

Advanced Metering Infrastructure System Report to Finance and Administration Committee April 17, 2018

BACKGROUND

The City of Greater Sudbury provides drinking water services to over 48, 000 customers. Funding to provide these services is primarily generated through user fees based largely on consumption through water meters measuring usage for each account.

The City's current metering technology is outdated when compared to industry norms and relies on 'touch pad' technology requiring manual readings to determine consumption. The resolution of the consumption data generated using touch pad technology also limits the range of business processes and customer friendly options. A contemporary water service provides real-time information to both system operators and customers about performance, consumption levels and trends. Currently, our service does not offer these features in a user-friendly or timely way. With a significant percentage of the City's meter inventory slated for replacement a review of the City's current water meter technology and metering related processes is underway.

In early 2017 the Water/Wastewater Services division procured consulting services from Diameter Services through a Request for Proposal process to review the City's current inventory of water meters, analyze current meter reading and billing processes and identify opportunities for improvements in functionality and efficiencies.

Diameter was also requested to provide an analysis of the feasibility and benefits of using improved metering technologies commonly referred to as smart meters for our customers. The City's Water/Wastewater Tactical Plan 2015-2018 recognized the need to review and possibly improve the current practice of water meter repair, replacement, and invoicing as a high priority project to enhance customer service and water meter efficiency. Platforms based on smart meter technology such as Automated Meter Reading (AMR), Advance Metering Infrastructure (AMI), Advanced Meter Reading Advanced Metering Analytics (AMA) are now widely used in many communities.

FEASIBILITY STUDY

The feasibility study conducted by Diameter Services is now complete and their recommendations are incorporated into the attached report. The report outlines the goals and approach used, recommendations and potential benefits, as well as anticipated implementation time lines and estimated project costs.

The following key recommendations and benefits were identified in the Diameter Services report:

KEY STUDY RECOMMENDATIONS

- The City of Greater Sudbury should implement a fixed base AMI system across the entire water meter population in the City of Greater Sudbury;
- The City of Greater Sudbury should procure, implement and operate their own Meter Data Management Software system;

- Customers should have access to an on-line customer service portal and should be available to Greater Sudbury water/wastewater customers to permit real-time access to personal consumption data and usage profile;
- The project should be fully implemented within a 36 month period where the first year of the project will be focused on procurement and start up, and the final 2 years concentrating on real data production and collection

IDENTIFIED BENEFITS OF AMR/AMI

Customer Improvements

- Enhanced Customer Service – improvements in customer service through the ability to provide accurate and instant consumption information to the customer
- customer on-line access to water account - observe water consumption while away from home on vacation – real time data access
- alerts to customers of abnormal water consumption - help avoid high water bills
- leak detection alert to customers - warnings for customers before severe property damage can occur
- reduction in customer estimated meter consumption readings – increase in accurate invoicing
- customer support to engage in water conservation and financial savings
- reduction in customer complaints and frustration – easy to read water consumption – real time data
- fast and efficient response to customers regarding water consumption and invoicing
- expedite customer requests for water service termination – final move in/ move out meter readings

Operational Improvements

- revenue protection – highlighted areas for revenue improvement such as elimination of estimated water bills
- reduced water meter damage
- use real time data to produce accurate and analytical reporting
- City staff will have full access and control of water meter asset data
- more efficient and rapid response to stopped meters
- operational efficiency – improvements in response time to maintenance issues, reduced water meter reading costs and exceptions
- water production and efficiencies accurately tracked improving water production and optimization
- potential opportunity to enhance collaboration with Greater Sudbury Utilities and efficiently share common resources
- improved Water Distribution System Operation – the data generated by the new system will enhance the City's ability to manage water losses from City water distribution systems by enabling district metering and leak detection programs, and dynamic water balance calculations
- the AMR/AMI system transmits real time information with no delays. City staff will be notified in a very short time frame of any water meter issues such as

damaged meters, stopped meters and irregular water consumption (high or low)

- the AMR/AMI technology will allow the City to review our present shared business practices and our contract arrangement with Greater Sudbury Utilities and allow us to examine the options to modify our relationship with GSU
- societal benefits – improvements in water conservation, lower carbon emissions associated with related City operations

Financial Benefits and Implications

The consultant has estimated revenue improvements from meter accuracy to be \$1.1 million. As meters get older, the parts begin to wear and the meter becomes less accurate with age. The replacement of older meters with new ones will reduce revenue loss.

Operating expenses are projected to decrease by a net amount ranging from approximately \$ 684,000 to \$764,000, summarized as follows:

- Elimination of meter reading costs - \$360,000
- Meter maintenance efficiencies - \$40,000
- Efficiencies in customer service and billing - \$182,000
- Reduction of unaccounted for water - \$428,000
- Increased IT support for new technology – (\$246,000 to \$326,000)

The consultant has projected that the combined impact of revenue improvements and cost savings will result in a pay back period of approximately 9 years for a fixed AMR/AMI solution.

The projected capital cost of a fixed AMR/AMI solution ranges from \$16.5 to \$17.4 million, inclusive of HST. There is approximately \$4.0 million in previously approved funds set aside for the acquisition and installation of an AMR/AMI solution. These funds would be available for a down payment towards the cost of the project. The amount that would have to be borrowed would be approximately \$12.5 to \$13.4 million. The annual repayment over a 20 year period at current borrowing rates would be approximately \$900,000 for \$12.5 million to be repaid and \$970,000 for \$13.4 million.

This repayment would be funded from future years' capital budgets, and would be partially offset by projected operating budget savings of \$684,000 to \$764,000 as identified in the consultant's report.

These amounts are based upon the Consultant's estimates at this time. A more detailed financial summary of the project capital and long term operating costs can only be completed following competitive procurement of the water meter system. The results of the RFP will be analyzed by City staff with the assistance of Diameter Services to determine the preferred system characteristics, the preferred business processes to manage information for water customers, and to determine the changes in business processes between City staff and services provided by Greater Sudbury Utilities.

The final analysis and recommendations including preferred vendor, capital financing, operational changes, and recommendations for changes to the GSU services agreement will be presented to Council in approximately one year's time.

PROCUREMENT RFP AND EVALUATION

The technical specifications involved with this type of procurement are relatively complex because the prospective bidders will be expected to complete the detailed design of the system that transmits data from the water meters to a centralized computer management system. Each vendor will have unique features and characteristics that will affect the City / GSU resources required to manage and operate the information and system. The reliability and quality of the electronic data is an important characteristic that will affect the system performance. City staff will be completing the specifications and RFP documents over the next few months with the assistance of Diameter Services.

The tender phase is anticipated to take approximately two to three months due to the extensive geographical area of our serviced community, and due to the fact that the proponents must complete enough design to adequately present their tender price for the proposed work. Following the tender phase, staff will be working with Diameter Services to complete the evaluation of the bids.

Similarly, Diameter Services will assist staff in the evaluation of the billing and meter reading services agreement with GSU, as it relates to the proposals submitted. Aside from the obvious costs savings from the reduction of manual meter reading services, staff will be evaluating all existing services and standard levels of those services. This process has to be performed in conjunction with the evaluation of the procurement RFP as there will be unique alternative changes to the service delivery model depending on which vendor is selected.

TIMETABLE OF NEXT STEPS

Subject to authorization, the next steps and timelines of the AMR/AMI Project are as follows:

Step	Duration	Schedule
Prepare RFP, Specifications and Procurement Documents	4 to 5 months	May to Sept, 2018
Tender RFP and Response Period	2 to 3 months	Sept to Nov, 2018
Evaluate RFP, Financial Implications, City's Service Delivery and Business Relationship with GSU,	4 to 5 months	Dec to April, 2019
Report to Finance & Administration Committee		April or May, 2019
Installation Period	24 to 30 months	2019 to 2021

CONCLUSION

A feasibility study has concluded that a fixed based AMR/AMI water meter system should be used to replace the City's existing manual water meter reading system. An automated meter system would be consistent with best practice in the industry and would offer numerous benefits as identified in the study. Most notably an automated system would enhance the experience for customers of the City's water and wastewater services, while it is estimated that the City will realize a net reduction in operating costs.

The City is currently utilizing water meters that have reached their useful life expectancy and should be replaced at an estimated cost of \$8.1M. The net increase in capital costs to obtain an automated water meter system is estimated at approximately \$8.4 M to \$9.3M.

Following a tender for determining a preferred vendor for the AMR/AMI system, it will be possible for staff to complete the full business evaluation and provide recommendations to Council for changes in the City's service delivery model and the proposed service arrangements with Greater Sudbury Utilities. The next steps in the project would include a final report to Council tentatively in Q2 of 2019.

It is projected that a new AMR/AMI water meter system could be fully implemented and operational by the year 2021.