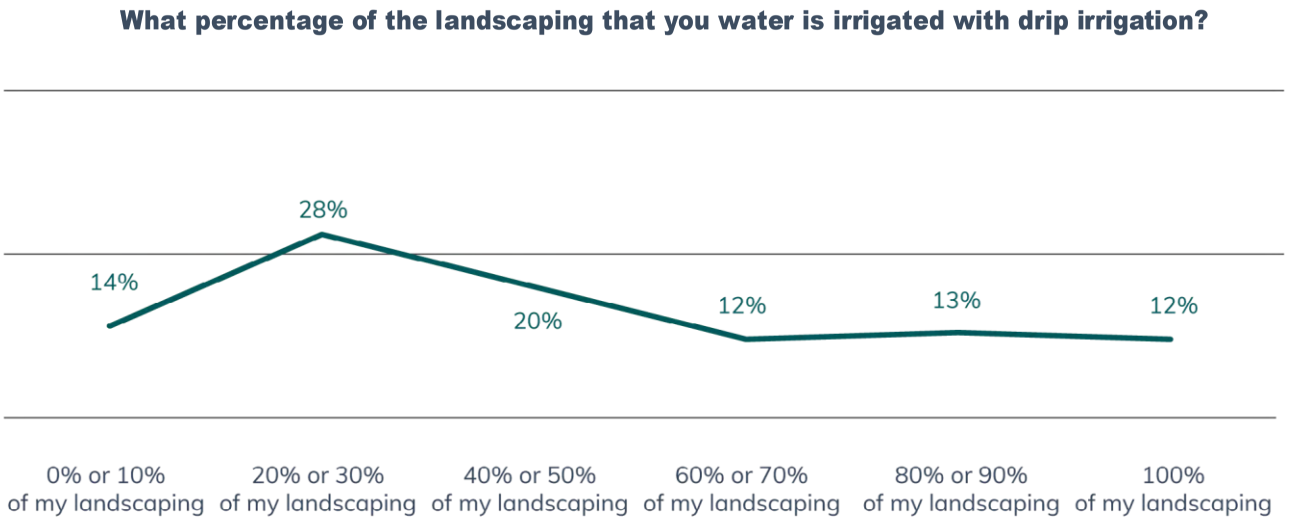


Figure 22: *Percentage of Landscape Irrigated with Drip*

Note: The Flume data showed a much smaller percentage of customes with drip irrigaiton at 9%; however this data may not be capturing customers with some but not all of their irrigation system converted to drip irrigation.

Forty percent of respondents reported having high efficiency nozzles installed in their irrigation systems. Of those customers, 89% reported turning their irrigation systems off when it rains and 53% reported multiple schedules for different parts of their yard.

When asked how often customers watered their lawn, most customers (75%) stated twice per week or more (Figure 19).

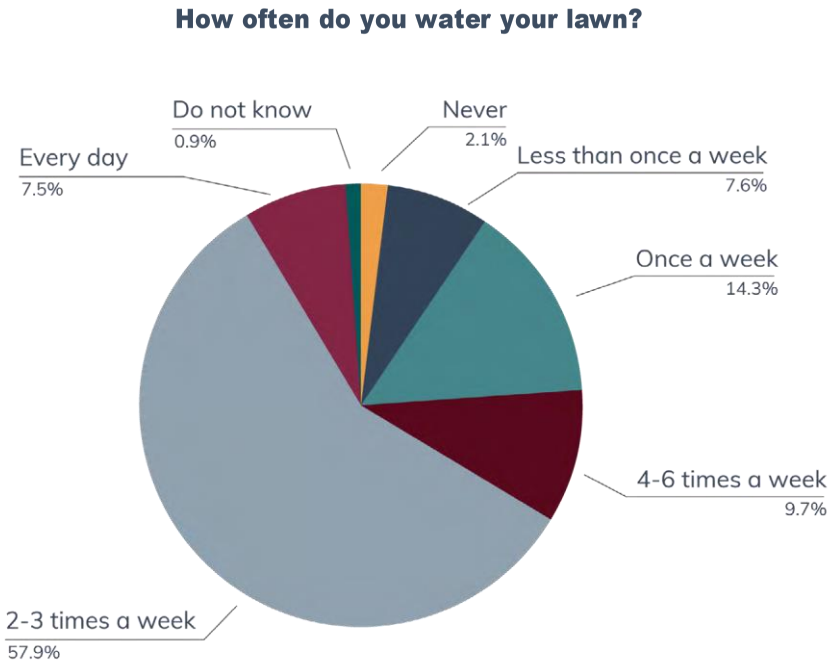


Figure 23: *Frequency of Lawn Watering*

CUSTOMER INTEREST

When it comes to customer interests, the online survey found that the majority of customers are interested in learning more about outdoor efficiency.

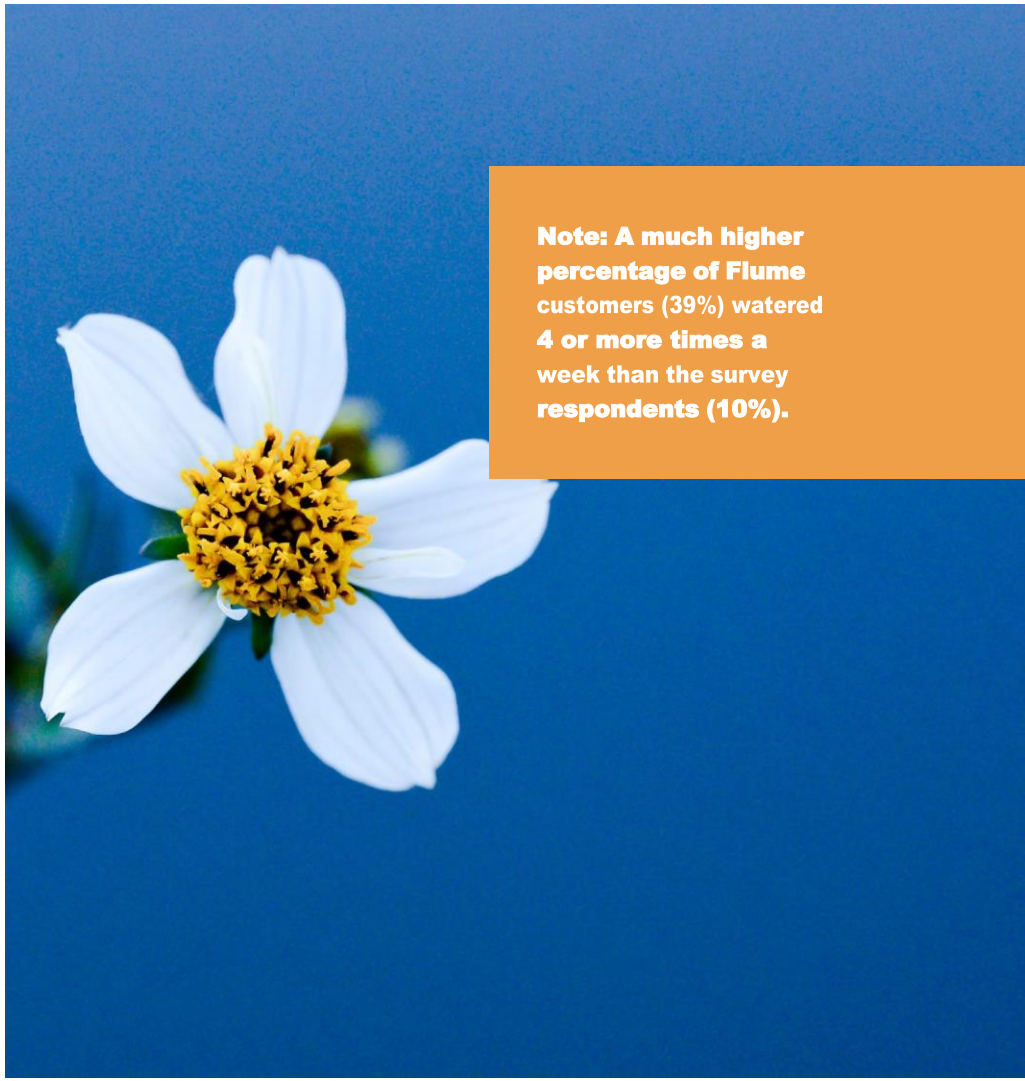
Customers with grass lawns wanted to learn more about:

- Optimizing their existing smart timer (50%)
- Buying a smart timer (36%)
- Installing drip irrigation (29%)

They were also "very" or "extremely" interested in planting low water use plants (42%) or replacing their lawns (32%). Customers who already have efficient equipment still wanted to learn more about how to optimize their:

- Drip irrigation (52%)
- Smart water timer (48%)
- High efficiency sprinklers (41%)

Three fourths of all respondents also had a strong interest in learning about different water utility programs and rebates to help reduce outdoor water use.



Note: A much higher percentage of Flume customers (39%) watered 4 or more times a week than the survey respondents (10%).

The survey indicated the following:

- A large portion of customers have drip irrigation systems installed,
- A significant percentage of customers have taken out part, or all, of their lawn, and
- Nearly all surveyed wanted more information about low water use landscape and equipment.

It was clear from survey responses that customers believe water conservation is important and want to learn more about water efficiency. However, their acute awareness and strong interest do not align with their actions. As with most people, they want to do the right thing, but many never take action.

Water agencies have been harnessing this interest and moving the market to landscape water efficiency. We are now at the apex of the adoption bell curve and capturing the remaining customers will take new types of outreach and support.

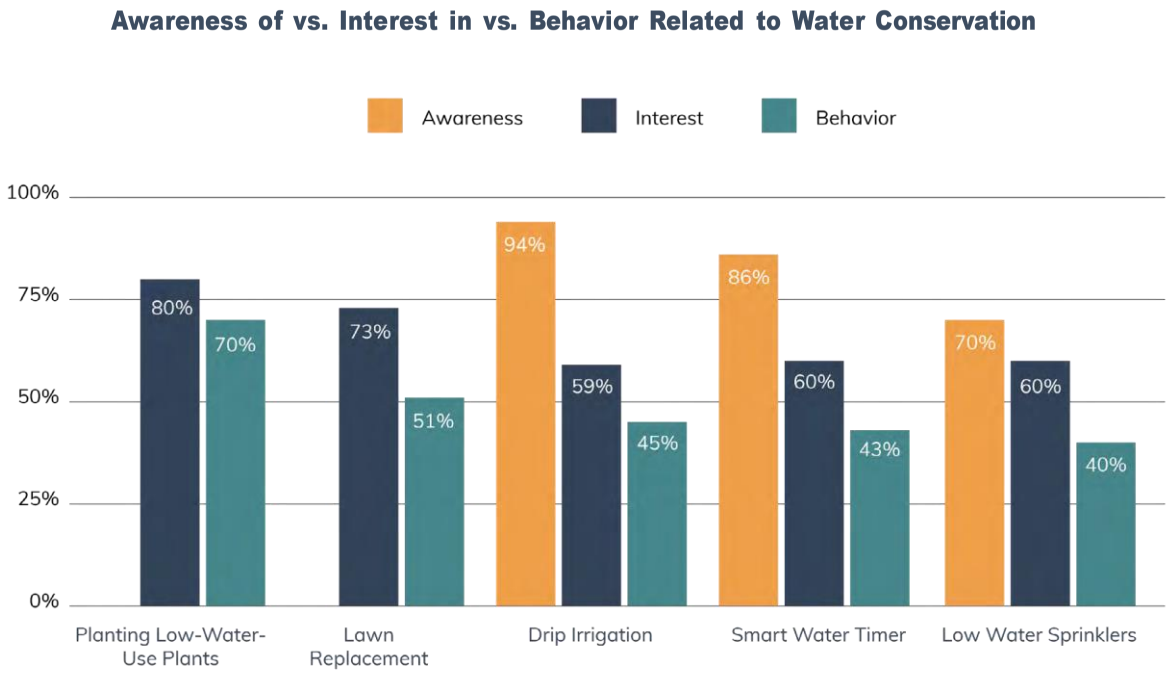


Figure 24: *Customer Awareness of vs. Interest in vs. Behavior Related to Water Conservation*

FINDINGS FROM CUSTOMER SURVEYS

The surveys allowed the research team to gain information from a large population of customers that can then be utilized by MWDOC and the Retail Agencies to design more effective programs. The major findings from the customer survey are below:

Survey Findings	Considerations
Customers believe climate change is real and water conservation is important.	Customers need to understand there is a continued water scarcity, despite recent rains, that require dogged action by each customer to reach increasing levels of efficiency. Agencies need to continue to inform customers about this need, show them ways to do their part, and provide high value programs.
Customers state they want to learn more about water efficiency. The majority of customers specifically expressed interest in obtaining more information about low water use landscapes and efficient irrigation equipment.	Customers have a greater than ever understanding of the importance of water efficient landscapes and want to learn about ways to achieve this. This shows that they may consider landscape efficiency upgrades. Agencies need to leverage this interest by linking customers to relevant programs and providing attractive incentives.
A large portion of customers state that they have installed drip irrigation systems.	Customers understand that drip irrigation is an important outdoor water efficiency measure and have taken action to have it installed. Agencies should continue to offer drip irrigation rebates. *Most likely incentive levels will need to be raised in order to increase activity.*
A significant percentage of customers state they have taken out part, or all, of their lawn.	Customers understand that turf is a high water consuming plant material and many have taken action. Agencies should continue to offer turf replacement incentives and support services. Most likely incentive levels will need to be raised in order to increase activity.

The survey results show that customers are gaining a strong understanding about the importance for water conservation, in general, and that they bear responsibility to create a water efficient lifestyle at their own property. The awareness and willingness are there. MWDOC and the Retail Agencies need to further bridge the gap between interest and action. This can be accomplished through outreach and education, strong customer support services, and higher incentives.

Section 6: Residential Demand Reduction Potential

To estimate the water efficiency potential of the existing residential customer base of MWDOC, two future water efficiency scenarios were modeled.

Level 1 – Full Regional compliance with the States' recommended standards for the 2030 Water Use Objectives

- Indoor Water Use at 42.0 GPCD
  - Total indoor water use = 2020 Regional Population x 42 Gallons x 365 days
- Outdoor irrigation at ET factor of 0.63
  - Total outdoor water use = Landscape area x Local net evapotranspiration (Net ETo)* x ET adjustment factor (ETF)* of 0.63**

**ET adjustment factor is also referred to as the Landscape Efficiency Factor (LEF)*
***See Glossary of Terms on the following page.*

Level 2 – Maximum achievable water savings by 2035

- Indoor = 35.0 GPCD
  - Total indoor water use = 2020 Regional Population x 35 Gallons x 365 days
- Outdoor irrigation at ET factor of 0.55
  - Total outdoor water use = Landscape area x Local net evapotranspiration (Net ETo)* x ET adjustment factor (ETF)* of 0.55**

Outdoor Standard Glossary of Terms

The outdoor residential standard is based on the formula:

Efficient Residential Outdoor Budget

(ETo-Peff) x (LAs) x (ETF) x 0.62)

ETo = Local reference evapotranspiration

Peff = Effective rainfall

LAs = Irrigated landscape area

ETF or LEF = ET Adjustment Factor or as now referred to as the Landscape Efficiency Factor

0.62 = Conversion factor from inches to square feet

The outdoor residential standard is an estimate of efficient irrigation from all the irrigable irrigated landscapes in a water agency's service area. Irrigable irrigated landscapes include landscape areas with healthy and somewhat healthy vegetation (e.g., brown lawns) and areas between vegetated areas (e.g., bare earth, cars, trampolines, gravel) measured from aerial and remote sensing data provided by the Department of Water Resources (DWR).

ETo (local reference evapotranspiration) is the amount of water that would be lost through evaporation and transpiration for a well-watered, uniformly green grass in inches per year and provided by DWR.

Peff is the effective rainfall or the portion of total rainfall that is available for use by plants and contributes to meeting their water requirement in inches per hour and provided by DWR.

The ETAF or LEF is the percentage used to adjust the ETo to reflect the efficient use of water for landscapes within the entire service area. LEF is used to forecast the amount irrigation water needed overtime as the landscapes become more water efficient due to plant changes and irrigation improvements.

WaterDM developed the model for predicting water demand reduction. The 2022 Draft of the Water Use Efficiency Standards Economic Analysis, based on consumption data from 2017-2019, offered a valuable baseline for demand. This report also projected the necessary reductions in demand and R-GPCD to meet each Retail Agency and the region's 2030 state water use efficiency standards, establishing the foundation for the Level 1 forecast in this study.

In the Level 1 analysis, WaterDM calculated the passive water savings—those expected to occur without incentives by 2030—factoring in the lifespan of fixtures and appliances. By 2030, WaterDM anticipates that 20% of Level 1 savings will be achieved passively, without incentives.

With the understanding that Level 1 water usage is realistically attainable, the subsequent investigation centered on determining the upper limit of what can be achieved.

The Level 2 forecast was constructed by calculating further reductions in indoor and outdoor water use beyond the 2030 Water Use Objectives. The forecast predicts a decrease to 35 GPCD in indoor use and a reduction to the LEF or ETF of 0.55 in outdoor use by 2035. While further outdoor reductions might be feasible, it's crucial to take into account the impact on the Orange County tree canopy and other environmental factors. The volume of passive savings is presumed to be the same as in Level 1.

Water demand and population data, which formed the baseline water use, were derived from the 2022 Draft of the Water Use Efficiency Standards Economic Analysis prepared by Water Systems Consulting, Inc., and M.Cubed. This data was based on Water Agency Annual Electronic Reports submitted to the State Water Resources Control Board. The baseline residential water demand was 85 GPCD and 222,572 AF during 2017-2019.

	R-GPCD (Indoor and Outdoor)	Residential Demand (AF)	Acre-feet Reduction
Baseline	**85**	**222,572**	**--**
Passive	**82.4**	**215,627**	**6,600 by 2030**
Level 1	**71.8**	**187,848**	**27,000 by 2030**
Level 2	**61.2**	**160,254**	**55,000 by 2035**

The forecasts showing total residential demand from baseline usage, both indoor and outdoor, to forecasted 2030 and 2035 usage are shown in gallons per capita per day.

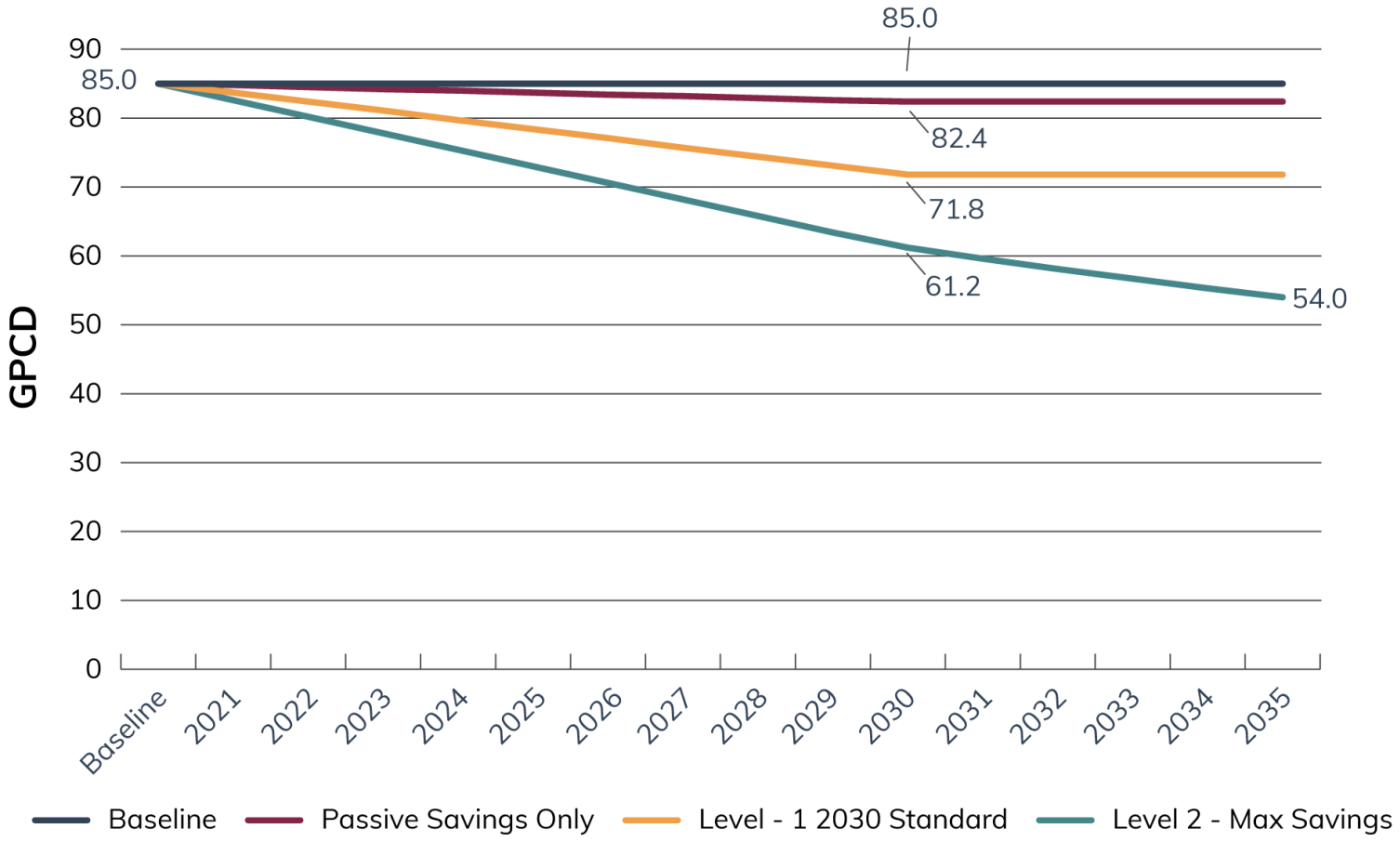


Figure 25: *Per capita demand forecasts*

The forecasts showing total residential demand from baseline usage to forecasted 2030 and 2035 usage are shown in gallons per capita per day.

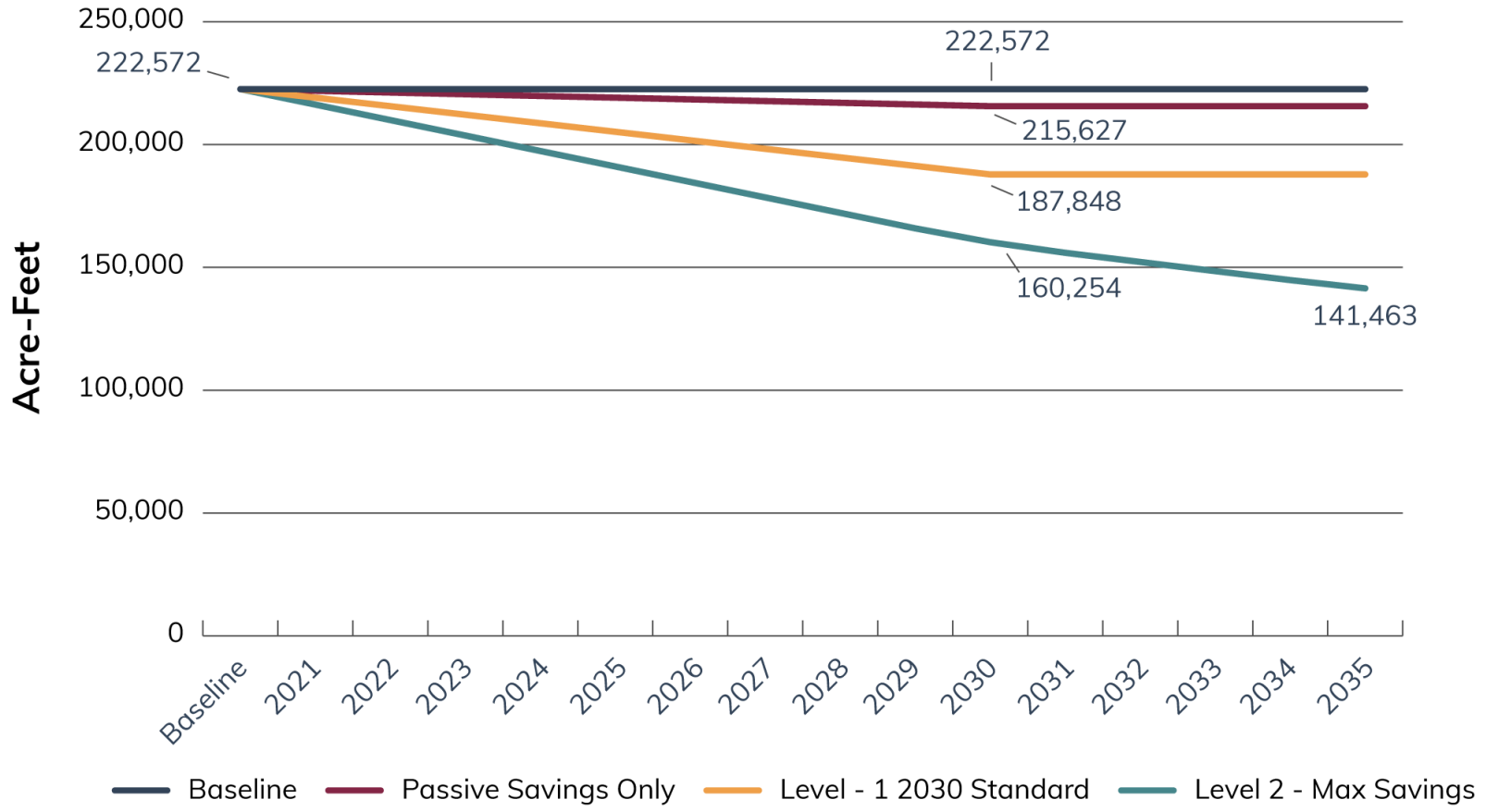


Figure 26: *Acre-Foot Forecast*

The below forecasts show water usage over time in GPCD, broken down by indoor and outdoor usage.

As shown, the baseline water use goes from 45 GPCD indoor (53% of total use) and 40 outdoor (47% of total use) to 42 GPCD indoor and 72 outdoor for Level 1, and 35 GPCD indoor and 26 outdoor for Level 2.

Per Capita Forecasts - **Baseline, Passive Savings, Level 1 Savings, Level 2 Savings**

		Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Baseline	**Indoor**	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
	Outdoor	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
	Total	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
Passive Savings Only	**Indoor**	45.0	45.0	44.9	44.8	44.8	44.7	44.7	44.6	44.5	44.5	44.4
	Outdoor	40.0	39.8	39.6	39.4	39.2	39.0	38.8	38.6	38.4	38.2	38.0
	Total	85.0	84.8	84.5	84.2	84.0	83.7	83.4	83.2	82.9	82.6	82.4
Level 1 - 2030 Standard	**Indoor**	45.0	44.9	44.6	44.2	43.9	43.6	43.3	43.0	42.6	42.3	42.0
	Outdoor	40.0	38.8	37.8	36.8	35.8	34.8	33.8	32.8	31.8	30.8	29.8
	Total	85.0	83.7	82.4	81.1	79.7	78.4	77.1	75.7	74.4	73.1	71.8
Level 2 - Max Savings	**Indoor**	45.0	44.2	43.2	42.2	41.1	40.1	39.1	38.1	37.1	36.1	35.1
	Outdoor	40.0	38.4	37.0	35.7	34.3	32.9	31.5	30.1	28.7	27.3	26.2
	Total	85.0	82.6	80.2	77.8	75.4	73.0	70.6	68.2	65.8	63.4	61.2

Table 8: *Per Capita Forecasts for Baseline, Passive Savings, Level 1 Savings and Level 2 Savings*

The below forecasts show water usage over time in Acre-feet, broken down by indoor and outdoor usage.

As shown, the baseline water use goes from 117,789 AF indoor and 104,783 AF outdoor to 109,937 AF indoor and 77,911 AF outdoor for Level 1, and 91,788 AF indoor and 68,466 AF outdoor for Level 2.

Acre-foot Forecasts - **Baseline, Passive Savings, Level 1 Savings, and Level 2 Savings.**

		Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Baseline	**Indoor**	117,789	117,789	117,789	117,789	117,789	117,789	117,789	117,789	117,789	117,789	117,789
	Outdoor	104,783	104,783	104,783	104,783	104,783	104,783	104,783	104,783	104,783	104,783	104,783
	Total	222,572	222,572	222,572	222,572	222,572	222,572	222,572	222,572	222,572	222,572	222,572
Passive Savings Only	**Indoor**	117,789	117,726	117,559	117,391	117,224	117,056	116,889	116,721	116,554	116,386	116,219
	Outdoor	104,783	104,151	103,624	103,097	102,570	102,043	101,516	100,989	100,462	99,935	99,408
	Total	222,572	221,878	221,183	220,489	219,794	219,100	218,405	217,711	217,016	216,322	215,627
Level 1 - 2030 Standard	**Indoor**	117,789	117,475	116,638	115,800	114,962	114,125	113,287	112,450	111,612	110,774	109,937
	Outdoor	104,783	101,624	98,990	96,355	93,720	91,085	88,450	85,816	83,181	80,546	77,911
	Total	222,572	219,100	215,627	212,155	208,682	205,210	201,738	198,265	194,793	191,320	187,848
Level 2 - Max Savings	**Indoor**	117,789	115,660	113,008	110,355	107,703	105,051	102,398	99,746	97,093	94,441	91,788
	Outdoor	104,783	100,613	96,967	93,321	89,675	86,029	82,383	78,737	75,091	71,445	68,466
	Total	222,572	216,274	209,975	203,677	197,378	191,080	184,782	178,483	172,185	165,886	160,254

Table 9: *Acre-foot Forecasts for Baseline, Passive Savings, Level 1 Savings and Level 2 Savings*

The percent demand reductions in 2030 are shown in Table 10. Passive conservation is estimated to achieve a 3.1% reduction in total demand. Under the Level 1 – 2030 Standard scenario, indoor use is reduced by 6.7% and outdoor use is reduced by 25.6% to meet the objectives. For the Under the Level 2 – Maximum Savings scenario, Indoor use is reduced from baseline by 22.1% and outdoor use by 34.7%.

Demand Reduction Percentage Forecasts for Passive Savings, Level 1 Savings, and Level 2 Savings

Forecast	Category	% Demand Reduced In 2030	Savings – AF
Passive Savings Only	Indoor	1.3%	1,571
	Outdoor	5.1%	5,374
	Total	3.1%	6,945
Level 1 – 2030 Standard	Indoor	6.7%	7,853
	Outdoor	25.6%	26,871
	Total	15.6%	34,724
Level 2 – Max Savings	Indoor	22.1%	26,001
	Outdoor	34.7%	36,317
	Total	28.0%	62,318

Table 10: *Demand Reduction Percentages by Forecast for Passive Savings, Level 1 Savings, and Level 2 Savings*

Section 7: Opportunities and Cost

The next step is the process was to identify the most promising and cost-effective methods for reducing demand for the two scenarios. The team evaluated the market potential, assessed existing programs measures, and reviewed emerging technologies. From these, we selected the most effective measures and identified the required activity to meet the Level 1 and Level 2 goals. The final step was to determine costs. The following section overviews the results of these processes.

Level 1 and 2 Goals and Requirements

Level 1 Goals

Indoor

- 42 Indoor GPCD
- 7,852 Acre-feet reduction
- 7% Reduction from baseline

Outdoor

- 29 Outdoor GPCD
- 0.63 ETAF
- 26,872 Acre-feet reduction
- 26% reduction from baseline
- Total = 34,724 Acre-feet

Level 2 Goals

Indoor

- 35 Indoor GPCD
- 26,000 Acre-feet reduction
- 22% Reduction

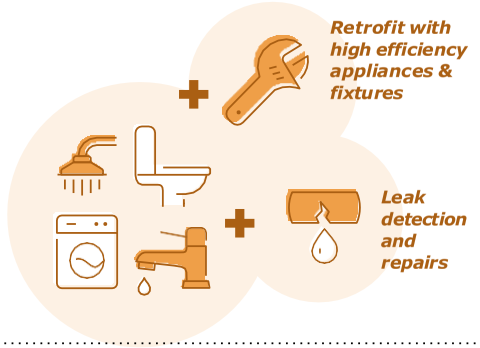
Outdoor

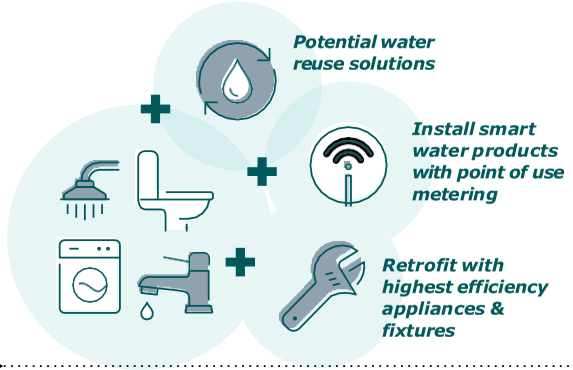
- 26 Outdoor GPCD
- 0.55 ETAF
- 36,317 Acre-feet reduction
- 35% reduction from baseline
- Total = 62,317 Acre-feet

Level 1 will require a 7% reduction in indoor water and 26% reduction in outdoor water. The indoor goal can be readily met with the programs currently offered. Many communities are already at 42 GPCD. Outdoor presents more of a challenge, requiring a reduction of 26,872 Acre-feet. To meet the outdoor goal, it will require many Retail Agencies to redesign their approach. The measures currently offered are appropriate, moving forwards, however the marketing, customer support, and incentive levels need to be reengineered for a higher response. The level of funding to achieve this goal necessitates a fourfold increase to the program budget.

Level 2 will require a 22% reduction in indoor water use (in already highly efficient households) and a 35% reduction in outdoor water use. These are aggressive numbers and will necessitate highly accelerated installation rates of existing measures, innovative technologies, more stringent codes and strong water pricing signals. It also means getting rid of most turf areas. There will be a need for an astronomical level of funding to achieve this goal.

MWDOC | INDOOR PHASES





BASELINE

Current Indoor Use:
45 GPCD

Current Condition:
moderately
high efficiency level

LEVEL 1

Indoor Goal:
42 GPCD

Reduction:
7,852 acre-feet
7% reduction from baseline

Requirements:

fairly easy to achieve using products and programs currently available

LEVEL 2

Outdoor Goal:
35 GPCD

Reduction:
26,000 acre-feet
22% reduction from baseline

Requirements:
will require
ramped up installation

rates of existing products and programs ***plus*** innovative technologies

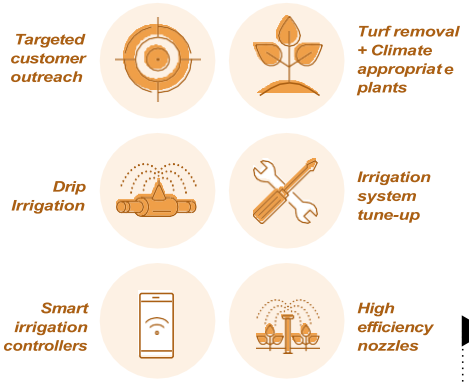
MWDOC | OUTDOOR PHASES | Outdoor affords high opportunity for water savings

BASELINE

Current Outdoor Use:
40 GPCD

Current Condition:

- Low overall saturation of water efficient devices
- Still millions of square feet of turf available for replacement
- Millions of inefficient sprinklers in the market
- Most irrigation systems



LEVEL 1

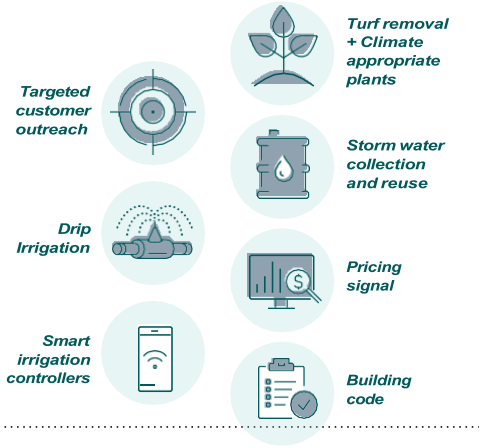
Outdoor Goal:
29 GPCD | **0.63** ETAF

Reduction:

26,872 acre-feet
26% reduction from baseline

Requirements:

are in need of repair



LEVEL 2

Outdoor Goal:
26 GPCD | **0.55** ETAF

Reduction:
36,317 acre-feet
35% reduction from baseline

Requirements:

- Extremely limited turf
- Setting individual budgets for each home
- Refined & targeted customer outreach
- Significant increased incentives & customer support
- Unprecedented level of funding

- New more stringent code
- Strong pricing signal to customers – likely need for new water rates
- New innovative technologies not available in the market today
- May require onsite water reuse
- Astronomical level of funding

Most Promising Measures for Reducing Residential Demand

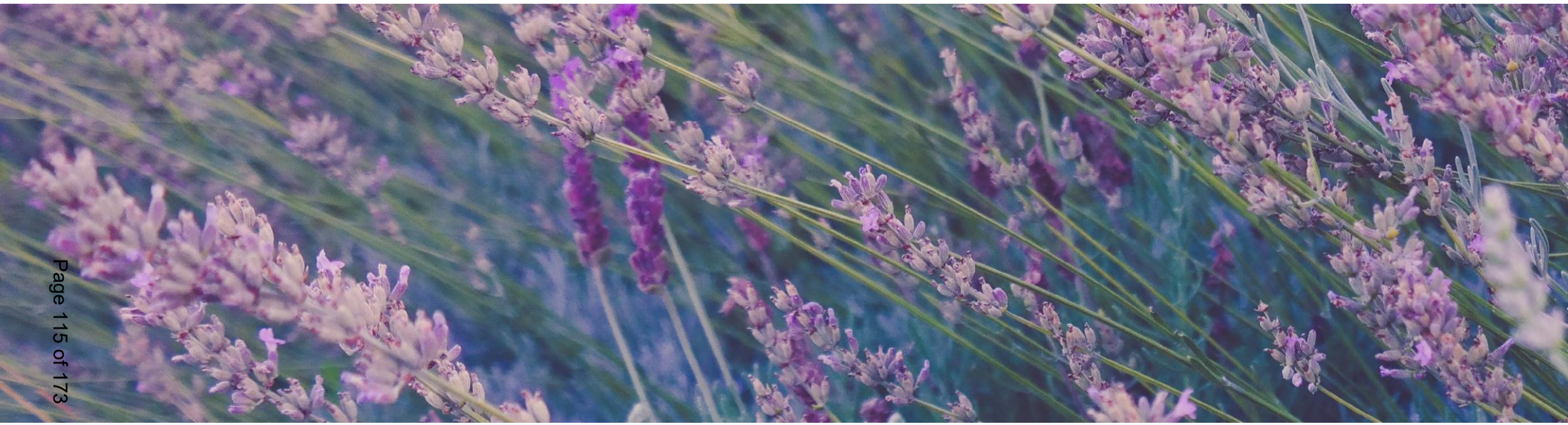
In order to select measures for further evaluation, it was necessary to understand the overall potential of specific measures including remaining market, water savings, customer receptivity, and cost effectiveness. The chart below describes each measure, the remaining water savings potential, and the reason for selection.

	Remaining Potential	Reasoning for Selecting
Water Budgets (as a program)	Single family homes in Orange County that don't currently have water budgets	• Identifies specific over water users, thus allowing Retail Agencies to target cost effective savings sites. • It's a foundational step in educating customers with powerful and personal information that identifies site-specific efficiency opportunities. • As an educational tool alone reduces water use.
Outdoor Efficiency		
Turf Replacement	Estimated Turf Remaining: Single Family: 806,249,462 SF* Multi-Family: 116,930,650 SF* DIM: TBD	• Huge remaining opportunity. • Long lasting measure.
Sprinkler Tune-up	All properties with remaining turf	• Nearly all irrigation systems need repair. • Repairs are necessary before efficiency upgrades are made otherwise new products will not work as designed. • High customer demand.
Drip Irrigation	All properties with irrigation	• Applicable for all landscape except turf. • Helps customer achieve highest level of efficient irrigation. • Reduces/eliminates overspray and runoff.
Smart Controllers	All properties with irrigation	• High customer receptivity due to technical aspect of device. • Reduces overwatering by providing the appropriate amount of water based on the local weather.
High Efficiency Sprinkler Nozzles	All properties with remaining turf	• Millions of high flow nozzles available for retrofit. • Solution for customers electing to keep turf. • Reduces runoff. • High cost effectiveness. • Generally easy retrofit.

**Per Metropolitan Water District's 2022 Turf Multiplier Effect Study*

Continued

	Remaining Potential	Reasoning for Selecting
Indoor Efficiency		
Premium Efficiency Toilets	Nearly 50% of existing fixtures are 1.6 GPF or above	• Reliable 20-year life of water savings. • Easy retrofit.
High Efficiency Clothes Washers	Over 435,000 homes in Orange County have washers Washers have 10-12 year life	• Customers prefer high efficiency models. • Easy to administer.
Water Monitoring and Leak Detection through Automated Meter Infrastructure or Devices	Over 435,000 homes in Orange County have yet to install a water monitoring and leak detection device	• Proactive leak detection. • Customer insight into water use. • Valuable end use data available for water agencies.



OPPORTUNITY BY MEASURE

There are several water efficient technologies with high potential for water savings in MWDOC's service area. Most of these measures are applicable to single family, multi-family, and commercial properties. Below is a description of the top measures.

Water Budget Program – A "water budget" is the calculated amount of water a property requires over a particular time period (usually a month, billing cycle, or year) based on the number of occupants, lot size, and local weather conditions. A Water Budget Program educates customers about their actual water consumption patterns compared to their budget. The savvy customer is now armed with a tool to better understand if their water use is efficient or not, and to independently make modifications to reduce their water use. An informational water budget program is extremely cost effective because the educated customer makes the changes on their own, thereby helping to transform the market. Several Retail Agencies in the MWDOC region have water budget rate structures in place. Through customer education and strong price schedules, all have been shown to successfully reduce demand.

Turf Replacement Program – Turf is the predominant landscape in Southern California and the potential for turf replacement within the MWDOC service area is enormously high. There is over 800 million square feet of remaining irrigated turf in the MWDOC service area across customer sectors. Although water savings are high, turf replacement programs are one of the more expensive programs and require significant administrative and support resources. There remains a number of customer barriers, as well, including project costs, concerns about changing the look of the property, and customers' lack of ability to execute a lawn replacement project. These issues need to be mitigated in the program design through personalized outreach, heightened customer support, and increase incentives.

Sprinkler Tune-Up Program – Irrigation repairs are also an area that can assist customers with ongoing excessive water use. Nearly all irrigation systems are in need of repair. Sprinkler Tune-up programs ensure technologies such as smart controllers and high efficiency sprinkler nozzles, when installed, will achieve the estimated savings and not cause customers to remove those devices if they expose problems with their irrigation system.

Drip Irrigation – Drip irrigation is 90% efficient at allowing plants to use the water applied, as compared with 65-75% efficiency rate of sprinkler systems. Drip devices have the advantage of lower evaporation loss because water is delivered slowly at the root zone, allowing the soil to better absorb it and avoid runoff. Most landscapes would benefit from installation of drip irrigation.

Smart Controllers - The majority of customer sites utilize standard timers to operate their irrigation system. There are tens of thousands of timers throughout the region. It is estimated that 20-30% of controllers currently purchased are smart controllers. Smart controllers can be a great water saving measure for sites over irrigating as well as large landscape areas.

Additional Opportunity - Plumbing Fixture Direct Install in Underserved Communities

Federal standards for low flow fixtures have been mandated since 1994 including 1.6 gallon per flush toilets and 2.5 gallon per minute showerheads. California now leads the nation with standards that are 20-40% more stringent than Federal standards and even stricter than the EPA's WaterSense Program. Recent advancements have allowed toilets to use 1 gallon per flush or less and showerheads 2.0 gpm or less while still providing equal or superior performance. However, the incremental savings going from a low flow to a high efficiency fixture are much of the time not cost effective. Programs should be targeted at low income, high density households, as well as older homes, because they provide in the most cost effective approach.

High Efficiency Sprinkler Nozzles

Most customers in the region, no matter their type, have some irrigated area within their property. These areas are typically irrigated by in-ground systems with inefficient nozzles (ex: pop-up spray heads). There are virtually millions of nozzles in the region. These irrigation systems can be easily retrofitted with high efficiency nozzles or micro or low precipitation systems. Market studies show that only around 20-30% of irrigation purchases are for high efficiency products. This low market saturation, coupled with the incredibly high number of nozzles within the region, provides a high potential for increased efficiency.

Water Use Monitoring and Leak Detection

Customer side smart devices monitor water consumption and detect unusual usage or potential leaks within a customer home. The devices typically connect to a home's Wi-Fi, allowing users to view their water consumption data via an app or online dashboard. Key features include detailed usage reports and real-time leak detection and alerts.

These systems also offer water agencies detailed, disaggregated data on water use, which can inform more precise planning and better program design. In addition, they can aid in identifying specific customers for targeted efficiency opportunities.

Similarly, utility side Advanced Metering Infrastructure (AMI) provides real-time or near-real-time data, allowing customers to see exactly when and how much water they use. This granular data, accessible through apps or online dashboards, can help them identify peak usage times and develop strategies to reduce consumption. AMI also offers the ability to detect unusual water usage patterns and send alerts to the customer. It's essential to ensure data and alerts are provided in a timely and user-friendly manner.

High Efficiency Clothes Washers – HE washers use up to 80% less water and 65% less energy than traditional machines and generally allow for larger washer loads. The Flume end use analysis shows over 60% of washers are using 25 gallons or more per load. This represents a large opportunity for water use reduction. Though high-efficiency washer prices have become more competitive, they still do cost more. Continuing to provide incentives is important to push high efficiency model sales.

Municipal Leak Detection - Water distribution systems experience real and apparent water losses through pipe leaks, seepage, loose pipe connections, inaccurate water meters, and improper system pressure. Real losses are the physical losses (or leakage) and Apparent losses are caused by revenue meter under-registration, water theft, and billing errors. Water loss reduction is also an important element of the State's legislative framework (SB555). SB 555 requires water agencies to conduct distribution system leak detection surveys to identify distribution system leaks and repair those leaks. The State Water Resources Control Board has assigned Water Loss Performance Standards specific to each Retail Agency. For many agencies, this will be the number one area for water use reduction due to these mandates.

Recycled Water - Direct potable onsite recycled water is a method of treating wastewater to make it safe for reuse in irrigation or industrial water processes, thereby reducing dependence on external potable water sources. This recycled water source helps to alleviate the need for imported water supplies. Due to the potentially high costs associated with these projects, it is important to offer property owners incentives to connect to recycled water.

What Does it Cost to Deliver Future Savings?

COST EFFECTIVENESS DEFINITION

Cost-effectiveness analysis is the process of weighing the costs and benefits of a WUE program. For this exercise, the relevant perspective for WUE investments is the cost to MWDOC and Metropolitan (excluding local Retail Agency costs). The benefits of the programs are defined as the value of the water savings in dollar terms using the avoided costs. Finally, the dollar costs are compared to the dollar benefits.

In order to determine the cost-effectiveness threshold for a portfolio of programs, it is first necessary to determine the avoided costs of supply. The significance of the avoided costs is that for each Acre- foot of water savings, MWDOC and the Retail Agencies can avoid the variable costs of purchasing Metropolitan water.

- The region's avoided cost ranges from $1,297 in 2023, increasing to $1,896 in 2027, and are estimated to be at $2,147 in 2030.
- The portfolio of programs being considered should fall below the average avoided cost of $1,678.

The following section details the required activity to meet the two savings levels as well the associated costs and cost effectiveness.

This section outlines the necessary activity to achieve the two specified savings targets, along with the corresponding costs.

The Alliance for Water Efficiency's Tracking Tool was utilized to conduct the analysis. Versions of the model can be found in the following files:

- MWDOC_AWE Tracking Tool_Avg 3 Year Activity with Turf Multiplier
- MWDOC_AWE Tracking Tool_Res and DIM 2030 State Standard Turf Multiplier
- MWDOC_AWE Tracking Tool_Res and DIM 2035 Maximum with Turf Multiplier

It's important to note that a turf multiplier percentage was utilized in calculating the future water savings from turf replacement. In a recent study conducted by Dr. Marx and sponsored by Metropolitan, the 2022 Turf Multiplier Effect, it was found that each 100 turf rebate participants in Orange County inspired an additional 156 turf transformations. It is believed that customer's new water-efficient landscapes motivated their neighbors or other community members to do the same. This effect is likely to continue and will aid in a larger-scale adoption of turf replacement projects.

Table 15 shows the cost-effectiveness results for the recommended program measures. The costs include both Metropolitan and MWDOC or grant funds for the program. Several measures are funded 100% by Metropolitan or other grants and therefore have zero cost to the MWDOC and its customer agencies.

ANNUAL ACTIVITY PER MEASURE

The chart below (Table 11) shows the average annual activity for the last three years, and an extrapolation of the activity required to meet the Level 1 and Level 2 water savings.

Annual Activity per Measure

Measure	Average Annual Activity Last 3 Years	Level 1 Activity	Level 2 Activity
Residential Measures			
Pre-1994 Premium Efficiency Toilet Rebates (Multi-family)	5,000	6,000	6,250
Premium Efficiency Toilet Rebates	100	300	400
High Efficiency Clothes Washer Rebates	1,413	2,000	2,500
High Efficiency Sprinkler Nozzle Rebates	987	2,000	3,750
Smart Controller Rebates (SF)	1,636	2,000	4,500
Turf Replacement Rebates (SF and MF in Sq. Ft.)	184,112	500,000	975,000
Drip Irrigation Rebate (SF and MF in Sq. Ft.)	87,460	150,000	200,000
Leak Detection Device Rebates	44	20,000	30,000
Sprinkler Tune-Up Program	--	5,000	6,250
Water Budget Program	--	12,500	18,750
Rain Barrel Rebates	75	150	150

Table 11: *Annual Activity per Measure*

Annual Activity per Measure, continued

Measure	Average Annual Activity Last 3 Years	Level 1 Activity	Level 2 Activity
CII Measures			
Smart Controller Rebates (CII)	313	1,500	3,500
Turf Replacement Rebates (CII)	540,667	1,500,000	2,000,000
Water Budget Program (CII)	--	5,000	6,250
Drip Irrigation Rebate (CII)	265,000	300,000	350,000
Leak Repair: Meter Connections/AMS/Combo	297	450	563
Leak Repair: Customer Property	61	100	125
Leak Repair: Main/Hydrant/Valve/Other	30	50	63
Leak Repair: Service	80	120	150
Recycled Water Conversions	4	4	4

Table 11: Annual Activity per Measure, continued

**Previously tracked under SoCal WaterSmart commercial devices.*

MEASURE PER UNIT COST

To achieve higher levels of activity, it's crucial to boost incentives, expand outreach efforts, and enhance customer support. This means that the per unit cost of each measure will rise as water savings or efficiency levels increase.

Table 12 reflects the current cost for each measure and the projected cost as activity scales to meet each level.

Measure Per Unit Cost

Measure	Per Unit Cost		
	Current	Level 1	Level 2
Residential Measures			
Pre-1994 Premium Efficiency Toilet Rebates	$200	$250	$275
Premium Efficiency Toilet Rebates	$40	$200	$250
High Efficiency Clothes Washer Rebates	$85	$300	$400
High Efficiency Sprinkler Nozzle Rebates	$2	$10	$15
Smart Controller Rebates (SF)	$180	$250	$300
Turf Replacement Rebates (SF and MF in Sq. Ft.)	$3	$6	$8
Drip Irrigation Rebate (SF and MF in Sq. Ft.)	$0.50	$1	$2
Leak Detection Device Rebates	$100	$150	$200
Sprinkler Tune-Up Program	NA	$500	$600
Water Budget Program	NA	$300	$400
Rain Barrel Rebates	$35	$35	$35

Table 12: *Measure per Unit Cost*

Measure Per Unit Cost, continued

Measure	Per Unit Cost		
	Current	Level 1	Level 2
CII Measures			
High Efficiency Sprinkler Nozzle Rebates (CII)	$2	$10	$15
Smart Controller Rebates (CII)*	$630	$1,350	$1,500
Turf Replacement Rebates (CII)	$3	$6	$8
Water Budget Program (CII)	NA	$1,500	$1,600
Drip Irrigation Rebate (CII)	$0.50	$1	$2
Leak Repair: Meter Connections/AMS/Combo**	$114	$114	$114
Leak Repair: Customer Property **	$20	$20	$20
Leak Repair: Main/Hydrant/Valve/Other**	$10	$10	$10
Leak Repair: Service**	$26	$26	$26
Recycled Water Conversions***	$2,275	$2,275	$2,275

Table 12: *Measure per Unit Cost, continued*

**Cost based on 18-station controller.*

***Per mile cost for leak detection. Assumes retail agencies fund repairs.*

****Incentive based upon historic average incentive for 10 AF/Y of savings. Incentive rate comprised of $1,950 from Metropolitan and $325/AFY savings from MWDOC.*

WATER SAVINGS PER MEASURE

The chart below details the total annual water savings per measure category at the current and projected activity levels.

Water Savings per Measure	Average Annual Water Savings (AF)		
Measure	Current	Level 1	Level 2
Residential Measures			
Pre-1994 Premium Efficiency Toilet Rebates	880	1,330	1,899
Premium Efficiency Toilet Rebates	6	19	34
High Efficiency Clothes Washer Rebates	218	309	485
High Efficiency Sprinkler Nozzle Rebates	9	18	38
Smart Controller Rebates (SF)	429	524	1,482
Turf Replacement Rebates (SF and MF in Sq. Ft.)	446	1,210	3,379
Drip Irrigation Rebate (SF and MF in Sq. Ft.)	56	95	160
Leak Detection Device Rebates	6	2,600	4,896
Sprinkler Tune-Up Program	--	1,933	3,149
Water Budget Program	--	1,918	3,300
Rain Barrel Rebates	0.14	1	1

Table 13: *Water Savings per Measure*

Water Savings per Measure, continued

Measure	Average Annual Water Savings (AF)		
	Current	Level 1	Level 2
CII Measures			
High Efficiency Sprinkler Nozzle Rebates (CII)	--	93	133
Smart Controller Rebates (CII)*	--	2,274	6,664
Turf Replacement Rebates (CII)	1,309	3,631	6,930
Water Budget Program (CII)	--	3,836	5,500
Drip Irrigation Rebate (CII)	132	149	174
Leak Repair: Meter Connections/AMS/Combo**	237	237	325
Leak Repair: Customer Property **	78	118	186
Leak Repair: Main/Hydrant/Valve/Other**	0.85	140	1.75
Leak Repair: Service**	1.30	2.16	2.71
Recycled Water Conversions***	37	56	93

Table 13: *Water Savings per Measure, continued*

**Cost based on 18-station controller.*

***Per mile cost for leak detection. Assumes retail agencies fund repairs.*

****Incentive based upon historic average incentive for 10 AF/Y of savings. Incentive rate comprised of $1,950 from Metropolitan and $325/AFY savings from MWDOC.*

LIFETIME WATER SAVINGS

Table 14 below presents the Acre-feet savings by activity for the life of the measures.

Lifetime Water Savings per Measure and Activity Level

	Lifetime Water Savings (AF)		
Measure	Current	Level 1	Level 2
Residential Measures			
Pre-1994 Premium Efficiency Toilet Rebates	14,960	31,416	56,101
Premium Efficiency Toilet Rebates	168	441	1,008
High Efficiency Clothes Washer Rebates	3,708	4,592	9,840
High Efficiency Sprinkler Nozzle Rebates	104	185	594
Smart Controller Rebates (SF)	7,294	7,802	30,093
Turf Replacement Rebates (SF and MF in Sq. Ft.)	16,490	39,184	130,985
Drip Irrigation Rebate (SF and MF in Sq. Ft.)	945	1,418	3,241
Leak Detection Device Rebates	97	38,668	99,432
Sprinkler Tune-Up Program	--	20,301	43,501
Water Budget Program	--	20,140	51,787
Rain Barrel Rebates	6	10	22

Table 14: *Lifetime Water Savings per Measure and Activity Level*

Lifetime Water Savings per Measure and Activity Level, continued

Measure	Lifetime Water Savings (AF)		
	Current	Level 1	Level 2
CII Measures			
High Efficiency Sprinkler Nozzle Rebates (CII)	--	972	2,083
Smart Controller Rebates (CII)*	--	33,833	135,330
Turf Replacement Rebates (CII)	48,423	117,551	268,687
Water Budget Program (CII)	--	40,279	86,312
Drip Irrigation Rebate (CII)	2,250	2,233	4,447
Leak Repair: Meter Connections/AMS/Combo**	1,328	1,761	3,773
Leak Repair: Customer Property **	6.80	10	21
Leak Repair: Main/Hydrant/Valve/Other**	10.40	15	33
Leak Repair: Service**	823	1,081	2,316
Recycled Water Conversions***	6,400	5,600	9,600

Table 14: Lifetime Water Savings per Measure and Activity Level, continued

**Cost based on 18-station controller.*

***Per mile cost for leak detection. Assumes retail agencies fund repairs.*

****Incentive based upon historic average incentive for 10 AF/Y of savings. Incentive rate comprised of $1,950 from Metropolitan and $325/AFY savings from MWDOC.*

COST PER AF PER MEASURE

Table 15 shows the cost-effectiveness or cost per Acre-foot for each measure at the varying levels.

	Cost per Acre-foot		
Measure	Current	Level 1	Level 2
Residential Measures			
Pre-1994 Premium Efficiency Toilet Rebates	$554	$388	$426
Premium Efficiency Toilet Rebates	$221	$1,105	$1,381
High Efficiency Clothes Washer Rebates	$269	$948	$1,265
High Efficiency Sprinkler Nozzle Rebates	$148	$742	$1,112
Smart Controller Rebates (SF)	$298	$465	$558
Turf Replacement Rebates (SF and MF in Sq. Ft.)	$346	$692	$923
Drip Irrigation Rebate (SF and MF in Sq. Ft.)	$384	$768	$1,536
Leak Detection Device Rebates	$300	$563	$751
Sprinkler Tune-Up Program	--	$844	$1,012
Water Budget Program	--	$1,276	$1,488
Rain Barrel Rebates	$3,606	$3,606	$3,606

Table 15: *Cost per AF per Measure*

Measure	Cost per Acre-foot		
	Current	Level 1	Level 2
CII Measures			
High Efficiency Sprinkler Nozzle Rebates (CII)	--	--	$423
Smart Controller Rebates (CII)*	--	$434	$483
Turf Replacement Rebates (CII)	$346	$692	$923
Water Budget Program (CII)	--	$1,276	$1,361
Drip Irrigation Rebate (CII)	$490	$979	$1,959
Leak Repair: Meter Connections/AMS/Combo**	$211	$211	$211
Leak Repair: Customer Property **	$1,425	$1,425	$1,425
Leak Repair: Main/Hydrant/Valve/Other**	$280	$280	$280
Leak Repair: Service**	$22	$22	$22
Recycled Water Conversions***	$13	$13	$13

Table 15: *Cost per AF per Measure, continued*

**Cost based on 18-station controller.*

***Per mile cost for leak detection. Assumes retail agencies fund repairs.*

****Incentive based upon historic average incentive for 10 AF/Y of savings. Incentive rate comprised of $1,950 from MWD and $325/AFY savings from MWDOC.*

TOTAL COST AND WATER SAVINGS

As previously discussed, to attain greater levels of engagement, it is essential to increase incentives, broaden outreach initiatives, and improve customer assistance. This raises the overall cost of the program. Not only does the individual cost for each action escalate, but the total budget dramatically increases. Despite this, the program cost effectiveness for the entire portfolio is still well under the avoided cost of imported water from Metropolitan.

However, the $35 Million annual budget for Level 1 and the $64 Million budget for Level 2 are far beyond any budget levels ever funded within the region. This presents a significant challenge to achieve the water savings goals. It is important to note that the budget does not include additional dollars required by local agencies. This includes monetary coverage for the costs of measuring irrigated areas, developing local WUE plans, creating customer water budgets, conducting outreach, repairing municipal leaks, reporting annually to the State, and other tasks required to meet the individual retailer Water Use Objectives.

The following charts show the annual, administrative, and total costs, as well as cost per Acre-foot, for the respective water saving levels.

Level 1: Water Savings, Cost, Cost per AF

Water Use Reduction by 2030	**27,900 AF**
Annual Program Costs	**$31,754,484**
Annual Administration Costs	**$4,128,083**
Total Costs	**$35,882,567**
Cost per AF	**$732**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2030 = **$251,177,969**

Level 2: Water Savings, Cost, Cost per AF

Water Use Reduction by 2035	**56,000 AF**
Annual Program Costs	**$56,872,152**
Annual Administration Costs	**$7,393,380**
Total Costs	**$64,265,532**
Cost per AF	**$876**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2035 = **$771,186,384**

Section 8: Recommended Strategies

We now have an understanding of the water efficiency measures and annual activity required to meet the sum of each Retail Agency's water use objective, and beyond. These are tried and true measures with challenging but reachable activity levels. However, an aggressive water savings goal requires funding at a level unseen to this date. Moreover, realizing such a goal is likely to extend beyond the 7-12 year timeline modeled in this study. That said, regardless of budgets and annual activity, the recommended strategy should be at the core of any level of activity.

No matter the level, it is recommended MWDOC, and the Retail Agencies offer incentives at ever increasing increments to motivate response.

In addition, the Retail Agencies will need to provide personalized customer outreach and robust support to link customers to the right program, help them when they get stuck along the way, and bring them to project completion.

THE IMPACT OF THE NEW STATE FRAMEWORK WUO

The new State Framework Water Use Objectives (WUO) will shift in the way water efficiency planning and implementation must occur in the coming year. Some Retail Agencies are already compliant with state objectives, others have a long way to go. Now carrying the burden of compliance, Retail Agencies become the lead organization, and must ensure that efficiency initiatives are fully on target to deliver the required local water savings.

This is a change from the traditional planning efforts of the past where MWDOC, the regional provider, generated a regional plan with input from the Retail Agencies. For most agencies, this will now require them to generate highly refined local plans and secure dramatically increased funding for WUE initiatives.

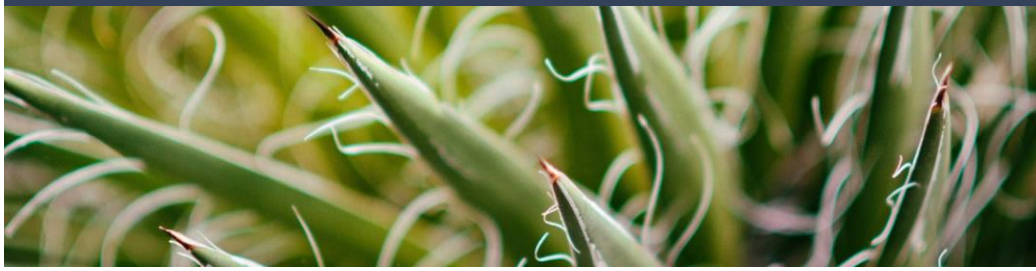
To address this shift, the recommended approach is:

1. Retail Agencies develop and fund local plans based upon their specific Water Use Objectives and the unique characteristics of their service area. Some agencies will need to greatly expand their staffing and resources well beyond existing levels. Many agencies must take a different approach with customer outreach to pinpoint inefficient users and direct resources. To sustain efficiency goals, all agencies must provide more robust customer education and support.
2. MWDOC, formerly the lead of the water efficiency planning processes, should play a supporting role. This may include provision of expert technical services, tools, and resources continuing to offer Region water efficiency programs.

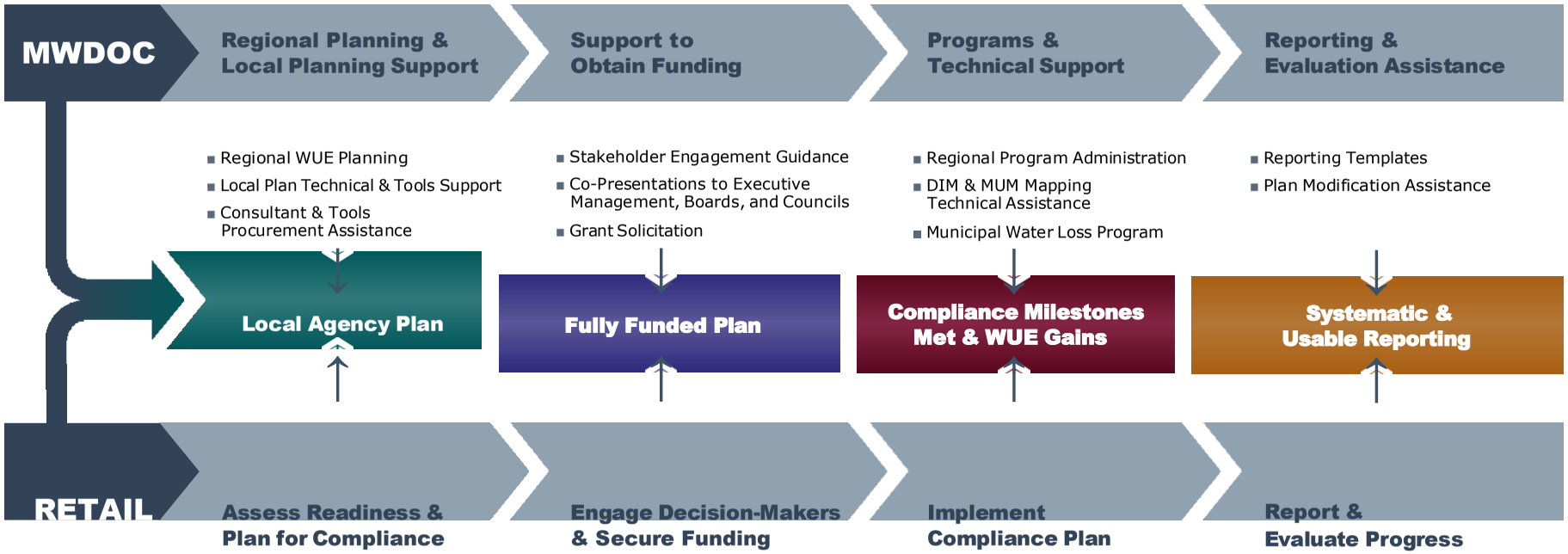
The following charts provide an overview of the main deliverables required in order to comply with the Water Use Objective. The chart also highlights the recommended roles and tasks for both the Retail Agencies and MWDOC. A breakdown of each deliverable is detailed in the following pages.

The following section details the recommended respective roles and division of responsibilities for MWDOC and the Retail Agencies. There are four major categories of work necessary for each Retail Agency to meet their specific Water Use Objective.

1. **Development of customizing local plans**
2. **Secure funding for the plans**
3. **Implementation of the plans**
4. **Systematic reporting and plan modifications**



MWDOC + RETAIL AGENCIES | RESPONSIBILITIES



ASSESS READINESS AND PLAN FOR COMPLIANCE

MWDOC **Regional Planning & Local Planning Support**

- Regional WUE Planning
- Consultant & Tools Procurement Assistance
- Local Plan Technical & Tools Support

Local Agency Plan

RETAIL AGENCY **Assess Readiness & Plan for Compliance**

- Compliance Readiness Assessment
- Data Systems & Support Tools Identification
- Water Loss Report and Standard Review
- Local Plan Development
- Program Evaluation and Enhancement Assessment

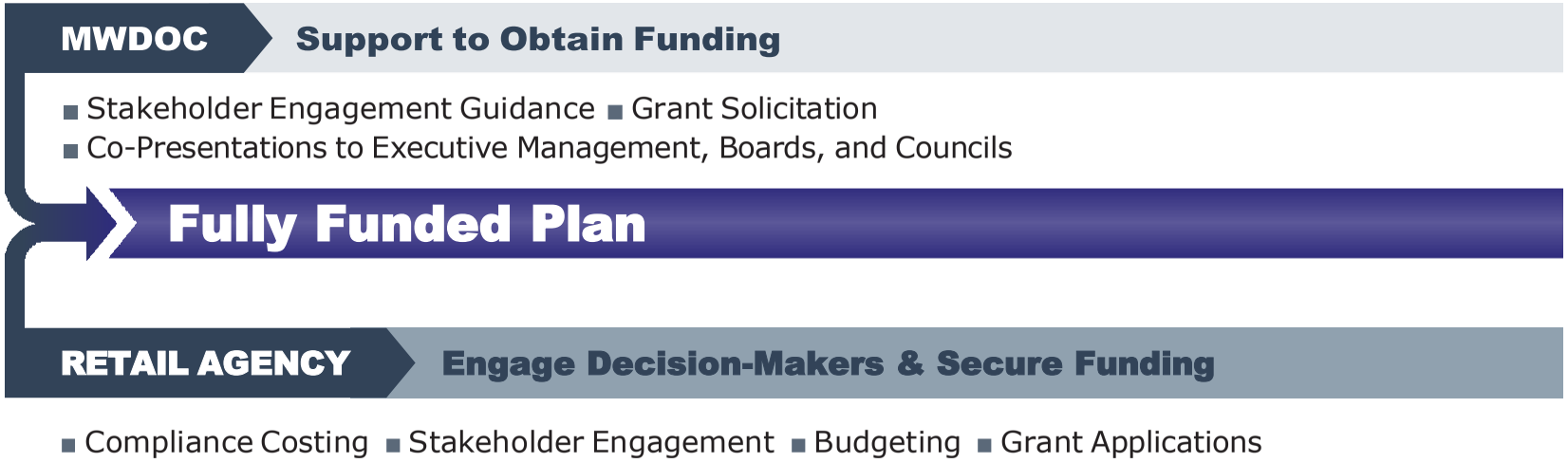
As s stated, each Retail Agency should analyze the gap between State Framework WUO compliance and current GPCD and identify the water use segments best offering further savings opportunities.

Each Retail Agency should create a custom-built plan, tailored to their unique service area, that will meet their agency specific WUO. A well-designed plan will detail the programs, support tools, communication and outreach tactics, budgets, staffing, resources, performance metrics, and funding sources required to meet the WUO.

MWDOC should support the Retail Agencies by assisting them in completion of the compliance assessment. This includes procurement of industry and technical consultants, RFPs/RFQs support, qualified lists of service organizations, master agreements, and other beneficial services.

Additionally, MWDOC can create planning document templates for Retail Agencies, designed to save valuable planning time and simplify the creation of required spreadsheets and documents.

ENGAGE DECISION-MAKERS & SECURE FUNDING



Retail Agencies must engage decision makers, gain their support, and secure funding through multiple sources. This means that budgets and plans must be presented and approved within each agency and grants written and submitted for funding.

MWDOC is adept at providing expertise and guidance through the many steps of the stakeholder engagement process. For example, MWDOC could support a Retail Agency by contributing to plan presentations for executive management, board members, and councils.

Additionally, MWDOC staff is proficient in grant writing and application submittal and can continue to secure grant funding on behalf of the retail agencies.

IMPLEMENT WATER USE EFFICIENCY PLAN

MWDOC **Programs & Technical Support**

- Regional Program Administration
- DIM & MUM Mapping Technical Assistance
- Municipal Water Loss Program

Compliance Milestones Met & WUE Gains

RETAIL AGENCY **Implement Compliance Plan**

- Residential Water Budget Generation
- DIM & MUM Mapping and Budget Generation
- CII Classification & BMP Implementation
- Customer Targeting & Outreach
- Leak Detection & Repair

With the proven success of water budgets, it is highly recommended that agencies generate a site-specific water budget for each customer in their service area. service area and provide monthly performance reporting.

Utilizing property-level data including customer category, landscape area, and historic consumption, a Retail Agency can produce reasonable property-specific water budgets.

Customers who regularly exceed their water budget offer the best opportunity for future demand reductions. Creating water budgets enables agencies to identify customers who are prime candidates for water savings and segment them into categories based on best program solutions. Water budgets also help customers understand what level of use is reasonable and to identify unusual spikes in use.

With targeted and personalized outreach and critical information provided by customer-specific water budgets, individual customers can be linked to the program(s) that offer the best WE solutions.

Agencies that have implemented water budget programs have secured significant, low-cost water savings as a result. MWDOC can help the Retail Agencies develop and implement water budgets by providing technical support and vetting software solutions. Options could include the following:

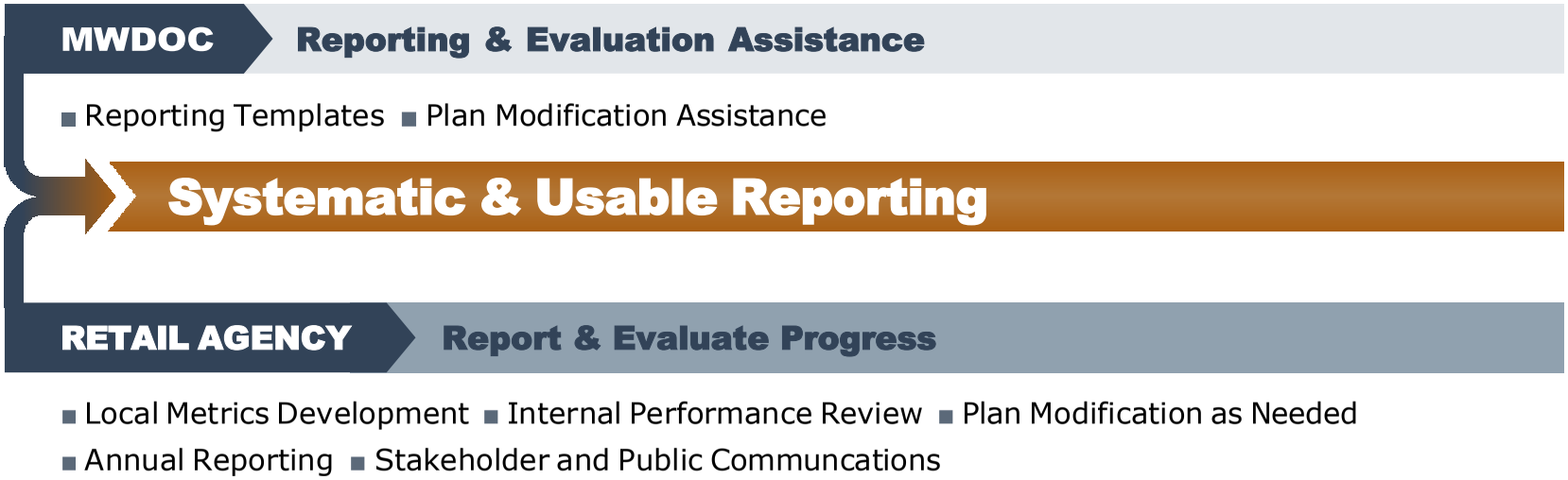
- Technical support in developing water budget for all categories of customers.
- Highlight successful water budget implementations.
- Provide outreach toolkits with marketing materials.
- Generate a directory of software vendors.
- Provide template RFPs/RFQs for vendor solicitation.
- Hold master agreement for water budget technology vendors.

MWDOC should continue to administer Regional programs that will benefit all Retail Agency compliance including:

- Turf Replacement Program
- Drip Irrigation Rebate
- Sprinkler Tune-Up*
- Support Services
- Landscape Design
- Landscape Maintenance Plans
- Municipal Leak Detection
- Water Balance Validation

Additionally, MWDOC will need to continue to coordinate with Metropolitan for SoCal WaterSmart Device Incentives including Toilets, Washer and Leak Detection and Member Agency Administered Funding.

REPORT AND EVALUATE PROGRESS



The new Framework will require extensive data tracking and reporting at the Retail Agency level. This includes:

- Annual residential water use and GPCD
- Dedicated irrigation meter area measurement and water use against aggregated budgets
- Water loss as compared to the agency's standard
- Indirect potable water reuse for the recycle water bonus incentive
- Variances
- Mixed-use CII meters using 500,000 gallons per year and status of DIM or in-lieu technology installations
- Buildings over 20,000 SF and annual aggregated consumption
- Mixed-use meter categories, top users, and best management practices implemented

Additionally, in order to achieve the required demand reductions, each agency will need to carefully identify performance metrics, track activity, and determine measure performance for the many elements of the Standards. Agencies should consider centralizing the datasets for easy access and efficient reporting.

Data to be managed includes:

- Water use standards and comparison against use
- Customer outreach and response levels
- Program activity across all programs
- DIM/MUM land area measurements
- CII classified accounts
- CII buildings 50,000 SF or more and aggregated water use
- CII BMPs implemented
- Water loss audits
- Distribution system leaks repaired
- New development: customer class, irrigated area, and population

Conclusions

Recognizing the criticality of California's water supply situation, the State developed hard-hitting, long-term Water Use Objectives (WUOs) to be delivered through the actions of California's Retail Water Agencies.

Unquestionably, the Water Use Objective poses considerable operational and financial challenges to most Retail Water Agencies. While some of the Retail Agency members of MWDOC will be compliant with State WUOs, many Agencies will not.

These Retail Agencies will have to significantly expand their budgets, staffing, and program response to meet WUO requirements. State Objectives require robust Water Use Efficiency plans and detailed annual reporting, as well as heightened technical capabilities in water consumption analysis, loss control, and advanced targeted outreach.

To best plan for WUO compliance, MWDOC elected to explore the potential for accelerated levels of efficiency moving forwards.

The Orange County Residential Water Efficiency Potential and Opportunities Study aimed to:

1. Measure remaining water savings potential in Orange County's residential market.
2. Identify cost-effective methods for reducing demand.
3. Suggest best ways to provide financial and technical assistance to Retail Agencies and consumers for water efficiency upgrades.

Two distinct water reduction scenarios were modeled for the residential market sector:

- LEVEL ONE Water efficiency requirements to reach compliance with the recommended 2030 State Water Use Objectives.
- LEVEL TWO Maximum achievable water savings beyond the State WUO by 2035, with appropriate funding, sound planning, and skillful execution.

Although it will be challenging and expensive, results derived from the Study identified sufficient conservation opportunities to meet the WUO.

Below are estimates of water savings potential in Orange County residential market.

	R-GPCD	Residential Demand (AF)	Acre-feet Reduction
Baseline	**85**	**222,572**	**--**
Passive	**82.4**	**215,627**	**6,600 by 2030**
Level 1	**71.8**	**187,848**	**27,000 by 2030**
Level 2	**61.2**	**160,254**	**55,000 by 2035**

In addition, a customer survey was implemented to provide more insight into outdoor water use opportunities and customer attitudes regarding water efficiency. The study found that customers understand the importance and critically of water efficiency, both individually and as community. Now more than ever before, they are willing to take action and do their part to decrease water use in the region, they just need information and guidance to do so. Below are highlights of the survey findings.

Survey Findings

Customers believe climate change is real and water conservation is important.

Customers state they want to learn more about water efficiency. The majority of customers specifically expressed interest in obtaining more information about low water use landscapes and efficient irrigation equipment.

A large portion of customers state that they have installed drip irrigation systems.

A significant percentage of customers state they have taken out part, or all, of their lawn.

Recommended Measures

The next step is the process was to identify the most promising and cost-effective methods for reducing demand for the two scenarios. The team evaluated the market potential, assessed existing programs measures, and reviewed emerging technologies.

The recommendations in the Study focus on achievable efficiency measures. These are the programs, services, and devices that work effectively in the Orange County customer market and should form the foundation of any future water efficiency program.

The most promising measures for reducing future residential and commercial landscape water demand include:

- Water budget programs
- Outdoor efficiency:
  - Turf replacement
  - Sprinkler tune-ups
  - Drip irrigation conversions
  - Smart irrigation controllers
  - High-efficiency sprinkler nozzles
  - Landscape design and maintenance assistance

Research indicates that there still are opportunities for measures like high-efficiency toilets and washers, smart irrigation controllers, and direct installation of plumbing fixtures for underserved communities.

Program Costs

After gaining a thorough understanding of the most optimal measures, the next step involved creating models for the necessary activities and their associated costs to achieve the Level 1 and Level 2 reduction targets. As previously discussed, in order to enhance engagement levels, it is crucial to enhance incentives, expand outreach initiatives, and improve customer assistance. These enhancements inevitably lead to an overall increase in program costs. Not only does the individual cost of each action rise, but the total budget experiences a significant increase. Nevertheless, the cost-effectiveness of the program for the entire portfolio remains considerably lower than the expense of importing water from Metropolitan. However, the allocated annual budget of $35 million for Level 1 and $64 million for Level 2 far surpasses any previous funding levels in the region. Consequently, accomplishing the water conservation goals presents a formidable challenge.

It is important to note that the budget does not account for additional funding required by local agencies. This encompasses financial coverage for activities such as measuring irrigated areas, developing local Water Use Efficiency (WUE) plans, creating customer water budgets, conducting outreach efforts, repairing municipal leaks, reporting to the State on an annual basis, and other tasks necessary to meet the individual retailer Water Use Objectives.

The following charts show the annual, administrative, and total costs, as well as cost per Acre-foot, for the respective water saving levels.

Level 1: Water Savings, Cost, Cost per AF

Water Use Reduction by 2030	**27,900 AF**
Annual Program Costs	**$31,754,484**
Annual Administration Costs	**$4,128,083**
Total Costs	**$35,882,567**
Cost per AF	**$732**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2030 = **$251,177,969**

Level 2: Water Savings, Cost, Cost per AF

Water Use Reduction by 2035	**56,000 AF**
Annual Program Costs	**$56,872,152**
Annual Administration Costs	**$7,393,380**
Total Costs	**$64,265,532**
Cost per AF	**$876**

**Assumed 13% administrative and overhead costs.*

Total Program Costs 2024 - 2035 = **$771,186,384**

Recommended Approach - Five Year Vision

With the local Retail Water Agencies now carrying responsibility for goal achievement, there will be a shift from the traditional planning efforts of the past where MWDOC, the regional provider, generated a regional plan with input from the Retail Agencies.

To address this shift, the recommended approach is as follows:

1. Retail Agencies develop and fund comprehensive local plans based upon their unique Water Use Objectives and the specific characteristics of their service area. Some agencies will need to greatly expand their staffing and resources well beyond existing levels. Many agencies must take a different approach to customer outreach to pinpoint inefficient users and best direct resources. To achieve efficiency goals, agencies must provide more robust customer education and support.

2. MWDOC, formerly the lead in the planning process, transitions to a supporting role. This may include provision of expert technical services, tools, and resources to Retail Water Agencies across the region and continuation of region water efficiency programs with participation as desired by each Retail Agency. Specific efforts include: 1) Dedicated irrigation meter irrigable area measurements, 2) CII Best Management Practice plans, 3) CII classifications, and 4) Mixed-use meter irrigation measurements and technology plans.

Implementation of these strategies requires high commitment levels and substantial funding. Regardless of plan level selected, the recommended approach remains constant, with scaling as the main difference.

Item No. 5

INFORMATION ITEM
October 2, 2023

TO: **Planning & Operations Committee**
(Directors McVicker, Nederhood, Seckel)

FROM: **Harvey De La Torre, Interim General Manager**

Staff Contact: Damon Micalizzi

SUBJECT: **2023 OC WATER SUMMIT UPDATE**

STAFF RECOMMENDATION

Staff recommends the Public Affairs & Legislation Committee: Receive and file the report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

REPORT

The upcoming 2023 Orange County Water Summit, themed 'Finding Reliability,' is less than two weeks away. At the time of this report, 285 attendees have registered to participate in the event, which will take place on Friday, October 13th, at the Westin Hotel in Costa Mesa.

Congressman John Duarte and Congressman J. Luis Correa will headline the session 'Are Infrastructure Funds the New Lottery?'

The latest DRAFT program for the event is attached.

Orange County Water District (OCWD), the lead agency for the 2023 summit.

2023 Draft Program

15th Annual OC Water Summit
Finding Reliability
Friday, October 13, 2023
7:30 am - 1:30 pm
Westin South Coast Plaza
Costa Mesa, California

PROGRAM*

7:30 am	**Registration and Continental Breakfast**
8:00 am - 8:15 am	**Welcome and Pledge of Allegiance** • Stephen R. Sheldon, Director, Orange County Water District • Jeffery M. Thomas, Board Member, Municipal Water District of Orange County • Fritz Coleman, Master of Ceremonies
8:15 am - 9:15 am	**Drought or Missed Opportunities?** • Moderator: Lisa Ohlund, Principal, Ohlund Management & Technical Services • Wade Crowfoot, Secretary, CA Department of Natural Resources *(Invited)* • Darcy Burke, Director, Elsinore Valley Municipal Water District and President, Watermark and Associates • Jason Phillips, Chief Executive Officer, Friant Water Authority
9:15 am - 10:00 am	**Are Infrastructure Funds the New Lottery?** • The Honorable J. Luis Correa, Congressman • The Honorable John Duarte, Congressman
10:00 am - 10:20 am	**Networking Break**
10:20 am - 11:15 am	**Is it Fair to Blame Climate Change for Everything?**

- Moderator: Fritz Coleman
- John Christy, Director, Earth System Science Center, The University of Alabama in Huntsville
- Rong Fu, PhD, Director of the Joint Institute for Earth System Science and Engineering, University of California, Los Angeles
- Steve Greenhut, R Street Institute

11:15 am - 12:15 pm	**What's Our Water Supply Future?** • Moderator: Lisa Ohlund, Principal, Ohlund Management & Technical Services • Edward Ring, Senior Fellow, California Policy Center, and Author, The Abundance Choice • Adan Ortega, Chair, Metropolitan Water District • Glenn Farrel, Executive Director, CalDesal

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12:15 pm - 12:30 pm	**Closing Remarks** • Stephen R. Sheldon, Director, Orange County Water District • Jeffery M. Thomas, Board Member, Municipal Water District of Orange County • Fritz Coleman, Master of Ceremonies

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12:30 pm - 1:30 pm	**Buffet Lunch and Networking**

Program subject to change

WESTMINSTER FALL FESTIVAL

Engaged with 225 Residents

OC WATER SUMMIT EMCEE FRITZ COLEMAN

Event Introduction Filming

STATEWIDE WORKFORCE SURVEY

https://tinyurl.com/ymh69d8f

GIRL SCOUTS RECAP VIDEO

https://tinyurl.com/girlscoutrecap

OC GIRL SCOUTS STEM-BASED PATCH CLINIC

- *21 Girl Scouts in attendance*
- *Earned the Water Resources and Conservation Patch*
- *Toured City of Seal Beach's Lampson Well site*
- *3 new hands-on activities created and led by MWDOC PA*

OC SPEAKERS BUREAU

Coordinated, attended, and provided support to MWDOC Board Director Karl Seckel for a speaking engagement at Leisure World to 44 Sunshine Club members.

17.85% SOCIAL MEDIA ENGAGEMENT RATE

A Good Rate is *1-5%*

Item No. 7

INFORMATION ITEM
October 2, 2023

TO: **Planning & Operations Committee**
(Directors McVicker, Nederhood, and Seckel)

FROM: **Harvey De La Torre, Interim General Manager**

Staff Contact: Sarah Wilson

SUBJECT: **MWDOC K-12 Choice School Programs Update**

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee receive and file this report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

The Municipal Water District of Orange County (MWDOC) K-12 Choice School Program contractors—Shows That Teach and Orange County Department of Education's Inside the Outdoors— have started to book live, interactive water lessons for the 2023/24 school year.

This report includes a preview of scheduled visits for October and November 2023. MWDOC Choice School Program contractors update the shared Google Calendar so that participating water providers can view sessions in their service area as they are booked. Please note that the shared Google Calendar is updated frequently and will always have the most accurate information. Visits are subject to change due to school and teacher availability. Login information for the shared Google Calendar is available upon request.

DETAILED REPORT

All MWDOC Choice School Programs incorporate hands-on interaction, pre- and post-program activities, and family and community engagement opportunities. Sessions are

Budgeted (Y/N): Y	Budgeted amount: $435,950	Core __	Choice X
Action item amount:	Line item: 63-7040		
Fiscal Impact (explain if unbudgeted):			

offered to schools either in person or virtually. This report includes a detailed breakdown of each program’s progress, including teacher feedback, video links, and photos.

MWDOC Choice K-2 Elementary School Program
October 2, 2023

Shows That Teach offers Orange County students in grades K-2 fun and informative assemblies that use music, humor, and audience participation to engage students in water-centric topics such as the water cycle, water supply resources, and using water wisely. This interactive program also includes hands-on pre- and post-activities that encourage students to reflect on their relationship with water. This program is offered either in person or virtually to K-2 students combined. Multiple classrooms and grade levels can participate simultaneously.

COMPLETED PARTICIPATION TO DATE:

Totals reflect the number of presentations *completed* and students seen since the start of the 2023-2024 school year.

- **In-person presentations hosted:** 7
- **Virtual presentations hosted:** 0
- **Total number of students seen:** 1,413
- **Presentations have been completed in the following service areas:** City of Anaheim, City of Garden Grove, City of San Clemente, City of Santa Ana, Santa Margarita Water District, City of Tustin

SCHEDULED PARTICIPATION TO DATE:

Totals reflect the number of presentations currently *scheduled* and students expected to participate in the upcoming months of the 2023-2024 school year.

- **In-person presentations scheduled:** 29
- **Virtual presentations scheduled:** 0
- **Total number of students expected:** 4,652
- **Upcoming presentations have been scheduled in the following service areas:** City of Anaheim, East Orange County Water District, El Toro Water District, City of Garden Grove, City of Huntington Beach, City of Orange, City of San Clemente, City of Santa Ana, Santa Margarita Water District, City of Seal Beach, South Coast Water District, City of Tustin, City of Westminster

ADDITIONAL PROGRAM DETAILS AND MEASUREMENTS:

Teacher Feedback:

“Informative, entertaining, and well-paced. All students were engaged and had a great time learning about water and tips to conserve.” *- Kindergarten Teacher, Kinoshita Elementary School, Santa Margarita Water District’s service area*

“It was lively, interactive, and educational. The kids were really engaged and paid attention. They had a lot of fun!” - *Second Grade Teacher, Eisenhower Elementary School, City of Garden Grove’s service area*

Video:

Click below to watch a video excerpt from a Waterology performance on 9-22-23 at Truman Benedict Elementary in the City of San Clemente’s service area.

https://www.dropbox.com/scl/fi/rd903bhxju4pki0rmaz0t/MWDOC-K-2-Choice-School-Program-Clip.mov?rlkey=zwf48or4m35p68o85l9uus3i4&dl=0

MWDOC Choice Elementary School Program (grades 3-5)
October 2, 2023

Orange County Department of Education's Inside the Outdoors offers Orange County students in grades 3-5 interactive, grade-specific lessons that engage students in valuable instruction on the history of California water, local climate and water sources, and how to use water efficiently. Each session includes student prompted interaction, demonstrations, and pre- and post-activities that guide students to examine how access to a reliable source of drinking water is important to every community. Participating students and their families also receive resources that complement the topics covered during the classroom session. This program is offered either in person or virtually to students in grades 3-5.

- **3rd Grade:** Compare and describe diverse weather and climate data and explore personal choices to protect our local water resources.
- **4th Grade:** Identify the key role water plays in California's history including the growth and expansion of towns and cities.
- **5th Grade:** Examine existing water management solutions and determine ways to protect the quality and quantity of water.

COMPLETED PARTICIPATION TO DATE:

Totals reflect the number of presentations *completed* and students seen since the start of the 2023-2024 school year.

- **In-person presentations hosted:** 15
- **Virtual presentations hosted:** 0
- **Total number of students seen:** 1,039
- **Presentations have been completed in the following service areas:** City of Garden Grove, Moulton Niguel Water District, City of Anaheim**,** City of Santa Ana

SCHEDULED PARTICIPATION TO DATE:

Totals reflect the number of presentations currently *scheduled* and students expected to participate in the upcoming months of the 2023-2024 school year.

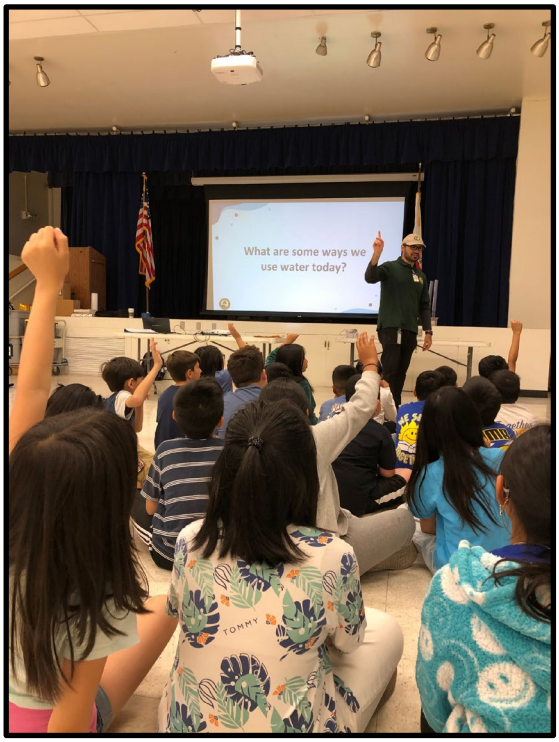
- **In-person presentations scheduled:** 78
- **Virtual presentations scheduled:** 3
- **Total number of students expected:** 4,764
- **Upcoming presentations have been scheduled in the following service areas:** City of Anaheim, City of Santa Ana, City of Fullerton, City of Garden Grove, City of Westminster, City of Huntington Beach, Santa Margarita Water District, City of Fountain Valley, City of Tustin, City of Buena Park, South Coast Water District, El Toro Water District, City of La Habra, City of Brea

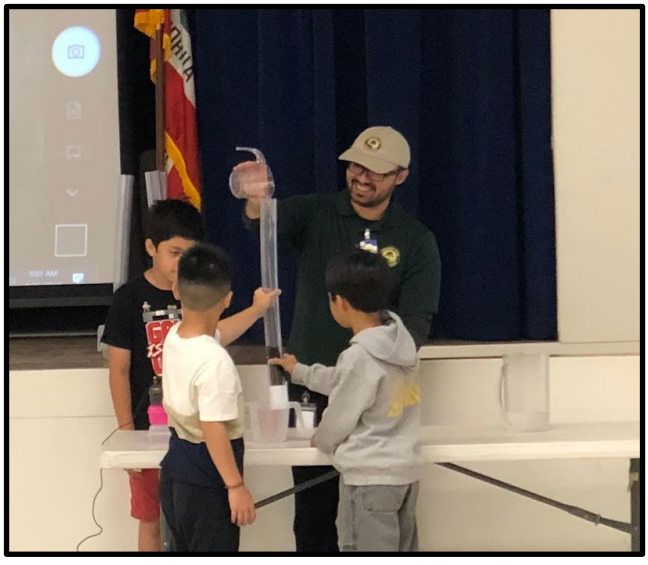
ADDITIONAL PROGRAM DETAILS AND MEASUREMENTS:

To date, OCDE/ITO has received interest from the following schools and is working with teachers to schedule those presentations:

- One (1) school from City of Westminster
- One (1) school from City of Tustin
- One (1) school from El Toro Water District
- One (1) school from City of Huntington Beach

Photos:





MWDOC Choice Middle and High School Programs (grades 6-12)
October 2, 2023

Orange County Department of Education's Inside the Outdoors offers Orange County students in grades 6-12 grade-specific classroom sessions that guide students to investigate challenges faced by water providers and identify sources of human impact on the quality, quantity, and availability of water in their communities. Each session includes student prompted interaction, demonstrations, and pre- and post-activities that engage students in developing solutions to real-world problems. This program is offered either in person or virtually to students in grades 6-12.

- **6th-8th Grade:** Students analyze water samples to identify sources of potential pollution and form strategies to monitor or minimize pollution.
- **9th-12th Grade:** Students collect and analyze data to explore the role of the Sacramento-San Joaquin Delta and its connection to our local water resources.

COMPLETED PARTICIPATION TO DATE:

Totals reflect the number of presentations *completed* and students seen since the start of the 2023-2024 school year.

Middle School Program (grades 6-8)

- **In-person presentations hosted:** 2
- **Virtual presentations hosted:** 0
- **Total number of students seen:** 34
- **Presentations have been completed in the following service areas:** City of Anaheim

High School Program (grades 9-12)

- **In-person presentations hosted:** 0
- **Virtual presentations hosted:** 0
- **Total number of students seen:** 0
- **Presentations have been completed in the following service areas:**

SCHEDULED PARTICIPATION TO DATE:

Totals reflect the number of presentations currently *scheduled* and students expected to participate in the upcoming months of the 2023-2024 school year.

Middle School Program (grades 6-8)

- **In-person presentations scheduled:** 15
- **Virtual presentations scheduled:** 0
- **Total number of students expected:** 500
- **Upcoming presentations have been scheduled in the following service areas:** City of Anaheim, City of Buena Park, City of Fountain Valley, City of Garden Grove

High School Program (grades 9-12)

- **In-person presentations scheduled:** 0
- **Virtual presentations scheduled:** 0
- **Total number of students expected:** 0
- **Upcoming presentations have been scheduled in the following service areas:**

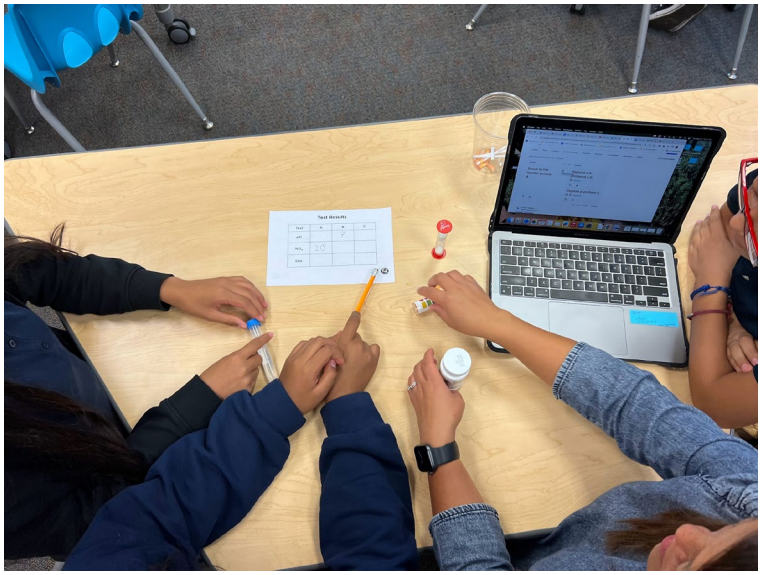
ADDITIONAL PROGRAM DETAILS AND MEASUREMENTS:

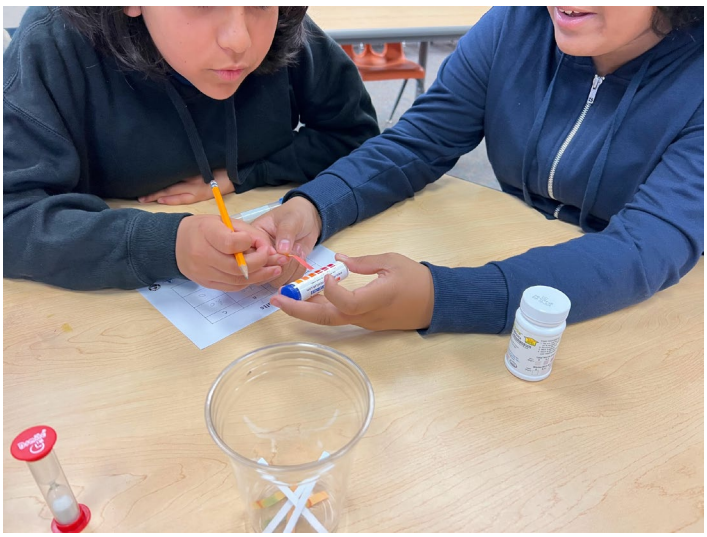
To date, OCDE/ITO has received interest from the following schools and is working with teachers to schedule those presentations:

- Two (2) schools from City of Santa Ana
- One (1) school from City of Fullerton

Teacher Feedback:

“We did the Wonders of H2O pre-activity lesson yesterday and it's so pertinent to our project and allowed our students to gain real world insights about our watershed and watersheds in general.” - *Science Teacher, South Junior High School, City of Anaheim’s service area*





Oct 2023 (Pacific Time - Los Angeles)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 3-5 TUSTIN Estock Elem	3	4 3-5 ANAHEIM Palm Lane	5	6 3-5 GARDEN GROVE 3-5 HUNTINGTON BEACH	7
8	9 3-5 BREA Brea Country 3-5 BUENA PARK Emery	10 K-2 WESTMINSTER	11 K-2 WESTMINSTER	12	13 3-5 GARDEN GROVE K-2 GARDEN GROVE at K-2 TUSTIN Nelson Elem	14
15	16 3-5 ANAHEIM Price Elem 3-5 BUENA PARK K-2 ANAHEIM Canyon	17	18	19	20 3-5 ETWD San Joaquin 3-5 LA HABRA Ladera K-2 ETWD San Joaquin K-2 WESTMINSTER John	21
22	23 3-5 FOUNTAIN VALLEY	24 K-2 TUSTIN Sycamore	25 K-2 ORANGE California K-2 SEAL BEACH	26	27 3-5 SANTA ANA Edison 3-5 SCWD RH Dana Elem	28
29	30 K-2 ETWD Grace Christian K-2 SAN CLEMENTE	31	1	2 K-2 SANTA ANA Heroes K-2 SANTA ANA at	3	4

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30 K-2 ETWD Grace Christian K-2 SAN CLEMENTE	31	1	2 K-2 SANTA ANA Heroes K-2 SANTA ANA at	3	4
5	6	7	8	9 K-2 ANAHEIM Jefferson K-2 WESTMINSTER	10	11
12	13	14 K-2 ANAHEIM at K-2 HUNTINGTON BEACH	15	16	17 6-12 BUENA PARK K-2 GARDEN GROVE K-2 SMWD Oxford Prep K-2 WESTMINSTER Post	18
19	20	21	22	23	24	25
26	27	28 6-12 ANAHEIM Madison K-2 SCWD RH Dana Elem	29	30	1 3-5 ANAHEIM Roosevelt	2

ENGINEERING & PLANNING	
Lead and Copper Rule Revisions – Lead Service Line Inventory Choice Program	In mid-March 2023, multiple agencies requested MWDOC's assistance in complying with US EPA Lead and Copper Rule Revisions (LCRR) - Service Line Inventories which all water systems are required to complete and submit to the primacy agency (for California it is the State Water Boards) by October 16, 2024. On May 24, 2023, MWDOC hosted an initial meeting with (18) OC agencies and the State Division of Drinking Water staff regarding the LCRR – Lead Service Line Inventory compliance requirements. On June 19, 2023, MWDOC posted an RFP for technical assistance with multiple agencies' service line inventories and received five (5) proposals. The MWDOC Board approved a contract award to Hazen and Sawyer (Hazen) on September 20, 2023. MWDOC staff have been hosting one-on-one meetings with interested agencies to answer agency-specific questions related to LCRR compliance approach, costs, and data needs to help agencies navigate the process. To date, the program has 13 Participating Agencies who are in the process of selecting program services. MWDOC staff and Hazen will meet with each agency to finalize their program services selections. This will provide the Scope of Work and pricing that agencies can take to their governing body for approval. The project currently remains on schedule to begin issuing Notices to Proceed on a first-come first-served basis in October 2023.
MNWD Pump-in to EOCF #2 Technical Study	MWDOC continues to support MNWD's technical study of a potential pump-in project to East OC Feeder #2 from the City of Santa Ana's East Station. MWDOC has hosted multiple meetings with staff from MET's Water Quality, Operations, and Engineering Groups, Moulton Niguel Water District (MNWD), City of Santa Ana, OCWD, and MNWD's consultant Brown & Caldwell. MWDOC will host a 4th technical meeting on October 16, 2023, between MET staff, MWDOC, MNWD and consultant Brown & Caldwell.
Doheny Ocean Desalination Project	South Coast Water District (SCWD) continues to develop the Doheny Ocean Desalination Project. SCWD estimates an on-line date of 2028, if approved by the SCWD Board. At the SCWD Board Meeting on June 22, 2023, Clean Energy Capital (CEC) provided an update on the financial implications of the project. CEC presented updated cost projections for a 5 MGD project where SCWD would take 2 MGD. The updated estimated 1st year water cost is $2,597/AF (in 2028$) or $2,058/AF (discounted to 2023$), which is a $469/AF increase vs CEC's 2021 estimate.

	The increase is largely driven by increases in energy costs (with energy costs making up 60% of the overall cost increase). **SCWD Unit Cost of Water ($/AF)** MWDOC Average of High and Low $2,100 5 MGD Plant $2,701 Difference $ 601 **SCWD Residential Average Monthly Cost** No Desal $141.63 With 5 MGD Plant $145.64 Difference $4.01 **CEC estimates of Construction Costs:** Escalated to a Feb 1,2025 construction start date $137,642,914 Total Grants ($ 30,423,241)[1] Total Development & Financing Costs $ 30,685,350 Total Capitalized Costs $137,905,023 SCWD Staff Report is located here: https://scwd.granicus.com/MetaViewer.php?view_id=3&clip_id=2790&meta_id=180312 CEC Presentation slides are located here: https://scwd.granicus.com/MetaViewer.php?view_id=3&clip_id=2790&meta_id=180313 On July 27, 2023, SCWD released the Request for Qualifications for the Progressive Design Build Operate and Maintain (DBOM) Project and have received several proposals. [1]As of September 2023, SCWD has secured $32.4M in grant funding for the Project, including $10M from the California Department of Water Resources Desalination Construction Grant, $20M from the U.S. Bureau of Reclamation Water Infrastructure Improvement for the Nation (WIN) Act Grant, and $2.4M from the U.S. Environmental Protection Agency Grant.
South OC Nitrification Event	See Discussion Item in Board package.
Shutdowns	**R6 Reservoir Rehabilitation** El Toro Water District (ETWD) shut down the 275 Million Gallon R6 Reservoir to replace the aging reservoir liner and cover in November 2022. ETWD started refilling the R6 Reservoir on September 11, 2023, and is on track to completing the refill and returning to service by October 6, 2023. MWDOC has been coordinating with MET and the South Orange County agencies to return R6 to

service in time for the AMP Prestressed Concrete Cylinder Pipe (PCCP) Inspection shutdown scheduled for October 29 through November 4, 2023.

R6 Reservoir refilling on September 18, 2023 (Courtesy of El Toro Water District)

AMP Prestressed Concrete Cylinder Pipe (PCCP) Inspection

MWDOC coordinated with ETWD, MET, and the SOC agencies to move the scheduled shutdown of the AMP down-gradient of OC-70 to October 29 through November 4, 2023, to accommodate the R6 reservoir return to service. R6 is needed to support SOC agencies during the AMP Shutdown.

MET is conducting a periodic inspection of the PCCP sections of the AMP to monitor the condition of the high tensile strength prestressed structural steel wire in the pipe. A rehabilitation project for the AMP to add a structural steel liner to the PCCP sections of the pipeline is currently in design with an estimated start date of late 2027 which will require a series of shutdowns over a 2–3-year period.

Diemer Water Treatment Plant

MET has scheduled a 7-day shutdown of the Diemer WTP to repair a broken chlorine solution line to **January 5-11, 2024**. Finding a suitable window for this shutdown presented challenges due to numerous maintenance shutdowns by MET and retail agencies as well as fire danger concerns.

During the Diemer shutdown, the following pipelines will be down for repairs:

- Allen-McColloch Pipeline
- East Orange County Feeder No.1
- East Orange County Feeder No.2
- Lower Feeder – Treated and Untreated
- Second Lower Feeder (portions)

General Managers Report
WEROC Status Report

September 2023

SEPTEMBER INCIDENTS/EVENTS

- **No Significant Events to Report**

Vicki can provide additional information on this event as warranted.

COORDINATION/PARTICIPATION WITH MEMBER AGENCIES AND OUTSIDE AGENCIES MEETINGS OUTSIDE OF PROGRAMS AREAS AND EMERGENCY RESPONSE

- On 9/5, Vicki conducted the monthly coordination/information call with member agencies.
- On 9/6, Vicki attended the IRWD TTX Exercise After Action Report meeting.
- On 9/7, Janine attended the Orange County Emergency Management Organization (OCEMO) meeting at the Health Care Agency Warehouse. Presentations included an overview of the Medical/Health Operational Area Coordination (MHOAC) Program, overview planned revision cycle for the Unified County of Orange and Orang County Operational Area Emergency Operations Plan, and the Orange County Operational Area Recovery Plan.
- On 9/8, Vicki gave her monthly update to the WACO meeting.
- On 9/11, Vicki attended the California Office of Emergency Services, Emergency Management Mutual Aid SEMS Technical Subcommittee in which Vicki represents Region one.
- On 9/12, Janine attended the USACE Fullerton and Carbon Canyon Dam Workshop training..
- On 9/14, Vicki attended the FEMA DEI & Mitigation Webinar held virtually.
- On 9/18, Vicki attended the Southern California Roadside Ignition meeting the Alex H and MET..
- On 9/21 Vicki attended the OCEMO Leadership monthly meeting to coordinate the activities for the rest of 2023.
- On 9/22, Vicki participated on a planning meeting, where she has been asked to sit on a presentation panel in regard to emergency management and water planning. The date of this presentation has not been finalized at this time.

- On 9/22, Vicki attended the monthly CESA State Board meeting in which she is still the member at large for the southern region.
- On 9/26, Vicki attended the first MET Member Agency Emergency Coordinator Meeting. Meeting discusses communications and coordination, and future exercises.

PLANNING AND PROGRAM EFFORTS

EOC Readiness & EOC Project
WEROC EOC Project - Refer to Action item #1 on the October P&O Committee Meeting. Agenda.

Contact lists and SOPs are being updated to reflect current changes to phone numbers, and personnel changes.

IT & Cyber Security
WEROC continues to send out important information to the Cyber Security Distribution Group as received from DHS or the OCIAC.

On September 19th, WEROC hosted the Cyber Security Working Group meeting. 54 people attended to hear briefings by the FBI, CISA and OCIAC. Presentations included Discovery Bay Water Facility Attack, AI overview and an overview of current threats and IT Information presented to the group/

Member Agency and County/Operational Area Plan Review
Vicki reviewed or revised the following plans this month:

- SCWD Palisades Dam Emergency Response Plan (CalOES has returned the plan requesting additional information a meeting is being scheduled at the beginning of October to talk thru the change requests) Vicki is assisting with crafting the dam language needed for the plan.
- Orange County Operational Area Recovery Plan
- Unified County of Orange and Orange County Operational Area Emergency Operations Plan
- California Office of Emergency Services Emergency Management Mutual Aid Plan and Training Guidance.

Regional Fuel Project
Vicki has been conducting research and collecting data from member agencies. The requested deadline for information was August 31st in which 2/3rds have responded back

Regional Mapping Project
Janine continues to work on revision of the 2017 WEROC Map Atlas and Public Safety Power Shut (PSPS) Off map updates. MWDOC Engineering has been assisting with the collaboration with CDR and providing input to the project.

Resource Requests and Member Agency Inventory Lists
Janine has collected this information from each agency and is finishing the correlation of information received.

State Preparedness Report and Threat and Hazard Identification and Risk Assessment (THIRA)

WEROC will be attending UASI meetings for preparation of the annual State Preparedness Report required each year.

- October 10, 2023 Emergency Management Session #1
- October 17, 2023 Emergency management Session #2

Participation in the SPR workshop is vital in identifying gaps in training, exercises and equipment etc. The workshops assist the Anaheim-Santa Ana UASI assess the information and allocate funds to address gaps in critical areas.

Training and Exercises
On 9/18, Vicki conducted a virtual 800Mhz training for the WEROC Member agencies.

On 9/19, Vicki conducted an ICS 100/700 and Standardized Emergency Management System (SEMS) training for the upper management at SMWD

Vicki attended an ICS 300 course September 13-19. Vicki needs to update her training certification for ICS 300, ICS 400 and G191 ICP/EOC Interface. so she can continue to teach and provided this training for free to water agencies,

Vicki created a Workshop/Tabletop Exercise (TTX) Situation Manual for SCWD to be delivered on two different days October 26th & November 2nd. Vicki will be facilitating this TTX on behalf of the agency.

WEROC Planning Efforts in the Development Stage

- Regional Water Distribution Plan
- WEROC Logistics Plan
- Regional Fuel Plan

Status of Water Use Efficiency Projects
September 2023

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
SoCal Water$mart Residential Indoor Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, 121 high efficiency clothes washers and 14 premium high efficiency toilets were installed in Orange County. To date, 128,553 high efficiency clothes washers and 61,018 high efficiency toilets have been installed through this program.
SoCal Water$mart Commercial Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, zero commercial devices were installed in Orange County. To date, 115,207 commercial devices have been installed through this program.
Flow-Monitoring Device Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, 6 flow-monitoring devices were installed in Orange County. To date, 122 flow-monitoring devices have been installed through this program.
Smart Timer Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, 123 residential and 10 commercial smart timers were installed in Orange County. To date, 32,762 smart timers have been installed through this program.
Rotating Nozzles Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, 555 rotating nozzles were installed in Orange County. To date, 578,991 rotating nozzles have been installed through this program.

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Rain Barrel Rebate Program	MWDSC	Ongoing	Ongoing	In August 2023, 10 rain barrels were installed in Orange County. To date, 8,895 rain barrels have been installed through this program.
Turf Removal Program	MWDOC	Ongoing	Ongoing	In August 2023, 60 rebates were paid, representing $342,600.89 in rebates paid this month in Orange County. To date, the Turf Removal Program has removed approximately 26.7 million square feet of turf.
Spray to Drip Rebate Program	MWDOC	Ongoing	Ongoing	In August 2023, 20 rebates were paid, representing $44,404.05 in rebates paid this month in Orange County. To date, the Spray to Drip Program has converted approximately 3.1 million square feet of standard spray irrigation to drip irrigation.
Landscape Design and Landscape Maintenance Assistance Programs	MWDOC	Ongoing	Ongoing	In August 2023, 5 landscape design packages and 20 landscape maintenance packages were delivered to MWDOC Turf Removal Program customers. To date, 740 landscape design packages and 310 landscape maintenance packages have been delivered to MWDOC Turf Removal Program customers.
Industrial Process/ Water Savings Incentive Program (WSIP)	MWDSC	Ongoing	Ongoing	This program is designed to improve water efficiency for commercial customers through upgraded equipment or services that do not qualify for standard rebates. Incentives are based on the amount of water customers save and allow customers to implement custom water-saving projects.

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Industrial Process/ Water Savings Incentive Program (WSIP) cont.				Total water savings to date for the entire program is 1,291 AFY and 8,027 AF cumulatively.
Recycled Water Retrofit Program	MWDSC	Ongoing	Ongoing	This program provides incentives to commercial sites for converting dedicated irrigation meters to recycled water. To date, 183 sites, irrigating a total of 1,676 acres of landscape, have been converted. The total potable water savings achieved by these projects is 3,692 AFY and 24,699 AF cumulatively.

Public & Governmental Affairs Activities Report
August 31, 2023 – September 26, 2023

Member Agency Support	Public Affairs Staff: • Shared Mesa Water's *Water Use Efficiency and Education Coordinator* job opening with various networks • Provided the City of Tustin MWDOC Department of Motor Vehicle rebate videos with their logo on it to share in their lobby and on their cable channel Government Affairs Staff: •
Community and Special Events	Public Affairs Staff: • ***Speakers Bureau –*** Coordinated and attended a speaking opportunity with Director Seckel at Leisure World for 44 Sunshine Club members • Continue to participate in the planning and coordination of the OC Water Summit • Planned and coordinated the first MWDOC Water Resources & Conservation Patch Clinic at the City of Seal Beach's Lampson Well site for 21 Orange County Girl Scouts • Planned for Girl Scouts STEM Expo on October 23, and prepared promotional/conservation items for the event • Provided a Ricky the Raindrop appearance at the City of Westminster's Fall Festival and interacted with 225 local residents • Met with Orange Coast College to discuss event logistics for the Orange County Children's Book Festival Government Affairs Staff: • Participated in the OCBC Governmental Affairs Committee meeting • Distributed the Legislative Policy Principles to the member agencies for review and feedback • Along with Joe Berg, met with staff at ACC-OC to discuss the rulemaking and implementation of *Making Conservation a California Way of Life* and engaging Orange County cities • Circulated the monthly Grants Tracking and Acquisition report to member agencies • Along with Joe Berg, met with staff at the League of Cities to discuss the rulemaking and implementation of *Making Conservation a California Way of Life* and engaging Orange County cities • Met with staff from ACC-OC to outline and prepare for a special meeting with a panel discussion on the rulemaking for *Making Conservation a California Way of Life* •

K-12 Water Education	Public Affairs Staff: • Provided information regarding MWDOC K-12 Choice School Programs to East Orange County Water District, City of Fullerton, City of Garden Grove, and El Toro Water District • Provided all water providers participating in the MWDOC Choice School Programs with login information for the shared Google Calendar of scheduled visits • Met twice with MWDOC 3-12 Choice School Program contractor, Orange County Department of Education's Inside the Outdoors, to discuss program direction, goals, and new opportunities to engage students • Met with Child Creativity Lab to compare education programs and discuss areas for collaboration
Workforce Initiative	Public Affairs Staff: • Sent a 1-question survey to Water Energy Education Alliance members to gain insight on industry workforce priorities. Received 65 responses to date. • Participated in the California Municipal Utilities Association's Statewide Advisory Council Meeting in support of their $4M High Roads Training Partnerships grant • Met with Generation: Now! to discuss career pathways and potential Orange County partnership opportunities • Provided support to the Centers of Excellence for Labor Market Research for their application to the California Community College Chancellor's Office for funding • Proofed and provided input on a draft media alert from the Association of California Water Agencies and the California Water Environment Association on careers in water for Water Professionals Appreciation Week
Digital Communications, Publications, and Media Engagement	Public Affairs Staff: • Prepared and distributed content for social media • Submitted content to the Association of California Water Agencies newsroom ○ MWDOC's Offers STEM-Based Merit Badge Clinics for OC Scouts • Updated the MWDOC website as requested by several departments • Worked with Hashtag Pinpoint and Orange County Water District to film OC Water Summit emcee, Fritz Coleman's event introduction • Provided an interview and proofed an article written by California Special Districts Association (CSDA) for the Westminster Watersmart Conservation Garden project. The first of several articles will appear in their November/December green issue.

Special Projects	Public Affairs Staff: • Sent signed "Thank You" letters to the Orange County Grand Jury who attended the local infrastructure inspection trip • Met with the Wyland Foundation to discuss next steps for the City of San Clemente landscape transformation project • Attended at Nature-based Solutions, Climate Resiliency, and Equity webinar hosted by BAYWORK • Provided education content to CSDA by request for their social media pages Governmental Affairs Staff: • Coordinated and submitted all documents requested to OC LAFCO for the Focused MSR • Staffed the ISDOC Executive Committee meeting • Responded to various ISDOC inquiries regarding membership, upcoming meetings, and updated/edited the Executive Committee minutes • Staffed the WACO meeting on earthquake preparedness • Met with Soto Resources to discuss the grants program • Staffed the WACO Planning Committee meeting

Outreach Metrics	Public Affairs Staff:
	• Google Performance Analytics (September 2023)
	  ○ 151 business profile interactions
	  ○ 1,729 people viewed the business profile
	• Website Analytics (GM report timeframe)
	  ○ 10k pageviews + 39 OC Water-Smart Parks Microsite site sessions
	  ○ Top pages for this date range
	  ▪ MWDOC Homepage 1.5k
	  ▪ Water-Use-Efficiency 1.1k
	  ▪ Turf removal 768
	  ▪ Residential Rebates 609
	  ▪ Board Meetings 411
	• ocwatersmartgardens.com Analytics (August 2023)
	  ○ 512 sessions
	  ○ Top pages for this date range
	  ▪ Landing Page
	  ▪ Helpful Plant List Common Questions
	  ▪ Garden Resources
	• Social Media (August 3 – August 29)
	According to Hootsuite – the global leader in social media management –a good engagement rate is between 1% to 5%. For this period, MWDOC's engagement rate is at 17.85%
	  ○ 34,197 Post reach (number of people)
	  ○ 6,104 Post engagement (actions taken – likes, shares, etc.)

Legislative Affairs	Governmental Affairs Staff: • Worked with Metropolitan staff to respond to an inquiry from Congresswoman Porter's office regarding a boil order in the City of Coronado • Attended the ACWA State Legislative Committee meeting • Participated in the CCEEB WCW Committee meeting • Attended the ACWA Federal Affairs Committee meeting • Participated in the CMUA Regulatory Committee meeting • Met with Director Crane to review the Legislative and Regulatory Policy Principles • Drafted a letter to Governor Newsom to sign AB 1594 (Garcia) – zero emission medium and heavy-duty vehicles • Along with Director Seckel and Harvey, met with Assembly Member Diane Dixon • Along with Director Crane and Harvey, met with Assembly Member Valencia and Assembly Member Petrie-Norris • Participated in the Metropolitan Member Agency Legislative meeting