

For Information Only

City of Sudbury Water Meter Replacement Study

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Recommendation

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Finance Implications

The funds for this study project will be funded from existing approved 2013 meter replacement capital funding allocations.

Background

Current Technology:

Approximately 48,000 water meters track water consumption throughout the City and form the basis for the billing of water and wastewater services. Meters are read at the customer's premises and the collected data is converted to a water bill by GSU. The water bill includes a charge for the cubic meters of water used, a fixed service charge and a factor for wastewater services. The revenue generated from this billing process provides the foundation for most of the funds required to provide water and wastewater services.

The current meter inventory is largely comprised of older technology positive displacement meters that have remote readers located on the outside of the structure where the meter is located. In order to determine consumption, routine readings are taken by a meter reader at each premise.

The existing technology gives rise to the following brief summary of concerns;

- The American Water Works Association (AWWA) recommends that water meter replacement programs be based on both age and total flow through a meter. Approximately 25,000 meters active in the system, exceed the industry standards of 20 years and should be replaced at this time. An unknown number of additional meters should be replaced due to the volume of water that has passed through the meter.
- Meters which have exceeded their recommended design life, tend to underestimate the volume of water that passes through the meter. Consequently, the data is less accurate and less reliable to use for operational purposes.

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- The current meter technology has limited capabilities for data collection and analysis which leaves the City susceptible to tampering and water theft for extended periods of time without detection.
- Accidental customer water loss such as a plumbing fixture failure can go undetected for long periods of time, resulting in large unplanned water bills.
- A recent random investigation of 500 residences resulted in the discovery of a 9.4% tampering rate.
- Since the water meter data has only limited operational value it is principally only used for producing water bills.
- Errors with data transfer from a water meter reading can result in billing errors, which can pass undetected for long periods of time due to limitations in existing data analysis systems. Recently, staff uncovered a number of these types of errors, resulting in back charging customers.

New Technology:

New water meter technology has greatly advanced in recent years and many municipalities have upgraded their technology to mitigate associated risks and to promote fairness across their customer base. The latest advances utilize wireless technology to transmit a signal from the water meter to a central data processing unit on a more frequent basis. This system allows real time data to be available to billing staff and operations staff simultaneously and almost instantaneously after the data is transferred.

New water meter technology data is typically transmitted in a similar fashion as the new 'Smart Meter' technology used by GSU and Hydro One. It is also possible to transmit data more frequently if required for trouble investigation, or data analysis, or to meet some other operational needs.

New water meter technology can produce the following additional benefits:

- Promote more equitable billing across a customer base;
- Detect anomalies in customer consumption which might be representative of leaks in customer plumbing, thus mitigating excessive charges to a customer caused by undetected plumbing issues;
- Detect anomalies in customer consumption which might be representative of tampering, allowing enforcement staff to prioritize investigations and mitigate potential losses;
- Eliminate the need to attend at a premises to obtain manual 'final' meter reads for customers who move;
- Reduce frequency of flow estimates where meter data is unavailable which will result in more representative bill for each billing period;
- Allow staff to rely on the more discrete sampling periods and more extensive data for operational planning and analysis. This could assist with a more accurate comparison of plant production versus consumer usage and other related trends. It also introduces the possibility of a district metering strategy for identifying watermain leaks, prioritizing leak detection programs, calibrating computer simulation programs, and developing more comprehensive asset management plans;
- Remotely check meter status in the event of a customer concern;
- Monitor compliance with the water restrictions bylaw.

Proposed 2013 Project

The capital cost to implement the upgrade to a new water meter technology is significant, but relatively simple to calculate. The financial benefits are more difficult to calculate as they should consider the cost of managing changes in business process versus staying with the same technology.

There are many examples of Ontario communities where new meter technology has been used. There are a number of different styles of technology, and each one has its unique benefits and capital cost variance. Since the existing inventory of water meters requires consideration for replacement anyway, it is appropriate to consider an upgrade in technology as part of the replacement considerations.

Because of the complexity of this initiative, staff has decided to retain a professional firm to conduct a business study and prepare a report with the following objectives:

- To summarize the options for implementing new water meter technology in comparison to replacing the water meters with similar to existing technology;
- To summarize the business requirements of a possible technology upgrade to both the data collection and analysis as well as impacts to the billing system;
- To summarize estimated capital costs as well as probable changes in operating and maintenance costs;
- To summarize customer and operational benefits; and,
- To provide recommendations for the preferred water metering technology and business processes including a proposed implementation approach and schedule.

The study report will provide a solid foundation for moving forward with a plan based on industry best practices and support the objective of providing fiscally sustainable water and wastewater services.