

PURPOSE:

The purpose of this memo is to present the Financial Advisory Board with a background on the status of the Water Utility Automated Meter Infrastructure Business Case.

BACKGROUND:

In June 2018, the City received notification from Alexander Contract Services expressing a desire to terminate their contract with the City for water meter reading services. The City is currently working with Alexander to maintain manual reading services for the duration of the agreement, which is valid through August 2021. Additionally, the City is exploring alternatives for future meter reading operations.

On Dec. 4, 2018, City Council awarded a contract to West Monroe Partners, LLC to complete a Water Utility Automated Metering Infrastructure (AMI) Business Case analysis to examine options and feasibility of implementing alternatives to manual water meter reading.

During the business case analysis, West Monroe Partners evaluated four technology options in comparison to a baseline manual meter reading scenario, which would be managed within the City. Options included:

1. Leveraging the City's current Elster AMI system used to read electric meters
2. Installing a low-site point to multi-point AMI network, which would require approximately 35 to 40 collectors mounted on objects such as street lights
3. Installing a high-site point to multi point AMI network, which would require approximately six base stations mounted on objects such as water towers
4. Using a mobile radio AMR system, which would involve meter reads being collected via a motor vehicle-mounted mobile radio system

Several key assumptions were made in analyzing the various options. Perimeters for estimated costs were built around a 20-year period, which mirrored an assumed 20-year battery life for the AMI endpoints.

Industry Trends

The use of automated meter reading technology has become a standard in the Water Utility industry. In 2016, the City received just two bids for the water meter reading contract and is now aware the current vendor would prefer to end the working relationship.

Staff used Alexander's request to terminate their contract as an opportunity to explore the water utility industry and potential operational improvements. During the business case, staff reached out to several surrounding communities to access their reading operations. The results found few communities still maintain a manual meter reading method and most opted for full AMI.

There are many reasons for this shift. Manual meter reading comes with significant costs, potential liabilities and operational inefficiencies. Among the concerns are increased likelihood of workers compensation and vehicle liability claims, as well as the increasing cost of necessary vehicles and equipment to complete the process. Meter reading has a high employee turnover rate and environmental and man-made conditions such as poor weather, animals and locked fences affect the reliability and cost of the process.

While liabilities and expenses are significant, the most concerning issue with manual meter reading is the reliability of monthly reads for billing. Manual meter reading generates a large percentage of estimated reads (approximately 25%), which are largely impacted by the weather.

Service Level Expectations

A major driver for staff's review was improving the customer experience; implementation of a new system will allow the City to raise the level of services. A new system would greatly reduce estimated reads and provide opportunities for customer-side leak detection, more data to help inform customers about their usage and increase opportunities for customer water conservation. A new system will also allow a streamlined process for final reads.

Timeline

With the manual meter reading contract set to expire in August 2021 and after evaluating options, staff determined a one-year installation period as the preferred timeframe. In the business case, deployment costs were consolidated to 2020. Additionally, integration of the new ERP utility billing system will coincide with deployment and a delay in the meter reading solution could result in added integration costs.

Project Cost Estimates

Estimated costs for AMI implementation range between \$7 and \$10 million. Deployment of AMI would be provided by a contractor and implemented over the course of 2020. No funds are currently budgeted for this project, which is not part of the current Capital Improvement Program.

As part of the business case analysis, West Monroe provided projected costs through 2039 for each technology option. All options were compared to a baseline, which assumed manual meter reading would continue through expansion of the current Water Utility operations. The baseline model anticipated adding seven full-time equivalents City meter readers and purchasing equipment and vehicles for each, starting in 2021.

Overall, the baseline assumption indicated a projected increase of approximately \$20.21 million in operations between 2019 and 2039. All technology options were compared against the baseline. A breakdown of projected costs by option is provided below. The estimated deployment figures are based on the projected cost to install AMI in 2020.

| Year | Estimated Operation | Estimated Deployment | Total Estimated Cost |
|------------------|----------------------------|-----------------------------|-----------------------------|
| Do Nothing | \$20.21 | - | \$20.21 |
| AMI – Elster | \$10.96 | \$7.74 | \$18.70 |
| AMI – High Point | \$16.73 | \$9.70 | \$26.43 |
| AMI – Low Point | \$17.01 | \$8.50 | \$25.51 |

The reduction in projected operation costs for the AMI options is due primarily to a reduced need for additional vehicles, equipment and personnel through these methods.

DISCUSSION:

Staff is presenting the business case to the Public Utilities Advisory Board. Once a technology option is recommended, better cost estimates can be calculated. However, staff began exploring potential funding scenarios and will be discussing three with the Financial Advisory Board.

Each scenario presented below is based on preliminary costs and are only provided as a general framework to further this discussion.

Cash-on-Hand

In 2017, the City established the Phosphorus Fund, along with a fixed monthly phosphorus surcharge to generate money for facility upgrades to the Springbrook Water Reclamation Center. The fund began 2019 with a balance of approximately \$16 million, which includes the Water loan repayment from the Electric Utility.

Under the Cash-on-Hand option, the City would borrow from this fund to cover initial costs and pay back the loan with interest based on the City’s return rate on investments. Evaluations on this method included an internal interest rate of approximately 1.1% with payback periods between five and eight years.

The caveat for the funding method is the impact on the overall Phosphorus Fund. The state requires wastewater operations to obtain a National Pollutant Discharge Elimination System (NPDES) permit through the Illinois Environment Protection Agency (EPA). In the latest renewal process, the state mandated new standards for acceptable phosphorus and nitrogen levels. In order for the City to be compliant with these regulations, significant facility upgrades are required at the Springbrook facility within the next 10 years.

Facility upgrades are anticipated to cost approximately \$64 million with the design phase planned for 2024 and 2025 and construction beginning in 2026. Project design is earmarked in the City’s Capital Improvement Program under WWU35. The monthly surcharge was established to generate half the needed funds for this project, which included the repayment from the Electric Utility for money it borrowed during 2016. The other half of the project will likely be funded through borrowing.

The \$16 million currently sitting in Phosphorus Fund is restricted for the facility upgrades and use on an AMI project will reduce the cash balance. The phosphorus surcharge is effective until the fund generates half the estimated costs, which was anticipated to occur by 2031. Use of this fund is not anticipated to impede the conclusion date nor is it anticipated to impede progress on facility upgrades. Staff estimates needing approximately \$3.14 million for reports and designs through 2024. Below is a table projecting the fund balance in 2024 in comparison to the projected AMI projects.

| Option | Needed Funds | Beginning Balance | Year to 50% |
|------------------|---------------------|--------------------------|--------------------|
| Current | \$3.14 M | \$20.57 M | 2031 |
| AMI – Elster | | \$12.48 M | 2031 |
| AMI – High Point | | \$10.44 M | 2031 |
| AMI – Low Point | | \$11.69 M | 2031 |

The key factor in using available funds would be determining the length of repayment. Staff calculated repayment plans over five and eight years. A five-year repayment would keep costs down, but would also require a high internal debt service payment.

Outside Borrowing

Another option to fund AMI is to borrow from outside the organization. Based on history, the City could borrow needed funds at a 3.6% interest rate with a 20-year payback. The option would keep the Phosphorus Fund intact, but would result in a higher overall cost for the project. The Water Utility has not borrowed since 2011.

Built in Rates

The third funding scenario is implementing a rate increase in 2020. Staff, however, does not feel this is a realistic option, as rates would likely surge anywhere between 20% and 25% in 2020, before leveling in 2021. Preliminary calculations anticipated the average monthly bill of \$75.50 per month would jump to between \$90 and \$94 per month.

Conclusion

Based on the estimated total costs provided by West Monroe, the use of cash-on-hand could be the least expensive funding method. Projected total costs for use of cash-on-hand range between \$8 and \$10 million, while borrowing ranges between \$11 and \$14 million due to the increased interest rate. A breakdown of projected borrowing costs is provided below.

| | Needed Capital | Borrow (20-Year) | Cash-on-Hand (8-Year) | Cash-on-Hand (5-Year) |
|-------------------------------------|---------------------------|-----------------------------|----------------------------------|----------------------------------|
| <i>Interest</i> | | 3.60% | 1.10% | 1.10% |
| Estimated Total Debt Service | | | | |
| AMI – Elster | \$7.74 | \$11.15 | \$8.13 | \$8.00 |
| AMI – High | \$9.70 | \$13.97 | \$10.19 | \$10.02 |
| AMI – Low | \$8.50 | \$12.24 | \$8.92 | \$8.78 |

RECOMMENDATION:

Please distribute this memorandum to the Financial Advisory Board.