TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON SEPTEMBER 7, 2016**
FROM:	**JOHN LUCAS, P.ENG. DIRECTOR – WATER & WASTEWATER**
SUBJECT:	**WATER METER LOCATION OPTIONS FOR RESIDENTIAL CUSTOMERS**

RECOMMENDATION

That, on the recommendation of the Director, Water & Wastewater, the Water Meter Location Options for Residential Customers report **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

- None.

2015 – 19 STRATEGIC PLAN

The initiative supports the Strategic Plan through the strategic focus area of *Leading in Public Service* by being proactive in financial management services and providing excellent customer service delivery.

CONTEXT

The City of London has historically installed water meters inside our customer's buildings, primarily to protect the equipment from the elements. The City has a proactive water meter replacement program in place to minimize revenue losses and install equipment to support advanced meter reading technologies. Replacement is undertaken after a meter has reached approximately 15 years of service life (2,400 m^3 of water throughput) to ensure the equipment functions effectively and accurately.

Over time, advancements have occurred in meter reading technology. Early water meters were mechanically driven direct read style; which then advanced to a remote read; then to electronic touch pad technology; and now to the current radio frequency (drive by) read system. In particular, the City utilizes an Itron radio transmitting meter reading system, incorporating a 100W Electronic Radio Transmitter (ERT) as the primary component.

A very small number of customers have expressed concerns with the radio transmitter installation within their premises and would prefer installation outside. Reasons for these requests vary, with health and safety concerns cited as a basis of the concern. The Itron ERT has been widely accepted for similar use and is fully compliant to all regulatory standards.

The current Water By-law is silent on installation options, so there is little flexibility for staff to meet customer interests at this time. The intention of this report is to identify alternative locations, specifications, responsibilities, and rates and charges for alternative meter and ERT locations, for consideration with other Water By-law updates to be proposed later this year.

BACKGROUND

City of London customers have been fully metered since 1925. Currently there are about 115,000 metered customers (105,000 residential, and 10,000 industrial, commercial and institutional meters). Water meters are an important component of our infrastructure,

measuring the volume of water consumed that forms the basis for the billed revenue for the Water and Sewer utilities, in the amount of $165,000,000 annually.

Water meters are mechanical devices that wear as they register consumption. Their accuracy decreases as they wear, eventually registering less volume than the actual consumption. This reduction in accuracy has a negative impact on the revenue stream for the Water and Sewer utilities and increases our unaccounted for water loss. London's water meter replacement strategy, developed in 2008, determined the optimal replacement frequency to be when approximately 2,400 cubic metres of volume has passed through the meter (about 15 years), optimizing the meter value and service life. The benefits of advanced radio read meter technologies are being realized: increasing read success rates, improving customer service, and reducing operating and capital costs.

Water meters have been typically installed indoors to protect against freezing conditions, since this location provides best protection and life value. Recently, some customers have been requesting that their water meter and/or ERT replacement be done outside of their premise. In an effort to increase customer service, this report puts forth options for those customers requesting alternative locations outside of their premises other than the currently accepted standard location.

DISCUSSION

London has been installing the Itron 100W Electronic Radio Transmitter (ERT) since 2009 and as part of our meter reading technology. This particular radio transmitting meter reading technology was selected as it provided the best flexibility and value in terms of meter reading needs, meter selection and future expansion. Water meter manufacturers typically have distinct protocols (digital coding) to read the volume measured with their water meter and typically require their own proprietary radio-based communication system. The main benefit of the system used by the City of London (Itron 100W ERT system) is that is compatible with the majority of the water meter protocols on the market, allowing it to utilized to read a wide range of water meters produced by various meter manufacturers.

The ERT utilized to transmit the volume readings at the meter is fully compliant to regulatory standards of the FCC and Industry Canada, which governs the safety of such devices as it relates to the output frequency. It fully meets and exceeds Health Canada's Safety Code 6 – Radio Frequency Exposure Guidelines.

To address customers' interests, staff have evaluated alternative water meter installation options, with estimated costs, for customers who wish to not have a water meter and/or ERT installed in their home.

Consideration was given to activities of other municipalities related to this issue. The following three (3) options are proposed for a future Water By-law update, which will recognize the customer's concerns, while being mindful of initial capital costs (and apportionment), ease and flexibility of installation, continued operational support, and interoperability with the meter reading process. In all cases, the City of London provides and installs the appropriate water meter and ERT, makes final connections to the plumbing system, connects all necessary hardware, and activates the equipment. Differences in costs are borne by the customer for activities beyond the status quo.

A) <u>Water Meter & ERT Replacement in Standard Location (Status Quo)</u>

- all costs included in current rates and charges
- all responsibility continues to reside with City of London
- no additional charges are incurred by the customer
- water meter with attached ERT installed in standard location within the premise/household/building
- current Water By-law defines this option very well
- current standards and specifications recognizes this installation practice

B) Water Meter Replacement in Standard Location, ERT Installed Remotely

- current Water By-law defines this option very well
- current standards and specifications recognizes this installation practice
- water meter requires hardwiring to remotely located ERT, such as to hydro stack outside – no additional charges for this installation if done by owner
- customer will be required to obtain specific wiring type from the Water Service Area
- 50 feet (15 metres) of wire is maximum length allowed
- wire installation must be fastened securely and protected from possible damage, tampering, etc.
- customer will be required to pre-install the wire from the existing meter location to the remote ERT location prior to meter replacement appointment

C) Water Meter and ERT Replacement in a Meter Pit at/near Property Line

- current Water By-law somewhat defines this option
- Water By-law (Schedule A"- Water Rates and Charges) does not specify associated costs and apportionment
- current standards and specifications recognizes this installation practice
- meter pits will be placed in front yards or driveways (in line with current water service) at property line, in a location accepted by the City for the purposes of access for periodic maintenance, inspection, etc.
- meter pit lids (residential) are 46 cm (18") diameter
- customer will be required to complete an application form and confirm that they are aware of the size of the lid and that they will have an increased potential for a frozen service
- City will install the meter pit to ensure conformance to our specifications and building code requirements
- customer to reimburse the City 100% cost of pit and installation (estimated at $2,000 - $3,000), exclusive of required restoration
- customer will be responsible for arranging and carrying out of all restoration work, 100 % cost borne by customer
- if the customer wishes to revert back to a standard installation, they will be required to pay the fee set out in the Water By-Law (Schedule A"- Water Rates and Charges) currently covered under "Install Water Meter and Remote Read-Out Unit at Customer Request" , and pertinent clause(s).

FINANCIAL IMPACT

The Water Service Area diligently investigated water metering and reading options in 2008. The most cost effective, efficient, sustainable, and customer-oriented option was selected. Utilizing the Itron 100W ERT as the method to transmit meter readings to the meter reader, and transitioning to a drive-by meter reading system, will reduce meter reading costs by approximately 75%. At the same time, customer service will increase by eliminating problematic long term estimated reads, and supports moving towards the other possible value-added services, such as interval meter reading data, leak detection, and backflow detection.

The status quo installation (Option A) is the sole zero-cost option. The other two (2) options (Option B: ERT wired outside; Option C: Meter Pit) will have a financial impact on the utility which will be passed along to the customer who chooses to vary from the status quo.

Option B, with the ERT wired remotely outside, will have the least financial impact on the customer as the Water Service Area will provide the required wire for free of charge. However, the customer will have some minor costs and/or time to ensure that the wire is installed from the water meter location to the ERT location outside the building. This option is susceptible to problems associated with wire damage. If it is found that the remote reading device is failing to receive a signal due to a cut or damaged wire, the customer will be required to pay a fee as set out in the Water By-law (Schedule A"- Water

Rates and Charges), under “Repair Damaged Water Meter”, and pertinent clause(s).

Option C, with the meter pit installation, has the most financial impact on the customer in terms of upfront cost, estimated to be between $2,000 to $3,000 depending on the installation location, restoration and potential difficulties encountered. Installation and restoration costs beyond the status quo will be borne entirely by the customer.

Also with Option C, the water meter would now be able to measure any leakage on the private-side of the water service piping between meter pit and building. The owner would become responsible for any consumptive costs related to leaks on their water service.

SUMMARY

The water meter and meter reading strategy developed in 2008 outlined the future direction of water metering and meter reading for the City of London. The replacement program is well established, and is on its way to reducing meter reading costs by 75%.

Customer concerns have been expressed as it relates to the locating the radio devices within their premises, suggesting that externally located alternatives be available to them. Within the current Water By-law, there is no other alternative water metering options readily available for meter exchanges other than the current process (ie. a water meter and ERT being installed inside private buildings). The addition of alternatives for meter installation will allow customers a solution that will work for them while retaining the majority of the original goals of the Water Meter and Meter Reading Strategy. These proposed alternatives have an “at cost” solution, recognizing deviation from what is covered in capital and operating budgets. Additional costs of these alternatives should not be subsidized by the vast majority of water ratepayers when the status quo solution is effective, safe, reliable, and sufficient.

Acknowledgements:

This report has been prepared with input from Scott Koshowski, P. Eng. - Environmental Services Engineer.

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