ALLIANCE FOR WATER EFFICIENCY

WATER EFFICIENCY & CONSERVATION SYMPOSIUM 2025

AUGUST 6-8, 2025 | CHICAGO, IL

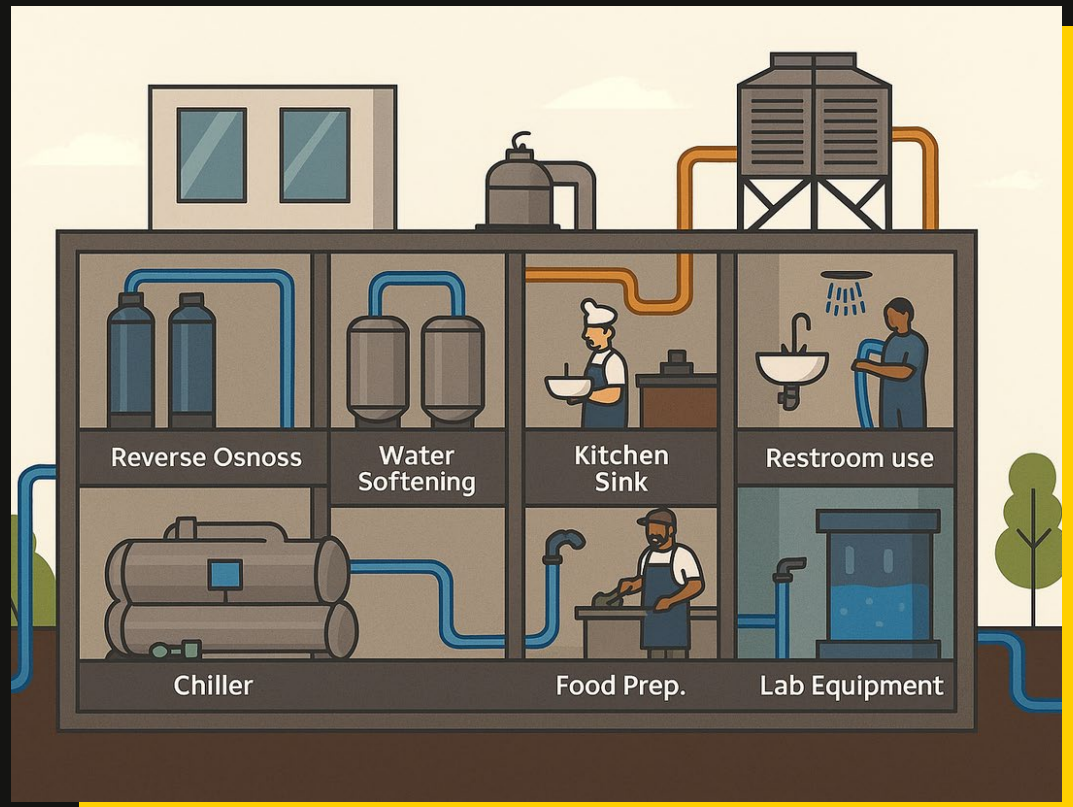
CII Opportunities Part 2: The Inside Scoop: Tackling Indoor Water Use in CII Facilities

Room 300 11:15 AM – 12:30 PM

Unlocking Commercial Water Efficiency: Lessons from the City of Goodyear's Commercial Program

Andrew Pirrone
Water Conservation Coordinator, City of Goodyear

Annikki Chamberlain
President and Owner, Mimir Water



Unlocking Commercial Water Efficiency:

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Andrew Pirrone - City of Goodyear
Annikki Chamberlain - Mimir Water

CITY OF Goodyear

MIMIR WATER™

CONTENTS

ABOUT GOODYEAR, AZ

STATS

- Sonoran Desert
- Southwestern U.S.
- ~105,000 residents
- 4 – 5% annual growth
- Growing Commercial & Industrial Sector

GOALS

- Limit new high water users
- Alignment with available water resources
- Clear water use targets for customers

THE TRADITIONAL APPROACH

METHODS

OUTCOMES

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METHODS

- Send a letter.
- Offer a rebate.
- Conduct a fixture audit.
- Estimate based on design flows.

OUTCOMES

- Deliver a report.
- General efficiency guidelines
- Focus on “Getting to Zero”

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- General efficiency guidelines
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OUTCOMES

- Low implementation Rate
- Missed High-Impact Opportunities
- Operational Disruption
- Reinforced Mistrust
- Poor Water Management

Can we have a different outcome?

A NEW ADVENTURE

In Commercial Water Management

Can we have a different outcome?

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SITUATION

A new large commercial customer just came online and is using more water than expected. What do you do?

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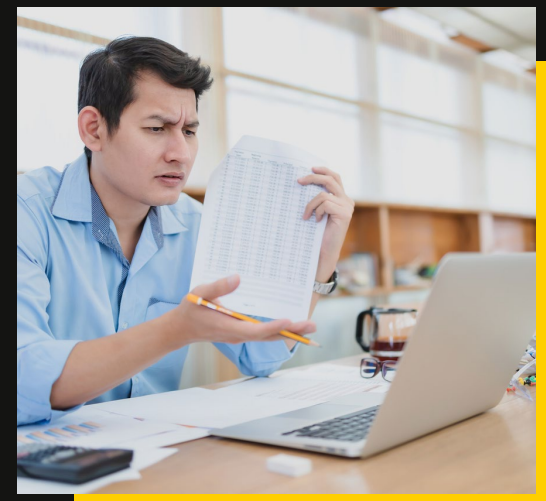
COMPLIANCE/ TECH ASSISTANCE

OUTCOME 1:

The letter gets mailed to the billing address… where it’s opened by someone in Accounts Payable who has no idea about water use and has no idea what to do with this. They stack it on a pile and, after loosing it for 3 months, finally sends it to the facility where HR receives it and tosses it since it’s so old.



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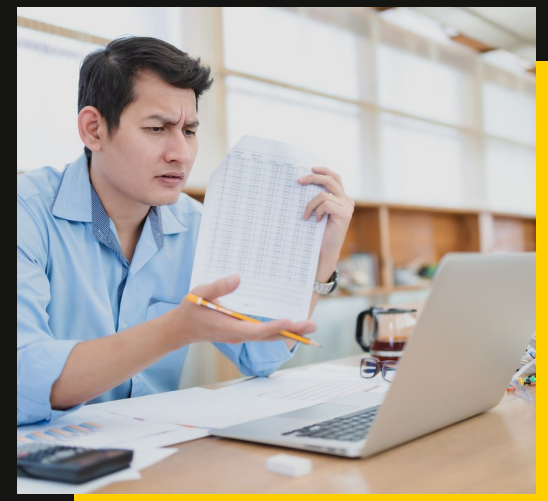
The letter gets mailed to the billing address… where it's opened by someone in Accounts Payable who has no idea about water use and has no idea what to do with this. They stack it on a pile and, after loosing it for 3 months, finally sends it to the facility where HR receives it and tosses it since it's so old.

You continually review and bemoan their high water use in a perpetual spiral of 'they just don't care!'

Story Ends



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They're thrilled to hear from you and love talking about "saving water." Unfortunately, they have no operational knowledge, and the facilities team quietly ghosts the conversation because they have been down this road before.

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They're thrilled to hear from you and love talking about "saving water." Unfortunately, they have no operational knowledge, and the facilities team quietly ghosts the conversation because they have been down this road before.

You enthusiastically report your efforts back to management, but your professional heart is broken... longing for a water savings moment that never comes.

Story Ends

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SUSTAINABILITY MANAGER

COMPLIANCE/ TECH ASSISTANCE

OUTCOME 3:

The compliance requirement creates motivation for change. Your offer of assistance signals you're here to help, not just enforce. The customer agrees to meet with internal stakeholders to explore solutions.

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Congratulations! You survived your first audience with the customer and your follow-up meeting with them is scheduled.

Go to Next

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Equipment includes reverse osmosis, water softener, adiabatic condensers, dishwashers, sanitation hoses, food prep, restrooms and more.

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MEETING W/ SUBMETER PLAN & INSTALL

OUTCOME 1:

The ops team politely nods...wondering why you are interested in brand new fixtures when the rest of the facility is using a ton of water. Then wonders if you're a random vendor trying to sell them stuff? The trust that you understand their actual water use? Gone.

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The ops team politely nods...wondering why you are interested in brand new fixtures when the rest of the facility is using a ton of water. Then wonders if you're a random vendor trying to sell them stuff? The trust that you understand their actual water use? Gone.

You return seemingly victorious to the office but when you return from vacation after sending off your dissertation, your email inbox is empty... just like your hopes and dreams.

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MEET W/ SUBMETER PLAN & INSTALL

OUTCOME 2:

The calculations look tidy on paper, but they don’t reflect real-world conditions. Commercial properties are too unique for generic benchmarks and relying on them can lead to poor investments, lost momentum, and an ops team that doesn’t trust “number-crunchers” and “desk jockeys” offering one-size-fits-all recommendations.

OUTCOME 2:

The calculations look tidy on paper, but they don't reflect real-world conditions. Commercial properties are too unique for generic benchmarks and relying on them can lead to poor investments, lost momentum, and an ops team that doesn't trust "number-crunchers" and "desk jockeys" offering one-size-fits-all recommendations.

You ask your audit contractor to follow up with the customer on their recommendations but they tell you it's not part of their scope. By the time you have a moment to reach out yourself, it's been 6 months and report is irrelevant.

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Congratulations! You have an on-site appointment scheduled to assess and install submeters to start measuring real & live water data.

Go to Next

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You install submeters at the facility. Now what?

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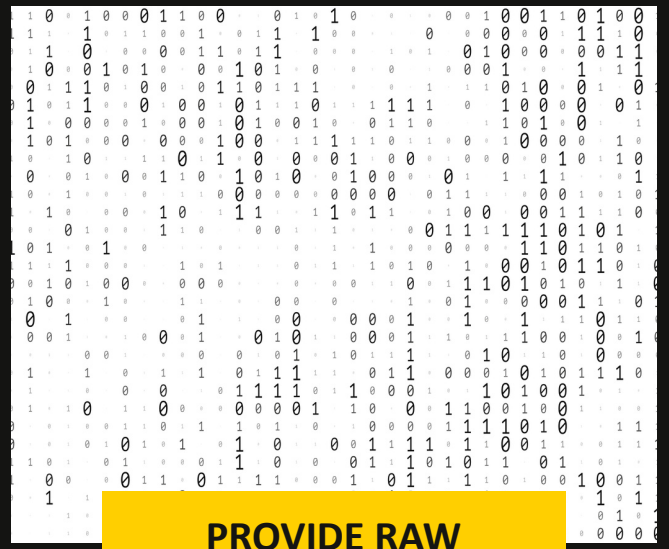

PROVIDE RAW SUBMETER DATA

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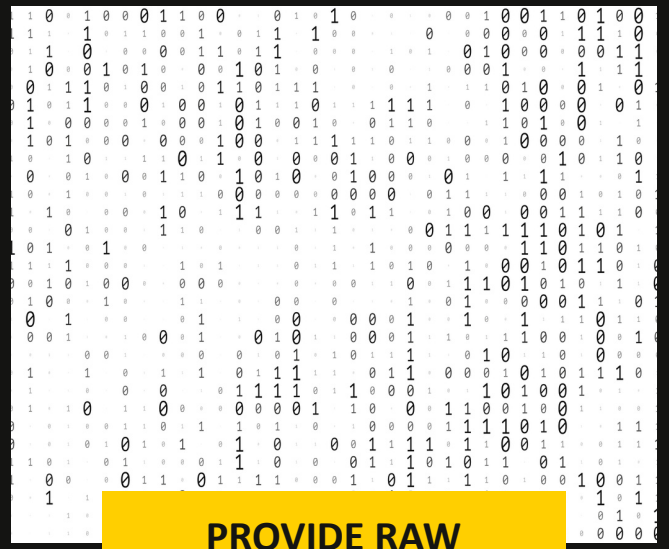

PROVIDE RAW SUBMETER DATA

2 WEEKS DOWNLOAD & ANALYSIS

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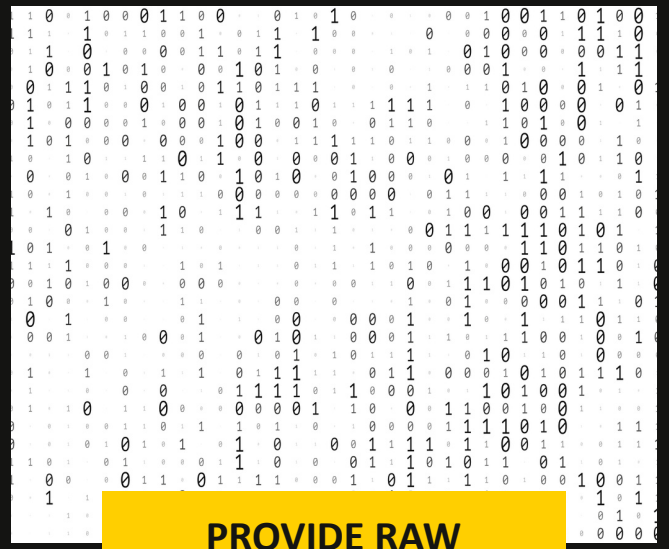

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ANALYZE & PROVIDE INSIGHTS

OUTCOME 1:

You’ve officially overestimated their bandwidth and interest. Water use data is not in their job description, they are not proficient in Excel, and they already have a full time job. Nothing happens. Ever.

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You ask Chat GPT what went wrong and it tells you it loves data too and can't understand any poor soul who doesn't feel the same way you do.

Story Ends

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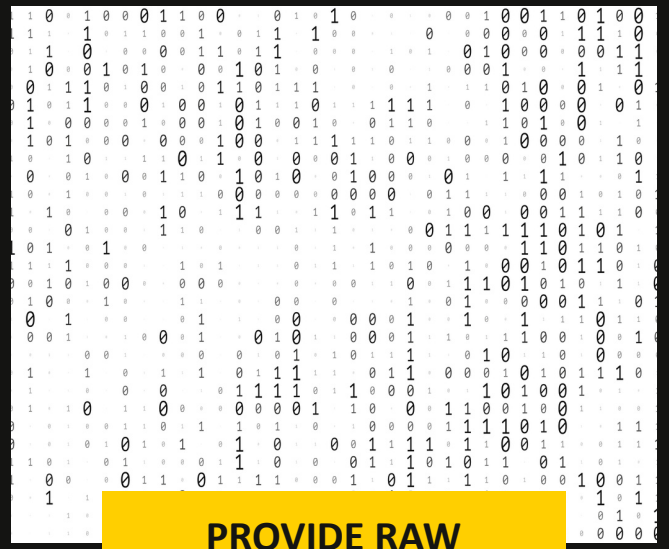

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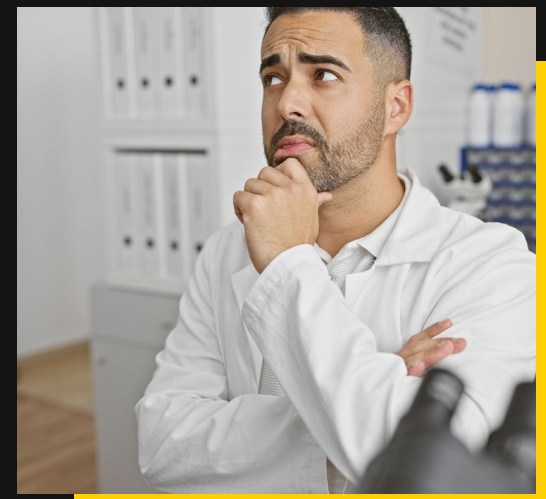
The ops team looks at you blankly. They have no idea what happened Wednesday two weeks ago. Also, your biweekly site visits are now a recurring interruption. Everyone is mildly annoyed, and progress slows to a crawl.



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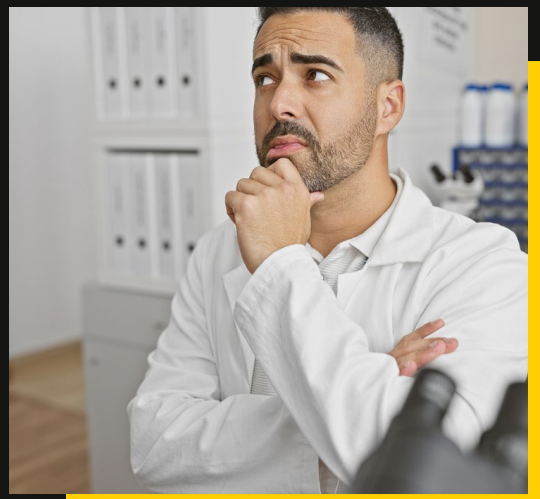
You spend way too much money on your favorite lunch spot that is close to this facility and it's the only thing you look forward to on your scheduled site visits.



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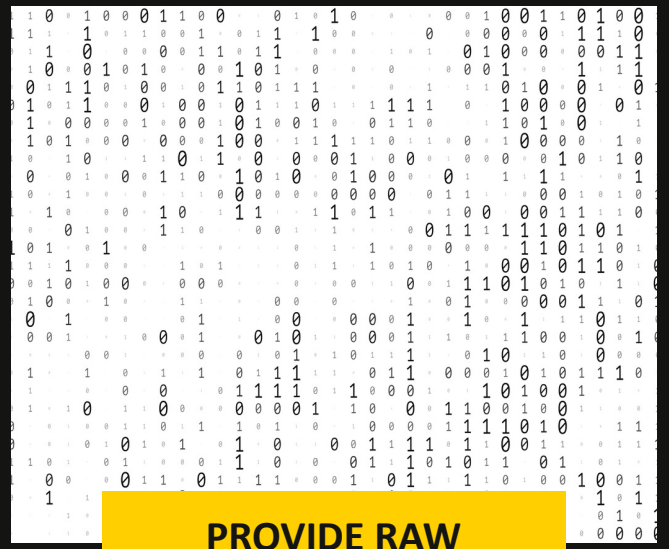

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OUTCOME 3:

You become the bridge between data and action. The ops team doesn’t have to sift through numbers—they just get clear trends and recommendations. They start making changes, and you become the go-to person for water strategy.

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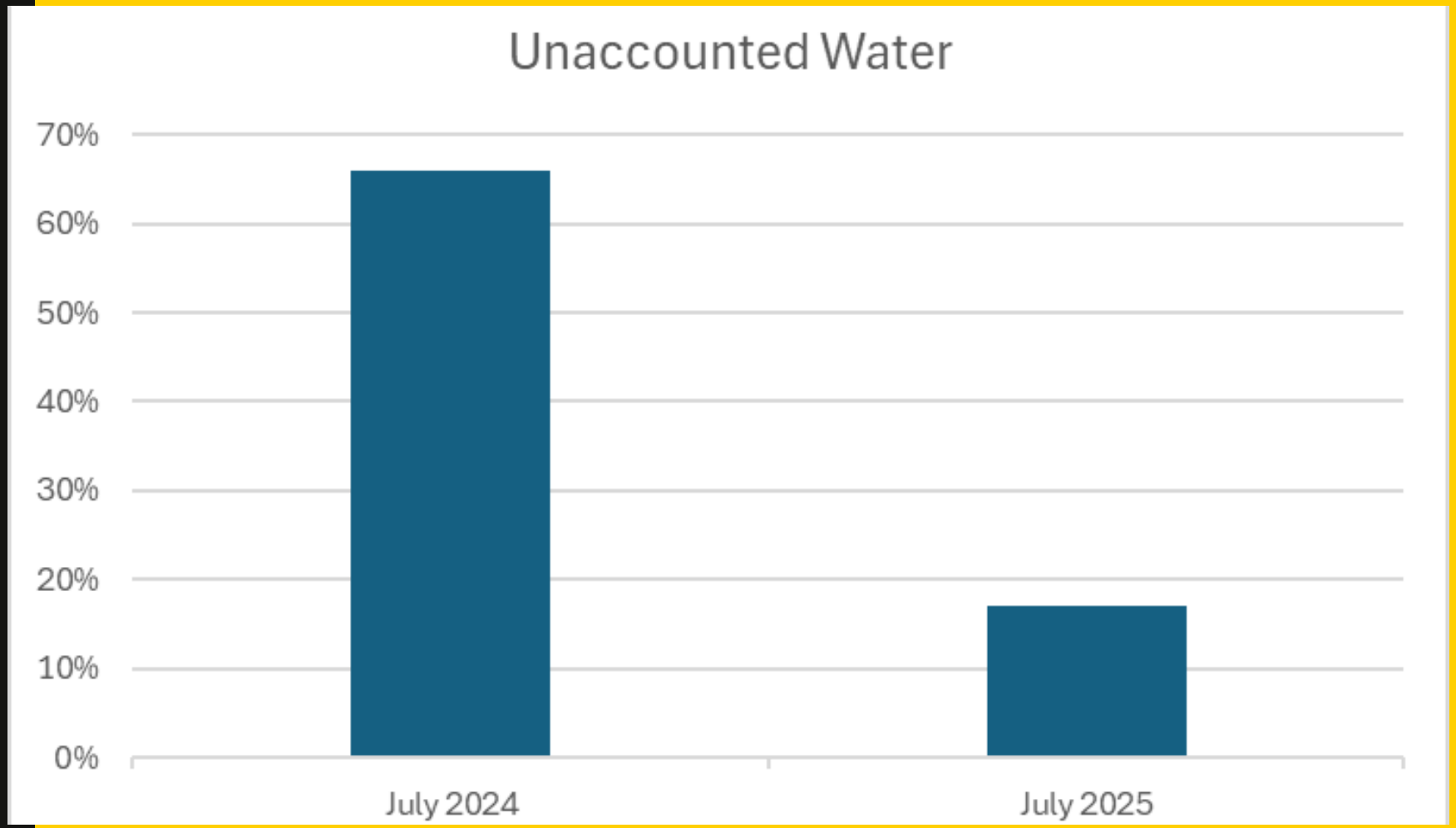
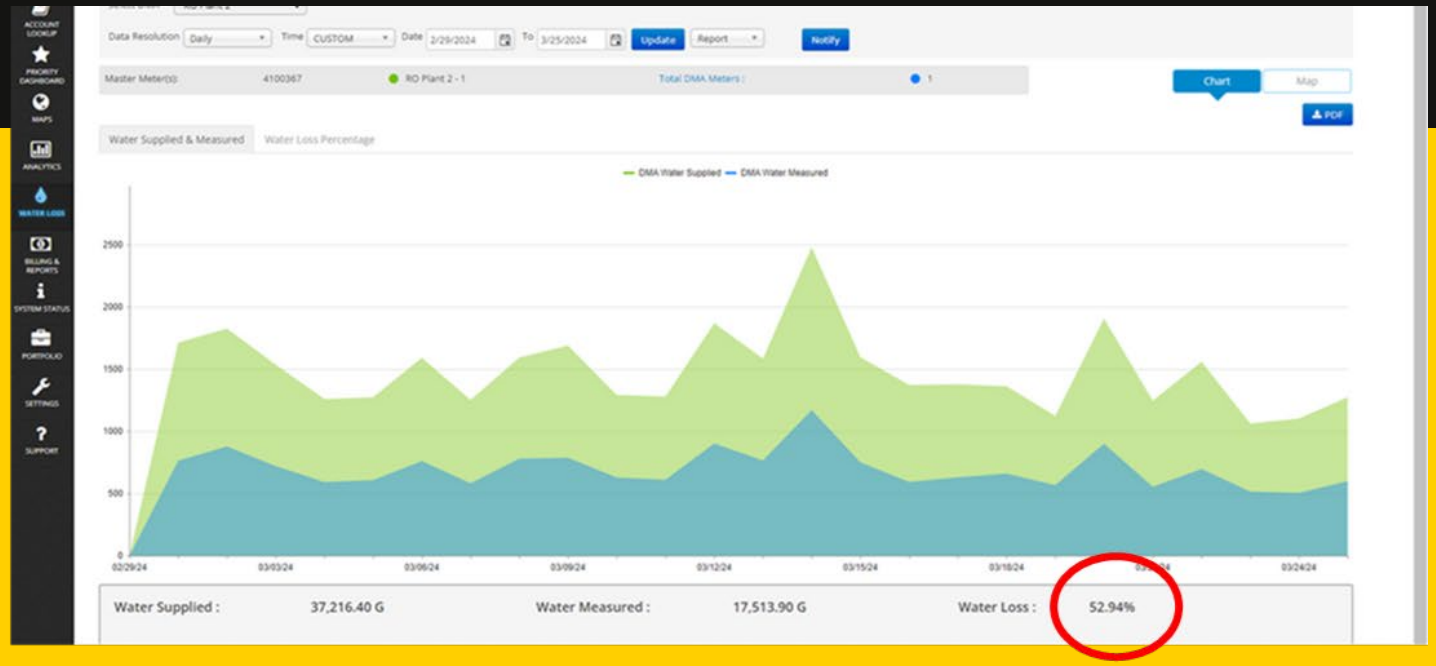
Congratulations! You’ve successfully planted enough seeds of trust to start impacting water use and helping the customer to too!

Go to Next

CASE STUDY



Water Balance: Unaccounted water dropped from 66% to 17%.

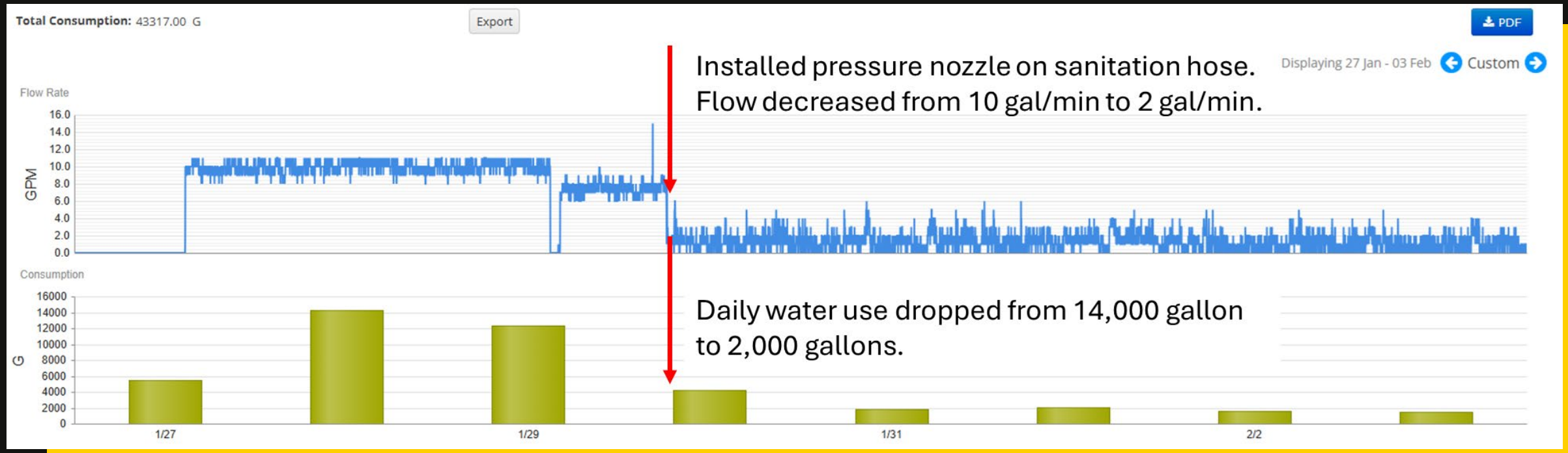


CASE STUDY

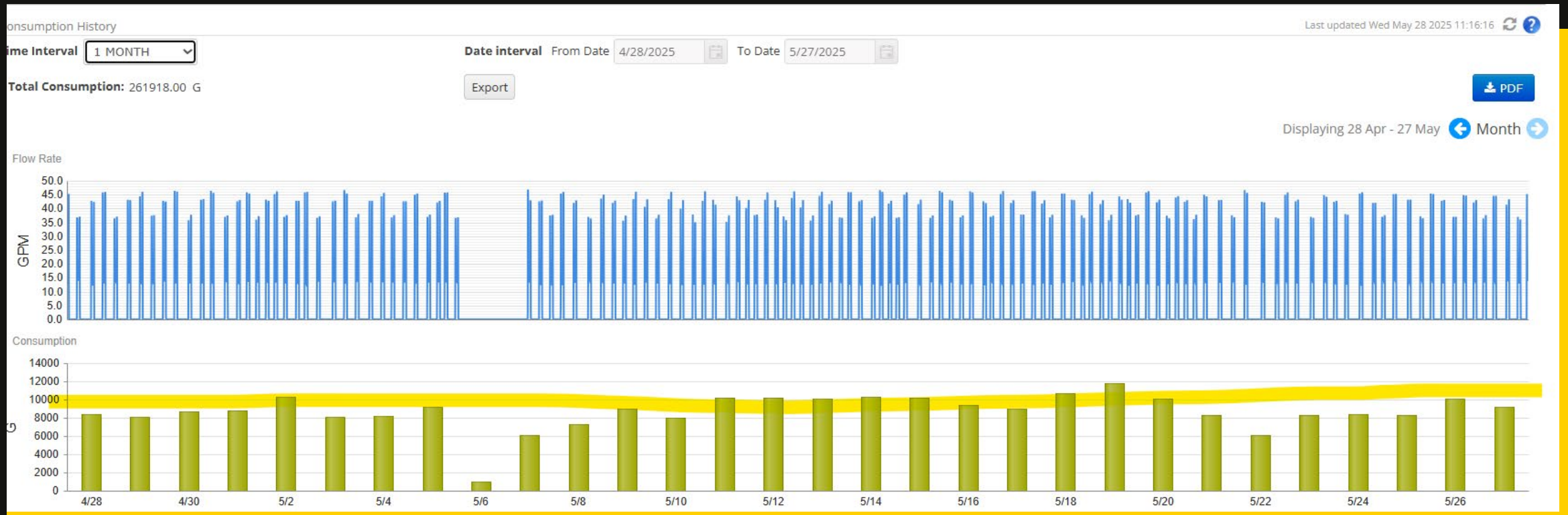
Reverse Osmosis Unit: Verify Recovery Rate

CASE STUDY

Auto Cook Line: Identified a 3 gal/minute, or 4,000 gallons per day, leak on equipment over the when the facility was shutdown for the Christmas holiday.



CASE STUDY **Sanitation Hose Line:** 10,000 gallon per day drop in sanitation water.



Water Balance: Verified water softener blowdown volume

CASE STUDY

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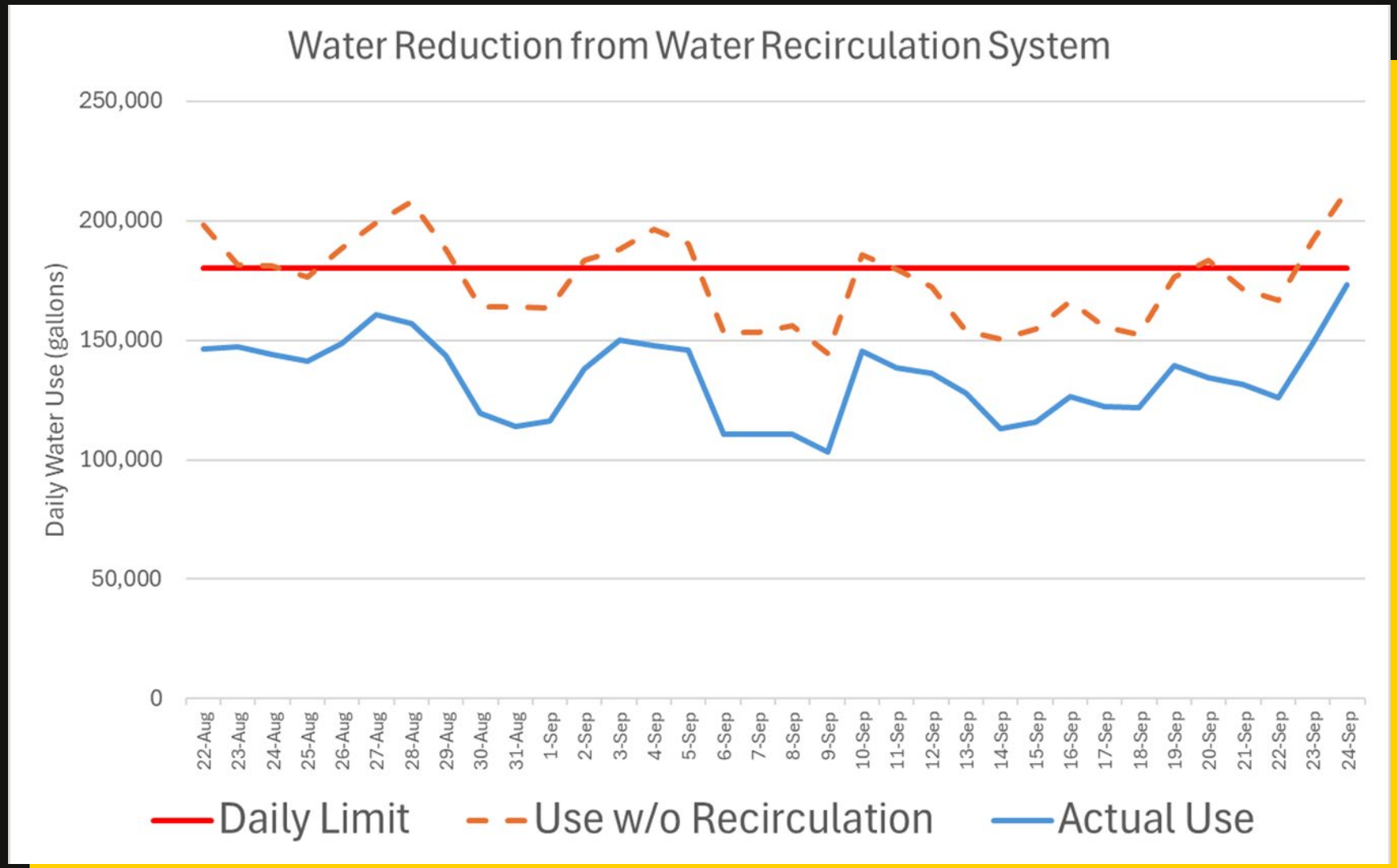
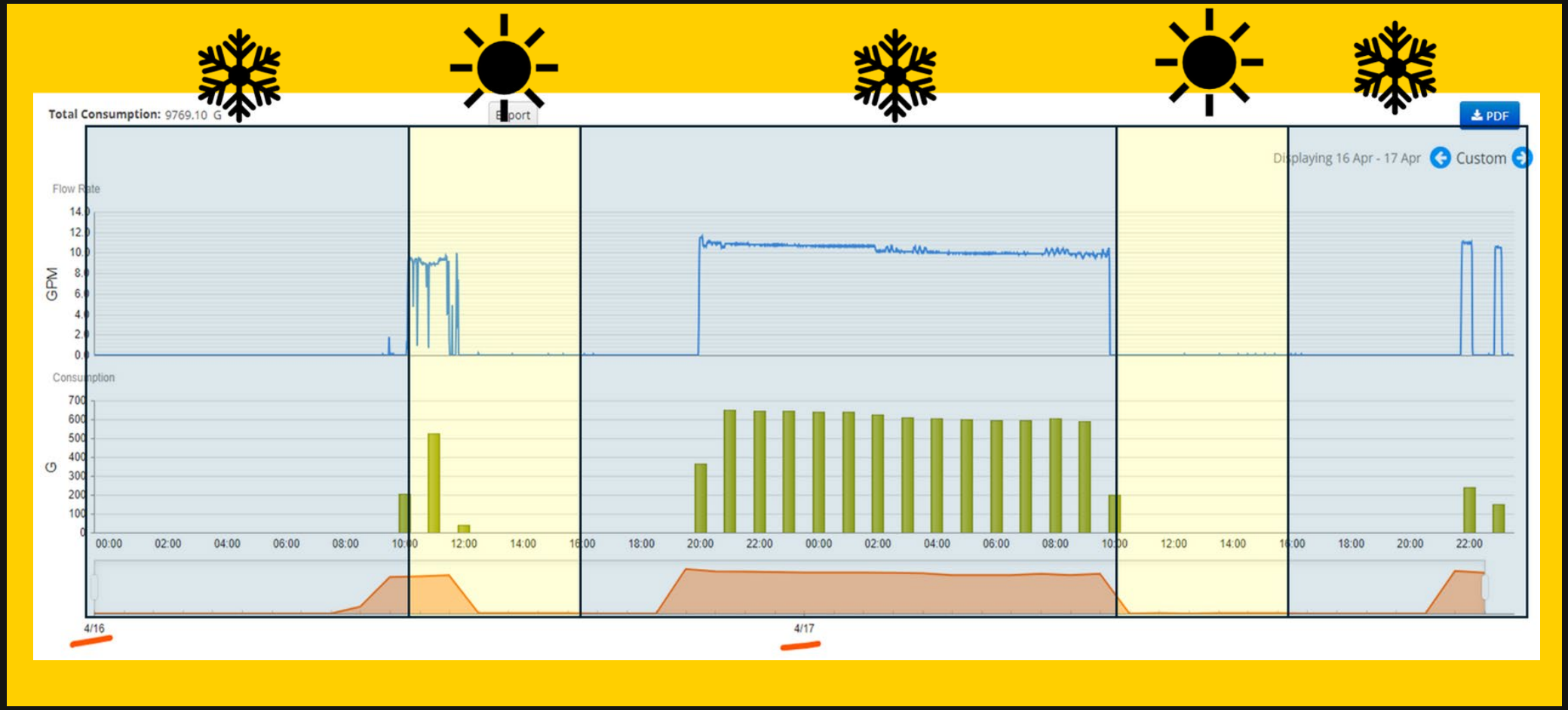


Condenser System: Measuring condenser water use lead to recirculation system, saving 40,000 gallons of water per day.

CASE STUDY



Adiabatic Condensers: Monitoring revealed that adiabatic condensers were operating in reverse after a shutdown, triggering water flow at the wrong times. This real-time insight enabled facility to quickly correct the issue. Major trust builder!

CASE STUDY

Expand across portfolio: The monitoring system was adopted in a second facility in Chicago based on the Goodyear, AZ findings.

A FRESH APPROACH

METHODS

A FRESH APPROACH

METHODS

- Focus on relevant systems
- Measure, don’t assume
- Focus on Operations
- Deliver relevant insights
- Streamlined communication
- Targeted reporting
- Data-driven upgrades

A FRESH APPROACH

OUTCOMES

A FRESH APPROACH

OUTCOMES

- Improved Performance
- Sustained Performance
- Verified equipment commissioning
- Enhanced equipment protection
- Compliance achieved
- Water Saved
- Long-term buy-in to water efficiency
- Built trust with City
- Regional Replication

THANK YOU

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Annikki Chamberlain - Mimir Water
Annikki@mimirwater.com

CITY OF Goodyear

MIMIR WATER™

How to Get Results the MnTAP Way: Water Conservation in the CII Sphere

Gabrielle Martin

Engineer, Minnesota Technical Assistance Program

How to Get Results the MnTAP Way: Water Conservation in the CII Sphere

Gabrielle Martin, CEM

8/7/25

UNIVERSITY OF MINNESOTA
Driven to Discover℠

MnTAP

UNIVERSITY OF MINNESOTA

What is MnTAP?

Minnesota Technical Assistance Program

Based at University of Minnesota

Helping MN businesses find **cost-effective solutions that reduce waste, conserve water, save energy, and prevent pollution.**

No-cost

Confidential

Non-regulatory

MINNESOTA POLLUTION CONTROL AGENCY

MnTAP

UNIVERSITY OF MINNESOTA

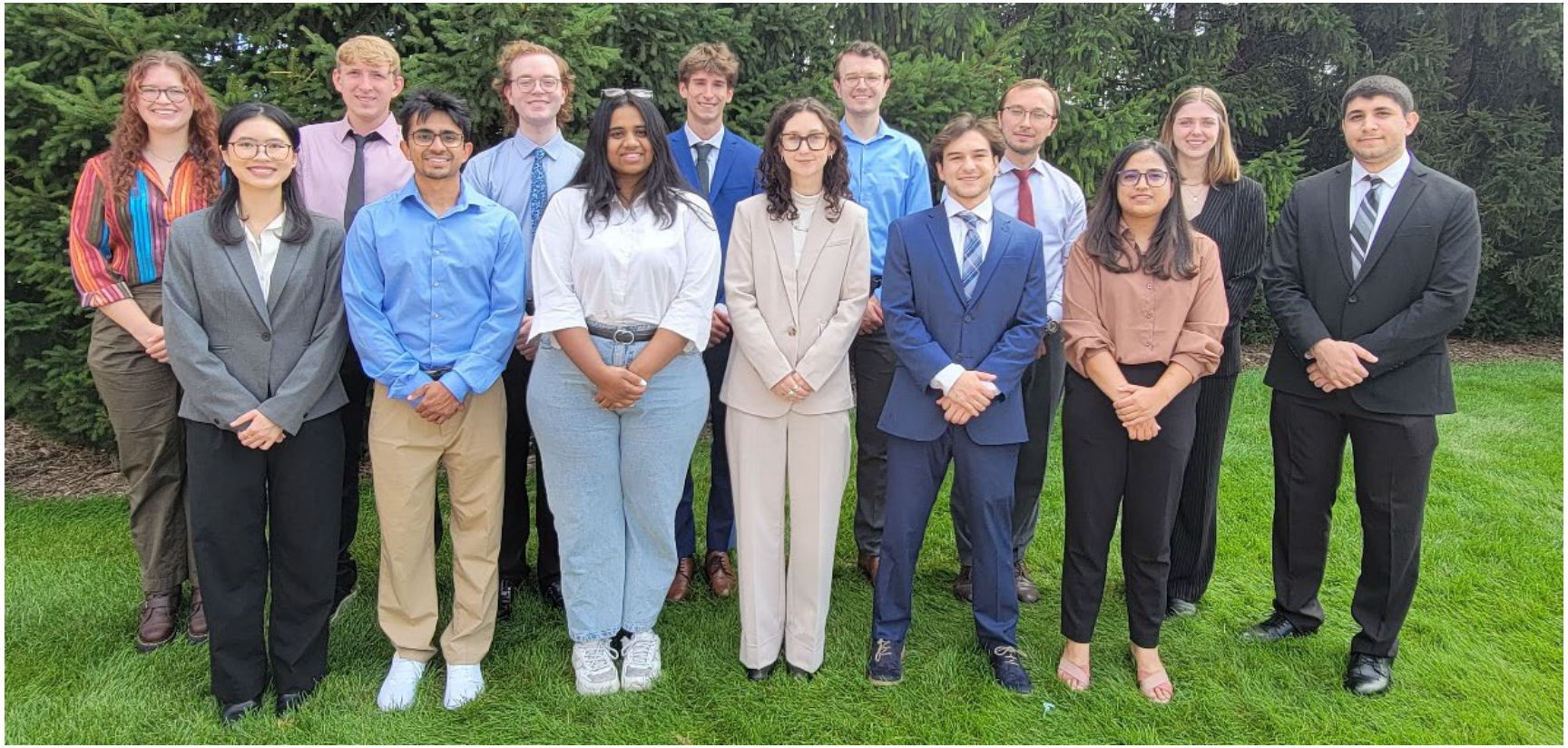
Services

- Technical Assistance
- Intern Program
- MN Materials Exchange
- Outreach and Training

Technical Assistance

- Scheduling
- In-person site visit
- Data review and research
- Recommendations
- Follow-up

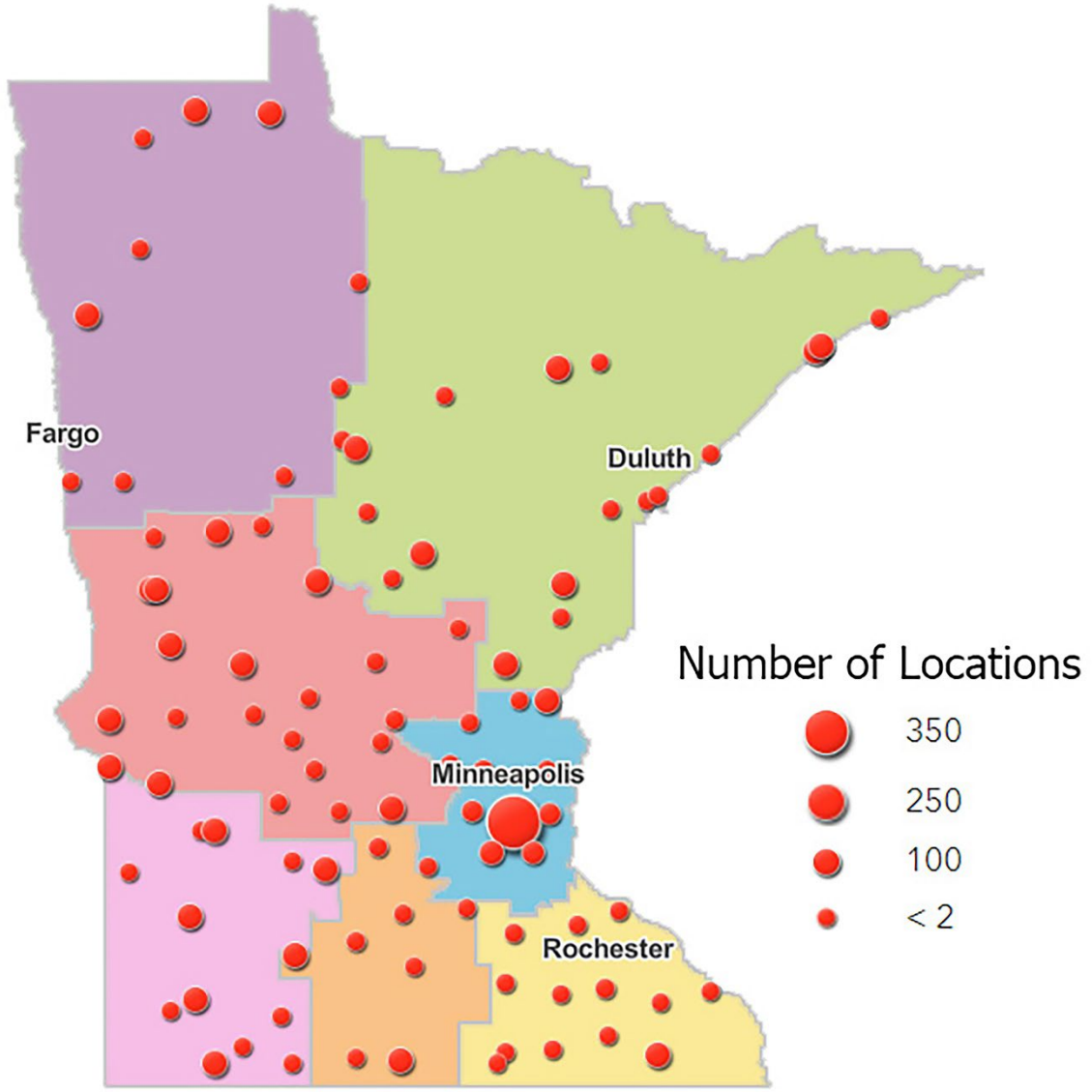
Intern Program



The 2024 MnTAP Intern Cohort

Clients

- Manufacturing
- Food processing
- Wastewater treatment plants
- Healthcare
- Schools



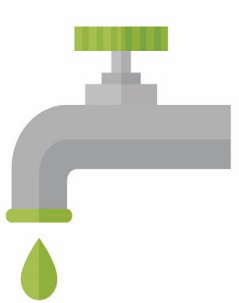
Waste

404 MILLION
POUNDS

Energy

117 MILLION kWh
6.2 MILLION THERMS

Water



900 MILLION
GALLONS

Costs

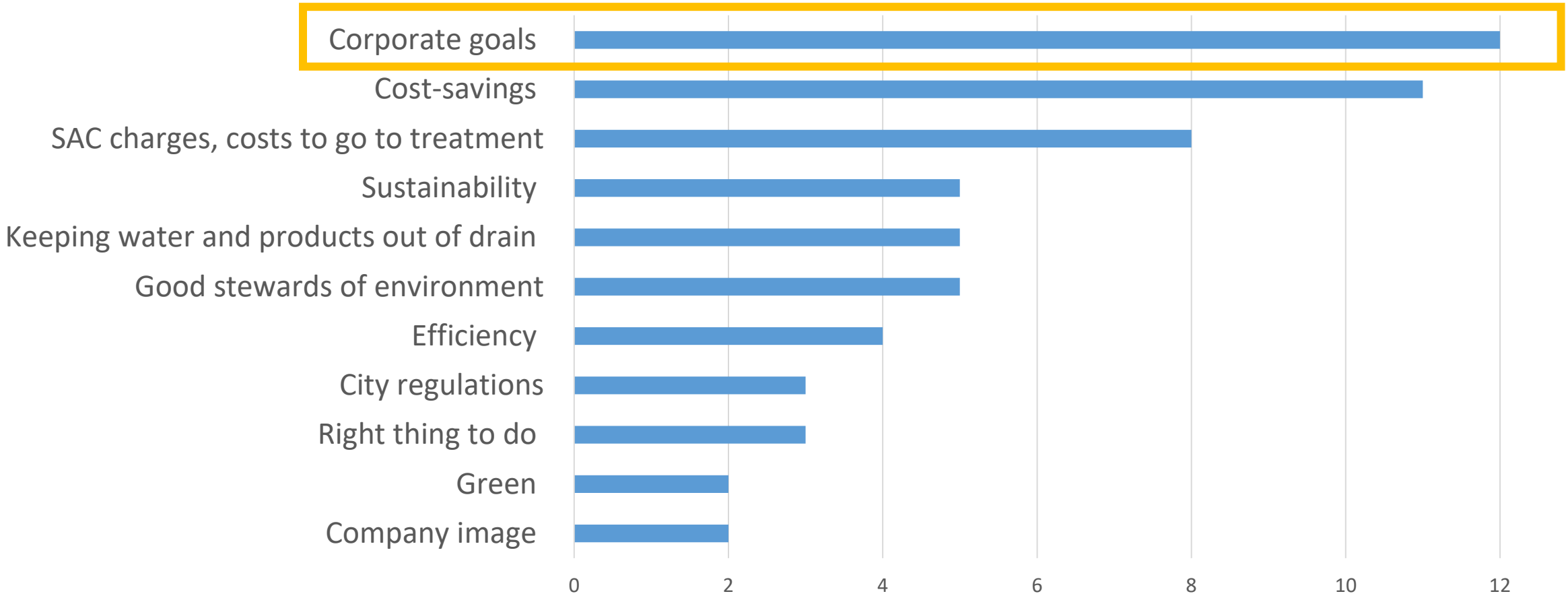
$58 MILLION
SAVED

1984 – 2024

Finding water savings

Outreach

Motivations



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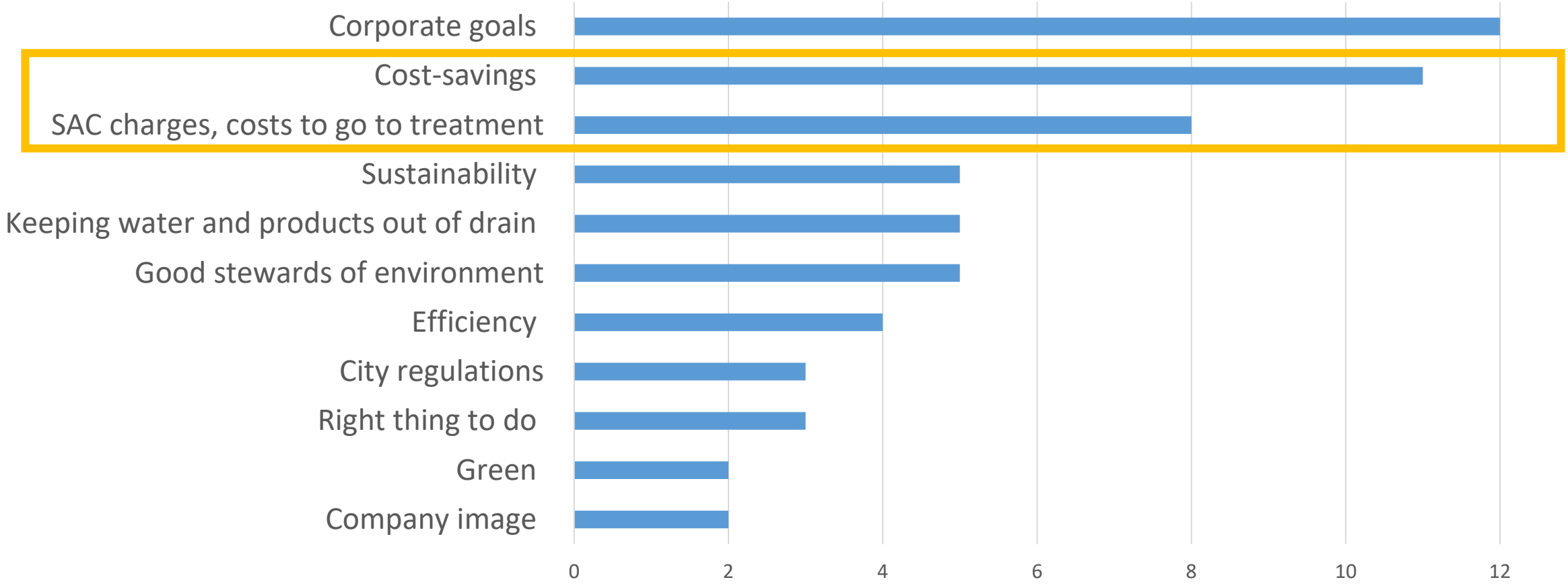

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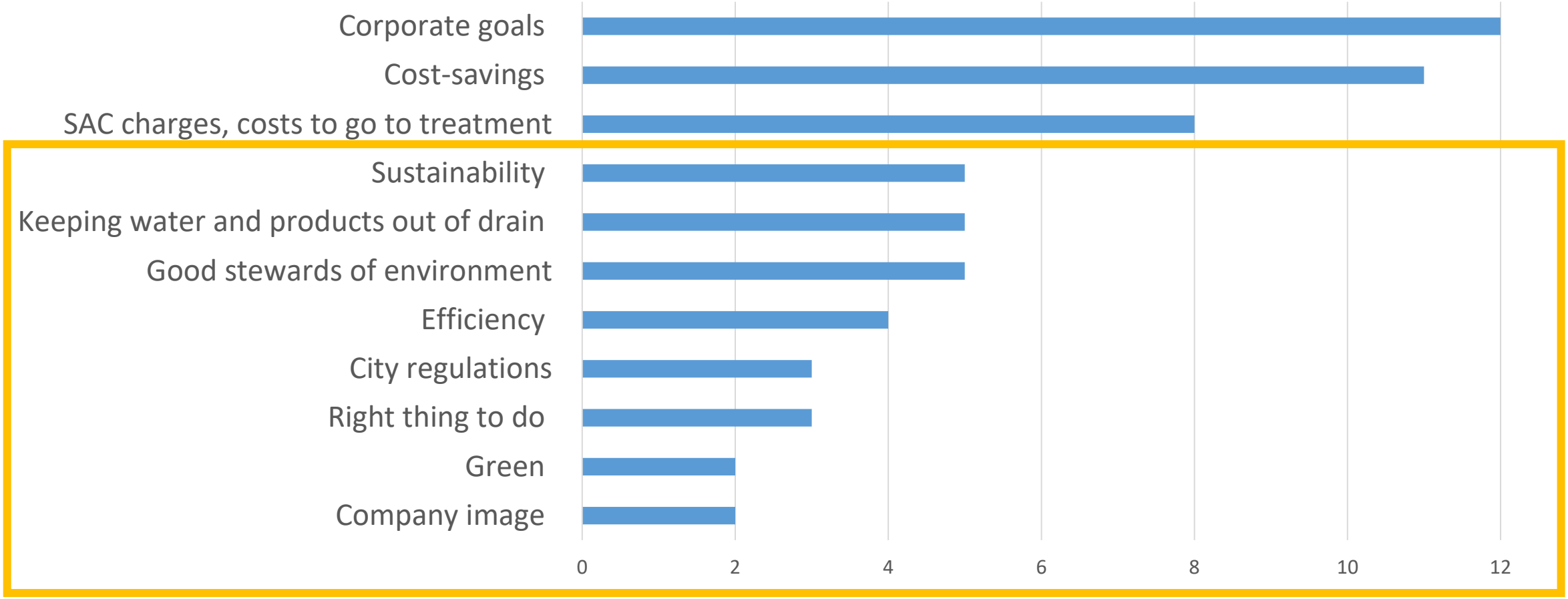
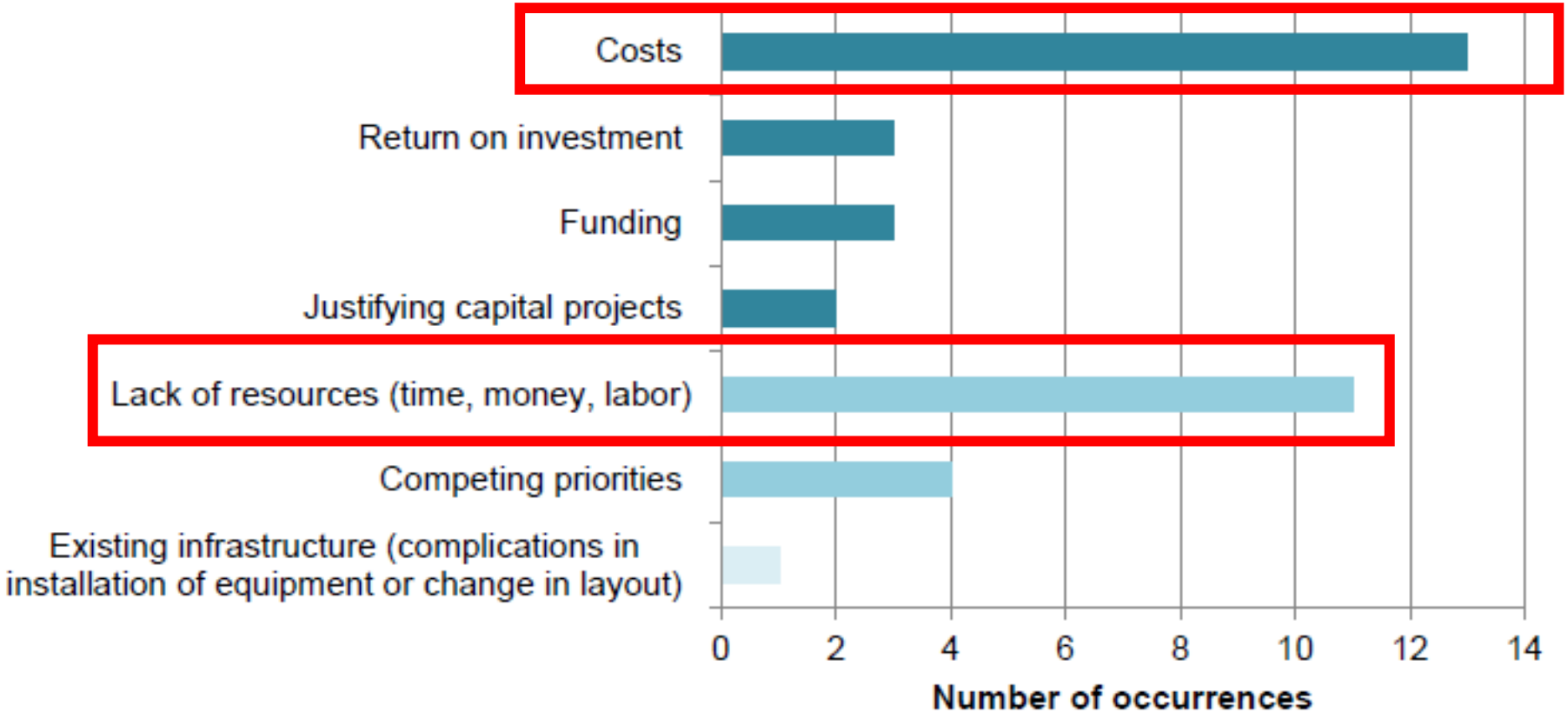


Barriers


Costs
Return on investment
Funding
Justifying capital projects
Lack of resources (time, money, labor)
Competing priorities
Existing infrastructure (complications in installation of equipment or change in layout)
0
2
4
6
8
10
12
14
Number of occurrences

Outreach

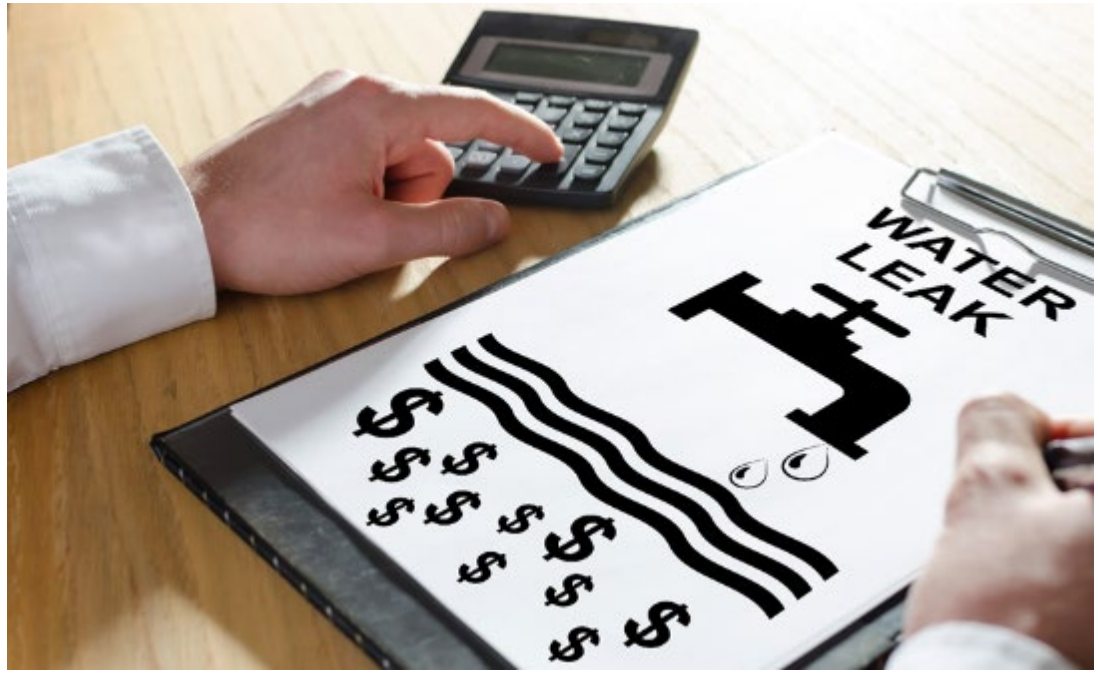
Focus on the money

Make it easy

Water: a limited resource with real costs

Water costs you up to *THREE* times

- **Water cost**
- **Processing cost**
  - Softening
  - Deionization
  - Heating
- **Sewer cost**



Cost of Water in Minnesota

Type of Water	Sample cost per 1000 gallons
Well water	
Softened well water	
Softened well water + sewer	
City water + sewer	
Softened city water + sewer	
Heated city water + sewer	
Softened, heated city water + sewer	

Technical Assistance

Technical Assistance Strategies

Maintain

Manage

Modify

Technical Assistance Strategies

Maintain

Manage

Modify

Technical Assistance Strategies: Maintain

Repair existing process to operate as designed

- Low hanging fruit
- Low cost
- Requires staff time/attention
- Often postponed if not urgent

Technical Assistance Strategies: Maintain

- **Water softener discharging water**
- **Piston was broken**
- **Contractor repaired**
  - Two hours
  - $353
- **Annual savings**
  - 4.5 million gal water
  - 2,000 lb softener salt
  - $55,000

Technical Assistance Strategies

Maintain

Manage

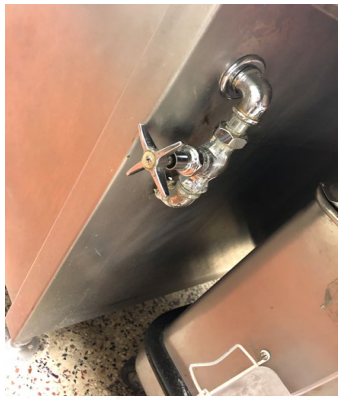
Modify

Technical Assistance Strategies: Manage

Optimize existing process

- Low or medium cost
- Reset system limits
- Change SOPs
- Add operating controls/automation
- Replace like for more efficient like

Technical Assistance Strategies: Manage



- **Soup kettle left on**
  - 1.5 million gal of 127°F water per year
- **Replaced valve with solenoid and timer**
  - $26
- **Annual savings**
  - 1.3 million gal water
  - 7,000 therms
  - $13,000

Technical Assistance Strategies

Maintain

Manage

Modify

Technical Assistance Strategies: Modify

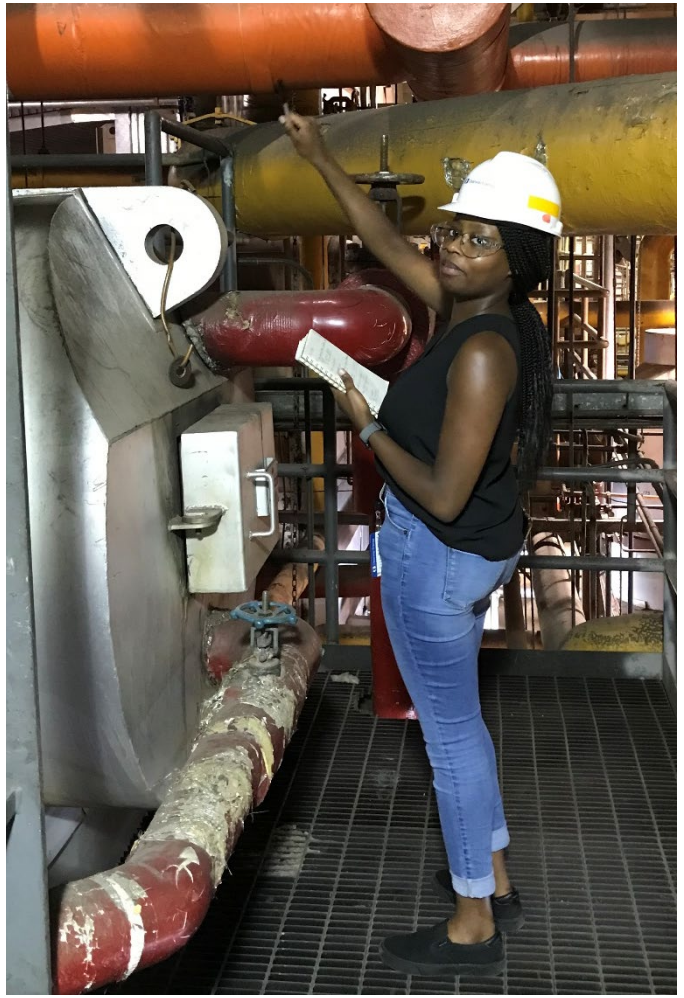
Change process or equipment significantly

- **High level of complexity**
- **Often presents some risk to the process**
- **May require**
  - Process redesign
  - Capital investment
  - Extended time to implement

Technical Assistance Strategies: Modify

- **Boiler blowdown quenched with city water**
- **Cooling towers continuously sampled for chlorine**
- **Redirect chlorine test water to cool the blowdown water**
- **Annual Savings**
  - 5.4 millions gallons
  - $62,000

Chlorine Analyzers



Follow Up

Follow Up

Check in every 3-6 months

Follow up for 2-3 years

Expect contact changes

Implementation

	Maintain	Manage	Modify
Proposed recommendations	10%	56%	34%
Implementation rate	48%	37%	31%

Thank You

Gabrielle Martin
gamartin@umn.edu
(612) 875-8163

Strengthening Minnesota businesses by improving efficiency while saving money through energy, water, and waste prevention.

Reminders & What's Next

Thank you all for participating in this session!

- **CEUs:** AWWA CA-NV Water Use Efficiency Practitioner

American Water Works Association
California-Nevada Section

- **Next**: Lunch (12:30 pm – 2:00 pm) (Room 621)

Thank You to our Sponsors