

Update on the Water Meter Program

Date:	October 4, 2013
To:	Public Works and Infrastructure Committee
From:	General Manager, Toronto Water
Wards:	All
Reference Number:	P:\2013\Cluster B\TW\pw13019

SUMMARY

The purpose of this report is to respond to a request from City Council to provide additional status reporting for large capital projects. The water meter program, also known as the Water Meter Replacement and Automated Meter Reading (AMR) System project, is a large capital project that will see the installation of new automated meters in every home and business in the city. The project implementation period is six years beginning in 2010 and ending in 2015. Currently the project is ahead of schedule and within budget.

This report also describes proposed changes to the City's fees and charges designed to enhance compliance with the mandatory requirement for water consumers to allow access to their properties for the purposes of installing a new water meter under the water meter program.

RECOMMENDATIONS

The General Manager, Toronto Water recommends that:

1. City Council approve the proposed changes to the City's fees and charges associated with water consumers who do not allow access to their properties for the purposes of installing a new water meter and associated meter reading equipment under the water meter program, as outlined in this report.
2. This report be forwarded to the Budget Committee for its meeting on November 6, 2013 to be considered concurrently with the 2014 Water and Wastewater Rates and Services Fees report and Toronto Water's 2014 Operating budget, along with the appropriate recommendations to amend the Municipal Code, as detailed in this report.

Financial Impact

This report provides an update on the financial status of the Water Meter Replacement and Automated Meter Reading (AMR) System project. The total projected expenditures are forecasted to be \$186 million or 85% of the total project costs of \$219 million. The projected savings of \$33 million are as a result of lower than expected costs associated with the installation of large meters and lower than anticipated commodity and labour prices.

At project completion, the additional annual revenue as a result of the new meters is expected to be \$29.4 million, which is \$2.1 million higher than the original project forecast. Operating savings were expected to be \$5 million annually. Toronto Water is on target to achieve these savings and has included the efficiencies as part of the 2014 Operating Budget and the 2015 & 2016 Outlooks.

Implementation of the proposed changes to the City's fees and charges as described in this report could potentially result in an estimated increase in revenue of up to \$10 million. The increase in revenue is intended to recover the City's costs in providing special meter reading services. It is expected that these fees will serve as an effective incentive to allow access for the purposes of having a new meter installed as required under Chapter 851. As a result, Toronto Water has not included these additional fees as part of the 2014 Operating Budget and will report on the actual revenues and corresponding costs as part of the Corporate Variance Reports in 2014.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on June 23 and 24, 2008, during consideration of report PW16.12 entitled "Request for Proposal (RFP) 0713-08-0001: Water Meter Replacement and Automated Meter Reading System", City Council authorized:

- a. the General Manager of Toronto Water and the Treasurer to negotiate and enter into an agreement, in a form satisfactory to the City Solicitor, with Neptune Technology Group (Canada) Limited in the total amount of \$191,756,663.14, net of GST including provisional items for the project; and
- b. An upset limit of funds required to finance the project be set at \$219 million (net of GST), including contingency, provisional item and inflationary indexing for labour and materials over the implementation period of six years.

A copy of the Council decision related to this request is available at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2008.PW16.12>

At its meeting on November 27, 28 and 29, 2012, during consideration of report AU9.7 entitled "A Mid-Term Review of the Union Station Revitalization: Managing Risks in a

Highly Complex Multi-Year, Multi-Stage, Multi-Million Dollar Project”, City Council requested the Deputy City Manager and Chief Financial Officer to implement additional status reporting for large capital projects including:

- a. Additional detail in capital budget and capital variance reports; and
- b. Separate status reporting to City Council for large capital projects.

A copy of the Council decision related to this request is available at:
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.AU9.7>

ISSUE BACKGROUND

The City of Toronto is currently implementing a mandatory water meter program that will replace or install new automated meters in every home and business in the city to provide an equitable system for all Toronto Water customers. The City will provide meters to those who were previously on a flat rate system and replace old existing meters with more efficient and up-to-date technology. As a result, customers will only pay for the water they actually use under the new system.

This new technology is integrating all water meter reading, data storage and billing operations across the City of Toronto. Once installed, each water meter across the City will send data wirelessly via radio frequency, several times a day, to a series of collection units. The data is then sent to a central server, which allows for fast, secure access and storage of all information. All data contains only the water meter serial number and consumption data. No identifiable property owner information is transmitted. The radio frequency used by the transmitter is a frequency licensed by the federal government on which only water meters can operate.

The new system will help to keep better track of water consumption across the city, better and more quickly indicate unusually high water consumption patterns which may suggest water loss at a property and eliminate the need for City staff to go into homes to obtain water meter readings. It will also provide environmental benefits associated with the more efficient use of water. Being aware of water use - and therefore being able to use water more efficiently - leads to benefits for all Torontonians.

The program is being rolled out on a ward-by-ward basis over a six-year period, beginning in 2010 and ending in 2015.

At its meeting on November 27, 28 and 29, 2012, during consideration of report AU9.7 City Council requested the Deputy City Manager and Chief Financial Officer to implement additional status reporting for large capital projects. Given that the water meter program is a large capital project that is approximately half-way through its six-year implementation period, Toronto Water is providing this status update.

This report was prepared in consultation with the Deputy City Manager and Chief Financial Officer and the City Solicitor.

COMMENTS

1. Overall Project Status

The scope of work under the water meter replacement program involves the installation of new automated meters for approximately 474,000 water accounts. At the start of the project, there were approximately 68,000 flat rate accounts, and 406,000 accounts with existing meters that required replacement. Of the 406,000 existing metered accounts, 390,000 were associated with small meters and 16,000 with large meters. A water meter is considered large if the water supply opening diameter is 37mm or more. All other meters are considered small meters.

The first new water meter installation occurred in April 2010. As of August 31, 2013, 250,800 new water meters have been installed under the program representing 53% of the installations of the total 474,000 water accounts. There are 223,200 water meters remaining to be installed and the project is expected to be substantially complete by the end of 2015, ahead of the original schedule and well before the sixth anniversary of the first installation.

Table 1 below provides a summary of the water meter installations completed each year since the start of the project until now as well as the remaining installations still to be completed.

Table 1: Summary of Water Meter Installation Progress

No. of Meters	Flat Rate Accounts	Metered Accounts (Small Meters)	Metered Accounts (Large Meters)	Total Water Accounts
Total to be Installed	68,000	390,000	16,000	474,000
Completed in 2010	1,700	400	300	2,400
Completed in 2011	17,000	23,700	5,700	46,400
Completed in 2012	29,300	70,100	5,400	104,800
Completed in 2013 (to Aug 31)	13,000	81,000	3,200	97,200
Total Completed to Aug 31, 2013	61,000	175,200	14,600	250,800
Total % Completed	90%	45%	91%	53%
Total Remaining	7000	214,800	1,400	223,200

2. Budget / Financial Status

In 2008, the project upset limit was set at \$219.0 million which is comprised of \$191.8 million for the agreement with Neptune Technology Group (Canada) Limited, \$12.0

million for inflationary indexing of labour and materials and \$15.2 million for the project contingency.

As of August 31, 2013, the total project expenditures were \$87.8 million or 40% of the \$219 million upset limit. The remaining expenditure required to complete the project are anticipated to be \$98.2 million which includes a \$19 million contingency amount which may not be fully spent. Therefore, the total projected expenditures are forecasted to be \$186 million or 85% of the \$219 million upset limit. Most of the \$33 million difference between the forecasted total and the upset limit is due to less extensive installation work associated with large meters than was originally anticipated and lower than anticipated commodity and labour prices.

Table 2 below provides a summary of the forecasted project expenditures as originally reported in 2008 when Council authorized the agreement with Neptune. The table also provides a summary of the annual expenditures since the start of the project until now and the forecasted expenditures remaining until the end of the project.

Table 2: Summary of Project Expenditures

Year	Projected Expenditures in 2008 (\$ Million)	Actual Expenditures to Aug 31, 2013 (\$ Million)	Projected Expenditures Remaining (\$ Million)
2010	12.2	3.4	NA
2011	59.5	17.5	NA
2012	58.2	35.9	NA
2013	29.1	31.0	11.9
2014	30.0	NA	37.1
2015	30.0	NA	30.2
2016	0.0	NA	19.0
Total	219.0	87.8	98.2
% of Total	100%	40%	45%

In 2008, the anticipated financial benefits from the water meter program were expected to be approximately \$32.3 million per year once the system was fully implemented. The benefits were to be realized through a combination of additional revenues (\$27.3 million associated with the replacement of the City’s aging meters and the conversion of flat rate accounts) and operating efficiencies (\$5 million associated with the implementation of an automated, radio frequency-based reading system). At that time the investment in meter replacement and an automated reading system was expected to pay for itself in approximately 7 years (based on projected water rate increases approved in principle by Council for the next six years).

Staff have compared the meter reading accuracy of the water meters that were replaced since 2010 with the accuracy of the new meters being installed under the project. Staff have also calculated the increase in revenue obtained from flat rate accounts that have been converted to metered accounts since 2010 and in total have determined that the City is recovering currently approximately \$21.7 million in additional annual revenue due to the new meters. The anticipated additional annual revenue due to the new meters at

project completion is now expected to be \$29.4 million which is \$2.1 million higher than the original project forecast.

Table 3 below provides a summary of the forecasted revenue recovery due to the installation of the new meters as originally reported in 2008 when Council authorized the agreement with Neptune. The table also provides a summary of the annual revenue recovery since the start of the project until now and the projected revenue recovery until the end of the project.

Table 3: Summary of Revenue Recovery

Year	Projected Revenue Recovery in 2008 (\$ Million)	Revenue Recovery to Aug 31, 2013 (\$ Million)	Projected Revenue Recovery (\$ Million)
2010	1.2	0.1	NA
2011	11.5	3.2	NA
2012	22.0	12.1	NA
2013	23.7	21.7	NA
2014	25.5	NA	27.3
2015	27.3	NA	29.4

The \$5 million annual savings due to operating efficiencies associated with the implementation of the new meters are anticipated through reductions of \$3.5 million in water meter reading and \$1.5 million in call centre, billing and maintenance functions.

As part of its 2014 Operating Budget submission, Toronto Water has submitted a business case to reduce meter reading services in 2014. Additional reductions will be submitted as part of the 2015 and 2016 Operating Budget submissions.

In 2008, the investment in meter replacement and an automated reading system was expected to pay for itself in approximately 7 years (based on projected water rate increases approved in principle by Council for the next six years). Today with the revised total projected expenditures forecasted to be \$186 million and the revised financial benefits expected to be approximately \$34.4 million per year (i.e. \$29.4 million in revenue recovery and \$5 million in operating savings), the system is now expected to pay for itself in only 6 years.

3. Schedule Status

The water meter program is being implemented across the City on a Ward by Ward basis. Once the program becomes active in a given ward, installers begin work within a specific area inside that Ward. When most of the properties within a specific area have been completed, the installers move to the next area inside the active Ward. Eventually, all areas within the active Ward are completed, and the water meter program advances to a new Ward.

Table 4 below provides a summary of the year in which water meter installation has started or is expected to start by Ward.

Table 4: Summary of Water Meter Installation Starts by Wards

Year Installation Started or Expected to Start	Ward Numbers
2010	18, 28
2011	6, 13, 14, 19, 20
2012	16, 17, 21, 22, 24,25,27,29,30,32,31,33,34
2013	8, 10, 11, 15, 23, 26, 35, 36, 43, 44
2014	9,12, 37, 38, 39, 40, 41, 42
2015	1,2,3,4,5,7

4. Major Challenges

Gaining access to private property in order to install the new water meters has been a major challenge. Neptune Technology Group (Canada) Limited, the City's contractor attempts to contact customers up to at least six times before determining that gaining access to the property is beyond their scope. Following the sixth attempt, a final notice is issued by the City and sent to the customer requesting them to comply with the program and make an appointment for installation. If access to the property is still not obtained, the matter is investigated by a City By-law Officer and at this point the customer typically agrees to provide access. Less than ten customers have been fined for not providing access for meter equipment installation. Approximately 5% of all customers do not provide access on request from the City's contractor resulting in a backlog of work for the City's By-law Officers.

In some situations the existing plumbing material is lead or corroded galvanized piping that is not adequate to enable meters to be installed. In these situations customers are requested to update their plumbing. Most customers recognize the need for the plumbing upgrades and are able to do so. In some cases, customers have difficulty with the cost of the upgrades, which causes delay in the meter installation.

In 2012, the project effort was partially diverted to North York in response to commitments to the City's Ombudsman to address issues arising from customers who were responsible for reading their own meters. These customers were not reading the meter reliably enough to avoid billing and payment issues. By redirecting effort to North York, the operating efficiencies expected by the planned reduction in meter reading services anticipated earlier in the program has been delayed by approximately one year.

5. Project Risk Mitigation

The project's quality control measures that were implemented at the beginning of the project ensure that all information associated with the new meters is accurate and that work is done to City standards. A key initiative of the water meter program is the establishment of a dedicated project team. The project team is co-located at 275 Merton Street and comprised of staff from all key City stakeholder divisions (i.e. Toronto

Water, Revenue Services and Information & Technology). The project team inspect the work and monitor key performance indicators (KPI) on a daily basis which has allowed them to identify trends quickly and implement corrective action. As a result, the project team has been able to minimize expenditures, stay ahead of schedule, minimise customer complaints and mitigate risk to the City.

The contract with Neptune contained provisions for the City to carry the financial risk for factors deemed outside of the control of the contractor. These provisions were necessary to attract enough potential contractors to bid on the project to get competitive pricing. The provisions allowed for adjusting unit prices based on increases in commodity pricing (copper), the US-Cdn. Dollar exchange rate, the Fair Wage rate, cost of living and cost of manufacturing. Due to these provisions, the project capital budget was established with a 7% contingency dedicated to financial risk. To date the changes made to unit rates amount to approximately 5% of the original contract amount. The amount is projected to rise to approximately 7% by the end of the project; however, the project is well under budget so the City will not incur the full impact of the unit price changes.

6. Customer and Stakeholder Relations / Impacts

Project related information is provided to customers through a dedicated project website, brochures, letters and 311. Project information is continually updated to address feedback from customers and to explain new developments. The project website can be found at: <http://torontowatermeterprogram.ca/>

Complaints from customers received by City project staff have been very low. To date there have been approximately 300 complaints received regarding the project.

To help flat rate customers understand water meters, meter installation and other aspects of the water meter program, staff have met with Ward Councillors and attended Community meetings prior to the start of installation in their respective Wards. In addition, City staff attended a Community meeting at the request of a Ward Councillor to address concerns with low-power radio waves held by a small segment of the public. Toronto Public Health participated in the meeting and has posted a statement on their website explaining the radio emissions from the transmitters being used on the project. Toronto Public Health reviewed available literature in addition to data provided by the water meter manufacturer. Based on the information provided, the meters transmit RFs at 0.0143% of Health Canada's Safety Code 6 guidelines, a value which is well below the 1% noted in the City's prudent avoidance policy.

One of the benefits associated with automated meter reading technology is the ability to monitor consumption levels on a property-by-property basis, and to use this consumption data for leak detection and notification purposes. This has allowed Revenue Services staff to produce notification letters to former flat rate customers within 30 days of a new meter installation where consumption data from the new meter suggests that daily average consumption is higher than 3 cubic metres per day. Since January 2013, approximately 132 "Warning Letters" have been sent to former flat rate customers that have recently converted to automated meters.

Additionally, water consumption is continuously monitored by comparing average daily consumption to past consumption levels. Where higher than normal consumption is detected, a notice is generated and mailed to property owners, advising them of higher than expected consumption levels, and suggesting that the customer have the property checked for leaks or investigate other potential causes for the high consumption. The current parameters to determine higher than normal consumption are set at three times the normal, individual daily average consumption for a given property. While all properties and consumption patterns and amounts are unique, the average residential home in Toronto consumes between one-half and one cubic meter of water per day. Since January 2013, approximately 16,000 notifications have been sent to customers that have converted to automated meters from flat rate accounts, the notifications are sent to customers whose daily average exceeds the 3 m³/day after conversion advising them to check for leaks.

Staff meet regularly with stakeholders internal to the City including Revenue Services, Information & Technology, Internal Audit and 311 to gather feedback, address issues, plan next steps and to explain project status.

Sustainment of the new metering infrastructure is being planned and implemented in order to ensure the full benefits from the new meters are achieved. New procedures for determining meter asset condition and maintenance are being developed with Revenue Services and 311 to help provide timely and effective maintenance. The sustainment plans also address meter investigations and repairs.

7. Proposed Changes to the City's Fees and Charges

Gaining access to private property in order to install a new water meter is a significant issue for the program. A review of installation data indicates that approximately 3% of property owners have not provided access for the purposes of installing new automatic meter reading equipment. Access is required under provisions of the City of Toronto Municipal Code, Chapter 851 - Water Supply (Chapter 851) and is necessary to ensure completion of the project work such that all water meter readings become automated.

Under Chapter 851, no person shall deny access to authorized City staff for the purposes of installing and maintaining water meters and meter reading devices. Failure to respond to requests to schedule appointments for installation or failure to allow access to install a new meter are offences under Chapter 851 and can result in penalties. Penalties include fines and ultimately turning the water supply off. Enforcing penalties under Chapter 851 are labour intensive for City staff.

Manual Meter Reading Fee

For customers with existing meters who do not allow access to their property for the purpose of installing a new meter, manual water meter reading will continue to be required in order to accurately bill customers for water consumption until the new automated meter is installed. Manual water meter reading is accomplished by physically

visiting the property and either taking the reading directly from the old meter or by touchpad. In areas of the City where the majority of the water meters have been replaced with new meters, these manual readings require a special visit to a property. The City's full costs of performing a manual water meter reading are estimated at \$80.00 per visit.

As such, the introduction of a manual meter reading fee for the recovery of the City's attendance at the property necessitated by the property owner's failure to provide access is proposed and would also serve as an incentive for property owners to allow access for the purposes of installing a new meter.

If it is assumed that 3% or approximately 12,000 of the 406,000 water accounts with existing meters require manual water meter reading 3 times per year at \$80 per visit, the estimated annual cost to the City associated with providing this service would be \$2.9 million. Therefore, a fee of \$80 per visit is recommended in order to recover the City's full cost of providing this service.

Flat Rate Legacy Fee

Similar to customers with existing meters, flat rate customers who do not allow access to their property for the purpose of installing a new meter will continue to be billed on a flat rate. This is problematic because the City cannot determine how much water is consumed by individual property owners under the flat rate structure.

As of August 31, 2013, new water meters have been installed at approximately 90% of the properties that were being billed on a flat rate basis at the beginning of the project, leaving approximately 10% of the properties remaining on a flat rate billing basis. A review of water consumption data recorded shortly after the new meters were installed at properties with former flat rate accounts indicated that water consumption was higher than for properties that were previously metered. A residential flat rate legacy fee is proposed to be \$1,020.00 per year, reflecting an increase in consumption at the 95th percentile of the former flat rate customers billed at the proposed 2014 residential water rates. The 95th percentile is used because it is assumed that water consumption for the remaining 10% of flat rate customers who have not allowed access to their properties will be considerably higher than average.

If it is assumed that property owners who do not allow access to install the new water meters at the remaining 7,000 flat rate water accounts, the estimated annual loss in anticipated revenue associated with these accounts could be as high as \$7.1 million (i.e. 7000 x \$1,020). Therefore, a flat rate legacy fee of \$1,020.00 per year for these accounts will provide a charge that is reasonably consistent with anticipated water consumption.

Lastly, up to six months may be required from the date of approval of these fees to implementation, such that they can be programmed in the City's Utility Billing Database and new bill lay-outs can be designed. Education and notification work will continue as the program expands across the City. Therefore, it is proposed that the introduction of the new fees be effective July 1, 2014.

Draft Council Recommendations – To implement the recommended changes, staff are proposing that the Public Works and Infrastructure Committee adopt in principle the changes to the City's fees and charges associated with water consumers who do not allow access to their properties for the purposes of installing a new water meter and associated meter reading equipment under the water meter program as described in this report, and then refer the matter to the Budget Committee meeting of November 6, 2013, so that the recommendations can be included as part of 2014 Water and Wastewater Rates and Service Fees report to be considered concurrently with Toronto Water's 2014 Operating and Capital Budgets. A draft of the Council recommendations is as follows:

City Council authorizes effective July 1, 2014, the following amendments to Chapter 441, Fees and Charges of the Municipal Code:

- a. Appendix D, Schedule 1, Water & Wastewater Consumption Rates be amended to include a manual water meter reading fee of \$80 per visit; and*
- b. Appendix D, Schedule 1, Water & Wastewater Consumption Rates be amended to include a flat rate legacy fee of \$1,020 per year for residential flat rate consumers.*

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SIGNATURE

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ATTACHMENTS

Appendix A: Water Meter Installation Progress by Ward Account Status at August 31, 2013