



MADDAUS  
WATER  
MANAGEMENT

# TURNING UP THE VOLUME ON CII: SUCCESSFUL PROGRAMS & USEFUL TOOLS

CalWEP Peer to Peer – June 1, 2022

1

## Introductions

Why enhance CII?

2

## Updates

Current Drivers and Recommendations  
from SB 606 & AB 1668

3

## Case Studies

Successful Programs and Useful Tools

4

## Roundtable Discussion

Probe Each Others Key Insights:  
Challenges, Approaches, Solutions

5

## Shareback & Wrap-Up

# Speakers: Workshop Panel Guests



**Lisa Maddaus, PE**  
Principal

Maddaus Water  
Management



**Heather Aviles**  
Water Resources  
Analyst

City of Santa Rosa



**Julie Ortiz**  
Water Conservation  
Manager

San Francisco Public  
Utilities Commission



**Krista Guerrero**  
Resource Specialist

Metropolitan Water  
District of Southern  
California



# Updates on Current Drivers for Enhancing CII Programs



# FRAMEWORK RESOURCE HUB

CALWEP'S ONE STOP SHOP FOR IMPORTANT EVENTS AND DOCUMENTS



DWR Monthly Water Loss  
Webinar

March 17th, 2022  
Water Loss



DWR Draft Annual Water  
Supply and Demand  
Assessment Guidance  
Document Meeting

March 7th, 2022



DWR Monthly Water Loss  
Webinar

February 17th, 2022  
Water Loss

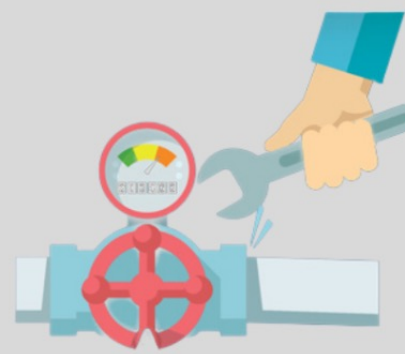
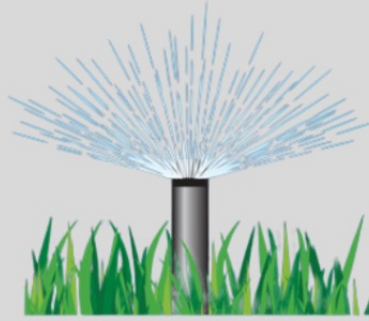
View



CalWEP Joint Task Force  
Brainstorm #2

February 15th, 2022

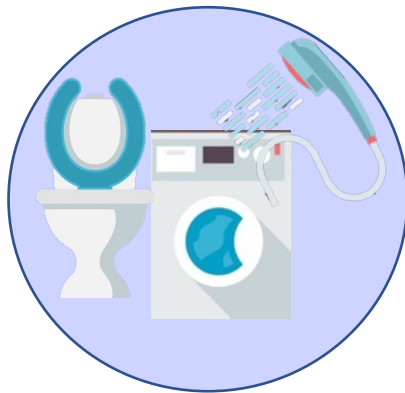
**[CalWEP.org/framework-hub](https://CalWEP.org/framework-hub)**



# *What the* FRAMEWORK?

A ROUND-UP OF WHAT'S GOING ON WITH THE NEW CONSERVATION REGULATIONS

**INDOOR USE**



+

**OUTDOOR  
RESIDENTIAL USE**



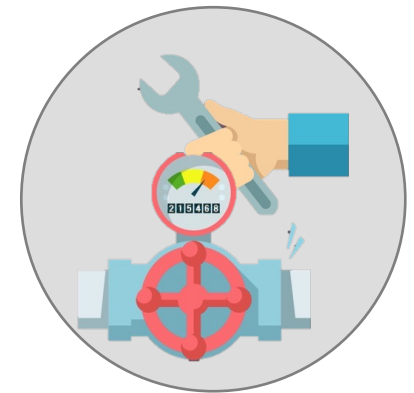
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**CII LANDSCAPE**



+

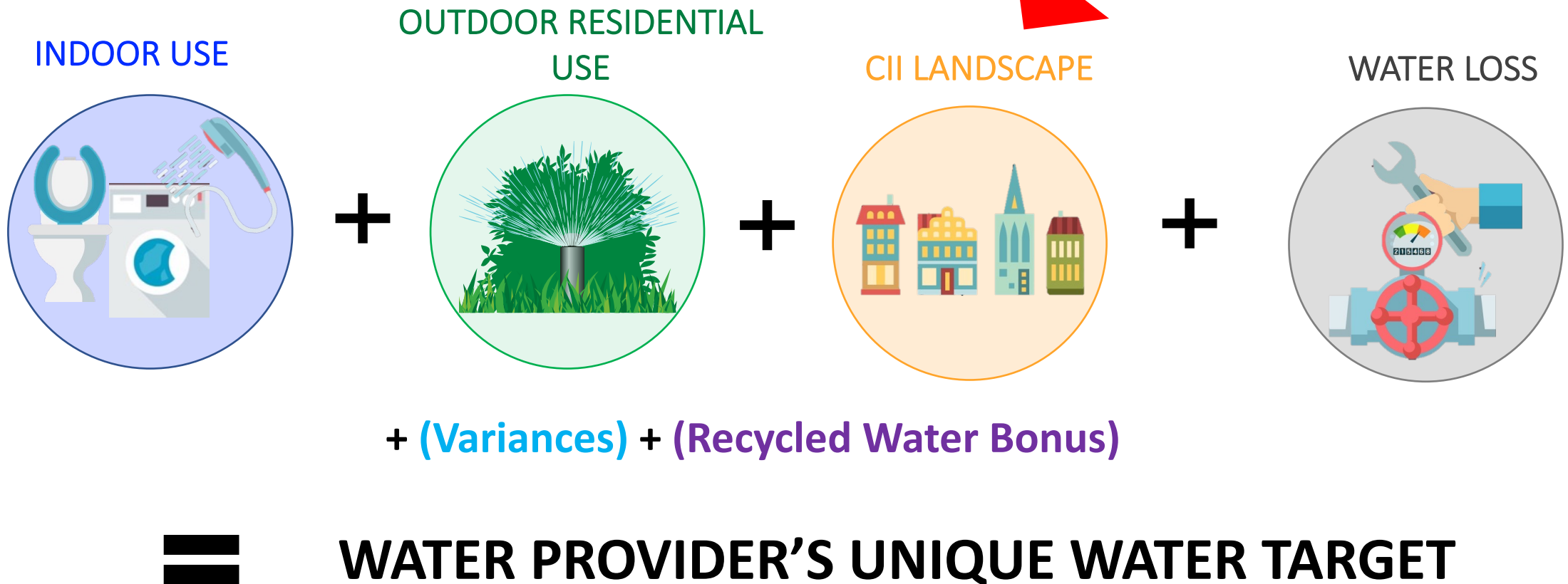
**WATER LOSS**



**[CalWEP.org/framework-updates](https://CalWEP.org/framework-updates)**

# Calculating water targets

Providers will need to meet the SUM of the standards





# 3 Pathways to Compliance:

## WATER USE STANDARD

### CII – DIM / Equivalent Tech. Conversion

- > 1 acre irrigated
- CII-DIM Water Budget Equation applies

✓ Must report water use

## PERFORMANCE MEASURES

### In-Lieu Tech

- > 1 acre irrigated
- Demonstrate improved WUE
- Companion BMPs required

✓ Qualitative Reporting

### CII BMPs

\*Process water excluded

- 5 BMP categories
- Top 2.5% individual / Top 20% by sector
- Develop Implementation Plan

✓ Qualitative Reporting

# DWR's Legislative Objective

Recommendations to the SWRCB for:

✓ CII water use best management practices

BMPs Categories:

1. Outreach and Education
2. Incentive Programs
3. Landscape
4. Collaboration & Coordination
5. Operational

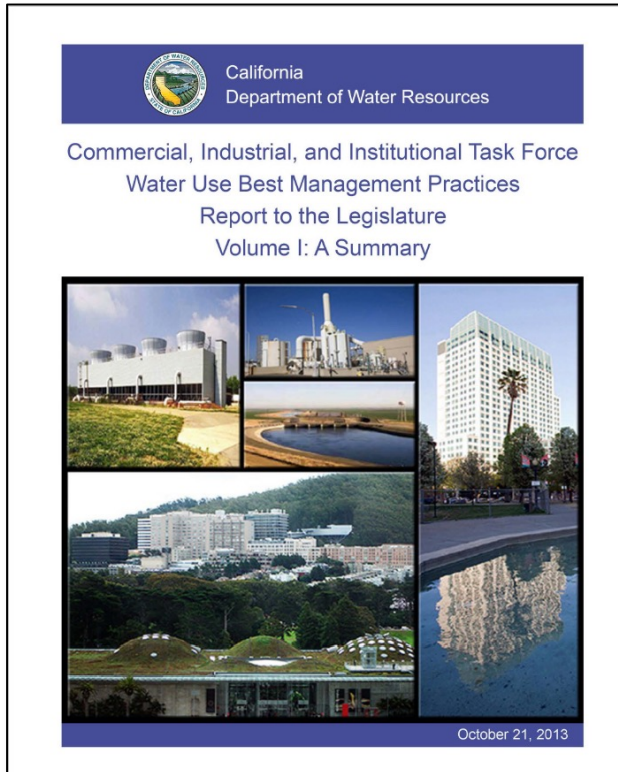
# DWR Technical White Paper BMPs

## Well Rounded Programs: Leverage Key BMP Elements for Successful Programs

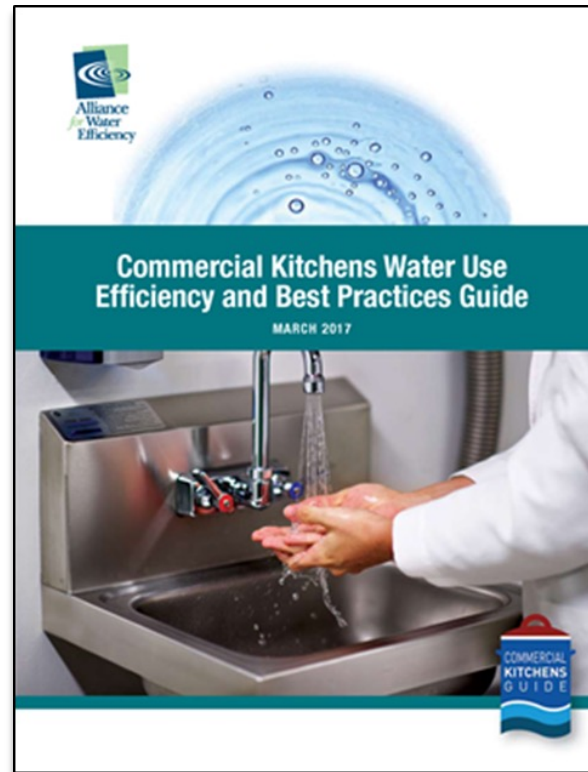
- **Education**
  - Outreach/Customer Engagement including AMI
  - Need testimonials in outreach materials
  - Surveys/Assessments/Audits & Technologies
- **Incentives**
  - Rebates
  - Cooling
  - Irrigation
  - Landscape Transformation
  - Green Business Certifications
- **Policies**
  - Water Smart Businesses get lesser Drought Restrictions
  - LEED Construction
  - Water Supply Assessments
  - Net-Zero Development
- **Mandates**
  - MWELO for Non-Residential Properties
  - Wastewater discharge
- **Resource: DWR BMPS White Paper with Case Studies**



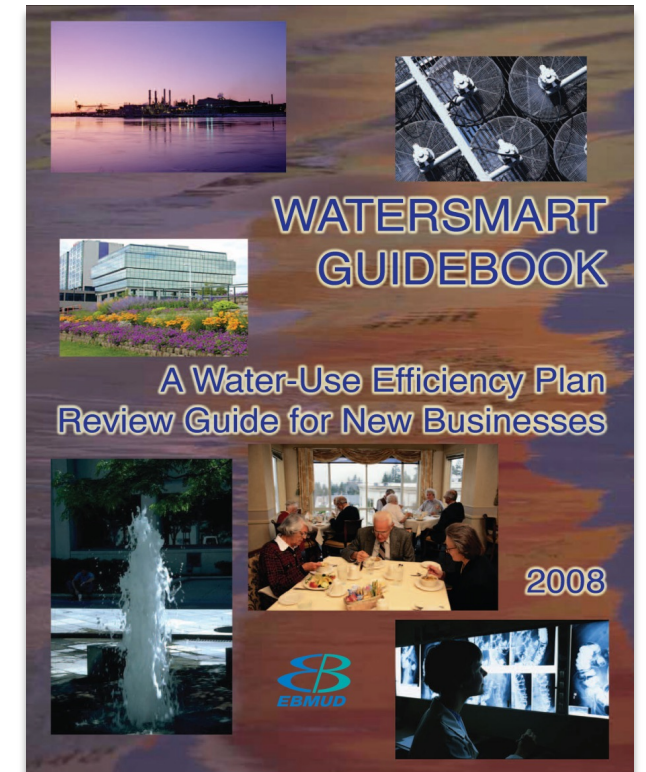
# CII BMP Resources



[Commercial, Industrial, and Institutional Task Force Best Management Practices Report to the Legislature Volume I](#)

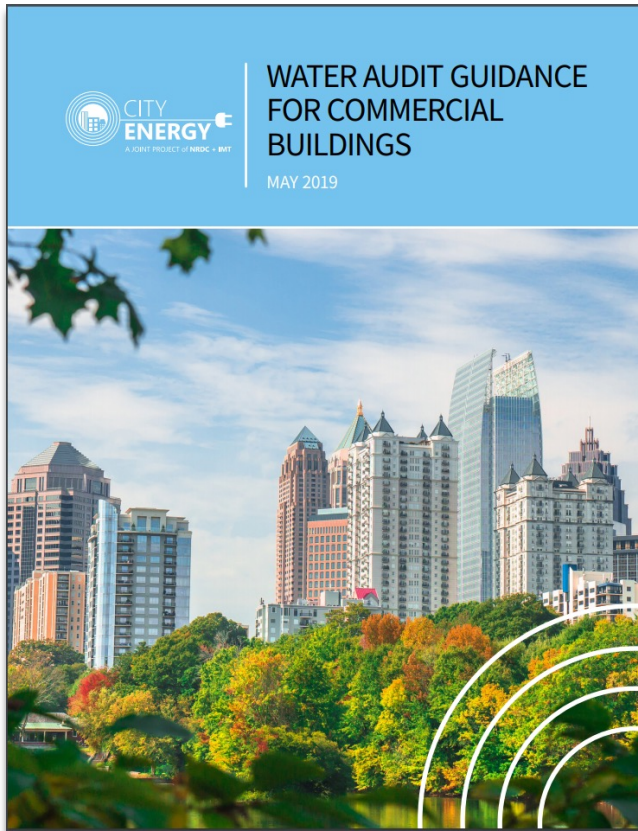


[Commercial Kitchens Water Use Efficiency and Best Practices Guide](#)

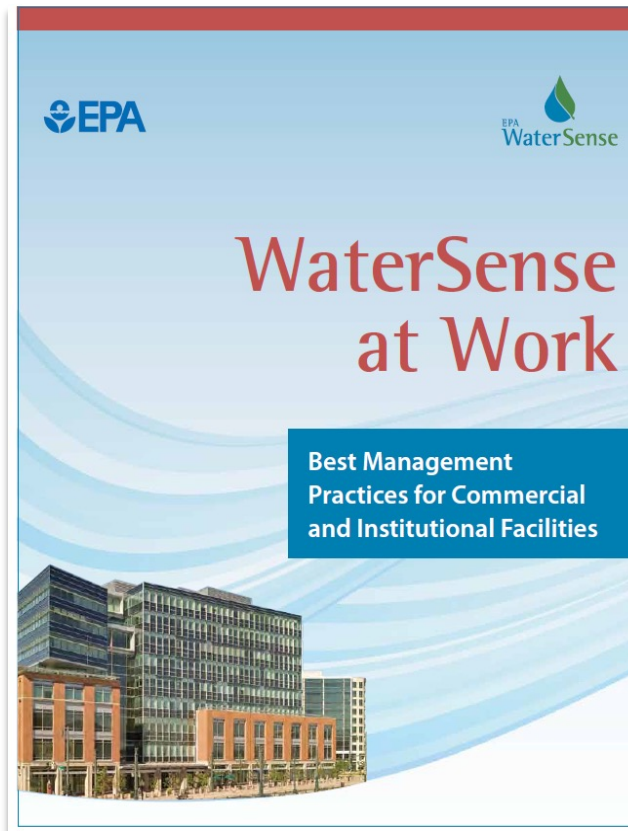


[EBMUD WaterSmart Guidebook](#)

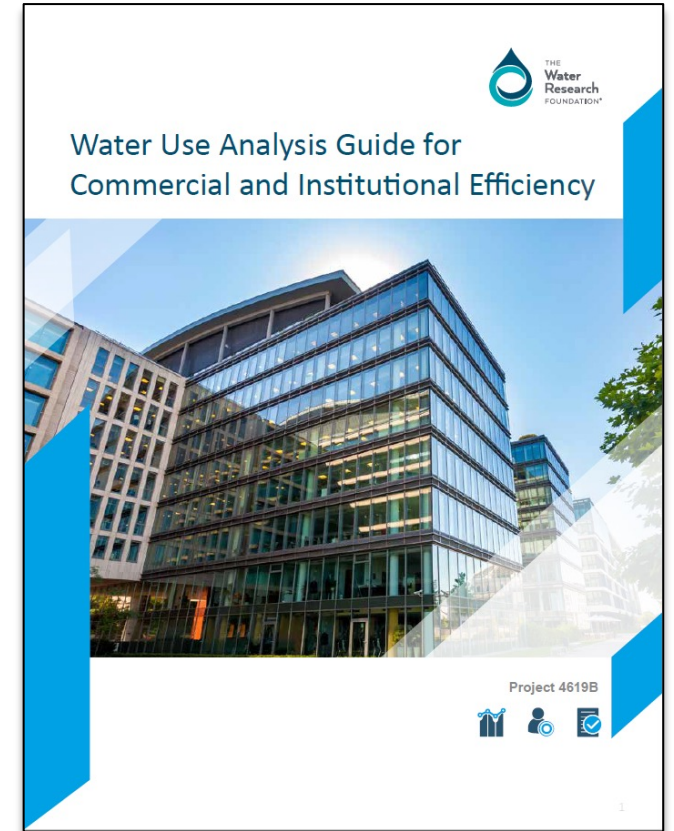
# CII BMP Resources (cont.)



[City Energy Water Audit Guidance for Commercial Buildings](#)

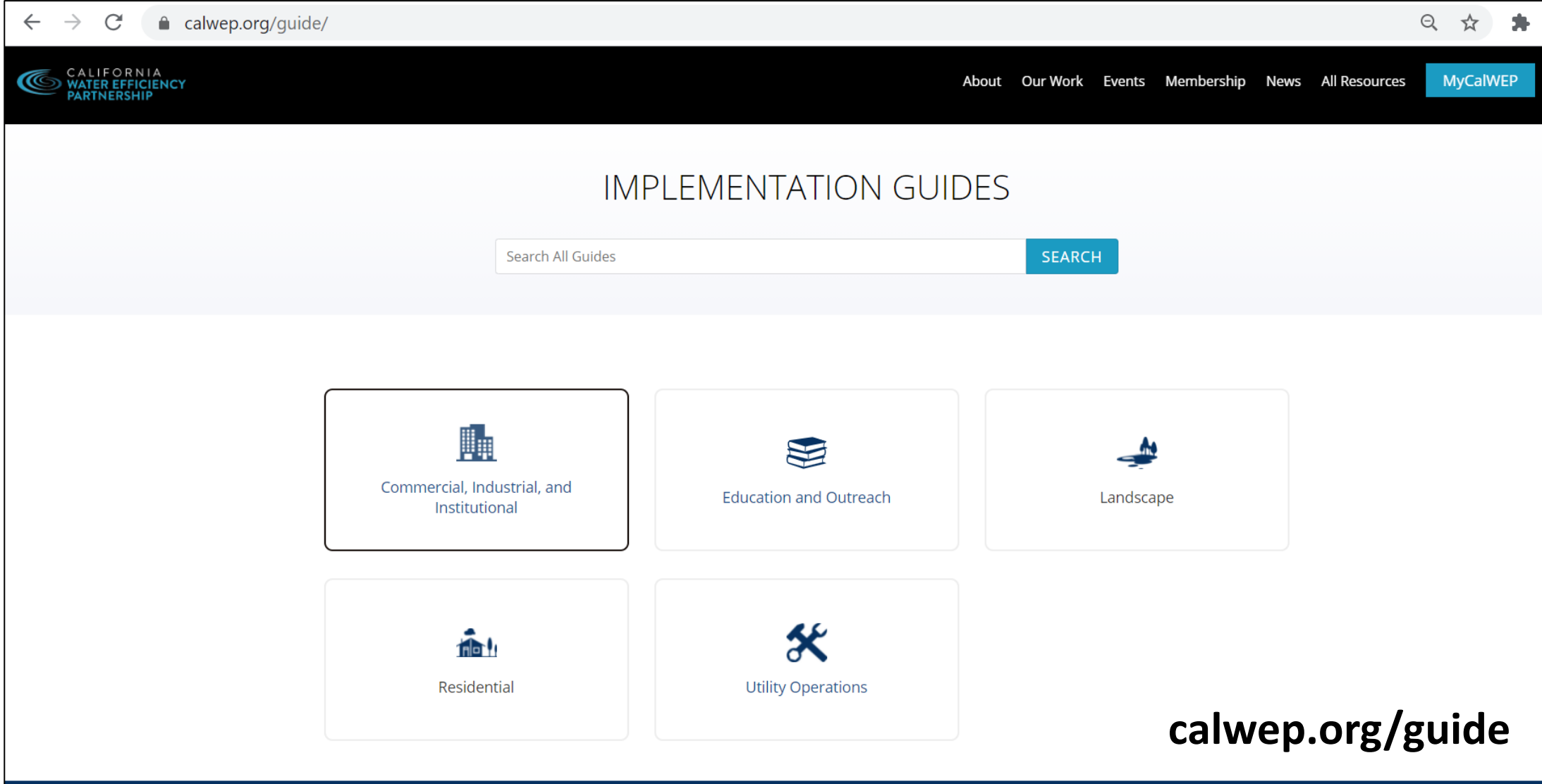



[U.S. EPA WaterSense at Work](#)



[Water Use Analysis Guide for Commercial and Institutional Efficiency](#)

# Useful Tools: CalWEP Implementation Guides




← → ↻ calwep.org/guide/ 🔍 ☆ ⚙

**CALIFORNIA WATER EFFICIENCY PARTNERSHIP**


About Our Work Events Membership News All Resources **MyCalWEP**

## IMPLEMENTATION GUIDES


Search All Guides **SEARCH**




Commercial, Industrial, and Institutional




Education and Outreach



Landscape



Residential



Utility Operations

**calwep.org/guide**








# Inside CII Guides



## CII Partnerships and Funding Sources




 [Complete Guide](#)

-  Partnerships
-  Additional Non-Monetary Opportunities to the Commercial Sector
-  Lessons Learned
-  Guidance and Documents
-  Examples from Members



## CII Codes and Standards




 [Complete Guide](#)

-  Current Codes and Standards (updated as of November 2020)
-  Historical Background on Codes and Standards
-  Guidance and References



## CII Surveys


 [Complete Guide](#)

-  Basic Steps for Developing a CII Water Survey Program
-  Lessons Learned
-  Guidance Documents and Examples



## CII Incentives

 [Complete Guide](#)

-  Summary of CalWEP Member CII Incentive Programs by Type



# Inside CII Partnerships and Funding

## CII PARTNERSHIPS AND FUNDING SOURCES



### Partnerships

Wholesale-Retail  
Partnerships

Member Example  
Program

Energy and Wastewater  
Utility Partnerships

Government Partnerships

Environmental Groups

Private Foundations

Regional Funding  
Opportunities

Technology Grants for  
Innovation and Support

## Partnerships

Partnerships can make water efficiency programs significantly more cost-effective by providing funding or cost-share opportunities. In addition, partnerships can increase program exposure and/or provide opportunities to launch pilot programs that can be evaluated for effectiveness and potentially established as long-term programs. Partnership and funding opportunities are available to government entities like water, wastewater and energy utilities that can help lead a grant effort and then have a cost-sharing agreement to support collaboration on the project implementation. Many partnership opportunities involve the public-private relationship, and therefore focused on supporting the CII sector.

### Wholesale-Retail Partnerships

Wholesale agency programs often are available throughout a wholesale agency's service area, and retail agencies may choose their level of participation. This involvement can include anything from assistance in

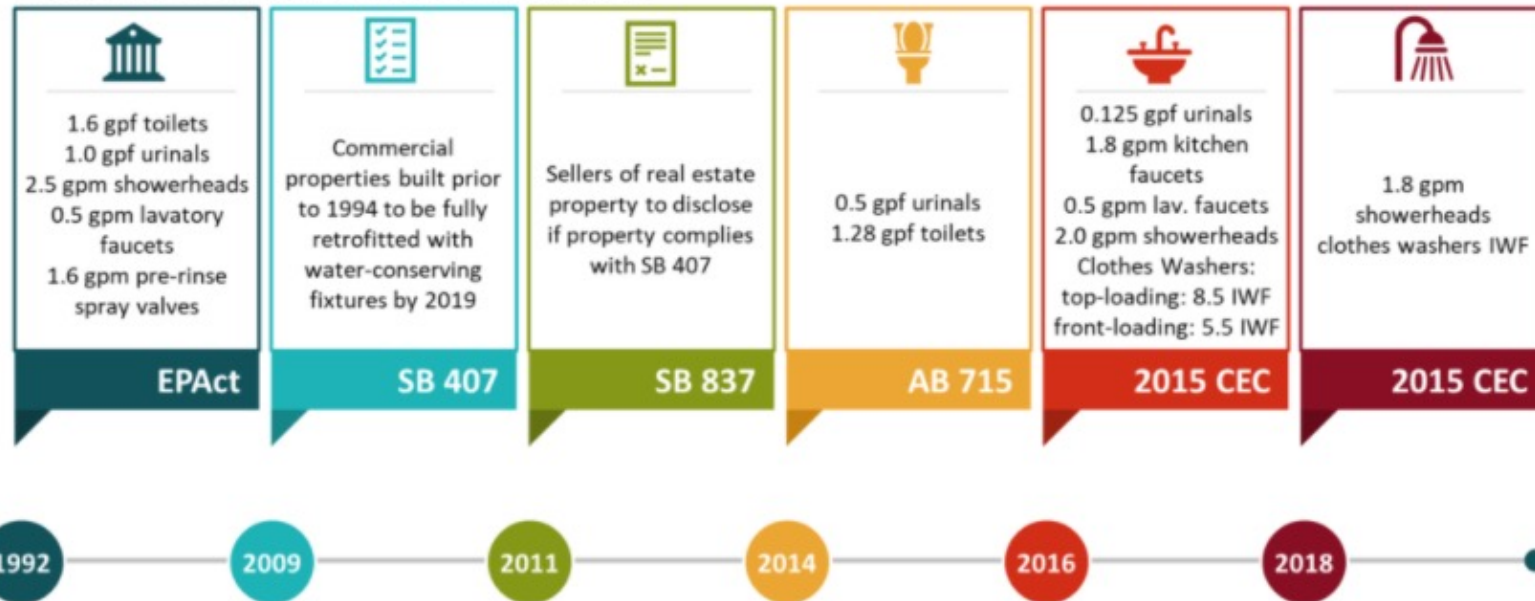


# Inside CII Codes and Standards

## Commercial Plumbing Codes and Standards

Commercial plumbing codes and standards is a conservation measure that is considered to be “passive” and that results in reliable long-term real water savings. New and older fixtures and appliances are governed by the codes and standards in place at the time that the building was constructed or when the plumbing product is replaced. As a result, it is important to know both the current and historical codes and standards with dates of changes.

### Timeline of Commercial Fixture Standards



[Current Codes and Standards \(updated as of November 2020\)](#)

- Toilets
- Urinals
- Showerheads
- Faucets
- Pre-Rinse Spray Valves
- Commercial Clothes Washers

[Historical Background on Codes and Standards](#)

- The Federal Energy Policy Act of 1992
- California State Law – AB 715
- California State Law – SB 407 and SB 837
- Permanent Water Savings

[Guidance and References](#)





# Inside CII Surveys

Basic Steps for Developing a  
CII Water Survey Program

Member Example  
Program

Lessons Learned

Guidance Documents and  
Examples

Member Example  
Program

Resources

## Basic Steps for Developing a CII Water Survey Program



- 1. Develop Team Knowledge of Conducting CII Water Surveys:** CII facilities can include a wide range of water-using equipment. Equipment in some facilities (e.g., restaurants) will be more homogeneous, while other facilities (e.g., manufacturing) will have more complex and unique equipment. It is recommended that water providers who plan to provide meaningful surveys to CII customers either develop internal technical knowledge of CII water uses and survey procedures or contract a third party to conduct the water surveys.
- 2. Identify and Target CII Customers:** Water efficiency staff should define program goals in order to identify the most appropriate CII customers to target for the program. Once the program goals and the target CII



# Inside CII Incentive Programs

## Summary of CalWEP Member CII Incentive Programs by Type

### Financial Incentives

Member Example  
Program

### Direct Install

Member Example  
Program

### Device Distribution

Member Example  
Program

### Performance-Based Programs

Member Example  
Program

## Summary of CalWEP Member CII Incentive Programs by Type

### Financial Incentives

- Check out West Basin Municipal Water District's [Cash for Kitchens](#) program that provides free efficiency devices, educational materials, and appliance rebates for items such as air-cooled ice machines, connectionless steamers, and commercial dishwashers.
- Irvine Ranch Water District offers a wide variety of commercial rebates for its customers, ranging from HETs to cooling tower conductivity controllers. Check out more information about the commercial rebate program here: [rightscapenow.com/rebates/commercial-rebates](https://rightscapenow.com/rebates/commercial-rebates)
- Irvine Ranch Water District also offers a WaterStar certification program for businesses and restaurants to improve water use efficiency, save on water bills, and obtain financial incentives for efficiency improvements. Being certified is a way to inform the community that the applicant values water conservation. Check out the program here: [rightscapenow.com/programs/waterstar-business-recognition](https://rightscapenow.com/programs/waterstar-business-recognition)

### Member Example Programs



#### Cash 4 Kitchens (C4K) - West Basin

\* / The Cash for Kitchens (C4K) Program provides free water efficiency devices, educational materials, and appliance rebate information....



#### Commercial Rebates

Interested in saving water and money? IRWD offers customers rebates on the purchase of high-efficiency water fixtures. Below is a list of el...



# Case Studies: Successful Programs and Useful Tools

# City of Santa Rosa: 5 tips for CII water savings

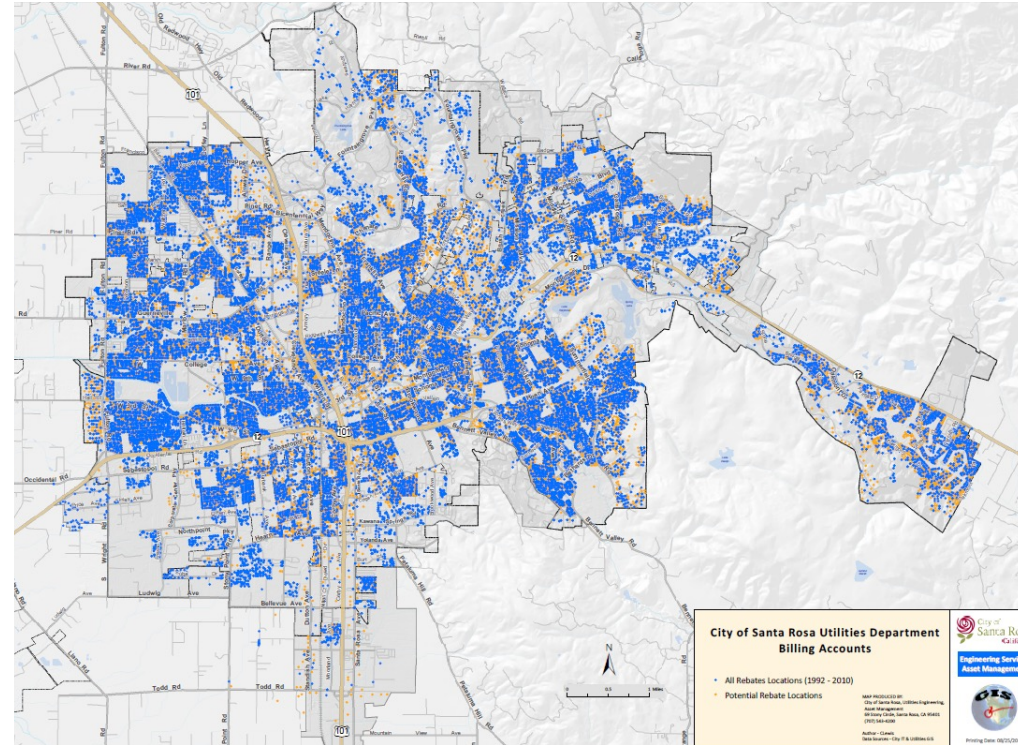
Heather Aviles: Water Resources Analyst



OUR FUTURE IN EVERY DRÖP

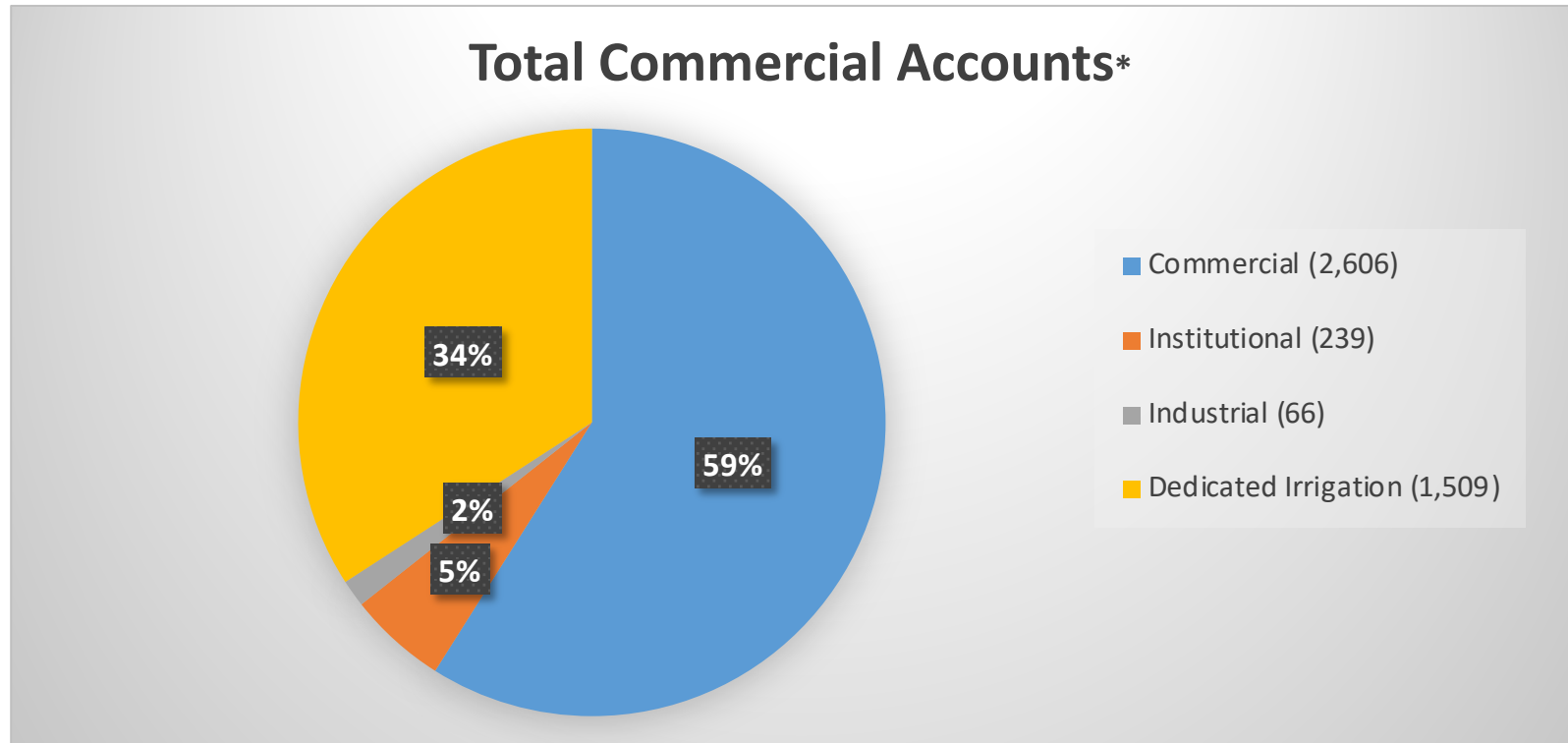
# City of Santa Rosa

- 54,000 accounts
- 19,000 ac-ft/year
- 45,598 residential
- 3,261 multi-family
- 4,420 CII
- 1,509 dedicated irrigation





# Breakdown of CII Accounts



# Top 5 Tools For CII

- 1 Best tool: AMI
- 2 Offer in person audits
- 3 Have clear Water Waste Ordinance
- 4 Partner with local engineering firm
- 5 Offer Sustained Reduction rebate

# AMI: Commercial Sectors

## Collaboration with Water Billing

- Continuous usage detected after 48 hours of 50 gph
- Billing clears as many as they can
  - They send letters or call if over 100 gph
- Remaining accounts sent to WUE
  - We reach out to business by phone

9/21/2020 4:00	1493	GAL
9/21/2020 5:00	1470	GAL
9/21/2020 6:00	1450	GAL
9/21/2020 7:00	1443	GAL
9/21/2020 8:00	1447	GAL
9/21/2020 9:00	1580	GAL
9/21/2020 10:00	1570	GAL
9/21/2020 11:00	650	GAL
9/21/2020 12:00	60	GAL
9/21/2020 13:00	50	GAL
9/21/2020 14:00	40	GAL
9/21/2020 15:00	48	GAL
9/21/2020 16:00	42	GAL
9/21/2020 17:00	40	GAL
9/21/2020 18:00	30	GAL
9/21/2020 19:00	36	GAL
9/21/2020 20:00	34	GAL
9/21/2020 21:00	30	GAL



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# 2021 CII Water Savings

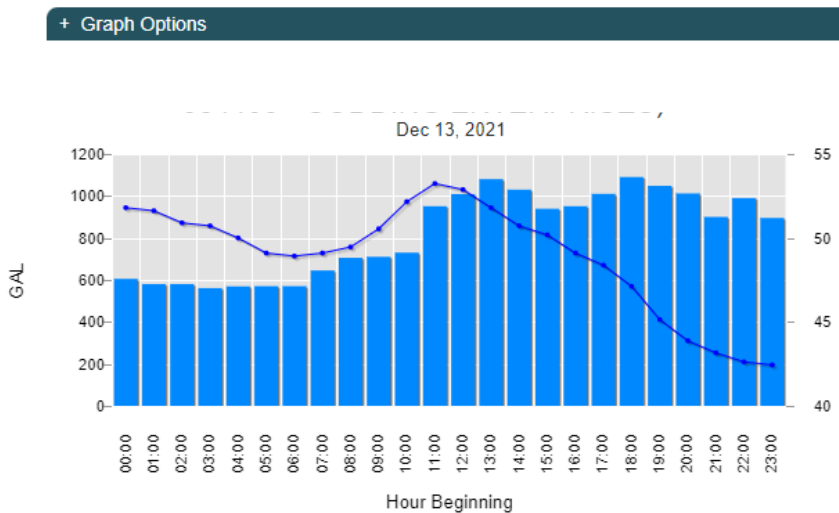


- 2021 estimated water savings = 12 MG\*
- 45 cases resolved
- 32 in-person audits resulted

\*Savings calculated by assuming leak would have continued for equal amount of time that leaked has occurred.



# AMI: WaterSmart Portal



- Track **Hourly**, Daily, Weekly, and Monthly Water Use
- Create customized notifications for high or continuous use
- Access water saving tips, tool, and rebate information easily



# In-Person Audits

- Our trained staff inspects site
  - Provide detailed report with inventory tables and identifies any leak found
- Find many issues from leaking toilets to broken mainlines

# Water Waste Ordinance

- Reinforces resolution
- Ability to shut off water service

Santa Rosa City Code					
<a href="#">Up</a>	<a href="#">Previous</a>	<a href="#">Next</a>	<a href="#">Main</a>		<a href="#">Search</a>
<a href="#">Title 14 POTABLE AND RECYCLED WATER</a>					

## Chapter 14-21 WATER WASTE REGULATIONS

[Show All](#)

14-21.010 Purpose.

14-21.020 Water waste—Definition.

14-21.030 Prohibition of potable or recycled water waste.

14-21.040 Requirements for certain recirculating systems in new potable or recycled water services.

14-21.050 Notice and disconnection.



OUR FUTURE IN EVERY DRÖP

# Rebates and Incentives



- Urinal rebates: \$450 each
- Sustained Reduction Rebate
  - \$400 for every thousand gallons reduced on average
  - Performance based allows for flexibility





# Partner With Professionals

- Consult a local engineering firm on complex sites
- Allows us to serve all CII customers
  - Develop water balances & diagrams



**Brelje & Race**  
CONSULTING ENGINEERS

# Summary

1. AMI is our best tool to save water
2. Offer in person audits
3. Use Water Waste Ordinance to curb waste
4. Partner with knowledgeable engineering firm
5. Sustained reduction rebate allows for flexibility in CII sector

# Contact Information

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Water Resources Analyst  
City of Santa Rosa  
Phone: (707) 543-3966  
Email: [haviles@srcity.org](mailto:haviles@srcity.org)



OUR FUTURE IN EVERY DRÖP

# CalWEP Peer to Peer 2022

## Using AMI Data for CII Customer Engagement

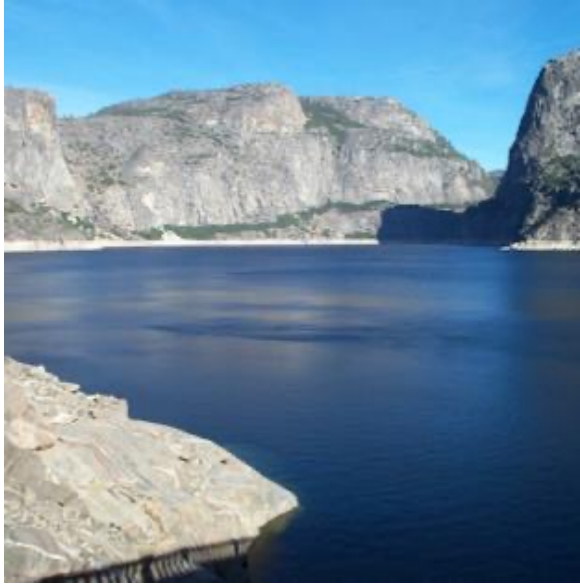
**Julie Ortiz**

**San Francisco Public Utilities Commission**

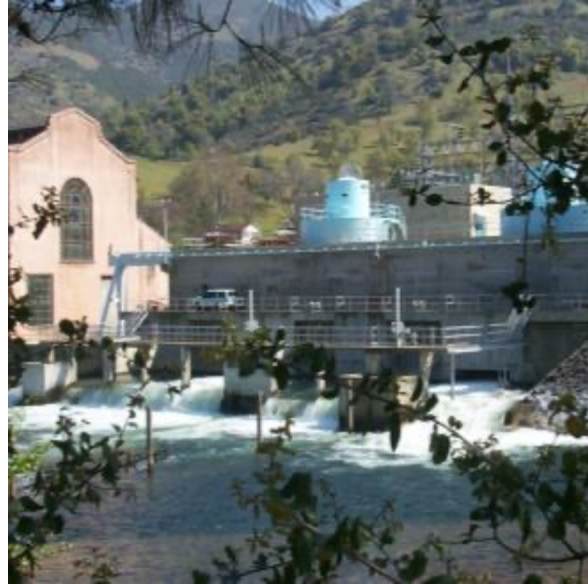




# San Francisco Public Utilities Commission (SFPUC)



Water: delivering high quality water every day



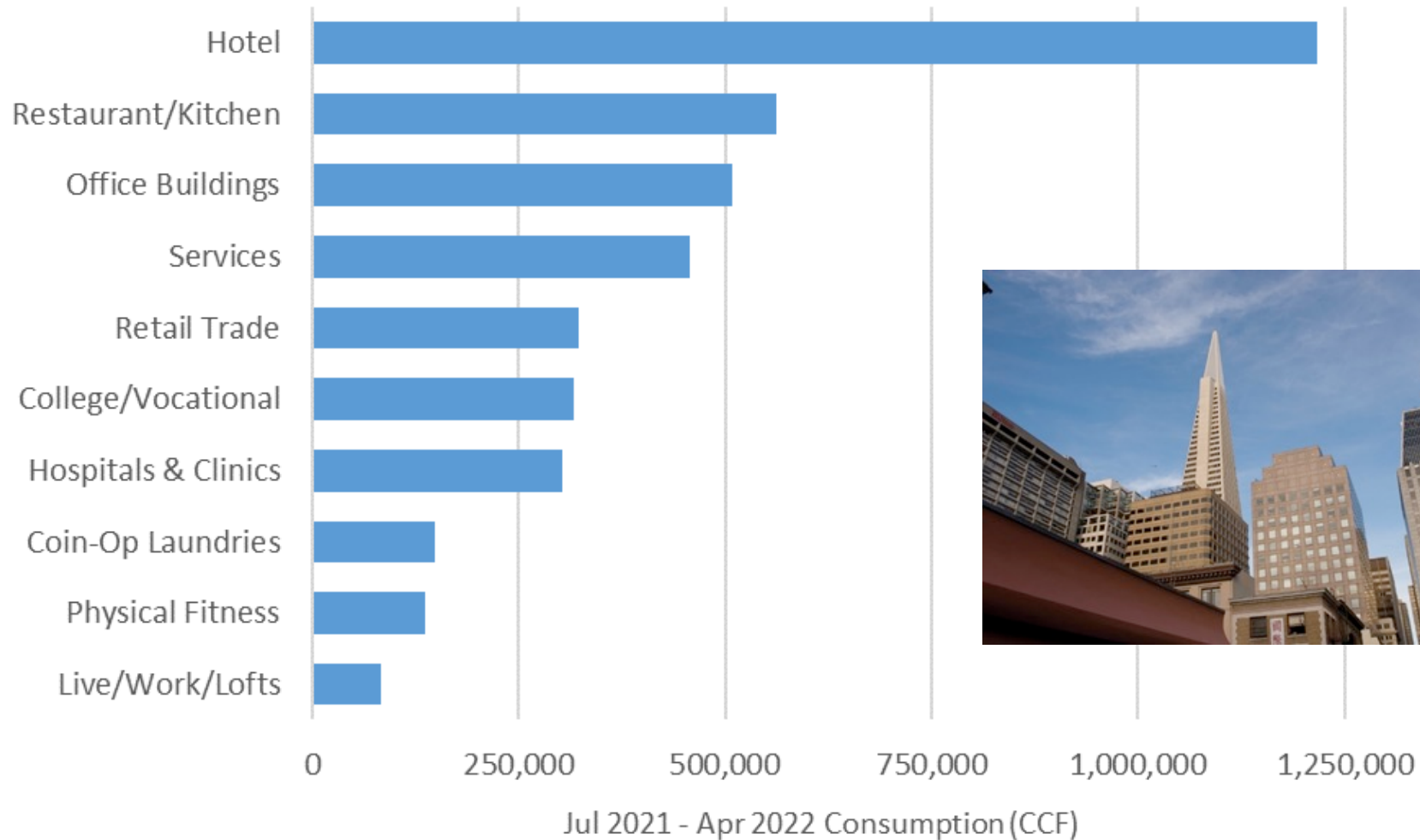
Power: generating clean energy for vital City services



Wastewater: protecting public health and the environment

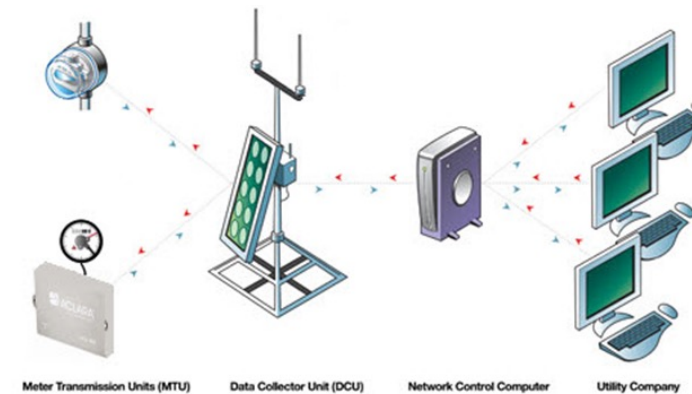


# Top Commercial Sectors by Water Use, FY 2021-22



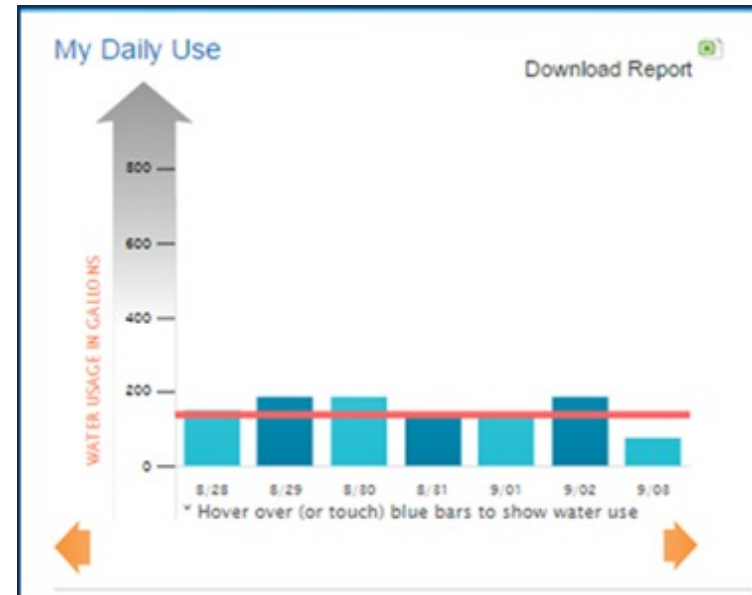
# Retail System Automated Metering Infrastructure

- 99% of meters on AMI
- Fixed Network AMI Technology – Aclara STAR, hourly data
- Replaced most meters and added wireless transmitters 2010-2013
- Began billing with AMI data 2013
- Developed custom Data Screening Tool (ADR)
- Launched in-house customer web portal 2014
- Started leak alert program 2015



# AMI Data to Engage CII Customers

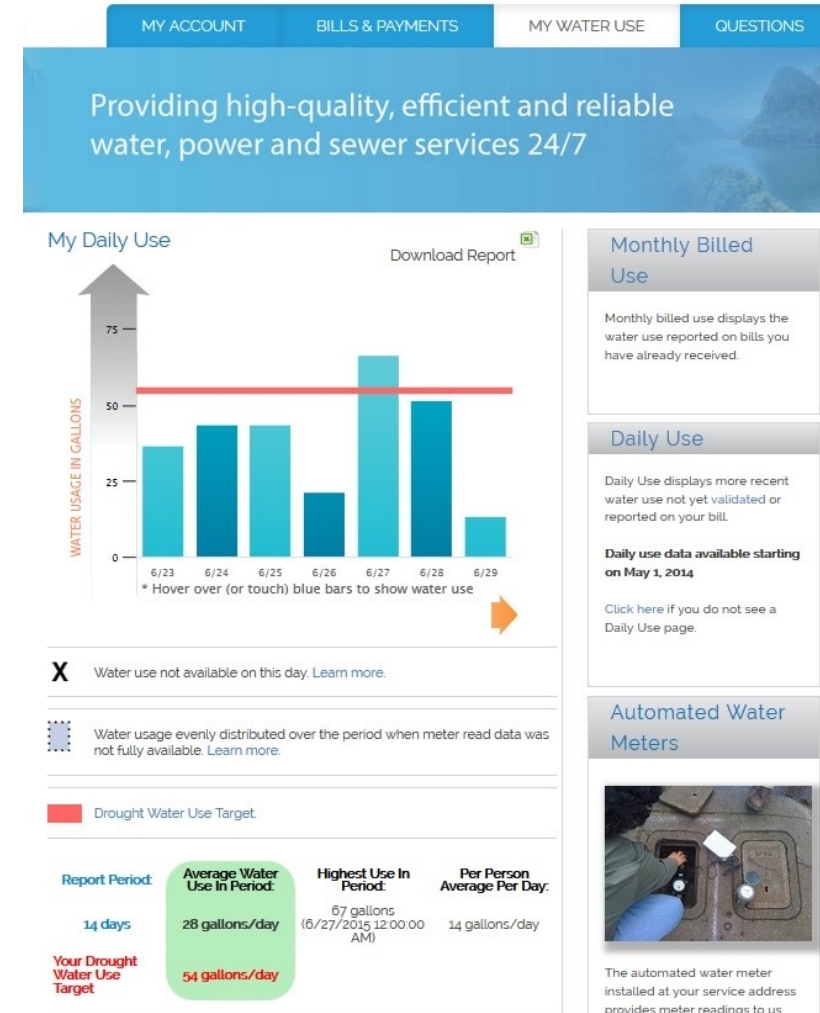
- My Account “self-help” web portal
- Leak and rain alerts
- Staff resource to diagnose site issues





# Customer Web Portal: MyAccount

- Launched in-house-built platform 2014 with account info, bills, daily water use
- Since then, upgraded to add single sign-on with eBill and hourly water use data
- Portal Admin tool enables staff to see what customers view





# Automated Leak Alert Program

- Use i-INFO platform by Alliance for Community Solutions to generate and issue phone, email, text alerts
- Notices sent by robo call, text, email, and letter in 4 languages
- 3 rounds using all means available; door hanger/staff call last step for ongoing leakers
- Notify SF, MF (2 to 5 dwelling units), and irrigation accounts at 48 hours constant use over 7.5 gallons/hr
- Two thresholds for commercial and large multi-family accounts

Mi-Nexus Back Actions Help i-INFO

Account Info


Account ID: #####  
SPID: #####  
Premise Address: ## Magellan Av, San Francisco, CA 94116  
Account Type: RES-SWTR  
Account Status: Active Service Agreement  
Incident Status: Current Open Incident (since 08/13/18)  
Account Name: Doe, John  
Last Notice Sent On: 08/14/2018  
Incident # - Notice #: 1 - 1  
# of times on leak report: 2

Notes (0)  
no notes

Customer Name	Phone	Email Address	Mailing Address	Opt Out
Doe, John	(###) ###-#### (H) (###) ###-#### (W)		>## Magellan Ave San Francisco CA 94116	None

Communication History  
Leak History  
Service Points

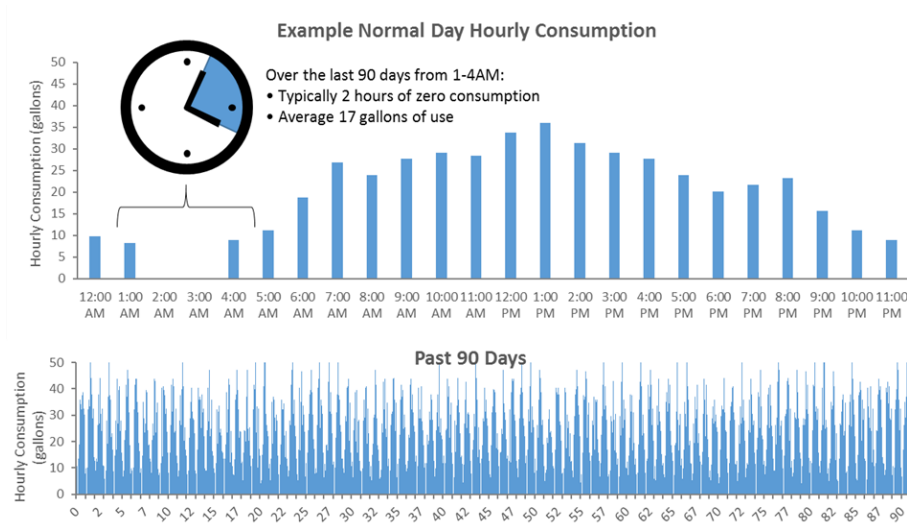
**LEAK GUIDE**  
HOW TO IDENTIFY COMMON PLUMBING LEAKS



San Francisco  
Water Power Sewer  
Services of the San Francisco Public Utilities Commission

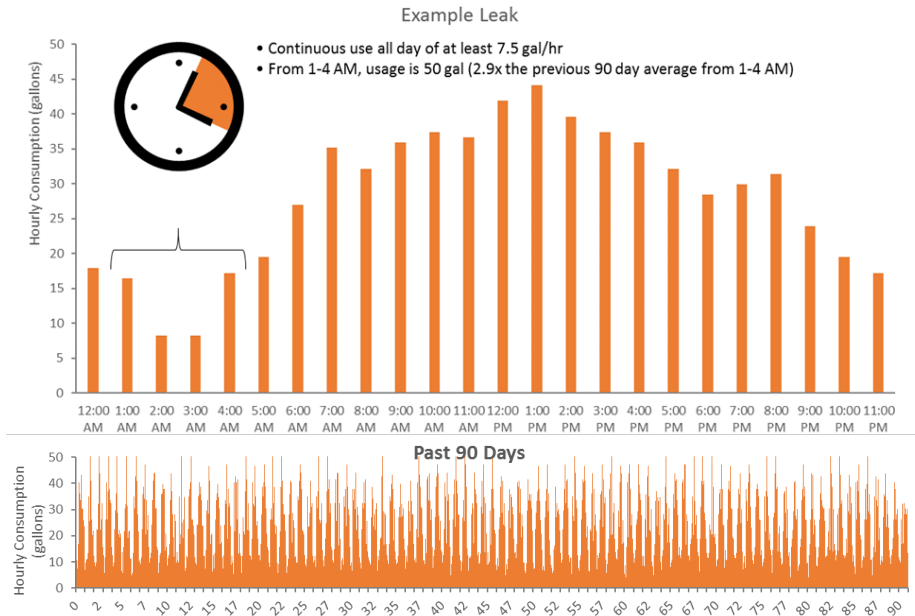
# Leak Criteria 1 for CII and Large MF Intermittent Overnight Consumption

**Leak Criteria 1: applies to accounts that tend to have zero consumption overnight:**



- 72 hours continuous consumption  
 $\geq 1$  cubic foot per hour
- $>2x$  consumption volume between 1 AM – 4 AM compared to average previous 90 days
- $>1$  hour(s) of zero consumption between 1 AM – 4 AM averaged over previous 90 days

# Leak Criteria 2 for CII and Large MF Regular Overnight Consumption

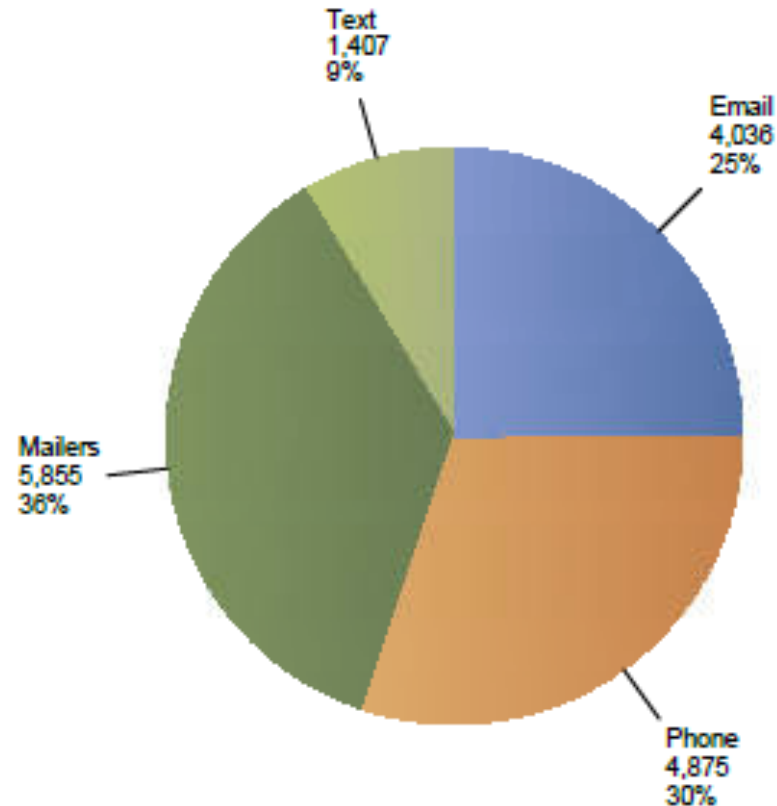


## Leak Criteria 2: applies to accounts that tend to have some consumption overnight:

- 72 hours continuous consumption  $\geq 1$  cubic foot per hour
- $>4x$  consumption volume between 1 AM – 4 AM compared to average previous 90 days
- $<1$  hour of zero consumption between 1 AM – 4 AM averaged over previous 90 days

# Alerts Reach Many CII Sectors (July 2021-May 7, 2022)

**Figure 2b - Total Successful Notifications Sent To Date in FY 2021-22 (16,173)**



**Total unique accounts noticed to date in FY 2021-22: 3,299**

Agriculture	6
Car Wash	1
Commercial	103
Dentist	9
Entertainment/Retail	165
Food Processing	12
Gas Station	6
Hotel	133
Hotel - Residential	69
Institutional	105
Large Multi-Family 6+ DUs	1,636
Laundry	12
Manufacturing (Non-Food)	15
Medical	40
NA or Unknown	44
Office	246
Physical Fitness	6
Private Household	11
Restaurant	334
School	71
Services	261
<b>Total</b>	<b>3,285</b>

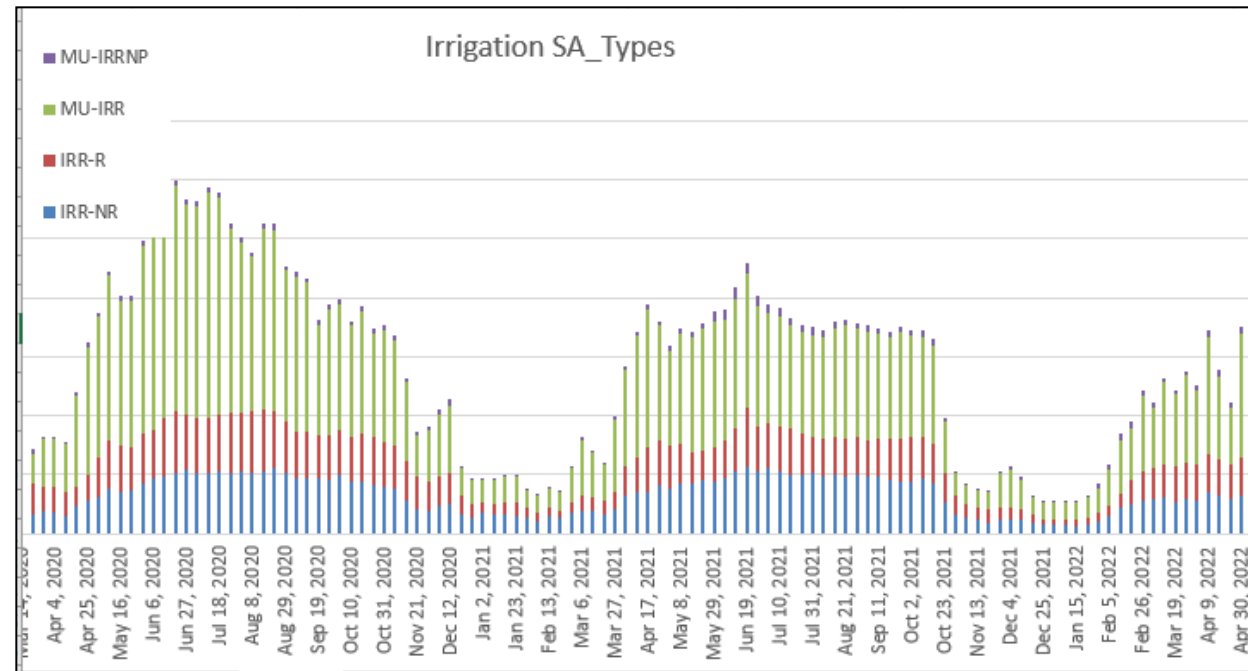
# AMI Enables Other Types of Alerts: Irrigation During Rain

- In 2021, notified irrigation customers with use during two rain events
- Irrigation during rain is a local water waste prohibition
- Evaluating value for future use

Subject: Irrigation During Recent Rain Detected at **PREMISE\_ADDRESS**

Dear SFPUC Customer,

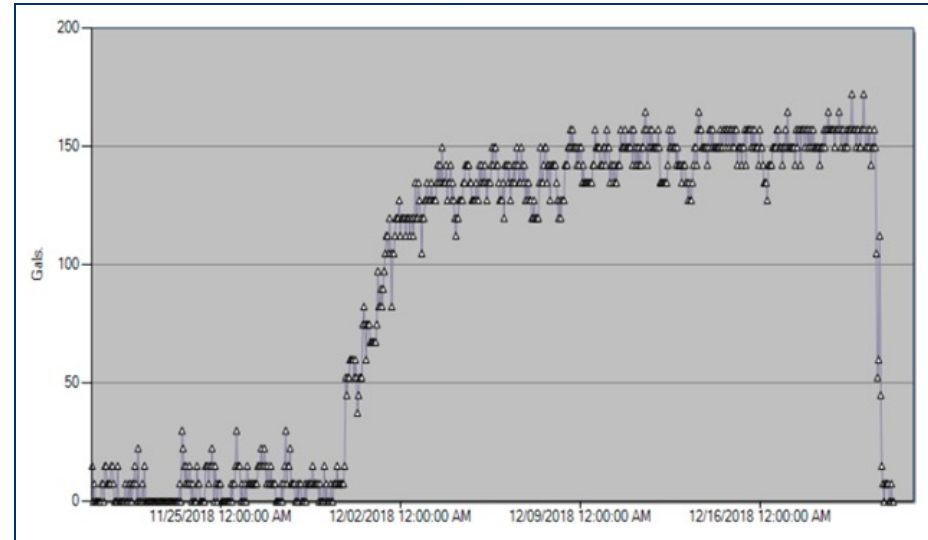
Our data shows that meter number **METER\_BADGE** associated with the irrigation account serving **PREMISE\_ADDRESS** used approximately **CONSUMPTION\_GAL** gallons of water on November 9, 2021 when rainfall was occurring. This is a courtesy reminder that irrigating during and within 48 hours of measurable rainfall is considered a wasteful water practice and [prohibited by the SFPUC](#). Despite recent rains, California, including San Francisco and the Bay Area, remain in severe drought and the SFPUC is asking all customers to cut water waste. Repeat violations of the no-irrigation-during-rain restriction could result in potential fines and public disclosure.





# AMI Data Improves CII Evaluations

- Enables us to better prepare for virtual and onsite evaluations and provide more follow up:
  - Check water use patterns
  - Identify potential leaks, unusual spikes, irrigation schedules
  - Share data with customers and make recommendations



*Car dealership with single faulty toilet valve stuck open. SFPUC conservation staff saw spike while reviewing AMI data, contacted company and they fixed the fixture.*

**Visit: [sfpuc.org/fixleaks](https://sfpuc.org/fixleaks)**

**Julie Ortiz**  
**Water Conservation Manager**  
**[jnortiz@sfgwater.org](mailto:jnortiz@sfgwater.org)**



# Metropolitan's Commercial Programs: Supporting the Framework

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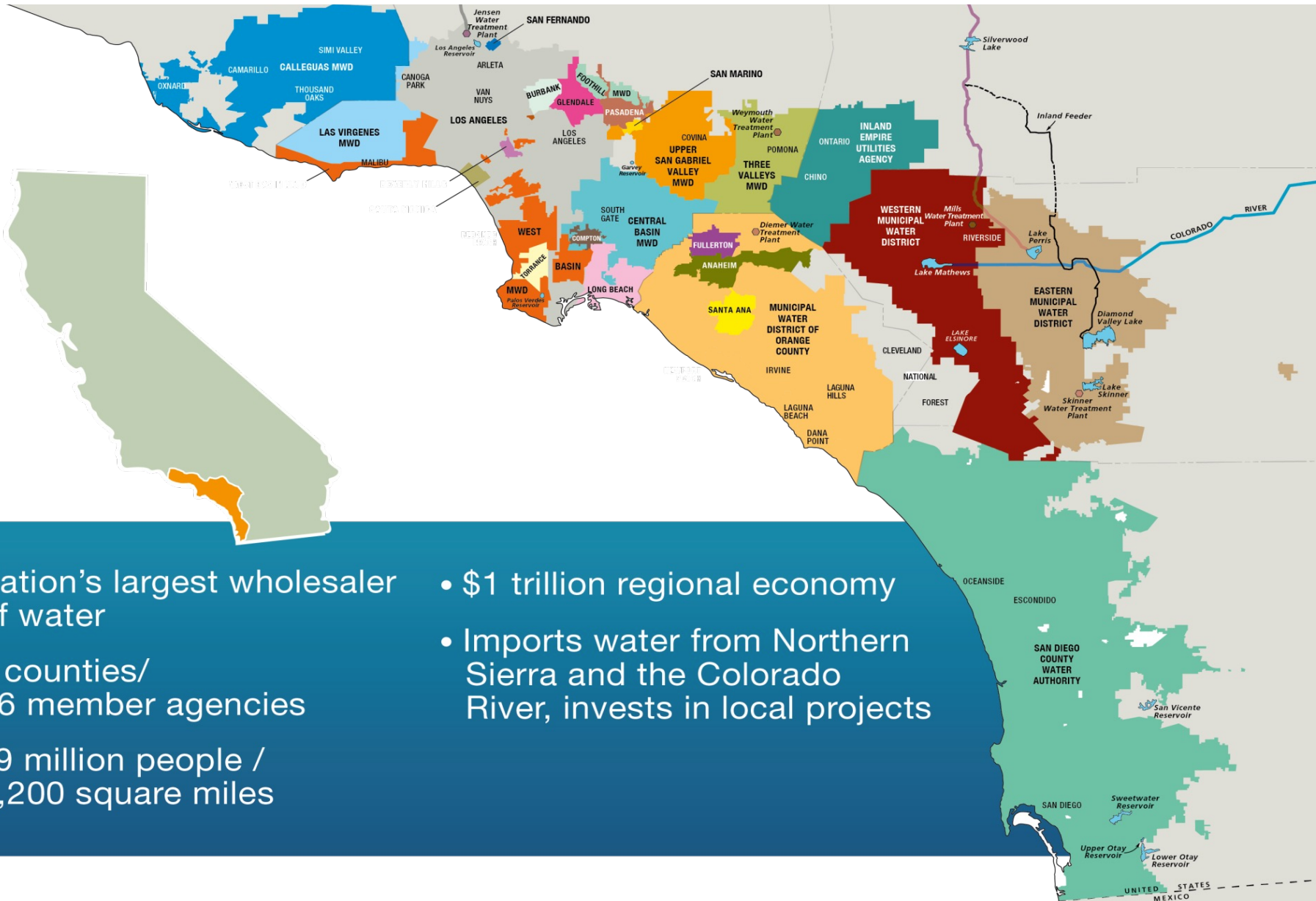
Krista Guerrero

Metropolitan Water District of Southern California





# Metropolitan Overview



- Nation's largest wholesaler of water
- 6 counties/ 26 member agencies
- 19 million people / 5,200 square miles
- \$1 trillion regional economy
- Imports water from Northern Sierra and the Colorado River, invests in local projects



# Range of Commercial Programs

- Water Savings Incentive Program (WSIP)
- Innovative Conservation Program (ICP)
- Turf Replacement Program
- Commercial Landscape Surveys
- Device Rebate Programs
- Training for Landscape Professionals
- Interactive Turf Dashboard
- Commercial Recognition Program





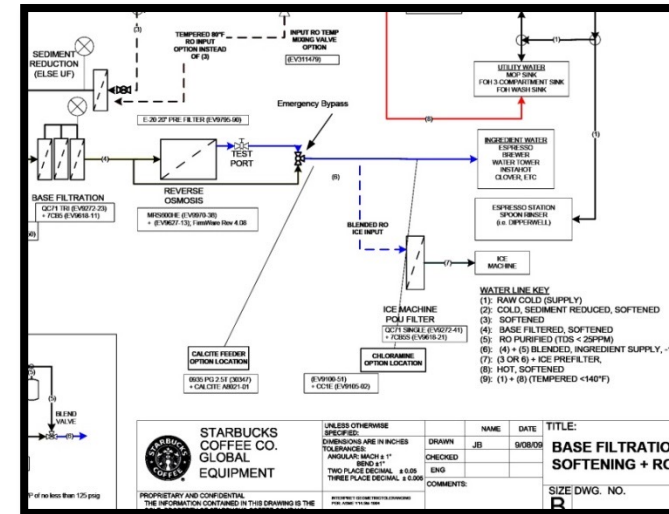
# Water Savings Incentive Program (WSIP)

- “Pay for performance program”
- Incentives for non-residential, customized projects:
  - Retrofit existing equipment
  - Improve processes
  - Improve agriculture & landscape irrigation systems
  - Contract for water management services



# Incentives

- Up to \$0.60 / 1,000 gal saved per year (up to 10 yrs)
  - Limit: Up to 50% of eligible project costs
- Payments are phased
  - Final payment may be adjusted per monitoring results
  - Some projects may qualify for single payment based on detailed engineering plans



# WSIP Eligible Costs

- Directly pertain to project installation or water management services
  - Audit, engineering, software, hardware
  - construction, equipment, materials (incl plants),
  - freight shipping, 3rd party labor, contract water management services
- Ineligible costs:
  - Customer's direct labor
  - Sales tax
  - Permitting
  - Environmental compliance
  - Land acquisition





# Landscape / Agriculture WSIP Projects



Irrigation System Upgrades  
\$141K / 650 AF  
(35.5 Mgal / yr)



Capture, Treat & Reuse  
Nursery Runoff  
\$458K / 3,421 AF  
(>111 Mgal / yr)



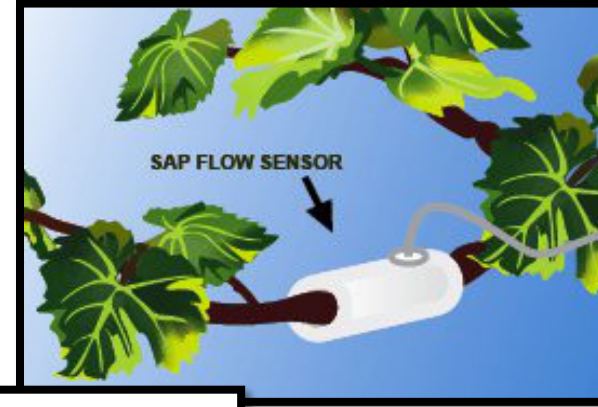
# Innovative Conservation Program (ICP)

- **ICP Grant Program Overview**

- Evaluate water saving potential & reliability of new technologies or strategies
- Funding up to \$50,000
- Evaluate incentive applicability

- **Evaluation criteria**

- Innovation
- Water/energy savings
- Market impact
- Cost effectiveness
- ICP focus





# Turf Replacement Program

- Multi-pronged approach to maximize water utilization and conservation
- \$2 per square foot of turf removed
  - Commercial: 50,000 square foot rebate maximum (per year)
  - Public Agency: 200,000 square foot rebate maximum (per year)
- Incorporates watershed components to capture runoff
- Three plants per 100 square feet
- Permeable hardscape and mulch required



[socalwatersmart.com](http://socalwatersmart.com)



# Large Landscape Surveys

- No cost
- Minimum 1 acre irrigated area
- Commercial, institutional, HOAs common areas, Large Residential Landscapes
- Recommendations to improve water efficiency





# Regional Rebate Program



Residential  
Rebates



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

English ▼

Residential ▼



Rebates

Retailer Tools

Contractor Resources

Contact Us



## SPRINKLER NOZZLES

Qualified sprinkler nozzles are eligible for \$2 per nozzle, with a minimum of 30 nozzles per site.

[Learn More](#)



## VERIFY YOUR ELIGIBILITY & ESTIMATE YOUR REBATE

Click to verify eligibility and identify the current rebate amounts. Rebates may vary by water agency and are based on



## SUBMIT YOUR REBATE APPLICATION!

Complete and submit your application online. Various rebates are available region-wide, so apply now to secure your place!

[socalwatersmart.com](https://socalwatersmart.com)

# Commercial Rebates



Premium High  
Efficiency Toilets  
\$40

High Efficiency Urinals  
zero to .25gpf / \$200



Air - Cooled Ice Machines  
\$1,000

Plumbing Flow Control  
Valve  
\$5 each / min 10



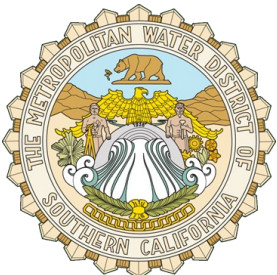
Connectionless Food  
Steamers  
\$485 / compartment

Dry Vacuum Pumps  
\$125 / 0.5HP



Cooling Tower Conductivity  
Controllers  
\$625 / pH: \$1,750

Laminar Flow Restrictors  
\$10 each / min 10



# Commercial Rebates: Landscape

- Rotating Spray Nozzles
  - Base rebate \$2 per nozzle
- Large Rotary Nozzles
  - Base rebate \$13/set
- Weather Based Irrigation Controllers
  - Base rebate \$35/station
- Central Computer Irrigation Controller
  - Base rebate \$35/station
- Soil Moisture Sensor Systems
  - Base rebate \$35/station
- In-Stem Flow Regulators
  - Base rebate \$1 each (min 25)





# Landscape Training for Professionals

- Water Efficient Landscape Dual Certification Program
  - QWEL
  - CLCA's Water Manager Certification
- Model Water Efficient Landscape Ordinance Training
  - Ordinance governs all new and larger rehab landscape projects

CALIFORNIA LANDSCAPE CONTRACTORS ASSOCIATION

**MWEL** Mastering Water Efficient Landscapes  
A Deepen Dive Into Sustainable Hards

**What role do you play?**

**CERTIFICATE WORKSHOP** Attend this newest MWEL workshop! We'll take a closer look at different Water Efficient Landscape Ordinance compliance and enforcement roles.

Presented by California Landscape Contractors Association and sponsored by Metropolitan Water District of Southern California

Keep informed and add to your MWEL expertise — gain new information and explore a new approach to understanding the ordinance! Attendees will learn about recent updates and changes to MWEL and have the opportunity to participate in question and answer sessions with subject experts.

Presented virtually in five 90-minute classes, this workshop will offer CEUs for your current certifications and provide you with a participation certificate.

This workshop is FREE to those in Southern California thanks to a generous sponsorship by the Metropolitan Water District. Attendance at all five classes is mandatory to receive a certificate and registration refund. Visit web page for details.

Winter session starts in January!

**JANUARY 6-20, 2022**  
10-11:30 a.m. via Zoom

Thursday, January 6	Tuesday, January 18
Tuesday, January 11	Thursday, January 20
Thursday, January 13	

**SIGN UP NOW TO ATTEND!**  
Go to [clca.org/mwel](https://clca.org/mwel) for more information and registration

Earn CEUs for your existing APLD, AWWA, IA, ISA, NALP and QWEL certifications!



**WEL DCP** Water Efficient Landscape DUAL CERTIFICATION PROGRAM  
A MWD, QWEL, CLCA, WATERSENSE PARTNERSHIP

**CERTIFICATION WORKSHOPS** **NEW!** **FREE!**

The California Landscape Contractors Association (CLCA) and Metropolitan Water District of Southern California (MWD) have again partnered to bring the landscape professionals of Southern California a one-of-a-kind certification and educational opportunity.

**Become one of the first graduates of this free pilot program!**

- ➔ Become a CLCA Certified Water Manager (CWM)
- ➔ Become a Qualified Water Landscaper (QWEL)
- ➔ Increase Your Individual and Company Marketability
- ➔ Exclusive Listing as an Irrigation Professional on MWD's Website
- ➔ Earn Double National EPA WaterSense Certification Recognition
- ➔ Earn CEUs for Existing Industry Certifications

Presented virtually in six three-hour classes

Attendance at all six classes and one in-person irrigation audit/written test is mandatory to receive certifications and registration refund. See [clca.org/welcdp](https://clca.org/welcdp)

**Dates: March 16 - April 1, 2021 • 9:30 a.m. - 12:30 p.m.**

Class #1 Tuesday, March 16	Class #4 Thursday, March 25
Class #2 Thursday, March 18	Class #5 Tuesday, March 30
Class #3 Tuesday, March 23	Class #6 Thursday, April 1

Audit/Exam: 2021 Date of Your Choice\* 9 a.m. - 3 p.m.

\*Date for written exam/audit will be selected at a later date. Convenient locations will be chosen based on geography of registered attendees.



**SIGN UP NOW TO ATTEND!**  
[clca.org/welcdp](https://clca.org/welcdp)

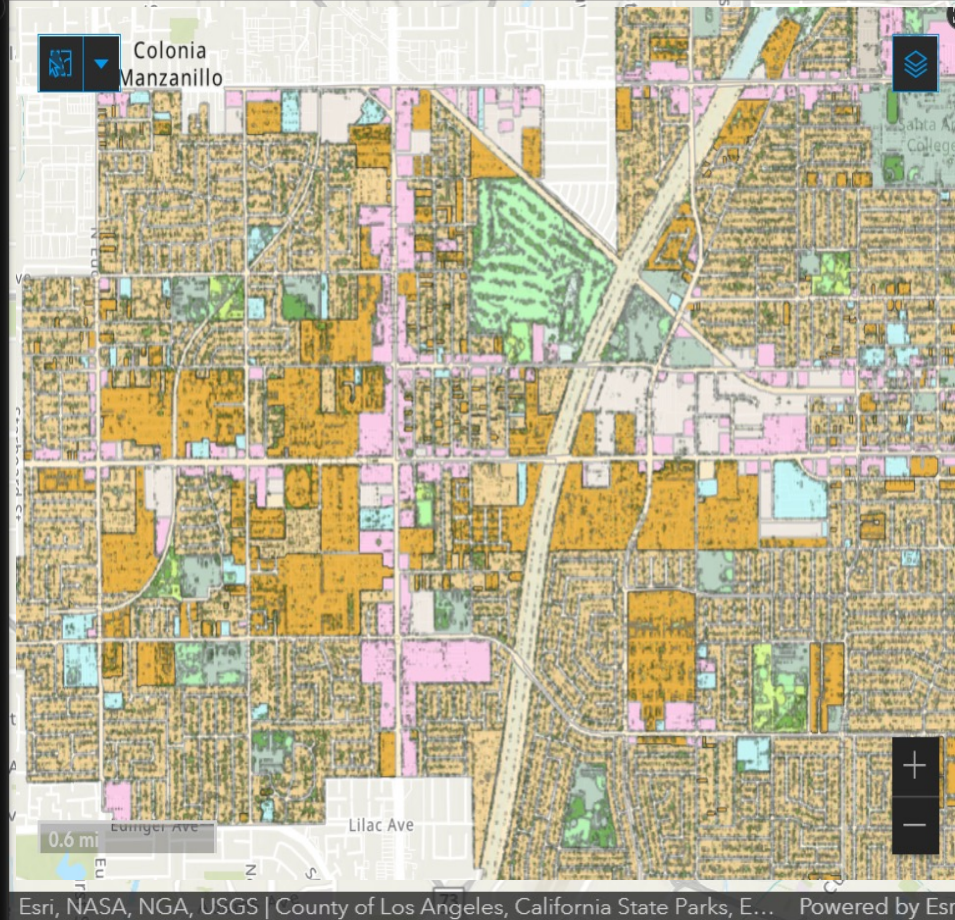
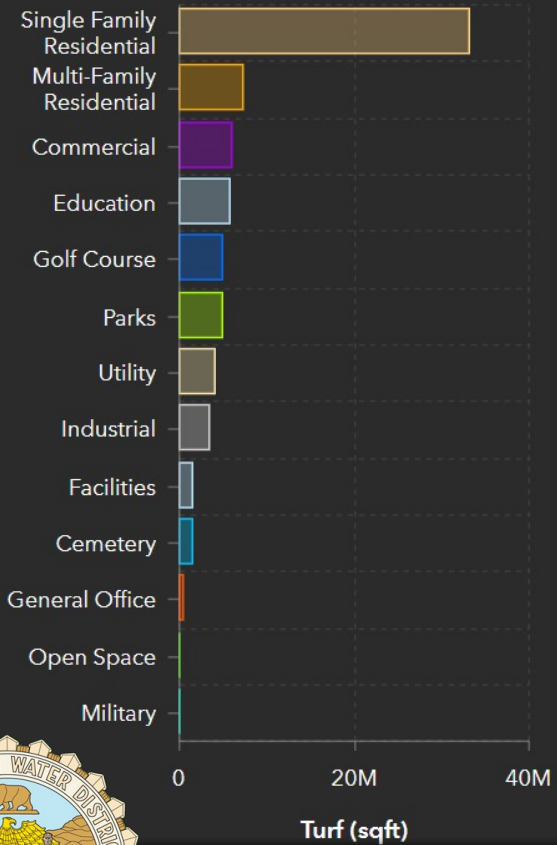


# Projects Under Development



# Interactive Turf Measurement Dashboard

## Step 1: Select Land Uses



## Step 2: Explore by Parcel Group

Golf Course #3487: 2,918,018

Golf Course #3484: 1,820,728

Cemetery #3108: 1,545,398

Utility #3490: 1,279,601

Parks #3047: 885,185

Utility #3491: 843,434

Last update: a minute ago

## Step 3: Output Table

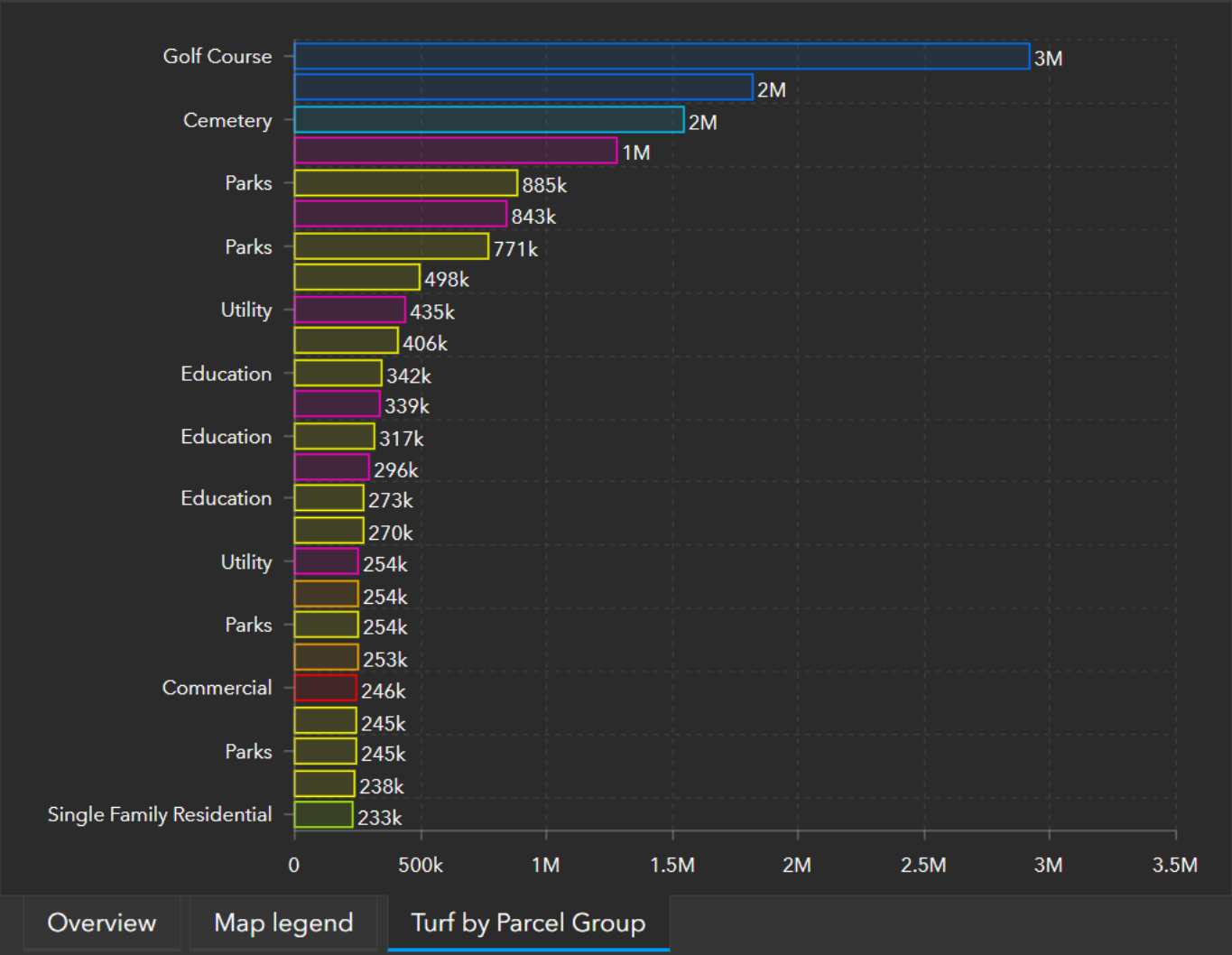
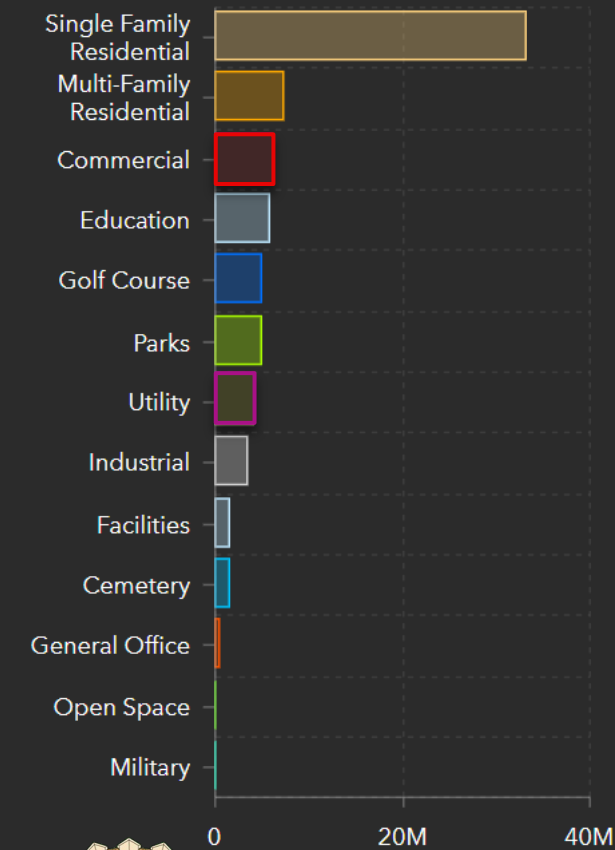
Land Use	Turf (sqft)
Single Family Residential	33,111,951
Multi-Family Residential	7,188,755
Commercial	5,952,574
Total	72,873,214





# Turf Measurement Dashboard: Ranked by amount of turf per parcel

## Step 1: Select Land Uses



### Step 2: Explore by

Golf Course #3487:	2,918,018
Golf Course #3484:	1,820,728
Cemetery #3108:	1,545,398
Utility #3490:	1,279,601
Parks #3047:	885,185
Utility #3491:	843,434

Last update: 2 minutes ago

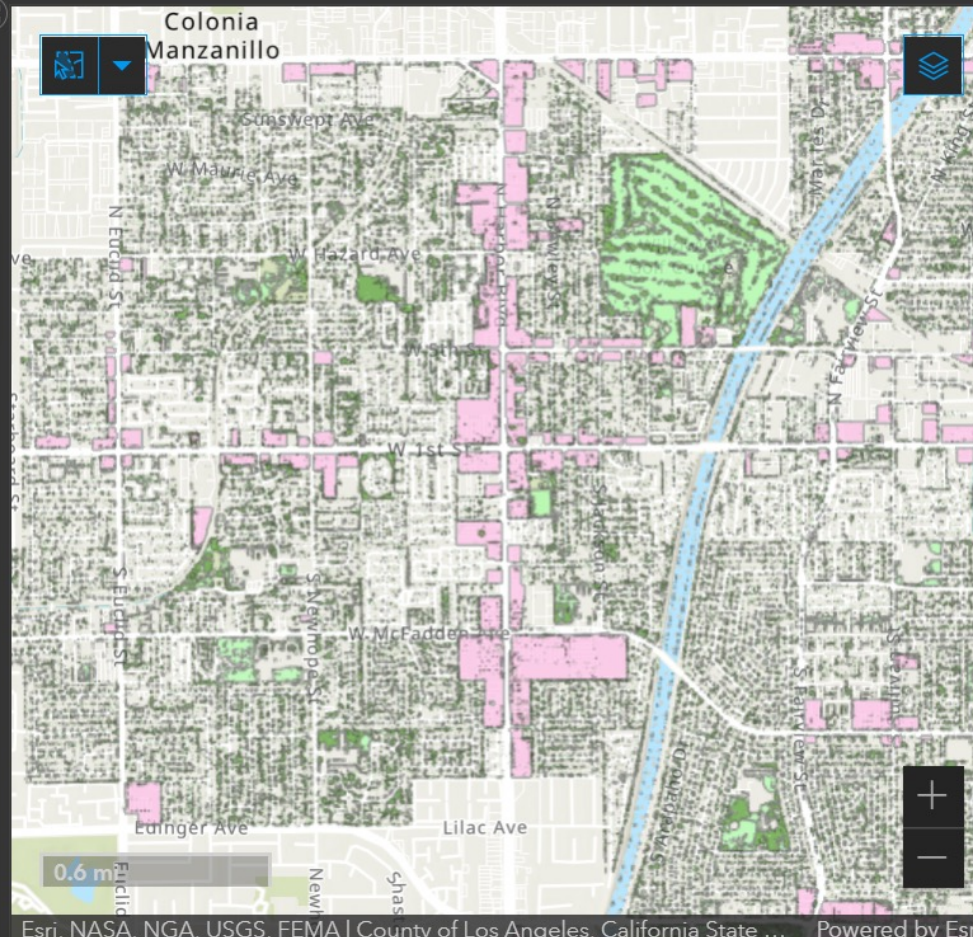
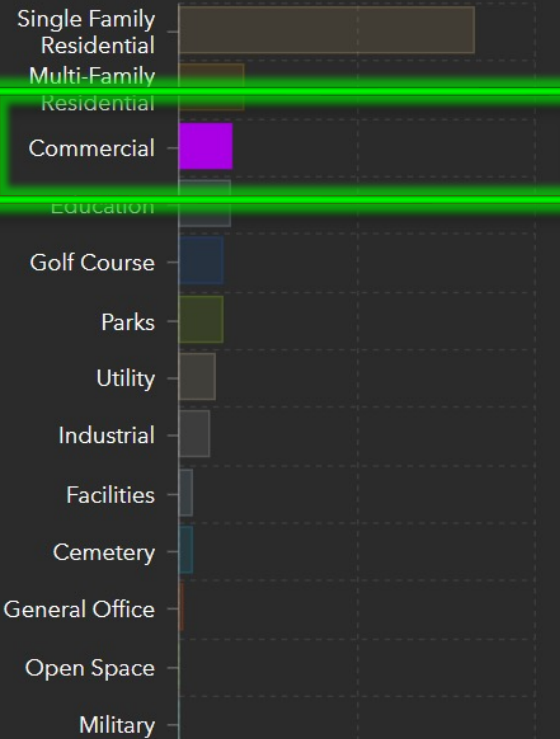
### Step 3: Output Table

Land Use	Turf (sqft)
Single ...	33,111,951
Multi-F...	7,188,755
Total	72,873,214



# Isolate categories to understand the magnitude of the issue

## Step 1: Select Land Uses



## Step 2: Explore by Parcel Group

Commercial #3849: 245,554

Commercial #3856: 213,133

Commercial #2655: 184,933

Commercial #3746: 183,281

Commercial #3869: 146,893

Commercial #3880: 136,582

Last update: a few seconds ago

## Step 3: Output Table

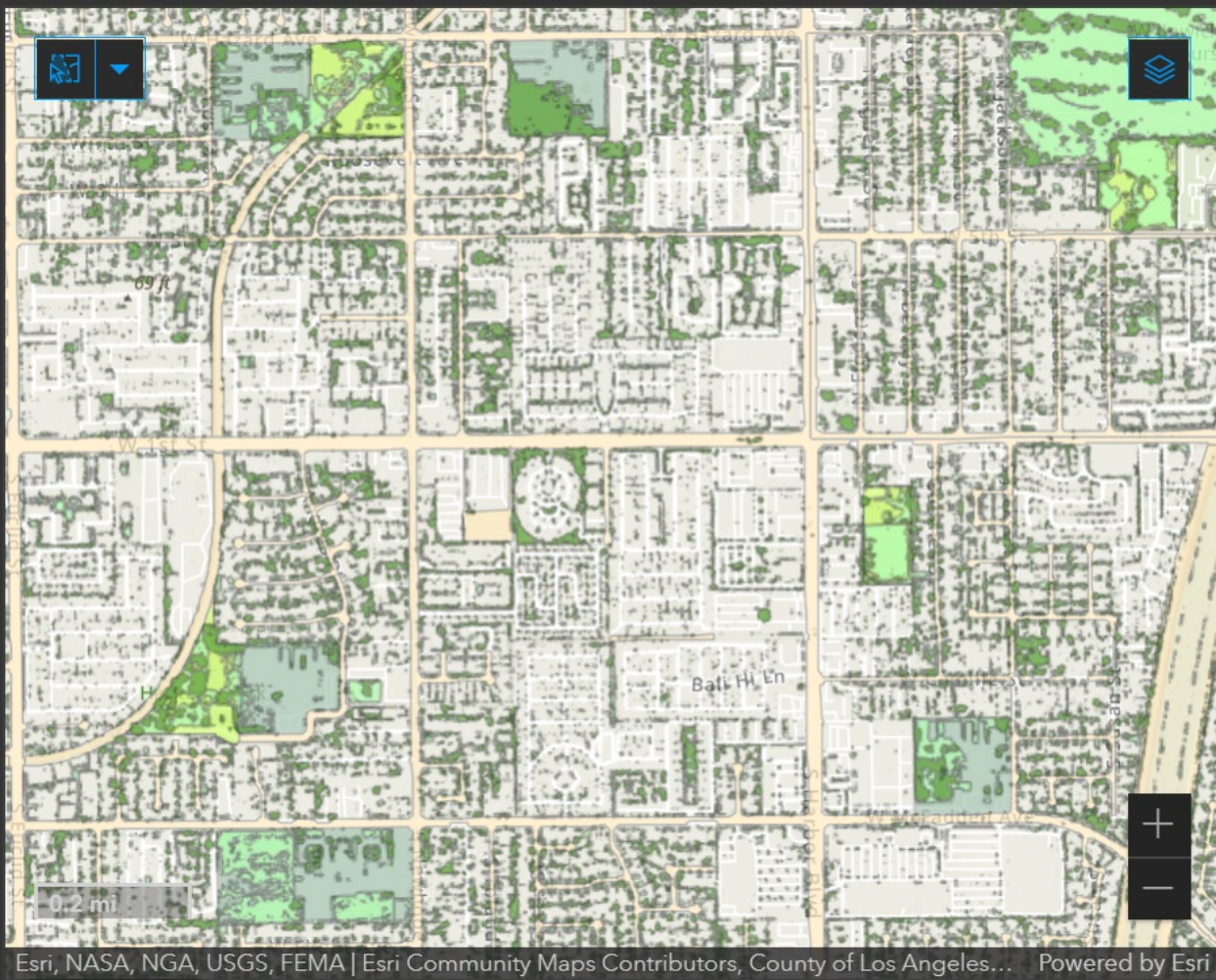
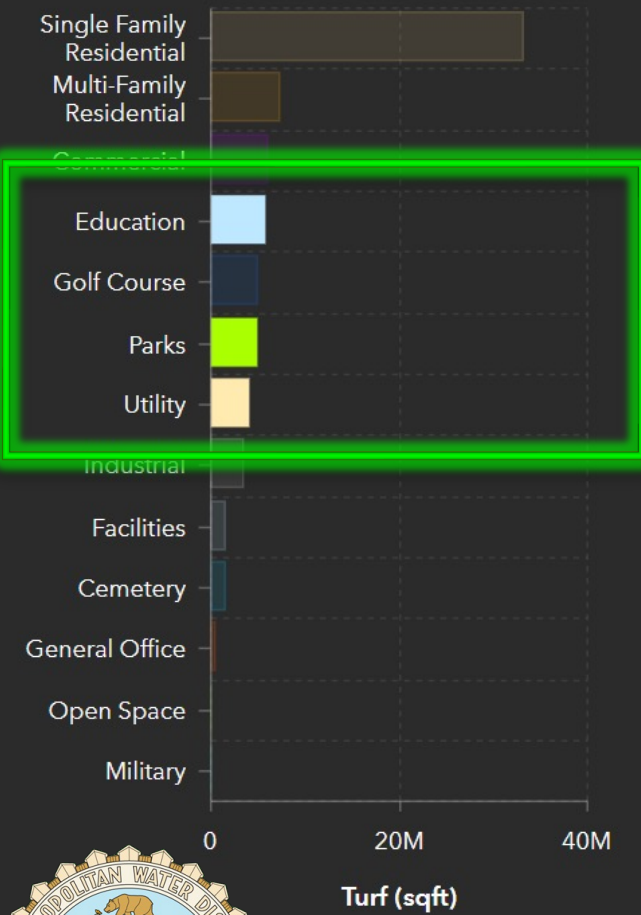
Land Use	Turf (sqft)
Commercial	5,952,574
Total	5,952,574





# Group categories and locate on map

## Step 1: Select Land Uses



Overview Map legend Turf by Parcel Group

## Step 2: Explore by Parcel

Utility #3490:	1,279,601
Parks #3047:	885,185
Utility #3491:	843,434
Parks #3039:	771,117
Education #1957:	498,113
Utility #3492:	434,814
Last update: a minute ago	

## Step 3: Output Table

Land Use	Turf (sqft)
Education	5,772,300
Parks	4,824,773
Utility	3,971,438
Total	14,568,512

# Commercial Recognition Program

- Currently seeking out partners for commercial recognition program
- Focusing on creative water saving technologies and practices with biggest ROI
- Will include messaging/outreach efforts
- Expect to have program running by end of year





**Krista Guerrero**

**213-217-6568**

[kguerrero@mwdh2o.com](mailto:kguerrero@mwdh2o.com)



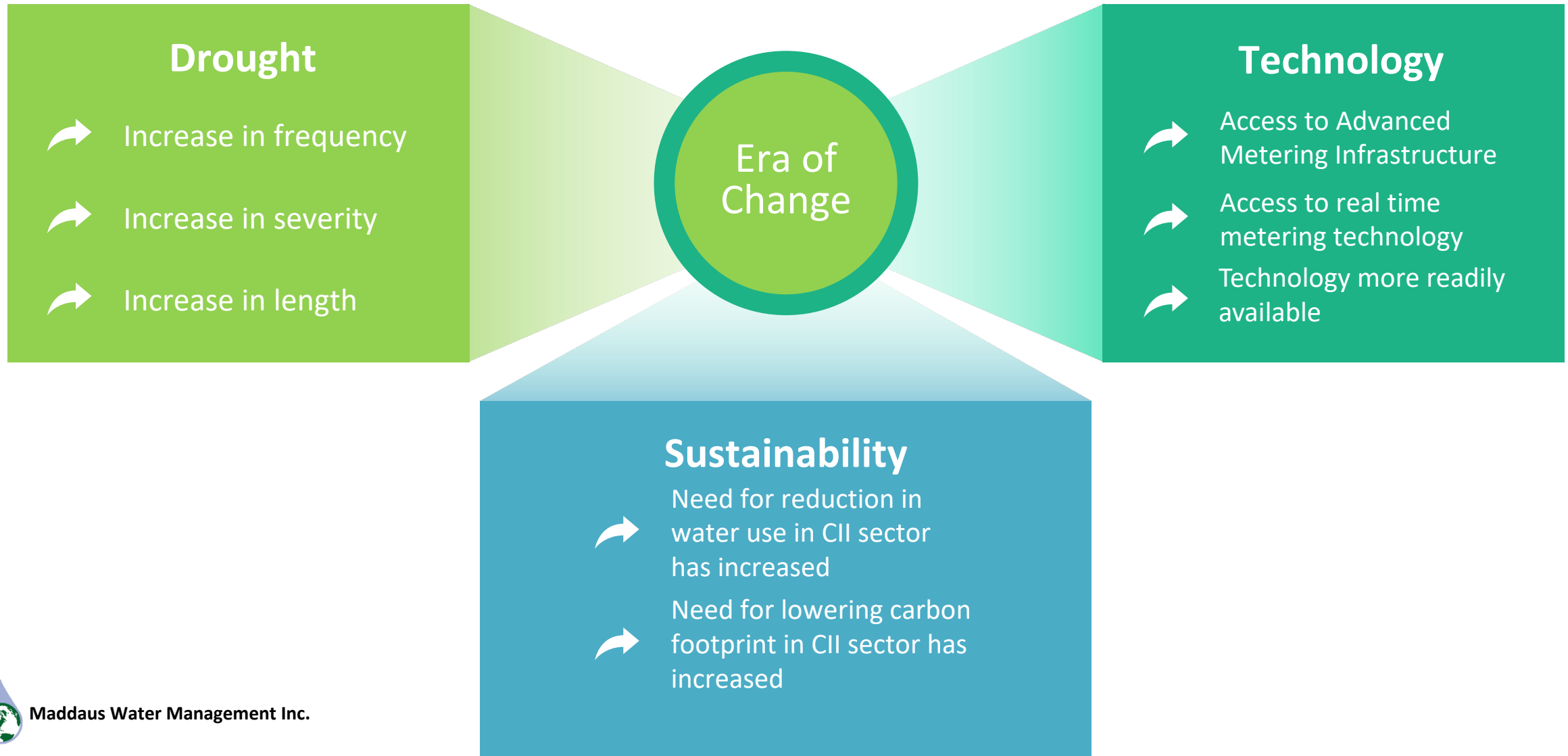
# Top Recommendations

**Lisa Maddaus**  
**Maddaus Water Management**



# Top Recommendations:

## Solutions = Leverage New Technology, Avoid Mistakes



# Findings from AWWA 2021 AMI Utility Survey

- August and September 2021
- 322 U.S. utilities surveyed
- Goal: understand their experiences with AMI implementation
- Data collected via online survey platform

Source: AWWA and The Behaviouralist. (2022). *Increasing consumer benefits & engagement in AMI-based conservation programs.*



Maddaus Water Management Inc.

## 79%

The overwhelming majority of surveyed utilities are strongly confident about the benefits of AMI for both utilities and customers.

## 43%

Slightly less than half of the surveyed utilities provided their customers with a functional AMI portal in August 2021. Another third of the utilities (33%) plan to provide customers with portal access in the future.

## 68%

Over two-thirds of the utilities are now rolling out the AMI technology across all of their customer bases or have already completed the rollout.

## 56%

Most surveyed agencies have already been systematically using AMI data to inform the utility's operations.



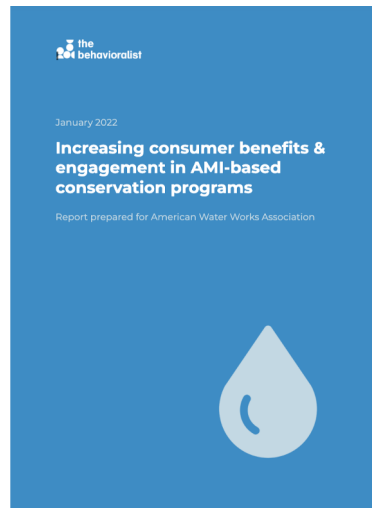
# Project Findings Available on AWWA Website



## Increasing consumer benefits & engagement in AMI-based conservation programs: Guidebook for practitioners

Available for free on the AWWA website:

[https://www.awwa.org/Portals/0/AWWA/ETS/Resources/Technical%20Reports/ami\\_guidebook\\_feb\\_2022.pdf](https://www.awwa.org/Portals/0/AWWA/ETS/Resources/Technical%20Reports/ami_guidebook_feb_2022.pdf)



## Increasing consumer benefits & engagement in AMI-based conservation programs: Complete project report

Available for free on the AWWA website:

[https://www.awwa.org/Portals/0/AWWA/ETS/Resources/Technical%20Reports/ami\\_report\\_feb\\_2022.pdf](https://www.awwa.org/Portals/0/AWWA/ETS/Resources/Technical%20Reports/ami_report_feb_2022.pdf)







# 3 CRITICAL MISTAKES

## Mistake 1



- Not making the AMI customer portal part of utility billing system (online bill pay)
- Connect from beginning
- Only 10% of utilities connected it from start

### **SOLUTION:**

Connect to online billing system.

## Mistake 2



- Letting portal vendor own the data rather than utility
- Makes it difficult to extract the data

### **SOLUTION:**

Utility owns the portal data.

## Mistake 3



- Making a third-party portal without strong links between other two parties (utility and customer)
- Difficult to work together cohesively

### **SOLUTION:**

Avoid third-parties and/or create good communication between parties.



# Consider the Branding of CII Surveys

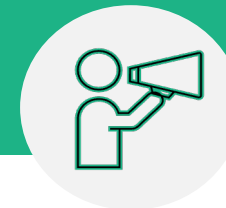
## Replacing “Audit” with New Term “Assessment”

Inspection  
Survey  
Consultation  
Evaluation  
Checkup  
Walk through



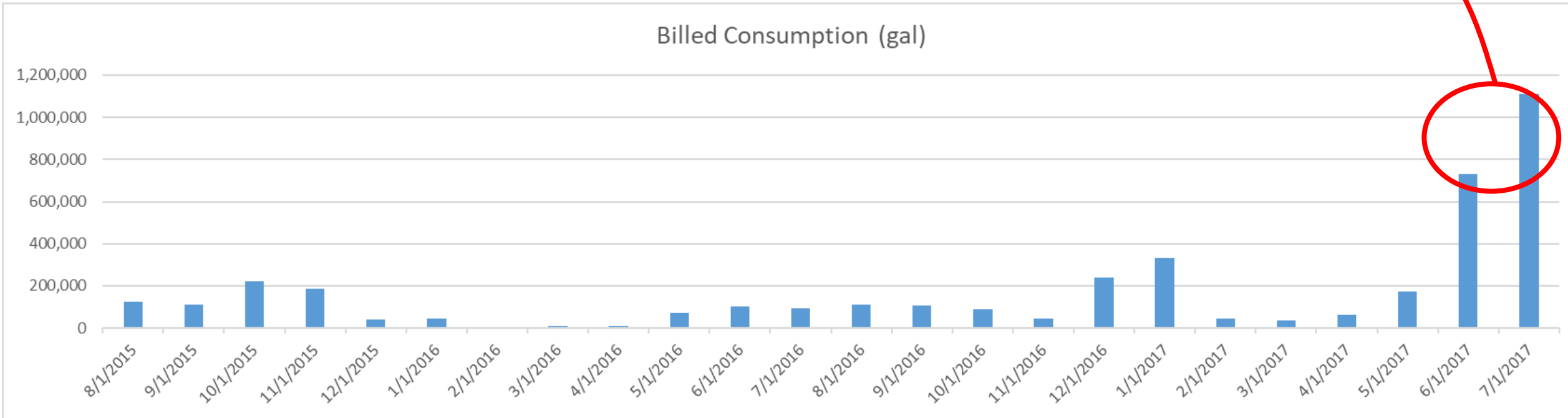
## Innovative Marketing Approaches

Classes  
Webinars  
Lunch and Learn  
Social Media  
Community Groups  
Online Data Portal



# Our Past – Manual Monthly Graphs in Excel

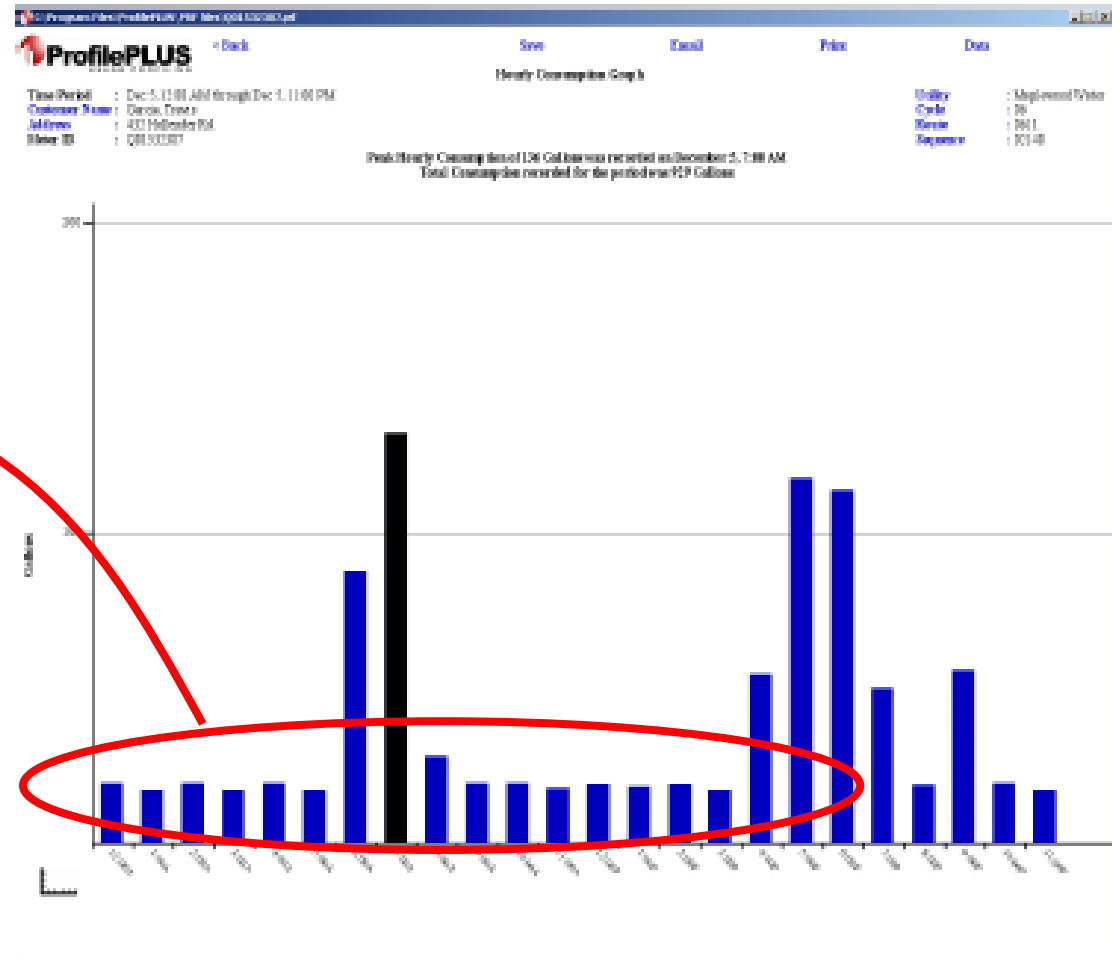
Water use is manually graphed to show evidence of a leak.



# Our Future – Daily Automatic Alerts via AMI Portals

Continuous water use could be evidence of a leak.

**USE FOR DETERMINING CUSTOMER LEAKS**  
**Leaks are likely to exist if water usage never goes to zero.**

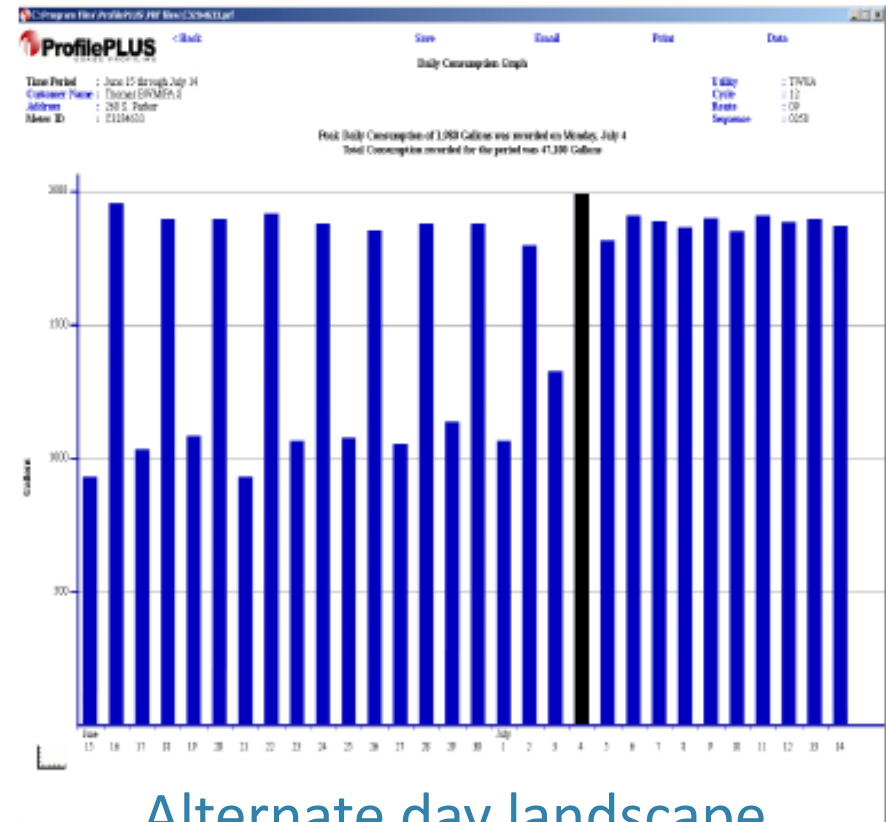




# AMI Power: Drought Enforcement Tool

- Tracks water use by day and hour.
- Compares use to water ordinance compliance.
- Can set alarms for non-compliance with agency water use rules.
- Assists in enforcement of fees (drought fines) with customers.

## USE IN WATER CONSERVATION PROGRAMS – EVEN/ODD DAY OUTDOOR WATERING VIOLATION



Alternate day landscape  
irrigation policy is violated here.

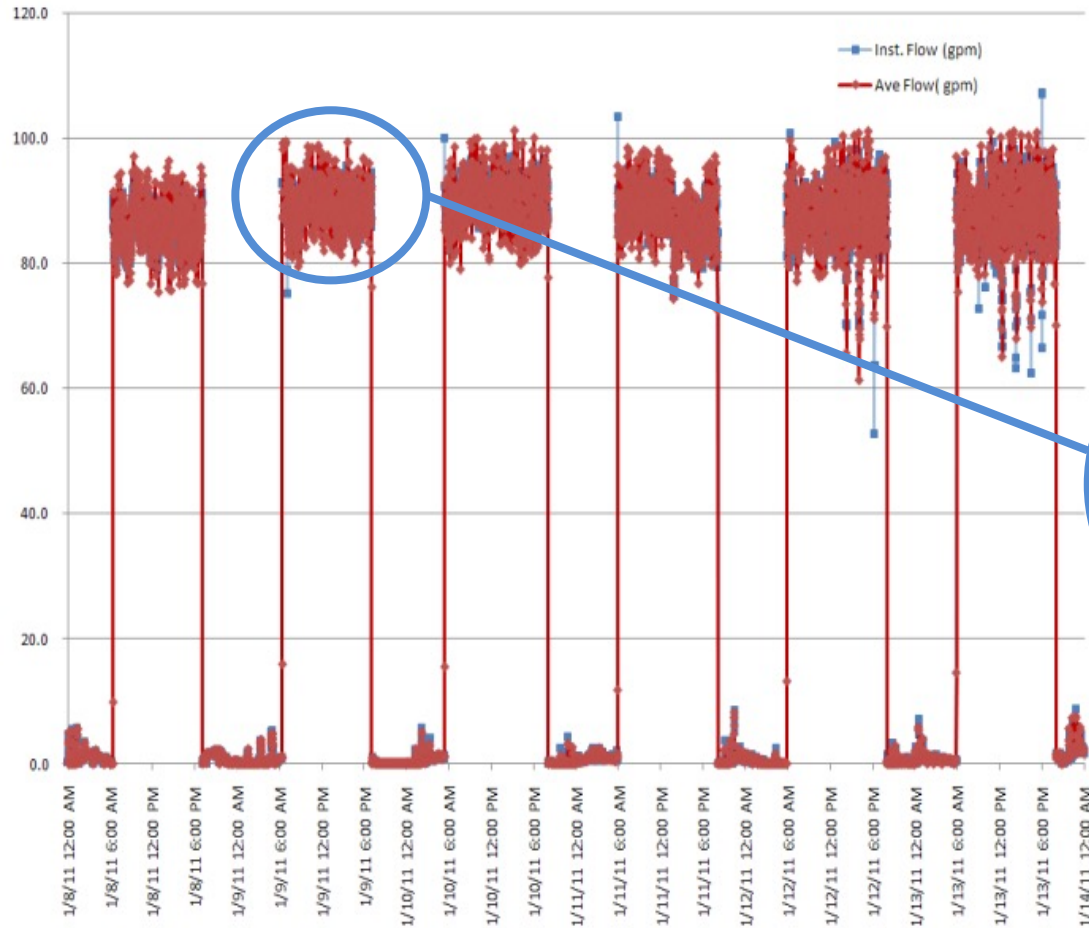


# Top Recommendation: Useful Tools – Water Assessments using Meter Data Loggers (real-time)

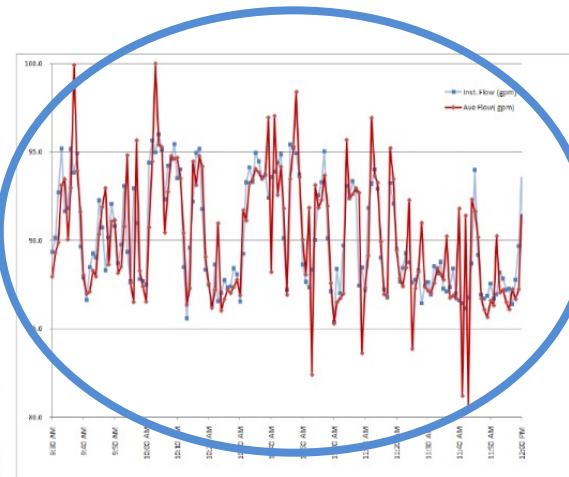
- Many different types of water meter data loggers
- Helpful to get real-time data and identify leaks and inefficiencies in equipment
- Example: MagneFlow Logger
  - Small
  - Lightweight
  - Easy to use
  - Can be strapped onto *most* meters
    - Often a sign that it may not work if the meter has a digital display
    - Can use on submeters too
    - Has special instructions for Neptune meters
  - Can adjust data resolution as low as gallons per 1 second
  - Needs to be removed from meter to download data into computer application



# Our Future – Real Time Flow Meter Data



water use over a week



water use over a day

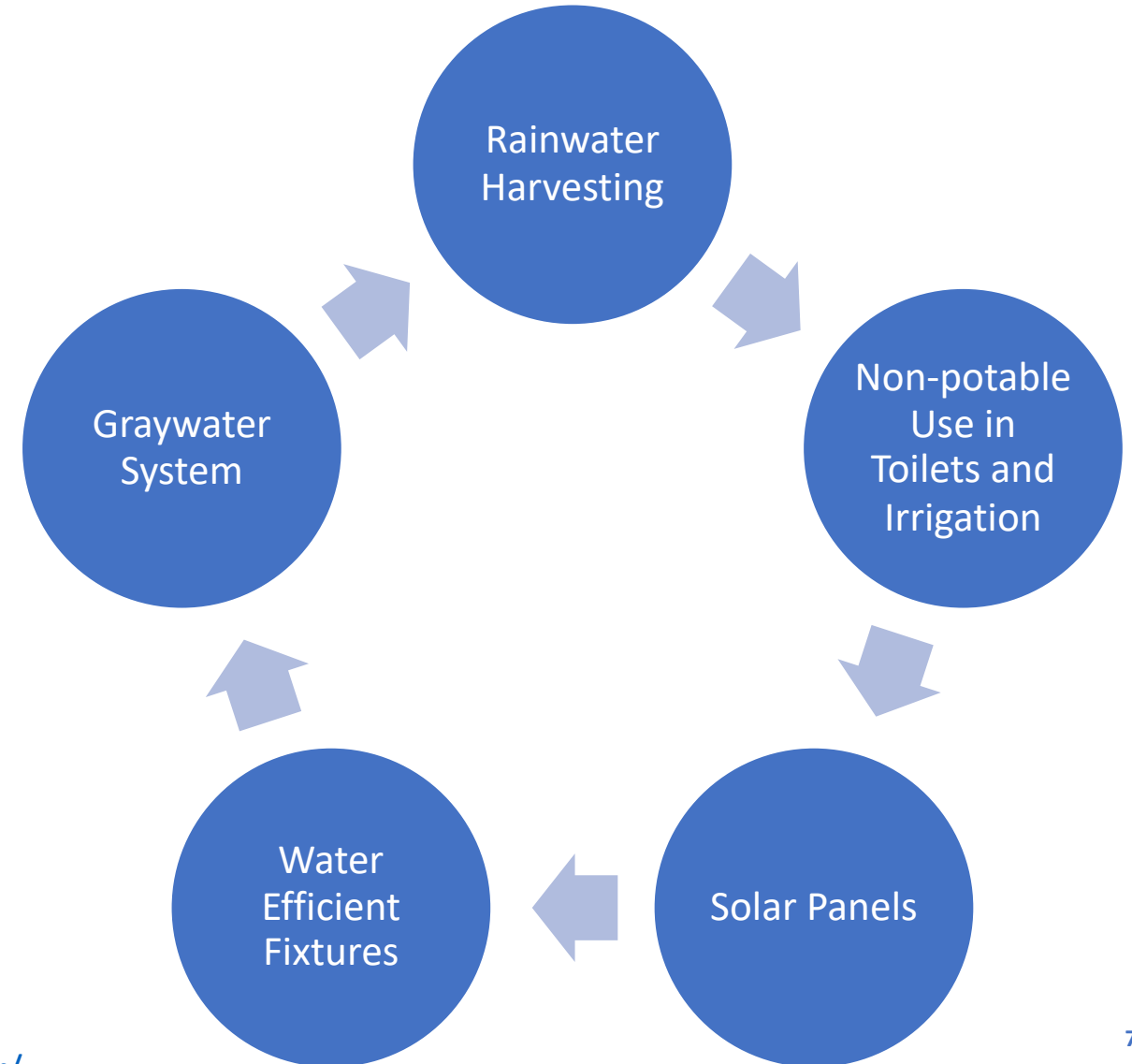


# Top Recommendation: Future of Sustainable ICI Buildings in the U.S.



**Bullitt Center (Seattle, Washington)**

<https://bullittcenter.org/2020/06/30/virtual-tour-of-the-bullitt-center/>





# Top Recommendation: Future of Sustainable Wastewater Treatment



LOTT Clean Water Alliance  
(Seattle, Washington)

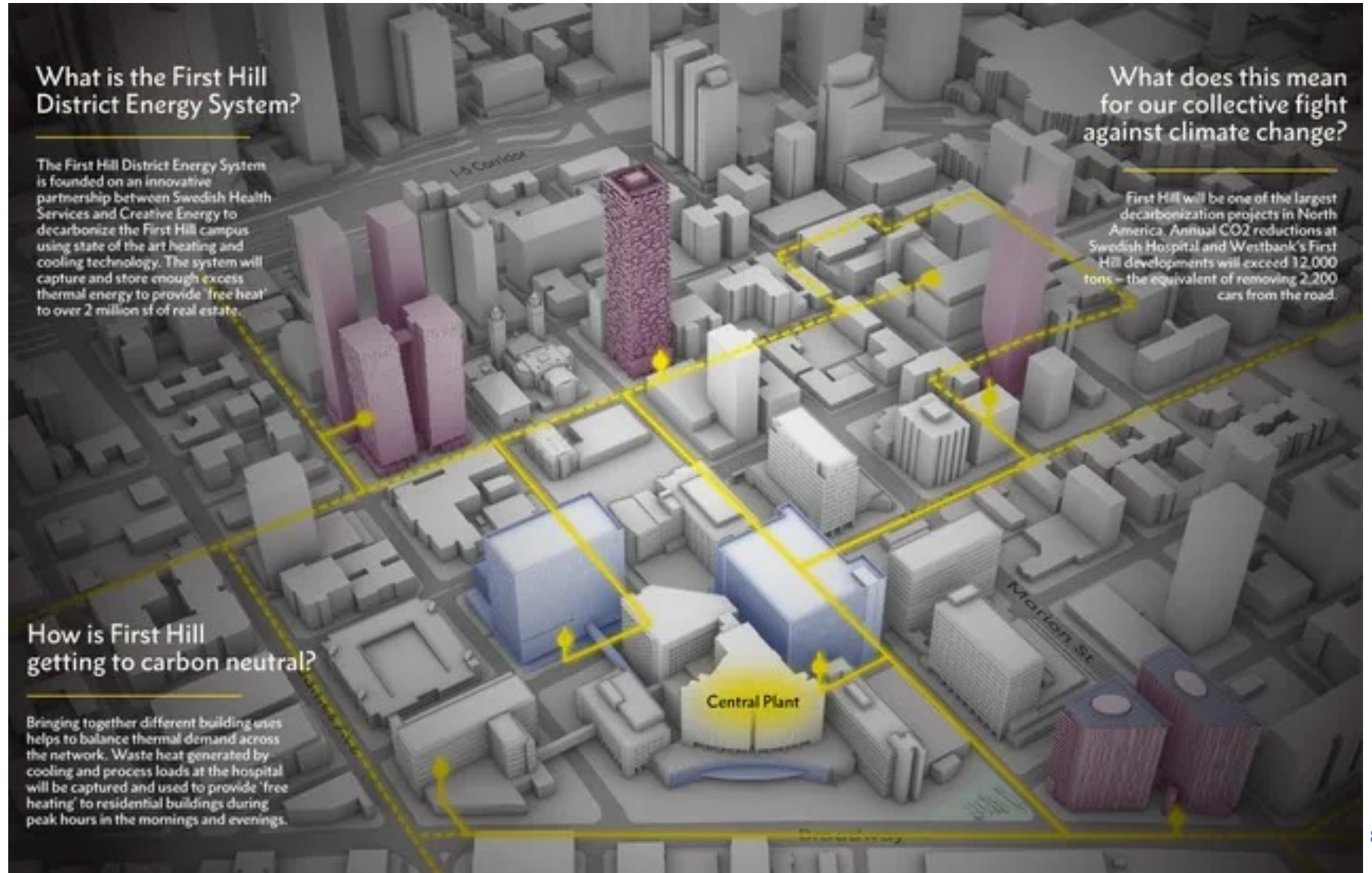


Maddaus Water Management Inc.

# Future of Sustainable Wastewater Treatment

March 29, 2022:

Redevelopment  
project  
to be carbon  
neutral  
in Seattle,  
Washington.



# Q&A

# Time for a Roundtable Breakout

- What key insights do you have from working with CII customers?
  - Challenges?
  - Approaches/Strategies?
  - Solutions?
- Each table share-back
- Panelists weigh-in...





# Workshop Panel Outcomes



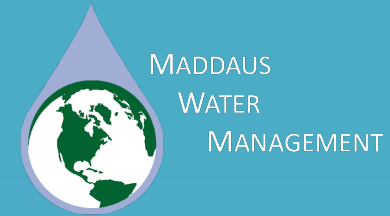
# Thank you!



**Lisa Maddaus**

**916-730-1456**

**[lisa@maddauswater.com](mailto:lisa@maddauswater.com)**



[www.maddauswater.com](http://www.maddauswater.com)