Chloride reduction program update

6/29/23

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The District receives more salt than this pile per day – 110 tons on average
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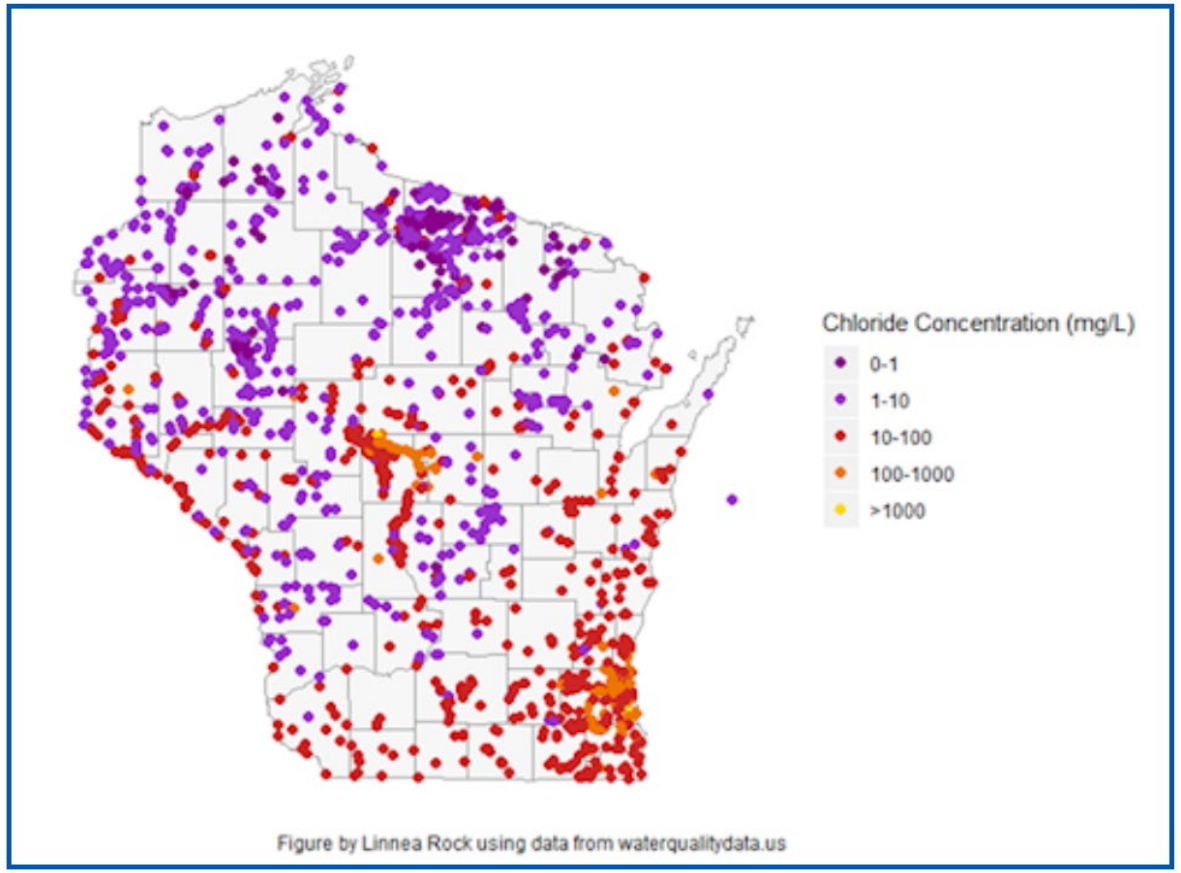
Treatment process does not remove salt, so it leaves in effluent

Chloride impacts

- Affects freshwater aquatic life
- Disrupts ecosystems
- Interferes with lake mixing

WI chloride criterion for surface water



Chloride concentrations in surface water bodies throughout Wisconsin

395 mg/L

Eventual target for WPDES permit as a weekly average

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Treating for chloride

- Expensive – 55-500% increase in rates
- Energy intensive – would lead to higher GHG emissions

Pollution prevention as alternative to treatment

- There are known ways to reduce chloride sources
- Can be much less expensive than treatment

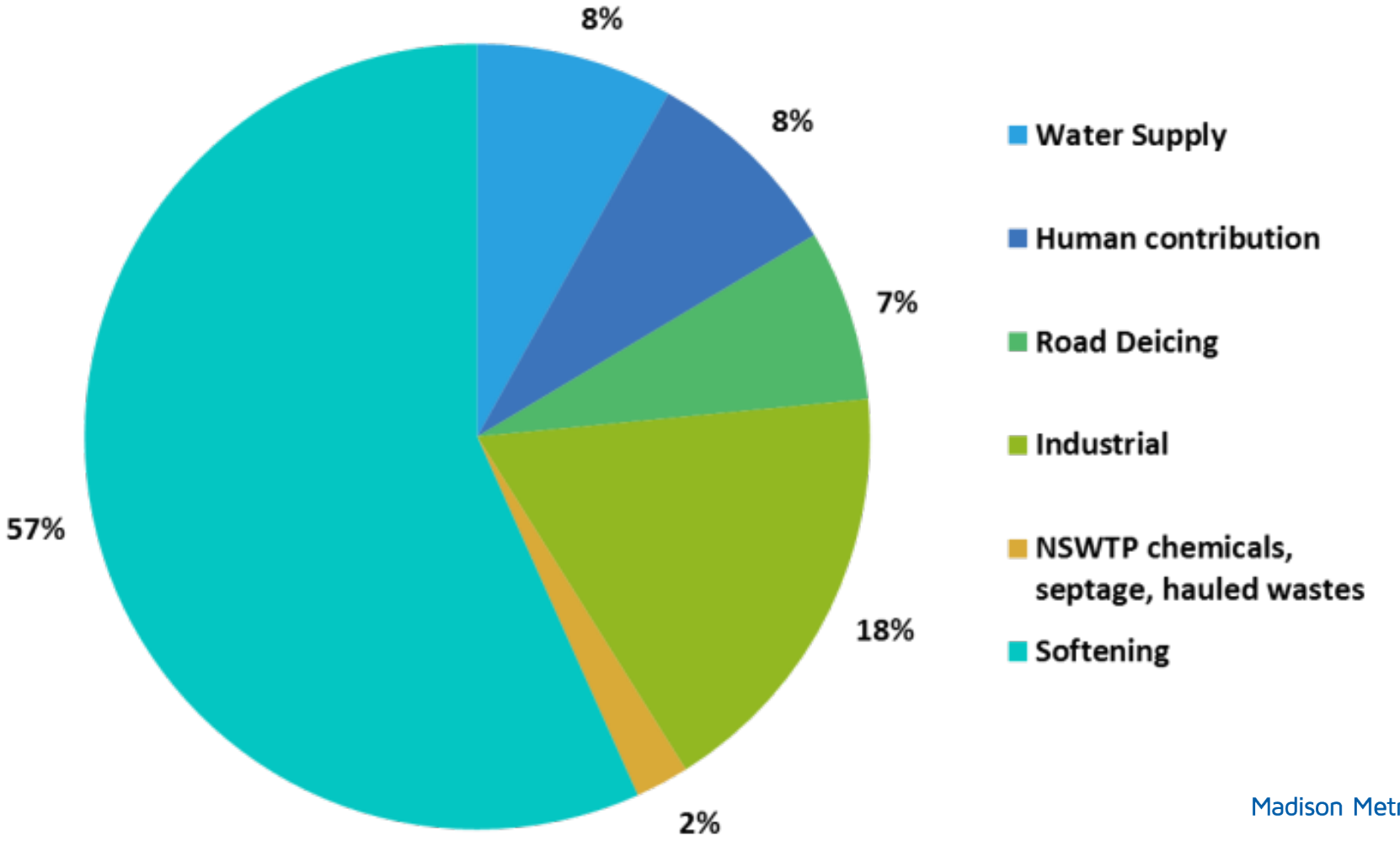
Source reduction is chosen path for compliance

- Permit reissued in 2020 with chloride variance
- Variance was granted based on overall environmental benefit of chloride source reduction vs. treatment

Variance limits for winter and summer

Chloride	Weekly Avg	465 mg/L	Daily	24-Hr Flow Prop Comp	This is an interim limit in effect November 1 through March 31 annually. See subsections 3.2.1.11 for chloride source reduction measures and 6.2 for the Chloride Target Value schedule.
Chloride	Weekly Avg	430 mg/L	Daily	24-Hr Flow Prop Comp	This is an interim limit in effect April 1 through October 31 annually. See subsections 3.2.1.11 for chloride source reduction measures and 6.2 for the Chloride Target Value schedule.
Chloride		lbs/day	Daily	Calculated	Calculate the mass discharge of chloride in lbs/day on the same days chloride sampling occurs.

Sources of chloride to Nine Springs WWTP



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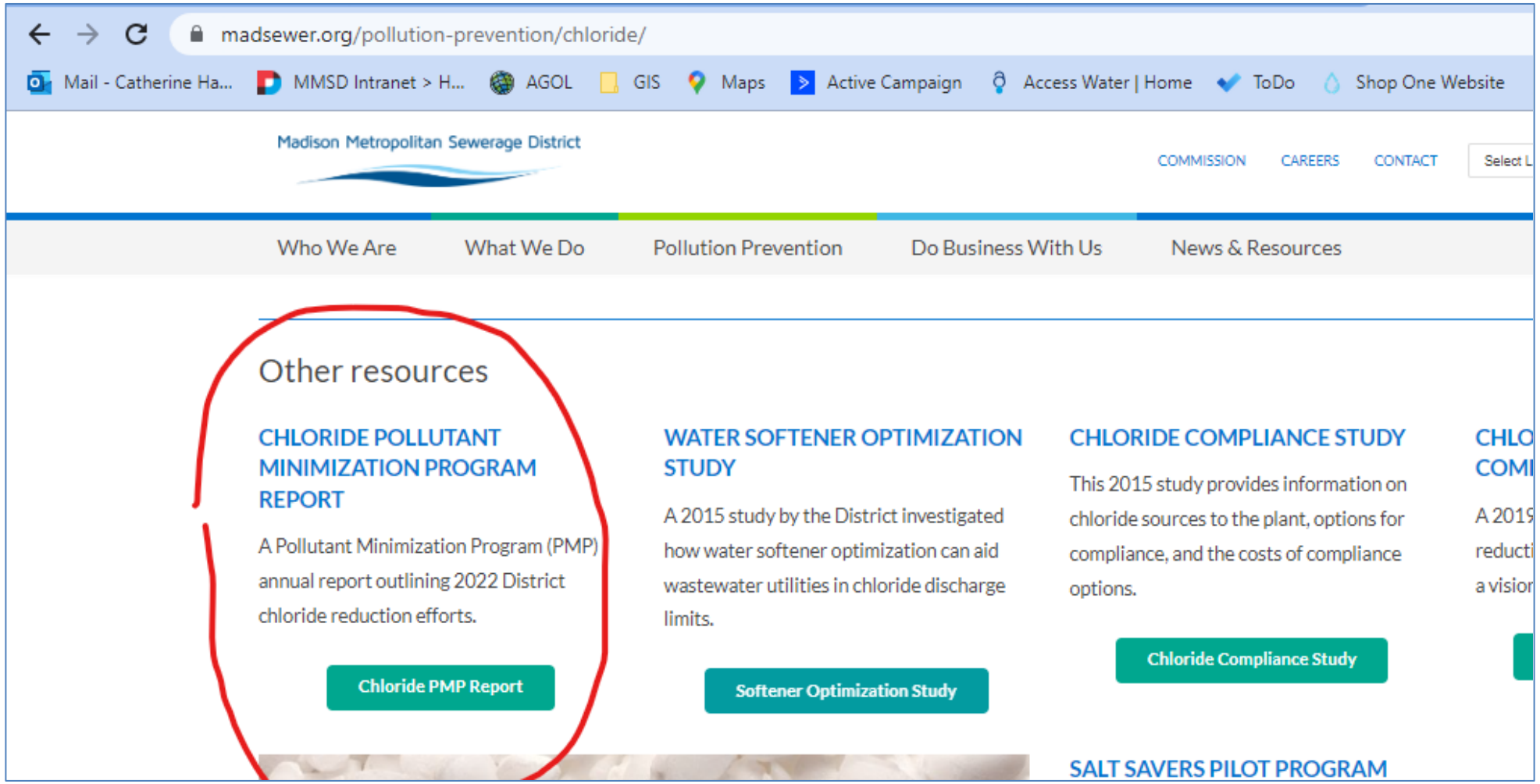
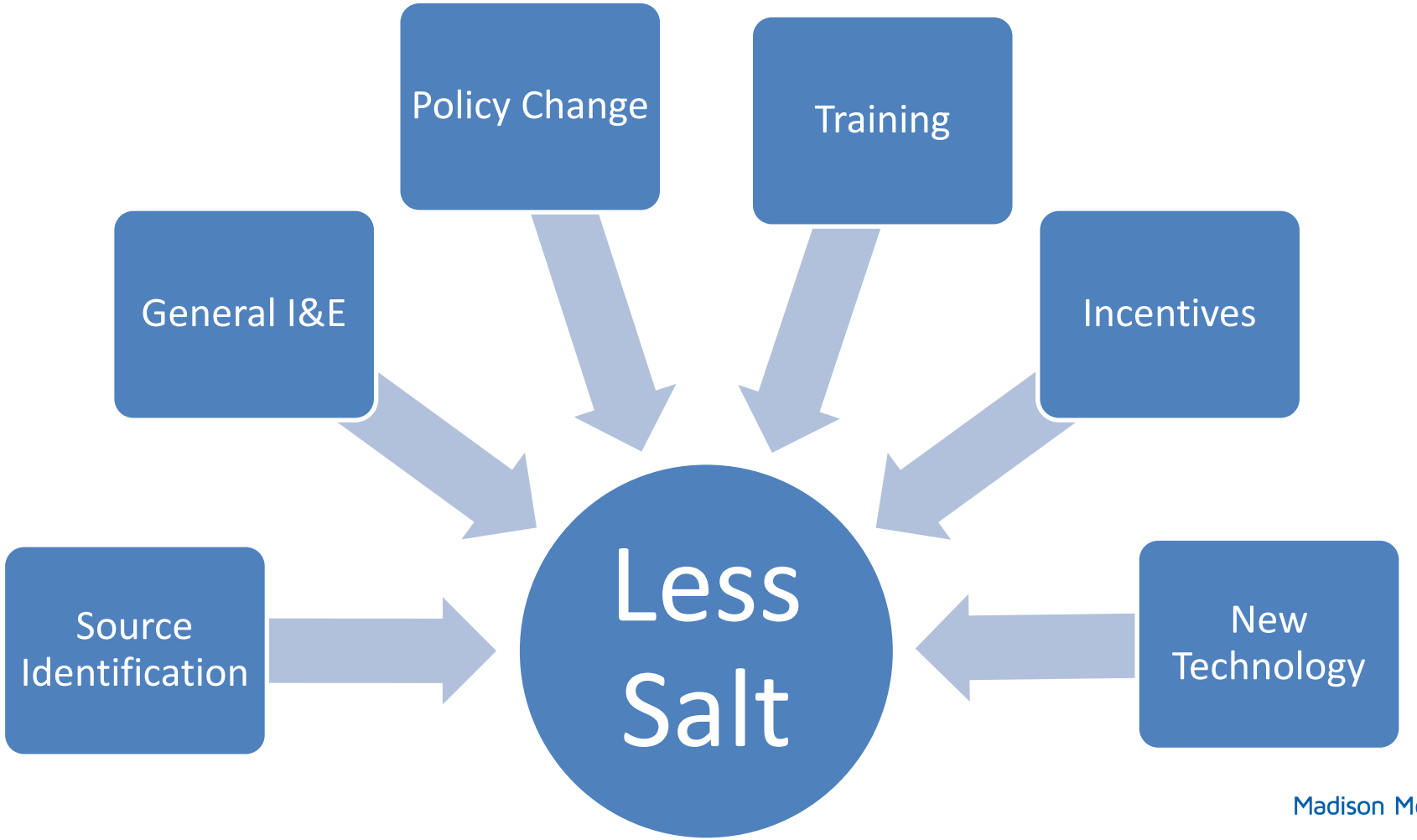
Pollutant Minimization Plan (PMP)

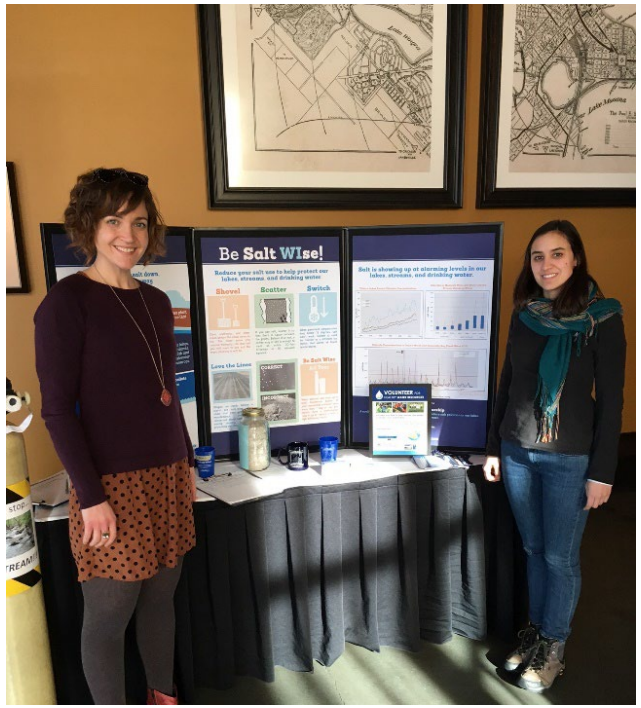


Source reduction is…



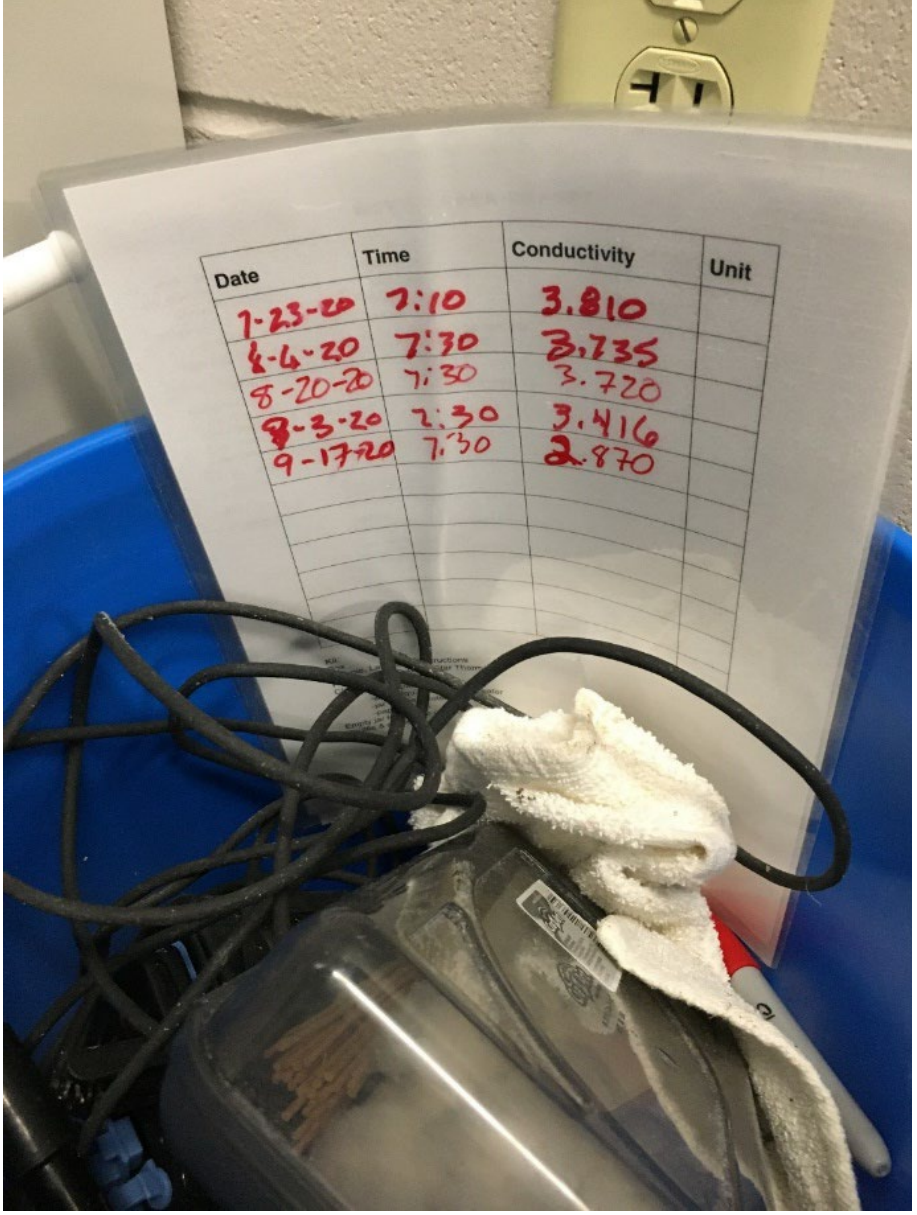
Chloride PMP actions

Action	How
1) Identify chloride sources	• District chloride monitoring • AECOM study • Survey of commercial salt users
2) Assess compliance options	• AECOM study • Paired watershed water softener study
3) Build partnerships	• Engaged water softener industry • Convened Wisconsin Salt Wise
4) Incentivize salt reduction	• Budgeted source reduction funding • Developed water softener and road salt reduction grant programs • Contacted stakeholders to encourage grant projects
5) Create “easy” ask for residents	• Developed Salt Savers reporting app and training curriculum • Trained and certified softener technicians and plumbers • Partnered with municipalities to issue discounts



We conduct community outreach

We develop and support training



We research sources of chloride

We build awareness through media

Wisconsin Salt Wise

Home | Successes | The Skinny on Salt | Take Action | Maintenance Professionals | About Us

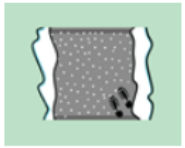
Smart Winter Salting

Best Practices for Snow and Ice

You can keep sidewalks and driveways safe this winter while protecting our waters by following these simple steps:

1. Shovel

Clear walkways and other areas before the snow turns to ice. The more snow you remove manually, the less salt you will have to use and the more effective it will be.



2. Scatter

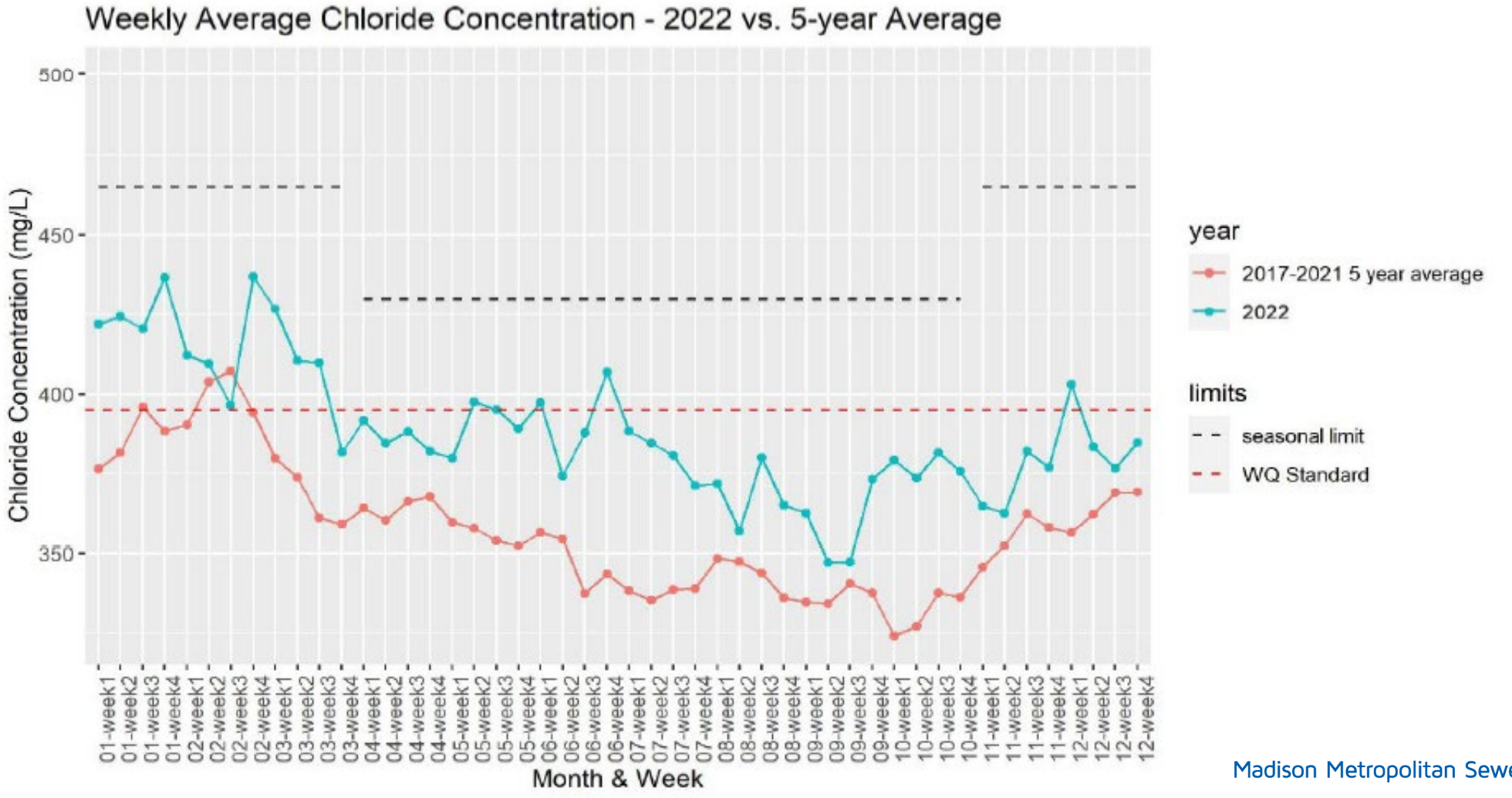
If you use salt, scatter it so that there is space between the grains. Believe it or not, a coffee mug of salt is enough to treat an entire 20-foot driveway or 10 sidewalk squares. If you see oversalting, follow these simple steps.

3. Switch

When pavement temperatures drop below 15 degrees, salt won't work. Switch to sand for traction or a different ice melter (PDF) that works at lower temperatures.

We convened and grew WISaltWise

There’s still work to do



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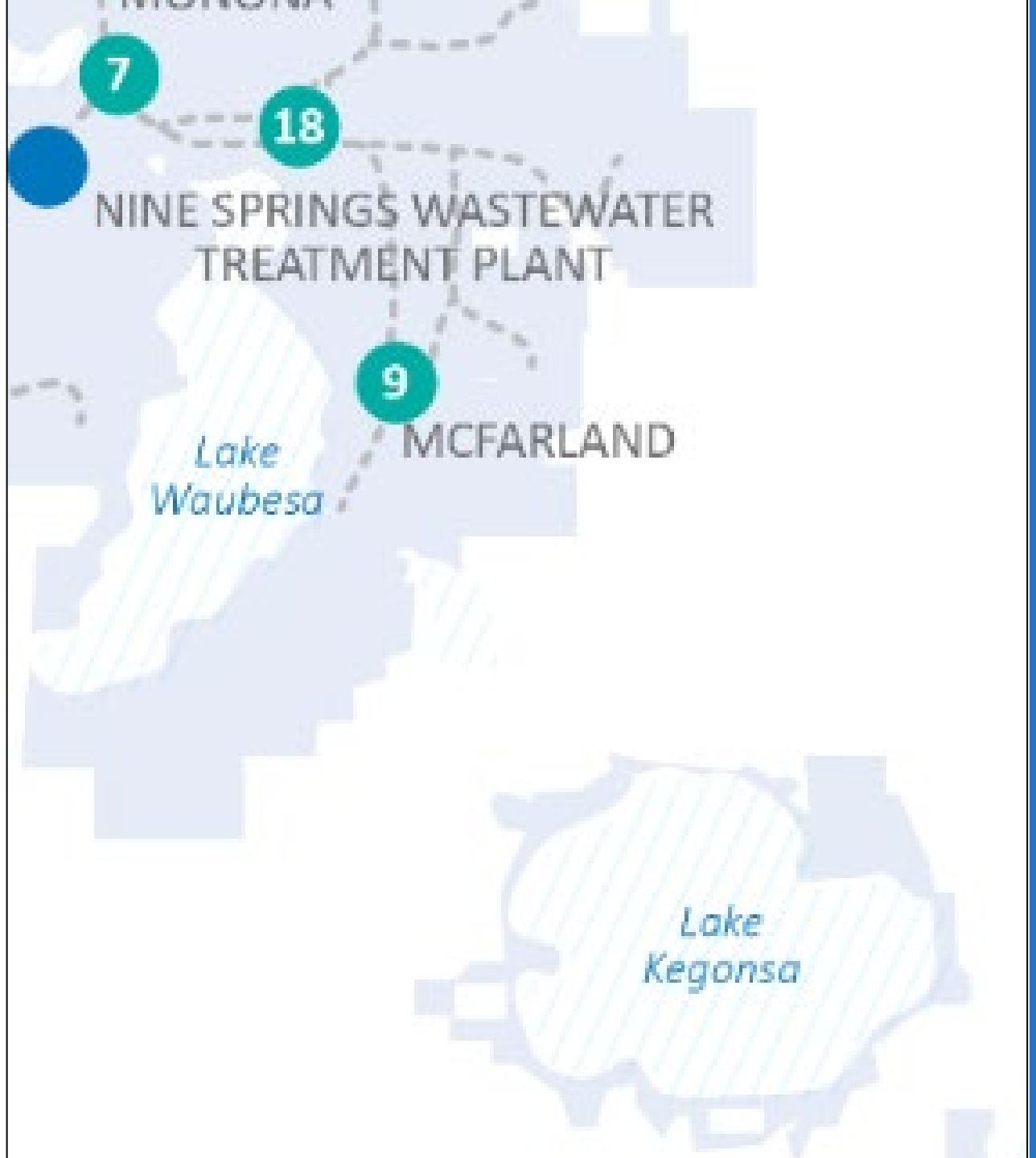
How can we change salt use norms?

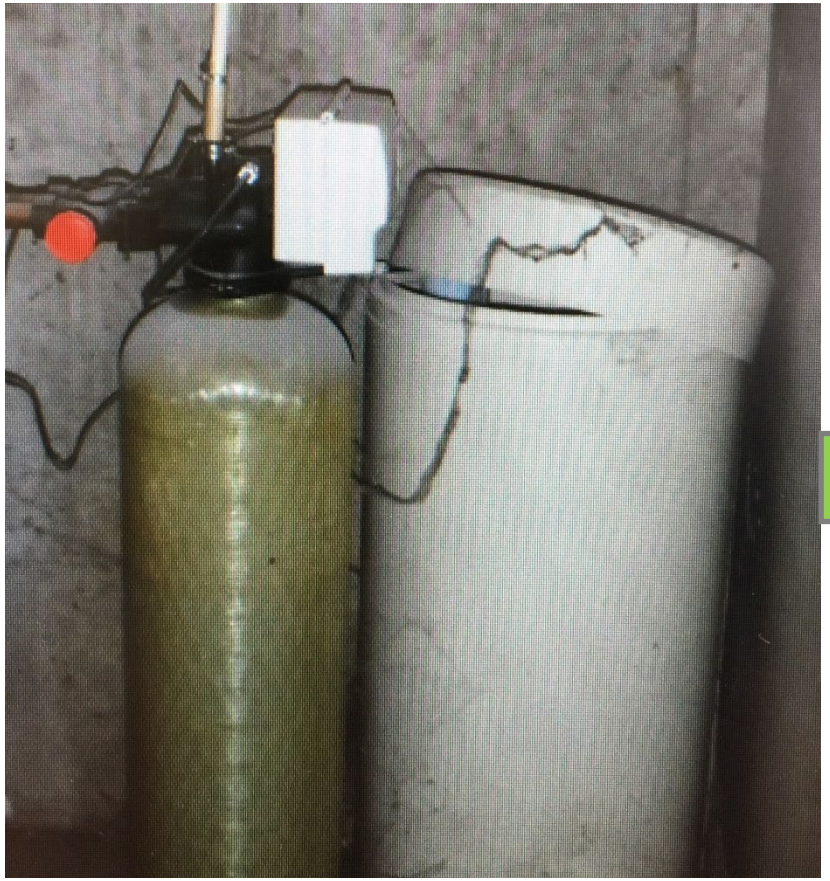
- Softener salt and road salt used widely and there are barriers to reducing their use
- Education alone is not enough to change behavior when barriers exist other than lack of awareness
- Key question: what will motivate behavior change?



Salt Savers pilot program

- Project in Pump Station 9 pilot area from 2019-2022
- Goals:
  - Test incentives
  - Engage water softener service providers
  - Test models of offering rebates through municipal partners

Incentives given to improve softeners



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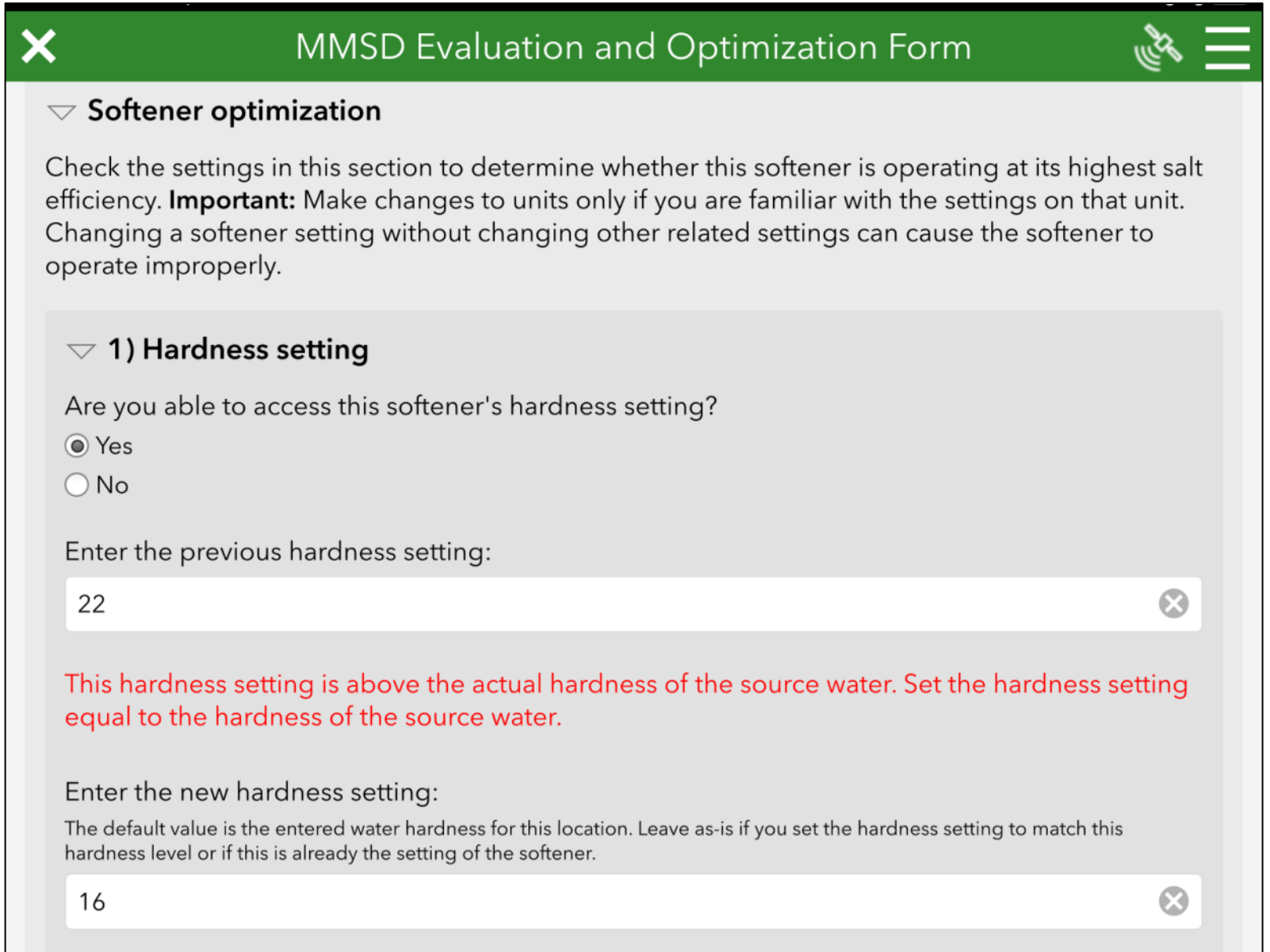
Trained service providers documented jobs



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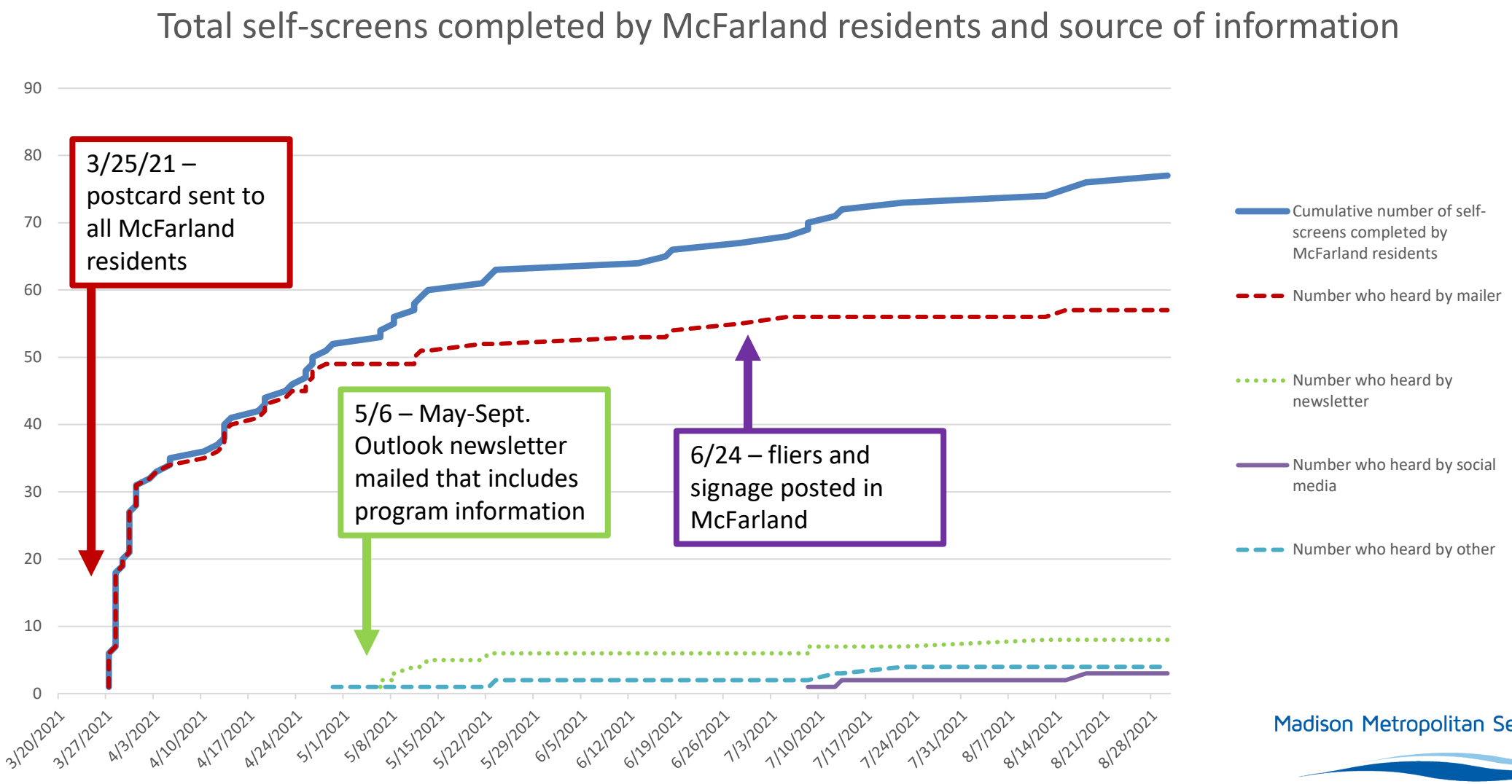
Program promoted through several channels



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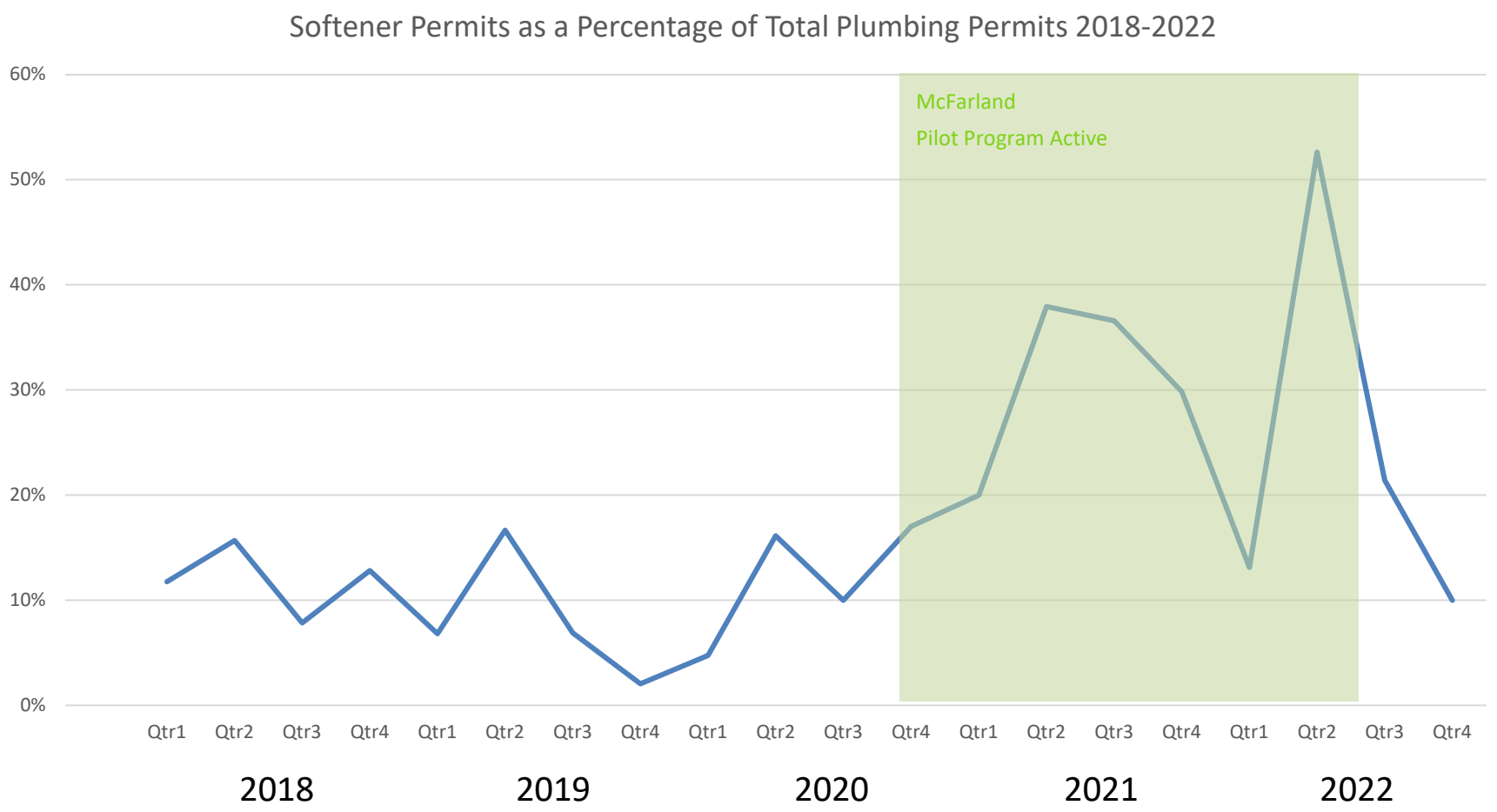
Evaluated data to assess program



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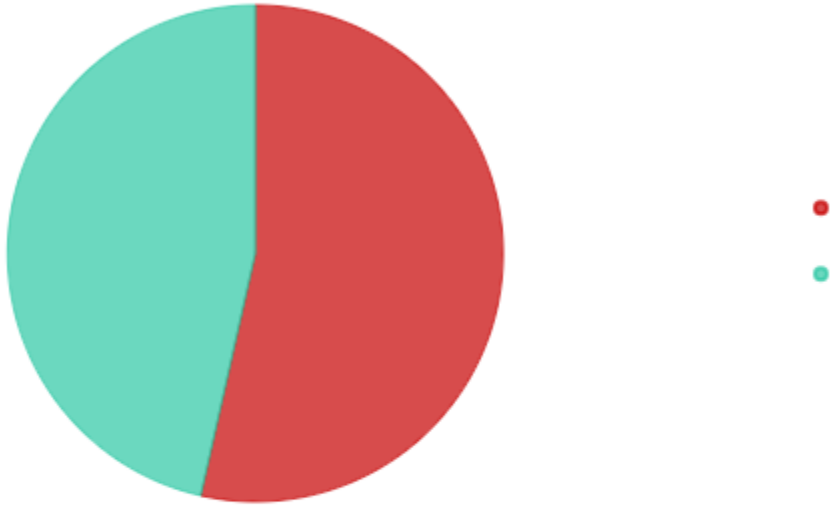
Got feedback from participants

4) Would you have optimized or replaced your softener within the last two (2) years if there ha... Column Bar Pie Map



Hide table Empty categories Sort

Answers	Count	Percentage
No	53	52.48%
Yes	46	45.54%

Outcomes

229

Softener services completed in pilot

45

Pounds of chloride reduced per day

$7,420

Cost per pound of chloride reduced per day

Takeaways

- Most services were softener replacements
- Slight evidence of program influencing consumer behavior
- High effort for relatively small chloride reduction
- Rebates can be effective, but are limited and cannot be the only tool

Applying lessons to future strategy

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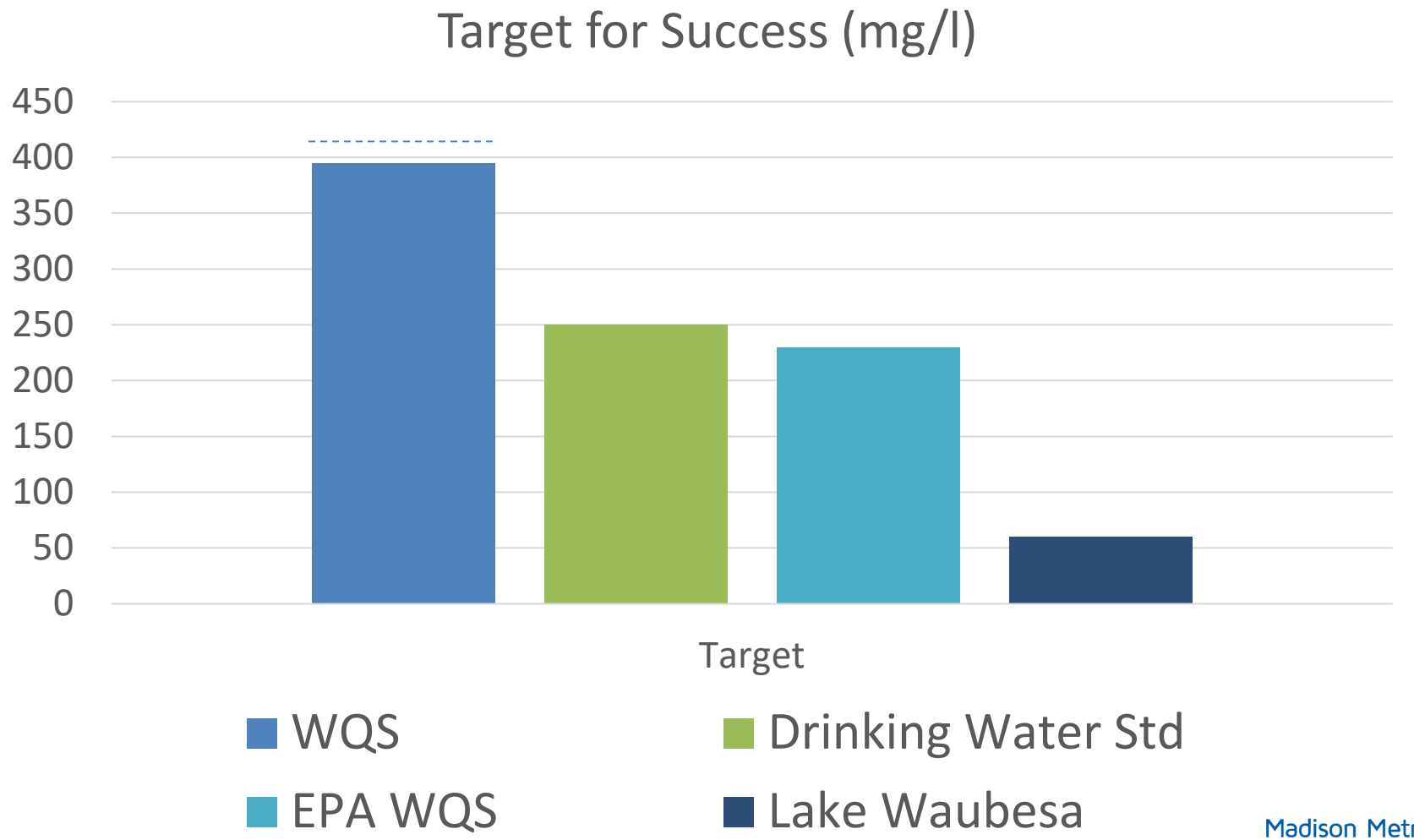
Possible future policy direction



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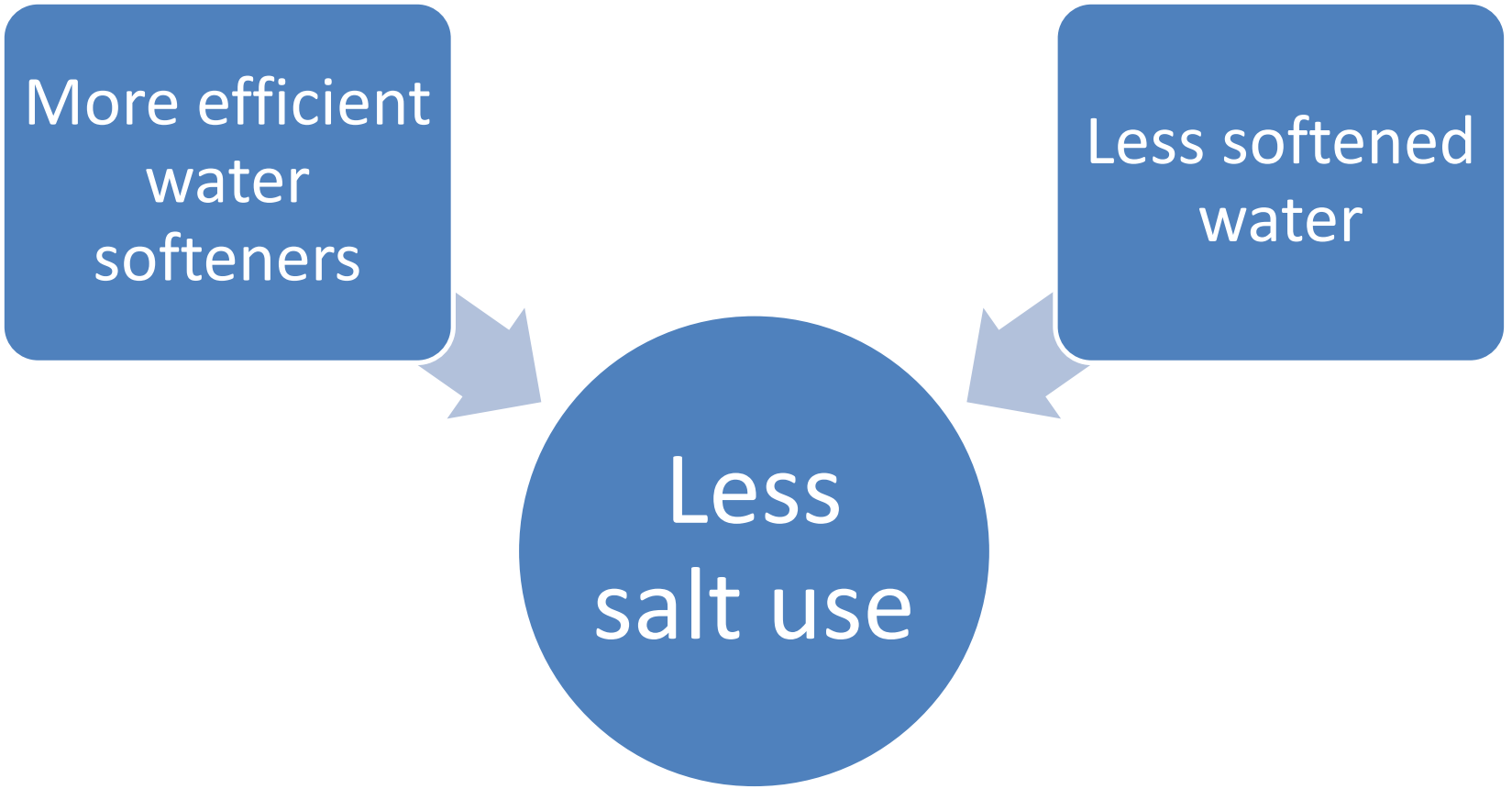
Pathways to salt reduction



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Training and engaging softening and plumbing professionals

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Blending valves to reduce salt use

- Can reduce salt use by up to 25-30%
- Allows for consumer preference in water softness level
- Pilots with Culligan, Dave Jones, Tim O’Brien Homes

Effect of softening less water

Assume three neighboring homes each use 6000 gallons of water per month (total).
They all get water from a well with 20 grains per gallon hardness.



	House 1	House 2	House 3
Softener efficiency	4500 grains/lb.	3000 grains/lb.	4500 grains/lb.
Percent water softened in home	90%	60%	60%
Salt used/month	24 lbs.	24 lbs.	16 lbs.

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Planned activities

- Strengthen partnerships with softener vendors and service providers
- Enhance resources for public and service providers
- Evaluate need and feasibility of policy to support chloride reduction
- Identify motivators for large commercial softener improvements

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Thank you

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