BMA
Management Consulting Inc.

Water, Wastewater and Storm Rate Review

October 2012

City of London

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Background

The City of London (City) retained BMA Management Consulting Inc. (BMA) to undertake a water, wastewater (sanitary sewer) and storm rate structure review. The scope of this study was to consider all viable options with respect to the most appropriate rate structure to meet the City's defined goal, objectives and operating principles as follows:

Goal	• ***To introduce and implement a "value based" funding model for water, wastewater and storm services.***
Objectives	• ***To ensure financial stability*** • ***To promote conservation*** • ***To encourage and support economic development and jobs retention***
Operating Principles	• ***Fairness and Equity*** • ***Sustainability*** • ***Affordability***

As identified in a recent report presented to the Civic Works Committee on September 10, 2012, introducing and implementing a new funding model for water and wastewater services requires a new understanding of the ***value of water***; it is not about cost, it is not about price, it is about value – health and safety is maintained through constant monitoring and testing of the system, quality of life is enhanced by providing service on demand to residents and businesses, promoting economic development through robust and reliable systems, and fire protection that keeps insurance rates low for all customers.

As individual principles and objectives can be in conflict with each other (e.g. affordability and conservation, economic development and conservation), the direction provided by staff and Council in the development of an appropriate rate structure for the City of London was to ensure that the funding model ***balances the objectives and principles across all customer groups*** within the City and to ensure that everyone pays their fair share for these life sustaining services. The implementation of virtually any change to the existing rate structure will cause shifts in the burden between different customers, some of which will pay more while others will pay less. The recommended rate structure provides Council and the community with an indication of the shifts anticipated for various customers. To the extent possible, while still adhering to the objectives and principles set out above, every effort has been made to minimize impacts to all customer groups.

Water and Wastewater Analysis and Recommendations

Opportunities to Support the City's Objectives and Principles

The City has clearly defined it's objectives and principles in the establishment of future rate structures. This section of the report provides a summary of each of the objectives and principles, what they mean and an assessment of any issues and opportunities for future rate structures as well as recommended rate structure strategies.

Objective: Ensure Financial Stability	
What Does it Mean	Financial Stability is based on ensuring that the rate structure provides for a steady and predictable stream of revenues such that the City is capable of meeting its current financial requirements. A predictable source of income (revenue) is required to avoid a deficit when meeting operating and capital obligations.
Assessment of Existing Rate Structure	• In the past seven of eight years the water system has operated in a deficit position which reflects a lack of financial stability. Water and wastewater operations are capital intensive with a high proportion of fixed costs that cannot be reduced as consumption decreases. • Average annual deficits have been $0.6 million since 2004 (see Appendix A for details). • While staff annually forecast consumptions, unanticipated events such as weather conditions and economic slowdowns can impact the financial stability of the system. • Residential average water consumption has declined by 26% since 2001 but the fixed costs of the water and wastewater system are significant and it is extremely difficult to balance the budget with declining and unpredictable consumptions. • The City's rate structure recovers 99% of the total water/wastewater costs through volumetric rates. As such, the existing rate structure poses significant risk to financial stability.
Benchmarking & Best Practice Research	• Of 80+ municipalities surveyed, representing in excess of 85% of the Ontario population, the average amount of costs that are recovered from the fixed portion of the bill is 25% (See Appendix B for details), significantly higher than the 1% in London. • Financial stability is supported by aligning the rate structure (fixed/volumetric charge) with the municipality's ability to control the cost of service. This suggests that fixed costs should be recovered from a fixed monthly fee.
Recommended Rate Strategy	• Increase the City's financial stability by allocating a larger share of the costs to be recovered from the fixed monthly charge and reducing the volumetric rates.

Objective: Promote Conservation	
What Does it Mean	The rate structure will encourage the efficient and justifiable uses of water as well as assist in managing system demand. Programs that promote efficient water usage may reduce operating costs and capital investment needs over time.
Assessment of Existing Rate Structure	• For the Residential customer class only, conservation is promoted by utilizing an inclining block rate structure. • The existing **inclining block rate water structure** no longer reflects low, mid and large volume customers because average residential consumptions have declined significantly over time. For example, the first premium is set at approximately 17 m^3 of water consumed per month. The average residential customer consumes 15 m^3, the third block is set at approximately 56 m^3 per month and there are only 0.1% of residential customers consuming at this level or higher (See Appendix C for the Residential consumption frequency distribution). • The existing premiums are very low; with only a 5% premium for consumption in the second block and 10% in the third block of consumption, it is questionable the impact that this has on conservation. • By not charging the same rate structure for all customers consuming the same amount of water, conservation is not supported across the customer classes and results in inequities (discussed in a later section).
Benchmarking & Best Practice Research	• For inclining block rate structures, the block (quantity) shift points are generally based upon the unique demand characteristics of each customer type and are focused on user demand points to enhance water usage awareness. • Typically, block rate thresholds for residential properties try to establish the first block to reflect indoor water use and the second block to reflect outdoor use. • Challenges exist in establishing the most appropriate threshold or block(s). • In order to be effective, conservation rate premiums should have an impact on consumption behavior.
Recommended Rate Strategy	• Implement new thresholds and premiums to promote conservation. • Ensure all customers with similar consumption/flow patterns pay the same per unit charge.

Objective: Encourage and Support Economic Development	
What Does it Mean	The rate structure will align with other economic development initiatives and will consider the competitive positioning of commercial and industrial properties in London and the City's ability to attract new and retain existing businesses.
Assessment of Existing Rate Structure	• The City's existing water rate structure for Non-Residential (Industrial, Commercial, Institutional—ICI) is a declining block rate structure which promotes economic development for large ICI customers. • A declining rate structure is designed to reflect the fact that at a certain level of consumption the cost of providing the service decreases, i.e. the fixed costs of the utility have already been met. • The **declining block rate water structure** for ICI customers has three (3 blocks), with significant discounts for large volume customers. • The existing water blocks need to be rationalized (currently set at approximately 3 m^3 per month and 711 m^3 per month (See Appendix D ICI sector consumption frequency distribution). • There are seven different wastewater rates for different customers with lower per unit costs for large Institutional and Industrial customers which have not been rationalized in
Benchmarking & Best Practice Research	• Due to the significant discounts in water and the seven rate wastewater system which is essentially declining, ICI properties in London pay a significantly lower cost for water and wastewater service than 80+ Ontario municipalities surveyed (the cost in London ranges from 23% to 37% lower than the survey average for customers consuming between 10,000 m^3– 0.5 million m^3). • As consumption increases, the differential between the cost of service in London and the survey average/median increases whereby London properties are at a significant cost advantage. (See Appendix E for a comparison of 2012 ICI customer costs) • Approximately 20% of the Ontario municipalities surveyed employ a declining rate
Recommended Rate Strategy	• Implement new thresholds and discounts to promote economic development. • Ensure all customers with similar consumption/flow patterns pay the same per unit charge.

Principle: Fairness and Equity	
What Does it Mean	Fairness and equity is based on the principle that customers should be contributing equitably towards revenue requirements and based on their proportionate share of the underlying cost of service. This recognizes that the funding model should reflect the value of water to all customers.
Assessment of Existing Rate Structure	• The majority of the water and wastewater costs are fixed in nature. It is estimated that approximately 61% of water and 78% of wastewater costs are fixed. However, the City of London recovers only 2% of the water cost of service from the fixed monthly fee and 0% from wastewater. (See Appendix F for details). • Similar to the majority of municipalities surveyed and, in conjunction with the American Water Works Association (AWWA) practices, the City currently charges customers different fixed rates based on the size of the water meter service which is referred to a meter equivalency (ME) factor. While considered an appropriate practice to promote fairness and equity, the City's MEs have not been updated in 10+ years. • Customers that consume the same amount of water do not pay the same water/ wastewater rate which compromises fairness and equity. • Currently there is a misalignment of revenues and expenditures between wastewater and storm sewers which does not support fairness and equity. Currently, the wastewater rates generate approximately $2.1 million in revenues used to support the storm sewer operations.
Benchmarking & Best Practice Research	• Fairness and equity is supported by aligning the fixed costs of the system with the rate structure to ensure that all customers contribute to the fixed costs of operating the system. Based on trends that BMA has tracked across Ontario over the past 10+ years, a number of municipalities have increased their allocation to the fixed charge to support fairness and equity (as well as financial stability). • The City's MEs are amongst the highest in the survey of peer municipalities and exceed the AWWA standards by 0%-250%, depending on the meter size. (See Appendix G for details). • The vast majority of municipalities do not charge different rates to different customers groups.
Recommended Rate Strategy	• Increase the allocation of costs to be recovered from the fixed monthly charge for water and establish a wastewater fixed meter charge. • Charge the same rates to all customers consuming the same water and generating the same wastewater flows. • Incorporate new meter equivalency factors based on industry standards. • Align revenues and expenditures in wastewater and storm operations.

Principle: Sustainability	
What Does it Mean	Sustainability is defined as the enduring ability of the City to ensure that it can deliver the level and types of programs and services to the community, while proactively assessing and managing associated risks, at acceptable levels of taxation and fees. Life-cycle planning ensures that sustainable levels of revenue are available to provide sufficient resources for future rehabilitation and replacement needs.
Assessment of Existing Rate Structure	• The City has developed a long range financial plan to support the sustainability of the system in the future. • Insufficient revenues are generated from the storm rates to support its operations. • The City does not have a fire protection charge to support additional infrastructure
Benchmarking & Best Practice Research	• The rate structure impacts sustainability. For example, by minimizing revenue losses through a predictable source of revenues, sustainability is improved. This can also reduce the overall cost of service. • A number of municipalities have implemented a fire protection charge to ensure that funds are set aside to maintain the service.
Recommended Rate Strategy	• Increase the predictability of future revenues by increasing the fixed monthly charge. • Align revenues and expenditures in the storm and wastewater operations.

Principle: Affordability	
What Does it Mean	The rate structure will incorporate policies that support affordable water and wastewater services for all customers while, at the same time, ensuring that the full cost of service is being recovered. The most common affordability measure is average water/wastewater costs as a percentage of average household income.
Assessment of Existing Rate Structure	• The City's Residential costs are well below the survey average of 80+ Ontario municipalities surveyed. For a Residential customer consuming 200 m^3 annually, London customers pay approximately 14% less than the survey average (See Appendix E). • The City's average water/wastewater charges as a percentage of income is at 1% which is considered affordable. • Increasing the fixed monthly charge to promote stability will impact affordability. To ensure that ***affordable*** water/wastewater services are provided to low volume Residential customers**,** strategies have been recommended to provide the first 7 m^3 per month of consumption at no cost. This level of consumption represents a minimum level to support basic indoor water usage. This serves to reduce the cost to low volume customers.
Benchmarking & Best Practice Research	• There is no one benchmark percentage established in the industry for water/wastewater affordability. Depending on the source used, the range typically for water/wastewater costs is from 1.5%-3.0% of household income. Beyond this point, water/wastewater affordability becomes a concern.
Recommended Rate Strategy	• Implement strategies to ensure low volume Residential customers are maintained at affordable levels.

Summary of Rate Structure Recommendations

Despite industry trends in rate setting practices, as stated by the Canadian Water and Wastewater Association (CWWA), there is, and always will be, a lot of variation in water and wastewater rate setting practices given that there is no single rate setting approach or rate structure. Based on the principles and objectives as defined by the City as well as the benchmarking and best practice research, significant financial modeling was undertaken to determine the rate structure that best met each of the principles and objectives. The following strategies are recommended in the development of a new rate structure:

1. ***Align the revenues and expenditures for wastewater and storm services to support Fairness and Equity and Sustainability***
2. ***Implement a Fire Protection Charge to support Sustainability***
3. ***Establish a Fixed Monthly Rate Structure that recovers 30% of the cost of service to support Financial Stability and Fairness and Equity***
4. ***Include the first 7 m^3 per month of water/wastewater as part of the fixed charge to support Affordability***
5. ***Update the meter equivalency standards to AWWA to support Fairness and Equity and Economic Development***
6. ***Utilize the same rate structure for all customers to support Fairness and Equity***
7. ***Establish a humpback rate structure to support Conservation and Economic Development***

1. Align revenues and expenditures in wastewater and storm services

For years, the wastewater rates have been set to recover all wastewater costs and also subsidize, in part, storm operations. This does not support ***fairness and equity*** principles because the manner in which the services are billed differs and therefore could result in an inequitable recovery of costs at the customer level. It also does not support the principle of ***sustainability***. Based on an analysis of wastewater and storm expenditures, it is recommended that rates for wastewater be reduced by $2.1 million and transferred to the storm rates.

2. Implement a Fire Protection Charge

Fire protection service differs from other services provided by the waterworks system. Essentially it is a standby service that the utility makes available on demand. Although most fire hydrants and sprinkler connections are rarely used, the system must be ready to provide adequate water quantities and pressures at all times throughout the distribution system. The costs associated with maintaining the supply, treatment, pumping, storage, and distribution capacity for fire protection services include annual O&M costs and capital costs invested in facilities that are sized larger than necessary for fire-fighting purposes. The fire protection charge should recover both the additional capital costs incurred to provide the fire protection service and the costs incurred to maintain the system on an annual basis.

The potential maximum-day and maximum-hour demands that result from providing fire protection service can be significant. In general, these demands are determined based on maximum fire demands and individual system performance. In order to accommodate the fire flow demands, utilities are often required to oversize the infrastructure.

Fire protection costs can be recovered in a number of ways. Fire protection costs can be included in the tax levy and recovered based on the assessed value of the property. This method assumes the benefit of fire protection service are related to property value. Another method is to recover the costs through a volumetric or consumption per m^3 rate which assumes the benefit of fire protection is based on water consumed. The preferred method of allocating fire protection costs is based on infrastructure costs. Pipe costs were used to determine infrastructure requirements for the residential and ICI sectors. These costs were then assigned to each property in the residential and ICI sectors. In this way, individual property owners are assessed a portion of the fire protection costs based on infrastructure costs. The recommended fire protection charge is to recover approximately $2.5 million through a separate fixed monthly fee, with a higher fee for ICI to reflect pipe costs and the additional capital investment related to the fire flow capacity.

3. Establish a Fixed Monthly Rate Structure that recovers 30% of the Cost of Service for Water and Wastewater

As stated by the Canadian Water and Wastewater Association (CWWA), at the heart of the methodology for setting water and wastewater rates is the concept of a two-part rate structure; a volumetric charge and a fixed charge based on meter size. To date, the City of London recovers only 2% of the water costs from the fixed monthly fee in water and there is no fixed charge for wastewater. The following approach was undertaken to determine the most appropriate allocation to fixed charges for the City of London:

- Identify all costs that could be allocated to the fixed charge;
- Consider practices employed in other jurisdictions and recommended through CWWA/AWWA;
- Consider current practices, rate history and the impact on various classes of customers; and
- Balance the objectives and principles that will be impacted by a change in the fixed monthly fee including ***conservation, affordability, fairness and equity and financial stability***.

An analysis was undertaken of the City's water and wastewater operating budget to determine whether each expenditure varies with volumes consumed or is fixed. Variable/volumetric costs are those costs that are related to the amount of water consumed or wastewater flows over a specified period of time, such as day, month or year. As volumes or flows decline, these costs can be reduced. Costs associated with volumes consumed typically include the purchase of water and some of the costs associated with the pumping station and reservoirs costs (electrical, chemical and pump maintenance). Fixed costs include the customer's water service connection, meter supply and repair, billing, collection and meter reading. In addition, there are a number of other fixed costs that exist in a water and wastewater system such as the cost of debt service, reserve requirements, capital improvements and depreciation of the existing infrastructure.

Based on the analysis of the City's costs 61% of the water and 78% of the wastewater costs are fixed. While an allocation of costs to be recovered from fixed equal to the underlying costs drivers would support ***fairness and equity*** as well as ***financial stability***, the principles of ***affordability*** for low volume customers and ***conservation*** would be compromised. Analysis of numerous other options and alternatives were reviewed from 10%-50%. Allocations any greater than 30% would cause too significant of an increase in the low volume Residential customer and as such is not recommended. Allocations below 30% are not recommended to support the principles of fairness and equity and the objective of financial stability.

To achieve a balance in supporting all City objectives and principles, it is recommended that **30% of the total cost for both water and wastewater be recovered from the fixed monthly fee**. This represents less than half the actual fixed costs but significantly improves fairness and equity by ensuring that all customers contribute to the system; maintaining affordability for low volume customers and supporting conservation. The allocation of additional costs to fixed is recommended in future years to gradually move toward a target of 40%. This could be in increments of 2% annually to allow customers time to adjust to the shifts in the cost of service.

4. Include the first 7 m^3 as part of the fixed charge

The City's existing rate structure includes a minimum monthly charge of $5 for Residential customers. By moving to a 30% fixed monthly charge, the $5 minimum charge is no longer required as customers will be required to contribute to system costs through the fixed monthly fee. For a customer with a 5/8" meter (Residential and small Commercial), the monthly fee would be approximately $11 for water and $10 for wastewater, a significant increase from the existing $5 per month. This recognizes the minimum recommended monthly contribution to have access to water and wastewater services. However, to improve ***affordability*** for low volume Residential customers which is defined as a principle of the City**,** it is recommended that the first 7 m^3 per month be provided without charge. This represents a minimum level to support basic indoor water usage. This serves to reduce the overall cost to low volume customers and mitigate increases created by increasing the fixed monthly fee.

5. Update the Meter Equivalency Standards to AWWA

The City currently charges customers different fixed monthly fees based on the size of the water meter service which is referred to a meter equivalency (ME) factor. The costs for installing, maintaining and replacing customer meters and services increase with the size of the service and the corresponding equivalent meter ratio increases for this reason. As such, customers with large meters place a greater demand on the water and wastewater systems and therefore should pay more.

A key consideration in improving ***fairness and equity*** is to ensure that the differentials by meter size used to recover fixed costs are appropriate. This is particularly important given that the recommended strategy is to increase the recovery of costs from the fixed monthly portion of the bill.

Many municipalities rely on industry standard meter equivalent ratios set out by AWWA to establish the appropriate meter service cost differentials. These are applied to the costs that are recovered from the fixed monthly charge. By updating the ME ratios, larger ICI properties will benefit in the City of London as the City's existing MEs exceed industry standards. While not the purpose of the recommended update, it will also support the City's objective to ***encourage and support economic development***. Utilizing AWWA standards is a defensible and equitable approach.

6. Utilize the Same Rate Structure for All Customers

Currently, Residential, Commercial, Industrial and Institutional customers pay different volumetric rates for the same water consumed and wastewater flows. For example, a Residential, Commercial and Industrial property with the same size meter, consuming the same volumes and generating the same wastewater flows each pay different costs for the same service and the difference is quite significant. The following illustrates the problem from a ***fairness and equity*** perspective for a customer with a 5/8" meter that consumes 180 m^3 annually.

Residential	$	596
Commercial	$	553
Industrial	$	494

As shown above, the Residential customer pays the highest cost of service at $596 annually compared with a Commercial property paying $553 (7% less) and an Industrial property that pays only $494 (17% less than Residential). This is driven by two factors:

- Different water rate structures for Residential and ICI properties
- Different wastewater rate structures for 7 different customer types

To support ***fairness and equity***, it is recommended that all properties pay the same cost of service, regardless of the property class or customer type. This approach still allows for inclining, declining and humpback rate structures (discussed in the next section) for water and wastewater, resulting in all customers being charged the same per unit rate within different blocks of consumption.

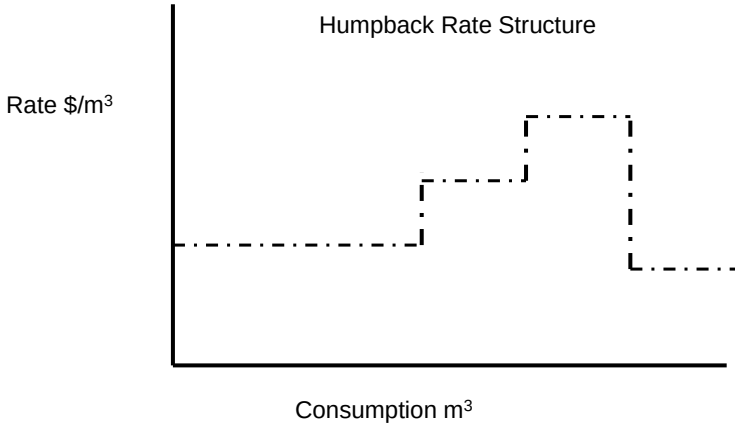
7. Establish a Humpback Rate Structure

A humpback rate structure uses a combination of increasing and decreasing block rates: rates first increase, then decrease in steps as consumption increases. This approach attempts to target high volume residential customers by charging higher rates for usage above what is considered average use to support ***conservation***, and then provides a lower cost for mid to high volume commercial and industrial customers to encourage ***economic development***. In effect, this type of rate structure merges together the City's existing water rate structures for the Residential (inclining) and ICI (declining) customers. However, as discussed in the previous recommendation, one of the primary advantages of a humpback rate structure, in comparison to the existing practice, is that all customers that consume the same quantity of water pay the same rates, regardless of what customer class they are in, thereby supporting ***fairness and equity***. From an ***economic development*** perspective, this rate structure is also typically used by municipalities to attract or retain firms that use large amounts of water where there is significant capacity available.

The block rates can be set at thresholds to coincide with usage patterns. For example, blocks can be set for:

- Low volume customers, charging the lowest rates
- Average volume customer to pay rates that are affordable (or close to the uniform rate had a humpback rate structure not been used)
- Increasing rates for customers that consume above the average to promote conservation (targeting high volume Residential customers)
- Lower rates to support economic development of business and industry
- Further reductions to very large customers to recognize economies of scale and economic development

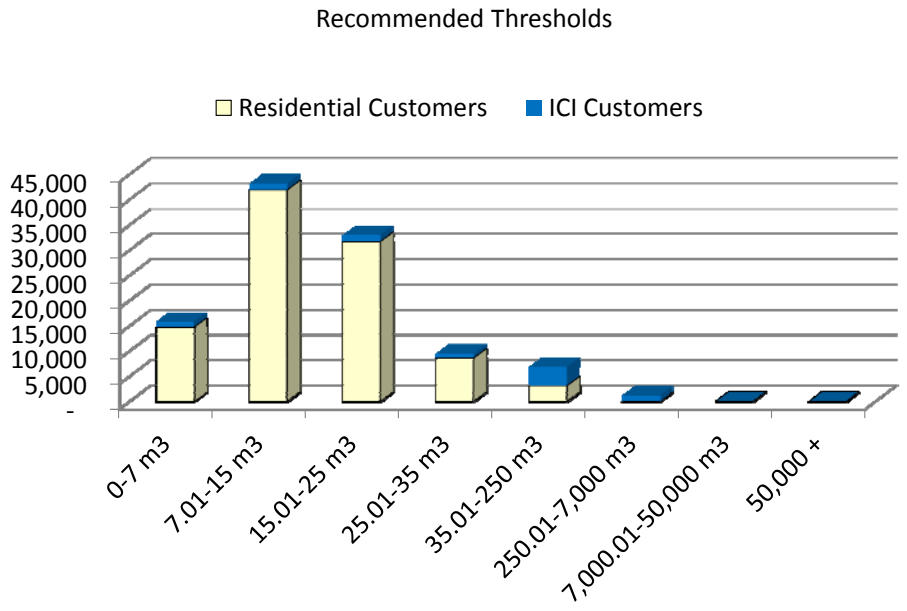
The following provides an illustration of a humpback rate structure with four block rates.



Similar to the challenges with the City's existing water rate structure which has an inclining Residential water and a declining ICI water rate structure, challenges exist in determining and rationalizing a humpback rate structure in terms of the extent of premium/discount and the most appropriate number of blocks and thresholds. As such, analysis and consideration was given to:

- ***City Objectives and Principles***—the key considerations in evaluating various humpback options include ***conservation, economic development, fairness and equity and affordability*** which have been balanced in the design of the recommended rate structure.

- ***Thresholds*** – As noted earlier, the existing water thresholds, particularly in the Residential class are not effective in terms of the thresholds being set too high to effectively support conservation. The ICI thresholds are also problematic. The recommended approach is to set the threshold to coincide with the consumption patterns within the Residential and ICI sector and to align with ***conservation and economic development*** objectives. The graph below reflects the recommended thresholds as well as the number of customers within each consumption threshold. As shown below, an eight block humpback model is recommended.

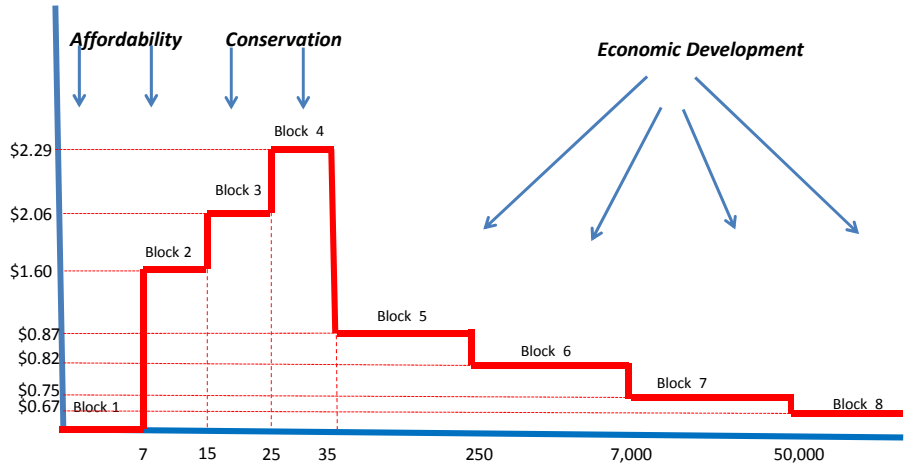


% of total	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Total
Residential	14.66%	41.90%	31.67%	8.61%	3.15%	0.00%	0.00%	0.00%	100.00%
ICI	12.22%	13.15%	13.24%	9.07%	39.19%	12.94%	0.16%	0.03%	100.00%
Consolidated %	14.45%	39.41%	30.07%	8.65%	6.28%	1.13%	0.01%	0.00%	100.00%

- ***Premiums, Discounts and Average Unit Costs***
  - The existing wastewater rate structure which charges seven different rates based on the customer type provides significant discounts to large customers, well below the average per unit price. The recommended strategy is to utilize a humpback rate structure that applies to all property classes for both water and wastewater to support ***conservation and economic development*** but ensure that the rates are reasonable in terms of the average per unit costing.
  - The City currently has an inclining rate structure for Residential properties to encourage ***conservation***. However, the existing premiums are very low; only a 5% premium for consumption in the second block and 10% in the third block of consumption (in relation to block one rates). This becomes even less effective when more costs are recovered from the fixed monthly fee, as is being recommended. As such, it is recommended that the premiums be increased to support ***conservation.*** This will also mitigate the increase in costs to small volume Residential customers, thereby supporting ***affordability***.

The following summarizes the recommended blocks and thresholds, and the premiums/discounts recommended using 2012 budget data, most current consumption data and all recommendations contained in this report:

Proposed Water Humpback Rate Structure



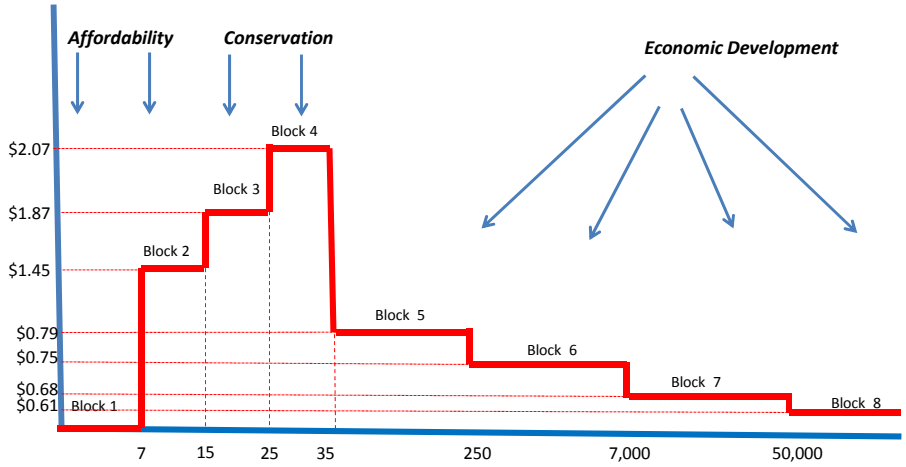
Note: the above diagram is not to scale. As shown above:

- ***Affordability*** is supported through blocks 1 and 2 and represents low to average Residential and small business customers
- ***Conservation*** is supported through blocks 3 and 4 which targets high volume Residential customers
- ***Economic Development*** is supported through blocks 5-8 through gradual step down rates
- ***Fairness and Equity*** is supported since all customers pay the same rates based on water consumed. The next page provides additional detail and rationale for the thresholds.

- ***Affordability (Block 1 & 2)*** - Approximately 14.7% of the Residential customers and 12.2% of the ICI customers fall within the block one threshold which is set at 7 m^3 per month. These customers would only pay the fixed monthly fee to support affordability. The second block represents the median consumption level for Residential customers. Approximately 42% of the Residential customers consume between 7-15 m^3 per month. All customers would receive the first 7 m^3 per month at no charge and the next 8 m^3 at a rate of $1.60 m^3 for water and $1.45 m^3 for wastewater. The blended rate for properties consuming at this level is close to average per unit cost. This supports ***fairness and equity*** and ***affordability***.
- ***Conservation (Block 3 & 4)*** - The third and fourth blocks are charged a premium and represent Residential consumption levels above the median. The third block is for consumption between 15-25 m^3 per month and the premium in comparison to the block two rate is approximately 30% which provides incentive to ***conserve***. The fourth block reflects high volume Residential customers consuming between 25-35 m^3 per month and this would impact approximately 8.6% of Residential customers. There is an additional premium of approximately 11% compared with the block three rate.
- ***Economic Development (Blocks 5-8)*** - The fifth block reflects the majority of the ICI consumption, with 39% of customers consuming between 35-250 m^3 per month and represents the first declining rate. The blended rate for properties consuming 250 m^3 is close to the average per unit cost of service. Blocks 6-8 represents mid to large customers with gradually reducing rates. The blended rates in these blocks are below the average per unit cost to support ***economic development***.

A similar rate structure is recommended for the wastewater operations as shown below.

Proposed Wastewater Humpback Rate Structure



Residential Customer Impact Analysis

Model Description	Res	Res	Res	Res	Res
Annual Consumption	80	120	150	200	360
Meter Size	5/8"	5/8"	5/8"	5/8"	5/8"
Existing					
Water Existing	$ 137	$ 201	$ 250	$ 331	$ 602
WW Existing	$ 132	$ 199	$ 248	$ 331	$ 596
Total 2012 Existing	$ 269	$ 400	$ 498	$ 662	$ 1,198
Recommended					
Water	$ 135	$ 193	$ 241	$ 330	$ 673
Fire Protection	$ 15	$ 15	$ 15	$ 15	$ 15
WW	$ 116	$ 169	$ 212	$ 293	$ 604
Total	$ 266	$ 376	$ 468	$ 638	$ 1,292
Combined Change	$ (3)	$ (24)	$ (30)	$ (24)	$ 94
Combined Change	-1%	-6%	-6%	-4%	8%

As shown above, Residential customers that consume 80 m^3 annually, which is considered a low volume customer, would pay approximately $3 less per year under the recommended rate structure, thereby supporting ***affordability***. This takes into account all recommended strategies. The majority of Residential customers would experience a reduction between 4%-6%. Residential customers consuming higher than the average would experience an increase. For example, a Residential customer that consumes 360 m^3 annually would experience an increase of $94 per year or $8 per month. This reflects the City's objective to promote ***conservation***. As shown in Appendix E, the cost of water and wastewater services continues to be below the average for properties consuming 80-250 m^3 and only 1% higher than the survey average for properties consuming 300 m^3 annually as a result of the conservation blocks that have been included in the recommended rate structure.

ICI Customer Impact Analysis

Model Description	Comm	Comm	Comm	Comm	Ind	Ind	Ind	Ind	Ind	Instit.	Instit.
Annual Consumption	180	1,000	1,500	5,000	20,000	30,000	120,000	700,000	1,500,000	120,000	700,000
Meter Size	5/8"	5/8"	1"	2"	2"	3"	6"	6"	6"	6"	6"
Existing											
Water Existing	$ 372	$ 1,241	$ 1,829	$ 5,643	$ 19,410	$ 28,415	$ 107,765	$ 614,942	$ 1,314,497	$ 107,765	$ 614,942
WW Existing	$ 181	$ 1,005	$ 1,507	$ 5,023	$ 13,524	$ 20,285	$ 81,141	$ 397,517	$ 719,570	$ 88,453	$ 423,642
Total 2012 Existing	$ 553	$ 2,245	$ 3,336	$ 10,666	$ 32,934	$ 48,701	$ 188,906	$ 1,012,459	$ 2,034,066	$ 196,218	$ 1,038,584
Recommended											
Water	$ 289	$ 1,315	$ 1,953	$ 5,648	$ 18,008	$ 27,530	$ 106,140	$ 533,338	$ 1,068,022	$ 106,140	$ 533,338
Fire Protection	$ 15	$ 15	$ 100	$ 100	$ 100	$ 100	$ 400	$ 400	$ 400	$ 400	$ 400
WW	$ 256	$ 1,185	$ 1,753	$ 5,067	$ 16,258	$ 24,825	$ 95,695	$ 482,505	$ 966,639	$ 95,695	$ 482,505
Total	$ 559	$ 2,515	$ 3,806	$ 10,814	$ 34,366	$ 52,455	$ 202,236	$ 1,016,243	$ 2,035,061	$ 202,236	$ 1,016,243
Combined Change	$ 6	$ 270	$ 470	$ 148	$ 1,432	$ 3,754	$ 13,330	$ 3,784	$ 995	$ 6,017	$ (22,341)
Combined Change	1%	12%	14%	1%	4%	8%	7%	0%	0%	3%	-2%

As shown above, efforts have been made to mitigate the shifts across the ICI sector, however, some shifts did occur. Mid-sized commercial and industrial properties would experience an increase ranging from 1-14%. Large industry and institutions would experience limited changes, ranging from a decline of 2% to an increase of 3%. The largest industrial properties in the City of London would experience no increase as a result of the rate change. This promotes ***economic development*** within the City and continues to maintain rates in London's ICI well below peer municipalities as shown in Appendix E.

Recommended Water and Wastewater Rates

As shown below, the recommended rates represent all assumptions and recommendations contained in the report and are based on:

- 2012 Budget with a $2.1 million reduction in the Wastewater Budget, which has been reallocated to Storm (presented in the next section of the report)
- 2011 consumption data
- 30% fixed monthly fee
- 2012 customer counts and meter sizes
- $0.5 million temporary rate stabilization allocation that may be required as a result of the impact of changes on consumption patterns and to provide revenue stability

If implemented in 2013, the rates would be updated to reflect the increase in operating budget requirements and any other factors that would impact rates such as new consumption data.

Fixed Rates

Meter Size	Water Monthly	WW Monthly
5/8"	$ 11.25	$ 9.70
3/4"	$ 16.87	$ 14.55
1"	$ 28.12	$ 24.24
1 1/2"	$ 56.25	$ 48.49
2"	$ 90.00	$ 77.58
3"	$ 196.86	$ 169.70
4"	$ 337.48	$ 290.92
6"	$ 787.46	$ 678.81
8"	$ 1,349.93	$ 1,163.67
10"	$ 1,687.41	$ 1,454.59

Volumetric Rates

	Block Ranges per month consumption	Water	WW
Block 1	0-7	$ -	$ -
Block 2	7.01-15	$ 1.60	$ 1.45
Block 3	15.0-25	$ 2.06	$ 1.87
Block 4	25.01-35	$ 2.29	$ 2.07
Block 5	35.01-250	$ 0.87	$ 0.79
Block 6	250.01-7000	$ 0.82	$ 0.75
Block 7	7,000.01-50,000	$ 0.75	$ 0.68
Block 8	50,000+	$ 0.67	$ 0.61

Summary—Water and Wastewater Rate Structure

The following table reflects the recommended rate structure for water and wastewater in relation to the City's principles and objectives.

Principle/Objective	Recommendations/Rate Structure
Financial Stability	• Recovering 30% of all costs from the fixed monthly fee will significantly increase revenue stability.
Conservation	• Implementing a humpback rate structure with two of the eight block rates set at premiums will encourage conservation.
Economic Development	• Implementing a humpback rate structure with four of the eight block rates set at discounts will encourage and support economic development.
Fairness & Equity	• By increasing the costs to be recovered from the fixed monthly fee, all customers will contribute to recognize the value of water to all customers and the high degree of fixed costs to operate the systems. • Charging all customers the same rates for the same amount of water consumed supports fairness and equity. • Incorporating new meter equivalency ratios based on industry standards improves equity. • Aligning revenues and expenditures in wastewater and storm operations
Sustainability	• Implementing a fire protection charge will improve sustainability. • Aligning revenues and expenditures in wastewater and storm operations. • Recovering 30% of all costs from the fixed monthly fee will significantly improve sustainability.
Affordability	• Allowing the first 7 m^3 consumed per month to be free improves affordability for low volume customers which is required to offset, in part, the increase in fixed monthly costs .

Storm Analysis and Recommendations

Stormwater Introduction

Stormwater runoff is water that flows over hard surfaces (rooftops, driveways, etc.) and across the land and does not soak into the ground. Stormwater is of concern for two reasons:

- Volume and timing of runoff water (flood control)
- Potential contaminants that the water may be carrying

The City of London has a sophisticated drainage system made up of man-made and natural features – swales, ditches, roadways, curb and gutter, catch basins, storm sewers, combined sewers, storm water detention ponds, treatment systems, outlet structures, creeks, rivers, dykes, spillways and dams. All properties use the public drainage systems. Even properties which are not directly connected to storm sewers benefit in the sense of protection from flooding and receive a service from the municipal operation of an adequate and properly managed drainage system.

The revenue from the Storm drainage charge is required to fund replacement, repairs and improvements of:

- The storm sewer pipe system
- All other municipal drainage systems
- Facilities for storm water management systems
- Erosion control programs related to the drainage and river systems in the City
- Upkeep and repairs to the Springbank Dam
- Improvements to address flooding in the City and partial funding of programs that provide homeowner subsidies to address flooding concerns.

Stormwater programs tend to be perceived differently from water distribution and wastewater treatment efforts. Turning on the tap and flushing the toilet are daily reminders of those more traditional services. Surface water management tends to be noticed only when problems such as flooding or acute pollution events occur. It is important, therefore, to remind customers continually of the necessity of these programs.

A stormwater management program cannot be successful without a consistent, dedicated source of revenue on which it can rely. Historically, in most Ontario municipalities stormwater management has been financed with general revenue from property taxes, but these taxes, have proven to be undependable and inadequate as stormwater programs must compete against other programs and services for funding. The declining infrastructure in many cities, highlighted by many national studies and reports, shows stormwater service has been particularly hard hit. When funded through property taxes, most municipalities lack adequate funds for infrastructure improvements, repairs, maintenance and other stormwater management programs. The City of London has been a leader in terms of moving the stormwater management off property taxes and into a separate funding model, well in advance of most Ontario municipalities. In a user-fee-funded utility structure, costs are isolated from the City's other operations and allows the ability to budget programs and projects based on a realistic and dependable revenue stream and well-planned schedule and master plan. The purpose of the this rate structure review is to review and update, where required, the existing rate structure within the utility model framework.

Stormwater Customers

As stated in the User Funded—Stormwater Utilities report prepared by the Water Environment Federation, "Stormwater allocation considers the following:

- Users are properties that add runoff to a system and/or are served by the provision of stormwater services and facilities;
- Beneficiaries are people or properties that gain from stormwater management (are protected, for example, from the effects of flooding and resulting flood damage or benefit from improved water quality); and
- Service or user fees are dedicated charges paid by generators of stormwater runoff on the estimated amount of water that leaves their property or in relation to the services and facilities they receive

As such, individual property owners, or residents, are viewed as generators who should pay user charges in the amount proportionate to their stormwater runoff contribution based on the cost of the service. Storm drainage charges also recognize that all properties benefiting from the City's municipal drainage system should contribute to the costs of maintaining and replacing the system in a ***fair and equitable*** manner.

Existing Storm Rate

Customer	# of Customer Accounts	Monthly Rate	Monthly Billing Structure	Revenue	% of total Revenues Generated
Residential	104,535	$12	per customer	$15,636,973	91.0%
Commercial & High Rise	5,299	$15	per customer	$1,088,589	6.3%
Institutional	525	$12	per customer	$107,137.14	0.6%
Industrial				$356,310	2.1%
Industrial < 600,000 m3	171	$104	per hectare		
Industrial 600,000 - 1.2M m3	13	$89	per hectare		
Industrial > 1.2M m3	13	$89	per hectare		
Totals	110,557			$17,189,008	100.00%

As shown above, all customers pay a monthly fee except industrial customers who pay a per hectare basis. Currently, the Residential customer group is contributing approximately 91% of the total revenues toward the storm system, with the remaining 9% from various ICI customers.

Analysis of Rate Structure Against Objectives and Principles

This structure has been in place for a number of years but as will be described below, there are some issues that should be addressed to better align with the City's principles and objectives.

- ***Sustainability***—As discussed in the water, wastewater section of the report, the storm rates are currently not recovering the full cost of service. Recommendation were made to reallocate the revenue recovery model to reflect the underlying cost of service for wastewater and storm. This will result in an overall increase in storm and a reduction in sanitary sewer charges.
- ***Fairness and Equity—***Only Industrial properties pay in relation to the size of the property (cost per hectare); all other properties pay a flat monthly rate despite the fact that this includes large commercial and institutional properties. This poses some problems in terms of fairness and equity. Commercial and institutional properties are charged a small flat rate per month even though, in some cases, they have an extremely large impervious land area that contributes more run-off to the system. As such, these large commercial and institutional properties have a significant storm water runoff which contributes to the cost to storm system and these customers are being subsidized by other customers. The institutional flat rate, in fact, is lower than the residential rate despite these properties having very large land and building areas. Some property owners do not pay any storm charge. Examples are lands under development and vacant parcels of land even though they contribute run-off to the system.

The following table summarizes the existing revenues recovered in comparison to the pipe cost and hectares:

	% of total Revenues Generated	% of Pipe Cost	% of Hectares
Residential	91.0%	79.3%	65.8%
ICI	9.0%	20.7%	34.2%

As shown above, there is considerable difference between the revenues that are currently generated by Residential and ICI customers compared with the pipe cost to support the service and the total number of hectares. Residential customers are currently over contributing to the cost of the system in relation to the pipe costs and in relation to the number of hectares. As will be described in the next section of the report, as the system is very capital intensive, pipe cost is an important consideration in cost recovery.

Stormwater Rate Structure Options

The key principles considered in evaluating the cost allocation methodology focused primarily on ***fairness and equity, financial sustainability, affordability and economic development***. The approaches that were considered in allocating stormwater costs included:

1. ***Impervious Area Method***—The impervious area method is based on the actual amount of impervious area contained on the individual property or within the class of users.
2. ***Total Land Area***—This method would assume that costs would be recovered from customer classes based on the total land area.
3. ***Pipe Value***—This method would allocate the costs to be recovered from customer classes based on the pipe value.

Method 1: Impervious Area Method

The impervious area method is based on the actual amount of impervious area contained on the individual property or within the class of users. Unlike water and wastewater flows, stormwater discharges are not significantly influenced by water consumption (except for minor uses like washing cars and excessive lawn watering). Further stormwater flows in fact have two major components: discharges from private impervious areas (building roofs, driveways, parking lots, etc.) as well as public impervious areas (streets, sidewalks, etc.). Establishing the impervious area for individual properties is very labour intensive to develop and maintain since it involves aerial photography interpretation and analyzing and digitizing the impervious area boundaries for all properties. Given that the impervious area information is not readily available and would be difficult to maintain on an annual basis, this approach is not recommended.

Method 2: Land Area Method

Another approach is to allocate storm drainage costs to property classes based on the number of hectares of property within each class. For example, the Residential Class comprises approximately 66% of the total hectares and would therefore be responsible for 66% of the costs associated with the storm sewer costs. Currently, the residential sector contributes approximately 91% of the revenues. Although this methodology is easy to administer, it does not take into consideration the underlying capital costs of storm water management to the classes which is the major driving factor in the cost of operations. This approach is, not recommended from a ***fairness and equity*** perspective.

Method 3: Pipe Value Method

Storm water management costs are extremely capital intensive and the major capital cost component relates to pipe value and the replacement of the pipes. Residential lands make up approximately 66% of the land area within the City of London, however, approximately 79% of the storm sewer pipe costs serve the Residential sector. By allocating costs using the main cost driver, ***fairness and equity*** is promoted. This allocation approach is also simple to understand and track and it is defensible.

The recommended approach is to allocate the costs for rate revenue recovery based on pipe cost to the Residential and ICI classes. This will reduce the proportional contribution of Residential properties from 91% to 79%. It should be noted however that with the reallocation of $2.1 million of costs to be recovered from Storm (previously recovered from wastewater rates) to reflect full cost recovery, the reduction to Residential properties is lessened. As will be shown later in the report, the recommended monthly fee is close to the existing fee for Residential properties (Current fee is $12.47 per month compared to estimated new fee of $11.83 per month).

Because ICI customers are not as homogeneous as Residential customers, charging a flat rate to all ICI customers, regardless of their size is not recommended. As described earlier, the runoff related to large industrial, commercial and institutional properties must be taken into consideration for ICI customers to support ***fairness and equity*** principles and should be charged on a per hectare basis. However, for administrative ease, it is recommended that an area threshold be established. The threshold would be established such that properties below the threshold will be considered generally homogeneous enough to warrant a flat rate. This would be easier to administer because the majority of the ICI and high rise properties would be billed on a flat rate basis.

Models have been run to charge properties below an established area (hectares) threshold using a flat rate approach and the properties above the threshold using a uniform cost per hectare basis. Several thresholds were run using data from the general zoning parcel information available. Analysis was undertaken over the past several years to determine the most appropriate threshold, with 0.4 hectares being considered appropriate. By treating all large customers the same, ***fairness and equity*** is supported. While it is recommended that Residential properties pay a flat per month rate, consideration for multi-family properties is required to ensure equity. It is recommended that multi-family residential properties that are bulk metered pay based on a rate per hectare if the property is greater than the recommended 0.4 hectares to ensure equity between residential customers.

Other Customer Considerations

There are a number of issues that have been raised in past reports that should also be considered in the development of a new storm rate structure to ensure that the City's principles and objectives are met. These include:

- Vacant Land—Currently vacant parcels do not pay storm drainage charges however, vacant parcels contribute run-off (although less than in a developed state) and are served by the drainage system. In municipalities that recover storm related costs from property taxes (as is the case in the majority of municipalities); all properties contribute, including vacant parcels and farmland (although both pay discounted rates which varies based on the type of property—commercial, industrial, farmland). An approach similar to that used in discounting property taxes for vacant land should be considered. It is recommended that vacant land be charged 75% of the applicable storm drainage charge.

- Residential Flat Rate Customers Without Storm Sewer—Consistent with past recommendations, it is proposed that residential customers without a storm sewer pay 75% of the flat rate charged to Residential customers. It is proposed that this discount in the storm rate would apply to those customers who are impacted by localized surface flooding in areas which do not have storm sewers (or combined sewers) in the immediate area (within 100 meters) and are not likely to have storm sewers installed in the foreseeable future based on flood relief plans.

- Urban Reserve—Currently these properties contribute via the Drainage Act for local works. It is recommended that Urban reserve continue to pay per the requirements of the Drainage Act but not be included in the stormwater management charge.

- Farmland—Currently farmland properties are not contributing to stormwater management. Farmlands are discounted in the property tax system for social benefit/economics reasons. It is recommended that farmland continue to pay as per the requirements of the Drainage Act but not be included in the stormwater management charge. This is recommended for social benefit reasons and supports ***affordability***.

- Large Properties—It is suggested that customers who have single properties exceeding 15 ha can apply for a reduction in their ”contributing area”. The application would be supported by a report prepared by a Professional Engineer which defines the storm drainage “contributing area”, potentially resulting in a reduction to their storm charge for flood-plain, stormwater management facilities, parkland or other innovative stormwater management systems.

Estimated Stormwater Rates

As shown below, the recommended rates represent all assumptions and recommendations contained in the report and are based on:

- 2012 Budget with a $2.1 million increase in the Wastewater Budget
- 2012 customer counts
- Parcel and threshold data provided by the City through various databases

	Monthly Flat Fee	Monthly Per Hectare Fee
Residential	$ 11.83	
Residential Without a Storm Sewer	$ 8.87	
ICI below the Threshold of 0.4 hectares	$ 11.83	
ICI above the Threshold of 0.4 hectares		$ 98.42
Multi-Family above the Threshold of 0.4 hectares		$ 98.42

There are numerous detailed technical issues that must be addressed as part of the implementation strategy for a new storm rate structure. The most significant challenges deal with data availability for the storm drainage rate structure. The data required to finalize the rate structure, which include the number of units in multi-family buildings and the land area of customers’ properties are available in various databases that the City has access to. There is a need to correlate these databases to validate the assumptions used in this report and extract the data in the necessary format for the rate structure. It may be necessary to stage the conversion to the new rate structures, undertaking water and wastewater first, followed by storm.

Impact Analysis—Storm

As discussed previously, additional verification of the parcel and hectare information is required, however, based on the information available today, Residential customers would experience a reduction of $7.50 per year. Industrial properties are currently paying between $1,064-$1,252 annually would pay an estimated $1,181 per year. Institutional properties greater than 0.4 hectares would experience significant increases compared with the low existing annual charge of $144. An institutional property that is, for example 4 hectares would pay under the new system over $4,700.

Summary—Storm Rate Structure

The following table reflects the recommended rate structure for storm in relation to the City's principles and objectives.

Principle/Objective	Recommendations/Rate Structure
Financial Stability	• By charging flat monthly rates and per hectare rates, financial sustainability is supported.
Conservation	• N/A
Economic Development	• By providing an opportunity for a large customers to apply for a discount that meet specific criteria, economic development is supported.
Fairness & Equity	• By charging all large customers above the 0.4 hectare threshold the same rate, fairness and equity is significantly improved. This addresses the inequities in the existing system where industrial properties pay per hectare and all other large properties pay only a small flat rate. • By allocating costs to Residential and ICI customers using pipe cost, fairness and equity is supported. • By providing a discount for vacant properties and properties that do not have storm sewers, fairness and equity is supported.
Sustainability	• By moving to a full cost recovery model, financial sustainability is supported
Affordability	• By exempting farmland properties from a storm charge, social benefit to farmland properties is supported.

Appendices

Appendix A—Summary of Year End Operating Budget Deficits/Surpluses

The following table reflects the shortfalls that the water operations has experienced over the past eight years.

Summary of Surplus/(Deficit) Positions		
2004	$	(271,094)
2005	$	(839,855)
2006	$	(676,894)
2007	$	(1,278,760)
2008	$	332,283
2009	$	(887,670)
2010	$	(473,464)
2011	$	(810,976)
Total	$	(4,906,429)

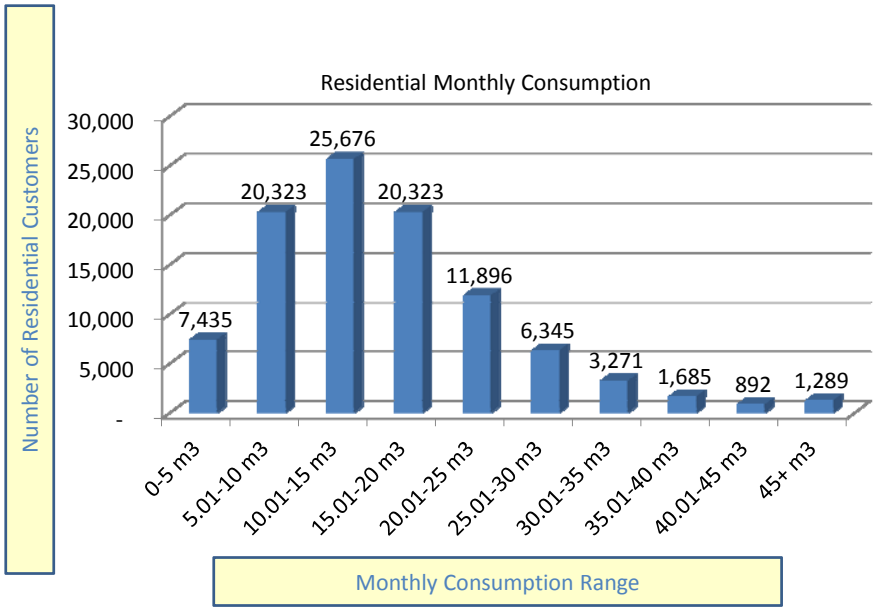
- In 7 of the past 8 years, the City experienced revenue shortfalls in the water operations. In 2008 which was the only year where a surplus was generated, revenues were actually less than budgeted but the City was able to reduce expenditures to offset revenue shortfalls.
- Average annual deficits have been $0.6 million since 2004.
- Losses erode the ability of the City to address capital requirements (***sustainability***) as these losses must be funded from reserves or, alternatively, they result in additional future rate increases to recover past revenue shortfalls (***affordability***).
- While staff annually forecast consumptions, unanticipated events such as weather conditions and economic slowdowns have reduced consumption more than forecast. The majority of the costs are fixed and therefore cannot be adjusted to account for the revenue decrease. The City's rate structure which recovers 99% of the costs through the volumetric rates make it extremely difficult to balance the budget from year to year.
- As identified in the City's budget document, average household consumption declined by 24% since 2001.
- Changes to the City's water/wastewater rate structure are required not only to improve ***revenue stability,*** but also to improve ***fairness and equity.***

Appendix B - Benchmarking—Fixed versus Variable Costs

Municpality	Fixed Annual 5/8	Fixed as % of Total Residential 250 m^3
Aurora		0%
Brampton		0%
Caledon		0%
Cornwall		0%
East Gwillimbury		0%
Fort Frances		0%
Georgina		0%
Grimsby		0%
Kitchener		0%
Markham		0%
Meaford		0%
Middlesex Centre		0%
Mississauga		0%
North Bay		0%
Ottawa		0%
Richmond Hill		0%
Stratford		0%
Tecumseh		0%
Timmins		0%
Toronto		0%
Vaughan		0%
Whitchurch-Stouffville		0%
London	$ 7	1%
Waterloo	$ 32	4%
Lincoln	$ 57	6%
Welland	$ 87	8%
North Dumfries	$ 108	13%
Wellesley	$ 108	13%
Peterborough	$ 124	25%
Cambridge	$ 136	16%
Orangeville	$ 146	17%
Wilmot	$ 156	18%
Brantford	$ 157	18%
Newmarket	$ 168	21%
St. Thomas	$ 174	22%
Guelph	$ 184	23%
Hamilton **	$ 194	31%
Ajax	$ 207	29%
Clarington	$ 207	29%
Oshawa	$ 207	29%
Pickering	$ 207	29%
Whitby	$ 207	29%
Penetanguishene	$ 214	23%
St. Catharines	$ 222	25%

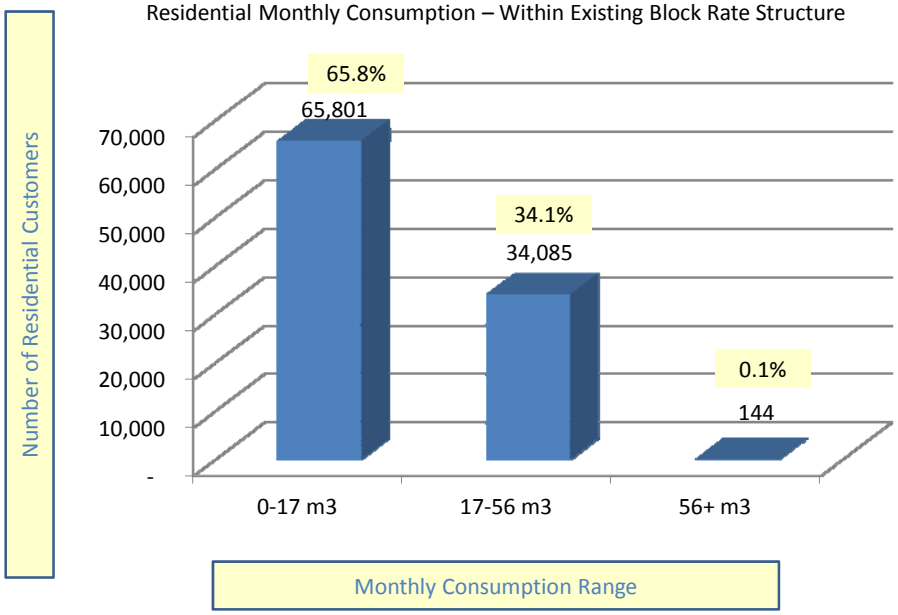
Municpality	Fixed Annual 5/8	Fixed as % of Total Residential 250 m^3
Quinte West	$ 240	38%
Barrie	$ 252	33%
Burlington	$ 261	37%
Halton Hills	$ 261	37%
Milton	$ 261	37%
Oakville	$ 261	37%
Bracebridge	$ 269	23%
Gravenhurst	$ 269	23%
Huntsville	$ 269	23%
Lambton Shores	$ 276	22%
Pelham	$ 279	35%
Innisfil	$ 299	31%
Woolwich	$ 312	28%
Thorold	$ 323	37%
Kingsville	$ 327	62%
King	$ 329	43%
Tillsonburg	$ 342	41%
Brockville	$ 349	59%
Thunder Bay	$ 352	40%
Belleville	$ 358	37%
Central Elgin	$ 368	31%
Chatham-Kent	$ 372	48%
Kawartha Lakes	$ 380	32%
Windsor	$ 391	36%
Sault Ste. Marie	$ 394	58%
West Lincoln	$ 396	40%
Greater Sudbury	$ 399	41%
St. Marys	$ 456	60%
The Blue Mountains	$ 481	54%
Niagara-on-the-Lake	$ 497	50%
Niagara Falls	$ 505	51%
Kingston	$ 521	58%
Port Colborne	$ 538	50%
Kenora	$ 539	59%
Leamington	$ 563	76%
Prince Edward County	$ 625	45%
Fort Erie	$ 727	58%
Sarnia	$ 813	88%
Average	**$ 222**	25%
Median	**$ 207**	25%
Minimum	**$ -**	0%
Maximum	**$ 813**	88%

Appendix C
Residential Consumption



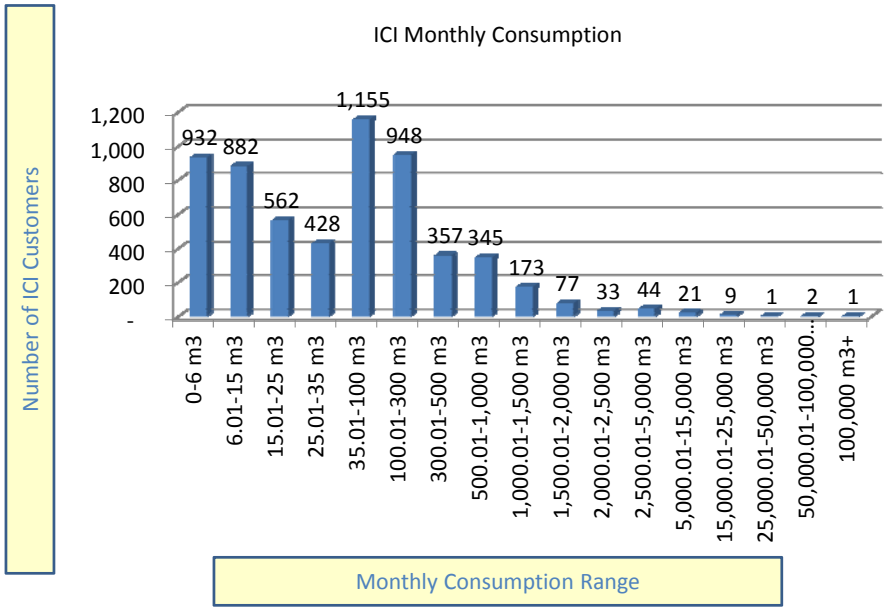
- Over 56% of customer consume 15 m^3 or less per month (180 m^3 annually)
- An additional 32% consume between 15-25 m^3

Residential Consumption—Using the Existing Water Rate Thresholds

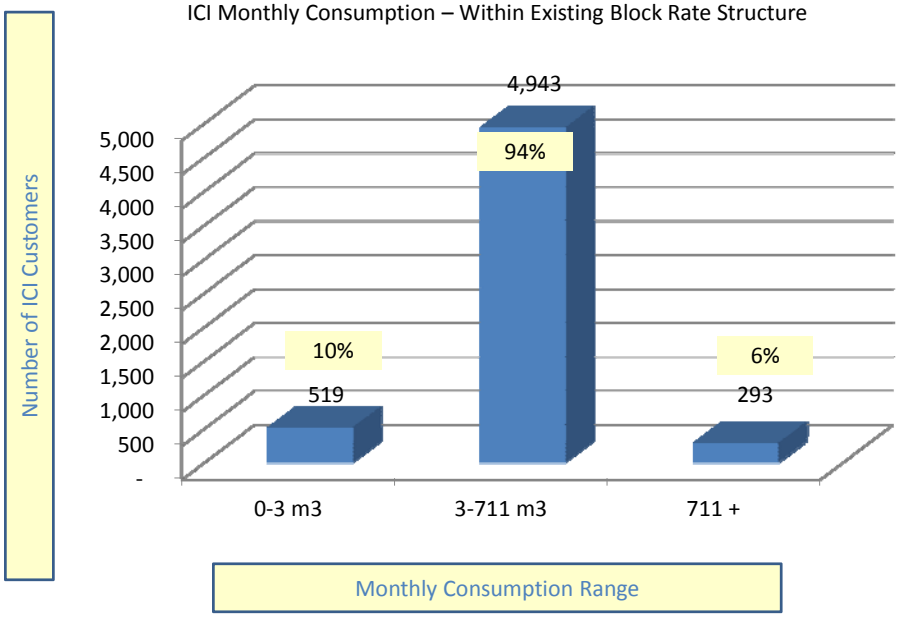


- The City's first consumption threshold at 17 m3 is above the average consumption level of 15 m^3
- 34% of the customers consume at the second block rate but the premium is only 5% which is not an effective deterrent to water consumption
- Only 0.1% of customers are at the block three threshold

Appendix D
ICI Consumption



- As shown in the graph, there is a wide range of consumption across the ICI class, with over 30% of customers consuming at low levels (0-15 m^3)
- There are 35% of the customer that consume between 100-300 m^3 per month, which is considered mid sized customers.



- The City's first consumption threshold for ICI properties is at 3 m^3 is extremely
- The second block threshold is set at approximately 711 m^3 per month which includes 94% of the customers as the range is so high
- 6% of the ICI customers benefit from the third rate in the declining rate structure

Appendix E
Comparative Analysis

Volume Meter Size	Res. 200 m^3 5/8"	Res. 250 m^3 5/8"	Residential 300 m^3 5/8"	Commercial 10,000 m^3 2"	Industrial 30,000 m^3 3"	Industrial 100,000 m^3 4"	Industrial 500,000 m^3 6"
London Existing	$ 662	$ 829	$ 997	$ 20,712	$ 48,702	$ 157,451	$ 778,142
London Recommended	$ 638	$ 834	$ 1,030	$ 18,665	$ 52,455	$ 163,571	$ 745,838
Average 80+ Ontario Municipalities	$ 773	$ 895	$ 1,021	$ 26,745	$ 78,117	$ 253,331	$ 1,245,546
Difference to the Average Existing	-14.4%	-7.4%	-2.3%	-22.6%	-37.7%	-37.8%	-37.5%
Difference to the Average Recommended	-17.4%	-6.8%	1.0%	-30.2%	-32.9%	-35.4%	-40.1%

Note that this excludes Storm charges.

As shown above, all Residential customers pay considerably less than the survey average of 80+ Ontario municipalities. Further, the existing cost of water and wastewater service for all ICI customers is well below the survey median.

This continues to be the case for all ICI customers in London under the recommended rate structure as well as Residential properties up to 300 m^3 of consumption.

Appendix F
Analysis of the Water and Wastewater Budget

Water

	Operating Budget	Fixed	Volumetric
Administration	$ 4,406,000	$ 3,566,000	$ 840,000
Billing and Customer Service	$ 1,901,000	$ 1,901,000	
Engineering	$ 1,363,000	$ 1,363,000	
Purchase of Water	$ 19,870,000		$ 19,870,000
Water Operations	$ 10,381,000	$ 7,550,649	$ 2,830,351
Meter Shop	$ 1,375,000	$ 1,375,000	
Debt Servicing & Capital Contributions	$ 20,381,000	$ 20,381,000	
Total	$ 59,677,000	$ 36,136,649	$ 23,540,351
% of Total		61%	39%

Wastewater

	Operating Budget	Fixed	Volumetric
Administration	$ 1,802,424	$ 1,802,424	
Billing and Customer Service	$ 950,463	$ 950,463	
Sanitary Collection	$ 19,224,711	$ 19,224,711	
Sanitary Treatment	$ 6,170,763		$ 6,170,763
Debt Servicing & Capital Contributions	$ 26,442,519	$ 20,625,165	$ 5,817,354
Total	$ 54,590,880	$ 42,602,763	$ 11,988,117
% of Total		78%	22%

Appendix G - Meter Equivalency Ratios (2012 Rates)

	Brantford	Chatham-Kent	Cambridge	Durham	Guelph	Halton	Hamilton	Kingston	Kitchener	Ottawa	Sarnia	Toronto	Waterloo	London
5/8"	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	N/A	1.0	1.0	N/A	1.0	1.0
3/4"	1.0	1.0	2.5	1.0	1.0	1.0	1.0	2.5	N/A	1.8	1.4	N/A	1.0	1.1
1"	1.0	1.2	5.0	2.0	1.4	1.7	5.3	2.5	N/A	2.8	2.5	N/A	2.0	8.7
1 1/2"	1.1	2.4	8.0	4.3	3.7	3.1	5.9	3.0	N/A	7.1	4.9	N/A	3.7	17.0
2"	1.2	3.4	17.5	9.3	8.0	7.2	7.0	3.5	N/A	11.1	9.1	N/A	4.6	22.8
3"	2.3	6.1	30.0	16.4	16.8	13.1	12.1	5.6	N/A	25.0	17.6	N/A	9.7	56.8
4"	2.7	7.6	62.5	32.7	29.0	22.7	15.5	7.5	N/A	44.4	27.5	N/A	14.1	83.7
6"	3.6	11.5	80.1	60.7	54.4	58.4	27.4	11.4	N/A	100.0	57.2	N/A	24.0	141.3
8"	4.5	17.2	115.1	103.5	156.4	94.0	47.3	21.0	N/A	177.8	110.0	N/A	36.3	218.0

	Survey Median	London	AWWA ME
5/8"	1.0	1.0	1.0
3/4"	1.0	1.1	1.5
1"	2.0	8.7	2.5
1 1/2"	3.7	17.0	5.0
2"	7.2	22.8	8.0
3"	13.1	56.8	17.5
4"	22.7	83.7	30.0
6"	54.4	141.3	70.0
8"	94.0	218.0	120.0