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- **Questions**

- There will be a discussion/Q&A session at the end of the presentation.
- Submit questions to the organizer and panelists via the chat window

- **Presentation Slides & Recording**

- Presentation slides will be sent to all participants.
- This session will be recorded.

- **Notes**

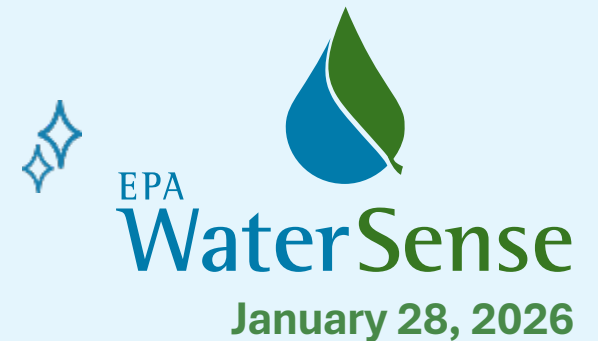
- To improve audio quality, all attendees are muted upon entry.

# Leveraging Advanced Metering Infrastructure (AMI) Data and Boosting Customer Enrollment

Kersey Manliclic, EPA WaterSense

Tim Collie, Elsinore Valley Municipal Water District

Drew Beckwith, City of Westminster, Colorado





# **Elsinore Valley Municipal Water District's District Metered Areas**

**Leveraging Advanced Metering Infrastructure  
(AMI) Data and Boosting Customer Enrollment**



# What is AMI: (Advanced Metering Infrastructure)

- **AMI** is a modern system of smart meters, communication networks and data management tools that enables utilities to automatically collect, transmit and analyze water usage data in near real-time. Unlike traditional meters that require manual reading, AMI systems use sensors and radio transmitters to capture detailed consumption metrics:
- The system integrates with platforms like AquaHawk, allowing customers to monitor their usage, receive alerts for continuous flow or leaks, and make informed decisions about water efficiency.



# EVMWD AMI System Data

- Collects 1.2 million records everyday or 400 million per year
- Customer Portal – AquaHawk
  - Free to all customers
  - Alerts
    - Leaks
    - Bill ranges (> \$\$\$ or Units per day)
    - Negative usage (found numerous in the last 3 months)
    - 1 cross-connection (well)
    - Interpret customer usage habits



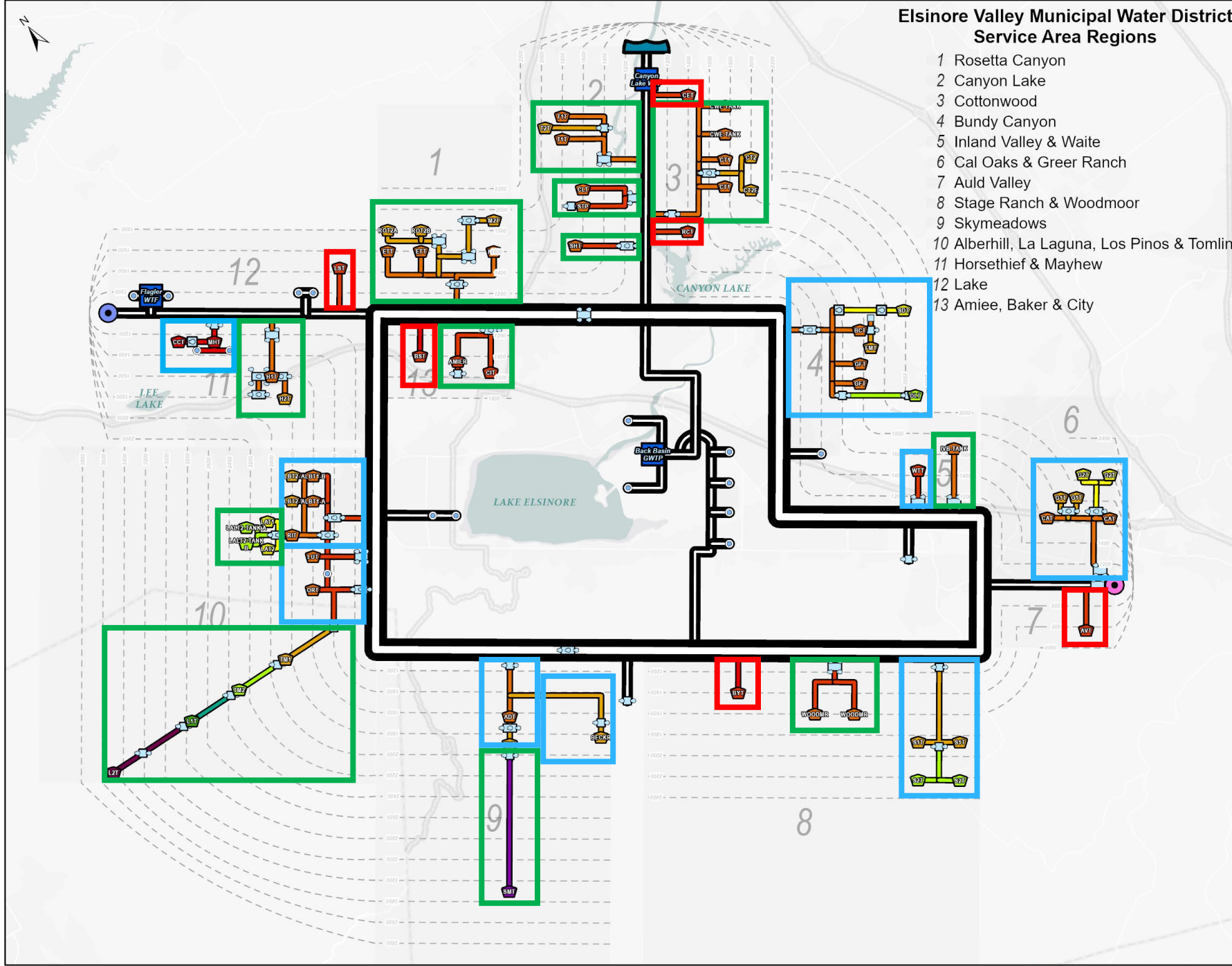
# 2015 to 2017 EVMWD Implemented AMI

- AMR system from 2002, was at end of life
- District Objectives
  - Several brands of meters (Currently using Neptune, Badger & Sensus)
  - Open to other brands that work with our AMI system (meter agnostic)
  - Customer portal
  - Leak detection
- AMI Radios were installed by a third-party vendor (45,000)
- 69 AMI Data Collection Units (DCU)



Elsnore Valley Municipal Water District  
Service Area Regions

- 1 Rosetta Canyon
- 2 Canyon Lake
- 3 Cottonwood
- 4 Bundy Canyon
- 5 Inland Valley & Waite
- 6 Cal Oaks & Greer Ranch
- 7 Auld Valley
- 8 Stage Ranch & Woodmoor
- 9 Skymeadows
- 10 Alberhill, La Laguna, Los Pinos & Tomlin
- 11 Horsethief & Mayhew
- 12 Lake
- 13 Amiee, Baker & City





# GIS Dashboard





# Power Bi Dashboard



# Where did our water go?

~3400 meters, 42% over 20 yrs old

~3700 meter, 19% over 20 yrs old

## DMA Zone Analysis

All Values In  
CCF Gallons

### Water Produced

$$\begin{array}{|c|c|c|c|c|} \hline \text{Produced} & & \text{Tank(s)} & = & \text{Net} \\ \hline 745.2\text{M} & + & 406.4\text{K} & = & 745.6\text{M} \\ \hline \end{array}$$

### Water Deliveries

$$\begin{array}{|c|c|c|c|c|} \hline \text{Net Produced} & & \text{Customers} & & \text{Known Loss/Issues} & = & \text{Loss} \\ \hline 745.6\text{M} & - & 698.7\text{M} & + & 0.0 & = & 46.9\text{M} \\ \hline \end{array}$$

\*\*\* Right-click on "Produced", "Tank(s)", "Customers", or "Known Loss/Issues" to Drill-Through to detailed information for further analysis. \*\*\*

Rolling 12 Months ⓘ

### Selection Criteria

DMA Zone  
Canyon Lake

Start Date  
5/13/2024

End Date  
12/1/2025

DMA Start Date  
5/13/2024

Gallons Lost Per Connection Per Day  
24.16

# of Customers  
3425

Gallons Lost Per Minute  
57.46

### System Efficiency

93.7%

Avg Loss Per 30 Days

\$12,443

at \$3.75 per unit

## DMA Zone Analysis

All Values In  
CCF Gallons

### Water Produced

$$\begin{array}{|c|c|c|c|c|} \hline \text{Produced} & & \text{Tank(s)} & = & \text{Net} \\ \hline 857.9\text{M} & + & 556.0\text{K} & = & 858.5\text{M} \\ \hline \end{array}$$

### Water Deliveries

$$\begin{array}{|c|c|c|c|c|} \hline \text{Net Produced} & & \text{Customers} & & \text{Known Loss/Issues} & = & \text{Loss} \\ \hline 858.5\text{M} & - & 2.0\text{bn} & + & -1.1\text{bn} & = & 3.4\text{M} \\ \hline \end{array}$$

\*\*\* Right-click on "Produced", "Tank(s)", "Customers", or "Known Loss/Issues" to Drill-Through to detailed information for further analysis. \*\*\*

Rolling 12 Months ⓘ

### Selection Criteria

DMA Zone  
Cottonwood

Start Date  
5/13/2024

End Date  
12/1/2025

DMA Start Date  
3/17/2023

Gallons Lost Per Connection Per Day  
1.63

# of Customers  
3729

Gallons Lost Per Minute  
4.22

### System Efficiency

99.6%

Avg Loss Per 30 Days

\$915

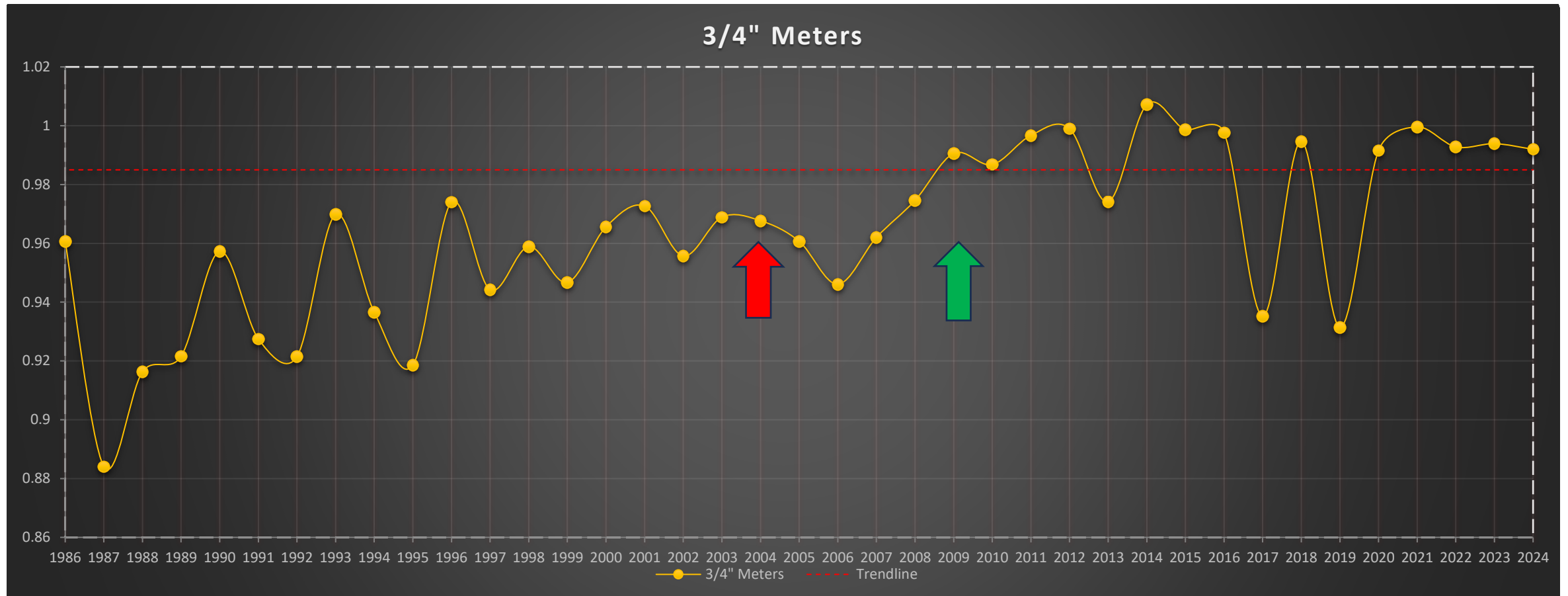
at \$3.75 per unit



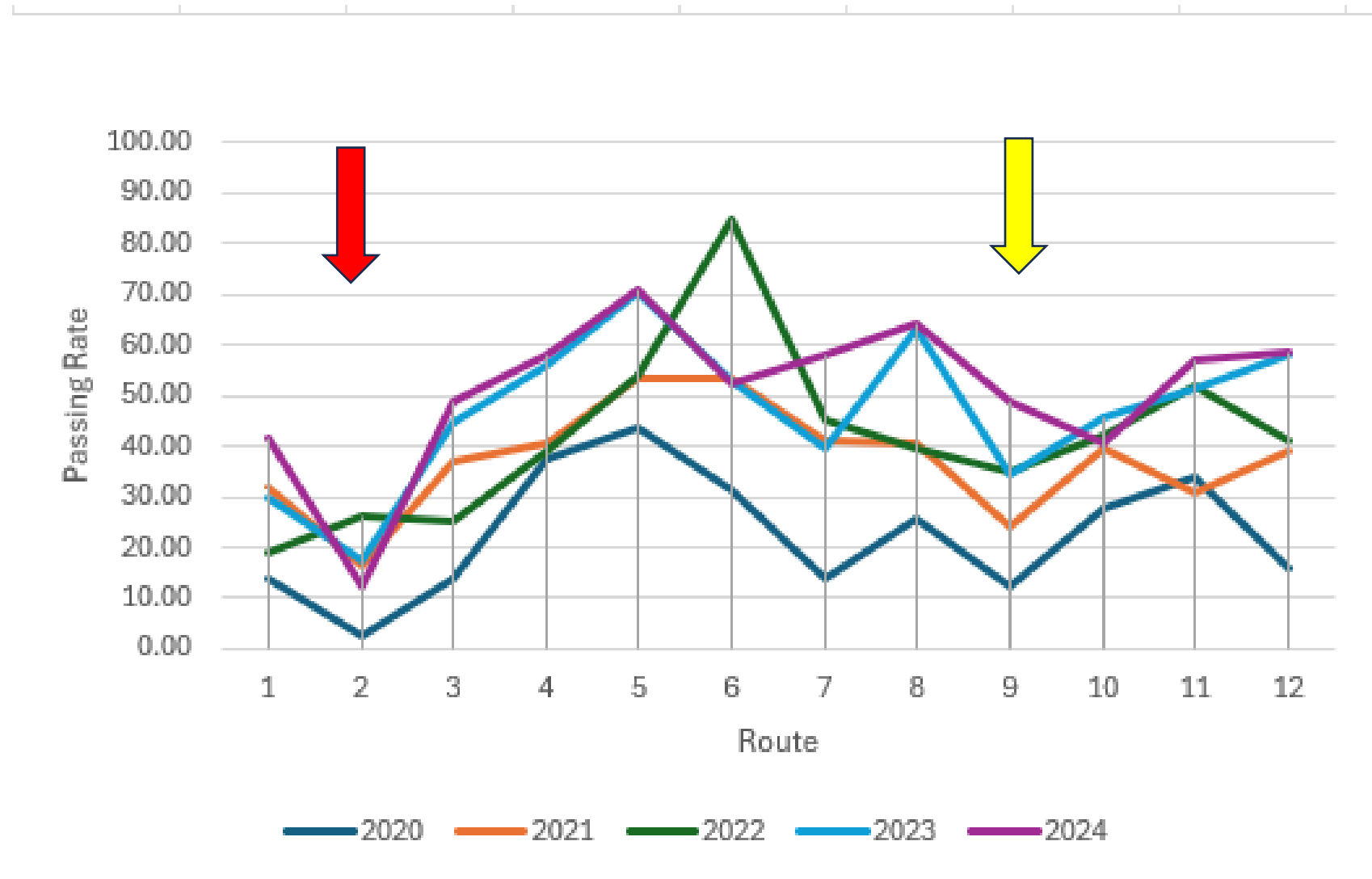
EVMWD

# Should you look for a leak?

- **Not until you know your data is correct!**
- Most of EVMWD's \*Loss\* is through aging meters (<20 yrs old)
  - Currently 18,149 (~37%) meters over 20 years old



# Meter Tests Passing Rate by Cycle





# Contact us for a live demonstration or questions

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**Tim Collie**

Water Operations  
Manager

[Tcollie@evmwd.net](mailto:Tcollie@evmwd.net)



**THANK YOU**





**WESTMINSTER**  
COLORADO

# Utilizing AMI Data for Customer Outreach

Drew Beckwith

[dbeckwith@westminsterco.gov](mailto:dbeckwith@westminsterco.gov)

303-658-2386

US EPA WaterSense Webinar – Jan 28, 2026



# Sign-Up Experiment – Research Goals/Partners

- Leverage ~\$18,000,000 investment in AMI
- Determine what kind of outreach works best to get more customers signed up in AMI portal
- UChicago E+E Labs: scale policy solutions into the real world
- AWE: like AWWA for water conservation

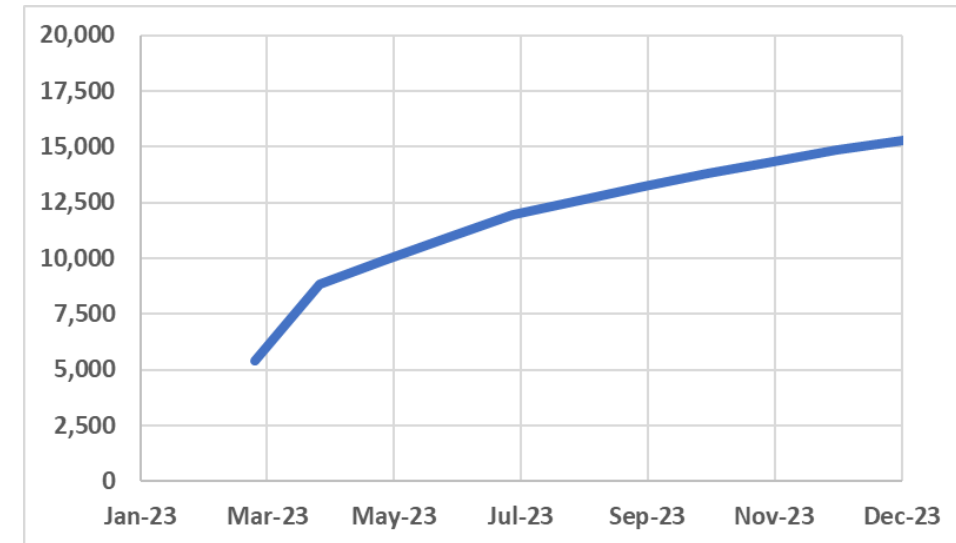


# Westy Water Sign-Up Experiment


- Randomized Control Trial (RCT/RCE) for more sign-ups
- What way of communication (mode) is most effective?
  - 1) email; 2) email+email; 3) email+postcard; 4) postcard; 5) postcard+postcard
- What message (content) is most effective?
  - 1) Leak Alerts; 2) Easy Payments; 3) Water Use Info







**WESTY  
WATER**





# Outreach Materials

**WESTMINSTER**  
Municipal Service Center  
6575 W. 88th Ave.  
Westminster, CO 80031

Scan the QR code and  
download the app now!



westminsterco.gov/westywater

**WESTMINSTER** | **WESTY  
WATER**

## GET LEAK ALERTS

Our online portal helps you catch leaks quickly to  
minimize property damage and unwanted expenses. Sign  
up for automatic leak alerts from Westy Water today!



# WESTY WATER

Log In to Westy Water

Dear Customer,

Our online portal allows you to explore your water use hour by hour and set personalized consumption alerts. Set up your Westy Water account today and take control of your water use!

Download the mobile app:

[Apple Store](#)

[Google Play Store](#)

Thank you,

City of Westminster

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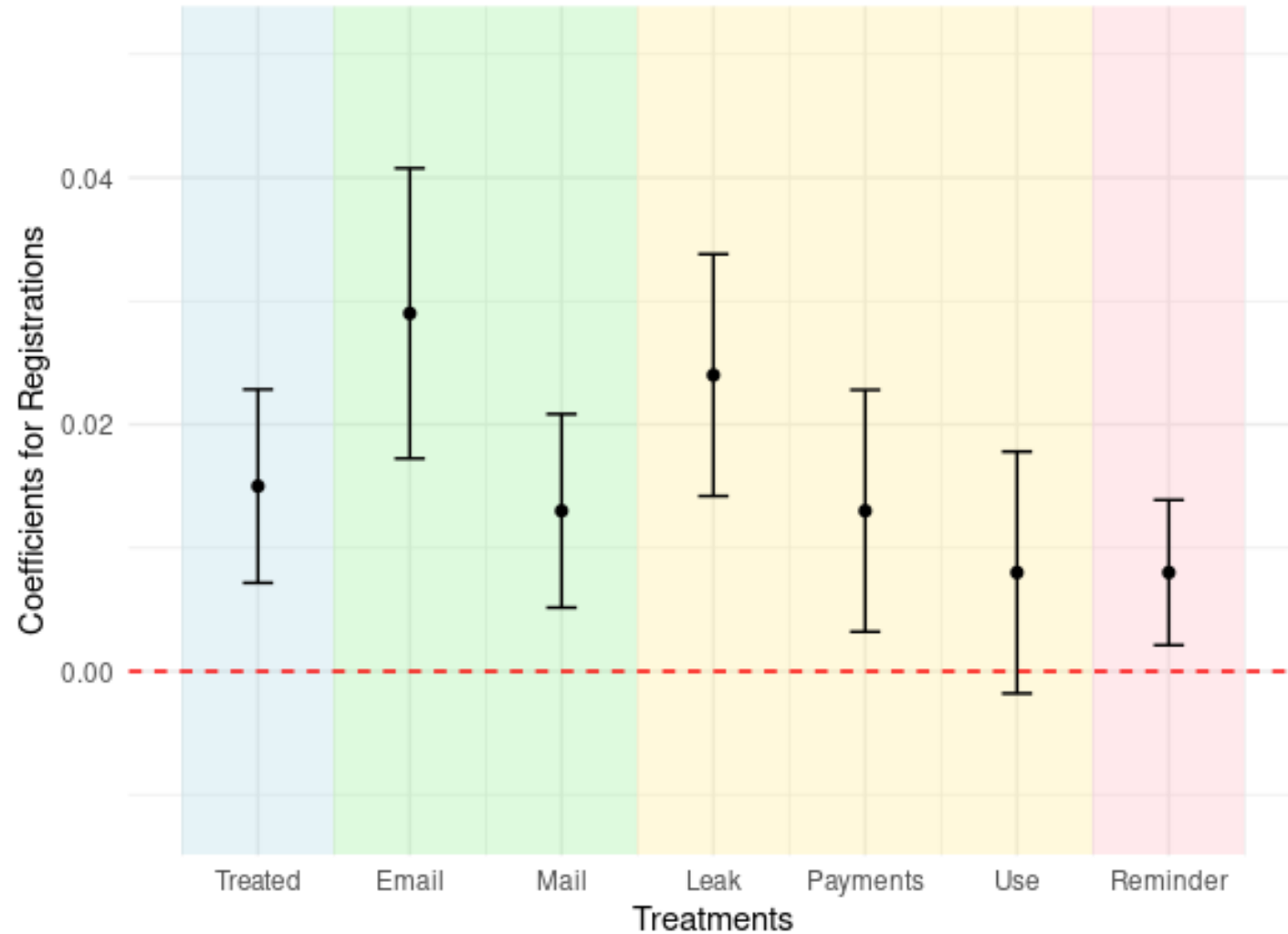
6575 W 88th Ave | Westminster, CO 80031 US

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# Sign-Up RCT Results



## Regression

- Content
- Mode
- Reminder
- Treated



Anything is better than nothing – except talking about water use...WTF!? ☹

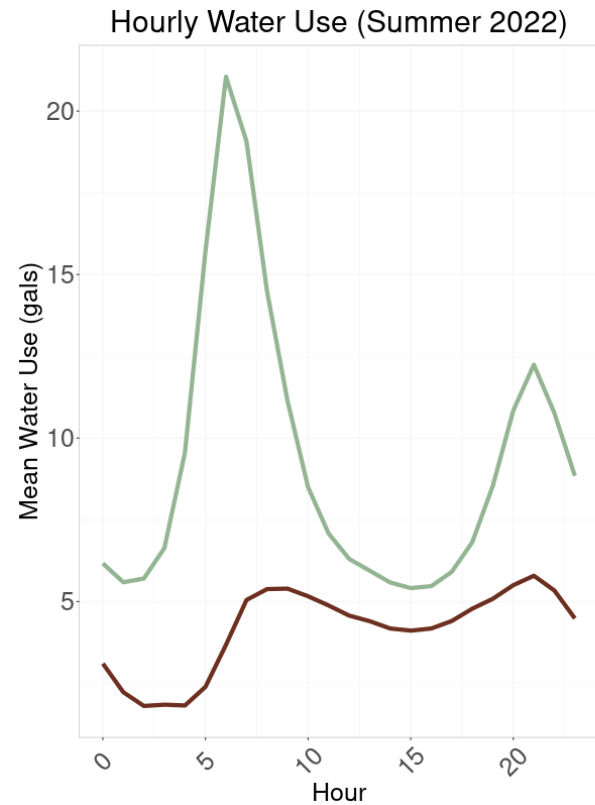
# Irrigation Experiment – Research Goals

- For Single Family Homes – do good
  - Irrigate during nighttime hours
  - Irrigate a maximum of 3-days per week
  - (Westminster does not have regular watering rules – I want them!)
- Determine what kind of “informational intervention” works best to change irrigation behavior
- Calculate water use reductions from treatment groups



# Daily Water Use Timing

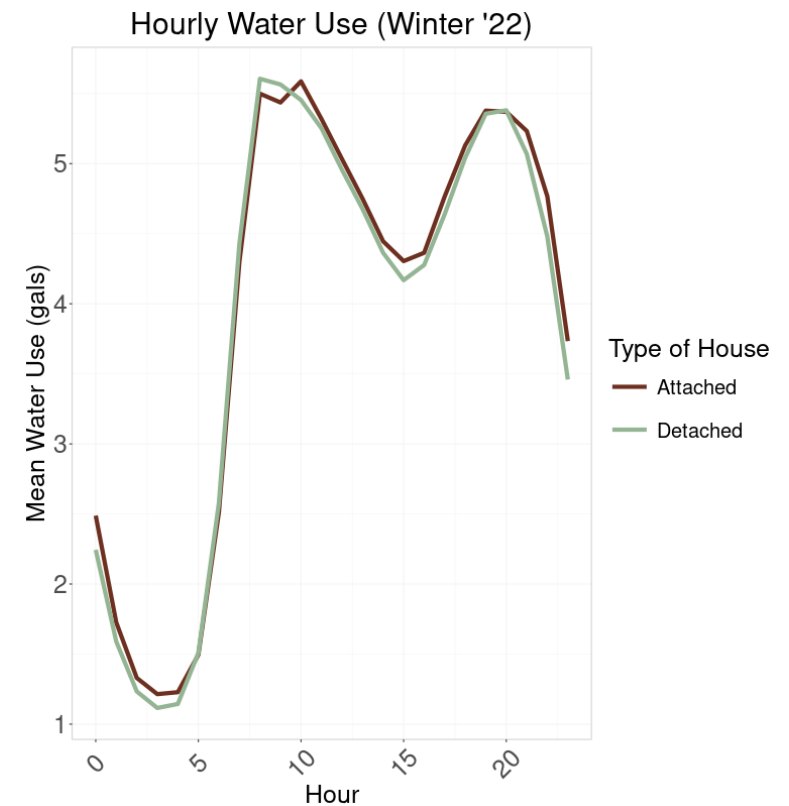
## Summer



In 2023, during at least 1 week:  
45% irrigated during the day  
31% irrigated 4+ days per week

SFD homes water outside in the AM

## Winter



SFD/SFA use water the same indoors

# Irrigation Experiment



- Randomized Control Trial (RCT/RCE)
  - Interventions June 1 – September 30, 2024
  - Emails every two weeks at most, max of 4 emails / customer
- What treatment is most effective?
  - 1) timing; 2) frequency; 3) timing + frequency

Irrigation = >150 gal/hr for 2+ hrs

	Frequency Event		No Frequency Event
Timing Event	A. Treatment A + Treatment B (143)	B. Treatment A (143)	E. Treatment A (2,437)
	C. Treatment B (143)	D. No Treatment (143)	F. No Treatment (2,437)
No Timing Event	G. Treatment B (980)	H. No Treatment (980)	I. Not in experimental sample (6,826)

Treatment Type:  
A = timing  
B = frequency



# Outreach Emails

## Timing (A)

## Frequency (B)

Log In to Westy Water

Dear Customer,

**Did you know that watering your yard at night when it's cooler can help your yard stay healthy this summer?** In the past two weeks, your water meter showed a lot of water use during the hot daytime hours.

It's best to water your yard after the sun sets. Using water wisely is really important to make sure we have enough water for future generations. The City of Westminster recommends residents water their yards between 6:00pm and 8:00am. Most people already do this.

### Here's what you can do this week:

1. Change your sprinkler timer to start watering between 6:00pm and 8:00am (double check the AM vs. PM setting).
2. Explore your water use in the [Westy Water App](#).

For more information about good irrigation practices, visit the City's [water conservation webpage](#).

Download the mobile app:

[Apple Store](#)

[Google Play Store](#)

Thank you,

City of Westminster

*This is an automatically generated email. Please do not reply to this message.*

Dear Customer,

**Did you know that only watering your yard a few days a week can help it stay healthy this summer?** In the past two weeks, your water meter showed a lot of water use on several days during the week.

It's best to water your yard only 3 days a week during July. Using water wisely is really important to make sure we have enough water for future generations. The City of Westminster recommends residents water no more than 3 days a week. Most people already do this.

### Here's what you can do this week:

1. Water your yard only the number of days per week shown in the picture below.
2. Explore your water use in the [Westy Water App](#).

For more information about good irrigation practices, visit the City's [water conservation webpage](#).

**1 Day / Week**

May (as needed)

**2 or 3 Days / Week**

June

**3 Days / Week**

July & August

**2 or 3 Days / Week**

September

**1 Day / Week**

October (as needed)

### Here's what you can do this week:

1. Change your sprinkler timer to start watering between 6:00pm and 8:00am (double check the AM vs. PM setting).
2. Water your yard only the number of days per week shown in the picture below.
3. Explore your water use in the [Westy Water App](#).



# WESTY WATER

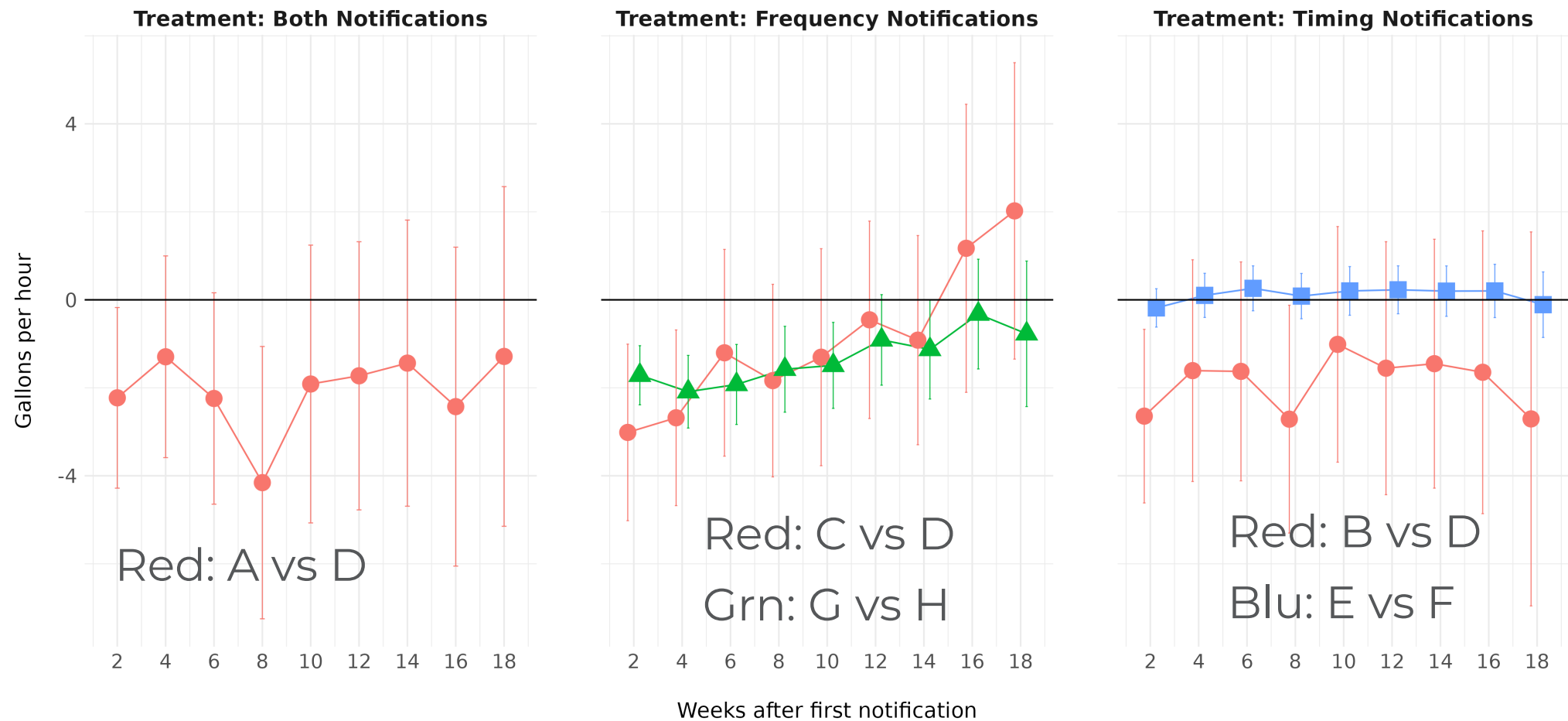
## Timing + Frequency (A+B)

Log In to Westy Water

**Did you know that watering your yard at night when it's cooler and only 2 days a week can help your yard stay healthy this summer?** In the past two weeks, your water meter showed a lot of water use during the hot daytime hours.

It's best to water your yard after the sun sets and just 2 days a week during July. Using water wisely is really important to make sure we have enough water for future generations. The City of Westminster recommends residents water their yards between 6:00pm and 8:00am and no more than 2 days a week. Most people already do this.

# Irrigation RCT Results



# Take Aways

- Be ready for customer engagement
- Regressions can get very complicated
- Saying anything can shift behavior and reduce use



Sent from Rhett's iPhone

Thanks Westminster for the heads up! We will try to do better. 😊

I have recently found a leak in my sprinkler system. I thought my water bill was to high. Thank you for reaching out.

Maybe you should take care of what's under your control instead of trying to control me... Have a nice day

I am watering at night. I see many who are not. Stop sending g me this.

Bro you have no idea what youre talking about. My sprinklers go off at 5 fucking am. Lose my email please.

# What is WaterSense?

- WaterSense is a voluntary program launched by EPA in 2006 that provides a simple way to identify water-efficient:
  - Products
  - Programs
  - Practices
  - Homes
- Products are independently certified for water efficiency **and** performance





# WaterSense Labeled Products

## Indoor products



Showerheads



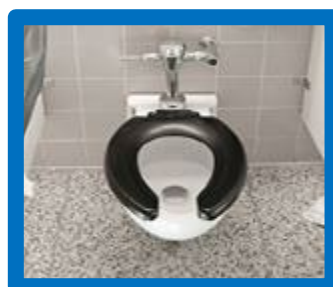
Lavatory  
Faucets



**\*NEW\*** Point-of-use  
Reverse Osmosis Systems



Tank-Type  
Toilets



Flushometer  
Valve Toilets



Flushing  
Urinals

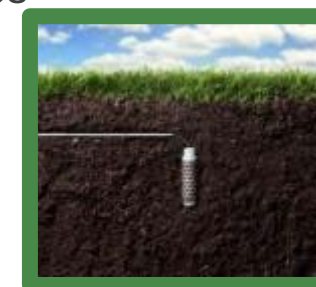
## Outdoor products



Spray Sprinkler  
Bodies



Weather-based



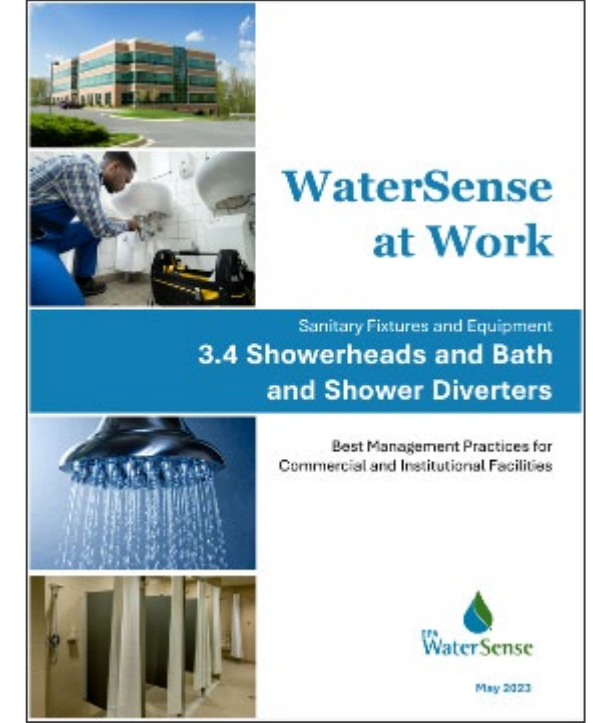
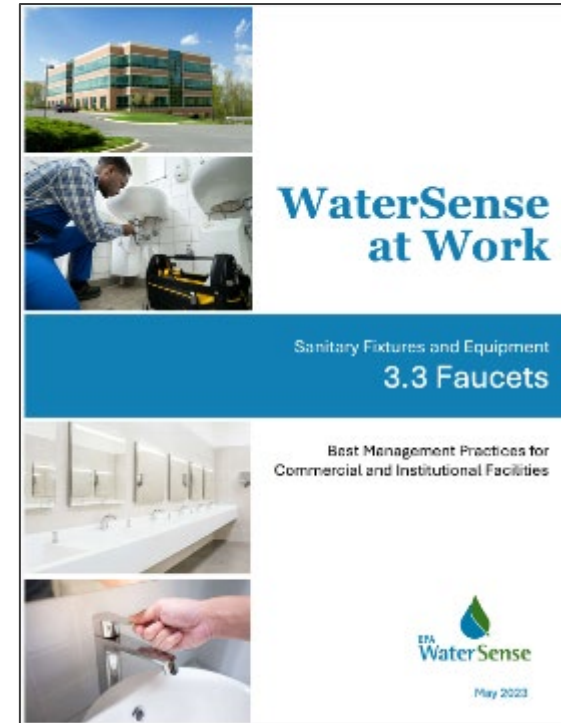
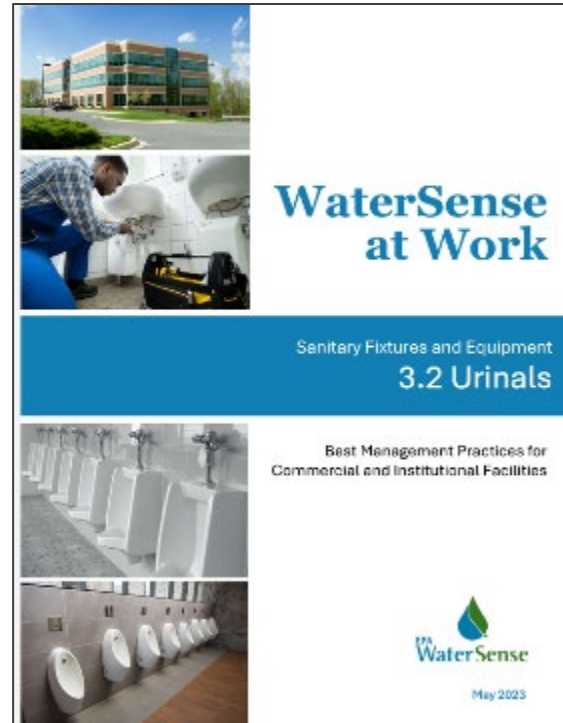
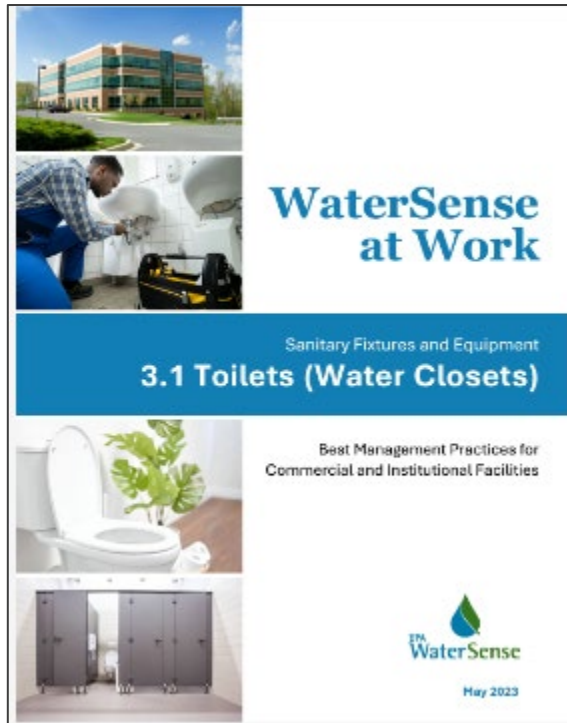
Soil Moisture-based

Irrigation Controllers

More than **45,000** product models have earned the label.



# Best Management Practices



[www.epa.gov/watersense/best-management-practices](http://www.epa.gov/watersense/best-management-practices)

# Contact Us



## **WaterSense**

[www.epa.gov/watersense](http://www.epa.gov/watersense)

Email: [watersense@epa.gov](mailto:watersense@epa.gov)

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