Central Water Softening

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Long-term program goals for the Settlement

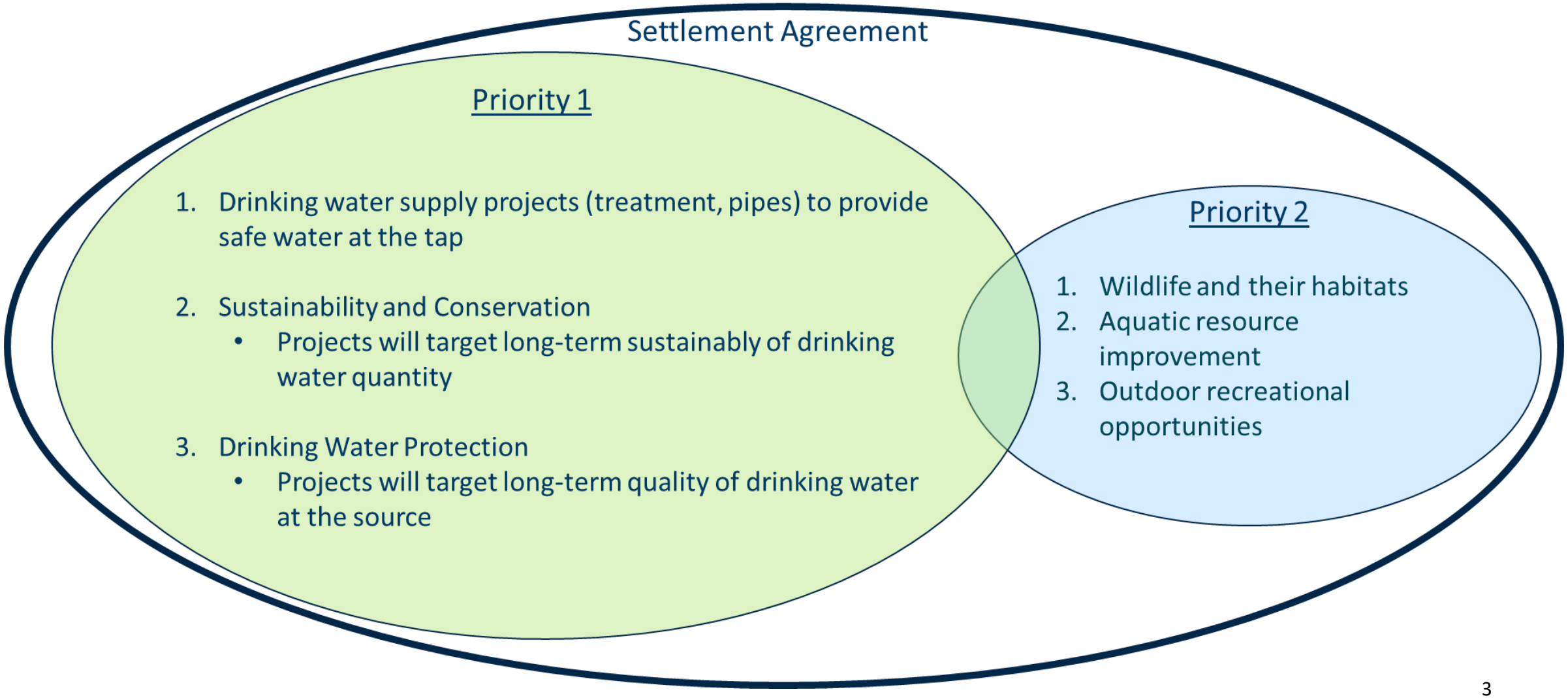
Priority 1 – Drinking Water Quality, Quantity, and Sustainability

- Provide clean drinking water to residents and businesses to meet current and future needs under changing conditions, population, and health-based values.
- Protect and improve groundwater quality.
- Protect and maintain groundwater quantity.
- Minimize long-term cost burdens for communities.

Priority 2 – Natural Resource Restoration, Protection, and Enhancement

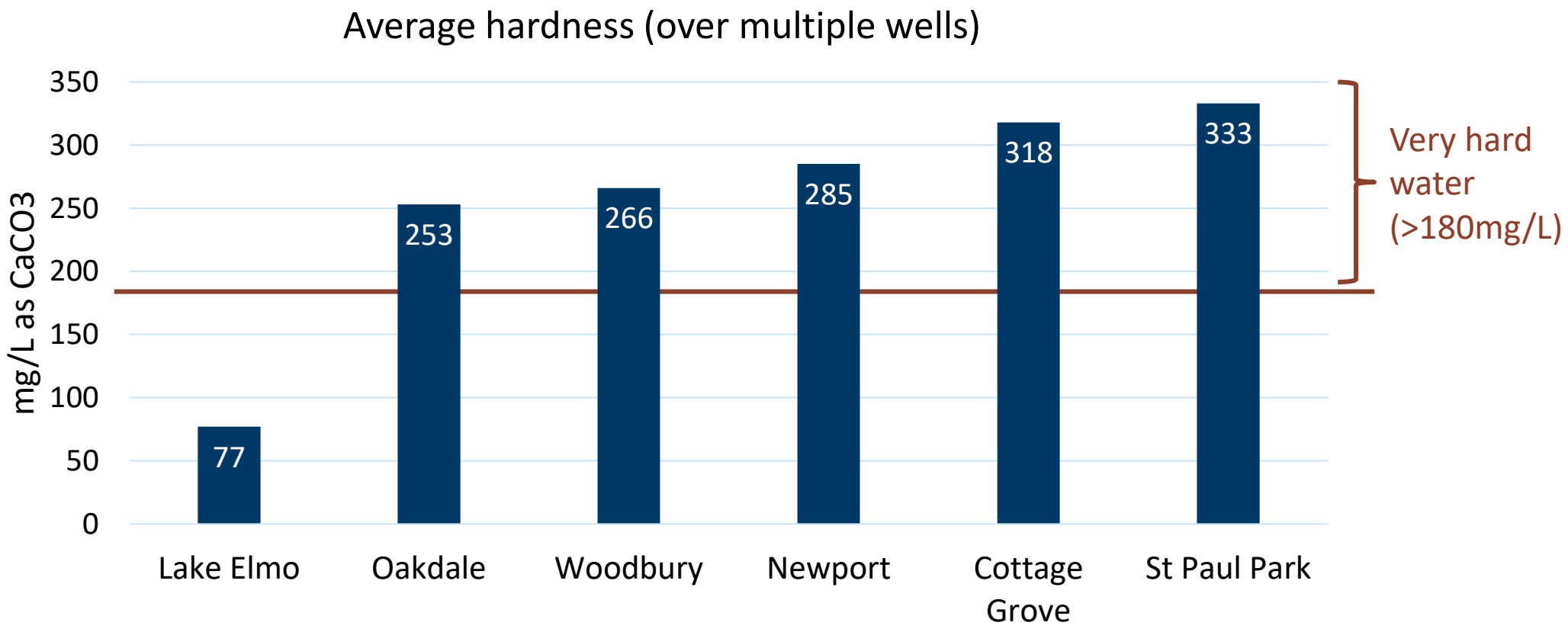
- Restore, protect, and enhance aquatic resources, wildlife, and habitat.
- Reduce fish tissue contamination and remove PFAS-based fish consumption advisories.
- Improve and enhance outdoor recreational opportunities.

Activities under the Settlement



Central water softening

Groundwater throughout the East Metro is generally very hard.

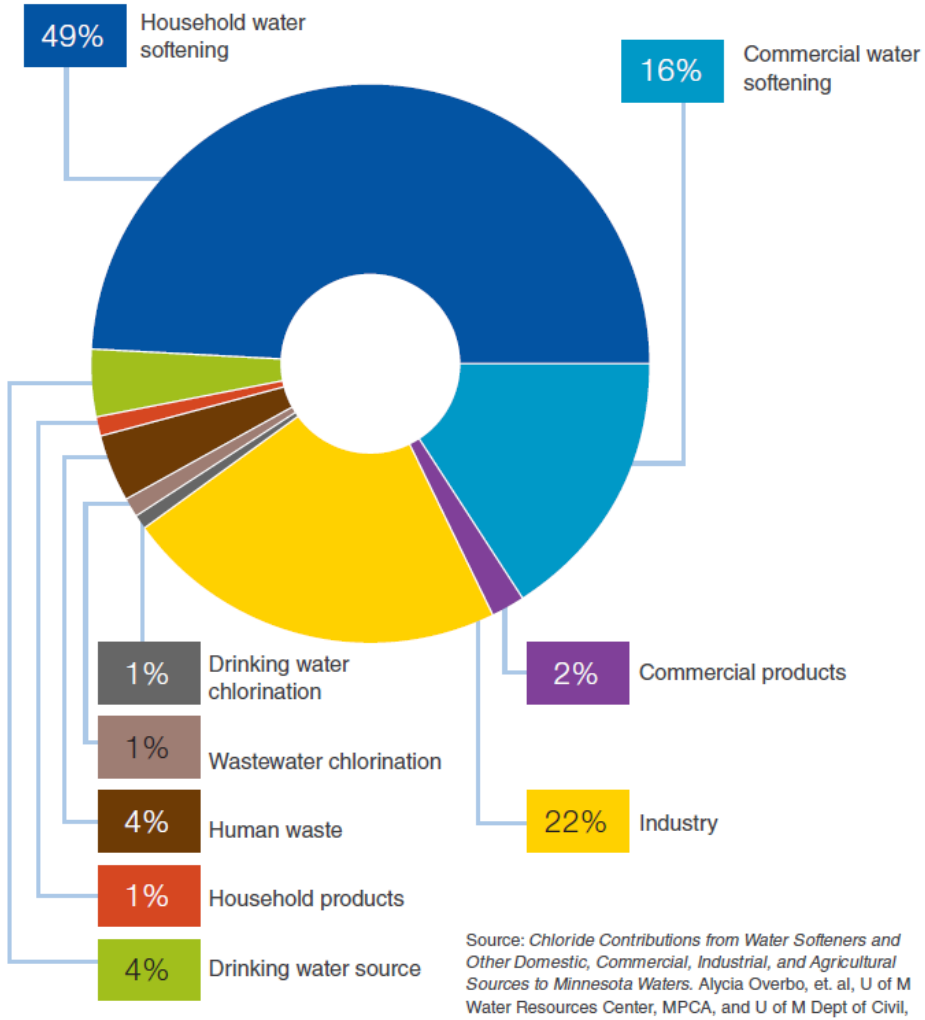


Central water softening

- As a result of groundwater hardness, many East Metro residents install in-home water softeners.
- Two environmental impacts are associated with residential water softeners:
  - Wasted water from the regeneration cycle
  - High concentrations of chloride in the discharged stream.

Central water softening

- **Primary benefit:** Eliminating wasted water
  - During a regeneration cycle (which occurs every two days), average in-home water softener discharges **27 gallons of water** to the sewer.
- **Co-benefit:** Reduces high concentrations of chloride in the discharged stream
  - Reducing sources of chloride to WWTP discharge or reducing the chloride at WWTPs would enhance the discharged water resources, making rivers better habitat for aquatic life and enhancing the feasibility of wastewater reuse.



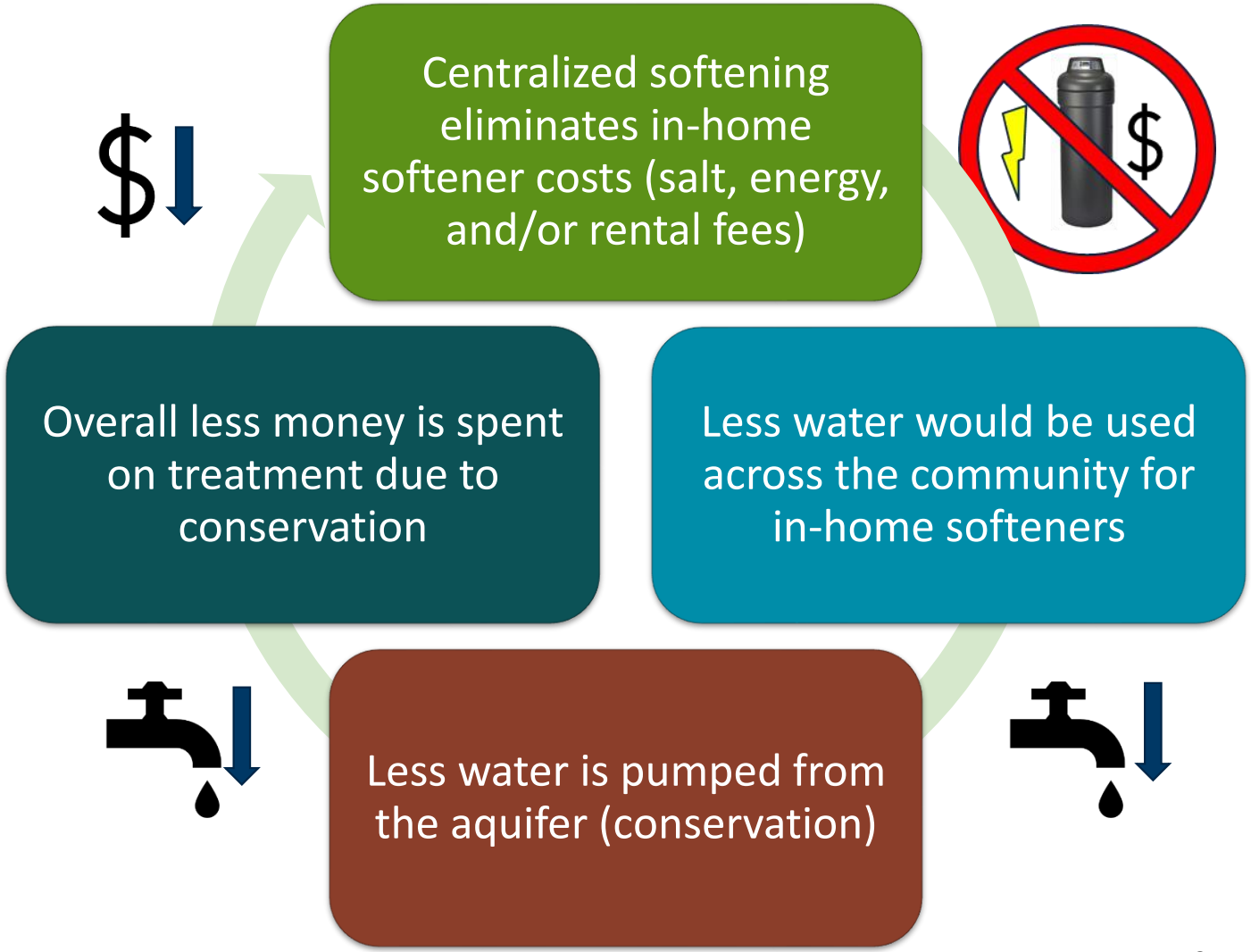
Source: *Chloride Contributions from Water Softeners and Other Domestic, Commercial, Industrial, and Agricultural Sources to Minnesota Waters.* Alycia Overbo, et. al, U of M Water Resources Center, MPCA, and U of M Dept of Civil, Environmental, and Geo-Engineering, January 2019.

Central Water Softening and Priority 1

Central water softening

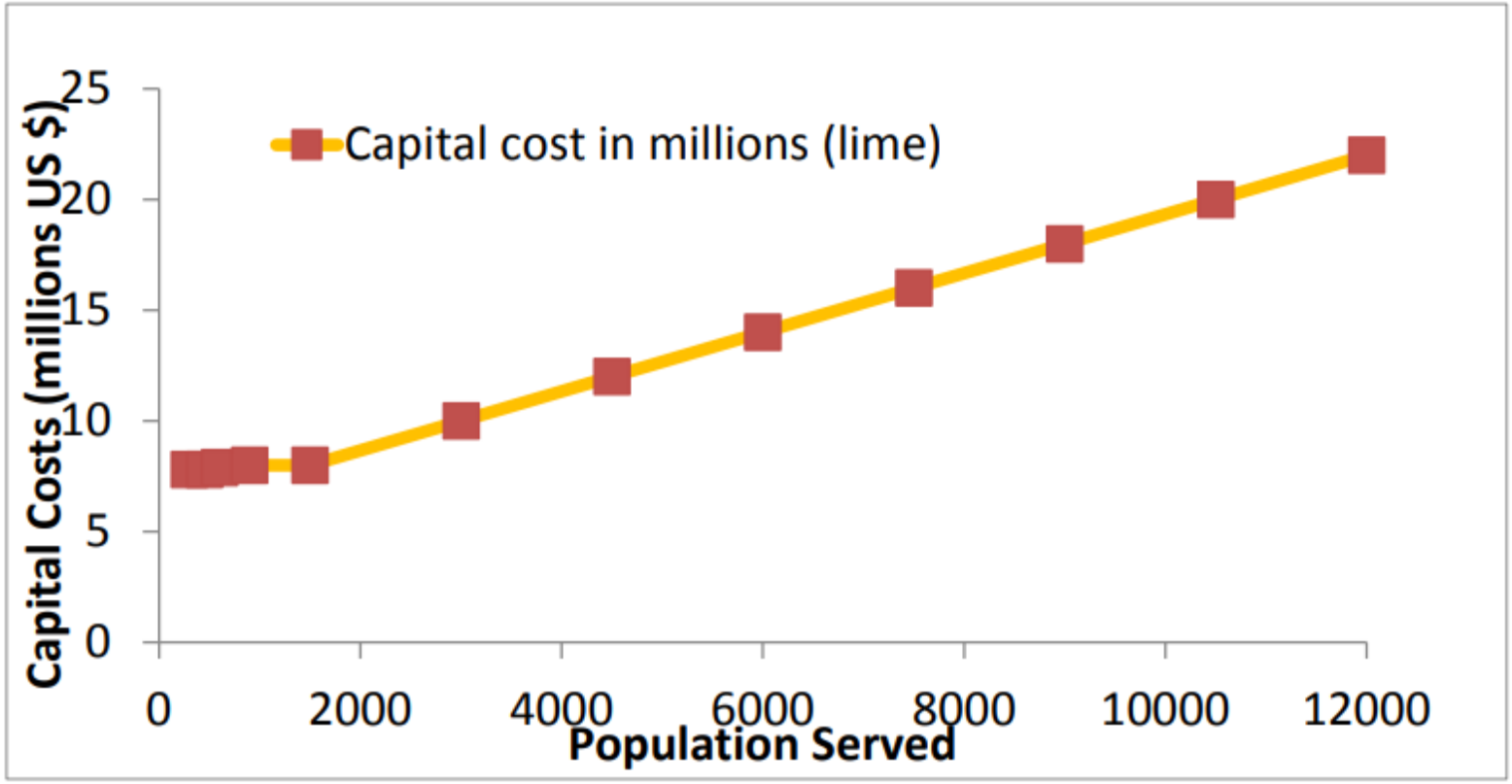
Centralized water softening would eliminate the need for in-home softeners, providing economic, sustainable, and environmental benefits.

With costs shared by the community, this meets the goal of Priority 1 but also provides a conservation of funds which could be used for other Priority 1 Settlement projects.



Central water softening

- Lime softening costs potentially in 10's of millions per community



Source: *Alternatives for addressing chloride in wastewater effluent*, MPCA, December 2018

Central Water Softening – Cottage Grove

Jennifer Levitt and Ryan Burfeind, City of Cottage Grove

Water Softening

- ## Cottage Grove Water Softening Statistics
  - 11,513 residential water connections throughout the City
  - Estimated that 75% of residential properties use in-home water softener
  - 2,943,000 pounds of softener salt used annually
  - Estimated 413 mg/L chloride discharge based on average in-home water usage
  - 42 million gallons of water is estimated to be wasted annually through recharging, which is 4.18% of Cottage Grove's average water use

- ## Minnesota Softening Statistics
  - 49% of chloride in treatment plant influent from water softeners
  - 230 mg/L chloride discharge causes chronic toxicity in aquatic organisms
  - Elevated chloride levels being discharged into the Mississippi River

❖ Centralized water softening would eliminate the need for in home softeners, providing a significant environmental benefit

Central Water Softening and the Conceptual Plan

Central water softening

- Cottage Grove and others are interested in incorporating centralized water softening as part of drinking water projects covered under the Conceptual Plan
- Some feedback from work groups that Settlement could cover design, but less support for covering the capital expense, though it could be eligible under the Sustainability and Conservation allocation
- Co-Trustees will also need to decide whether to subtract out central water softening savings from the SPRWS bulk water charges that would be covered as O&M under Option 3; affects only Lake Elmo and Oakdale
- Consider consistency between Settlement coverage of centralized water softening versus capital and O&M across these communities.

Questions