



MEMORANDUM

DATE: June 20, 2023

TO: Honorable Mayor and City Councilmembers
Dave Perrault, City Administrator

FROM: David Swearingen, P.E. Public Works Director / City Engineer
Gayle Bauman, Finance Director

SUBJECT: Water Meter Replacement & Lead/Copper Inventory

Budgeted Amount:	Actual Amount:	Funding Source:
\$1,225,000	TBD	Water Utility Fund

Council Should Consider

- Beginning the process to replace the City’s water meters over 2023 & 2024 or revisit this item next year.
- Hiring a consultant to evaluate the City’s existing metering system to provide a recommendation for replacement and transition.

Background

The City currently has 2,822 meters in its system. 2,513 are designated as Cycle 1 (mainly residential) and 309 are designated as Cycle 4 (mainly commercial).

Commercial meters in the City were replaced in 1997. Most residential meters in the City were replaced in 1999-2000. Residential meters were not replaced at that time if they were in good working order and less than 10 years old. This means that the majority of the meters in the City are at least 23 years old with some possibly being up to 33 years old. The Galaxy readers were replaced throughout the entire City in 2012.

In late 2020 or early 2021, the City was notified that the Galaxy radio transmitter endpoints that were installed in 2012 would no longer be manufactured, therefore, there are no parts available for replacement if needed. The next option was to utilize endpoints that use cellular transmission. Public Works has been transitioning to the cellular endpoints as the radio endpoints fail. The radio endpoints are said to have a 20-year life before the batteries begin to fail, but we have also learned that if an endpoint struggles to send information to a “collector”, it will continue to try and send a signal which will use up battery life. This might be one of the reasons why Public Works has had to make replacements recently.

This table shows the meter parts replaced over the last 5 years:

	Reading System Appointments (parts replaced)	Water Meter Body Appointments (parts replaced)
2019	11	3
2020	16	2
2021	28	4
2022	74	4
2023 (as of 6/13)	32	3

Discussion

The general consensus based on available data is that a residential meter's average lifespan is 15 to 20 years. As with any mechanical device, water meters are subject to wear. Wear contributes to meter accuracy degradation, meaning that the water meters become less efficient for measuring flow and will generally under register the actual throughput. Age, as well as the total number of gallons that pass through the meter, affect the accuracy and wear on a meter. Lost water has a financial impact on the City because lost water does not generate revenue but still costs the City to pump, purchase, treat, and distribute the water and thus the taxpayers ultimately have to pay for it.

Studies on the internet vary widely, but ultimately support the 15 to 20 year lifespan. One study indicated the optimum year for replacement is year 16 when a meter is at 99.2% accuracy. The accuracy of older meters varies based on the quality of water in a system as well as the type of customer using the meter.

Prior to 2021, the City's unaccounted for water percentage was gradually increasing each year. The percentage unaccounted for was:

- 2018 – 2.4% (8.0 million gallons)
- 2019 – 3.7% (11.3 million gallons)
- 2020 – 4.1% (12.6 million gallons)

We were not able to calculate unaccounted for water for 2021. The percentage for 2022 was 3.9% or 14.0 million gallons.

The 14.0 million gallons in 2022 equates to lost revenue between \$49,840 and \$113,400 depending on which tier of the rate structure is used.

Based on recent invoices, the estimated cost for residential and commercial meter parts (not including installation) are:

Residential:

- Meter body - \$70
- Register - \$96
- Endpoint - \$161
- Total - \$327

Commercial (includes meter body, register and endpoint):

1" disc- \$481

1.5" disc- \$760

2" compound- \$2,875

3" compound- \$3,537

2" turbo- \$1,291 (irrigation use)

Lead and Copper service line inventory

On August 4, 2022, EPA released Guidance for Developing and Maintaining a Service Line Inventory to support water systems with their efforts to develop inventories and to provide states with needed information for oversight and reporting to Environmental Protection Agency (EPA). The guidance provides essential information to help water systems comply with the Lead and Copper Rule Revisions requirement to prepare and maintain an inventory of service line materials by October 16, 2024. If the City Council chooses to move forward with replacement of the water meters this year, City staff recommends adding the service line inventory task to the project since the meter hooks directly to the service and material type can be determined for each property.

If the City Council does not choose to move forward with meter replacement, City staff will attempt to gather service line information by using mailing notices to residents to submit their material type or setup an appointment with Public Works to inspect the service. Staff can also review data within our permitting system and GIS data.

Budget Impact

Meter repairs and upgrades are funded by the Water Utility Fund. Based on the age of the system, the data on unaccounted water and some of the issues we have been encountering, the City is probably in need of new meters city-wide in the next few years. Staff is seeking direction from Council on hiring a consultant to evaluate our current system and provide recommendations on next steps.

Attachments

N/A