



Water Conservation and Servicing Master Plan

City of Cornwall

Final Report

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Watson & Associates Economists Ltd.
905-272-3600
info@watsonecon.ca

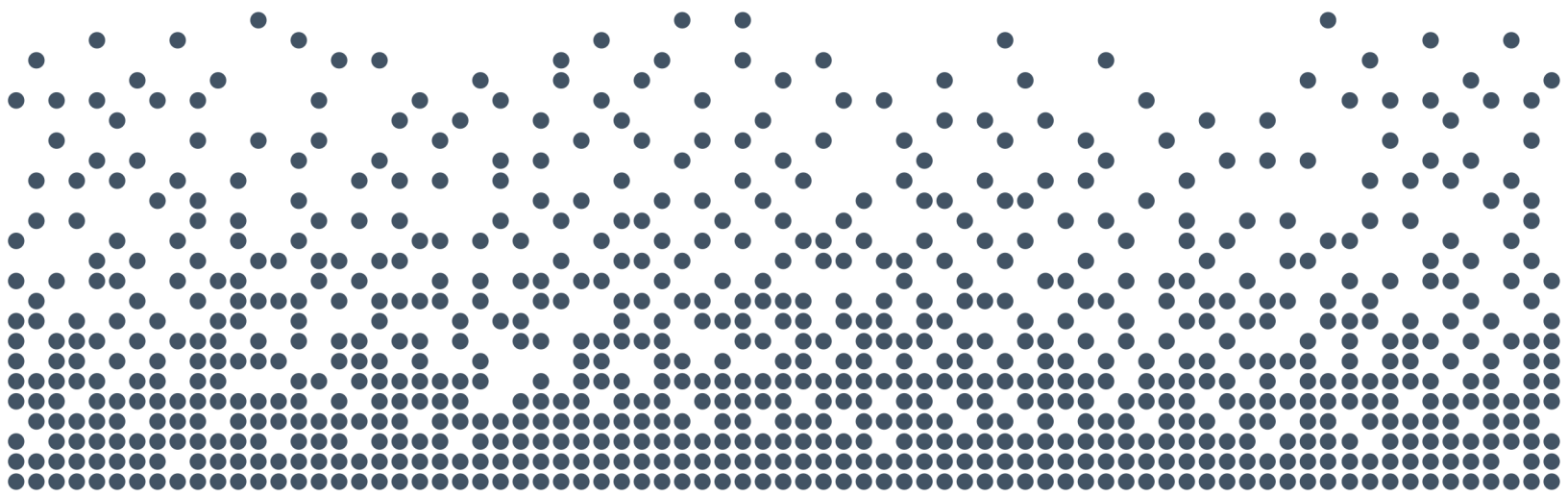
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Report



Chapter 1

Introduction



1. Introduction

1.1 Background

The overarching purpose of the Water Conservation and Servicing Master Plan (Master Plan) is to develop a water conservation program. In doing so, the further objectives of the Master Plan include:

- Community outreach to increase awareness and gain public support for water demand management;
- Development of volume-based metered water and wastewater rates to provide a sustainable revenue source. This will include the assessment of alternative methods to charge residents for water and wastewater services;
- Development of a draft water conservation incentive and rebate plan;
- Consultation with the public on alternative water and wastewater billing rates and water conservation incentive and rebate plans;
- A financial plan for the sustainable funding of water and wastewater services and water conservation initiatives;
- Recommendations on request for proposals and tenders, etc.; and
- Timing and implementation guidelines.

The Master Plan is also being undertaken in response to recommendations of the Ministry of Environment, Conservation and Parks (MECP), which regulates the City's Drinking Water Quality Management System (DWQMS). One of the 2018-2019 MECP Inspection Report Recommendations was that "measures should be considered to promote water conservation. This could include studies of current practices to determine how much water would be saved by implementing conservation measures." Furthermore, a new update of the DWQMS (entitled DWQMS 2.0) puts greater emphasis on the external and internal audit process for water conservation programs. To audit the effectiveness of a water conservation program, the City needs to be able to measure the volume of water utilized by residents and businesses within the City. As the City currently only meters the water consumption of non-residential connections and a small number of residential connections in the City, the installation of water meters City-wide is being investigated to allow the City to measure the effectiveness of the proposed water conservation program, in addition to comprising a key component of the water conservation program itself.



The MECP has also released a guideline, “Towards Financially Sustainable Drinking-Water and Wastewater Systems,” which provides possible approaches to achieving sustainability. The Province’s principles of financially sustainable water and wastewater services are presented below and provide support for the objectives of this Master Plan, including:

- Transparent public engagement;
- Generation of sustainable revenues for the reliable services and future rehabilitation and replacement of infrastructure; and
- Equitable outcomes and promotion of water conservation through users paying for the services they receive.

Principles of Financially Sustainable Water and Wastewater Systems

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.

Principle #2: An integrated approach to planning among water, wastewater, and storm water systems is desirable given the inherent relationship among these services.

Principle #3: Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.

Principle #4: Lifecycle planning with mid-course corrections is preferable to planning over the short term, or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.



Principle #8: Financial plans are “living” documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.

Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal Council.



Chapter 2

Community Outreach to Increase Awareness and Gain Public Support for Water Demand Management



2. Community Outreach to Increase Awareness and Gain Public Support for Water Demand Management

2.1 Introduction

The St. Lawrence River Institute of Environmental Science (River Institute) has been working alongside the City to undertake initiatives to educate the community on water conservation and the need to protect the St. Lawrence River as the City's drinking water source. The community outreach and education program was undertaken in two phases in 2020 and 2021.

2.2 Phase 1 (2020)

The first phase of the program was undertaken in 2020 and consisted of producing three separate guides, which were placed on the City's dedicated water conservation page of their website and also promoted through social media channels. The three guides developed included:

- **Building a Rain Garden**
 - Rain gardens consist of native plants and shrubs which help collect stormwater runoff from your grass, roof, and driveway. Rain gardens capture 30% more stormwater than a manicured lawn, thereby reducing the stormwater that enters the City's combined sewers requiring treatment at the wastewater treatment plant. Rain gardens also allow the stormwater that is captured to re-enter the groundwater system and recharge aquifers (underground sources of fresh water).
 - The guide included information on designing your garden, what plants to include, soil composition, and ongoing maintenance.
- **Conducting Your Own Home Water Audit**
 - The home water audit guide provided a tool for all homeowners to assess their water usage and identify ways to conserve water. The guide also provided the benefits of conserving water from:
 - an environmental perspective, including conserving depleting aquifers;



- an operational perspective, including reduced chemical costs of treating water and wastewater; and
- a capital cost perspective, including reduced costs of replacing City infrastructure and the deferral of capacity expansions.
- **Organizing a Community Shoreline Clean-up**
 - The clean-up guide provided helpful tips for organizing a clean-up with the objective of removing trash that contaminates drinking water and threatens the lives of all people, wildlife, and communities who depend on clean water.

In addition to the three water conservation guides that were developed, the water conservation page of the City's website also included valuable information on:

- The largest uses of water in the household;
- Benefits of using a carwash vs. washing your car at home;
- Landscape and lawn irrigation advice to help save water while maintaining a beautiful outdoor space;
- Indoor water conservation tips such as regularly checking for leaks in your system; and
- Proper use of the sewer system (e.g., not putting wipes, solvents, grease, etc. down your drains or toilets) to protect the environment and reduce wastewater treatment and collection costs.

The River Institute and the City also produced a "Street Level" video, which was placed on the City's website to give an overview of the use of water in the City. The video focused on the City's water source (the St. Lawrence River) and the health of that drinking water source before following water on its path through the City's water treatment plant and distribution infrastructure to homes and businesses, before being collected in the sewer system, treated at the wastewater treatment plant, and contributed back into the St. Lawrence River.

2.3 Phase 2 (2021)

The second phase of the education program was conducted in 2021 and included the production of three videos on different aspects of water conservation.



The first video focused on the need to conserve water from an environmental standpoint. The presence of the St. Lawrence River leads some to the impression that fresh water is abundant or unlimited (and therefore water conservation is not important); however, this is not the case. The video dispels this myth that freshwater is an abundant resource world-wide and emphasizes the importance of using drinking water sources we do have (like the St. Lawrence River) in an environmentally responsible and efficient manner.

The second video illustrates how simple changes in how water use in our homes can translate into large volumes of water saved over time, providing insights into the most accessible areas for initial water conservation.

The final video focuses on efficient water use when watering lawns and gardens. The video builds on the information provided through the rain garden guide and the landscape and lawn irrigation tips provided on the water conservation page of the City's website.



Chapter 3

Rate Structure Alternatives and Water Meters



3. Rate Structure Alternatives and Water Meters

3.1 Introduction

This chapter summarizes the different rate structure alternatives or pricing mechanisms that could be utilized to recover the long-term capital and operating costs of providing water and wastewater services within the City. The rate structure alternatives have also been assessed with regard for:

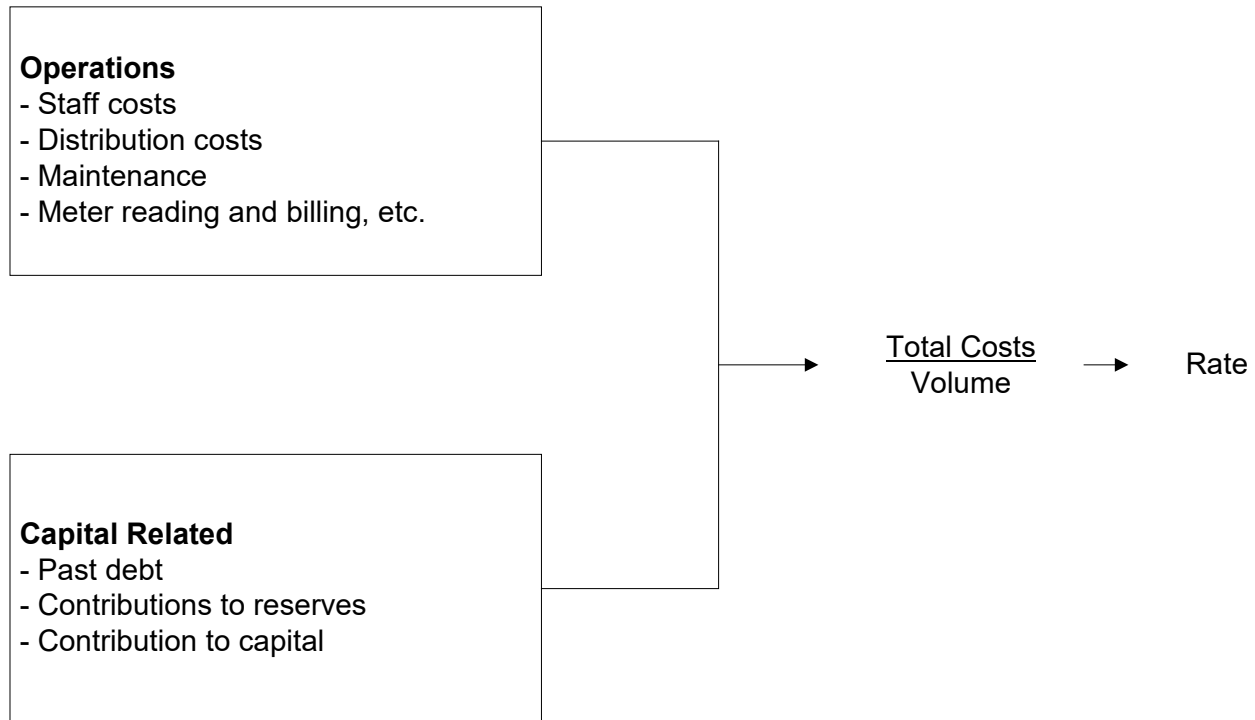
- Cost recovery and revenue stability implications;
- Administration and ease of implementation;
- The ability to allocate costs of service to customers in an equitable fashion;
- Promotion of water conservation; and
- The prevalence of different rate structures employed by Ontario municipalities.

Section 3.6 also summarizes the City's current water and wastewater rate structure and recommends an alternative rate structure that could be employed within the City based on discussions with staff.

Rates in their simplest form can be defined as total costs to maintain the utility function divided by the total expected volume to be generated for the period. Total costs are usually a combination of operating costs (e.g., staff costs, distribution costs, maintenance, administration, etc.) and capital-related costs (e.g., past debt to finance capital projects, transfers to reserves to finance future expenditures, etc.). The schematic below provides a simplified illustration of the rate calculation for water.



“ANNUAL COSTS”



These operating and capital expenditures will vary over time. Examples of factors that will affect the expenditures over time are provided below.

Operations

- Inflation
- Increased maintenance as system ages
- Changes to provincial legislation

Capital Related

- New capital will be built as areas expand
- Replacement capital needed as system ages
- Financing of capital costs is a function of policy regarding reserves and direct financing from rates (pay as you go), debt and user pay methods (development charges, *Municipal Act*)



3.2 Alternative Pricing Structures

Throughout Ontario, and as well, Canada, the use of pricing mechanisms varies between municipalities. The use of a particular form of pricing depends upon numerous factors, including Council preference, administrative structure, system capacities, and economic/demographic conditions, to name a few.

Municipalities within Ontario have two basic forms of collecting revenues for water and wastewater services, those being through incorporation of the costs within the tax rate charged on property assessment and/or through the establishment of a specific water and wastewater rate billed to the customer. Within the rate methods, there are four basic types of rate structures employed:

1. Flat Rate
2. Constant Rate
3. Declining Block Rate
4. Increasing (or Inverted) Block Rate.

These types of rates may be employed independently or in combination. The definitions and general application of the various methods are set out in the following subsections.

3.2.1 Property Assessment

This method incorporates the total costs of providing water into the general requisition or the assessment base of the municipality. This form of collection is a "wealth tax," as payment increases directly with the value of the property owned and bears no necessary relationship to actual consumption or demand for service. This form is easy to administer as the costs to be recovered are incorporated in the calculation for all general services, normally collected through property taxes.

3.2.2 Flat Rate

This rate is a constant charge applicable to all customers served. The charge is calculated by dividing the total number of user households and other entities (e.g., businesses) into the costs to be recovered. This method does not recognize differences in actual consumption but provides for a uniform spreading of costs across all users. Some municipalities define users into different classes of similar consumption patterns, such as a commercial user, residential user, and industrial user, and charge a flat rate



by class. Each user is then billed on a periodic basis. No meters are required to facilitate this method, but an accurate estimate of the number of users is required. This method ensures a set revenue for the collection period but is not sensitive to consumption, hence may cause a shortfall or surplus of revenues collected.

3.2.3 Constant Rate

This rate is a volume-based rate, in which the consumer pays the same price per unit consumed regardless of the volume of water consumed. The price per unit is calculated by dividing the total cost of the service by the total volume used by all consumers. The bill to the consumer climbs uniformly as the consumption increases. This form of rate requires the use of meters to record the volume consumed by each user. This method closely aligns the revenue recovery with consumption. Revenue collected varies directly with the consumption volume.

3.2.4 Declining Block Rates

This rate structure charges a successively lower price for set volumes, as consumption increases through a series of "blocks." That is to say that within set volume ranges, or blocks, the charge per unit is set at one rate. Within the next volume range, the charge per unit decreases to a lower rate, and so on. Typically, the first, or first and second blocks cover residential and light commercial uses. Subsequent blocks normally are used for heavier commercial and industrial uses. This rate structure requires the use of meters to record the volume consumed by each type of user. This method also requires the collection and analysis of consumption patterns by user classification to establish rates at a level that does not over or under collect revenue from rate payers.

3.2.5 Increasing or Inverted Block Rates

The increasing block rate works essentially the same way as the declining block rate, except that the price of water in successive blocks increases rather than decreases. Under this method the consumer's bill rises faster with higher volumes used. This rate structure also requires the use of meters to record the volume consumed by each user. This method requires, as with the declining block structure, the collection and analysis of consumption patterns by user classification to establish rates at a level that does not over or under collect from rate payers.



3.3 Assessment of Alternative Pricing Structures

The adoption by a municipality or utility of any one particular pricing structure is normally a function of a variety of administrative, social, demographic, and financial factors. The number of factors and the weighting each particular factor receives can vary between municipalities. The following is a review of some of the more prevalent factors.

3.3.1 Cost Recovery

Cost recovery is a prime factor in establishing a particular pricing structure. Costs can be loosely defined into different categories: operations, maintenance, capital, financing, and administration. These costs often vary between municipalities and even within a municipality, based on consumption patterns, infrastructure age, economic growth, etc.

The pricing alternatives defined earlier can all achieve the cost recovery goal, but some do so more precisely than others. Fixed pricing structures, such as property assessment and flat rates, are established on the value of property or on the number of units present in the municipality, but do not adjust in accordance with consumption. Thus, if actual consumption for the year is greater than projected, the municipality incurs a higher cost of production, but the revenue base remains static (since it was determined at the beginning of the year), potentially providing a funding shortfall. Conversely, if the consumption level declines below projections, fixed pricing structures will produce more revenue than actual costs incurred.

The other pricing methods (declining block, constant rate, increasing block) are consumption based and generally will generate revenues in proportion to actual consumption.

3.3.2 Administration

Administration is defined herein as the staffing, equipment and supplies required to support the undertaking of a particular pricing strategy. This factor not only addresses the physical tangible requirements to support the collection of the revenues, but also the intangible requirements, such as policy development.

The easiest pricing structure to support is the property assessment structure. As municipalities undertake the process of calculating property tax bills and the collection



process for their general services, the incorporation of the water costs into this calculation would have virtually no impact on the administrative process and structure.

The flat rate pricing structure is relatively easy to administer as well. It is normally calculated to collect a set amount, either on a monthly, quarterly, semi-annual, or annual basis and is billed directly to the customer. The impact on administration centers mostly on the accounts receivable or billing area of the municipality, but normally requires minor additional staff or operating costs to undertake.

The three remaining methods, those being increasing block rate, constant rate, and declining block rate, have a more dramatic effect on administration. These methods are dependent upon actual consumption and hence involve a major structure in place to administer. First, meters must be installed in all existing units in the municipality and units to be subsequently built must be required to include these meters. Second, traditional meter readings must be undertaken periodically. Hence staff must be available for this purpose, or a service contract must be negotiated. Alternatively, Advanced Metering Infrastructure (AMI) can be utilized to eliminate the need for manual meter reading. Third, the billings process must be expanded to accommodate this process. Billings must be done per a defined period, requiring staff to produce the bills. Lastly, either through increased staffing or by service contract, an annual maintenance program must be set up to ensure meters are working effectively in recording consumed volumes.

3.3.3 Equity

Equity is always a consideration in the establishment of pricing structures, but its definition can vary depending on a municipality's circumstances and based on the subjective interpretation of those involved. For example: Is the price charged to a particular class of rate payer consistent with those of a similar class in the surrounding municipalities? Through the pricing structure, does one class of rate payer pay more than another class? Should one pay based on ability to pay or on the basis that a unit of water costs the same to supply no matter who consumes it? There are many interpretations. Equity, therefore, must be viewed broadly in light of many factors as part of achieving what is best for the municipality as a whole.



3.3.4 Conservation

In today's society, conservation of natural resources is increasingly being more highly valued. Conservation continuously focuses on the preservation of non-renewable resources and on the proper management of renewable resources. Conservation is also a concept that applies to a municipality facing physical limitations in the amount of water that can be supplied to an area. As well, financial constraints can encourage conservation in a municipality where the cost of providing each additional unit is increasing.

Pricing structures such as property assessment and flat rate do not, in themselves, encourage conservation. In fact, depending on the price that is charged, they may even encourage resource "squandering," either because consumers, without the price discipline, consume water at will, or the customer wants to get their money's worth and hence adopts more liberal consumption patterns. The fundamental reason for this is that the price paid for the service bears no direct relationship to the volume consumed and hence is viewed as a "tax," instead of being viewed as the price of a purchased commodity.

The declining block rate provides a decreasing incentive towards conservation. By creating awareness of volumes consumed, the consumer can reduce their total costs by restricting consumption; however, the incentive lessens as more water is consumed, because the marginal cost per unit declines as the consumer enters the next block pricing range. Similarly, those whose consumption level is at the top end of a block have reduced incentive to lower consumption.

The constant rate structure presents the customer with a linear relationship between consumption and the cost thereof. As the consumer pays a fixed cost per unit, their bill will vary directly with the amount consumed. This method presents tangible incentive for consumers to conserve water. As metering provides direct feedback as to usage patterns and the consumer has direct control over the total amount paid for the commodity, the consumer is encouraged to use only those volumes that are reasonably required.

The increasing block method presents the most effective pricing method for encouraging conservation. Through this method, the price per unit consumed increases as total volumes consumed grow. The consumer becomes aware of consumption

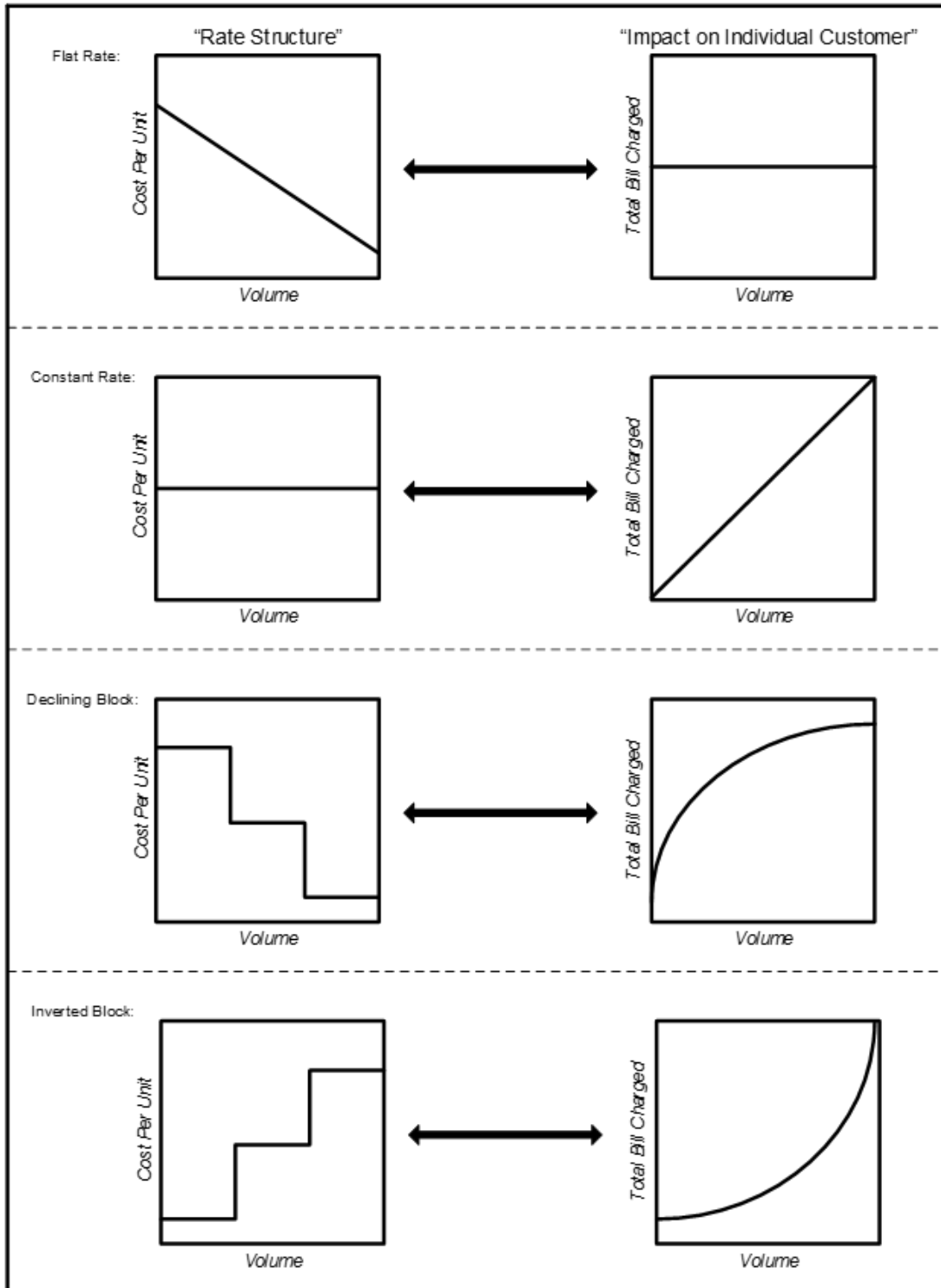


through metering with the charges increasing dramatically with usage. Hence, there normally is an awareness that exercising control over usage can produce significant savings. This method not only encourages conservation but may also penalize legitimate high-volume users if not properly structured.

Figure 3-1 provides a schematic representation of the various rate structures (note property tax as a basis for revenue recovery has not been presented for comparison, as the proportion of taxes paid varies in direct proportion to the market value assessment of the property). The graphs on the left-hand side of the figure present the cost per unit for each additional amount of water consumed. The right-hand side of the figure presents the impact on the customer's bill as the volume of water increases. The schematic is summarized below for each rate structure.



Figure 3-1
Water Rate Pricing Structures





Rate Structure	Cost per Unit as Volume Consumption Increases	Impact on Customer Bill as Volume Consumption Increases
Flat Rate	Cost per unit decreases as more volume consumed	Bill remains the same no matter how much volume is consumed
Constant Rate	Cost per unit remains the same	Bill increases in direct proportion to consumption
Declining Block	Cost per unit decreases as threshold targets are achieved	Bill increases at a slower rate as volumes increase
Increasing (Inverted) Block	Cost per unit increases as threshold targets are achieved	Bill increases at a faster rate as volumes increase

3.4 Water Meters

There are several benefits of installing water meters in a municipality in addition to facilitating the metered rate structures summarized in Section 3.2.

One benefit is that information on consumption patterns becomes available. This information provides benefit to administration in calculating rates which will ensure revenue recovery. Additionally, when planning what services are to be constructed in future years, the municipality or utility has documented consumption patterns distinctive to its own situation, which can be used to project sizing of growth-related works. As mentioned earlier, traditionally meter readings must be undertaken periodically and staff must be available for this purpose, or service contracts must be in place. AMI can be utilized, at a higher initial capital cost, to eliminate the need for manual meter reading. There are a number of benefits to both a municipality and property owners with the installation of water meters, including AMI water meters.



Benefits to the municipality include:

- The re-allocation of resources towards system monitoring and repair vs. meter reading;
- Remote meter reading;
- Improved leak detection:
 - The installation of smart water meters will also allow the City to improve their ability to find leaks in the water pipes under the ground. Finding and repairing these leaks as quickly as possible provides operating cost savings that are ultimately passed on to the customer and rate payer. The early detection of leaks in the system saves money by reducing the amount of water that must be produced. In addition, repairing leaks soon after they occur is typically less expensive than doing so when the problem persists over time leading to greater damage and repair costs.
 - In addition to saving money, having the ability to find leaks more quickly allows for the repairs to be scheduled at a time when shutting off the water will be of a minimal inconvenience to property owners.
- Reduced environmental footprint and alignment with community strategic plan priorities including being leaders in sustainability and climate change impact; and
- Deferral of capacity improvements and lower operating costs associated with water conservation

Benefits to property owners include:

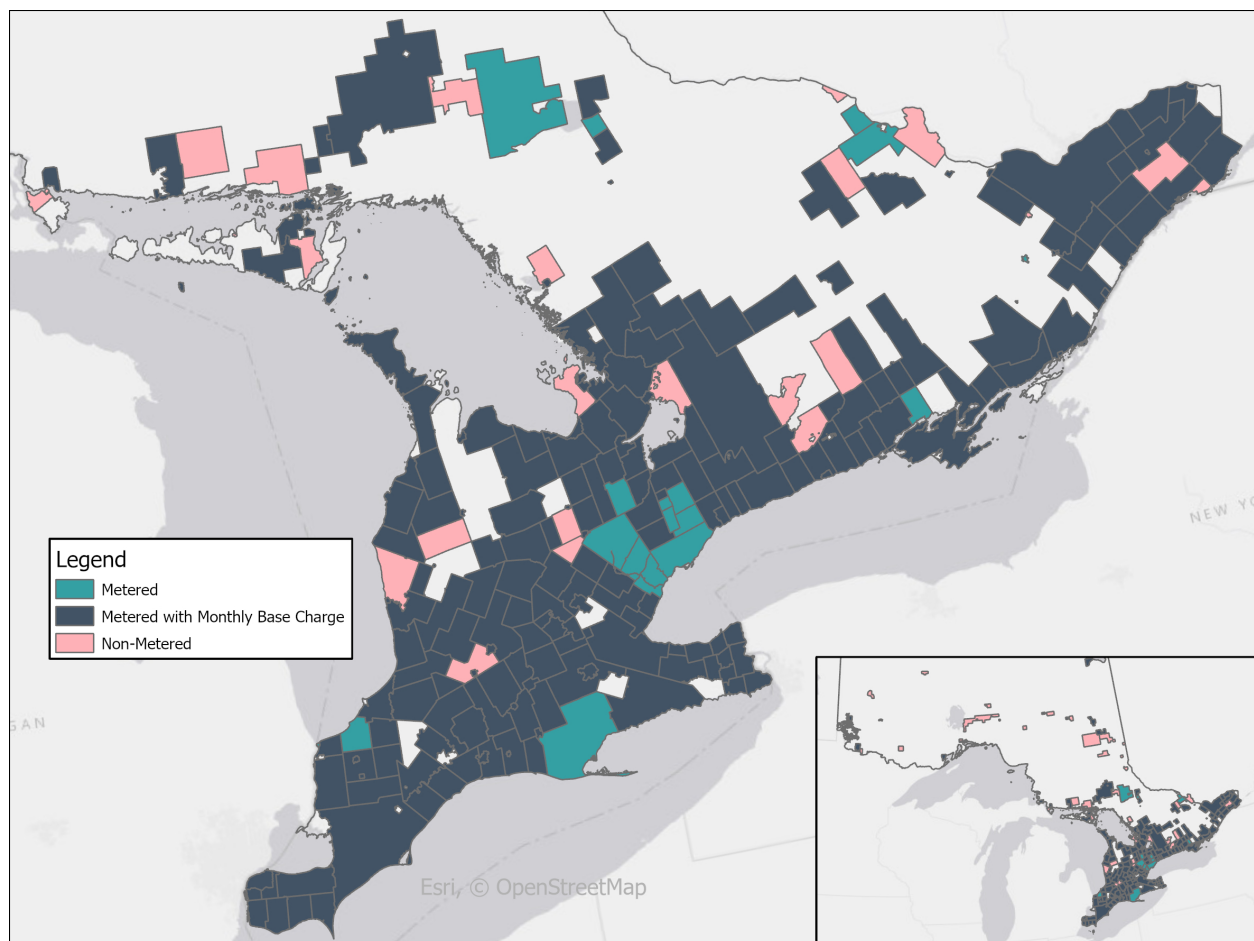
- Improved customer service through use of timely data;
- Identification of unusual water use and real-time customer notification:
 - A useful example would be, if a customer historically does not use any water between midnight and 7 a.m., a notification could be sent to check if a toilet valve is stuck as the customer used water during the night when he/she typically does not;
- Improved water-use management by customers; and
- Ability to pay only for the water used.



3.5 Rate Structures in Ontario

In a recent survey of municipalities providing municipal water services in Ontario (271 municipalities), all forms of rate structures that have been identified are in use by Ontario municipalities in some manner. Of the municipalities surveyed, approximately 85% of the municipalities have water meters. The 41 municipalities without water meters are typically smaller municipalities with water systems that may only serve a small area of the municipality. The average population of those municipalities is 3,800 persons (excluding the unmetered Cities of Timmins and Cornwall with populations in excess of 40,000 persons). Furthermore, as shown in Figure 3-2, most of these municipalities are in the northern parts of the Province.

Figure 3-2
Metered and Unmetered Municipalities in Ontario





The most common rate structure is the constant rate (for metered municipalities). Most municipalities (approximately 88%) who have meters and volume rate structures also impose a base monthly charge (as shown in Figure 3-2). Monthly base charges could include billing charges, meter charges, or minimum charges as summarized in the following sections.

Recently, many municipalities have started to establish base charges based on ensuring a secure portion of the revenue stream that does not vary with volume consumption. Selection of the quantum of the base charge is a matter of policy selected by individual municipalities.

When examining the practice in eastern Ontario, as shown in Figure 3-2, other than the City of Cornwall, the Township of North Stormont is the only municipality to not impose rates comprised of a monthly base charge and a consumptive rate per volume of water consumed.

3.5.1 Billing Charges

Historically, the development of a base charge often reflected the billing charge approach, where either the recovery of meter reading/billing/collection costs plus administration, or those costs plus certain fixed costs (such as capital contributions or reserve contributions) were calculated. Billing charges can be calculated on a uniform basis by customer or account or differentiated by customer class if these costs vary. Billing charges are relatively easy to calculate, administer, and to communicate to customers.

Compared to other types of base charges, billing charges are typically lower as the costs they are meant to recover represent a fairly small share of the costs of service.

3.5.2 Meter Charges

Many municipalities set base charges such as meter charges to recover the minimum costs associated with making the service available, as these costs are incurred regardless of the water used in a given period. Approaches to establishing these costs could involve a minimum system requirement analysis or by assessing the long-term annual capital replacement costs that would be incurred to maintain the capital infrastructure through which services are provided.



Meter charges consist of a monthly base charge that varies by meter size. Because meter charges vary by customer or account based on meter size, they can be more difficult to explain than billing charges or minimum charges.

3.5.3 Minimum Charges

Minimum billing charges are designed such that customers are charged a minimum amount regardless of water consumption and the minimum is often set at a low level of water consumption that typically most customers would consume.

3.6 City of Cornwall Current and Proposed Water and Wastewater Rate Structures

3.6.1 Current Rate Structure

The City currently employs a variation of the flat rate structure described in Section 3.2 and Section 3.3, by customer class and constant metered rates for some non-residential customers.

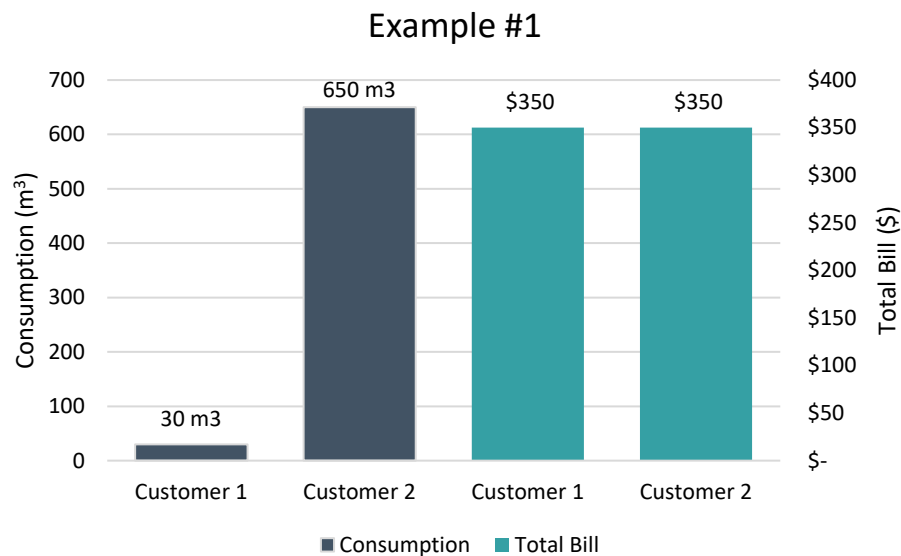
Residential customers are charged a fixed rate based on the number of water-using fixtures that are installed in the residence. This variation of the flat rate structure seeks to align cost recovery with consumption without the imposition of water meters. As described above, this flat rate method ensures a set revenue for the collection period but is not sensitive to actual consumption, and hence may cause a shortfall or surplus of revenues collected. Furthermore, for many residents the number of water-using fixtures will have no bearing on the amount of water consumed (e.g., empty nesters) and demand for service.

Non-residential customers are charged either a flat rate per water-using fixture, as above, or a constant rate per volume of water consumed. The approach of charging metered rates or flat rates for the same types of customers has potential equity issues, as similar customers exhibiting similar water demands may pay considerably different water and wastewater bills. The following three non-residential customer comparisons further illustrate the inequities in the current practices of non-residential water and wastewater billing. These non-residential customer comparisons are based on actual water and wastewater bills within the City.



Non-Residential Customer Example #1

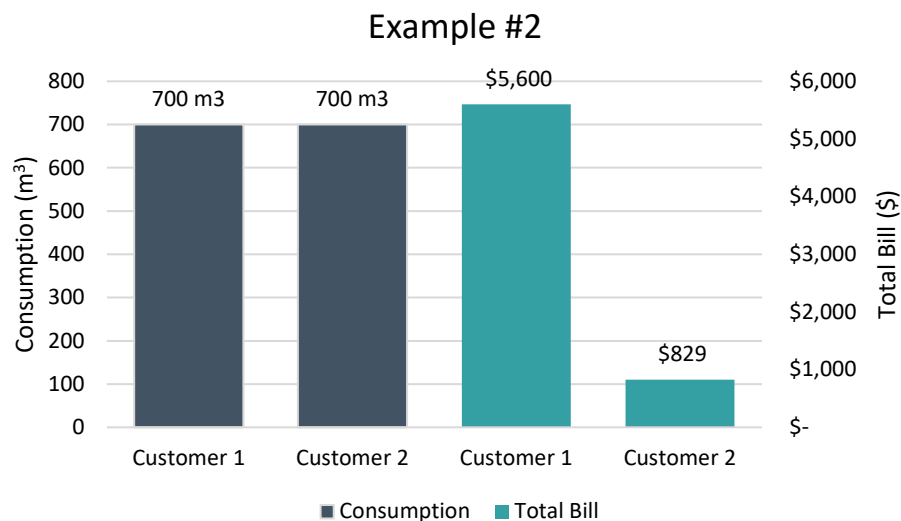
- **Customer 1:** Consumes 30 m³ of water annually and pays \$350 per year for water and wastewater, based on the number of water-using fixtures.
- **Customer 2:** Consumes 650 m³ of water annually and pays \$350 per year for water and wastewater, based on the number of water-using fixtures.
- Customer 2 consumes approximately 22 times the amount of water annually as customer 1 but pays the same water and wastewater bill.





Non-Residential Customer Example #2

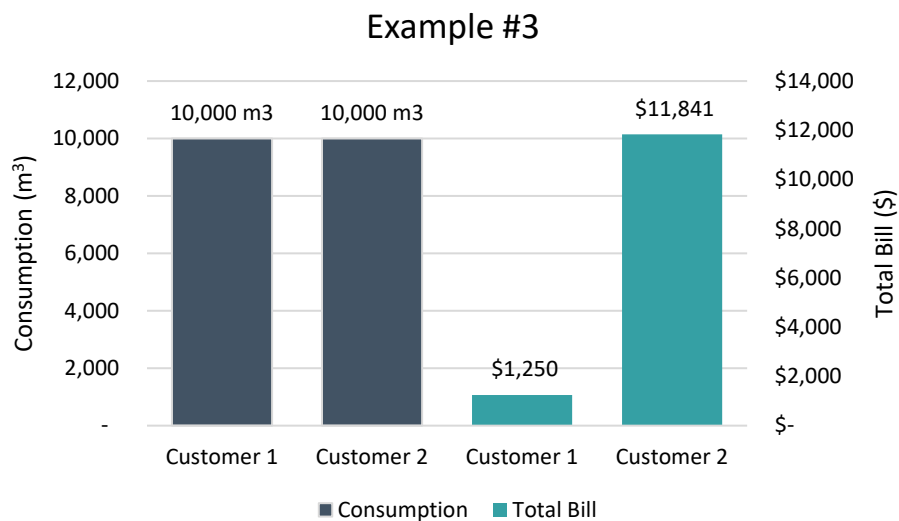
- **Customer 1:** Consumes 700 m³ of water annually and pays \$5,600 per year for water and wastewater, based on the number of water-using fixtures.
- **Customer 2:** Consumes 700 m³ of water annually and pays \$829 per year for water and wastewater, based on the volume of water consumed.
- Customers 1 and 2 have identical water consumption patterns; however, customer 1 pays almost 7 times more for water and wastewater (+\$4,771) than customer 2 because customer 1 is billed based on the number of water-using fixtures.





Non-Residential Customer Example #3

- **Customer 1:** Consumes 10,000 m³ of water annually and pays \$1,250 per year for water and wastewater, based on the number of water-using fixtures.
- **Customer 2:** Consumes 10,000 m³ of water annually and pays \$11,841 per year for water and wastewater, based on the volume of water consumed.
- Customers 1 and 2 have identical water consumption patterns; however, in this case the bill for customer 2, which is based on the volume of water consumed, is more than 9 times (+\$10,591) greater than the bill for customer 1, which is based on the number of water-using fixtures.



Wastewater billings are charged based on a percentage of the water bill imposed. As such, the same benefits and risks associated with the water rate structures apply to the wastewater billing as well. Furthermore, as the wastewater rates are set based on a percentage of the water bills, this structure does not allow for wastewater rates to be forecasted separately to recover the independent costs of providing wastewater services.

3.6.2 Proposed Rate Structure

The proposed metered rate structure that has been assessed through the Master Plan incorporates a fixed and volumetric component to the charge. This type of rate structure mirrors that of most municipalities in Ontario. A rate structure combining fixed and volumetric charges allows the City to receive some of the benefits associated with



both structures. The fixed component of the charge provides revenue stability which can be differentiated by meter size to reflect the available service capacity. The variable component of the charge promotes water conservation through metered rates, allowing customers some control over their water and wastewater bills through water-use management.

In terms of the type of volumetric rate structure to be imposed (i.e., constant rate, increasing block rate, or decreasing block rate), it is recommended that the City impose a constant rate. Although an increasing block rate can further incentivize water conservation as compared to a constant rate, the imposition of such a rate requires a detailed assessment of water consumption by customer and classification. Due to the lack of residential water metering data available in the City, the imposition of increasing block rates could have unintended bill consequences for customers within the City and is not recommended at this time.



Chapter 4

Conservation Incentive and Rebate Plan



4. Conservation Incentive and Rebate Plan

4.1 Introduction

In addition to promoting water conservation through the installation of water meters and the alternative rate structures, the water conservation program has considered the potential of providing financial incentives and rebates for customers who agree to install water efficient appliances or to partner in other programs or initiatives to limit water consumption and wastewater flows. To inform the development of these potential programs in the City, similar programs have been surveyed for 17 Ontario municipalities. The detailed survey undertaken for residential and non-residential programs is included in Appendix A.

4.2 Residential Programs

Twelve of the 17 municipalities surveyed provided incentives towards increasing water conservation in the residential sector. All these municipalities offered toilet rebate programs, while four others offered other incentives such as rebates for multi-residential buildings, weeping tile, down-spout, sump pump sanitary sewer disconnect programs, and washing machine rebates.

4.2.1 Toilet Rebate Programs

Toilet rebate programs are offered for the replacement of high-water-use toilets (i.e., toilets using 6 litres or 13 litres per flush or higher) with high-efficiency toilets (i.e., toilets using 4.8 litres per flush or less). The rebates that are provided are generally limited to a maximum of one or two per household, and in some cases further limitations are imposed based on when the home was constructed or when the existing toilet was purchased. Residential rebates range from \$50 to \$75 per toilet.

The costs and benefits of providing a toilet rebate program within the City have been evaluated. City staff have estimated that reducing residential water consumption from current estimates of 400 litres per capita per day to 250 litres per capita per day (i.e., a 37.5% reduction) would save approximately \$300,000 per year at the Water Purification and Wastewater Treatment plants. Based on the estimated current residential water demand of 6.1 million m³ annually, the annual cost savings associated with the



proposed reduction in average consumption equates to \$0.13 per m³ (\$0.00013 per litre) of water conserved. Table 4-1 presents, for various sized toilets, the assumed water usage per household, the water reduction associated with switching to a 4.8 litres per flush toilet, the operational costs savings associated with the reduced water consumption, and the resulting payback period to recover the costs of providing a \$50 toilet replacement rebate.

Table 4-1
Toilet Rebate Program Costs

Description	20-Litre Toilet	13-Litre Toilet	6-Litre Toilet	4.8-Litre Toilet
Litres per person per day (5 flushes/person/day)	100	65	30	24
Litres per household per day (2.2 persons/household ¹)	220	143	66	53
Litres per household per year	80,300	52,195	24,090	19,272
Annual water usage reduction with 4.8 litres per flush toilet	61,028	32,923	4,818	-
Annual City cost savings per 4.8 litres toilet (\$0.000132 per litre)	\$8.06	\$4.35	\$0.64	
Rebate payback period (\$50 rebate)	6.2 years	11.5 years	78.6 years	

¹ 2017 Development Charge Study Persons Per Household Estimate

The cost of providing a \$50 rebate for the replacement of a low-efficiency toilet with a 4.8 litres per flush toilet would be recovered in 6.2 years when replacing a 20 litres per flush toilet, and 11.5 years for a 13 litres per flush toilet. The cost savings associated with the replacement of a 6 litres per flush toilet with a 4.8 litres per flush toilet would take much longer to be realized (i.e., 78.6 years).

With the metered water rates (identified in Chapter 6), a high efficiency toilet could save the average household between \$80 and \$124 on their annual water and wastewater bill (higher savings would be associated with the replacement of older 20 litres per flush toilets). Depending on the price of the high-efficiency toilet purchased, the rebate, in combination with the cost savings on a customer’s water and wastewater bill, could recoup the cost of a new toilet in the first year.

4.2.2 Home Water Audit Programs and Education

Home water audit programs are offered to assess the water usage in a home and identify home-specific water efficiency retrofit opportunities. Although with the



installation of water meters total water use would be measured for each household, not all fixtures are created equal, with newer fixtures being much more energy efficient than older fixtures (e.g., older toilets use much more water per flush than newer toilets as identified in Table 4-1).

4.2.3 Other Residential Incentives

There are several other residential water conservation incentives that could be considered by municipalities as they continue to progress through their water conservation journey. These could include:

- Water-efficient landscaping incentives
 - Incentives provided towards planting water-efficient plants as opposed to lawns
- Water-efficient home certification programs
 - Certifications for new homes that are built with high-efficiency water usage fixtures and appliances
- Rainwater harvesting
 - Incentives for the installation of rainwater harvesting systems. These systems could be for seasonal outdoor use or all-season indoor-outdoor use
- Greywater reuse
 - Greywater reuse systems reduce the amount of treated drinking water that is required in a home for specific activities. For example, water required for flushing toilets or outdoor ornamental plant watering could be replaced with water used for washing.

4.3 Non-Residential Incentives

Non-residential rebates or incentives offered for the surveyed municipalities include toilet rebates (similar to residential incentives), and other rebates for the replacement of certain equipment and appliances such as spray valves for restaurants, dental vacuum pumps, and water-cooled refrigeration units. Municipalities such as Kingston, York, Toronto, and Waterloo Region also provide various water audit/consultation and partnering opportunities to identify water saving opportunities with potential incentives for upgrades that are made. In some cases, the financial incentives (e.g., “capacity buy-back programs”) for these upgrades are calculated based on the reduction in long-



term water usage and the impacts on the deferral of water and wastewater capacity upgrades.

4.4 Recommendations

At this time, the City is proposing that rebates for the replacement of low-efficiency toilets and home water audits would be included within the water conservation program.

As discussed in greater detail in Chapter 6, on average, the bill impacts of moving to metered water rates for non-residential customers will be more significant than for residential customers. The City intends to consult directly with non-residential stakeholders prior to the implementation of alternative metered rates to make sure the City understands the specific concerns of the non-residential stakeholders and to develop water conservation incentives specific to the non-residential water users within the City. The intent of developing specific non-residential conservation incentives is to provide stakeholders with the opportunity to change water consumption behavior or implement technology/equipment changes prior to the imposition of alternative water and wastewater rates.

It is also recommended that over time the City monitor the effectiveness of the water conservation incentives and rebates and consider expanding the program to include other initiatives when participation levels in the recommended activities begin to plateau.

The City is proposing allocating \$100,000 towards the water conservation incentives and rebates

4.4.1 Residential Toilet Rebate Program

It is recommended that the City would offer rebates of \$50 towards the replacement of high-water-use toilets with high-efficiency WaterSense® labeled units (4.8 litres per flush or less). Rebates would only be available for the installation of qualifying toilets in homes and businesses built prior to 1997. Homes built after 1996 were required to be built with 6 litre per flush or less toilets and would not be eligible for the rebate. There would also be a limit on the number of rebates per home (i.e., two per home).

To help gauge demand for the toilet rebate program, the City is proposing allocating \$50,000 of the annual budget towards the toilet rebate program (i.e., replacement of



1,000 toilets per year). Initially rebates would be available on a first-come, first-served basis. There are approximately 13,500 homes within the City that were constructed prior to 1997 and would qualify for the toilet rebate program.

Other proposed limitations of the program include that it would not be available for new bathrooms and the rebate cannot exceed the purchase price of the new toilet.

4.4.2 Residential Home Water Audits

The City and a third party would offer free home visits and water audits to identify water saving opportunities and specific retrofit opportunities to reduce water use. Home audits would address indoor and outdoor water use. It is recommended that the City track the metered water consumption of households after receiving a home water audit to measure the effectiveness of the program in terms of the consumers' willingness to change behavior or implement water-saving equipment and appliances.

The City is proposing to allocate \$50,000 of the annual budget towards residential home water audits.



Chapter 5

Public Engagement



5. Public Engagement

5.1 Introduction

As part of the Master Plan, the City has engaged with the general public to:

- Provide information on the issues and study process;
- Seek feedback on potential solutions and opportunities;
- Involve stakeholders in the development of recommendations; and
- Provide feedback to participants on what the City heard and how the input was utilized in formulating final recommendations.

Furthermore, the public engagement plan was designed with regard for the results from the initial public survey on water meters that the City undertook in 2019 to address some of the concerns the City received related to installing water meters.

The public engagement strategy has been designed to include three distinct phases:

- Phase 1 – Inform
- Phase 2 – Consult/Involve
- Phase 3 – Provide Feedback

Due to the COVID-19 pandemic, the public engagement plan has been undertaken entirely through on-line measures. The City has maintained a dedicated section of their website for the Master Plan in addition to utilizing a separate public engagement site through the HaveYourSayCornwall.ca platform.

5.2 Phase 1 – Inform

The Inform stage of the public engagement plan was designed to inform the general public about the Water Conservation and Servicing Master Plan, including:

- The problem: The City does not have a water conservation program;
 - Solutions/Opportunities: Development of a Water Conservation and Servicing Master Plan, including:
 - Installation of water meters;
 - Alternative rate structures;
-



- Conservation incentives and rebates; and
- Operational benefits and financial impacts;
- Study process and timeline;
- Water and wastewater service provision and principles of funding; and
- Opportunities for public engagement.

The intent of this initial stage of the public engagement process was to clearly identify the scope of issues under discussion for which input is being sought, what the public's role will be in the decision-making process, and to provide individuals with the information they need to participate in a meaningful way.

The Inform stage of the public engagement strategy ran for approximately six weeks from April to May 2021, and included the following activities:

- Introductory video outlining how water and wastewater services are provided, the purpose of the Master Plan and study process, and how residents can be involved.
- Public engagement site and City website with:
 - Introductory information and video;
 - Frequently asked questions; and
 - Questions and answers forum in which City staff provided responses to individual questions.

As summarized in Chapter 2, during this stage of the public engagement plan, the River Institute was also actively undertaking community outreach to increase awareness and gain public support for water demand management, focusing on topics such as:

- The scarcity of clean, fresh water;
- The link between household water consumption and ecosystem health; and
- How individual changes in water consumption contribute to ecosystem health.

The City also sent out frequent notices through their social media channels and public notices, including the development of creative incentives to encourage participation such as fun quizzes and poll questions to gauge initial responses related to water conservation and metering.



5.3 Phase 2 – Consult/Involve

Having developed preliminary rate structure alternatives, conservation incentives, and rebate options with staff, public feedback was solicited through an on-line survey and the questions and answer forum. The public survey was designed to gauge the public's opinion and understanding on the following topics:

- Water and wastewater service levels;
- Perceptions of user pay principles and how they apply to water and wastewater services;
- Water conservation and water as a resource;
- Billing structures and equity;
- Sources of water demand;
- Water conservation incentives and rebates; and
- Perceived impact of water metering and other conservation initiatives on behaviour.

As noted in Section 5.1, the public engagement plan was developed to build on the findings of the initial public survey undertaken by staff in 2019. The limited results of the 2019 survey suggested there was generally an opposition to the installation of water meters and a concern that metered water rates would cost residents more money on their water and wastewater bills.

To address the concern about increased water and wastewater bills with the installation of water meters and to give residents and businesses an indication of what the impact might be on their individual water and wastewater bill, Watson and the City developed a water and wastewater rate calculator for use on the City's website. The rate calculator allowed residents and businesses to compare their actual 2020 water and wastewater bill with potential bills under a metered rate structure. Bill comparisons included those that would result at Cornwall average residential consumption levels, targeted consumption levels with water conservation, and at Province of Ontario average consumption levels. Furthermore, individuals also had the ability to calculate their bill based on their own water consumption estimates. As non-residential customers are currently metered within the City, these customers were able to assess their bill impacts based on their actual 2020 metered water consumption. Consistent with the draft metered water rates that were presented to City Council in October 2020, the calculator



showed that, on average, households would see a decrease in their total water and wastewater bills under a metered structure, while non-residential customers would see an increase.

5.3.1 Public Survey

Our assessment of the quantitative and qualitative survey results and commentary is provided below. The survey questions have been summarized into the following categories, and the results from each question are discussed further below:

- Levels of service and water and wastewater funding principles;
- Water and wastewater rates and customer equity;
- Impacts of financial incentives on water consumption/conservation behaviour; and
- Water as a resource.

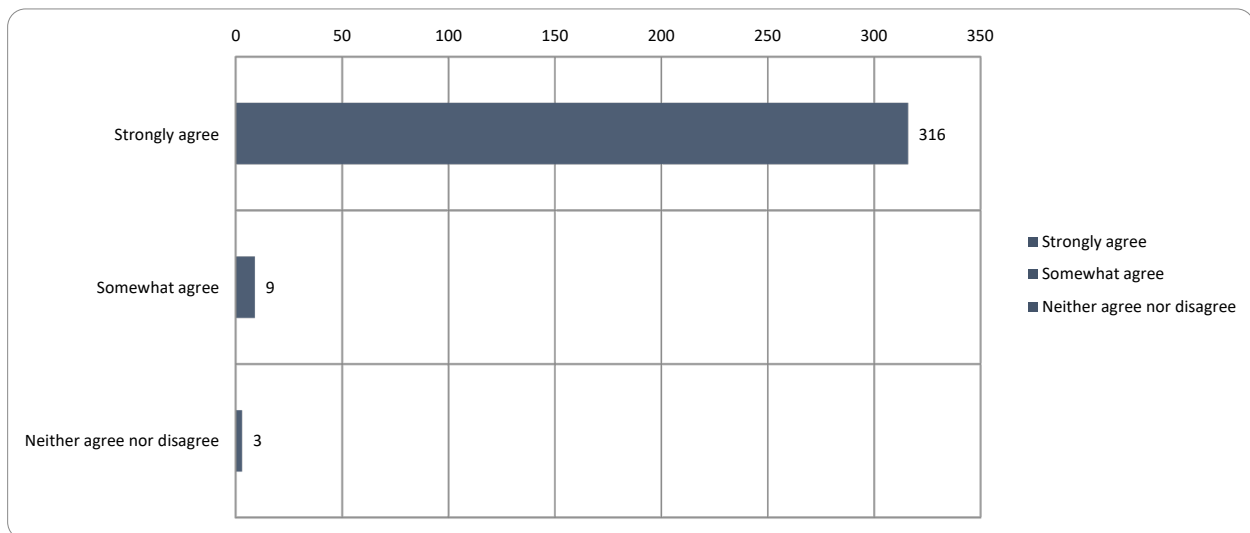


1. Levels of service and water and wastewater funding principles

a. Question #1: Safe and reliable drinking water should be provided to households and businesses.

Ninety-six percent of respondents strongly agreed with the above statement. While this question does not ask about who should be responsible for funding the safe and reliable provision of drinking water, the responses indicate that the needs of the systems should be met.

Figure 5-1
Question #1



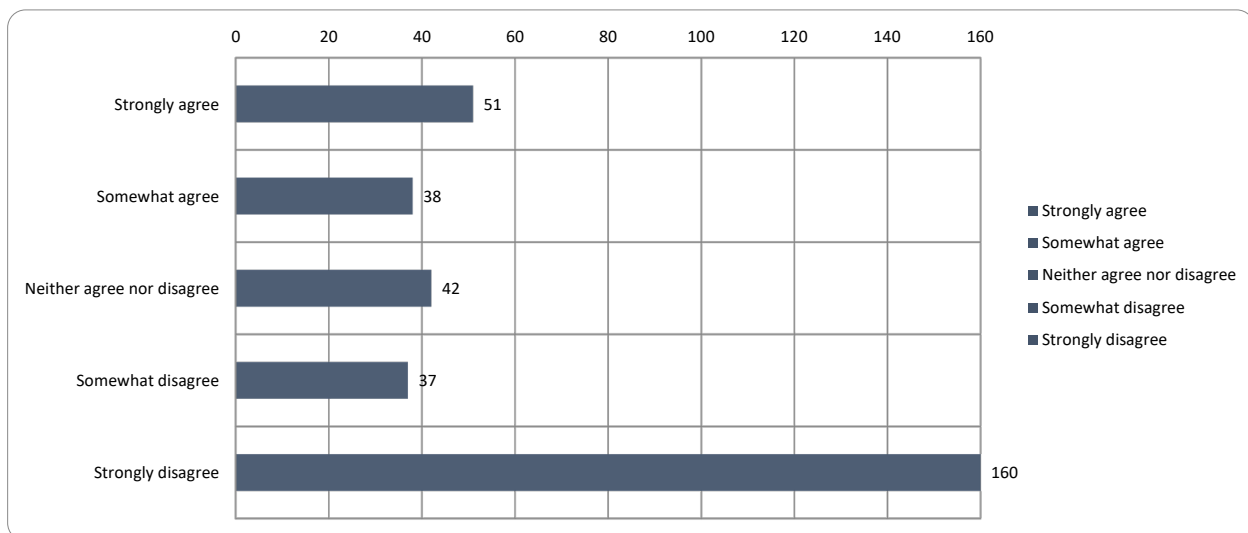


b. Question #2: Water and wastewater services should be funded through water and wastewater rates paid by users of the systems and not through general taxes.

Almost all municipalities in Ontario fund water and wastewater services entirely through user rates; however, approximately 60% of survey respondents disagree with this approach, suggesting that water and wastewater services should be funded through general taxes and not through user rates.

Many of the following questions in the survey are premised on the City's current practice of imposing user rates for water and wastewater services. Due to the large number of respondents who disagree with the general principal of funding water and wastewater services through user rates, the responses to the following questions have been assessed separately to see the change depending on whether the individual agreed or disagreed with funding water and wastewater services through user rates.

Figure 5-2
Question #2



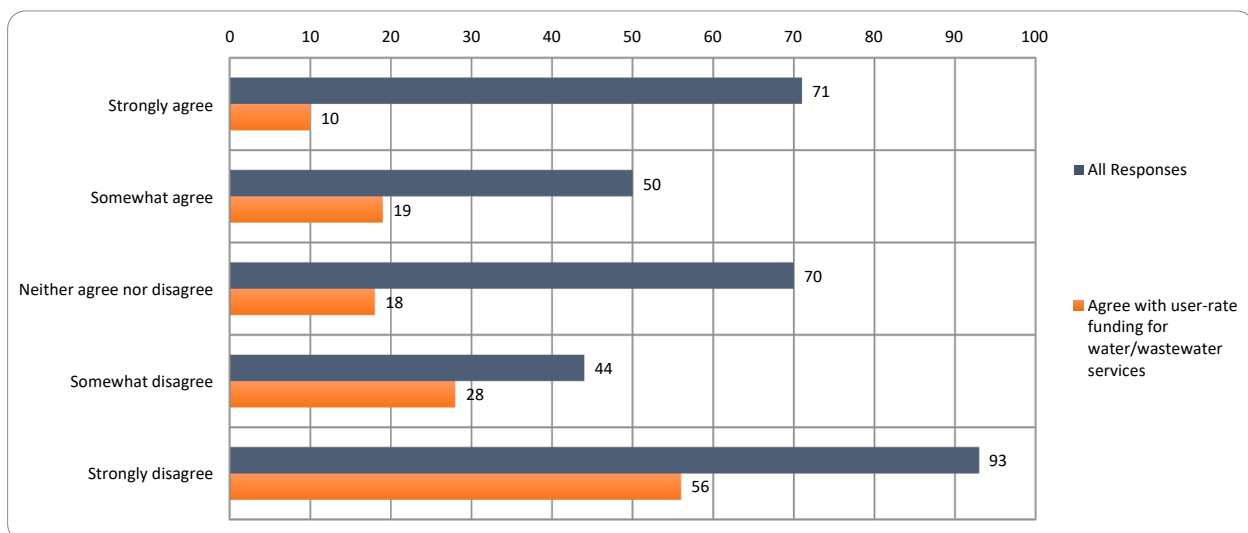


2. Water and wastewater rates and customer equity

- a. **Question #3: It is fair for a household that uses half as much water as another household to be charged the same bill for their water use.**

The total results indicate a fairly even distribution of responses; however, when assessing the results for the individuals who agree with user-rate funding, over 64% of those individuals find it inequitable that customers with the vastly different water consumption patterns would pay the same annual bill.

Figure 5-3
Question #3

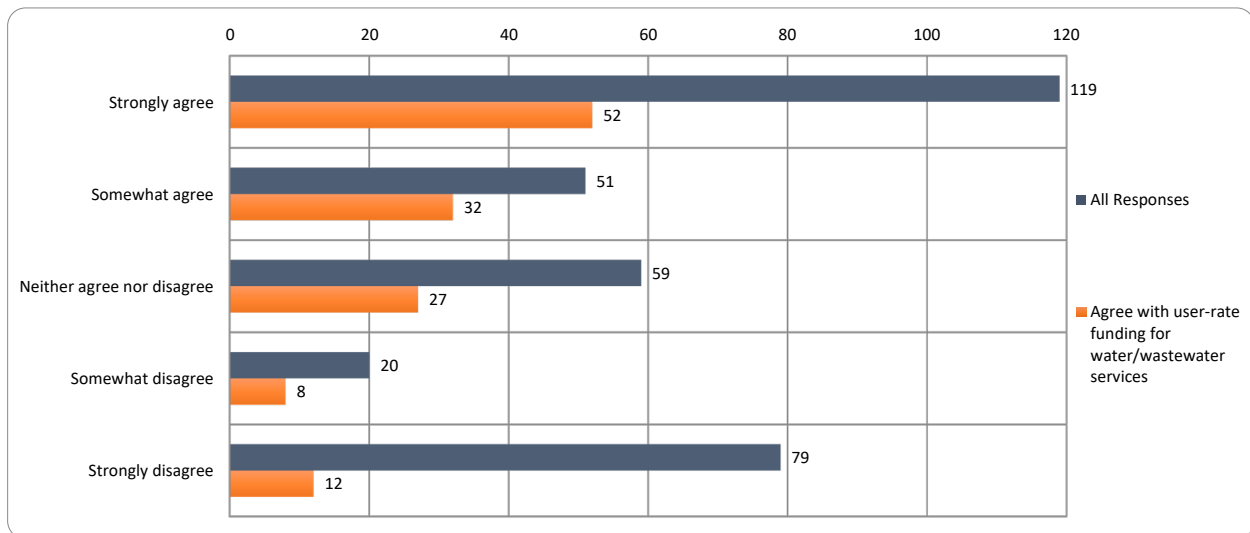




- b. **Question #6: The water and wastewater bills for all households and businesses should be calculated in the same way. For example, all customers should pay metered rates, or all customers should pay flat rates.**

Fifty-one percent of respondents agree there should be consistency in how bills are calculated and imposed. That number increases to 64% when considering only those individuals who agree with user-rate funding.

Figure 5-4
Question #6

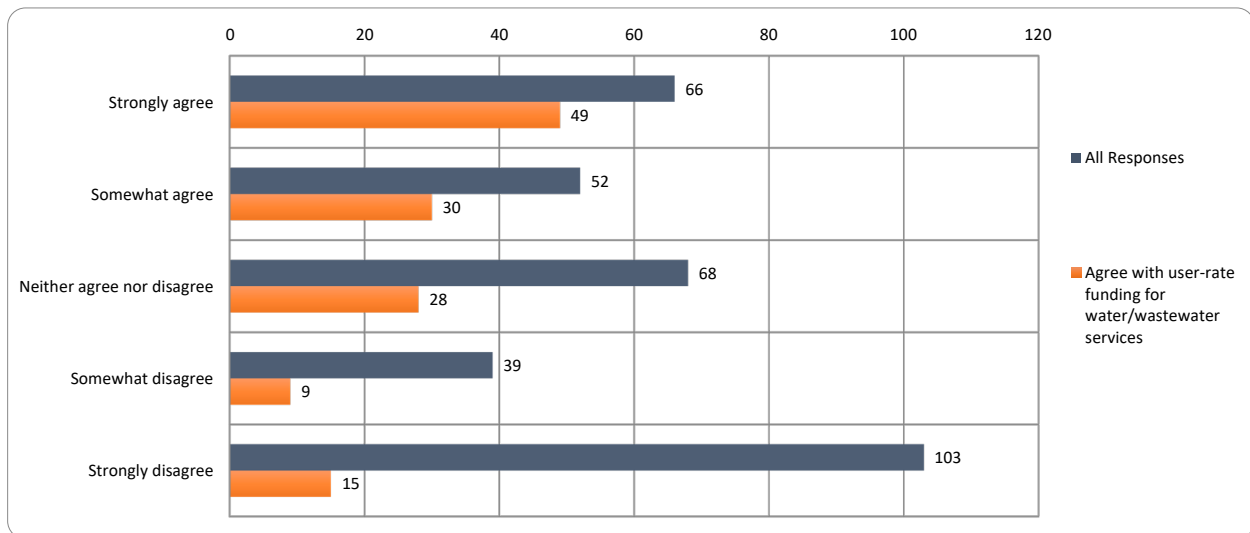




c. **Question #12: The amount I pay for water services should be based on the amount of water I use.**

The total responses were fairly evenly distributed across the levels of agreement, with the largest number of respondents (103 or 31%) strongly disagreeing with water bills being related to water consumption. When assessing the responses from those who agree with user rates, however, 60% agreed with this concept, with a further 21% neither agreeing nor disagreeing.

Figure 5-5
Question #12





3. Impacts of financial incentives on water consumption/conservation behaviour

- a. **Question #8: If using less water would save you money on your water and wastewater bill, how likely are you to reduce your water consumption?**
- b. **Question #13: Knowing how much of your water and wastewater bill is directly related to the amount of water you use would it impact how much water you use in the future?**

Question #8 sought to identify whether customers would decrease their water consumption if they knew that using less water would save them money on their water and wastewater bill. Question #13 built on question #8 to identify if knowing specifically how much of their water bill was tied to consumption, would it have a greater perceived impact on behaviour. Fifty percent of all respondents to questions #8 and #13 indicated they were unlikely or very unlikely to reduce water consumption if it would save them money. When considering only the respondents who agree with user rates, that number decreases to only 29% for question #8 and 25% for question #13, indicating those who agree with user-pay principles would be more willing to change their behaviour if they would ultimately pay less for the service.

Figure 5-6
Question #8

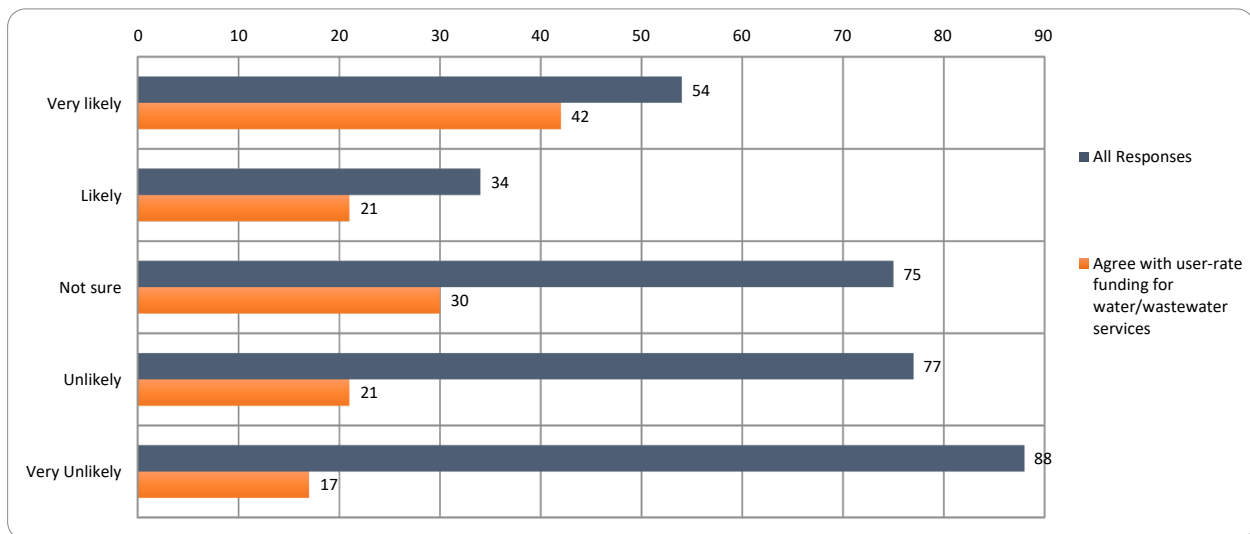
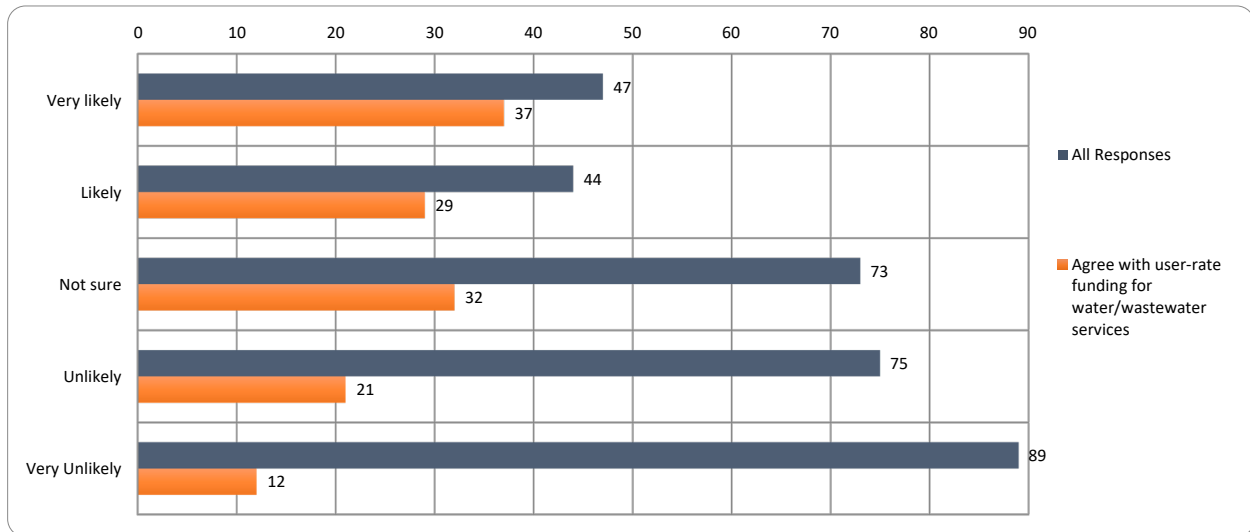




Figure 5-7
Question #13

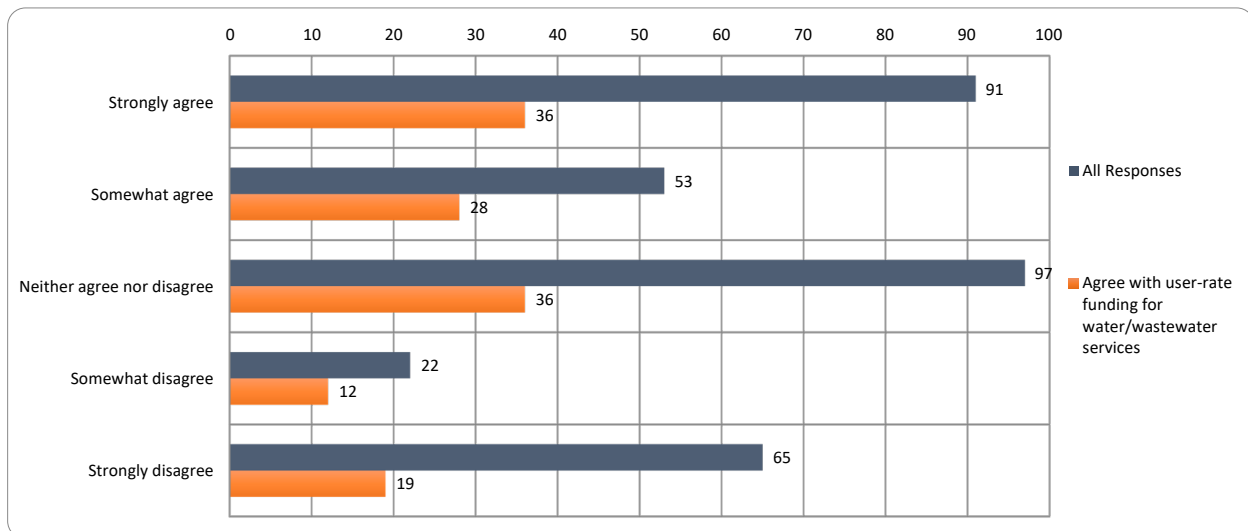




c. **Question #9: Lack of financial incentives is a factor that limits my willingness to install water-saving devices (such as installing low-water-use toilets)**

Somewhat in contrast to the responses to question #13, 44% of all respondents said they agree or strongly agree that the lack of financial incentives to install water-saving devices has prevented them from doing so. In addition, a further 30% said they were unsure. These results are consistent when considering only the individuals who agree with user rates, in that 71% (compared to 74% for all respondents) either agree or are unsure.

Figure 5-8
Question #9

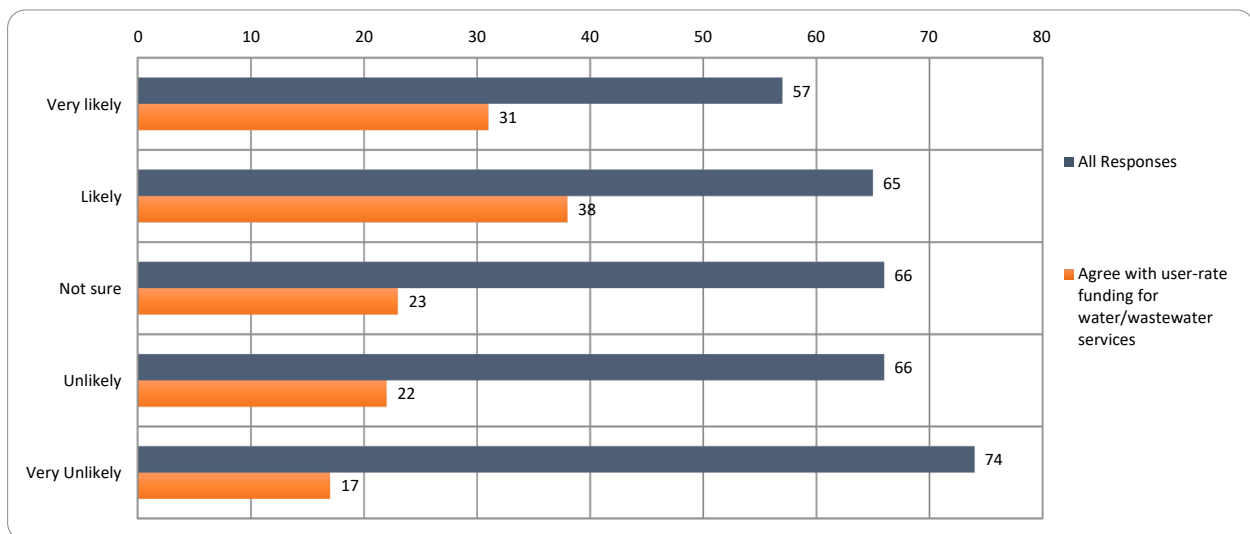




d. **Question #10: Knowing that toilets are the greatest user of household water, how likely is it that you would install a water saving toilet if it would save money on your water and wastewater bill?**

The responses from all individuals are evenly distributed across the options, with slightly more respondents indicating that a lower water and wastewater bill would not be sufficient incentive to install a water-saving toilet.

Figure 5-9
Question #10

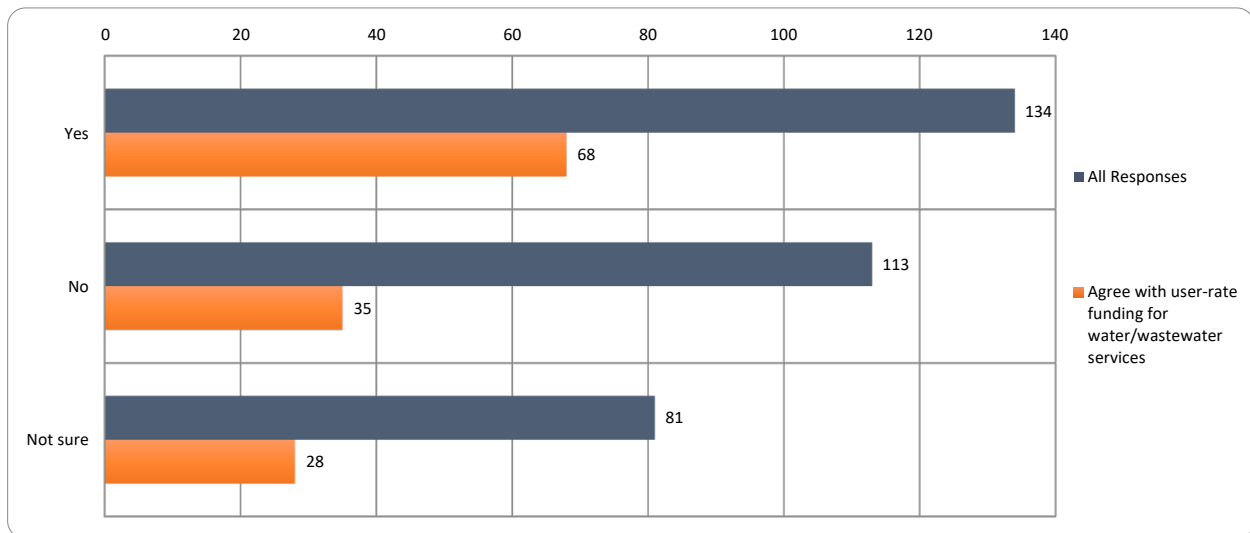




e. **Question #11: If there was a financial rebate towards the purchase of a low-water-use toilet, would the likeliness of you installing a low-water-use toilet increase?**

In contrast to the responses to question #10, 41% of all respondents said that they were more likely to install a water-saving toilet if there was a financial rebate towards the purchase. A further 24% indicated they were unsure. For the individuals who agree with user rates, the number of people who said they were more likely to install a water-saving toilet if there was a financial incentive increased to 52%.

Figure 5-10
Question #11





4. Water as a resource

a. **Question #4: I feel that water connects me to the environment.**

b. **Question #5: I feel that water is connected to my health.**

Questions #4 and #5 were developed to measure residents' attitudes towards water and its importance. Forty-seven percent of all respondents agreed to some extent that water is an important way in which we are connected to the environment. In addition, a further 40% neither disagreed nor agreed with the statement, with only 13% disagreeing.

Eighty-five percent of all respondents agreed that water is connected to individual health. This level of agreement is similar to the level of agreement with the provision of safe and reliable drinking water to all residents.

Figure 5-11
Question #4

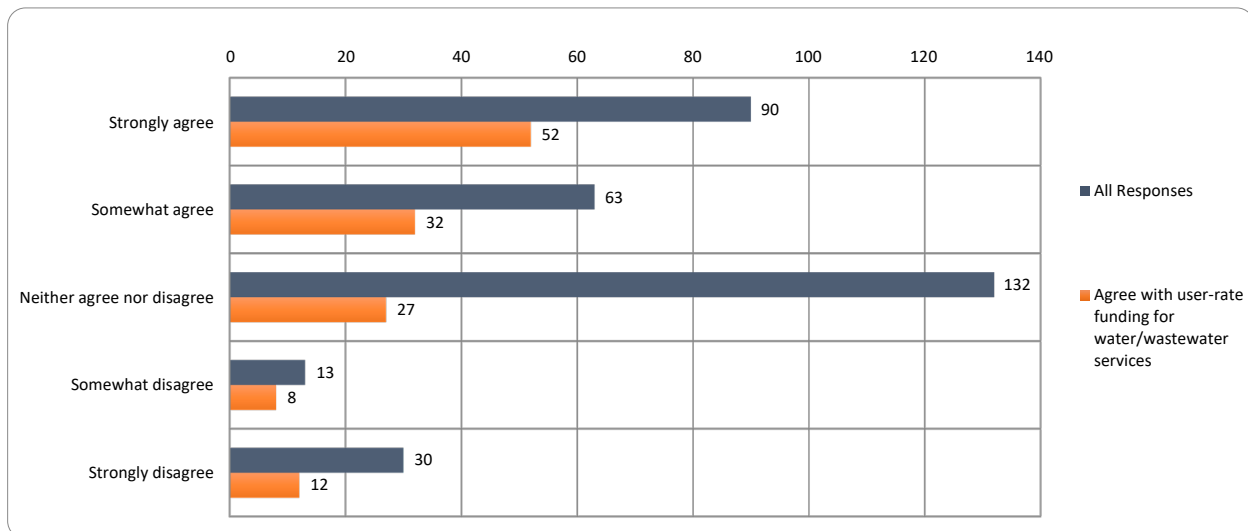
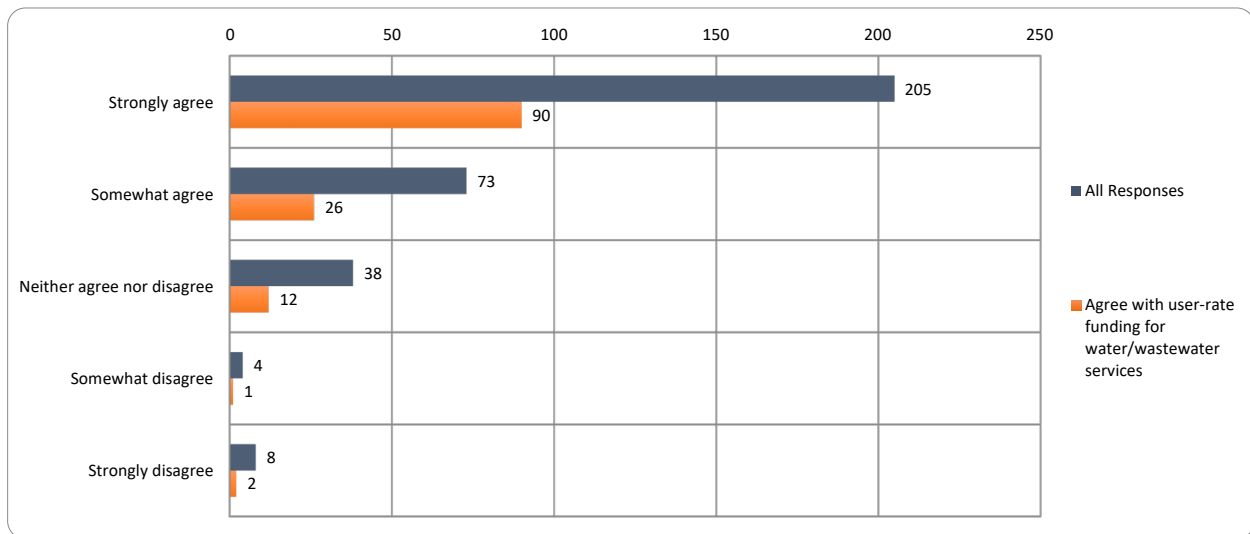




Figure 5-12
Question #5

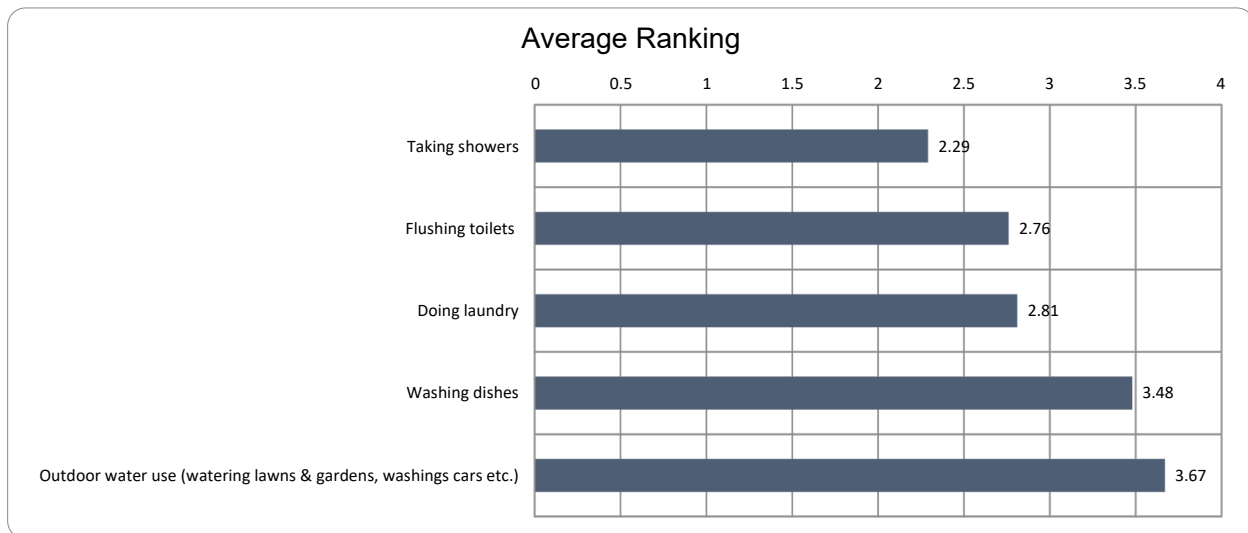




c. **Question #7: Which of your household activities do you think use the most water? Rank from 1 (most water consumed) to 5 (least water consumed).**

The average ranking of the responses to question #7 indicate that residents have a fairly good idea about what the most significant uses of water are in the home. Flushing toilets was ranked as the second largest use of water, with taking showers being the first. Toilets and showers typically represent the largest use of water (although in reverse order).

Figure 5-13
Question #7

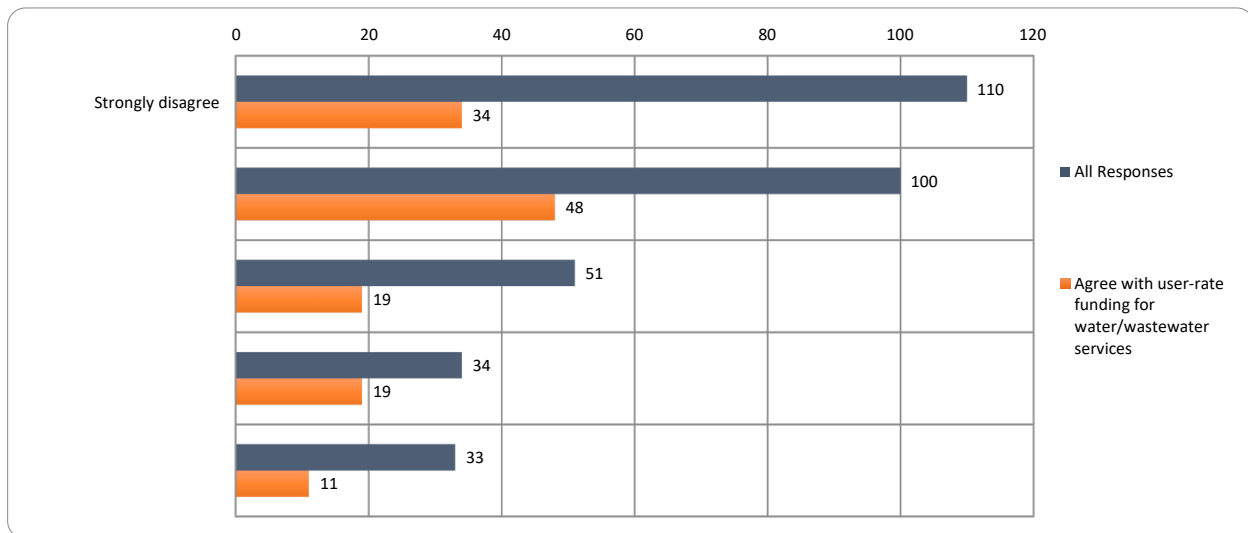




d. **Question #14: I consider myself water conscious and think I currently do a good job conserving water.**

Whether assessing all respondents or only those who agree with user rates, most responses indicate that residents believe they are water conscious and are already doing a good job of conserving water.

Figure 5-14
Question #14



5.3.1.1 Public Survey Summary

In total, 328 responses to the survey were received, representing less than 2% of the total households within the City. The responses received do not provide a statistical representation of the entire community, however, they provided informative insight into the development of a water conservation program and alternative rate structures.

The first item to note, which was identified in the summary of question #2 above, is that 60% of respondents indicated water and wastewater services should not be funded through user rates and should be funded through taxes. This was important to note, as it can be reasonably assumed individuals who believe that water and wastewater services should be tax funded, would be opposed to rates that are based on the volume of water consumed or other water conservation initiatives. This assumption played out in themes from the other questions, as the individuals who disagreed with this fundamental principle of how water and wastewater services are funded in almost every



municipality in Ontario, had very different responses to the other questions in most cases.

The noticeable themes presented in the survey responses are included below. Included in parentheses for each theme is whether the theme related to all responses or only those from individuals who agreed with user rates. The implications of each theme on the water conservation program and user rates in the City are also identified.

- **Theme #1:** Safe and reliable drinking water should be provided to all homes and businesses in the City (all responses)
 - This theme supports the Province's principles of financially sustainable water and wastewater services and the City's intention to provide for those costs through water and wastewater rates.
- **Theme #2:** The rate structure that is imposed should be consistent for all users (all responses)
 - This theme is in contrast with the City's current rate structure in which all households and some businesses are charged a flat rate based on the number of water-using fixtures, while some businesses are charged a metered rate based on the volume of water consumption.
- **Theme #3:** Water and wastewater bills should be based on your water consumption (respondents agreeing with user rates)
 - This provides support for the implementation of water meters to charge customers based on water consumption and not the number of water-using fixtures as currently is the practice.
- **Theme #4:** Financial incentives are needed to make water conservation upgrades (all users)
 - The responses showed that the likelihood of saving money on a water and wastewater bill is not sufficient motivation to install water-saving devices such as high-efficiency toilets. If, however, there was a financial rebate provided towards the purchase of a high-efficiency toilet, the perceived likelihood of installing such a device increased significantly.

5.3.2 Question and Answer Forum

The general public had the opportunity to ask questions through the question and answer forum on the HaveYourSayCornwall.ca public engagement site. All questions that were asked were answered by City staff and both the questions and answers were



posted publicly for the benefit of others. The questions/comments that were received generally related to the following topics (listed in descending order).

- General questions about the Master Plan process, water meters, and service delivery
- Opposition to water meters due to belief that there would be an increase in customer bills and installation concerns
- Support for metered water rates due to potential reduction in individual bills

The full list of questions and answers can be found in Appendix B.

5.4 Phase 3 – Provide Feedback

As an important part of the public engagement process in the City, the public will be made aware of the findings of the survey and how their feedback has been incorporated into the final recommendations.

Transparent feedback in this regard is paramount to the perceived value of engaging with the City on these and future matters.



Chapter 6

Financing Model



6. Financing Model/Business Plan

6.1 Introduction

Developing a financial model/business plan for the water conservation program needs to be undertaken in the context of the comprehensive plan for sustainable funding of the water and wastewater systems. As such implications of the water conservation program have been incorporated into City's Water and Wastewater Rate Study for the period of 2021 to 2030. The objectives of the Water and Wastewater Rate Study and steps carried out in the assignment included:

- Update water and wastewater service demand assumptions based on analysis of historical consumption, recent trends, and estimated water conservation;
- Estimate future consumption levels by applying revised demand assumptions (including water conservation impacts) to forecast growth based on the anticipated timing of anticipated residential and non-residential development.;
- Identify all current and future water and wastewater system capital needs to assess the immediate and longer-term implications;
- Build a capital program that blends lifecycle needs arising from the City's asset management plans and asset inventories with the annual capital spending required over the forecast period;
- Identify costs of water meter installation and water conservation programs
- Identify potential methods of cost recovery for the capital needs listing. These recovery methods may include other statutory authorities (e.g. *Development Charges Act, 1997 (D.C.A.)*, *Municipal Act*, etc.) as an offset to recovery through the water and wastewater rates. Separate charges for the recovery of water meter installation costs have also been considered;
- Forecast annual operating costs and rate-based funding requirements;
- Develop a long-term water and wastewater rate forecast (including the assessment of alternative rates) to address long-term financial plan needs and present findings to staff and Council for their consideration; and
- Provide an impact assessment on the rate payers.

In addition to providing a summary of the Water and Wastewater Rate Study, the following sections of this chapter provide a more in-depth assessment of the affordability of current and proposed rate structures.



6.2 Forecast Growth and Service Demands

Water and wastewater service demands have been prepared to assess the future demand for service in terms of the number of residential and non-residential customers by meter size and the forecast water consumption demands.

Growth in residential connections has been forecast based on the forecast development in the City's 2017 D.C. Background Study (i.e. 144 units per year), while non-residential growth has been forecast based on average annual new non-residential growth over the 2011 to 2019 period (i.e. 23 connections per year).

Currently annual residential water demand in the City is 400 litres per capita (269 m³ per household). The financial plan and forecast rates have been developed based on the City achieving a reduction in annual residential water demand to 250 litres per capita (203 m³ per household) with the implementation of the water conservation program and metered water rates. This level of consumption would still be approximately 36% higher than the average residential water consumption per capita in Ontario.

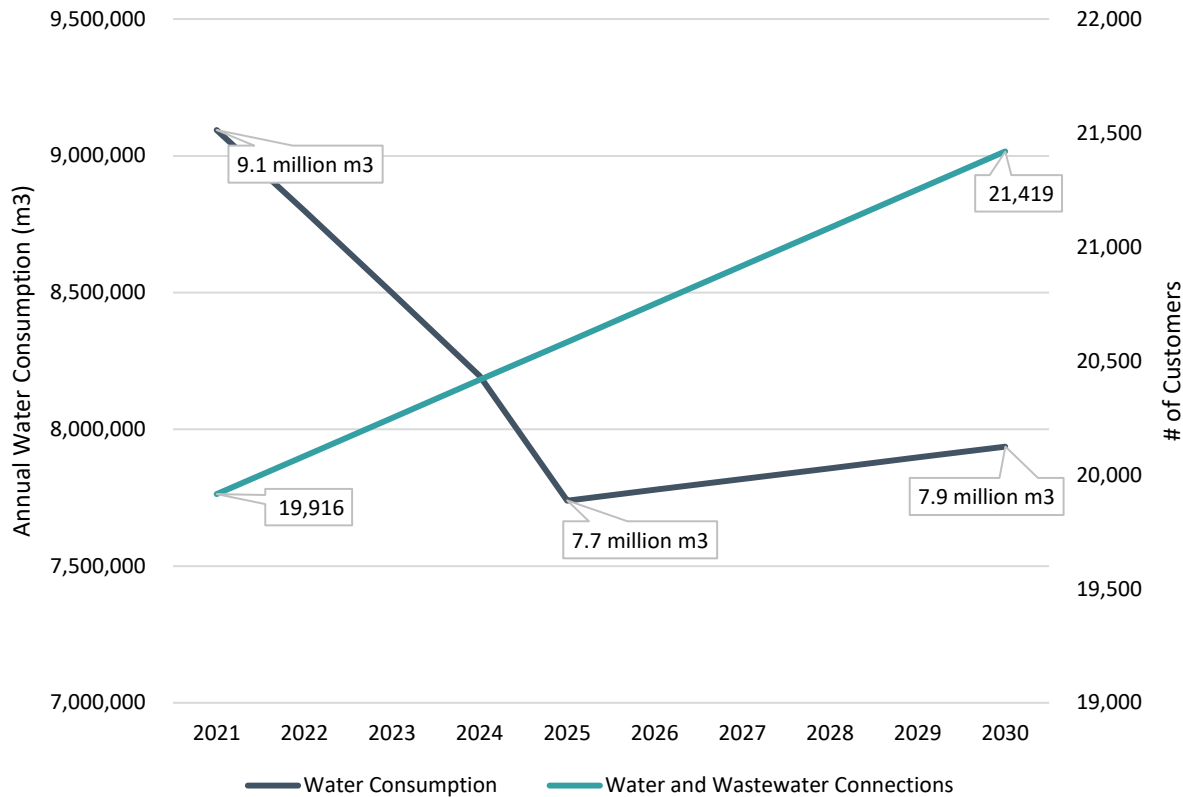
Non-residential consumption has been based on the 2020 consumption per non-residential customer, excluding customers consuming greater than 5,000 m³ of water annually so as not to skew anticipated consumption levels of new connections. This average level of consumption was then applied to the growth in non-residential customers to provide an estimate of total non-residential water and wastewater demands for the systems.

An estimated forecast decrease in total water consumption from 9.1 million m³ currently to 7.9 million m³ by 2030 (-12.1%) is anticipated. Forecast water and wastewater demand is based on billed water usage and excludes unbilled treated water due to maintenance activities and system leaks (estimated at 21% of treated water).

Figure 6-1 presents the forecast water demand and water and wastewater customers within the City over the 2021 to 2030 period.



Figure 6-1
City of Cornwall
Water and Wastewater Connections and Water Consumption Forecasts



6.3 Capital Infrastructure Needs and Financing

10-year capital forecasts have been developed for the water and wastewater systems to address capital maintenance, replacement, and expansionary needs across the systems. The forecasts are based on the City’s 10-year capital budget and forecast supplemented with needs identified in the City’s 2017 D.C. Background Study and 2020 area-specific D.C. Background Study. Moreover, the capital needs forecasts include the costs of installing water meters City-wide. The costs of undertaking the water meter project are estimated at \$14.6 million (2021\$) over the 2023 to 2024 period with a further \$1.25 million being anticipated for project management costs to oversee the installation and rate structure transition process.



The capital forecasts, which are summarized in the Water and Wastewater Rate Study, include total costs of \$152.2 million (\$96.4 million for water and \$55.8 million for wastewater), inclusive of 3% annual capital cost inflation.

The financing sources that are anticipated for the water and wastewater capital needs include transfers from reserves (growth and non-growth) and debt funding.

The recommended capital financing plan anticipates the issuance of \$49.4 million in additional debt over the forecast period (\$43.4 million water and \$6.0 million wastewater). Furthermore, of the anticipated \$49.4 million additional debt, \$6.0 million would be related to D.C. eligible growth-related works and \$17.1 million would be related to the installation of water meters and project management costs. The amount of debt required is related to the capital reserve funds that are available to fund the capital needs annually. In this regard, a reserve fund “floor” of \$500,000 has been established in the funding plan for both water and wastewater services to provide for funding flexibility and the ability to address emergency expenditures on an annual basis. The remaining \$102.7 million of the 10-year capital needs will be funded through rate-based sources (i.e. transfers from reserves).

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Reg. 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality’s debt capacity is capped at a level where no more than 25% of the municipality’s own source revenue may be allotted for servicing the debt (i.e. annual debt charges). Moreover, in addition to the Provincial borrowing limits, the City has set an internal borrowing limit for annual debt repayments equal to 10% of own-source revenues.

Including existing rate and non-rate-based debt and anticipated debt for completed water and wastewater projects, annual debt financing costs represent approximately 5.0% of own-source revenues (i.e. 20% of debt repayment limit)¹. With forecast growth in own source revenues based on the rate forecast presented herein, the anticipated debt for the water and wastewater systems (and anticipated non-rate based debt) would increase the City’s debt capacity utilization from 5.0% of own source revenues currently to a peak of 7.9% in 2027 before decreasing to 6.9% by the end of the forecast period.

¹ Based on the City’s 2019 Financial Information Return.



This would place the City well within the legislated limit of 25% of own source revenues and also below the City’s self-imposed debt limit of 10% of own-source revenues. Furthermore, while this assessment does include the City’s forecast tax-based debt, it does not include additional growth in tax-based own-source revenues (e.g. property taxes) that would serve to further reduce annual debt payments as a percentage of own-source revenues and preserve funding capacity for the issuance of future tax-based debt.

Table 6-1 summarizes the water and wastewater capital financing sources over the 10-year period and the impacts on the City’s debt capacity utilization.

Table 6-1
Water and Wastewater Capital Financing Plan

Capital Funding (\$ millions)			
Description	Water	Wastewater	Total
Development Charges Reserve Fund	-	0.1	0.1
Non-Growth Related Debenture Requirements	37.8	5.7	43.4
Growth Related Debenture Requirements	5.7	0.3	6.0
Reserves	52.9	49.8	102.7
Total	96.4	55.8	152.2
Debt Capacity Utilization (% of Own-Source Revenue)		2020 Estimate Peak (2027) 2030	5.0% 7.9% 6.9%

6.4 Operating Expenditure Forecast

Operating costs and non-rate-based revenues have been forecast based on the City’s 2021 operating budget plus 2% annual inflation. Operating budget impacts have also been considered with regard to the water conservation program. To implement the water conservation program, including the provision of toilet rebates and home water audits, an annual budget of \$100,000 has been included in the financial plan. Based on the assumed reduction in water consumption identified in Section 6.2, operational cost savings of \$300,000 (2021\$) have also been included for the water and wastewater treatment plants. Furthermore, staff have identified that an additional \$70,000 in operating cost savings could be witnessed annually in relation to increased leak detection in the water system with the installation of water meters and AMI technology.



Capital-related operating expenditures in the forecast include annual debt repayments and contributions to reserve funds to support the capital forecast and future needs. While operating aspects identified above generally increase with inflation over the period (i.e. 2% annually) as well as growth in infrastructure, the capital-related aspects tend to increase more specifically with the increase in capital funding requirements.

As a result of the inflation, growth, and capital-related expenditure increases, the water and wastewater operating expenditures are anticipated to increase over the forecast period.

Gross operating expenditures for water services are forecast to increase from \$8.7 million in 2021 to \$15.5 million by 2030 (+77%). For wastewater services gross operating expenditures would increase from \$11.0 million in 2021 to \$15.8 million by 2030 (+44%).

Figures 6-2 and 6-3 illustrate the annual net operating budget increase (excluding annual growth-related debt repayments) for water and wastewater services, respectively, over the forecast period by component, demonstrating the increase in annual revenues for capital funding purposes (transfers to reserves and debt).

Figure 6-2
City of Cornwall
2021-2030 Water Annual Operating Cost Forecast by Major Component

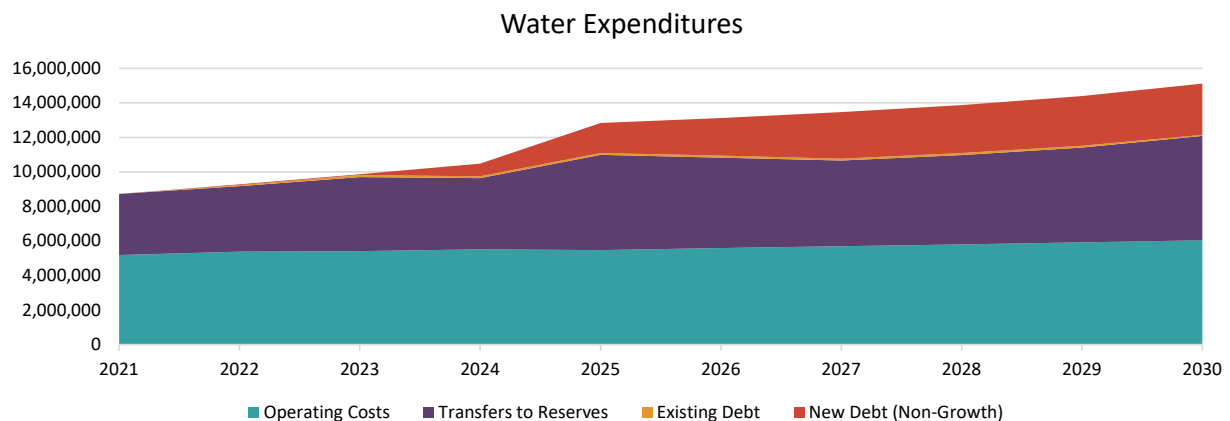
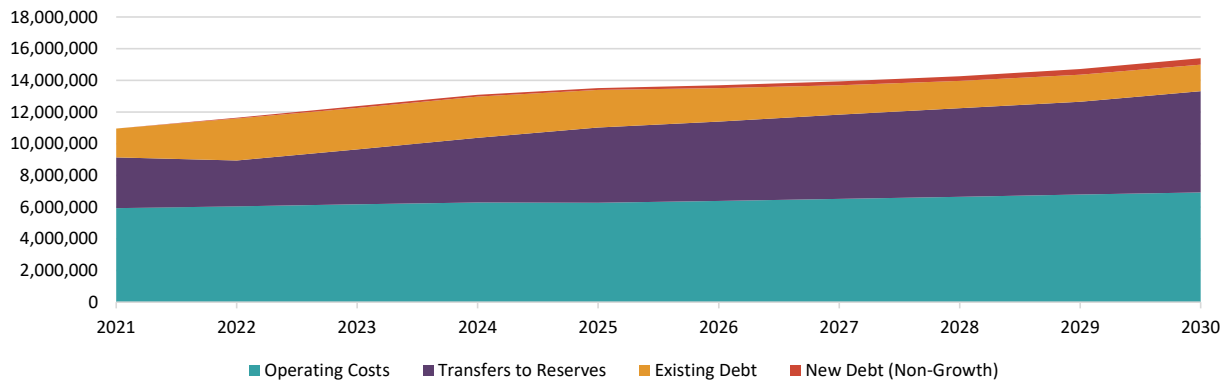




Figure 6-3
City of Cornwall
2021-2030 Wastewater Annual Operating Cost Forecast by Major Component
Wastewater Expenditures



6.5 Forecast Water and Wastewater Rates

The water and wastewater rates have been forecast such that they will be sufficient to fund the long-term capital needs of the systems by 2030, providing for the sustainable replacement of infrastructure and ongoing operation and maintenance of the systems.

To achieve full cost recovery identified in the Water and Wastewater Rate Study and to fund the costs of meter installation, consideration was given to alternative rate scenarios. Alternatives to recover the costs of meter installation included recovering the costs directly from existing connections through an annual charge over multiple years or including the costs for recovery from general water rates paid by all new and existing users of the system. Through discussion with City staff, it was recommended that the costs of installing water meters be recovered directly from the existing users of the system.

The alternative rate scenarios (including City-wide metered water rates) were also considered to address inequities that currently exist within the water and wastewater rates that are imposed across the City. Firstly, when assessing the amount of residential and non-residential consumption relative to the share of annual revenues, non-residential customers account for 33% of annual water consumption but provide only 16% of annual water and wastewater revenues. Furthermore, as summarized in Section 3.6 herein, there are inequities in the rate structure that allow two customers with the same of consumption profile to pay vastly different water and wastewater bills.



6.5.1 Water Rates

The recommended rate forecasts are provided to address full costs of the water system, including annual operating and capital expenditures from both a lifecycle and growth-related perspective.

It is recommended that once all water meters have been installed (anticipated prior to 2025), that water rates will be imposed comprising of:

- A monthly base charge that increases by size of the water meter; and
- A consumptive rate that is charge per cubic meter of water consumed.

The monthly base charges by meter size were established based on the American Water Works Association operating capacity ratios by meter size and to recover the long-term annual capital needs of the water system by 2030. Furthermore, to mitigate some of the initial impact on non-residential customers of moving to a uniform rate structure for all customers, the increase in monthly base charges will be phased in over the 2025 to 2030 period with greater annual increases thereafter for larger water meters. For multi-unit residential buildings, each residential unit will pay the equivalent monthly base charge for a ¾” meter, which is the smallest standard sized meters used for residential properties.

The per fixture rates have been forecast to increase by 5% annually over the 2022-2024 period, while the non-residential consumptive rates have been forecast to increase by 10% annually over the same period prior to the imposition of metered water rates City-wide. Once the alternative rate structure is imposed in 2025, consumptive rates will increase by 1.3% annually with monthly base charges increasing between 1% and 102% per year (greater increases for larger meter sizes).

An annual charge of \$80 would also be imposed on existing connections to the water and wastewater system over a seven-year period from 2025 to 2031 to recover the costs of meter installation. In calculating the costs to be recovered through charges directly to existing connections approximately 30% of the meter installation costs have been excluded to reflect benefits of meter installation to the water system more broadly and to future users of the system. New connections to the system will not be subject to the annual meter installation charge, as their water meter would be purchased through the building permit process.



The resultant rate forecast is presented in Tables 6-2 and 6-3 below.

6.5.2 Wastewater Rates

To achieve full cost recovery identified in the Water and Wastewater Rate Study, it is recommended that wastewater rates are imposed in the same manner as water rates beginning in 2025 (i.e. monthly base charges by meter size and consumptive rates). Furthermore, it is recommended that the wastewater rates are forecast independently of the required increases in water rates so that wastewater rates recover the independent costs of the wastewater systems.

As with the water rates, the per fixture rates have been forecast to increase by 5% annually over the 2022-2024 period, while the non-residential consumptive rates have been forecast to increase by 10% in 2022 and 2023 and 5.9% in 2024. Once the alternative rate structure is imposed in 2025, consumptive rates will remain constant and monthly base charges would increase between 0% and 102% per year (greater increases for larger meter sizes).

The resultant rate forecast is presented in Tables 6-4 and 6-5 below.



Table 6-2
City of Cornwall
Water Rate Forecast (2021-2024)

Description	2021	2022	2023	2024
Residential Water Rates				
Residential Per Fixture Rate (per Half Year)				
Kitchen Sink	58.95	61.90	64.99	68.24
Toilet	46.91	49.26	51.72	54.30
Extra Toilet	30.88	32.42	34.05	35.75
Bath or Shower	10.60	11.13	11.69	12.27
Extra Bath or Shower	9.11	9.57	10.04	10.55
Bath Basin	5.61	5.89	6.19	6.49
Automatic Washer	11.00	11.55	12.13	12.73
Outside Tap	12.19	12.80	13.44	14.11
Residential Tap	5.61	5.89	6.19	6.49
Swimming Pool, Hot Tub	16.15	16.96	17.81	18.70
Automatic Washer per Apartment Unit	11.00	11.55	12.13	12.73
% Increase - Residential Per Fixture Rate		5.0%	5.0%	5.0%
Non-Residential Water Rates				
Metered Rate				
Volumetric Rate (\$ per m ³)	0.506	0.557	0.612	0.673
Non-Residential Per Fixture Rate (per Half Year)				
First Tap Commercial	63.58	66.76	70.10	73.60
Extra Tap Commercial	10.10	10.61	11.14	11.69
Toilet	46.91	49.26	51.72	54.30
Urinal	14.09	14.79	15.53	16.31
Dental Spitoons	15.34	16.11	16.91	17.76
Car Wash	64.03	67.23	70.59	74.12
Fountain	12.15	12.76	13.40	14.07
Shower - Commercial	12.68	13.31	13.98	14.68
Dry Cleaners	247.42	259.79	272.78	286.42
Motel per Unit	52.87	55.51	58.29	61.20
% Increase - Non-Residential Per Fixture Rate		5.0%	5.0%	5.0%
% Increase - Non-Residential Metered Rate		10.0%	10.0%	10.0%

Table 6-3
City of Cornwall
Water Rate Forecast (2025-2030)

Water	2025	2026	2027	2028	2029	2030
Volumetric Rate (\$ per m ³)	0.682	0.691	0.699	0.708	0.717	0.726
Monthly Base Rate						
Up to 3/4"	19.11	19.35	19.59	19.84	20.09	20.34
1"	20.34	22.62	25.15	27.96	31.09	34.58
1 1/2"	20.34	25.82	32.79	41.63	52.86	67.12
2"	20.34	28.39	39.63	55.32	77.22	107.80
3"	20.34	32.23	51.09	80.97	128.33	203.39
4"	20.34	35.72	62.72	110.14	193.42	339.66
6"	20.34	41.00	82.66	166.64	335.95	677.28



Table 6-4
City of Cornwall
Wastewater Rate Forecast (2021-2024)

Description	2021	2022	2023	2024
Residential Wastewater Rates				
Residential Per Fixture Rate (per Half Year)				
Kitchen Sink	79.00	82.95	87.10	91.45
Toilet	62.86	66.01	69.31	72.77
Extra Toilet	41.38	43.45	45.62	47.91
Bath or Shower	14.21	14.92	15.66	16.44
Extra Bath or Shower	12.21	12.82	13.46	14.13
Bath Basin	7.52	7.89	8.29	8.70
Automatic Washer	14.74	15.48	16.25	17.06
Outside Tap	16.34	17.15	18.01	18.91
Residential Tap	7.52	7.89	8.29	8.70
Swimming Pool, Hot Tub	21.64	22.72	23.86	25.05
Automatic Washer per Apartment Unit	14.74	15.48	16.25	17.06
% Increase - Residential Per Fixture Rate		5.0%	5.0%	5.0%
Non-Residential Wastewater Rates				
Metered Rate				
Volumetric Rate (\$ per m ³)	0.678	0.746	0.820	0.869
Non-Residential Per Fixture Rate (per Half Year)				
First Tap Commercial	85.20	89.46	93.94	98.63
Extra Tap Commercial	13.54	14.21	14.92	15.67
Toilet	62.86	66.01	69.31	72.77
Urinal	18.88	19.83	20.82	21.86
Dental Spitoons	20.56	21.58	22.66	23.80
Car Wash	85.81	90.10	94.60	99.33
Fountain	16.28	17.10	17.95	18.85
Shower - Commercial	16.99	17.84	18.73	19.67
Dry Cleaners	331.57	348.15	365.55	383.83
Motel per Unit	70.85	74.39	78.11	82.02
% Increase - Non-Residential Per Fixture Rate		5.0%	5.0%	5.0%
% Increase - Non-Residential Metered Rate		10.0%	10.0%	5.9%

Table 6-5
City of Cornwall
Wastewater Rate Forecast (2025-2030)

Wastewater	2025	2026	2027	2028	2029	2030
Volumetric Rate (\$ per m ³)	0.869	0.869	0.869	0.869	0.869	0.869
Monthly Base Rate						
Up to 3/4"	24.67	24.67	24.67	24.67	24.67	24.67
1"	24.67	27.43	30.50	33.91	37.71	41.93
1 1/2"	24.67	31.32	39.77	50.49	64.11	81.40
2"	24.67	34.43	48.06	67.09	93.65	130.73
3"	24.67	39.09	61.96	98.20	155.63	246.66
4"	24.67	43.32	76.07	133.58	234.57	411.92
6"	24.67	49.73	100.25	202.10	407.43	821.38



6.6 Customer Impacts

6.6.1 Residential Customer Impacts

Annual water and wastewater bill impacts are presented for the three residential customer types in Table 6-6, including:

- A small usage household consuming 100 m³ of water annually
- A household consuming 203 m³ of water annually consistent with the targeted consumption levels within the water conservation program; and
- A household representing the current average annual water demand of 269 m³.

In addition to comparing the total annual water and wastewater bill for each customer type under the proposed rate structure, Table 6-6 also includes the forecast total annual water and wastewater bills that would be payable for the average residential customer under the current rate structure (i.e. \$ per water using fixture).

Table 6-6
Residential Water and Wastewater Bill Comparison

Residential	Scenario & Rate Structure	Annual % Increase	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Small usage - Up to ¼" meter Annual Consumption (m ³) 100	Current Rate Structure- Fixture Rate	5.0%	740	777	816	857	899	944	992	1,041	1,093	1,148
	Metered Rate Structure	0.6%					760	764	768	772	775	779
	Metered vs. Current Structure						(139)	(181)	(224)	(270)	(318)	(369)
	Metered Rate Structure - annual % increase			5.0%	5.0%	5.0%	-11.3%	0.5%	0.5%	0.5%	0.5%	0.5%
Average Consumption (Target) - Up to ¼" meter Annual Consumption (m ³) 203	Current Rate Structure- Fixture Rate	5.0%	740	777	816	857	899	944	992	1,041	1,093	1,148
	Metered Rate Structure	2.7%	-	-	-	-	920	925	929	934	939	944
	Metered vs. Current Structure						20	(20)	(62)	(107)	(155)	(204)
	Metered Rate Structure - annual % increase			5.0%	5.0%	5.0%	7.4%	0.5%	0.5%	0.5%	0.5%	0.5%
Average Consumption (Current) - Up to ¼" meter Annual Consumption (m ³) 269	Current Rate Structure- Fixture Rate	5.0%	740	777	816	857	899	944	992	1,041	1,093	1,148
	Metered Rate Structure	4.0%	-	-	-	-	1,022	1,027	1,033	1,038	1,043	1,049
	Metered vs. Current Structure						123	83	41	(3)	(50)	(99)
	Metered Rate Structure - annual % increase			5.0%	5.0%	5.0%	19.3%	0.5%	0.5%	0.5%	0.5%	0.5%

The small usage customer consuming 100 m³ of water per year would see their bill increase by 0.5% (+\$4) per year on average over the 2025 to 2030 period under the proposed rate structure. By 2030 the total annual bill would be \$369 less than the projected bill for the average residential home under the current rate structure.

For a household that consumes water at the targeted water consumption level of 203 m³ per year, as with the small usage customer, in comparison to the average residential



bill in 2030 under the current rate structure, this customer would pay \$204 less under the proposed rate structure.

Lastly for a household consuming the current average water consumption in the City (i.e. 269 m³ per year), if they were not to change their water usage habits and consumption remained unchanged, their rates in 2030 would still be \$99 less than those for the average residential customer under the current rate structure.

Furthermore, for all three customer types above, total annual water and wastewater bills would decrease by a further \$80 per year in 2032 when the annual meter installation charge is no longer applicable.

While Table 6-6 presents the impacts in comparison to the current average residential bill, the impacts by customer will vary depending on their actual current water and wastewater bill and future water demand.

Figures 6-4 to 6-6 illustrate the differing impacts for three pairs of customers with the same water demand as identified in Table 6-6 but with different current water and wastewater bills based on the number of water using fixtures in the home. In all three examples, customers will have the same impacts on their annual bill between 2021 and 2024 (i.e. 5% annual increase) and beyond 2025 once metered rates are imposed (i.e. <1% annual increase), however, when the alternative rates are imposed in 2025, the change in the annual bill could be as high as a 47% increase (Figure 6-6) or as low as a 27% decrease (Figure 6-4).



Figure 6-4
Residential Impact Comparison

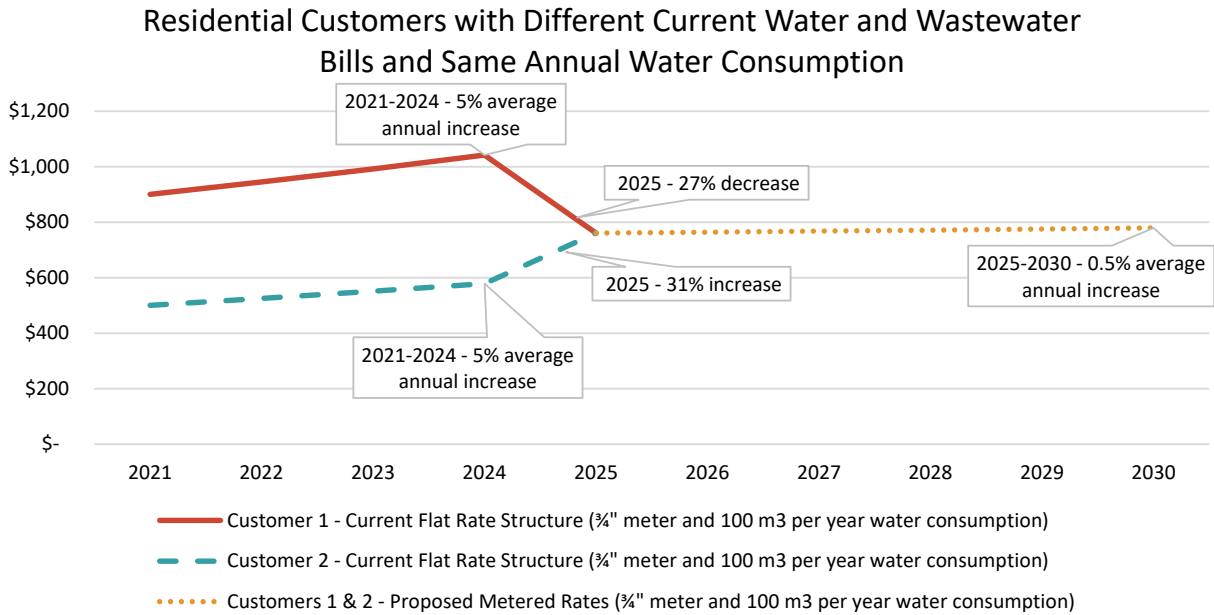


Figure 6-5
Residential Impact Comparison

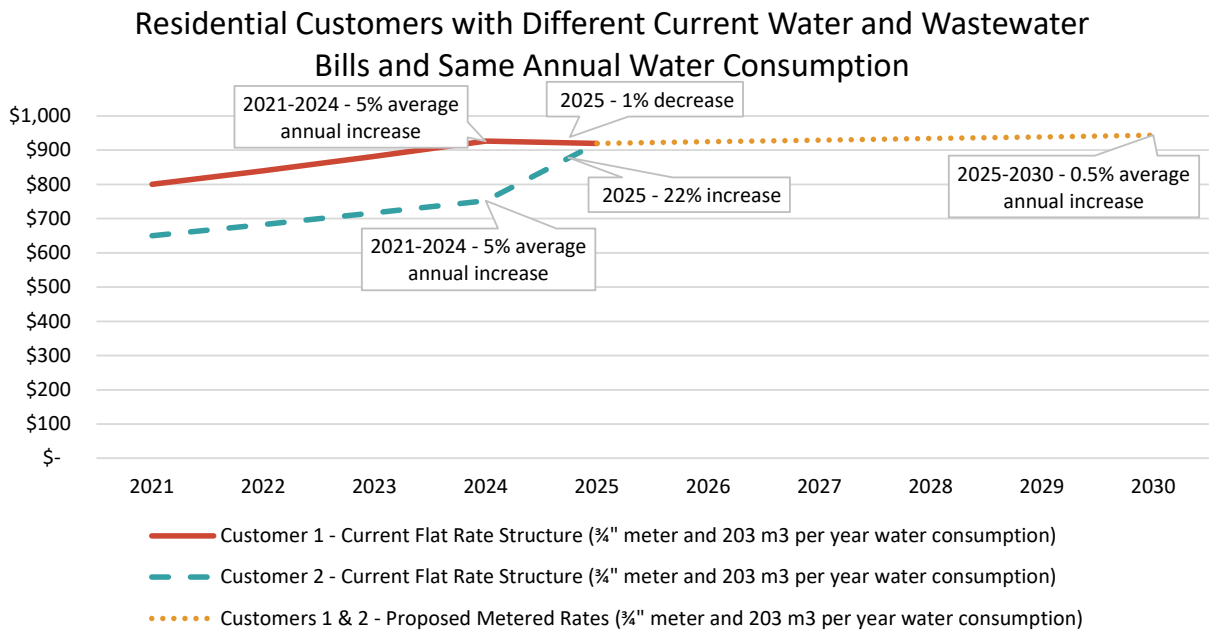
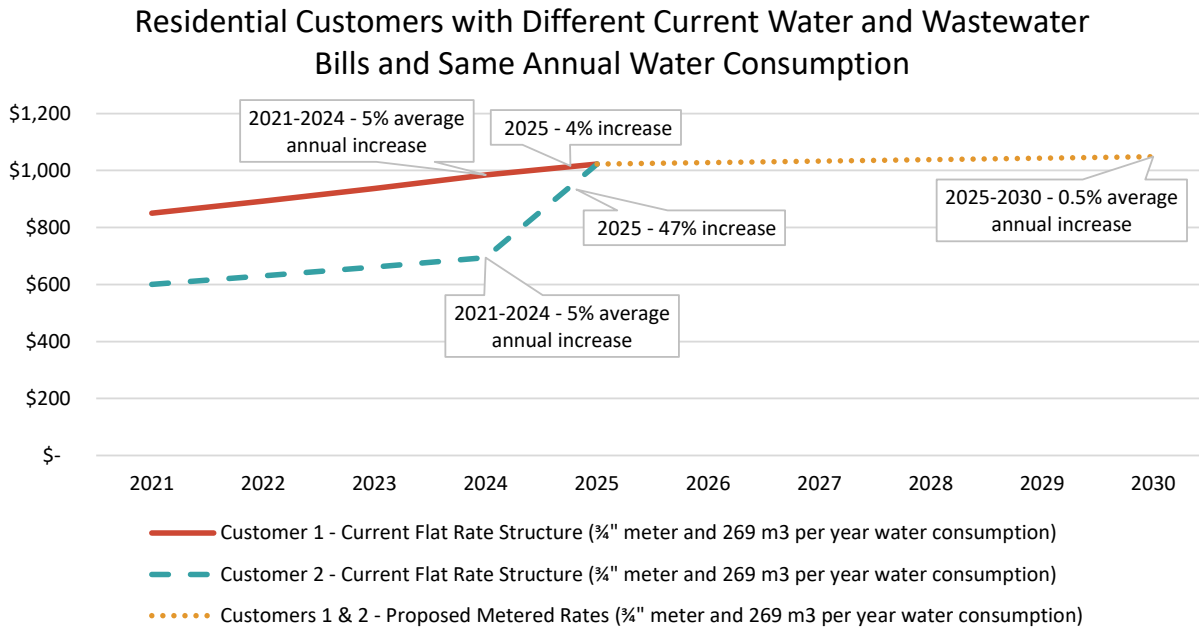




Figure 6-6
Residential Impact Comparison



6.6.2 Non-Residential Customer Impacts

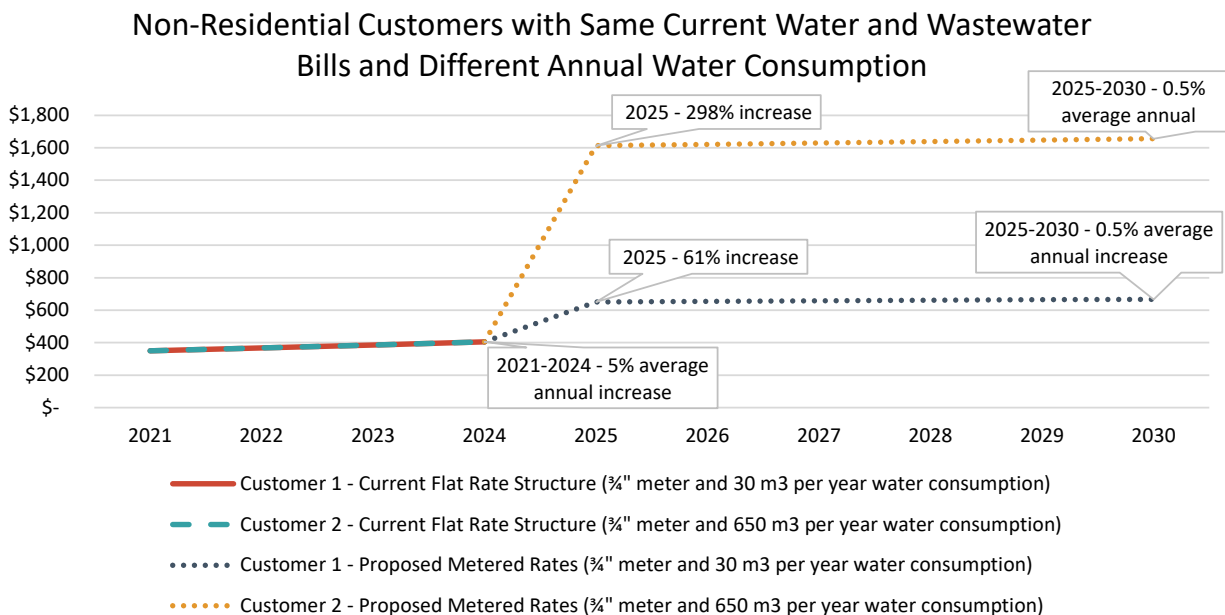
On average across all non-residential customers, total water and wastewater bills are anticipated to increase. However, because of the difference in current non-residential water and wastewater rates that are imposed (i.e. metered vs. per fixture) and the variation in types of non-residential customers and volumes of water consumed, the impacts of imposing the proposed alternative rate structure will be very much customer specific. To provide an example of these variations, four examples based on actual customer bills have been considered in Figures 6-7 to 6-10.

Figure 6-7 considers two customers with the same current water and wastewater bills (based on a per fixture rate) but differing level of water demand. Figure 6-8 to 6-10 assess pairs of customers with the same water demand but different current bills as one customer is charged on a per fixture basis and the other is charged on a per consumption basis. The assessment is summarized as follows:



- Figure 6-7
 - In 2025 customer 1 would see a 61% (+\$246) increase in their bill while customer 2 would see their bill increase by 298% (+\$1,208). The greater impacts for customer 2 are due their greater demand for service (i.e. 650 m³ per year vs. 30 m³ per year for customer 1).
 - Each customer would see their bill increase by less than 1% between 2025 and 2030.

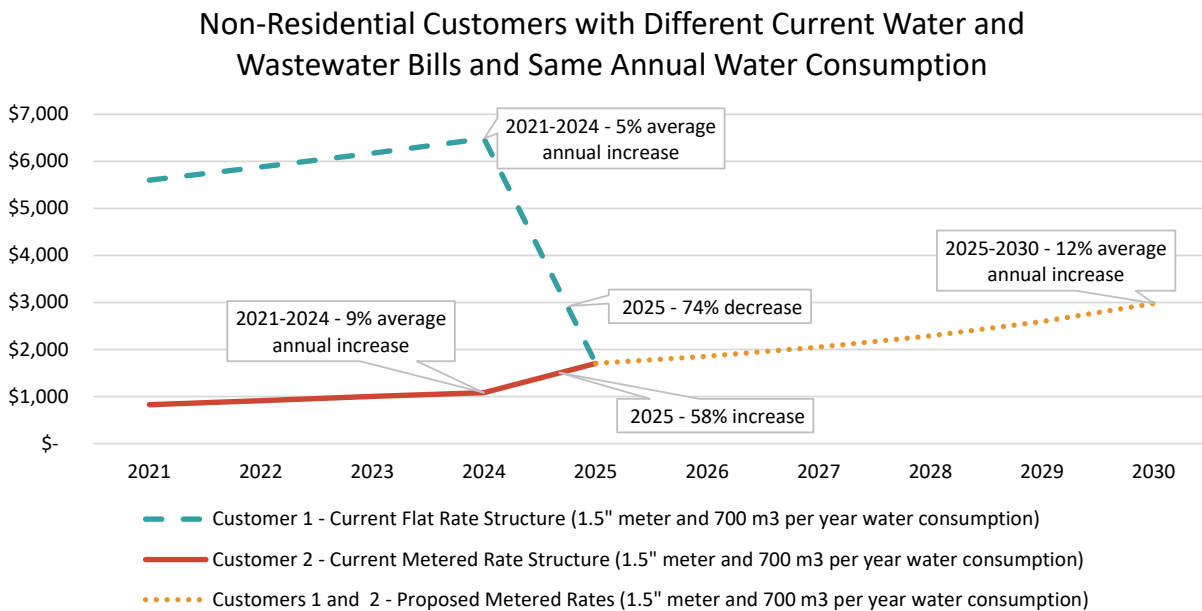
Figure 6-7
Non-Residential Impact Comparison





- Figure 6-8
 - Both customers have the same water demand profile (i.e. 700 m³ and a 1.5" water meter) however customer 1 (currently paying a per fixture rate) pays almost 7 times (+\$4,771) the amount of customer 2 who pays a consumptive rate.
 - In 2025 customer 1 would see a 74% decrease (-\$4,777) in their bill while customer 2 would see their bill increase by 58% (+\$626).
 - Beyond 2025, each customer would receive the same bill that would increase by 12% per year on average. The 2025 to 2030 impacts are greater than in Figure 6-7 due to the greater increases in monthly base charges for 1.5" meters compared to ¾" meters.

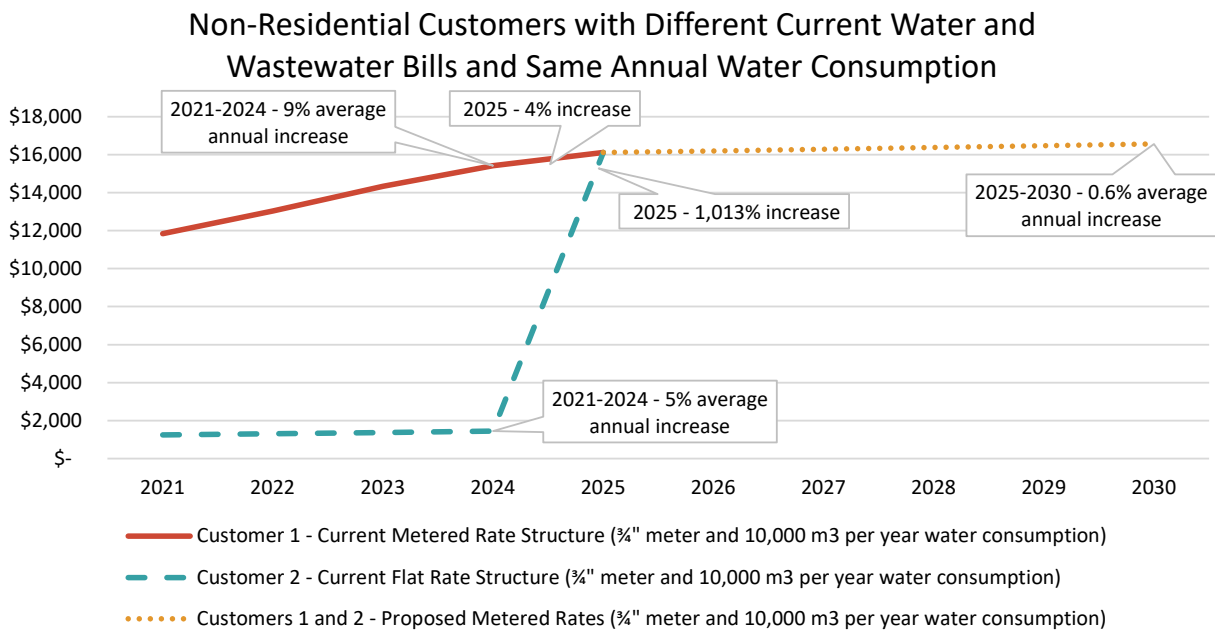
Figure 6-8
Non-Residential Impact Comparison





- Figure 6-9
 - Both customers have the same water demand profile (i.e. 10,000 m³ and a 3/4" water meter) however in contrast to Figure 6-8, customer 2 (currently paying a per fixture rate) pays almost 10 times less (-\$10,591) than customer 1 (paying a consumptive rate).
 - In 2025 customer 2 would see a 1,013% increase (+14,664) in their bill while customer 1 would see their bill increase by 4% (+\$690).
 - Beyond 2025, each customer would receive the same bill that would increase by less than 1% per year on average.

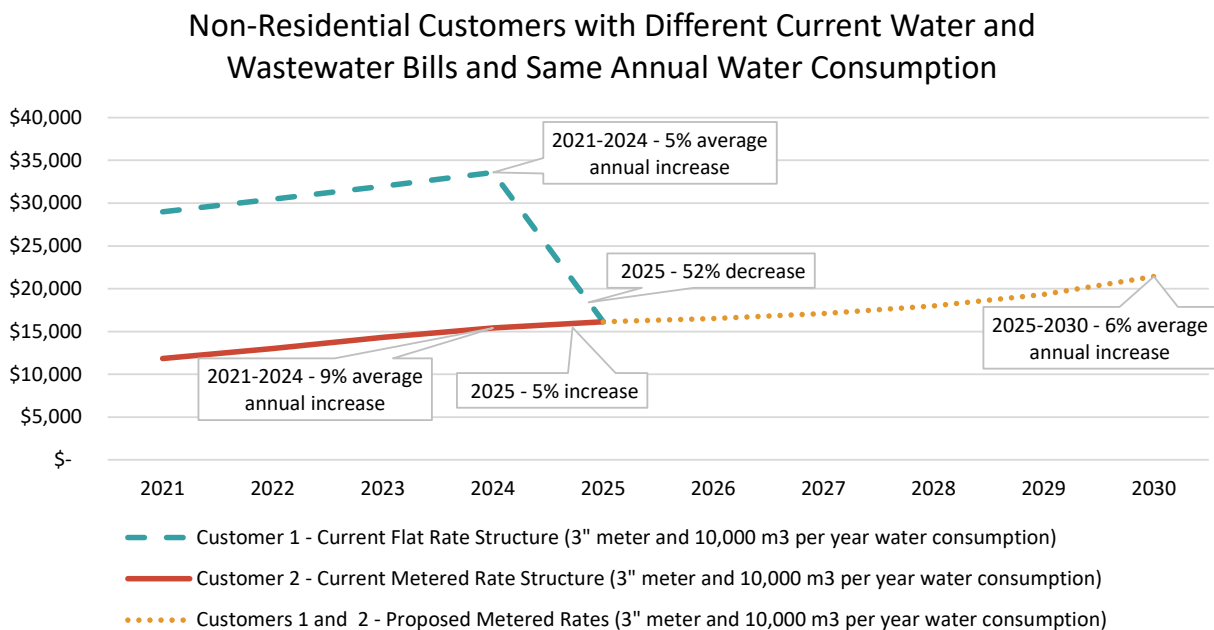
Figure 6-9
Non-Residential Impact Comparison





- Figure 6-10
 - In this case both customers would consume 10,000 m³ of water annually and have a 3" water meter as installed.
 - In this example, customer 1 (currently paying a per fixture rate) pays approximately 2.5 times (+\$17,159) the bill for customer 2 (paying a consumptive rate).
 - With the imposition of metered rates in 2025 customer 1 would see a 52% decrease (-17,445) in their bill while customer 2 would see their bill increase by 5% (+\$704).
 - Beyond 2025, each customer would receive the same bill that would increase by approximately 6% per year on average.

Figure 6-10
Non-Residential Impact Comparison



6.7 Municipal Practice

In addition to assessing the potential impacts of the proposed rate structure for different customer types within the City, the total bill impacts have also been compared to those in neighboring municipalities. The comparison assesses the competitiveness of the water and wastewater bills for a typical residential and non-residential customer.



Figure 6-11 shows the total residential water and wastewater bills for a residential customer consuming 203 m³ of water annually and with a ¾” meter. The current average bill of \$740 would place the City towards the bottom of the comparison. The proposed bill in 2025 with the imposition of metered water rates would increase City’s position slightly in the municipal comparison. Moreover, the anticipated bill by 2030 would not change the relative position compared to the 2025 total bill. By 2032 when the annual meter installation charge is no longer payable, the total annual water and wastewater bill would decrease by \$80 below that of the Municipality of South Dundas.

Figure 6-11
Residential Water and Wastewater Bill Comparison
Eastern Ontario Municipalities

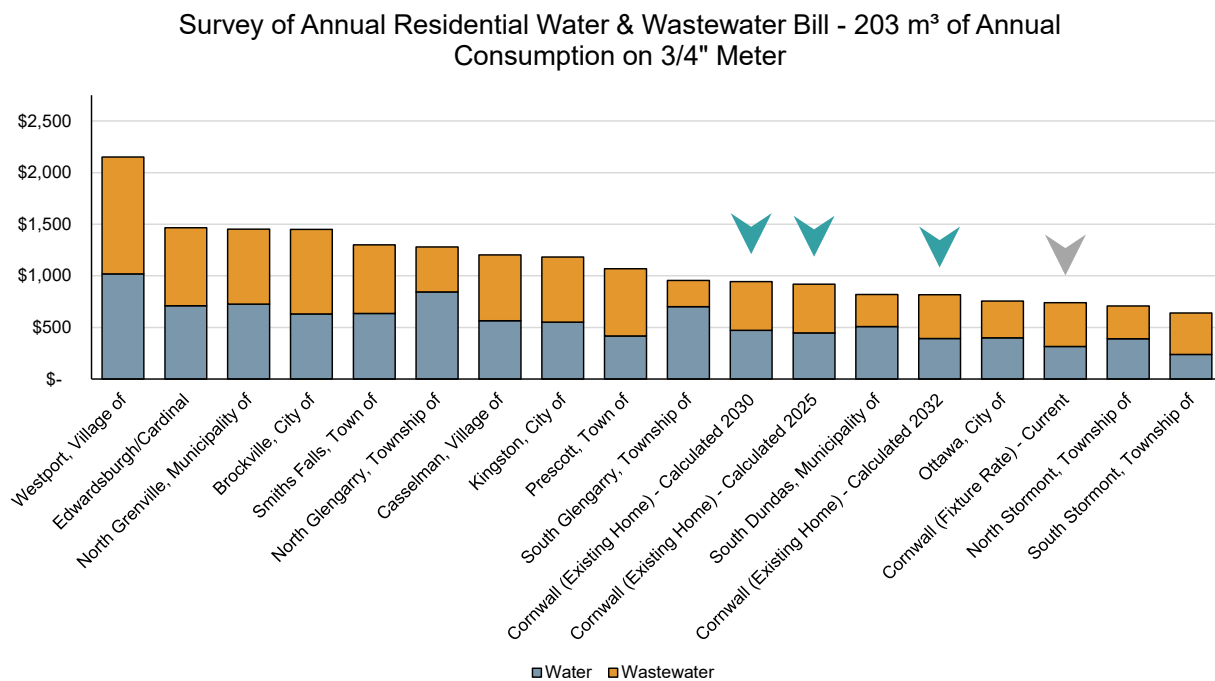


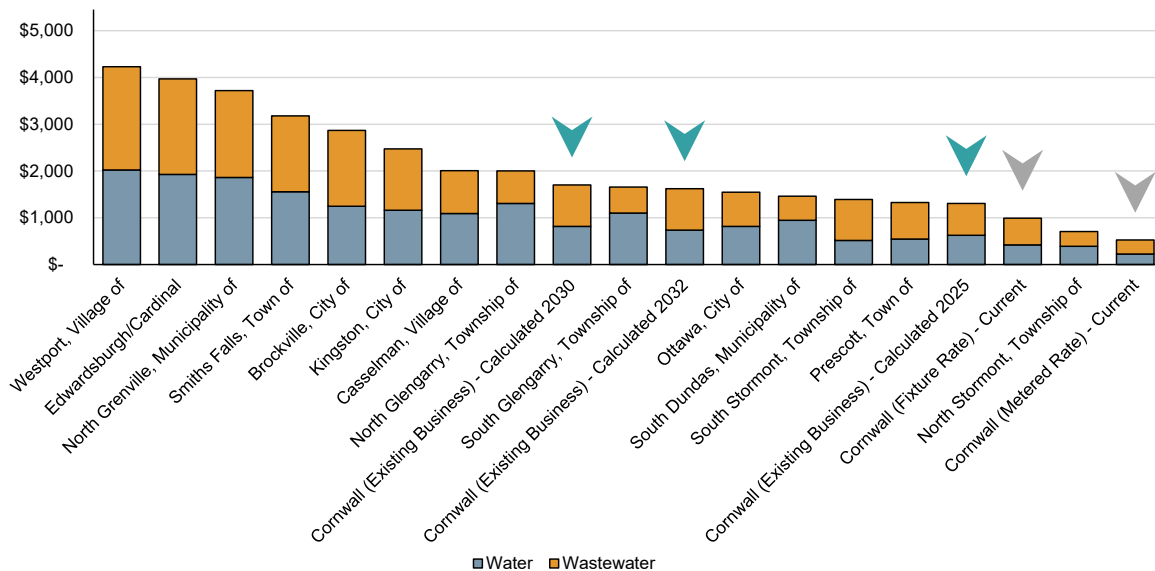
Figure 6-12 compares the average non-residential bill for a customer consuming 441 m³ of water annually and with a 1” meter. The current average bill of \$993 under the per fixture rate structure would place the City above only the Township of North Stormont, and the total annual bill of \$523 under the consumptive rate would place the City at the bottom of the comparison. The proposed bill in 2025 with the imposition of metered water rates would maintain the City’s position above only the Township of North Stormont. By 2030 the anticipated bill would increase towards the mid-range of the



comparison with a slight decrease (\$80) in 2032 when the annual meter installation charge is no longer payable.

Figure 6-12
Non-Residential Water and Wastewater Bill Comparison
Eastern Ontario Municipalities

Survey of Annual Non-Residential Water & Wastewater Bill - 441 m³ of Annual Consumption on 1" Meter



It is important to note that the 2025, 2030, and 2032 total bills are being compared to the current rates in the comparator municipalities, which would also be expected to increase over time.

To further assess the competitiveness and affordability of the current and proposed rates with the City, a survey of rates from 225 municipalities across the Province has been undertaken. Figure 6-13 shows the total water and wastewater bills for residential customers.

As shown in Figure 6-14, only 10% of the surveyed municipalities would have a residential bill of less than \$800 (including the City of Cornwall), with the majority of municipalities charging between \$800 and \$1,200 per year. The median total bill is currently \$1,163, 57% greater than the average residential bill for the City.



Figure 6-15 shows the total water and wastewater bills for non-residential customers. In the case of non-residential customers, Figures 6-15 and 6-16 further demonstrate the lower water and wastewater bills that are imposed in the City. Only 4% of municipalities impose a total bill of less than \$1,000. Furthermore, the median average bill in the Province is \$2,102, almost four times greater than the current metered rates in the City.

Figure 6-13
Water and Wastewater Bill Comparison
Province of Ontario
Residential Customer with 200 m³ Water Consumption and a ¾" Meter

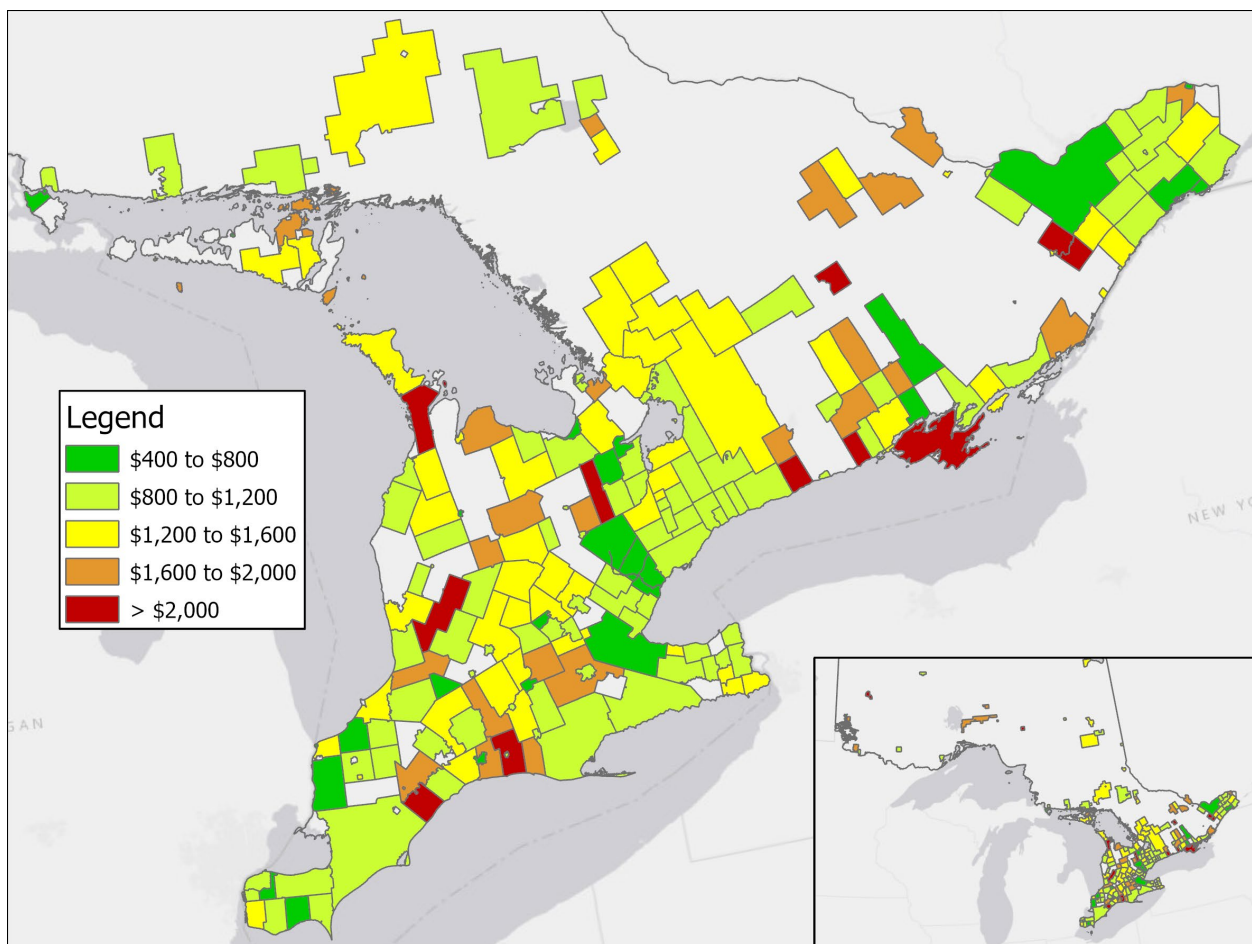




Figure 6-14
Distribution of Water and Wastewater Bills
Residential Customer with 200 m³ Water Consumption and a ¾" Meter

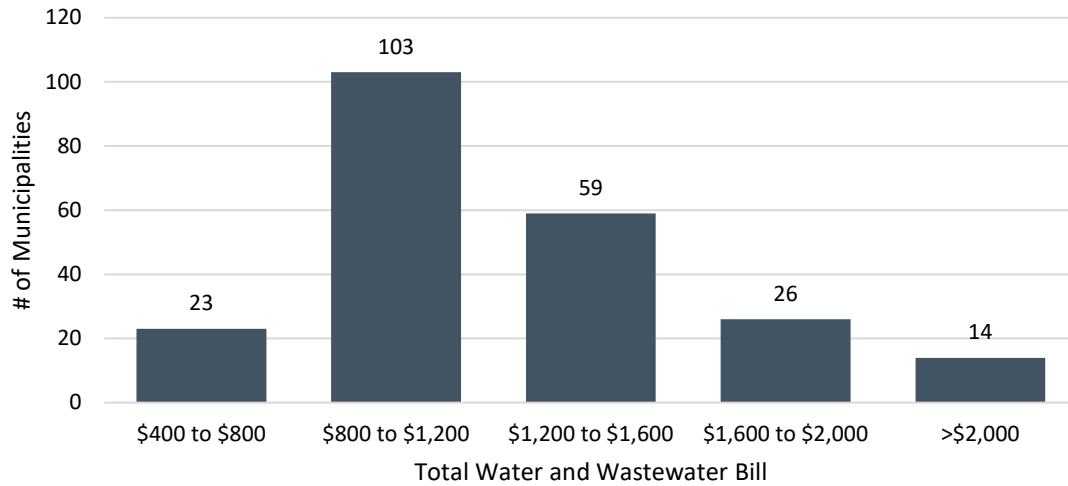




Figure 6-15
Water and Wastewater Bill Comparison
Province of Ontario
Non-Residential Customer with 450 m³ Water Consumption and a 1" Meter

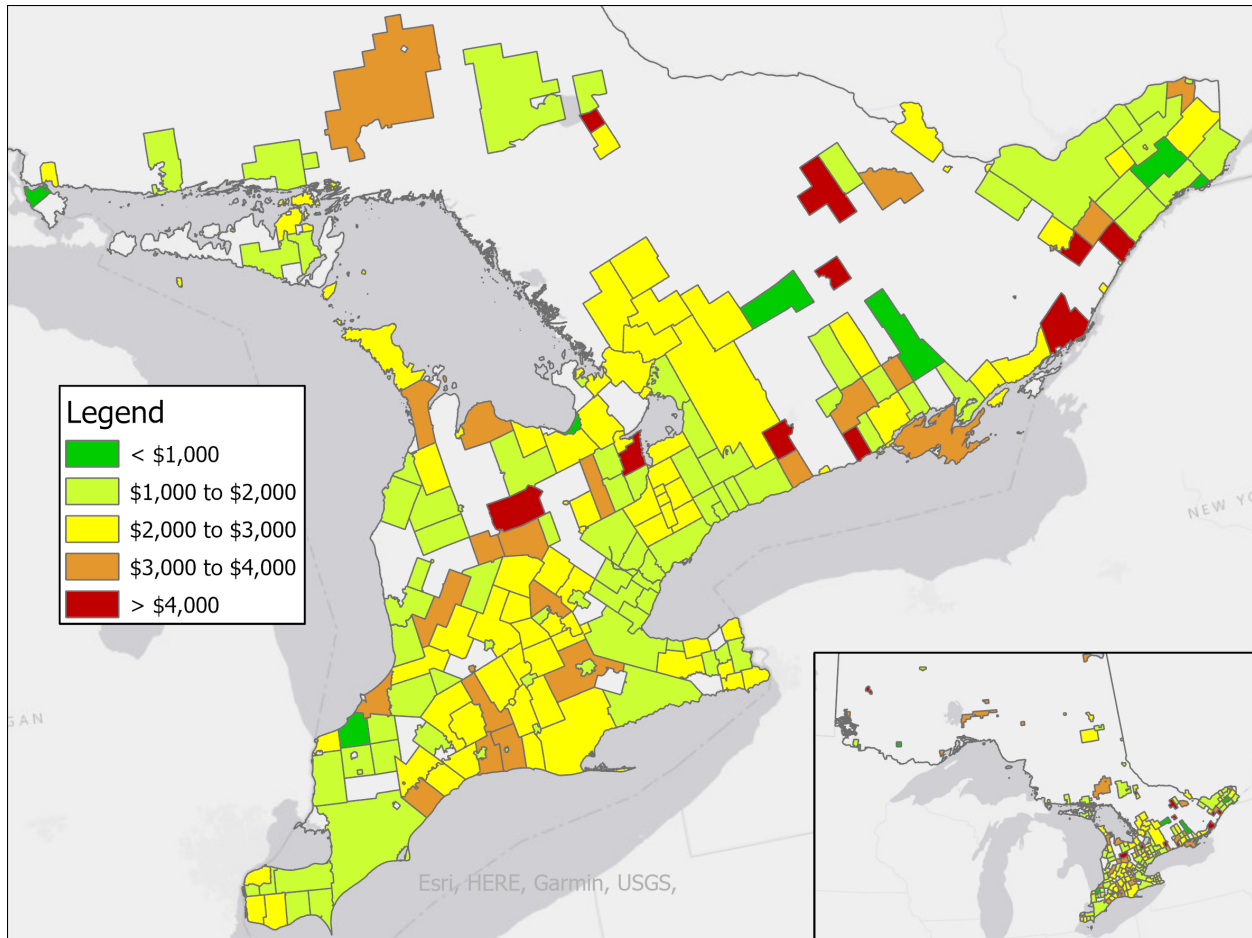
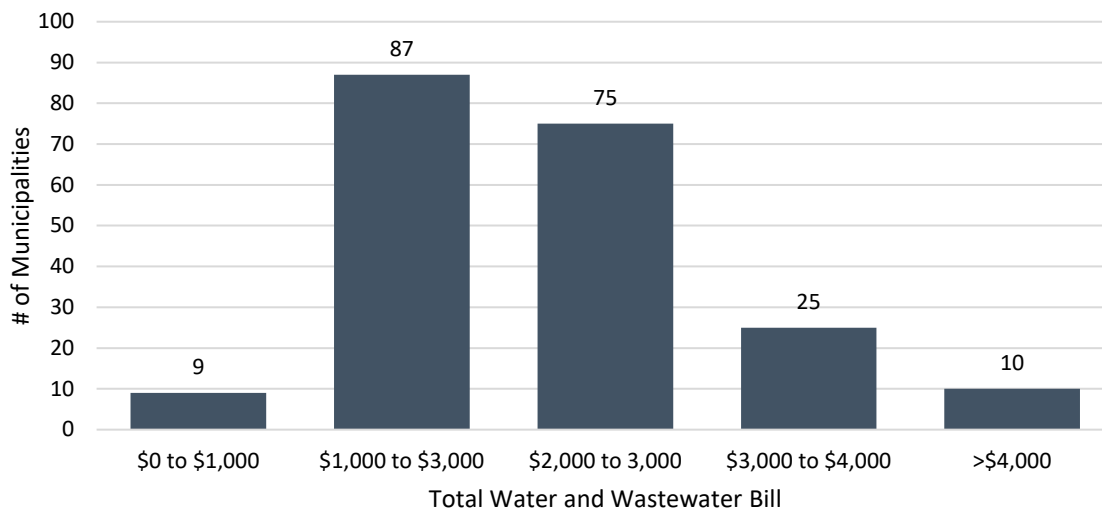




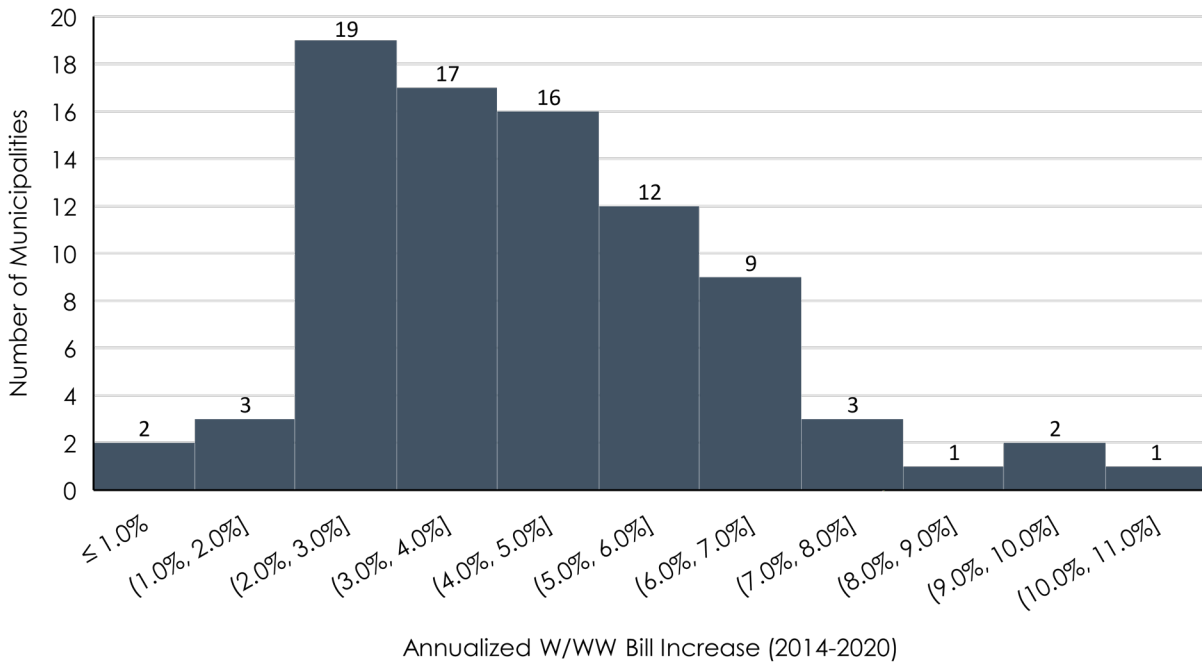
Figure 6-16
Distribution of Water and Wastewater Bills
Non-Residential Customer with 450 m³ Water Consumption and a 1" Meter



The affordability of the forecast rate increases within the City have also been assessed by comparing the average annual percentage increase to the average annual increases in residential water and wastewater bills in 85 municipalities across the Province over the 2014 to 2020 period. Using data compiled from the *2014 and 2020 BMA Municipal Studies* the annual percentage increase in water and wastewater bills has been calculated for residential customers consuming 200 m³ of water annually with a 5/8" meter. As shown in Figure 6-17, 76 of the 85 municipalities have seen average annual rate increases of between 2% and 8% per year, with some municipalities experiencing increases of greater than 10% annually. The City has increased water and wastewater bills over the same period by 3.2%, less than the median annual increase of 4.4%. Furthermore, while recognizing that annual bill impacts will vary by individual customer because of the change in rate structure, Table 6-6 illustrated the proposed rate increases for three sample residential customers. For these three customers, the forecast increase in total water and wastewater bills was between 0.6% and 4.0% per year under the proposed metered rate structure. These forecast rate impacts are generally below or in-line with the historical increases in the City and less than the median rate increase for the 85 surveyed municipalities.



Figure 6-17
Average Annual Water and Wastewater Bill Increases (2014-2020)





Chapter 7

Procurement methodology i.e.
Request for Proposals,
tenders etc.



7. Procurement methodology i.e. Request for Proposals, tenders etc.

7.1 Project Management

Given the extent and complicated scope of the proposed universal metering project, it is recommended that the City commission a project management consulting firm with expertise in the review of municipal water meter technology. The project management firm would provide project recommendations for universal installation of water meters complete with application of a state-of-the-art metering program which would include:

- **Advanced Metering Infrastructure (AMI)** - A network of fixed base equipment that captures detailed consumption information from the metering population that is retrieved by data collection software on at least a daily basis.
- **Customer Information System (CIS)** - The CIS automates the meter-to-cash flow process. It is the system of record for utility customer information and handles order processing, rate design, billing, credit collection, accounts receivable, statement preparation, and payment.
- **Meter Data Management (MDM)** - Software application that helps manage and ensure the accuracy and completeness of the volumes of data provided by a fixed network for billing, analysis, reporting and presentment.
- **Meter Installation Software (MIS)** - Software that captures the details of the installation including meter serial number, transmitter identification number, account information of where the equipment was installed.

Additionally, the successful project management firm would oversee preparation of specifications and procurement documents, contract administration and implementation oversight and support.

Effective consulting engagement for universal metering and AMI water projects are typically broken down into three key stages as follows: design; procurement; and management. The success of each stage is interdependent on the success of the previous one.

The focus of the design stage includes a background review and AMI equipment recommendations. These tasks set the framework for a successful procurement and



project outcome. The successful consultant will provide overall coordination services for the Design Stage and will provide the City with a recommendations report that includes a summary of the findings, recommendations for the project, and outline what technology best suits the City of Cornwall.

Following the design stage, the selected consultant would develop a structured approach to procurement. Considering that universal metering and AMI projects present unique considerations for procurement and development, it will be likely recommended that a Request for Proposal (RFP) procurement process be executed. The RFP process would provide the City with the ability to weigh both the technical and financial merits of vendors' systems instead of awarding this multifaceted project to the lowest financial vendor (using a tender process).

Program Management is a critical task that brings all elements of the project together to achieve the desired outcomes. This is particularly important with a universal metering project and AMI projects. At this point in time, the procurement stage is complete, and the contractor/vendors are selected. The project now transitions into installation start-up. The Project Management consultant's role will be to take an active leadership role to ensure the project is well planned and executed (quality assurance), mitigate risks and ensure successful universal meter installation and full commissioning of the AMI system.

Upon Council approval of the Water Conservation and Servicing Master Plan, Administration would immediately issue a Request for Proposal in order to commission a qualified consulting firm to provide project management services as outlined.



Chapter 8

Implementation Plan and Timeline



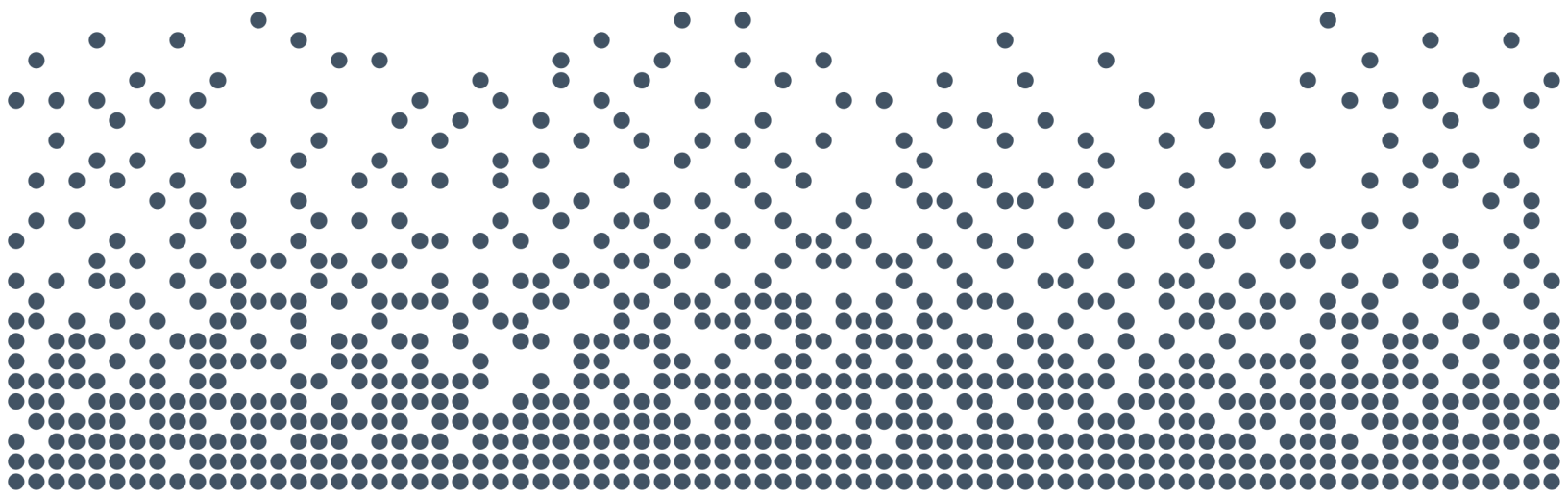
8. Implementation Plan and Timeline

As summarized in Chapter 7, the City is proposing to have the universal meter installation process overseen by a dedicated project management firm. The City anticipates that it will take up to two years to install water meters in all properties within the City and that this process would be able to commence in 2023 with metered water and wastewater rates being imposed for the start of 2025.

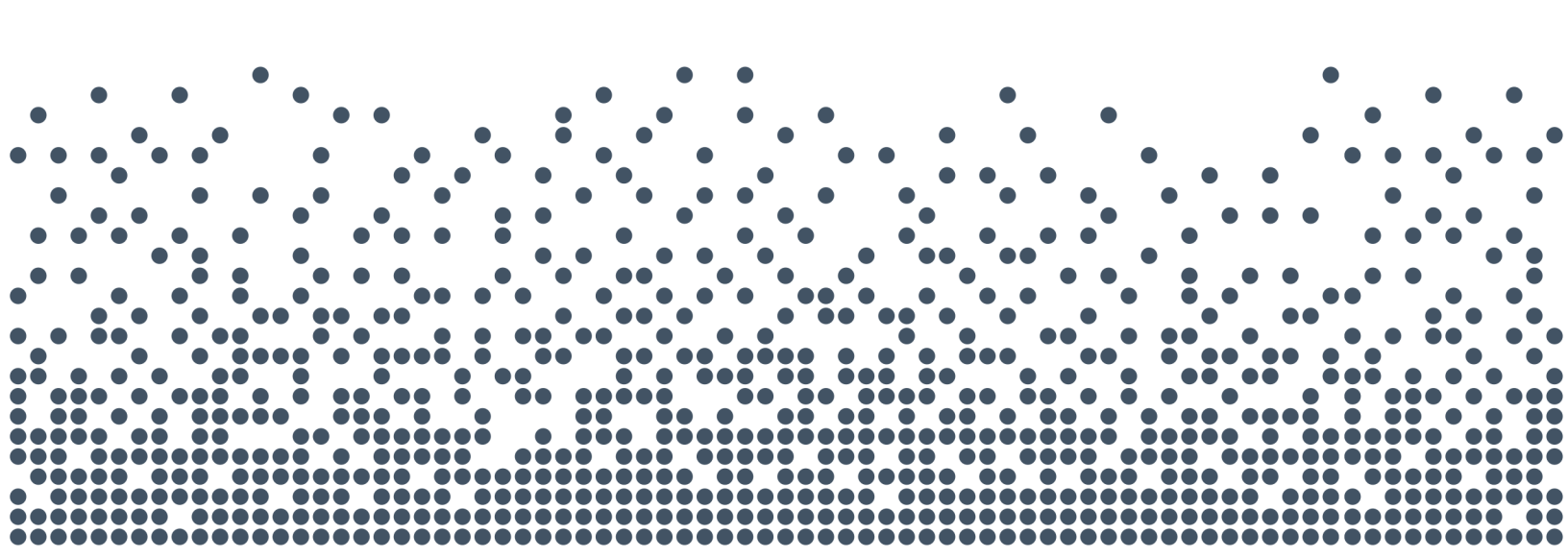
If Council provides direction to proceed with the installation of water meters City-wide and the implementation of the water conservation program, the next steps will be to:

- Issue a Request for Proposal in order to commission a qualified consulting firm to provide project management services as outlined;
- Continue outreach to promote and educate the community about the benefits of water conservation and the forthcoming water meter installations and rate structure changes;
- Consult with non-residential stakeholders on potential components of the water conservation program specific to their industries, such as incentives and rebates;
- Finalize water conservation program and begin implementation including home water audits and residential toilet rebate program;
- Begin universal water meter installation program under the supervision of a successful project management firm, including:
 - Public outreach program development;
 - Sample field inspections of existing plumbing at both residential and non-residential locations;
 - Development of tender specifications;
 - Electronic integration with the City water billing software;
 - Water meter installation logistics etc.

The City will also continue to assess water consumption data from all existing and newly installed water meters and revise the forecast metered water and wastewater rates prior to implementation in 2025.



Appendices



Appendix A

Conservation Incentive and Rebate Survey



Residential			
Municipality	Rebate Program Type		Capacity Buyback
	Toilet		
	Description	Amount	
Guelph			
Residential	Rebate for each 6L or larger toilet you replce with a WaterSense certified high efficiency (4.8-litre/flush or less) single or dual flush toilet (for a maximum of 2 toilets).	\$50.00	
Halton Region			
Residential	Only toilets purchased after January 1, 2007, and are WaterSense Certified are eligible for rebate. Six-litre toilets purchased after December 31, 2010 are no longer eligible. Limit of 1 toilet rebate per residece)	\$75.00	
New Tecumseth			
Residential	The toilet must be a new, water-efficient model from the approved model list and must be installed in a residence built prior to 1996 (for a maximum of 2 toilets).	\$50.00	
Waterloo Region			
Multi-Residential	Property managers can receive up to \$15 for every toilet flapper they replace. They may also receive shower heads and tap aerators free of charge through this program.	\$15.00	Money is available for property managers who upgrade all of their building's showerheads, toilets and tap aerators. Funding is awarded based on water savings achieved by the project.
Barrie			
Residential	The City offers a \$50 rebate to residents who replace high-flow fixtures (greater than 6 litres per flush) with low flow fixtures (6 litres or less) (max 1 credit per dwelling)	\$50.00	



Residential			
Municipality	Rebate Program Type		Capacity Buyback Description
	Toilet		
	Description	Amount	
Niagara Falls			
Residential	Incentive/rebate amounts are for residents of Niagara Falls purchasing a maximum of two high efficiency toilets (Only toilets meeting the US EPA WaterSense Performance Standard Guidelines) per household to replace inefficient toilets.	\$60.00	
Peterborough			
Residential	The rebate is only available for replacing less-efficient toilets with purchasing low-flow toilets in residential units in the City that are connected to both the municipal water and sanitary sewer system (for up to two rebates per residential unit)	\$50.00	
North Bay			
Residential	The program is offering a \$50 rebate for the purchase of two (2) WaterSense labelled low-flow toilet that are replacing existing, less efficient toilets.	\$50.00	
Collingwood			
Residential	Replace a high-flow fixture (greater than 6 litres per flush) with a low- or dual-flush model from the ecoENERGY-approved model list (max of 2)	\$50.00	
Oxford County			
Residential	Replace your old 13 litre or larger toilet with a new WaterSense® model	\$50.00	
Orangeville			
Residential	rebate towards the cost of a WaterSense® certified toilet which replaces an existing toilet with a flush volume of 6 litres or larger.	\$60.00	
Wasaga Beach			
Residential	Low Flow or Dual Flush Toilets	\$70.00	



Residential			
Municipality	Cost Sharing Upgrades	Other	
	Description	Description	Amount
Guelph			
Residential			
Halton Region			
Residential			
New Tecumseth			
Residential			
Waterloo Region			
Multi-Residential	The Region will partner with multi-residential property managers working on water-saving projects		
Barrie			
Residential		The Disconnect to Protect Rebate Program provides rebates to qualifying Barrie residents for disconnecting illegal downspout and sump pump/foundation drain connections to the sanitary sewer system:	<ul style="list-style-type: none"> - up to \$70 to disconnect downspouts - 75% of the costs to permanently redirect an existing sump pump discharge away from discharging to a laundry tub or floor drain to a surface discharge (to your lawn or rain garden) to a maximum of \$200 - 75% of the cost to disconnect your foundation drain from your sanitary lateral and construct a new sump and pump with surface discharge (to your lawn or rain garden) to a maximum of \$2000 - 75% of the cost of capping an existing sanitary drain and installing a sump pump with surface discharge (to your lawn or rain garden) to a maximum of \$300. If a sump pit is required, the maximum rebate increases to \$675



Residential			
Municipality	Cost Sharing Upgrades	Other	
	Description	Description	Amount
Niagara Falls			
Residential		The City of Niagara Falls is committed to the implementation of a Weeping-tile Removal Assistance Program (WRAP). The purpose of the WRAP program is to disconnect weeping-tile from the sanitary sewer.	Weeping-tile Disconnection - Full 100% reimbursement to a maximum of \$4,000.00 (including HST) Backwater Valve - Full 100% reimbursement to a maximum of \$1,200.00 (including HST)
Peterborough			
Residential			
North Bay			
Residential			
Collingwood			
Residential			
Oxford County			
Residential		Replacing your old top-loading washing machine with a new ENERGY STAR® model	100
Orangeville			
Residential			
Wasaga Beach			
Residential			



Non-Residential				
Municipality	Rebate Program Type			
	Toilet		Restaurants	
	Description	Amount	Description	Amount
Guelph				
Non-Residential/Multi-Residential	Rebate for each 6L or larger toilet you replace with a WaterSense certified high efficiency (4.8-litre/flush or less) single or dual flush toilet. Subject to inspection by the City			
Peel Region				
Non-Residential	Replace a non-WaterSense labelled flushometers-valve toilet with a WaterSense labelled unit. This incentive is not for tanked toilets.	100	Ice Machine - Replace an existing water-cooled condenser with an air-cooled unit.	1000
			Pre-rinse Spray Valve - Replace a non-WaterSense labelled pre-rinse spray valve with a WaterSense labelled valve.	25
			Dipper Well - Install a new dipper well faucet that has a flow rate less than 0.25 gpm (or 0.95 Lpm).	60
Toronto				
Commercial & Industrial				
Manufacturers				
York Region				
Non-Residential	Replace a non-WaterSense® labelled toilet with a WaterSense® labelled unit or higher efficient unit (4.8 LPF or less) (max of 5)	100	Ice Machine - Replace an existing water-cooled condenser with an air-cooled unit (max of 5)	1000
			Replace an existing pre-rinse spray valve with a WaterSense labelled valve (max of 5)	25
			Replace an existing dipper well faucet with one that has a flow rate of 0.5 gpm or less (max of 5)	60
			Packaged Condensing Unit - Replace water-cooled condenser with air-cooled unit at the same facility (max of 5)	1000
Industrial, commercial and institutional				



Non-Residential				
Municipality	Rebate Program Type			
	Toilet		Restaurants	
	Description	Amount	Description	Amount
Waterloo Region				
Industrial, commercial and institutional			Restaurants and food processors can receive free upgrades for pre-rinse spray valves	N/A
Kingston				
Industrial, commercial and institutional				
Commercial & Multi-residential	Replacement of toilets that use 13 Litres per flush (lpf) or more with single flush toilets of 4.8 lpf flush or less or dual-flush toilets with a maximum flush volume of 6 lpf.	\$30 per toilet OR Social housing providers can receive up to \$60 per toilet.		
	Replacement of toilets that use 6 lpf with single flush toilets of 3 lpf.			
	Replacement of toilets that use 13 lpf or more with single flush toilets of 3 lpf.	\$60 per toilet OR Social housing providers can receive up to \$125 per toilet.		
Ottawa				
High Volume Users (IC&I consuming >25,000 m ³ per year or multi-residential with at least 6 units)	Single-flush and dual flush high-efficiency toilets	50	Spray valve upgrades	50% of pre-tax price to maximum of \$200
	Urinal for 3.8L or less	60		
	Waterless urinals	75	Commercial dishwashers and washing machines	25% of the pre-tax price, to a maximum of \$1,000



Non-Residential				
Municipality	Dental Vacuum Pump		Capacity Buyback	
	Description	Amount	Description	Amount
Guelph				
Non-Residential/Multi-Residential				
Peel Region				
Non-Residential				
Toronto				
Commercial & Industrial			The City offers a free water audit to help identify ways to reduce water use rewarding participants that implement permanent water-saving measures	A one-time cash rebate of up to 30 cents per litre of water saved per average day
Manufacturers				
York Region				
Non-Residential	Replace a liquid ring dental vacuum pump with one that does not use water to create suction (max of 5)	1000		
Industrial, commercial and institutional			The Region offers free consultations and identify potential water savings through retrofitting equipment. Once the retrofits are complete, the Region will preform another audit and assess the amount of the incentive based on the type of retrofits installed	Up to \$50,000



Non-Residential				
Municipality	Dental Vacuum Pump		Capacity Buyback	
	Description	Amount	Description	Amount
	Waterloo Region			
Industrial, commercial and institutional				
Kingston				
Industrial, commercial and institutional				
Commercial & Multi-residential				
Ottawa				
High Volume Users (IC&I consuming >25,000 m ³ per year or multi-residential with at least 6 units)				



Non-Residential				
Municipality	Industrial Water Rate Program		Cost Sharing Upgrades	
	Description	Amount	Description	Amount
Guelph				
Non-Residential/Multi-Residential				
Peel Region				
Non-Residential				
Toronto				
Commercial & Industrial				
Manufacturers	<p>The City offers a decreasing block rate for manufacturers that:</p> <ul style="list-style-type: none"> - use more than 5,000 m³ annually - fall within the industrial property tax class - are in full compliance with the City's Sewers By-law - Submit a comprehensive water conservation plan to the satisfaction of the General Manager, Toronto Water 	30% Reduction on Consumption above 5,000 m ³		
York Region				
Non-Residential				
Industrial, commercial and institutional				



Non-Residential				
Municipality	Industrial Water Rate Program		Cost Sharing Upgrades	
	Description	Amount	Description	Amount
Waterloo Region				
Industrial, commercial and institutional			The Region offers a number of cost-sharing opportunities for IC&I Customers	<ul style="list-style-type: none"> - 50% funding for facility water balance audits, up to a maximum of \$10,000 - 50% funding for engineering consulting fees for water process upgrades, up to a maximum of \$10,000 - 50% funding for water sub-metering installations within manufacturing plants, low-rise condominiums, strip malls and other commercial businesses, up to a maximum of \$10,000
Kingston				
Industrial, commercial and institutional			Projects that can apply for custom incentives include institutional toilet replacement projects, retrofits of heavily-used commercial laundry or commercial kitchen equipment, or any other projects that permanently reduce water consumption and sewer discharges. Projects that save more than 80 cubic metres per year are eligible for the program.	Offers a financial incentive of \$5 per cubic metre of annual permanent combined water and sewer savings, up to a cap of 20 per cent of eligible project costs. For qualifying social housing providers, the incentive cap is 50 per cent of qualifying project costs.
Commercial & Multi-residential				
Ottawa				
High Volume Users (IC&I consuming >25,000 m ³ per year or multi-residential with at least 6 units)				



Appendix B

Public Engagement Questions & Answers



#	Question	Response
1	Why not just start with the easiest solution and install water meters, at least in all new builds and expand each year and start today not after another X years of ridiculous debate.	We have determined through market surveys that the cheapest price for water meters and installation costs is to purchase all at the same time. In other words the cheapest installed costs are if we do 1 large project. That will take about 2 years to complete. This report will go to Council likely at the beginning of June and a decision will be made at that time.
2	Why is water conservation even on the table? We have an infinite supply. There's no wear & tear as water travels through the system, the only cost is chlorination. Please stop talking about this & water meters are a definite NO. Same with an alternate supply line, NOT necessary.	As part of this engagement we have the River Institute providing some background knowledge about drinking water supply. Stay tuned to this website for video they developed. A small summary is that when we calculate global supply of fresh water of the water on Earth it's very small it just looks big when you stand beside the St. Lawrence river. The wear and tear occurs when people and industries and business turn water on and off and the plant has to turn pumps on and off. This creates a small vibration that travels down the pipes under the ground. With time, these vibrations break the pipe in the same way you can break a piece of metal like a paper clip by bending it up and down. In the middle of May we will be presenting to Council some of the other costs for water and wastewater in addition to the chlorination costs examples are coagulation chemical, electricity, repair parts, oil change costs of rotating equipment. The alternate supply is being investigated because if the plant supply line breaks or repairs are needed getting an emergency supply up and running would take over 24 hrs and currently the plant and system supply contains only 4hrs of water.
3	Our taxes are already too high--here will the funding for the proposed water meters come? Are you aware that these meters will need to be replaced every 20 years and who will pay for them then at another exorbitant amount? The city of Montreal had problems with their water meter program which included faulty meters and kickbacks to individuals--what measures will the city of Cornwall implement to prevent this happening here? Why not adopt water conservation methods like designated days and times that residents are permitted to water lawns and/or fill swimming pools? Tickets can be issued for those failing to respect these laws--I lived in the city of Pierrefonds in Quebec for more than 30 years and this worked well and we had "far lower" water taxes than the city of Cornwall. Why not try other measures before spending millions of dollars on water meters?	The maintenance and improvements to provide drinking water and wastewater treatment to a community are based on rates not on taxes. The 2 different words taxes and rates are used by the Province because the Safe Drinking Water Act requires that Council and Administration don't use tax money for water and don't use water money for roads improvement (for example). That decision was made from the investigation into what happen in Walkerton with the contaminated water. Part of the report that will be presented to Council will include recommendations on the best ways to purchase and install meters so that they have a long life and the bidding process is transparent. Water conservation methods like the one you suggest would be considered if Council decides to move forward with the Water Conservation portion of the Water Conservation and Servicing Master Plan. A second part of the report will be to show Council some of the inequities in the current water bills and recommendations to share costs across water users. At the moment, water meters are 1 option and water meters allow each person to control that portion of their bill and the new technology would allow a person to see their daily usage and yearly usage. This gives individuals some control of costs and limits the effect of high water consumers to the bills of others. Currently, Cornwall's water rates are the lowest in Ontario although it would seem Quebec is lower.
4	Will we still be paying water taxes on top of the water usage? As a landlord, will I be able to add this as a utility that my current and future tenants must pay in their own name?	For water bills we use the word rate and for property assessment we use the word taxes. There will be 2 components to a water bill if Council decides to move forward with water consumption or usage bills. The first part would be a fixed amount on every bill based on the size of the water meter and then another amount added to the bill based on the amount of water used.
5	How long before council make water meters mandatory?	We are planning to present the report to Council at the beginning of June. At that time, Council will decide whether they would like to proceed with any or all of the recommendations of the Water Conservation and Servicing Master plan and 1 element would be city wide water meters.



#	Question	Response
6	Is the end result of this process that we will be getting water meters? Industry and thoughtless home owners/renters have been wasting water with no penalties plus basically free water	The end of this process will be a report that goes to Council. The report will make recommendations for Council to provide direction on the next steps if any. The report will summarize options about continuing to use the current system for water bills and compare that with a couple of new systems that use water meters to create the water users bill. That rate option would have a fixed fee based on the size of the water meter and have a fee based on how much water was used during the billing period. The report will also present suggestions of program that could be developed to assist with water conservation and what the long term savings of those programs would be. The report will include a summary of what residents, property owners and business owners have told us are their concerns and what they feel are the benefits of the Water Conservation and Servicing Master plan report parts.
7	Implementation of water meters for rental properties will only raise rent costs. Since this city is already in a housing crisis that will cause renters/workers to leave for cheaper living spaces & thus leaving gaps for industries and warehousing employers to fill (or move). How will the City prioritize adding to skyrocketing rents (with water meters) to losing people and business taxes?	Rental properties have not been directly discussed as part of the development of this report. If Council decided to approve charging a rate based on the amount of water used (there will also be a fixed cost on every bill based on the size of the water meter) This might mean an individual apartment building's water bill might be the same or lower. The system being recommended if Council approved it would allow administration to discuss with the owner of the apartment building if they wanted to install sub-meters. Meaning meters at every apartment. That would allow the owner to only charge the tenant the amount the tenant used. In addition, by charging for water used this provides a business case for saving money by the installation of equipment that is more efficient and uses less water. Meaning you can save money. We encourage you to subscribe https://haveyoursaycornwall.ca/register to stay up to date. Thank you for showing interest in the Water Conservation and Servicing Plan and taking time to provide your input.
8	I'm not down for a water meter especially with a family of 9.. and six kids that need to be cleaned and washing that needs to be done.	If Council decides to install water meters and charge customers based on the amount of water used, this change will actually result in lower bills for some customers dependent on the amount of their current bill and the amount of water they use. Also charging customers for the amount of water used gives individuals control over how much they pay through the choices the individual can about where they use water. For example, Council will consider assisting with an incentive program for a high efficiency washing machine to lower both water usage and electricity usage in the same report when they consider the decision to move to having a charge for amount of water used. We will be releasing further information as well as a tool to help customers understand how metered water rates may affect the amount they pay. We encourage you to subscribe https://haveyoursaycornwall.ca/register to stay up to date. Thank you for showing interest in the Water Conservation and Servicing Plan and taking time to provide your input.
9	I am sorry but that large an expense will never get thru - that is the same problem Cornwall has been facing for years and will just be another excuse to put it off. I am jaded but believe this is just posturing to silence those who care. Why does Cornwall not care about the environment?	The process being used this time, we hope is different, and includes this website to be able to directly take your voice to Council when the report is presented at the Beginning of June. In addition, this time it was included in the Term of Council strategic plan we have provided that link next. "Being leaders in sustainability and climate change impact" is also one of the five pillars of the City's Strategic Plan. The plan can be found here (https://www.cornwall.ca/en/city-hall/strategic-plan.aspx) if you would further information. Now not directly linked to this plan development Council has directed administration to prepare a Zero Carbon Roadmap which will provide with direct project examples to help protect the environment and we have the River Institute who will be providing some outreach about how taking care of the urban water systems through a number of water conservation methods helps care for our shared environment. Thank you for showing interest in the Water Conservation and Servicing Plan and taking time to provide your input.
10	What is wrong with what we presently have. If the city wants to do something start with all "new builds" both residential and commercial. The cost of implementing water meters is maybe very expensive and the return probably minimal. The increase in taxes is not worth the investment for a small town like Cornwall and the cost would be born by mostly seniors.	The least expensive per meter cost and per meter installation cost is if they are purchased and installed in bulk. In addition, the report will recommend that leak detection equipment be installed at the same time. Finding leaks quicker and easier will save operating and repair costs. The rates are calculated by the requirement of the Financial Plan process of the Safe Drinking Water Act and that the people pay for the cost of water during the time they are using the water. That means the Act asks us to not burden future generations.



#	Question	Response
11	I see the bulk cost answer to the question of water meter installation but why not require the builder to install the meter in any new home or business? It would represent a very small addition to the cost of the building and the owner would hardly notice. It would be cheaper than the later retrofit.	You are correct the report that will be brought to Council will recommend that if Council asks administration to implement water consumption billing that part of any new building permits will be the installation of a water meter.
12	I am a senior living alone and would welcome water meters. The family with nine children does not want water meters, because they are being subsidized by people like me. If people could see how much water they are actually using, they might be a little more careful with this resource. Basing water rates on the number of taps in a home is ridiculous, similar to charging for electricity based on the number of electrical outlets in a home.	Thank you. In first report we brought to Council we shared with them what you described. At that time they asked us to develop this Water Conservation And Servicing Master Plan so that they could more fully understand the concerns and opportunities so that they could give direction for improvements. We are hoping to bring the report to Council shortly after we complete this engagement with the public.
13	We are now paying nearly 1000.00 a year for water which is exorbitant. Will the cost go down with a meter. I was told a few years ago that bills would remain the same if so why would I have people come in my house install a water meter. We are retired and I can tell you we do not use for 1000.00 of water a year. My sister in Quebec pays 80.00 a year.	Due to the inequity that exists between residential and business it is proposed in the rate study that residential rate would go down. We will have a water calculator up and running next week and you can check out what your new rate might be. It will likely get close to your sister's bill.
14	Why don't you enforce the bylaw that's probably already in place. People can water their lawn from June 15 - Sept. 15, and only between 7 PM and 11PM, and using the odd/even system. Residents with even numbered address can water their lawn on even numbered days and odd numbered addresses on odd numbered days. It's very cheap to implement and the water consumption would drop significantly. Water meters are expensive to install, repair and read often. People will find a way to bypass them and you will probably need several technicians to keep up with the demand..you will never recoup the money it will cost the city in using water meters.	Cornwall does not have a lawn watering by-law.We feel that water meters are needed to address the equity issue and give owners some control over costs. The programs and people that use the data from the meters are the processes that can control long term costs not the meters themselves.
15	The installation of water meters is one way to control the waste of water. Because it is plentiful, the average person will not practice water conservation as I've seen during the summer when lawns are being watered in full sun. At least this way, the cost will be shared among all users.	Thanks for sharing your thoughts.
16	I lived in Burlington Ontario when the water meters we in place. Not one homeowner saved money even when they conserved the water use and killed their lawns. why are you lying to people about the truth that it is nothing but a tax grab. The Mayor of Burlington lost the following election as a direct result of the water meter program. Trust me and councillor will loose their seat as a result of this harsh decision	I don't know all the details in Burlington. The only reason there would be a saving to a home owner in Cornwall is due the inequity that exists between residents and businesses. After the inequity is balanced water bills will go up by the rate of inflation or slightly above the rate of inflation or slightly below the rate of inflation. If the water conservation portion of the plan is successful the increase will more likely be below the rate of inflation.
17	Meters should be the last option. Before meters are installed (costly and paid by the taxpayers). Let's put some restrictions on water usage for lawns. Example: only after 600pm. And to 900pm. Odd numbers homes do Monday-Wednesday-Friday. Even numbers homes do Tuesday- Thursday-Saturday. No restriction to wash a vehicle as long as the nozzle is controlled (off when not in use). We see too many water all day, sometimes even in the rain!! Of course, in case of a "new lawn/sod" a permit could be obtained for this.	We are in the process of developing water conservation initiatives that will be part of the report we bring to Council at the end of this public engagement that will help people reduce their water usage for lawn watering. Odd/even water does have some benefit although it comes with some concerns. Staff needs to be hired during water season to enforce the by-law. In addition, in most homes toilets use the most water then various forms of washing, yourself, cloths, dishes. Lawn watering when compared to those other water uses is small. Other communities have noticed if they have water meters with consumption billing and move to monthly billing during the summer you create a bill with a graphic that shows a big change in water use from lawn water and because you see your water bill go up this help people control themselves without a lawn water restriction.
18	Will you still charge / tax me if my water is shut off and I'm in Florida???	During the time you are away you would only pay a fixed monthly charge there would be no water use charge.



#	Question	Response
19	Not down for this i dont see whats wrong with the system we have now look like a big ol money grab	The thing that concerns us and the reason the initial report was brought to Council was to let Council and through that report the public - that water is not being billed fairly/equitably across the City between commercial to residence and between individual residences and between commercial flat rate to commercial water consumption. Hope that helps explain one of the important reasons the report was written.
20	Is this new meter system (taxing) going to improve the quality of the water? Currently the pipes in Cornwall are so old, full of sediment, led, I have to run the water for 3 minutes before I turn on the water filter. The filter costs me an additional \$25. Per month, just to make the water fit for consumption.	The water meter and the other systems that would be put into place using the data will over time improve the water in the way you describe. Although, please phone Cornwall dispatch 613-930-2787 ext. 0 and tell them about your issue and they can do some local flushing to remove the sediment.
21	I would like to see water meters installed. I bought a home with 2 bathrooms but do not use the second bathroom. We are only 2 people here so why should I pay the same as a home with 4, 5 or 6 people in it.	Thank you for your feedback.
22	according to Goodwin water measurement without meters is impossible, how can he estimate the city has the highest use per capita in Ontario. He guesses the city is 100 ltrs per day above the prov. average. Did Goodwin do a survey, how many taxpayers did contact, what part of the city did he survey, where does a 50/50 split come from. Give the residence the right to vote on the next city election concerning water meters.	Water measurement to individual houses is not possible without water meters in each house you are correct. We do have water meters in a significant portion of the commercial and industrial properties. So what I did and was verified by the consultant was an estimate and we used an estimate of water leaking from the underground pipes and did not consider that portion when we estimated that Cornwall is 100 ltrs per day above the provincial average. The survey data was from this site and at the time of report it was 48% for the Water Conservation and Servicing Master Plan then 26% opposed and 26% unsure. That may not have been completely communicated to the reporter.
23	WATER conservation master plan and the ministry of environment report is only asking for a plan to try and conserve water? There must be alot of ways to save water that doesn't require spending 14 to 17 + million dollars? How much treated water is wasted at slash pads that could have been recapture if we could treat it like a pool without taking out the pools and using it like a reservoir?	You are correct if we only needed to conserve some water then water meters might not be that useful. Although, we are trying to create equity billing, to create the ability for a person to have options/control of their own water bill without effecting or being effected by others. In addition, there now exists a number of other pieces of equipment or software that can use the water meter data if sent wireless and continuously that can save money through better control of plant systems and scheduling of repairs. The recommendation is both the wireless data transfer to get the data to those other items and the water meters. If only water meters were installed those other benefits won't happen. A portion of the water in modern splash pads is recycled.
24	since the infrastructure in the ground is old the old water lines are potentially leaking would it be money better spent on water conservation . I would like to see a leak detection program report on all water line in the ground . on one of the council meeting there was a large number of old pipes with a cost to it. would that explain some water loss and money lost thats already being loss that could be fixed as a water conserving plan?	A Leak detection survey is currently preformed by the public works department and pipes repaired based on the results. The difficulty is that the survey is just a moment in time and does not constantly monitor for leaks. For example, the survey could show no leaks in this block and schedule the next survey in 2 months and a large leak could develop overnight and the leak won't be discovered for 2 months. You are correct that Cornwall like a lot of cities has a large number of old pipes (millions of dollars) that need rehabilitation like cleaning and relining. A leak detection program and work order software can help save money on repairs that can be than used for the relining cost and speed up the number of pipes relined for the same overall budget (cost).
25	If the city of cornwall is trying to claim to be enviromently friendly is there any thought of the enviromental impact of all those water meters from searching for alloys, mining impact, emissons while escavating , foundry ,plastic cast molding ,trucking and installation of the units? there must be other ways to help save water. Education on conserving water would be a plan and wouldn't cost millions. Example for this would be like In my naturel gas bill every month I receive pamphlets on how to conserve on our consumption .The seller of gas is trying to help us. How many times have the city ever sent out info on toilet leaking water uses or other stuff like watering lawn for only 20 minutes as longer isn't nessassary and the reasons.would that be a helpful conserving plan?	The City of Cornwall recent direction from Council to develop a zero carbon roadmap will be used to directly measure the environmental impact of purchasing water meters. If Council approves the Water Conservation and Servicing Master plan including the installation of water meters would be purchased under the City's procurement policy and that includes a green procurement requirement. The seller of gas model is similar to the rate idea in the master plan all our houses and businesses have a gas meter and the City would include pamphlets for the programs approved Council should they approve the plan. I don't know the answer to how many times the City has sent out information. The difficulty comes that although we have done information campaigns it is difficult to determine the effectiveness without water meters at every residence and business.



#	Question	Response
26	<p>Why do we always have to pay 3rd party's to tell us what to do , do we not have managers and engineers that could suggest different ideas than the water meter ? River institute should be able to come up with many ways to help residents conserve water ? Water meters are not the only solution.</p>	<p>Our thought is that when 3rd parties work with the City's administration and Council that we can have confidence that our ideas will succeed. The River Institute is working with the City to develop the water conservation ideas, the pandemic slowed that work. The River Institute (Dr. B. Hickey) developed the video about the importance of water conservation that is on this website. You are correct that water meters by themselves don't help us provide better service it's the programs and the people that use that the information from water meters to improve the service. In addition, it's the water consumption billing that creates an equity or fairness and water meters are necessary to provide the information to allow that to happen.</p>
27	<p>The ministry of the Environment recommended that the city implement a water conservation measures. Would that be the city departments should look at internal measures before just going ahead with meters. I' m sure the process from the river to the taps could use some fixing , maybe changing old pipe that leak , could be other items that would be up to continual improvement as per that DWQMS as per the water act that i read from council minutes of dec 14 2020. Nowhere in that report i see the M.O.E. telling the city they must install meters.?</p>	<p>Correct. The Ministry of Environment Conservation and Parks did not mention water meters. The water meters and the new wireless technology that will be installed at the same time allows the community to monitor the progress of water conservation. Water meters and water bills based on the amount of water used does 2 important things. It gives the person paying the bill choices that does not directly effect anyone else. You can use a little bit more water and pay for it yourself and that does not effect your neighbour. The wireless technology means that software can be used to find leaks either in your house or in the large pipe that run under the road. It would be possible if Council choose to proceed with water meters that a person could set up an email or text notification to yourself or another person to go check your house/business if water started to be used while you were on holidays to save your house from water damage due to a broken water hose to your clothes washer for example. You are also correct that some of the older pipes could use some assessment to see what could be fixed and it's the software that you can buy with the water meters that can be used to find the places to fix sooner and cheaper.</p>
28	<p>Question 0. If everyone is supposed to save money, how you will get the money to maintain and repair the system? Meters will increase everyone's rate and will affect the poor families first indirectly as they are renting(tenants) apartments and the owners will charge them extra for consumption. Cornwall is known for one of the highest population on welfare and retired people on fix income. The model in place, and actually ridiculously expensive, works as it is budgeted. Knowing this fact here are some questions : 1. How much will it cost taxpayers to install(labor) meters? 2. How much will it cost taxpayers to buy all the meters? 3. How much will it cost taxpayers to maintain the meters? 4. How much will it costs taxpayers in resources(admin fees) to track and do the billing over the current system? 5. How much will it costs taxpayers to store all the data (storage, backup, servers...)? 6. How much extra staff/contractors will be required from start to finish (drawing board, plan, execution and final installation)? 7. How many years will it take for taxpayers to pay for all of this? 8. How much will it cost to repair and maintain the current installation, is is less or more??? 9. Are they any water leaks (in the pipes) from the source water to the houses/businesses? If so why taxpayers should be finger pointed as "water-waster"? 10. Can the city point resident that are wasting water? I can't because we all went to school and learn to take care of our water. 11. Why don't just install water-meter to businesses with 50+ employees considering that small businesses and home owner are not wasting money? 12. How do you evaluate the impact on the pool sales on the local business knowing that people might have been able to afford one and now they won't ? 13. Has anyone wanting this project been reading the data with other cities that adopted this way that everyone just seen an increase in their water bill and the amount of water consumed as not been reduced as it's essential in our life? 14. Are you aware that Cornwall needs keep and recruit young family(multiple members) to keep offering services to our elderly and that they will be affected first? How this is equitable knowing that we live in a society and like school, roads and health care you should not have to worry about having water at your door. The model in place which is kind of "tiers" with how many bathrooms you have is an acceptable model (not the amount the city charge though). Thanks for answering all my</p>	<p>Sorry for the delayed answer.Question 0. You are correct the Safe Drinking Water Act tells us that we need to bill all the customer for cost. One of the concerns that we are trying give Council options is that not everyone pays an equitable amount. What does that mean? potentially you and I pay the same amount for water say \$100 although I use twice as much - really I should pay \$130 and you pay 70. In both cases the budget is \$200. Now there are many ways to try and help people who need assistance and it's hard to figure out what to do although one positive idea is that water meters provide the information on water usage so a tenant could request to see how much water they are really using and know if their rent was correct.Question 1 -2. The total installed cost is estimated at \$14 million.Question 3. The estimated cost to maintain the meters is approximately \$3 per meter per year.Question 4. The proposed system is wireless so there will be a saving as we currently pay a person to drive around when meter readings are needed.Question 5. All the data for the billing system is already stored on computers so there be will be no additional cost.Question 6. Those expenses are cover in the \$14 million.Question 7. 7 years.Question 8. The same or less do the savings of not having a person drive around or down load the data from the hand held device and create the bill.Question 9. Part of the proposal is to add leak detection equipment so that leaks can be discovered sooner.Question 10. We have calculated that Cornwall on average is above the Ontario average.by about 100 litres person per day.Question 11. The Water Conservation and Servicing Master plan contains a rate study and the rate study part of the plan proposes that the rate to businesses be increased.Question 12. The next part of our engagement will be to ask business like business that sell pools to provide us with their feedback. and that will be included in the report that goes to Council.Question 13. The reports presented to Council provided a summary of what has occurred in other municipalities and where both water meters and a water conservation program exists the cities have seen savings in the millions of dollars in avoided construction of water treatment plant and pumping stations. These cities have seen rate increases either at the cost of living or below where they previously had rate increases above the rate of inflation.Question 14. Currently, Cornwall has the lowest rates in Ontario and the rate change for residences won't change Cornwall will still be the lowest.</p>



#	Question	Response
29	If are serious about having a system where the user pays then why is there any requirement for a fixed rate. The cost of water and sewage should be calculated on a per liter of water used basis only. This purposed fixed rate is just the tax grab people are concerned with and there seem to be no mention of this rate staying fixed at the initial value hence it is just another tax.	The fixed rate is based on the idea of paying for the things made out of concrete and steel like the water purification plant building and they stay in place (fixed) and have 1 cost - the cost of construction. Then to make drinking water there are costs that change depending on how much is made for things like electricity and chemicals. Also, the equipment needs to be maintained and is maintained more often if it is used and used a lot. We separate it that way when the budget is presented to Council, although it's not done that way when a rate payer gets their bill.. This method is one way to create equity so the person only pays for the portion they use. Sorry we didn't mention the fixed portion directly. The fixed portion will stay the same with only adjustments for cost of living. The cost of living for the fixed charge is not predicted to change very much if at all.
30	They want for us to cut back on water consumption by putting in meters but they want us to wash out all recycle material before putting to road how do we do both ?	We believe you are talking about some of the information from the Recycle Coach app? Rinsing plastics that have some food in them helps keep the plastics stay less smelly while they are in the blue box waiting to get picked up. And it helps the people at the sorting tacitly as it is less smelly there as well. In addition, Cornwall's plastics are clean so that means we get more money for the recycled plastics. So this is an example of a balancing act for some of the things we do. Some rinsing with water is good. So we recommend only rinsing those plastics with food and we recommend rising with water that was used to clean dishes. This balancing act happens with other things . For example, full loads of laundry help water conservation. Also, a timer for lawn watering. Some watering helps the lawn overwatering does not.
31	Why is the reserves set at 714,000. But always more in it	HelloWe are not sure where the value \$714,000 came from. Although, we create reserves for 2 reasons in general. One being the rainy day fund. So that if we get an emergency break we can do the repair without going to the bank for a loan. The second is that when we are planning to replace big pieces of equipment like you would plan to get a new car (for us an example would be a big pump) we can make the purchase without getting a loan or the loan would be much smaller.I hope that gives you some useful information if you need anything more. Please ask another question.
32	I'm only one person. I'm paying all my neighbors swimming pools and a retal property who holds 14 rooms across my house. Sorry for the large family but I agree to have water meter. The water bill is going higher and higher every year, but I don't even use that much. Now it seems like large family against small/single family. They don't wanna pay more while I'm paying too much. Same like electricity, you paid from what you using. It might sound stupid but it's that possible if the meter is optional? What about you divided by userges so each group can pay what they deserve (without meter maybe)? Or program a bill system like this?	Good suggestions. What we are trying to include with the water meters (which by the way might be more important) is sensors and software to be able to make bill reading and leak detection and energy management (better schedule when pumps come on). So to get all the benefits we need to include everything which means wireless water meters everywhere, some sensors on fire hydrants and some computer programming. The project gets difficult to get for example the leak detection program to be fast if only some parts were installed either wireless meters, sensors or software.
33	I lived in Lancaster and when they brought in water meters, my bill went up - yet I was always well below the base level where I would be charged more. As a result, there was no real benefit to me in further reducing water usage as long as I stayed below the minimum amount. Hopefully, when meters are installed in Cornwall, actual reduced rates would occur for those people using less water.	HelloIf you go to https://www.cornwall.ca/en/live-here/water-and-wastewater-bill-calculator.aspx you can take a look and see an estimate of what your bill might look like if the Water Conservation and Servicing Master plan is approved. You can compare the estimate for people use use less against those who would use more.Thanks for your interest.
34	I don't feel like us as homeowners should have to pay for the meters if the city wants to install them, it should come out of the budget. Also how does sewage work? Will be be expected to pay an additional tax for the maintenance of the sewers?	As part of the Water Conservation and Servicing master plan various funding models are being explored should City Council provide direction to implement water meters. A common unknown amongst residents is that their water bill includes a portion for water treatment and wastewater (sewer) treatment to cover the costs of providing both of these services.



#	Question	Response
35	<p>I answered the survey question, But what is the point of having these discussions if Cornwall will do what they want anyway without actually caring about how it will affect residents? Water is a god given right. Not a privilege. I understand being charged some because the city runs the water to our homes for added convenience but to be charged for the actual water we use you are now telling us water is a privilege and not a right.</p>	<p>Sorry for the delayed response. Safe drinking water and effective wastewater treatment are cornerstones of a sustainable, healthy community and environment. The City is responsible for the treatment, pumping and distribution of potable water as well as collection and treatment of wastewater. The annual water and wastewater budget strives to provide funds to support the City's water and wastewater services by continuing to move towards financial sustainability (ie full cost recovery) in accordance with Provincial legislation. The current flat rate fixture based billing model doesn't promote water conservation and means the more fixtures within a residence the more they pay regardless of the amount of water consumed. The water conservation and servicing master plan is exploring water meters as a potential more equitable billing model whereas each residence and business would be charged based on the amount of water consumed. A 2020 rate study indicated further inequity as the residential sector is subsidizing the non-residential Industrial, Commercial and Institutional (IC&I) sector by 16%. It is therefore deemed necessary to consider a new rate structure which would reflect equity between the residential and non-residential sectors.</p>
36	<p>What do you have planned for persons living on ODSP who receive \$895 room and board and are incontinent due to living with a disability. What about persons caring for senior who is incontinent. Are you going to make these people your victims and charge them through the teeth?</p> <p>Are you prepared for all the lawsuits that will follow?</p> <p>Who's company will be installing the water meters and how deep do they have their hands in your pockets?</p> <p>I like many others will hold the City responsible for damage to my property to install the meters.</p> <p>Be honest and call it what it is and water conservation is not it. It is a major tax grab... will you show where you plan to spend the money because it won't be on water conservation?</p>	<p>Thanks for your questions. There are many details still to be decided – including who will complete the work and whether accommodations will be made for residents with special needs. The draft Water Conservation and Servicing Master Plan will be presented to Council later this summer. If Council direction is to proceed with water meters a public procurement process for water meter installations would occur. As part of this contract the successful proponent would be responsible for any remedial repair work occurred during installations.</p>