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The Regional Municipality of Durham Report

To: The Committee of the Whole
From: Commissioner of Finance and Commissioner of Works
Report: #2016-COW-83
Date: December 7, 2016

Subject:

Recommended 2017 Water and Sanitary Sewer User Rates

Recommendations:

That the Committee of the Whole recommends to Regional Council:

- A) The 2017 Regional water rates increase 4.9% and Regional sanitary sewer rates increase 2.3% from the 2016 user rate levels as set out in Schedule 1 and Schedule 2 respectively (attached), effective January 1, 2017 (increase for an average residential customer of 3.6%);
- B) The 2017 Raw Water rates for the Whitby raw water customers be as set out in Schedule 1 (attached), effective January 1, 2017;
- C) The 2017 water charges to the Sun Valley Heights Homeowners Co-operative Water System be as set out in Schedule 3 (attached), effective January 1, 2017;
- D) The 2017 Regional Water and Sanitary Sewer Systems Miscellaneous Fees and Charges be as set out in Schedule 4 (attached), effective January 1, 2017;
- E) The 2017 fee schedule for laboratory services at the Regional Environmental Laboratory located at the Duffin Creek Water Pollution Control Plant be as set out in Schedule 5 (attached), effective January 1, 2017;
- F) The Regional Solicitor be instructed to revise or prepare the necessary by-laws to implement the foregoing recommendations.

Executive Summary

1. Background

- This report relates to the recommended Water and Sanitary Sewer User Rates to be effective January 1, 2017. It is presented concurrently with and supports Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study which describes the financing of proposed capital works in 2017 and future years.
- This printed Executive Summary is supplemented by a Detailed Report available in the attached booklet.
- The Region's water and sanitary sewer user rates are reviewed annually and recommendations are made to Council in December, prior to a January 1st implementation of approved user rates.
- It is imperative that user rates be approved in 2016 in order that they can be implemented with the first customer billings commencing early January 2017. Any delay in implementation may mean that any required rate increase would have to be larger to generate sufficient revenue during the Region's fiscal year. In addition, it is considered preferable to adjust the rates during the low winter consumption period rather than have a rate increase occur at the same time as the spring/summer seasonal usage increase.
- Public notification that the proposed 2017 water and sanitary sewer user fees and related charges will be considered by the Committee of the Whole on December 7th, and by Regional Council on December 14th, was provided twice in local newspapers throughout the Region from November 17th to November 24th, 2016 and was posted on the Region's website.

2. Highlights

2.1 2017 Recommended Water and Sanitary Sewer User Rate Increases

- The recommended 4.9% water user rate increase and 2.3% sanitary sewer user rate increase (3.6% combined for an average residential customer) supports an increase in user rate expenditures of 6.0% for water and 3.4% for sewage. The current 2016 and recommended 2017 Water and Sanitary Sewer User Rates are provided in Schedule 1 and Schedule 2 respectively (attached).
- For water, the user rate increase of 4.9% is required to finance a proposed preliminary 2017 user rate supported budgeted expenditure increase of \$5.76 million or 6.0% over 2016, which, will allow for:
 - **A net *Operating Cost* increase of \$1.47 million due mainly to increases in utility costs, watermain repair budget (cathodic protection) and inflationary and economic increases;**
 - **A *Capital Program/Contribution* increase of \$4.29 million (user rate share) due mainly to advancing capital projects related to the federal government Clean Water and Wastewater Fund.**

- For sanitary sewer, the user rate increase of 2.3% is required to finance the proposed preliminary 2017 user rate supported budgeted expenditure increase of \$3.26 million or 3.4% over 2016, which will allow for:
 - **A net *Operating Cost* increase of \$1.31 million due to utility costs and inflationary and economic costs;**
 - **A *Capital Program/Contribution* increase of \$3.42 million (user rate share) due mainly to advancing capital projects related to the federal government Clean Water and Wastewater Fund; and**
 - **A *Debt Repayment* decrease of \$1.47 million or -14.3% related to the retirement of the Courtice Water Pollution Control Plant (WPCP) debt.**

2.2 Basis for the Proposed 2017 User Rates

- The projected data used to develop the 2017 user rates includes the following:

Projected Data Used to Develop 2017 Water & Sewage User Rates

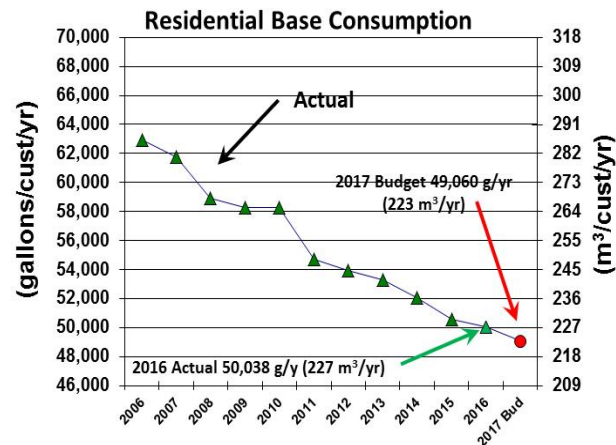
Parameter	Water	Sanitary Sewage
Customers		
- Number	174,305	170,161
- Growth from 2016 Actual	1.30%	1.35%
Consumption/Flow		
- Gallons (billions)	11.64	11.19
- Cubic metres (millions)	52.91	50.88
- Change from 2016 Budget	0.9%	0.9%
Projected User Rate Supported Expenditures		
- Total Expenditures	\$101,494,900	\$97,897,800
- Change from 2016 Budget	6.0%	3.4%
User Rate Change Required		
- Percent	4.9%	2.3%
- Impact on Revenue of 1% Rate Change	\$967,000	\$956,000

- **Impact of a 1% Rate Change** - Any change in either expenditures or other revenues by \$967,000 for water or \$956,000 for sanitary sewer is equivalent to a 1% change in the respective user rate.

2.3 Customer and Consumption Projections

- Customer growth in 2017 is projected at 1.30% for water and 1.35% for sanitary sewage.
- Total water consumption and billed sewage flows budgeted for 2017 are 0.9% higher for both water and sanitary sewage than budgeted in 2016.

- **Overall** – Total billed water consumption and sewage flows are projected to marginally increase in 2017. The consumption increase is due to residential growth volumes consumption in the non-residential sectors remaining stable.
- **Residential** – Base residential per customer water consumption (excludes seasonal usage) has been steadily decreasing. Contributing factors include the water efficient fixtures required in new construction by the Provincial Building Code and the popularity of more water efficient appliances. Actual 2016 base consumption decrease of 2.8% is in line with historic reductions (average annual 2005 to 2016 decrease was 2.6%). Continuing reduction in base usage per residential customer is expected for 2017 and into the future.



However, with seasonal usage and a 1.3% increase in customers included, total residential consumption is projected to increase by 1.2% in 2017.

- **Non-Residential Consumption Share** – After years of decrease, the Industrial, Commercial and Institutional (ICI) consumption share relative to residential usage is expected to remain stable at 26% in 2017. In the early 1980's, ICI represented 59% of all water usage.
- **Small to Medium Size ICI Water Users** – Consumption has been fairly stable in the 1st and 2nd ICI consumption blocks. No change is projected for 2017.
- **Large Water Users** – 3rd block ICI water usage has been declining for many years due to conservation, water recycling and scaling back or closing of large manufacturing operations. However, the reopening of a paper fibre production operation in mid-2013 (curtailed in spring of 2010) has resulted in an increase in large customer consumption, which in 2016 has levelled off. As a result, 2017 projected 3rd block consumption is the same as the 2016 budget.

2.4 Impacts on Water and Sewer Customers

- Average Residential Customers – The recommendation that the 2017 water and sanitary sewer user rates be increased over 2016 rate levels results in an increase of \$7.93 or 3.6% in the quarterly charge (\$31.72 per annum or \$2.64 per month) to a residential customer using 230 m³ (50,500 gallons) per year. This reflects the average volume of water projected to be used annually in 2017 by a residential customer.

2017 Proposed Regional User Rate Charges				
Typical Residential Customer Impact				
	Water	50,500	gallons/year	
	Usage	230	m ³ /year	
Billings (\$/quarter)				
	2016	2017		
	Actual	Proposed	Increase	
	\$	\$	\$	%
Water	107.51	112.78	5.27	4.9%
Sewage	115.85	118.51	2.66	2.3%
Total (\$/quarter)	223.36	231.29	7.93	3.6%
Annual Billing (\$/year)	893.44	925.16	31.72	3.6%

It is projected that in 2017, the average annual residential per customer consumption (including base and summer usage allowance combined) will remain the same at 230 m³ (50,500 gallons)

- Industry - The proposed 2017 water and sanitary sewer user rates result in a bi-monthly increase of \$2,652 for a customer using 227,272 m³ (50,000,000 gallons) annually (a customer in the top 25 users) as indicated below:

2017 Proposed Regional User Rate Charges				
Large Industrial Customer Impact				
	Water	50,000,000	gallons/year	
	Usage	227,272	m ³ /year	
Billings (\$ bimonthly)				
	2016	2017		
	Actual	Proposed	Increase	
	\$	\$	\$	%
Water	31,212	32,740	1,528	4.9%
Sewage	49,060	50,184	1,124	2.3%
Total (\$ bimonthly)	80,272	82,924	2,652	3.3%
Annual Billing (\$/year)	481,632	497,544	15,912	3.3%

2.5 Competitiveness of Durham's Water and Sewage Rates

- **Residential customers** - Of 13 larger municipalities surveyed across Ontario, Durham's 2016 Regional water and sewage charges are below average and are the 5th lowest.
- **Large users** - The Region's 2016 water and sewer rates were the 4th lowest of the 13 municipalities surveyed for a large user. The Region's declining block rates reflect the Region's reduced unit cost of servicing large customers.
- **Other Utilities** - Regional water and sewer charges for an average residential customer are each substantially less than other utilities such as natural gas, hydro, telephone and cable.

2.6 Miscellaneous Fees & Charges and Laboratory Fees

- **Miscellaneous Fees & Charges** - Schedule 4 Recommended 2017 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges includes 40 fee categories. Each has been reviewed individually. Most of the recommended 2017 charges increases vary from no increase to about 5%. Specific considerations and circumstances warrant changes to the following fees and charges:
 - **Items 1) to 14) Water & Sanitary Sewer Systems Frontage & Connection Charges** – An analysis of 2014 actual frontage costs indicates these fees should be substantially increased in order to achieve full cost recovery with the increases phased in over a 3-year (2016 to 2017) period. The first two phases were implemented in the 2015 & 2016 Miscellaneous Charges. The originally planned 2017 completion of the phase in has been extended in order to lessen the impact and in order to further phase in the frontage charges. The recommended 2017 charges represents an increase of 5% over 2016 charges.
 - **Item 18) Unmetered Water used for construction (building purposes) per service** – The volume of water used during home or building construction up until completion and meters are installed, typically during subdivision construction, is charged to builders by means of the building purposes charge. The charge is levied based on number of water services being built. It covers water usage until meters are installed. Water meters are not installed in new house construction until it is virtually complete and meter freezing is not an issue. Currently the charge is \$87.00 which is equivalent to about 87 m³ (19,200 gallons) of water usage per water service. An initial investigation indicates water usage could be upwards of 200 m³ (44,000 gallons) per home or more. Monitoring of development sites will continue. In the meantime an increase in the allowance to 110 m³ (24,200 gallons) (\$110.00) per home equivalent based on current water rates is recommended (see also Section 6.5).
- **Laboratory Fees** – Schedule 5 Recommended 2017 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory located at the Duffin Creek WPCP includes 9 pages of individual fees for a variety of tests. There have been six (6) fees increased. Two (2) new tests added, three (3)

fees eliminated and two (2) changed from a fixed rate to external subcontractor's rate.

2.7 Risk Factors

- The water and sanitary sewer user rate forecasts to 2026 include preliminary cost estimates for known projects and in some cases only allowances have been made until detailed designs are complete. However, there are other factors that will have cost implications which are unknown at this time and have not been quantified. The factors that will put additional pressures on future user rates include:
 - Potential for further reductions in water usage and thus related revenues without resulting in corresponding cost reductions;
 - Any further economic decline could result in lower system utilization with consequent decrease in water and sewage user rate revenues;
 - Market price impacts and volatility, including energy input prices and related equipment and supplies; and
 - There also may be unknown cost implications as a result of new legislation and current regulations as well as future amendments, related to Bill 72, the *Water Opportunities and Water Conservation Act*, the *Clean Water Act* (Source Protection Plans), the *Lake Simcoe Protection Act*, the *Great Lakes Protection Act* and the *Wastewater Systems Effluent Regulations* (WSER). This legislation is discussed in detail in Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study.

3. Future Issues

- Based upon projections to 2026, it is estimated that the combined water and sewer user rate increase will be approximately 5% to 7% per year over the forecast period depending on future customer growth, water demand and financial planning decisions. The cost factors behind these significant increases include the following:
 - Customer growth has recently been lower than experienced for a number of years and is projected to remain at low levels;
 - Water consumption has trended downwards in the past few years and this is expected to continue. Residential customer water usage is expected to be fairly level with consumption growth due to increases in the number of customers offset by reduced day-to-day individual customer use, due to more efficient plumbing fixtures and appliances and awareness of water conservation practices. Usage by small to medium-sized customers is expected to remain fairly constant. The long-term usage trend by large industrial customers is projected to stabilize;

- Operating costs are expected to increase at an annual rate of 4% or more due mainly to economic and inflationary increases in utilities, chemicals, and supplies;
 - Water supply and sanitary sewerage infrastructure require large capital investments in order to meet regulatory, asset management and growth related requirements, in particular for treatment plant and trunk main services. In addition, the forecast debt servicing costs are projected to increase; and
 - Water and sewage user rates are the funding source for capital investments for rehabilitation and replacement as well as growth (net of development charge contributions and grants, if available).
- Total and user rate share of major water and sewage systems capital projects over the forecast period (2017-2026) are discussed in detail in Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study.

4. Schedules of Rates & Fees

- The recommended Durham Region 2017 water and sanitary sewer user rates, fees and charges are set out in the attached schedules, as follows:
 - The recommended 2017 Water User Rates are 4.9% higher than the 2016 rates and are set out in Schedule 1.
 - The recommended 2017 Raw Water Rate for the Whitby raw water customers is set out in Schedule 1.
 - The recommended 2017 Sewage User Rates are 2.3% higher than the 2016 rates and are set out in Schedule 2.
 - The recommended 2017 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System is set out in Schedule 3.
 - The recommended 2017 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges (adjusted to reflect changes in cost structures and inflation) are set out in Schedule 4.
 - The recommended 2017 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory located at the Duffin Creek WPCP is set out in Schedule 5.

5. Attachments

Schedule 1 – Recommended 2017 Water User Rates

Schedule 2 – Recommended 2017 Sewage User Rates

Schedule 3 – Recommended 2017 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System

Schedule 4 – Recommended 2017 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges

Schedule 5 – Recommended 2017 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP

6. Detailed Report – Provided in enclosed booklet

Original signed by

R.J. Clapp, CPA, CA
Commissioner of Finance

Original signed by John Presta for

Susan Siopis, P.Eng.
Commissioner of Works

Recommended for Presentation to Committee

Original signed by

G.H. Cubitt, MSW
Chief Administrative Officer

Schedule 1 Recommended 2017 Water User Rates

REGIONAL MUNICIPALITY OF DURHAM							
Water User Rate Schedule				2017 Rate Increase = 4.9%			
Monthly							
Effective January 1, 2017							
Volumetric Charges							
Block	Consumption Range			Current 2016		Proposed 2017	
	From	To	Units				
First Block	0	to 45	cubic metres/month	\$0.997	/cubic metre	\$1.045	/cubic metre
	0	to 10,000	gallons/month	\$4.530	/1,000 gallons	\$4.752	/1,000 gallons
	0	to 1,600	cubic feet/month	\$2.822	/100 cubic feet	\$2.960	/100 cubic feet
Second Block	46	to 4,500	cubic metres/month	\$0.847	/cubic metre	\$0.889	/cubic metre
	10,001	to 1,000,000	gallons/month	\$3.852	/1,000 gallons	\$4.041	/1,000 gallons
	1,601	to 160,000	cubic feet/month	\$2.400	/100 cubic feet	\$2.518	/100 cubic feet
Third Block		Over 4,500	cubic metres/month	\$0.778	/cubic metre	\$0.816	/cubic metre
		Over 1,000,000	gallons/month	\$3.537	/1,000 gallons	\$3.710	/1,000 gallons
		Over 160,000	cubic feet/month	\$2.204	/100 cubic feet	\$2.311	/100 cubic feet
Basic Charges (\$/month)							
Meter/Fire Line Size		Service Charge		Minimum Charge		Unmetered Fire Line Charge	
		Current 2016	Proposed 2017	Current 2016	Proposed 2017	Current 2016	Proposed 2017
Inches	mm						
Standard	Standard	\$16.75	\$17.57	n/a	n/a	n/a	n/a
1-inch	25-mm	\$34.03	\$35.70	\$57.00	\$59.00	\$12.93	\$13.56
1 ½-inch	38-mm	\$72.44	\$75.99	\$109.00	\$114.00	\$17.38	\$18.23
2-inch	51-mm	\$156.45	\$164.12	\$209.00	\$220.00	\$33.64	\$35.29
2 ½-inch	64-mm	n/a	n/a	n/a	n/a	\$44.59	\$46.77
3-inch	76-mm	\$275.01	\$288.49	\$359.00	\$376.00	\$59.10	\$62.00
4-inch	102-mm	\$546.85	\$573.65	\$708.00	\$742.00	\$118.22	\$124.01
5-inch	127-mm	n/a	n/a	n/a	n/a	\$158.73	\$166.51
6-inch	152-mm	\$1,016.35	\$1,066.15	\$1,293.00	\$1,356.00	\$218.29	\$228.99
8-inch	203-mm	\$1,732.66	\$1,817.56	\$2,125.00	\$2,229.00	\$363.74	\$381.56
10-inch	254-mm	\$2,819.52	\$2,957.68	\$3,366.00	\$3,531.00	\$580.42	\$608.86
12-inch	305-mm	n/a	n/a	n/a	n/a	\$818.36	\$858.46
Flat Rate (includes consumption)							
		Current 2016	Proposed 2017				
Monthly/unit		\$39.40	\$41.33				
Quarterly/unit		\$118.20	\$123.99				
Annually/unit		\$472.80	\$495.96				
Other - Raw Water Rate							
			Current 2016	Current 2017			
All volumes			\$0.270	\$0.286			
			/cubic metre	/cubic metre			
			\$1.225	\$1.300			
			/1,000 gallons	/1,000 gallons			
Late payment charge is 2%. A bill payment is late if not made within 16 days of the date on which the bill is mailed.							

Schedule 2 Recommended 2017 Sewage User Rates

REGIONAL MUNICIPALITY OF DURHAM							
Sewage User Rate Schedule				2017 Rate Increase = 2.3%			
Monthly							
Effective January 1, 2017							
Volumetric Charges							
Block	Consumption Range			Current		Proposed	
	From	To	Units	2016		2017	
First Block	0	to 45	cubic metres/month	\$1.674	/cubic metre	\$1.712	/cubic metre
	0	to 10,000	gallons/month	\$7.608	/1,000 gallons	\$7.783	/1,000 gallons
	0	to 1,600	cubic feet/month	\$4.740	/100 cubic feet	\$4.849	/100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				167.9%		163.8%	
Second Block	46	to 4,500	cubic metres/month	\$1.473	/cubic metre	\$1.507	/cubic metre
	10,001	to 1,000,000	gallons/month	\$6.695	/1,000 gallons	\$6.849	/1,000 gallons
	1,601	to 160,000	cubic feet/month	\$4.171	/100 cubic feet	\$4.267	/100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				173.8%		169.5%	
Third Block		Over 4,500	cubic metres/month	\$1.238	/cubic metre	\$1.266	/cubic metre
		Over 1,000,000	gallons/month	\$5.627	/1,000 gallons	\$5.756	/1,000 gallons
		Over 160,000	cubic feet/month	\$3.506	/100 cubic feet	\$3.586	/100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				159.1%		155.1%	
Basic Charges (\$/month)							
Meter	Service Charge		Minimum Charge		Flat Rate/unit		
	Current 2016	Proposed 2017	Current 2016	Proposed 2017	Current 2016	Proposed 2017	
Standard	\$6.56	\$6.71	No minimum charge		\$44.60	\$45.63	
All other sizes							
Monthly	\$6.56	\$6.71	\$45.00	\$46.00	\$44.60	\$45.63	
Quarterly	\$19.68	\$20.13			\$133.80	\$136.89	
Annually	\$78.72	\$80.52			\$535.20	\$547.56	
Late payment charge is 2%. A bill payment is late if not made within 16 days of the date on which the bill is mailed.							

Schedule 3 Recommended 2017 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System

Sun Valley Home Owners Co-Op 2017 Projected Costs

Cost Item	Budget	Projected Cost
	2016	2017
	\$	\$
Hydro Electricity	1,900	2,200
Property Taxes	309	320
Laboratory Costs	2,255	2,255
Vehicle	2,870	2,870
Operator & Reports	15,290	15,580
Operation Materials	2,600	2,600
Maintenance Materials & Other	600	600
Machinery and Equipment	1,550	1,550
TOTAL	27,374	27,975
Cost Per Customer to the 17 Property Owners (Billings Sent Quarterly)		
Monthly (\$/month)	\$134	\$137
Annual (\$/year)	\$1,608	\$1,644

Schedule 4 Recommended 2017 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges

THE REGIONAL MUNICIPALITY OF DURHAM

WATER & SANITARY SEWER SYSTEMS MISCELLANEOUS CHARGES

(Excludes Any Applicable Taxes – except where noted)

Schedule 4 - Recommended 2017 Miscellaneous Charges	By-Law Schedule Reference		Existing 2016 Charges		Recommended 2017 Charges
	Water By-law #89- 2003	Sewer By-law #90- 2003	Water \$	Sewer \$	Note: Changes are in Bold \$
Item Number & Description					
SERVICE CONNECTION RELATED CHARGES					
1) Water Service Connection Charges, for single family and semi-detached residential lots including those for pre-installed stubs: a) 19mm (3/4") diameter - Base Rate – Apr 1 – Nov 30 - Winter Rate – Dec 1 – Mar 31 b) 25mm (1") diameter - Base Rate – Apr 1 – Nov 30 - Winter Rate – Dec 1 – Mar 31	D1		3,185.00 4,174.00		3,344.00 4,383.00
2) Water Service Connections, not covered above, including apartment buildings (from duplexes to multi floor buildings), townhouses and condominiums on blocks of land or recreational, institutional, commercial and industrial buildings: a) 19-mm (3/4") diameter minimum charge b) 25-mm (1") diameter minimum charge	D2		Actual Cost 3,185.00 3,715.00		Actual Cost 3,344.00 3,901.00
3) Inspection of an installation of a separate fire line on private property	D3		119.00		125.00
4) Sanitary Sewer Service Connection Charges for single family and semi-detached residential lots for pre-installed stubs 100 or 125mm (4" or 5") diameter: - Base Rate (Apr 1 – Nov 30) - Winter Rate (Dec 1 – Mar 31)		C1		3,660.00 4,767.00	3,843.00 5,005.00
5) Sanitary Sewer Service Connections, not covered above, including apartment buildings (from duplexes to multi-floor buildings), townhouses and condominiums on blocks of land or recreational, institutional, commercial and industrial buildings: - Minimum Charge		C2		Actual Cost 3,660.00	Actual Cost 3,843.00
6) Storm Sewer Service Connections: - Minimum Charge		C3		Actual Cost 3,660.00	Actual Cost 3,843.00

Schedule 4 - Recommended 2017 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2016 Charges		Recommended 2017 Charges
	Water By-law #89- 2003	Sewer By-law #90- 2003	Water \$	Sewer \$	Note: Changes are in Bold \$
7) Reuse of Water/Sewer Service Connection where building has been or will be demolished or removed: - Inspection fee	D4	C4		119.00 for both	125.00 for both
- Where a disused Water/Sewer Service Connection is to be replaced by the Region			See above service connection charges		
8) Disconnecting, rendering inoperable, reconnecting or restoring Water/Sewer connection	D5	C5	Actual Cost		Actual Cost
FRONTAGE CHARGES (see Notes 1 to 5)					
9) Standard 150-mm (6-inch) diameter Watermain (Note 3)	E1 & E2				
i) Cash cost (standard)					
- /metre			282.00		296.00
- /foot			85.95		90.22
ii) Per annum (see Note 2)					
- /metre		38.31		40.22	
- /foot		11.68		12.26	
10) Standard 200-mm (8-inch) diameter Watermain	E1 & E2				
i) Cash cost (standard)					
- /metre			328.00		344.00
- /foot			99.97		104.85
ii) Per annum (see Note 2)					
- /metre		44.56		46.74	
- /foot		13.58		14.25	
11) Standard 300-mm (12-inch) diameter Watermain	E1 & E2				
i) Cash cost (standard)					
- /metre			363.00		381.00
- /foot			110.64		116.13
ii) Per annum (see Note 2)					
- /metre		49.32		51.77	
- /foot		15.03		15.78	
12) Standard 200-mm (8-inch) diameter Sanitary Sewer (Note 3)		D1 & D2			
i) Cash cost (standard)					
- /metre				315.00	331.00
- /foot				96.01	100.89
ii) Per annum (see Note 2)					
- /metre			42.80	44.97	
- /foot			13.04	13.71	
13) Standard 250-mm (10-inch) diameter Sanitary Sewer		D1 & D2			
i) Cash cost (standard)					
- /metre				360.00	378.00
- /foot				109.73	115.21
ii) Per annum (see Note 2)					
- /metre			48.91	51.36	
- /foot			14.91	15.75	

Schedule 4 - Recommended 2017 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2016 Charges		Recommended 2017 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water \$	Sewer \$	Note: Changes are in Bold \$
14) Standard 300-mm (12-inch) diameter Sanitary Sewer i) Cash cost (standard) - /metre - /foot ii) Per annum (see Note 2) - /metre - /foot		D1 & D2		401.00 122.22 54.48 16.61	421.00 128.32 57.20 17.43
Note (1) – Customers requiring non-standard main sizes charged actual cost.					
Note (2) – Basis of per annum charges: Repayment period = 10 years Annual Interest rate = 6%					
Note (3) – Residential frontage charges to be assessed on the basis of a standard 150-mm (6-inch) diameter watermain and a standard 200-mm (8-inch) diameter sanitary sewer.					
Note (4) – Any frontage charges for non-standard main sizes, or any extraordinary circumstances, be assessed by the Commissioners of Finance and Works on a case by case basis to ensure full recovery.					
Note (5) – Rate may vary if estimated construction costs vary significantly from the rates noted above.					
MISCELLANEOUS CHARGES					
15) <u>Water Shut Off/Turn On</u> Initiated by Customer: During normal Regional working hours: - Shut Water Off - Turn Water On - Shut Off & Turn On During Same Call After normal Regional working hours: - Shut Water Off - Turn Water On - Shut Off & Turn On During Same Call Initiated by Region: For failure by the Customer to arrange with the Region for meter installation, replacement, repair or inspection or meter reading (off or on, each) For Water Shut Off Notification prior to shut off action being taken For Water Shut Off for collection action, (water not necessarily shut off) for non-payment of Water/Sewer bill, or any Regional invoice, or for violation of any provision of the Water System/Sewer System By-laws (water not necessarily shut off) Turn Water On	F1	E1		73.00 73.00 74.00 110.00 110.00 110.00 73.00 37.00 for both 94.00 for both 73.00 for both	77.00 77.00 78.00 110.00 110.00 110.00 77.00 39.00 for both 94.00 for both 77.00 for both
16) Standby charge while water service is shut off but not disconnected	F2		Standard Service Charge		Standard Service Charge

Schedule 4 - Recommended 2017 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2016 Charges		Recommended 2017 Charges
	Water By-law #89- 2003	Sewer By-law #90- 2003	Water \$	Sewer \$	Note: Changes are in Bold \$
17) Testing of Water Meter Initiated by Customer: - Deposit Fee where the meter is found to measure the flow of water within or below AWWA Specifications - Up to a maximum size of 25mm - Over 25mm Fee if meter is found to measure the flow of water above AWWA specifications	F3		209.00 209.00 Actual Cost No Charge		209.00 209.00 Actual Cost No Charge
18) Unmetered water used for construction (building purposes) per service	F4		87.00		110.00
19) Drawing Regional water from hydrant for purposes other than fire protection i) Area Municipalities - /cubic metre - /1000 gallons ii) Others - /cubic metre - /1000 gallons - Deposit - Meter Installation/removal - Minimum Charge - Administration Fee - Meter Assembly Rental - Daily - Minimum - Service Charge (monthly)	F5		3.38 15.36 3.38 15.36 460.40 - 460.40 121.40 - - -		3.38 15.36 3.38 15.36 1,000.00 104.00 - 121.40 3.50 25.00 25.00
20) Repair or replacement of frozen, damaged or missing water meter - Up to a maximum size of 19mm (3/4") - Over 19mm (3/4")	F6		205.00 Actual Cost		205.00 Actual Cost
21) Thawing of service pipes	F7		No Charge		No Charge
22) Thawing of private hydrants or unmetered Fire Lines	F8		Actual Cost		Actual Cost
23) Cleaning sanitary sewer services		E3		No Charge	No Charge
24) Repair to or renewal of sanitary building sewers		E4		No Charge	No Charge
25) Supplying Statement of Account	F9	E5	32.00 for both		33.00 for both
26) Charge for Regional Solicitor providing information	F10	E6	84.00 for both		88.00 for both
27) Processing of Dishonoured Payments	F11	E7	46.00 for both		46.00 for both
28) Account Payment Transfer Fee	F12	E8	10.00 for both		10.00 for both
29) Change of Occupancy	F13	E9	38.00 for both		40.00 for both
30) Charge for Late Payment of Water/Sewer Surcharge Rates	F14	E10	2%		2%
31) Lien Administration Fee	F15	E11	68.00 for both		71.00 for both
32) Installation and removal of anti-tampering devices on fire hydrants & curb stops	F16		126.00		132.00

Schedule 4 - Recommended 2017 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2016 Charges		Recommended 2017 Charges
	Water By-law #89- 2003	Sewer By-law #90- 2003	Water \$	Sewer \$	Note: Changes are in Bold \$
33) Water from Water Supply Plants, Water Pollution Control Plants, Works Depots & Bulk Filling Stations - /cubic metre - /1000 gallons - Minimum Volume Charge \$/per month - Occasional Users – Flat Rate - Account Administration Fee \$/year - Key deposit - Refundable on return of key - Swipe card	F17		2.84 12.91 49.60 35.90 121.00 206.00 171.00 -		2.84 12.91 49.60 35.90 121.00 206.00 171.00 35.00
34) Fire Flow tests: - Full test (May 1 – Oct 31) - Full test (Nov 1 – Apr 30) - Opening Hydrants (May 1 – Oct 31) - Opening Hydrant (Nov 1 – Apr 30)	F18		458.00 797.00 314.00 640.00		458.00 797.00 314.00 640.00
35) Sewage Surcharge and Compliance Agreements		E12		1,885.00	1,885.00
36) Disposal of Septic Tank and Holding Tank Waste and the disposal of Water Pollution Control Plant Sludge: a) Hauled Domestic Waste - /cubic metre - /1000 gallons b) Sludge from WPCP within the Regions of York and Durham and trucked to the incineration facilities at Duffin Creek WPCP - /cubic metre - /1000 gallons c) Annual charge for registration of Haulers (up to 10 vehicles) - Additional stickers if more than 10 vehicles, or replacement stickers – per sticker d) ICI Sector areas (discharges up to 50,000 gallons) e) ICI Sector areas (discharges of 50,001 to 100,000 gallons)		E2		19.56 88.93 16.19 73.59 175.00 10.20 522.75 1,024.59	19.56 88.93 16.19 73.59 175.00 10.20 522.75 1,024.59
37) Copies of By-laws Water System, Sewer System and Sewer Use (+ Applicable taxes)	F19	E13	18.20/copy		19.10/copy
38) Sewer TV Inspection Reports and Videos per report or video (+ Applicable taxes)		E14		17.80	20.43
39) Sewer Use By-law Agreement extra strength waste (\$/k.g.)				0.53	0.53
40) Sewer Appeal Application per request		E15		600.00	650.00

Schedule 5 Recommended 2017 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP

Description	2016 Rate (before appl. Taxes)		2017 Rate (before appl. Taxes)	
	\$	\$	\$	\$
Laboratory Fees Page 1 of 9				
ONTARIO DRINKING WATER REGULATION 170/03 PACKAGES				
DESCRIPTION				
Microbiological				
Presence/Absence Test (P/A for TC, EC)	\$14.30		\$14.30	
Treated Water (P/A, HPC or BKD)	\$26.50		\$26.50	
Well Water/Raw/Reg.319 (TC, EC)	\$27.50		\$27.50	
Well Water/Treated/Distribution (TC, EC, HPC)	\$37.70		\$37.70	
Resample Tests (e.g. MFHPC, MFTC)	\$13.30		\$13.30	
Resample Test (E.coli)	\$14.30		\$14.30	
Inorganic Chemical				
All Parameters required under Schedule 23 (As, B, Ba, Cd, Cr, Hg, Sb, Se, U)	\$80.60		\$80.60	
All Parameters required under Schedule 23 plus additional metals (Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, U, Zn)	\$80.60		\$80.60	
Inorganic Ions required under O.Regulation 170/03 (F, NO2, NO3, Na)	\$79.60		\$79.60	
Inorganic Ions required under O.Regulation 170/03 plus additional Ions (Hardness*, Ca, Mg, Na, K, Ammonia, F, Cl, Br, NO2, NO3, PO4, SO4)	\$79.60		\$79.60	
(Nitrite, Nitrate)	\$52.00		\$52.00	
(Sodium)	\$34.70		\$34.70	
(Fluoride)	\$34.70		\$34.70	
(Lead testing as required under O.Regulation 170)	\$35.70		\$35.70	
(Lead testing as required under O.Regulation 243) - For Standing & Flushed	\$102.00		\$102.00	
Organic Chemical				
THMs (Trihalomethanes)	\$102.00		\$150.00	
bromodichloromethane		bromoform		
dibromochloromethane		chloroform		
THM (Total)				
All Parameters required under Schedule 24 (Please see Parameters listed in O.Regulation 170/03)	\$1,087.30		\$1,087.30	
All Parameters required under Schedule 24 plus additional Organic Parameters (Includes all Parameters described under the following test CODES listed in this book - VOC, OC, TRIAZ, OP, PHENAC, CHLORPHEN, CARBUREA, GLYPH, DIPARA, PCB)	\$1,087.30		\$1,087.30	
Combined Packages				
York Region Drinking Water Package A (Includes DW2M (less TURB), Hg, B, Ba, U, VOC, OC, TRIAZ, OP, PHENAC, CHLORPHEN, CARBUREA, GLYPH, DIPARA, PCB)	\$1,285.20		\$1,285.20	
*Calculation included (no charge).				

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2016 Rate (before appl. Taxes)		2017 Rate (before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 2 of 9					
<u>MICROBIOLOGICAL CODES</u>					
<u>DESCRIPTION</u>					
O.Regulation 170/03					
Presence/Absence Test (P/A for TC, EC)	\$14.30		\$14.30		
Treated Water (P/A, HPC or BKD)	\$26.50		\$26.50		
Well Water/Raw/Reg.319 (TC, EC)	\$27.50		\$27.50		
Well Water/Treated/Distribution (TC, EC, HPC)	\$37.70		\$37.70		
Raw Water Intake, Municipal (TC, EC, BKD)	\$32.60		\$32.60		
Treated/Distribution Water (TC, EC, BKD, HPC)	\$42.80		\$42.80		
Resample Tests (e.g. MFHPC, MFTC)	\$13.30		\$13.30		
Resample Test (E.coli)	\$14.30		\$14.30		
New Mains					
New Water Mains (TC, EC, BKD, HPC)	\$42.80		\$42.80		
New Water Mains (TC, EC, BKD, HPC)+Thiosulphate	\$53.00		\$70.00		
Waste Water					
E.coli (Final Effluent)	\$16.30		\$16.30		
E.coli (Sludge / Cake)	\$30.60		\$30.60		
Final Effluent (TC, EC)	\$30.60		\$30.60		
Final Effluent (TC, EC, FS)	\$40.80		\$40.80		
Microscopic Examination	\$96.90		\$100.00		
Recreational Water					
E.coli (Lake/Beach/Creek/Pond/River)	\$14.30		\$14.30		
Lakes / Bathing beaches (TC, EC, FS)	\$37.70		\$37.70		
Any Single Membrane Filtration Test (eg. FC - MFFC, AE - MFAE, PS, SA etc.)	\$25.50		\$25.50		
Raw and Treated Water					
Algae Enumeration and Identification	\$75.50		\$100.00		
Algae by Microscopic Particulate Analysis	\$500.00		\$500.00		
Microcystin	\$153.00	MOE Reg O.160/03	\$153.00		
F Specific Coliphages	\$200.00		\$200.00		
Mycology (Fungi)					
Fungal Enumeration	\$21.40		\$21.40		
Fungal Identification (Consultation Required)	\$107.10		\$107.10		
Air Quality (Microbial - Bacteria, Yeasts & Molds)	\$54.10		\$54.10		
Enumeration of Bacteria, Yeast and Molds by RODAC plates (BHI & SAB/MEA)	\$50.00		\$50.00		
Protozoa Testing					
Cryptosporidium and Giardia (MBCG)	-		\$800.00		New
Cryptosporidium, Giardia and Microscopic Particulate Analysis (MBCGMPA)	-		\$1,100.00		New
Sterility (Spore) Testing					
Bacillus subtilis (DRY)	\$25.50		\$25.50		
Bacillus stearothermophilus (STEAM)	\$25.50		\$25.50		
Other Bacteriological Groups					
Private Wells (TC, EC)(Signed Report faxed next day)	\$76.50		\$76.50		
Iron Bacteria - Presence/Absence	\$54.10		\$54.10		
Sulphur Bacteria - Presence/Absence	\$54.10		\$54.10		
Iron & Sulphur Bacteria - Presence/Absence	\$85.70		\$85.70		
Enumeration for (TC, EC, FC, HPC, BKD, PS, AE or FS) per parameter	\$51.00		\$51.00		

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2016 Rate (before appl. Taxes)		2017 Rate (before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 3 of 9					
GENERAL INORGANIC CODES					
	Water	S/S/S	Water	S/S/S	
DESCRIPTION					
pH, Conductivity, Alkalinity	\$27.50	\$32.60	\$27.50	\$32.60	
Alkalinity	\$16.30	\$21.40	\$16.30	\$21.40	
Conductivity	\$11.20	\$16.30	\$11.20	\$16.30	
pH	\$11.20	\$16.30	\$11.20	\$16.30	
Fluoride by Ion Selective Electrode	\$21.40	\$27.50	\$21.40	\$27.50	
Total Residual Chlorine	\$11.20	\$19.40	\$11.20	\$19.40	
Free Residual Chlorine	\$11.20	\$19.40	\$11.20	\$19.40	
Colour	\$16.30	\$19.40	\$16.30	\$19.40	
Turbidity	\$16.30	\$19.40	\$16.30	\$19.40	
Biochemical Oxygen Demand (BOD5)	\$35.70	\$42.80	\$35.70	\$42.80	
Carbonaceous Biochemical Oxygen Demand (cBOD5)	\$35.70	\$42.80	\$35.70	\$42.80	
Chemical Oxygen Demand (COD)	\$31.60	\$37.70	\$31.60	\$37.70	
Dissolved Organic Carbon (DOC)	\$29.60	\$37.70	\$29.60	\$37.70	
Cyanide (Total)	\$40.80	\$47.90	\$40.80	\$47.90	
Cyanide (Free)	\$40.80	\$47.90	\$40.80	\$47.90	
Phenol	\$37.70	\$45.90	\$37.70	\$45.90	
Sulphide (H2S)	\$37.70	\$45.90	\$37.70	\$45.90	
Silicate (SiO3)	\$27.50	\$32.60	\$27.50	\$32.60	
Dissolved Solids (DS)	\$18.40	\$21.40	\$18.40	\$21.40	
Dissolved Solids, Ashed Dissolved Solids	\$26.50	\$29.60	\$26.50	\$29.60	
Volatile Dissolved Solids*					
Suspended Solids (SS)	\$15.30	\$17.30	\$15.30	\$17.30	
Suspended Solids, Ashed Suspended Solids, Volatile Suspended Solids*	\$21.40	\$24.50	\$21.40	\$24.50	
Total Solids (TS)	\$13.30	\$15.30	\$13.30	\$15.30	
Total Solids, Ashed Total Solids, Volatile Total Solids*	\$19.40	\$21.40	\$19.40	\$21.40	
Dissolved Solids, Suspended Solids, Total Solids	\$35.70	\$40.80	\$35.70	\$40.80	
Total Oil & Grease	\$53.00	\$63.20	\$53.00	\$63.20	
Total / Mineral / Animal & Vegetable* Oil & Grease	\$80.60	\$96.90	\$80.60	\$96.90	
Volatile Acids	\$30.60	\$30.60	\$30.60	\$30.60	
Moisture	-	\$19.40	-	\$19.40	
S/S/S = Sewage, Sludge and Soil					
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2016 Rate (before appl. Taxes)		2017 Rate (before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 4 of 9					
GENERAL INORGANIC CODES					
	<u>Water</u>	<u>S/S/S</u>	<u>Water</u>	<u>S/S/S</u>	
DESCRIPTION					
Ion Chromatography					
Hardness*, Ca, Mg, Na, K, Ammonia, F, Cl, Br, NO ₂ , NO ₃ , PO ₄ , SO ₄	\$79.60	\$95.90	\$79.60	\$95.90	
F, Cl, Br, NO ₂ , NO ₃ , PO ₄ , SO ₄	\$52.00	\$62.20	\$52.00	\$62.20	
Hardness*, Ca, Mg, Na, K, Ammonia	\$52.00	\$62.20	\$52.00	\$62.20	
Any One of the Above Single Elements by IC	\$34.70	\$40.80	\$34.70	\$40.80	
Nutrients by Segmented Flow Analyzer					
NH ₃ +NH ₄ , PO ₄ , NO ₂ , NO ₂ +NO ₃ , TKN, TP	\$98.90	\$118.30	\$98.90	\$118.30	
NH ₃ +NH ₄ , PO ₄ , NO ₂ , NO ₂ +NO ₃	\$59.20	\$70.40	\$59.20	\$70.40	
TKN, TP	\$59.20	\$70.40	\$59.20	\$70.40	
Any One of the Above Single Nutrients by SFA	\$38.80	\$46.90	\$38.80	\$46.90	
Metals					
Mercury (Hg) by Cold Vapour AA or AF	\$35.70	\$42.80	\$35.70	\$42.80	
Acid Soluble Metals by ICP (Al, Fe, Mn, Pb, Zn)	\$40.80	-	\$40.80	-	
Cation Scan by ICP (B, Ba, Be, Ca, K, Li, Mg, Na, SiO ₃ , Sr, U)	\$40.80	-	\$40.80	-	
Heavy Metals Scan by ICP (Water) (Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, Sb, Zn)	\$54.10	\$64.30	\$54.10	\$64.30	
Heavy Metals Scan by ICP (Sewage/Sludge/Soil) (As, Cd, Co, Cr, Cu, Mo, Ni, Pb, Se, Zn)	-	\$64.30	-	\$64.30	
Regulation 170 - Heavy Metals Scan by ICP (Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, U, Zn)	\$76.50	-	\$76.50	-	
Any One of the Above Single Metals by ICP	\$35.70	\$42.80	\$35.70	\$42.80	
(Lead testing as required under O.Regulation 170)	\$35.70	-	\$35.70	-	
(Lead testing as required under O.Regulation 243)	\$51.00	-	\$75.00	-	
Other elements such as (Ag, Ti, V, Tl, etc.) are available as single element requests.					
S/S/S = Sewage, Sludge and Soil					
* = Calculation Included (no charge)					

THE REGIONAL MUNICIPALITY OF DURHAM				
2017 FEES AND CHARGES (DRAFT)				
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY				
Description	2016 Rate		2017 Rate	
	(before appl. Taxes)		(before appl. Taxes)	
	\$	\$	\$	\$
Laboratory Fees Page 5 of 9				
<u>INORGANIC MONITORING PACKAGES</u>				
<u>DESCRIPTION</u>				
<u>Drinking Water</u>				
Drinking Water Package #1	\$96.90		\$96.90	
(pH, conductivity, alkalinity, chloride, fluoride, bromide, nitrite, nitrate, phosphate, sulphate, calcium, magnesium, sodium, potassium, ammonia, hardness*, ionic balance*, total anions*, total cations*, calculated dissolved solids*, calculated conductivity*, langelier index*)				
Drinking Water Package #2	\$149.90		\$149.90	
(colour, turbidity, Al, Fe, Mn, Pb, Zn) (pH, conductivity, alkalinity, chloride, fluoride, bromide, nitrite, nitrate, phosphate, sulphate, calcium, magnesium, sodium, potassium, ammonia, hardness*, ionic balance*, total anions*, total cations*, calculated dissolved solids*, calculated conductivity*, langelier index*)				
Drinking Water Package #2 with expanded metals	\$174.40		\$174.40	
(colour, turbidity, Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn) (pH, conductivity, alkalinity, chloride, fluoride, bromide, nitrite, nitrate, phosphate, sulphate, calcium, magnesium, sodium, potassium, ammonia, hardness*, ionic balance*, total anions*, total cations*, calculated dissolved solids*, calculated conductivity*, langelier index*)				
<u>Landfill Monitoring</u>				
Surface Water	\$370.30		\$370.30	
(BOD, COD, colour, phenol, total solids, suspended solids, dissolved solids*, pH, conductivity, alkalinity, fluoride, chloride, bromide, nitrite, nitrate, sulphate, phosphate, calcium, magnesium, sodium, potassium, ammonia, hardness*, total cations*, total anions*, ionic balance*, calculated dissolved solids*, calculated conductivity*, langelier index*, dissolved organic carbon, total kjeldahl nitrogen, total phosphorus, Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)				
(Filtration of Raw Landfill samples)	\$35.70		\$35.70	
*Calculation included (no charge).				

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2016 Rate (before appl. Taxes)		2017 Rate (before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 6 of 9					
<u>INORGANIC MONITORING PACKAGES</u>					
<u>DESCRIPTION</u>					
<u>Sewer Use By-law</u>		\$415.10		\$415.10	
Complete Inorganic Package					
sulphate, phenol, cyanide, Total/Mineral/Animal & Vegetable Oil & Grease					
Hg, Ag, Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Sn, Ti, Zn					
<u>Sewage and Industrial Waste</u>					
Monitoring Package #1		\$42.80		\$42.80	
(BOD5, suspended solids)					
Monitoring Package #2		\$100.00		\$100.00	
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus)					
Monitoring Package #2 plus Metals		\$161.20		\$161.20	
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus					
Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)					
Monitoring Package #3		\$149.90		\$149.90	
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus					
ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)					
Monitoring Package #3 plus Metals		\$211.10		\$211.10	
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus					
ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate					
Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)					
Monitoring Package #4 plus Metals		\$262.10		\$262.10	
(BOD5, CBOD5, susp. solids, total kjeldahl nitrogen, total phosphorus					
ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate, pH					
Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)					
<u>Sludge</u>					
Sludge Monitoring Package #1		\$116.30		\$116.30	
(total solids, total kjeldahl nitrogen, total phosphorus,					
ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)					
Sludge Monitoring Package #1 plus Metals		\$177.50		\$177.50	
(total solids, total kjeldahl nitrogen, total phosphorus,					
ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate					
Hg, As, Cd, Co, Cr, Cu, Mo, Ni, Pb, Se, Zn)					
Sludge Monitoring Package #2 (Agrisludge)		\$204.00		\$204.00	
(total solids, ashed total solids, volatile total solids*,					
total kjeldahl nitrogen, total phosphorus, ammonia+ammonium					
nitrite + nitrate, Hg, As, Cd, Co, Cr, Cu, K, Mo, Ni, Pb, Se, Zn)					
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description		2016 Rate		2017 Rate	
		(before appl. Taxes)		(before appl. Taxes)	
		\$	\$	\$	\$
Laboratory Fees Page 7 of 9					
ORGANIC MONITORING PACKAGES					
DESCRIPTION					
Drinking / Surface / Ground Water and Wastewater					
THMs (Trihalomethanes)					
bromodichloromethane	bromoform	\$102.00		\$102.00	
dibromochloromethane	chloroform				
THM (Total)					
BTEX by Purge & Trap GC/MS					
benzene	ethylbenzene	\$80.60		\$80.60	
m,p-xylene	o-xylene				
toluene					
Taste & Odour					
geosmin	2-methylisoborneol (MIB)	\$229.50		\$250.00	
2-isobutyl-3-methoxypyrazine	2-isopropyl-3-methoxypyrazine				
2,3,6-trichloroanisole	2,4,6-trichloroanisole				
Haloacetic Acids (Disinfection By-Products)					
bromochloroacetic acid	dibromoacetic acid	\$198.90		\$198.90	
dichloroacetic acid	monobromoacetic acid				
monochloroacetic acid	trichloroacetic acid				
Volatile Organic Compounds					
benzene	cis-1,2-dichloroethylene	\$128.50		\$128.50	
bromodichloromethane	trans-1,2-dichloroethylene				
bromoform	dichloromethane				
bromomethane	1,2-dichloropropane				
carbon tetrachloride	cis-1,3-dichloropropylene				
chlorobenzene	trans-1,3-dichloropropylene				
chlorodibromomethane	ethylbenzene				
chloroethane	styrene				
chloroform	1,1,2,2-tetrachloroethane				
chloromethane	toluene				
tetrachloroethylene (perchloroethylene)	1,1,1-trichloroethane				
1,2-dibromoethane(ethylene dibromide)	1,1,2-trichloroethane				
1,2-dichlorobenzene	trichloroethylene				
1,3-dichlorobenzene	trichlorofluoromethane				
1,4-dichlorobenzene	vinyl chloride				
1,1-dichloroethane	o-xylene				
1,2-dichloroethane	m,p-xylene				
1,1-dichloroethylene	THM (Total)				
methyl tert-butyl ether (MTBE)	xylene (Total)				
methyl ethyl ketone (MEK)	2-hexanone				
methyl isobutyl ketone (MIBK)	acetone				
1,1,1,2-tetrachloroethane	1,2,4-trichlorobenzene				
Pesticide/Herbicide Analysis					
Organochlorine Pesticides					
aldrin	endosulphan I	\$123.40		\$123.40	
a-BHC	endosulphan II				
b-BHC	endosulphan sulphate				
g-BHC (Lindane)	endrin				
a-chlordane	heptachlor				
g-chlordane	heptachlor epoxide				
p,p'-DDD	methoxychlor				
p,p'-DDE	mirex				
p,p'-DDT	oxychlordane				
o,p'-DDT	trifluralin				
dieldrin	toxaphene				

THE REGIONAL MUNICIPALITY OF DURHAM					
2017 FEES AND CHARGES (DRAFT)					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description		2016 Rate		2017 Rate	
		(before appl. Taxes)		(before appl. Taxes)	
		\$	\$	\$	\$
Laboratory Fees Page 8 of 9					
ORGANIC MONITORING PACKAGES					
DESCRIPTION					
<u>Pesticide/Herbicide Analysis</u>					
Triazine Herbicides					
alachlor (Lasso)	metolachlor	\$107.10		\$107.10	
ametryn	metribuzin (Sencor)				
atraton	prometon				
atrazine	prometryn				
cyanazine (Bladex)	propazine				
desethyl atrazine	simazine				
desethyl simazine					
Organophosphorus Pesticides					
chlorpyrifos (Dursban)	malathion	\$107.10		\$107.10	
chlorpyrifos-methyl (Reldan)	methyl parathion				
diazinon	mevinphos (Phosdrin)				
dichlorvos	parathion				
dimethoate	phorate (Thimet)				
ethion	temephos (Abate)				
fenchlorphos (Ronnell)	terbufos				
guthion (Azinphos-methyl)					
Phenoxy Acid Herbicides					
2,4-dichlorophenoxyacetic acid (2,4-D)		\$161.20		\$161.20	
2,4-dichlorophenoxybutyric acid (2,4-DB)					
2,4-dichlorophenoxypropionic acid (2,4-DP, Dichlorprop)					
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)					
bromoxynil	dinoseb				
dicamba	picloram				
diclofop-methyl	silvex (2,4,5-TP)				
Chlorophenols					
2,4-dichlorophenol	2,3,4,6-tetrachlorophenol	\$161.20		\$161.20	
2,4,6-trichlorophenol	2,3,4,5-tetrachlorophenol				
2,3,4-trichlorophenol	2,3,5,6-tetrachlorophenol				
2,4,5-trichlorophenol	pentachlorophenol				
Carbamate & Phenyl Urea Pesticides/Herbicides					
Aldicarb	Bendiocarb	\$239.70		\$239.70	
Carbaryl	Carbofuran				
Diuron	Triallate				
Benzo(a)pyrene					
Glyphosate	AMPA	\$198.90		\$198.90	
Diquat	Paraquat	\$198.90		\$198.90	
PCB Analysis					
Polychlorinated Biphenyls		\$80.60		\$80.60	
PAHs (Polynuclear Aromatic Hydrocarbons) by GC/MSD					
Acenaphthene	Chrysene	\$229.50		\$229.50	
Acenaphthylene	Dibenz(a,h)anthracene				
Anthracene	Fluoranthene				
Benzo(a)anthracene	Fluorene				
Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene				
Benzo(b)fluoranthene	1-Methylnaphthalene				
Benzo(g,h,i)perylene	2-Methylnaphthalene				
Benzo(k)fluoranthene	Naphthalene				
1-Chloronaphthalene	Phenanthrene				
1-Chloronaphthalene	Pyrene				
Open Characterization (Semi-quantitative)					
Volatiles		\$209.10		\$209.10	
(Scans for Volatile Organic Compounds)					
Extractables		\$246.80		\$246.80	
(Scans for Extractable Organic Compounds)					

THE REGIONAL MUNICIPALITY OF DURHAM			
2017 FEES AND CHARGES (DRAFT)			
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY			
Laboratory Fees Page 9 of 9			
ORGANIC MONITORING PACKAGES			
Industrial Sewer Use By-law Acid/Base/Neutral Compounds		\$214.20	\$214.20
di-n-butylphthalate	bis(2-ethylhexyl)phthalate		
Polychlorinated Biphenyls		\$80.60	\$80.60
Industrial Sewer Use By-law Volatile Organic Compounds		\$134.60	\$134.60
1,1,2,2,-tetrachloroethane	m/p-xylene		
1,2-dichlorobenzene	o-xylene		
1,4-dichlorobenzene	styrene		
benzene	tetrachloroethylene		
chloroform	toluene		
cis-1,2-dichloroethylene	trans-1,3-dichloropropylene		
dichloromethane	trichloroethylene		
ethylbenzene	xylene (Total)		
methyl ethyl ketone (MEK)			
Industrial Sewer Use By-law Nonylphenols & Ethoxylates (Subcontracted)		\$428.40	Subcontractor's Rate
nonylphenol	nonylphenol ethoxylates		
Durham/York/Peel Sewer Use By-law Organic Package		\$777.20	\$777.20
1,1,2,2,-tetrachloroethane	m/p-xylene		
1,2-dichlorobenzene	o-xylene		
1,4-dichlorobenzene	styrene		
benzene	tetrachloroethylene		
chloroform	toluene		
cis-1,2-dichloroethylene	trans-1,3-dichloropropylene		
dichloromethane	trichloroethylene		
ethylbenzene	xylene (Total)		
methyl ethyl ketone (MEK)			
di-n-butyl phthalate	bis (2-ethylhexyl) phthalate		
PCB (Total)			
nonylphenol	nonylphenol ethoxylates		
Total Petroleum Hydrocarbons (TPH) in Water (Subcontracted)		\$204.00	Subcontractor's Rate
This CCME method includes:			
a). BTEX-Purgeables by P&T GC/MS or HS GC/FID - gasoline range			
b). Extractables by GC/FID - diesel range			
c). Total Oil & Grease by Gravimetric - heavy oil range			
Legal Sample Fees and Legal Storage Fees			
Samples submitted under legal chain of custody	per sample	\$255.00	\$255.00
(To maintain an unbroken chain of custody for samples that may be used for litigation)			
Extended storage for legal samples (longer than 30 days)	per container per month	\$3.10	\$3.10
(Samples will be stored free of charge for 30 days from the date of final report)			
Court testimony by Regional Environmental Laboratory staff	per hour (including travel and wait time)	To be determined case-by-case	To be determined case-by-case
Mileage for appearance	per kilometre (actual)	\$0.55	\$0.55

Regional Municipality of Durham
2017 Water and Sanitary Sewer
User Rates
Detailed Report

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1. Background

1.1 Water and Sanitary Sewer User Rates Are Reviewed Annually

The Region's water and sanitary sewer user rates are reviewed annually and recommendations are made to Council in December, prior to a January 1st implementation of approved user rates.

The existing water and sanitary sewer user rates follow the same basic format as the uniform rates adopted in 1976. Since that time, user rates have been calculated in a consistent manner using a standard waterworks industry technique, the Base-Extra Capacity method. Rates are based on metered consumption with three declining rate blocks, a service charge (by meter size for water), and an unmetered fire line charge (water only).

The following report is related to this User Rates Report and was previously considered and approved by Council:

- **Report #2016-J-25: 2016 Asset Management Plan** – This report provides an update on Durham's asset management initiatives, including those related to the water and sewage systems. It provides important information regarding existing asset replacement values, condition and needs for existing asset rehabilitation and replacement. Findings of that report are used to formulate asset management strategies and replacement and rehabilitation capital investment plans.

The following report is being considered concurrently by Council:

- **Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study** – The implications of recommendations included in this report have been considered in developing the proposed 2017 water and sanitary sewer user rates.

Although the reports are separate, together they form the basis for planning and funding water and sewage system investments in a sustainable manner.

1.2 User Rates Implemented on January 1st of each year.

It is imperative that user rates be approved in 2016 in order that they can be implemented with the first customer billings commencing early January 2017. Any delay in implementation may mean that any required rate increase would have to be larger to generate sufficient revenue during the Region's fiscal year. In addition, it is considered preferable to adjust the rates during the low winter consumption period rather than have a rate increase occur at the same time as the spring/summer seasonal usage increase.

1.3 Public Notification Provided

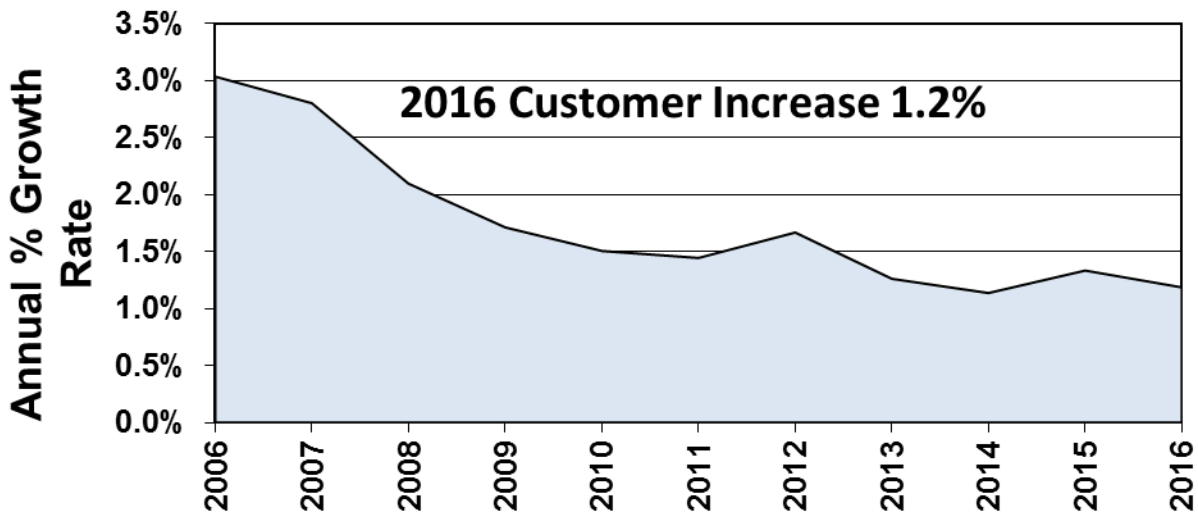
The proposed 2017 water and sanitary sewer user fees and related charges will be considered by the Committee of the Whole on December 7th and by Regional Council on December 14th 2016. Public notification of this was provided twice in local newspapers throughout the Region from November 17 to 24, 2016 and was posted on the Region's website. This affords the public an opportunity to make representation to Committee of the Whole and Regional Council regarding proposed changes to the user rates prior to adoption.

Printed copies of this user rate report are available to the public free of charge upon request or by accessing the Regional website.

2. Customer Growth Has Slowed

Actual annual water customer growth from 2006 to 2016 (June data) is shown in [Exhibit 1](#) below. June figures are used for rate calculation purposes as they represent the "average" number of customers for the year.

Exhibit 1 Yearly % Growth in Water Customers 2006 to 2016 Actual (June data)



Customer growth peaked at about 4.0% in 2004. Since then, the growth rate has decreased to 1.19% in the past year (June to June data). The highest growth rates occurred over the latter half of 2015.

For 2017 rate setting purposes, customer growth is projected to increase to 1.30% for water and 1.35% for sewage.

The actual June customer data from 2006 to 2016 and projected 2017 budget are provided in [Exhibit 2](#).

There were a total of 172,068 water customers and 167,894 sewage customers in June 2016. There are fewer sewer customers than water customers because there are Regional water supply services but no Regional sanitary sewer services provided in Orono, Newtonville, Blackstock, Greenbank, Uxville and most of Prince Albert. In addition, there are some individual customers in communities with sanitary sewers who are currently served only by the Regional water system.

Exhibit 2 Water & Sewage Customers 2006 to 2016 Actual & 2017 Budget (June to June)

Year	Water			Sewage		
	Total	Increase Over Previous June		Total	Increase Over Previous June	
		Number	Percent		Number	Percent
2006	146,615	4,321	3.0%	142,252	4,337	3.1%
2007	150,724	4,109	2.8%	146,400	4,148	2.9%
2008	153,884	3,160	2.1%	149,553	3,153	2.2%
2009	156,520	2,636	1.7%	152,219	2,666	1.8%
2010	158,877	2,357	1.5%	154,598	2,379	1.6%
2011	161,172	2,295	1.4%	156,907	2,309	1.5%
2012	163,860	2,688	1.7%	159,605	2,698	1.7%
2013	165,927	2,067	1.3%	161,683	2,078	1.3%
2014	167,813	1,886	1.1%	163,575	1,892	1.2%
2015	170,051	2,238	1.3%	165,844	2,269	1.4%
2016	172,068	2,017	1.2%	167,894	2,050	1.2%
2017 Budget	174,305	2,237	1.30%	170,161	2,267	1.35%

Note: The number of new sewage customers is greater than the number of new water customers due to the gradual servicing with sewage of existing water-only customers.

The projected 2017 increase in the number of water customers of 2,237 includes both residential and ICI (industrial, commercial and institutional) customers and is still less than the increase of 4,800 dwelling units provided in Report #2016-COW-82: 2017 Water and Sewer Servicing and Financing Study. This differential arises in part due to multi-unit developments, including apartment buildings and condominium corporations, representing multiple units but only one customer for billing purposes. There are currently approximately 207,700 *residential dwelling units* compared to about 167,500 *residential water customers* billed.

2017 projected customer growth is summarized as follows:

The projected customer growth for 2017 is:

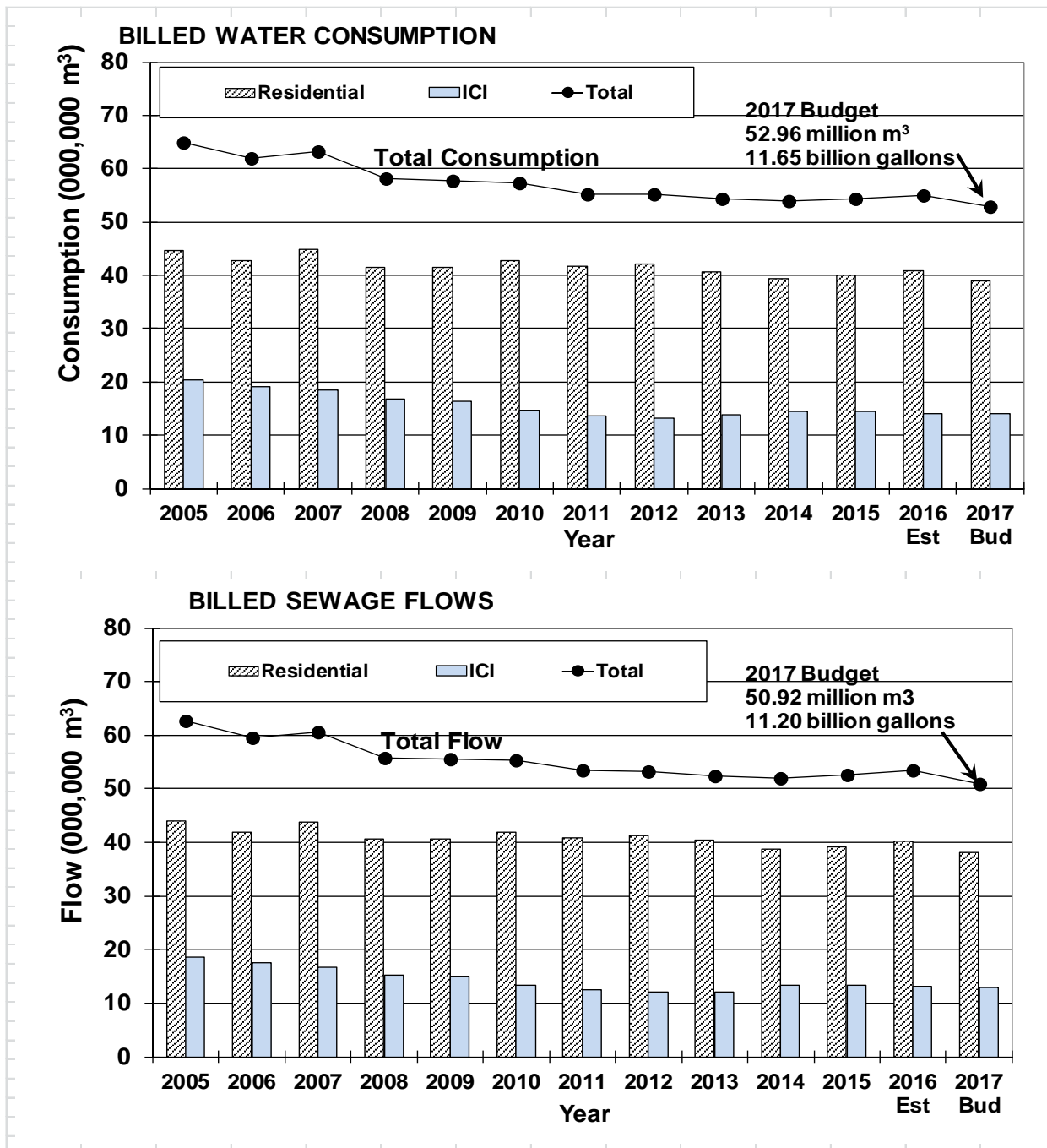
- **Water increase by +2,237 (+1.30%) to a total of 174,305**
- **Sewage increase by +2,267 (+1.35%) to a total of 170,161**

3. Water Demand is Stable

3.1 Historical Consumption

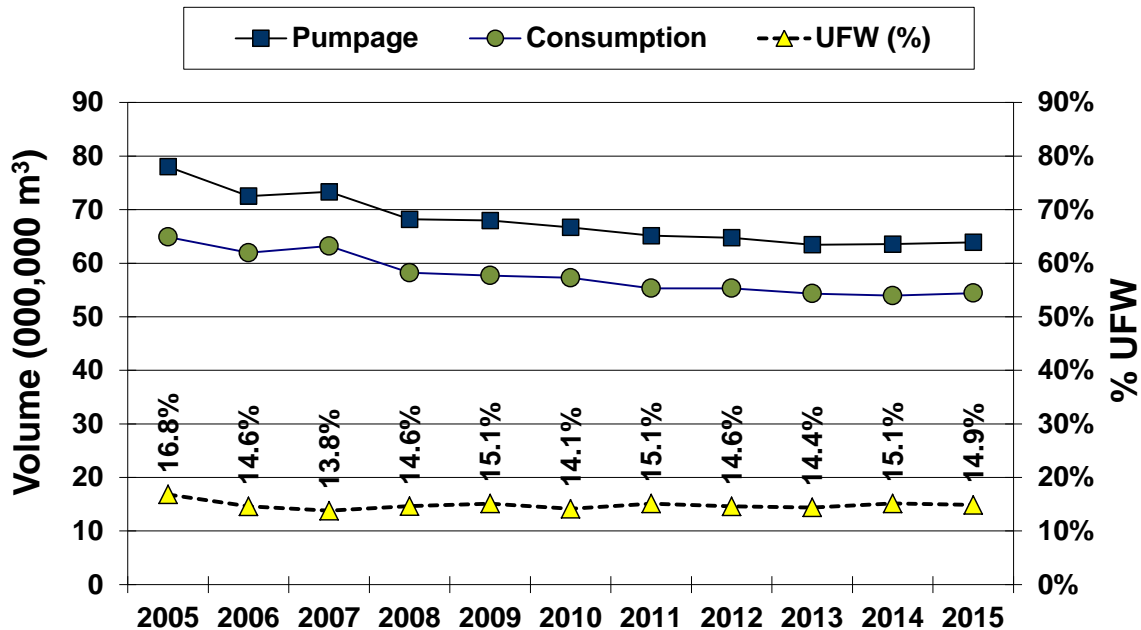
Actual residential, ICI (industrial, commercial and institutional) and total volumes billed to customers for water and sewage from 2005 to 2015, and the 2016 estimated and 2017 Budget, are graphed in Exhibit 3. As noted above there has been a general decrease in consumption over the period with increases in 2007 and 2016 attributable to drier than normal summers and attendant irrigation usage. This year higher consumption is projected due to a very dry summer.

Exhibit 3 Billed Water Consumption & Flows



Actual water supply, consumption and Unaccounted For Water (UFW) volumes from 2005 to 2015 are shown below in Exhibit 4.

Exhibit 4 Water Pumpage, Billed Consumption & Unaccounted for Water



Note: 1,000,000 cubic metres = 1,000 megalitres (ML)
 1 cubic metre = 220 Imperial gallons

Total pumpage and billed consumption follow parallel paths. The trend has been generally downward over the period. Exceptions were 2005 and 2007, both very dry summers with attendant higher seasonal usage. Consumption in 2015 also has a slight increase – it was also a drier than normal summer. Generally over the period there has been a downward trend in consumption.

UFW (also known as NRW – Non Revenue Water) losses have been calculated based on the difference between billed consumption and pumpage. This is also referred to as Non-Revenue Water (NRW) since it mostly represents water pumped but not billed. The biggest component is watermain leakage but also includes unmetered usage such as water used for main flushing and firefighting.

UFW in recent years has been in a range of about 14% to 15%. This is considered fairly normal, but efforts are continually made to limit or reduce UFW losses through various programs such as cathodic protection and cement lining of cast/ductile iron mains and replacement of old infrastructure including mains, water meters and polybutylene water services.

The water meter replacement program results in a reduction in unbilled water due to timely replacement of old meters which can under-record flows later in their lifecycle. This improves revenues due to higher billed usage (and hence lowers the calculated UFW).

Without these initiatives, leakage would be expected to increase as systems age. See also [Section 6.3](#) for a detailed update on water system losses.

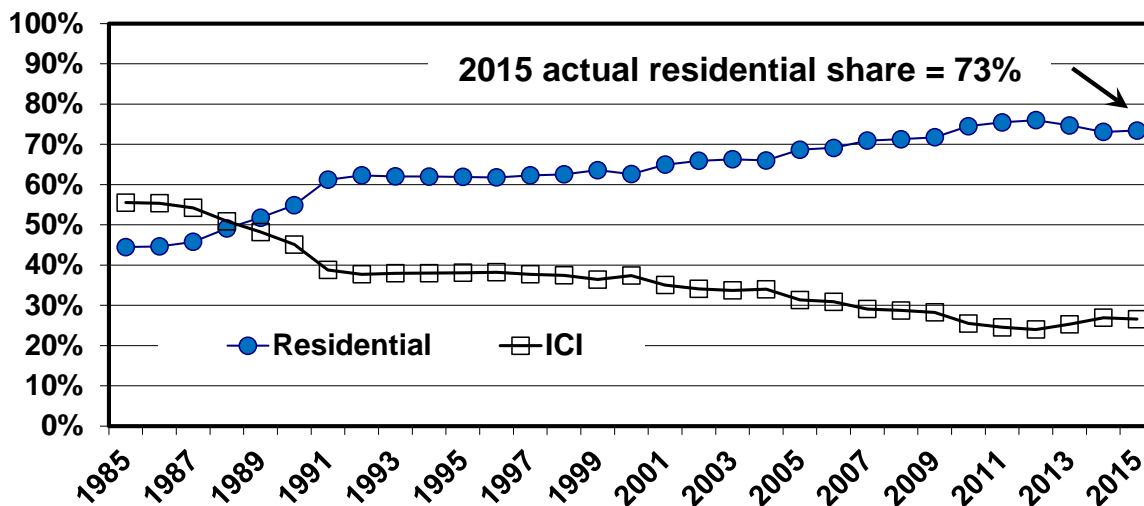
3.3 Residential Consumption

3.3.1 Residential Usage Share - Stable

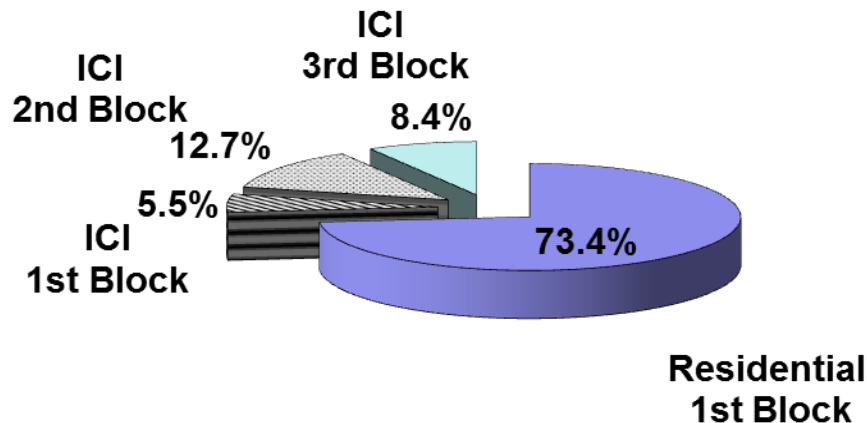
Over the years there has been a steady increase in the share of consumption by residential customers and a corresponding decrease by ICI customers. Residential usage has grown from about a 44% share in 1985 to a 76% share in 2012. The change was due to a combination of strong residential growth, and for a number of years, decreases in large ICI customer consumption. The trend reversed in 2013 with the reopening of a production facility that was shut down in 2010 by one of our largest ICI customers. Facilities were upgraded using a different paper recycling process with a resulting increase in industrial water usage.

Annual consumption share is illustrated in [Exhibit 5](#). The residential share is currently about 73%.

Exhibit 5 Billed Water & Sewage Volumes – Residential versus ICI (1985 to 2015)



The distribution of 2015 consumption by block and customer class is illustrated in [Exhibit 6](#).

Exhibit 6 2015 Water Consumption Share by Block

All residential and some ICI consumption is billed at 1st block rates. Only ICI water users enter the 2nd and 3rd blocks. Consumption by block is broken down as follows:

- **1st block** (including ICI up to 10,000 gallons/month or 45 m³/month) - All residential usage is billed at 1st block rates and these customers represent the majority of usage. Total 1st block consumption for all customers represented 78.9% of all usage in 2015 (ICI 5.5% + Residential 73.4%).
- **2nd block** (ICI 10,001 to 1,000,000 gallons/month or 46 to 4,500 m³/month) – This segment’s consumption has leveled off in recent years and currently is about 12.7% of the total.
- **3rd block** (ICI over 1,000,000 gallons/month or 4,500 m³/month) – Large user consumption decreased from about 8.8% of total usage in 2014 to about 8.4% in 2015.

3.3.2 Residential Usage - Stable

Although Durham continues to see residential customer growth, usage per customer has been trending downwards for some time - the combined impact is a steady decrease in total residential usage.

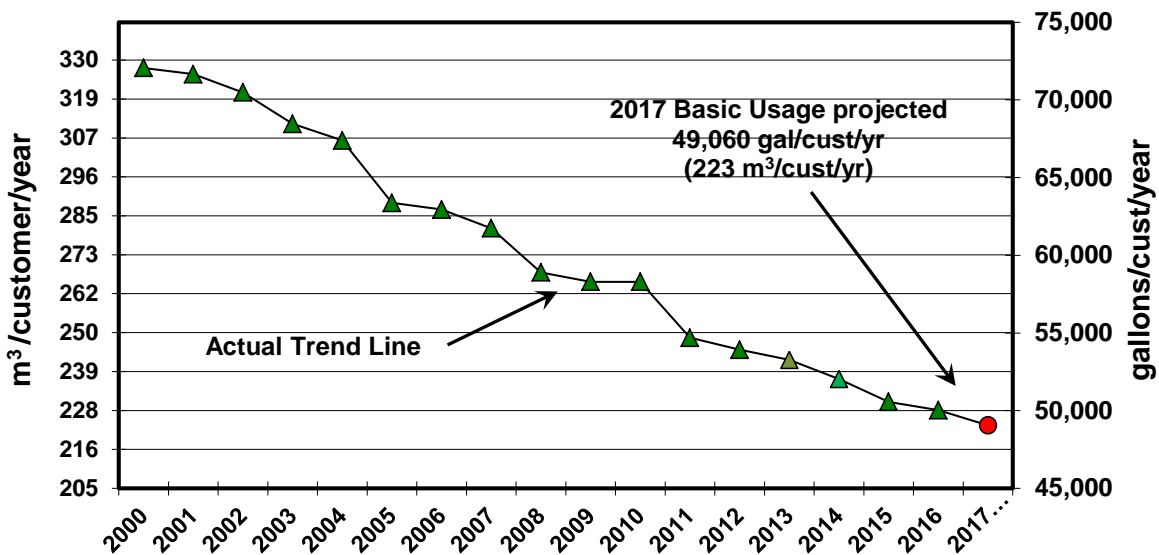
Residential consumption can be broken down into two components:

- **Basic Usage** - Basic usage is due to day-to-day activities that occur year-round such as kitchen, bathroom and laundry usage.
- **Seasonal Usage** – Seasonal usage is mostly outdoors during the summer months (May to September) and varies from year-to-year. During dry summers the level increases and in wet summers it is less.

Basic Usage – Although the number of residential customer continues to grow, **basic (day-to-day) usage per customer has been decreasing since about 2000. This steady drop in usage by existing residential customers tends to more than offset the impact on total residential consumption from the addition of new customers.**

The **decrease in basic per customer residential billed usage** is illustrated in **Exhibit 7.**

Exhibit 7 Basic Annual Residential Water Usage per Customer (excludes seasonal usage)



Actual 2016 **basic usage** is 227 m³/cust/yr (50,040 gal/cust/yr). It is still gradually trending downward over time – this year dropping by 1.1%. The level projected for 2017 is 223 m³/cust/yr (49,060 gal/cust/yr). This is consistent with the long-term trend. It is expected that the consumption per customer will level off at some point, but this has not yet occurred.

The downward trend in residential **basic usage** (day-to-day consumption) is a result of a number of initiatives which began in the 1990's:

- The Province revised the Ontario Building Code in 1996 to require low flush toilets (6.0 litres per flush) and low flow showerheads (9.85 litres per minute) in new construction. This started the trend towards more efficient household usage in new homes. The Province again revised the Ontario Building Code in 2012. The new Code has measures requiring high-efficiency (6.0 litre/flush) toilets in new single family residential construction or renovation (while still permitting the roughly equivalent 3/6 litre dual flush), and installation of low flow (7.6 litres/min) showerheads in all residential construction.
- New appliances, especially washing machines, are designed to use significantly less water.

Examples	Older	Newer
Toilets	10 to 20 litres per flush	Single Family Dwellings - 6.0 litres per flush (1)
Showerheads	Up to 30 litres per minute	Low Flow 7.6 litres per minute
Dishwashers	36 to 63 litres per load	31 to 45 litres per load
Washing Machines	Top loading 175 litres per load	Front loading 50 to 100 litres per load
Note 1) Ontario Building Code		

- The cost of water efficient appliances such as efficient toilets and front-loading washers has continued to decline to the point where many families find them affordable. The availability of widely available and affordable water efficient plumbing fixtures and appliances has resulted in ongoing decreases in consumption without the need to subsidize replacement of fixtures.
- There is a changing housing development format which results in smaller lot size, requiring lower seasonal usage.

- The Region is participating in the Priority Green Clarington where there are six homes built in Bowmanville with features that go beyond energy efficiency and water conservation standards required by the Ontario Building Code. Their energy and water usage are being monitored by the municipality. This will potentially provide information on the impact of advanced water conservation measures on residential customer usage. The homes in the Clarington Green Demonstration Project averaged 162 m³ (35,700 gallons) consumption in 2015 – see sidebar. This is about 30% below the Regional average and indicates that there is still potential for future reduction in residential per customer water use as conservation measures continue to be adopted.

Clarington Green Demonstration Project

Six new homes in Clarington built in 2014 were fitted with water and energy conservation measures that surpass minimum Building Code requirements. Measures included low flow toilets and showers as well as grey water reuse. Consumption was monitored to assess the potential impact of conservation

Logically, the steady decrease in **basic usage** per capita must eventually level off. Although the rate of decrease has moderated, there is no evidence that this has yet occurred.

Basic residential usage represents the majority of residential usage and is the most important element in projecting residential use.

Seasonal Usage - Seasonal volumes are mostly due to outside usage such as lawn irrigation. Year-to-year weather variations can result in very little seasonal usage in wet years (examples 2008 and 2013) to significant seasonal usage in dry years (examples 2005, 2007 and 2015). It can vary on average from about 5 m³/cust/yr (1,000 gal/cust/yr) up to about 32 m³/cust/yr (7,000 gal/cust/yr), depending on summer weather conditions. Revenue projections in the past have assumed very little seasonal usage. For 2017 the assumption has been increased modestly but is still below 85% of actual cases. The budget levels are shown in the chart below.

Total Usage - Total usage per residential customer (including basic usage plus a minimal allowance for seasonal usage) was budgeted to be 230 m³ (50,500 gallons) per year in 2016. For budgeting purposes, the decrease in base usage is expected to be offset by an increase in the allowance for seasonal usage. The 2017 residential usage is budgeted at 230 m³ (50,500 gallons) in 2017.

3.3.3 Residential Consumption Summary

Type of Usage	Per Customer		Total Annual	
	2016 Budget	2017 Budget	2016 Budget	2017 Budget
Cubic Metres				
Basic	225	223		
Seasonal Allowance	5	7		
Total	230	230	38,445,000	38,911,000
Gallons			(000)	(000)
Basic	49,500	49,060		
Seasonal Allowance	1,000	1,440		
Total	50,500	50,500	8,458,000	8,560,000

The projected total per customer residential consumption for 2017 budget purposes includes a decreased allowance for basic usage plus an increased allowance for seasonal usage. The total annual residential usage is slightly higher than that used for the 2016 budget.

3.4 ICI Consumption

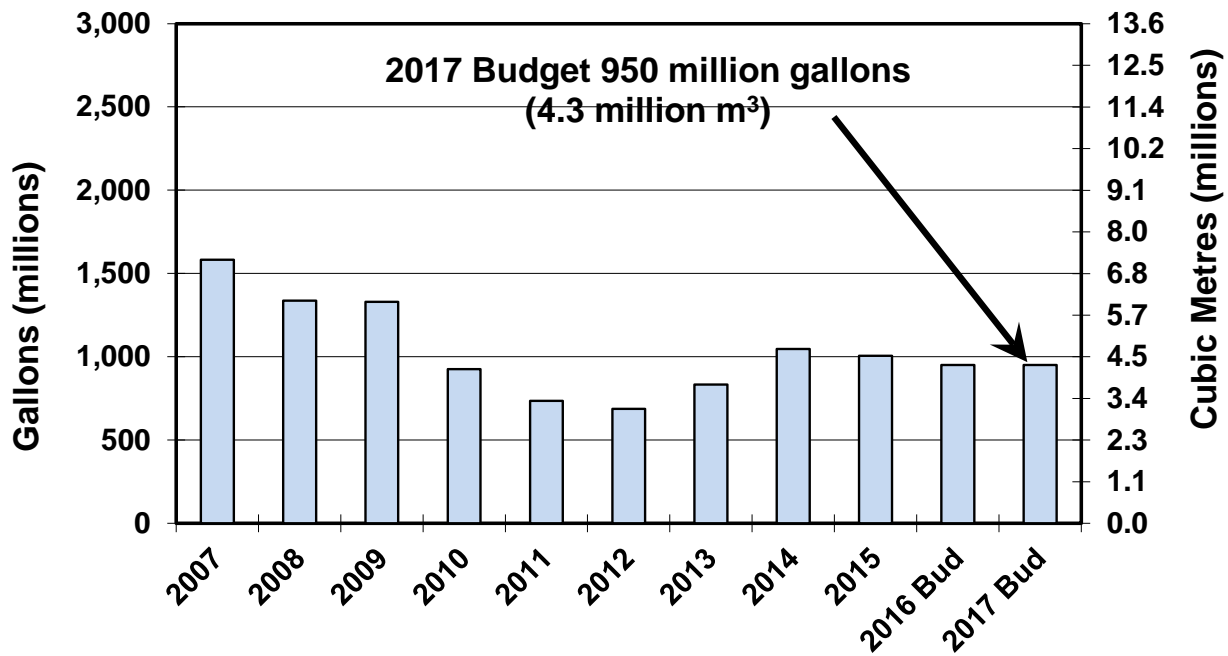
3.4.1 Small to Medium ICI Customer Usage – Constant

Water usage in the 1st and 2nd blocks represented about 18.2% of total usage in 2015. No change is projected for 2017 compared to 2016 budget.

3.4.2 Large Industry Usage - Constant

Actual 3rd block consumption is graphed for 2007 to 2015 in [Exhibit 8](#), as well as 2016 and 2017 Budget consumption. The large industry sector is responsible for 3rd block consumption and represented about 8.4% of total consumption in 2015.

Exhibit 8 3rd Block Water Consumption 2007 to 2017



Until recently, third (3rd) block water consumption has been in decline, having decreased 61% from 2006 to 2012 – an average of about 8% per year. Plant closures and cutbacks as well as conservation efforts all contributed. This trend reversed in 2013 when a former large water user that had curtailed operations in early 2010 returned to full operations in the second half of 2013.

By July this year, 27 customer accounts representing 19 customers had reached 3rd block rates. This is a decrease of one in the number of 3rd block accounts compared to 2015.

The projected 2017 3rd block Water Budget usage is 4.3 million cubic metres (950 million gallons).

3.4.3 ICI Consumption Summary

ICI consumption is projected to remain stable in 2017 compared to 2016 Budget. Thus the first, second and third block 2017 ICI consumptions are unchanged from the 2016 Budget levels.

ICI Consumption Summary

ICI Summary	Water	Sewage
Cubic metres		
<i>1st block</i>	2,864,000	2,773,000
<i>2nd block</i>	6,818,000	6,045,000
<i>3rd block</i>	4,318,000	4,000,000
Total	14,000,000	12,818,000
Gallons (000)		
<i>1st block</i>	630,000	610,000
<i>2nd block</i>	1,500,000	1,330,000
<i>3rd block</i>	950,000	880,000
Total	3,080,000	2,820,000

3.5 Total Consumption

Actual Consumption/Flow for 2011 to 2015 and budget levels for 2016 and 2017 are shown in [Exhibit 9](#).

Exhibit 9 Water Consumption & Sewage Flows 2011-2015 Actual & 2016/17 Budget

Year	Water			Sewage		
	Residential	ICI	Total	Residential	ICI	Total
Cubic Metres*						
2011 Actual	41,734,629	13,574,963	55,309,592	40,934,589	12,410,016	53,344,605
<i>Change</i>	0.7%	-2.3%	0.0%	0.8%	-2.8%	-0.1%
2012 Actual	42,042,355	13,265,250	55,307,605	41,252,009	12,065,400	53,317,409
<i>Change</i>	-3.5%	3.6%	-1.8%	-2.3%	-0.1%	-1.8%
2013 Actual	40,575,214	13,741,618	54,316,832	40,316,205	12,052,018	52,368,223
<i>Change</i>	-2.9%	5.7%	-0.7%	-4.0%	10.2%	-0.7%
2014 Actual	39,414,691	14,529,182	53,943,873	38,703,464	13,282,205	51,985,668
<i>Change</i>	1.3%	-0.5%	0.9%	1.4%	0.8%	1.3%
2015 Actual	39,942,818	14,462,622	54,405,440	39,262,916	13,382,187	52,645,103
2016 Budget	38,445,000	14,000,000	52,445,000	37,591,000	12,818,000	50,409,000
<i>Change</i>	1.2%	0.0%	0.9%	1.2%	0.0%	0.9%
2017 Budget	38,911,000	14,000,000	52,911,000	38,059,000	12,818,000	50,877,000
Gallons (000)*						
2016 Budget	8,458,000	3,080,000	11,538,000	8,270,000	2,820,000	11,090,000
<i>Change</i>	1.2%	0.0%	0.9%	1.2%	0.0%	0.9%
2017 Budget	8,560,000	3,080,000	11,640,000	8,373,000	2,820,000	11,193,000

* Note: 1 cubic metre = 220 Imperial gallons OR 1,000 gallons = 4.54 cubic metres

The water consumption and sewage flows are projected to increase by about 0.9% in 2017 from 2016 budget levels.

The 2017 water consumption and sanitary sewage flow projections take into account the following:

- Continuing reduction is assumed in basic usage per residential customer.
- Low levels of summer seasonal usage by residential customers (moderate increase from previous allowances).
- Usage by ICI customers remaining constant.

Taking the foregoing into account, 2017 consumption is budgeted as follows:

- **Water consumption is projected to increase by 0.9% compared to 2016 Budget to 52,911,000 cubic metres (52.9 MegaLitres) (11,640,000,000 gallons)**
- **Sewage flow billed is projected to increase by 0.9% to 50,877,000 cubic metres (50.9 ML) (11,193,000,000 gallons)**

4. The Recommended 4.9% Increase in the Water User Rates & 2.3 % Increase in the Sanitary Sewer User Rates are Needed to Finance the Proposed 2017 Expenditure Budgets

4.1 User Rate Revenue Requirements

The proposed preliminary 2017 water and sanitary sewerage expenditure budgets require a water rate increase of 4.9 % and a sewer rate increase of 2.3 %.

The proposed preliminary 2017 Budget expenditures and revenue sources, including user rate revenue requirements is summarized in Exhibit 10 for water and Exhibit 11 for sanitary sewerage.

Additional information on the capital program is available from Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study. Detailed 2017 Budgets and Business Plans are scheduled for presentation to Committee and Council in early December 2016.

4.2 Water Supply System

Approximately \$ 5.76 million in additional user rate revenues is required to support increased expenditures. This is generated by a combination of:

User Rate Increase - The proposed 4.9 % water rate increase generates \$ 4.91 million in additional revenues;

Customer Growth - Customer growth adds \$ 0.60 million; and,

Consumption Increase - Projected increased consumption (compared with 2016 Budget) will add to revenues by \$ 0.25 million.

The proposed preliminary 2017 user rate supported water system expenditures of \$101.49 million represent an increase of \$ 5.76 million over 2016 budget levels.

4.3 Sanitary Sewerage System

Approximately \$ 3.26 million in additional user rate revenues is required to support increased sanitary sewerage system expenditures. This is generated by a combination of:

User Rate Increase - The proposed 2.3 % sewage rate increase generates an additional \$ 2.24 million in additional revenue;

Customer Growth - Customer growth adds \$ 0.22 million; and,

Consumption Increase - Projected increased consumption (compared with 2016 Budget) will increase budgeted revenues by \$ 0.80 million.

The proposed preliminary 2017 user rate supported sanitary sewerage system expenditures of \$ 97.90 million represent an increase of \$ 3.26 million compared to 2016 budget.

Exhibit 10 Revenues Required from 2017 Water Rates

Budget Category	2016	2017 Proposed	Increase/(Decrease)	
	Approved Budget (\$)	Preliminary Budget (\$)	(\$)	(%)
A) Operations (net)				
Operations, Maintenance & Administration	57,316,000	58,787,100		
Less Other Revenues	10,000	10,000		
Operations from Current User Rates	57,306,000	58,777,100	1,471,100	2.6%
B) Tangible Capital Assets				
Construction of Municipal Services (Gross Cost)	47,080,000	64,327,600		
Operations Capital	2,073,000	2,481,000		
Total Capital Program	49,153,000	66,808,600		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	10,455,000	8,482,400		
- Development Charge Reserve Fund - Commercial	313,000	248,400		
- Development Charge Debenture	0	0		
- Other Financing	160,000	15,575,700		
Total Non User Rate Financing	10,928,000	24,306,500		
Capital Program from User Rates Revenue Sources	38,225,000	42,502,100		
Less User Rate Financing (Debt/Reserves)				
- User Rate Debenture	0	0		
- Asset Management Reserve Fund	4,089,000	4,293,000		
Total User Rate Financing	4,089,000	4,293,000		
Capital Program from Current User Rates	34,136,000	38,209,100		
Contribution to Asset Management Reserve Fund	4,294,000	4,508,700		
Current User Rates Capital Program/Contributions	38,430,000	42,717,800	4,287,800	11.2%
C) Debt				
Expenditure	0	0		
Less Development Charge Reserve Funds Applied	0	0		
Debt from User Rates	0	0	0	
E) Current User Rate Revenue Requirements				
Total Expenditures	106,469,000	125,595,700	19,126,700	
Total Reserve Fund Contributions	4,294,000	4,508,700	214,700	
Less Total Revenues & Recoveries	(15,027,000)	(28,609,500)	(13,582,500)	
Total Current User Rate Revenues Required	95,736,000	101,494,900	5,758,900	6.0%
Equivalent Water User Rate Increase		4.9%		
F) Impact of Changes in Customers & Consumption on Rate Increase				
Component		Revenue Change (\$)	Rate Increase	
Increased revenue needed for expenditures		5,758,900	5.8%	
Decreased revenue needed due to higher consumption		(250,800)	-0.3%	
Reduced revenue needed due to customer growth		(599,600)	-0.6%	
Added Revenue From Rate Increase		4,908,500	4.9%	

Exhibit 11 Revenues Required from 2017 Sewage Rates

Budget Category	2016 Approved Budget (\$)	2016 Proposed Preliminary Budget (\$)	Increase/(Decrease)	
			(\$)	(%)
A) Operations (net)				
Operations, Maintenance & Administration	58,345,000	59,655,400		
Less Other Revenues	37,000	37,000		
Operations from Current User Rates	58,308,000	59,618,400	1,310,400	2.2%
B) Tangible Capital Assets				
Construction of Municipal Services (Gross Cost)	138,042,000	72,029,500		
Operations Capital	865,000	1,862,000		
York Durham Capital	227,000	304,000		
Total Capital Program	139,134,000	74,195,500		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	9,204,000	14,494,600		
- Development Charge Reserve Fund - Commercial	1,895,000	531,500		
- Development Charge Debenture	14,489,000	0		
- Other Financing	87,802,000	29,907,100		
Total Non User Rate Financing	113,390,000	44,933,200		
Capital Program from User Rates Revenue Sources	25,744,000	29,262,300		
Less User Rate Financing				
- User Rate Debenture	0	0		
- Asset Management Reserve Fund	3,498,000	3,778,000		
- Treatment Plant/Rate Stabilization Reserve Fund	0	3,875,000		
Total User Rate Financing	3,498,000	7,653,000		
Capital Program from Current User Rates	22,246,000	21,609,300		
Contribution to Asset Management Reserve Fund	3,778,000	7,841,900		
Current User Rates Capital Program/Contributions	26,024,000	29,451,200	3,427,200	13.2%
C) Debt				
Expenditures				
- Existing Regional Debt	18,685,000	18,199,500		
- Existing York Durham Debt	3,235,000	3,232,100		
Total Debt	21,920,000	21,431,600		
Less Development Charge Reserve Fund	11,618,000	12,603,400		
Net Debt from User Rates	10,302,000	8,828,200	(1,473,800)	-14.3%
E) Current User Rate Revenue Requirements				
Total Expenditures	219,399,000	155,282,500	(64,116,500)	
Total Reserve Fund Contributions	3,778,000	7,841,900	4,063,900	
Less Total Revenues & Recoveries	(128,543,000)	(65,226,600)	63,316,400	
Total Current User Rate Revenues Required	94,634,000	97,897,800	3,263,800	3.4%
Equivalent Sewer User Rate Increase		2.3%		
F) Impact of Changes in Customers & Consumption on Rate Increase				
Component		Revenue Change (\$)	Rate Increase	
Increased revenue needed for expenditures		3,263,800	3.4%	
Decreased revenue needed due to higher consumption		(800,100)	-0.9%	
Reduced revenue needed due to customer growth		(218,600)	-0.2%	
Added Revenue From Rate Increase		2,245,100	2.3%	

4.4 Recommended 4.9% Water Rate & 2.3 % Sewage Rate Increases

The recommended user rates are based on the proposed expenditure and revenue budgets, customer growth and projected consumption levels. Details of the customer, consumption and proposed budget data used in the rate calculations are provided above.

Proposed 2017 User Rate Increases	
Water	+ 4.9 %
Sewage	+ 2.3 %
Combined Average Impact	+ 3.6 %

This report is part of the 2017 Regional Business Planning and Budget Process.

In order to support the proposed preliminary 2017 Water Supply and Sanitary Sewerage Budgets, it is recommended that current user rates be increased by **4.9%** for water and **2.3%** for sewage (combined average residential customer increase of **3.6%**).

The recommended user rate adjustments are caused by a combination of increases in number of customers and decreases to consumption, combined with increased expenditure requirements compared with 2016 Budget levels.

Based on 2017 customer and consumption projections, these rates are estimated to generate \$101,494,900 for water and \$97,897,800 for sanitary sewer. With the application of other revenues and reserve funds and debenture financing the total expenditures supported are \$125,595,700 for water and \$155,282,500 for sanitary sewer.

Water and sanitary sewerage system user rate funding (current rates and financing) is applied to water and sewage system operating costs (59% share) and capital (41% share - including current capital programs, long term debt repayment and reserve fund contributions). Operating costs are entirely recovered from user rates.

Capital costs relate to replacement of aging infrastructure, work is needed to meet regulatory requirements and growth not recovered from development charges. Long term debt repayments are for large projects funded by debenture. As systems age, capital investments pressures have continued to grow with an increase in the budget share (capital program plus debt payments) from 25% in 2004 to 41% in 2017.

The recommended 2017 water and sanitary sewer user rates are provided in Schedule 1 - Recommended 2017 Water User Rates and Schedule 2 - Recommended 2017 Sewage User Rates of the Summary to this Detailed Report.

4.5 Recommended 5.9% Raw Water Rate Increase

The Region supplies untreated raw water from the Whitby Water Supply Plant (WSP) to three water customers located within the South Whitby Industrial Area. All three are also supplied with potable water.

There are two raw water customers located on South Blair Street. They are served by a Whitby WSP raw water pumping station and a repurposed (formerly potable) watermain that was installed in 1912. The third raw water customer is located to the east of South Blair Street and served by a second WSP raw water pumping station and raw water main built in 1977.

The raw water pumping stations are separate from the potable water treatment facilities, but the water intake and wet well are shared. The raw water is treated with chlorine, but otherwise receives no further treatment.

The raw water system operating costs are fully recovered by means of a raw water volumetric rate, updated annually and included in Schedule 1. The volume of raw water supplied to each customer is metered and they are charged for this volume based on the approved raw water rate. On an ongoing basis the raw water rate fully recovers the costs associated with operating the raw water system, including pumping and main maintenance.

Capital costs related to construction, modifications or upgrades to the raw water supply are recovered directly from the raw water customers. There are no capital costs in the raw water rate included in Schedule 1. In the case of the 1977 system serving the customer to the east of South Blair Street, the works were constructed by the customer and turned over to the Region. The cost of raw water system capital improvements carried out by the Region have been recovered using separate capital charges that were set up when capital work was carried out. All past capital charges have been repaid by the affected raw water customers and there are currently no raw water system capital charges outstanding.

Some of the raw water facilities are quite old and need upgrading or replacement including the two existing raw water pumping stations at the Whitby WSP as well as the South Blair Street raw water main. The upgrade to the Whitby WSP, projected for 2019, is a catalyst for needed raw water system upgrades.

In addition to meeting the needs of existing raw water customers, a fourth nearby existing large potable water user has expressed interest in changing from potable water to raw water. If this were to proceed, supplying this additional raw water would affect the raw water works at the Whitby WSP as well as requiring a new extension of the existing raw watermain to the customer property. It would also affect the raw water rate and recovery of capital costs related to raw water system improvements.

Prior to any commitment to designing and incorporating new raw water facilities at the Whitby WSP, a written commitment from affected customers to funding any raw water system capital costs would be needed.

Regional staff have been carrying out preliminary discussions with all parties related to possible supply options and financial implications. When faced with upgrade costs some of the existing raw water customers may opt to change to the potable water system. One of the customers on South Blair Street has in fact indicated it is likely to change to a potable water supply early next year.

The recommended 2017 raw water rate of \$0.286/m³ (\$1.300/1,000 gal) represents a 5.9% increase over the 2016 raw water rate. This increase reflects current operating costs for the Central water plants as well as the impact on the rate of lower projected 2017 raw water consumption. The recommended raw water rate is shown in Schedule 1 – Recommended 2017 Water User Rates.

Regional staff will keep Council updated on any potential new raw water capital project or customers.

4.6 Recommended Sun Valley Heights Homeowners Co-operative Water System Charges

The recommended charges for the Sun Valley Heights Homeowners Co-operative Water System are provided in Schedule 3 – Recommended 2017 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System.

- The charge is based on system actual costs and results in a recommended increase of 2.2% from \$1,608 to \$1,644 annually (\$134 to \$137 monthly) for 2017.

The following provides some background on Sun Valley:

- The Sun Valley Heights Homeowners Co-operative water supply system is a privately owned water supply system servicing 17 individual residential properties in the City of Oshawa, north of Conlin Road and west of Thornton Road.
- On August 3, 2000, the Region of Durham was issued an order pursuant to Section 62 of the Ontario Water Resources Act to maintain and operate the existing private water system owned by Sun Valley Heights Homeowners Co-operative.
- The Region is currently operating the Sun Valley system in compliance with the order and requirements of Ontario Drinking Water Protection Regulation 170/03 (formerly Regulation 459/00). The costs incurred to operate and maintain the system are billed to each property owner on a quarterly basis.

4.7 Recommended Miscellaneous Fees & Charges

Water System By-law #89-2003 (as amended) and Sewer System By-law #90-2003 (as amended) establish a variety of fees and charges that the Region can use to recover the actual cost of providing day-to-day and individual services related to the Region's water and sewage systems.

Water and sewage systems rates, fees and charges for 2016 (current) and 2017 (recommended) are set out in Schedule 4 – Recommended 2017 Water & Sanitary

Sewer Systems Miscellaneous Fees & Charges of this report. All fees and charges where changes are recommended are **bolded**.

The recommended 2017 fees and charges are based on tracking actual costs over time. Many fees remain unchanged from 2016. Others have been adjusted higher due to increased costs relative to 2016 (by up to about 5%).

Specific considerations and circumstances warrant changes to the following fees and charges:

- **Items 1) to 14) Water & Sanitary Sewer Systems Connection and Frontage Charges** – A 2014 analysis of actual frontage costs indicated these fees should be substantially increased in order to achieve full cost recovery with the increases phased in over a 3-year (2015 to 2017) period. The first two phases were implemented in the 2015 and 2016 Miscellaneous Charges. The originally planned 2017 completion of the phase-in has been extended in order to lessen the impact and in order to further phase in the frontage charges. The recommended 2017 connection and frontage charges represent an increase of 5% over 2016 charges.
- **Item 18) Unmetered Water used for construction (building purposes) per service** – The volume of water used during home or building construction up until completion and meters are installed, typically during subdivision construction, is charged to builders by means of the building purposes charge. The charge is levied based on number of water services being built. It covers water usage until meters are installed. Water meters are not installed in new house construction until it is virtually complete and meter freezing is not an issue. Currently the charge is equivalent to about 87 m³ (19,200 gallons) of water usage per water service. An initial investigation indicates water usage could be upwards of 200 m³ (44,000 gallons) per home or more. Study of the situation will continue. In the meantime an increase in the allowance to 110 m³ (24,200 gallons) (\$110.00) per home equivalent based on current water rates is recommended (see also Section 6.5).

4.8 Recommended Regional Environmental Laboratory Charges

The Regional Environmental Laboratory is located at the Duffin Creek WPCP. The lab ownership is shared with the Region of York. The lab is operated by Durham Region with costs and revenues part of the Region's Duffin Creek WPCP operating budget. The laboratory operating costs are to be fully recovered from fees and charges. The following are recommended changes to the existing fee schedule for 2017:

- Six (6) fees have been increased (see pages 1, 2, 4 & 7 of 9),
- Two (2) new tests have been added (page 2 of 9 - shown as "New")
- Three (3) fees have been eliminated from the existing 2016 fee schedule including two (2) private wells tests (page 2 of 9 in 2016 schedule) and "Polychlorinated Biphenyls" test (page 8 of 2016 schedule)
- Two (2) have been changed from a fixed rate to "subcontractor's rate" (see page 9 of 9 – these procedures are subcontracted out),

The recommended charges for laboratory services are set in Schedule 5 – Recommended 2017 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP.

5. Customer Impact

5.1 User Rate Impact on Customers of Various Sizes

Water and sewer charges to various sized customers are provided in Exhibit 12.

Exhibit 12 Rates Impact on Customers of Various Sizes

									Water Rate Increase =		4.9%	
									Sewer Rate Increase =		2.3%	
									Average Residential Combined Increase =		3.5%	
Customer Category			2016 Billing			2017 Billing			Increase			
Gallons/yr	m ³ /year	Meter Size	Water	Sewage	Total	Water	Sewage	Total	Water	Sewage	Total	%
Quarterly Billings (\$/qtr)												
20,000	91	Standard Meter	72.90	57.72	130.62	76.47	59.05	135.52	3.57	1.33	4.90	3.8
50,500	230	Avg 2017 Std Meter	107.44	115.73	223.17	112.70	118.39	231.09	5.26	2.66	7.92	3.5
60,000	273	Flat Rate	118.20	133.80	252.00	123.99	136.88	260.87	5.79	3.08	8.87	3.5
100,000	455	Standard Meter	163.50	209.88	373.38	171.51	214.71	386.22	8.01	4.83	12.84	3.4
Bimonthly Billings (\$ bimonthly)												
100,000	455	Standard Meter	109.00	139.92	248.92	114.34	143.14	257.48	5.34	3.22	8.56	3.4
200,000	909	Standard Meter	368.06	589.30	957.36	386.12	602.86	988.98	18.06	13.56	31.62	3.3
5 million	22,730	2" Meter	3,536	5,610	9,146	3,710	5,740	9,450	174	130	304	3.3
50 million	227,270	4" Meter	31,212	49,060	80,272	32,740	50,184	82,924	1,528	1,124	2,652	3.3
150 million	681,820	6" Meter	91,102	142,842	233,944	95,558	146,118	241,676	4,456	3,276	7,732	3.3

5.2 User Rate Impact on Average Residential Customer

The impact on a typical residential customer of the proposed 2017 water and sewage user rate charges are shown below in Exhibit 13.

Exhibit 13 Rates Impact on Average Residential Customer

	Water Rate Increase = 4.9%			
	Sewer Rate Increase = 2.3%			
	Combined Increase = 3.6%			
	Billings		Increase	
	2016	2017		
	(\$)	Proposed (\$)	(\$)	(%)
Based on 50,500 gal/year (230 m³/yr) Consumption				
Water	107.51	112.78	5.27	4.9%
Sewage	115.85	118.51	2.66	2.3%
Total (\$/quarter)	223.36	231.29	7.93	3.6%
Annual Billing (\$/year)	893.44	925.16	31.72	3.6%
Impact of Reduced Base Usage on an Average Customer				
Average Consumption Reduction =		440	gallons/cust/year	
		2.0	m³/cust/year	
Average Water + Sewage Bill Savings =		\$5.51	\$/year or	0.6%

The average residential customer who used 230 m³ (50,500 gallons) in both 2016 and 2017 would have a bill increase of 3.6%.

5.3 User Rate Impact on 25 Largest Customers

Examples of projected water and sewer charges to the Region's 25 largest customers, using the current 2016 user rates and recommended rates for 2017 are provided in Exhibit 14.

Exhibit 14 Rates Impact on 25 Largest Users (Using 2015 Actual Consumption Data - \$/year)

										Water Rate Increase = 4.9%	
										Sewer Rate Increase = 2.3%	
Rank	2015 Consumption		2016 Rates			2017 Rates			Combined Increase		
	(m ³)	(000 gal)	Water (\$)	Sewage (\$)	TOTAL (\$)	Water (\$)	Sewage (\$)	TOTAL (\$)	\$	%	
1	2,211,610	486,550	1,731,350	2,750,820	4,482,170	1,816,040	2,813,890	4,629,930	147,760	3.3%	
2	522,840	115,020	417,250	660,220	1,077,470	437,670	675,360	1,113,030	35,560	3.3%	
3	417,530	91,860	335,330	529,900	865,230	351,740	542,050	893,790	28,560	3.3%	
4	291,530	64,140	237,290	344,510	581,800	248,900	352,410	601,310	19,510	3.4%	
5	286,300	62,990	233,220	367,450	600,670	244,630	375,880	620,510	19,840	3.3%	
6	236,580	52,050	194,520	305,890	500,410	204,050	312,910	516,960	16,550	3.3%	
7	235,580	51,830	193,750	304,650	498,400	203,230	311,640	514,870	16,470	3.3%	
8	159,220	35,030	134,320	45,160	179,480	140,900	46,190	187,090	7,610	4.2%	
9	154,460	33,980	130,610	204,210	334,820	137,010	208,900	345,910	11,090	3.3%	
10	149,150	32,810	126,470	197,630	324,100	132,670	202,160	334,830	10,730	3.3%	
11	148,620	32,700	126,080	197,010	323,090	132,260	201,530	333,790	10,700	3.3%	
12	144,170	31,720	122,620	191,490	314,110	128,620	195,890	324,510	10,400	3.3%	
13	133,470	29,360	114,270	178,210	292,480	119,870	182,300	302,170	9,690	3.3%	
14	120,080	26,420	103,870	161,670	265,540	108,960	165,380	274,340	8,800	3.3%	
15	114,100	25,100	99,200	92,550	191,750	104,060	94,670	198,730	6,980	3.6%	
16	97,810	21,520	86,540	134,100	220,640	90,780	137,180	227,960	7,320	3.3%	
17	97,140	21,370	86,010	133,250	219,260	90,220	136,310	226,530	7,270	3.3%	
18	92,260	20,300	82,220	127,230	209,450	86,250	130,160	216,410	6,960	3.3%	
19	91,960	20,230	81,980	126,840	208,820	85,990	129,750	215,740	6,920	3.3%	
20	89,270	19,640	79,890	7,410	87,300	83,810	7,580	91,390	4,090	4.7%	
21	76,380	16,800	69,850	220	70,070	73,270	230	73,500	3,430	4.9%	
22	75,420	16,590	69,100	106,360	175,460	72,490	108,800	181,290	5,830	3.3%	
23	64,380	14,160	60,510	92,680	153,190	63,470	94,810	158,280	5,090	3.3%	
24	64,340	14,150	60,470	92,630	153,100	63,440	94,760	158,200	5,100	3.3%	
25	63,510	13,970	59,840	91,610	151,450	62,770	93,720	156,490	5,040	3.3%	
Total	6,137,710	1,350,290	5,036,560	7,443,700	12,480,260	5,283,100	7,614,460	12,897,560	417,300	3.3%	

Note: Highlighted customers have reduced sewage charges (sewer appeals).

5.4 Durham's User Rates Compared with Other Ontario Municipalities

5.4.1 Background on User Rate Formats Used

A water and sewage rates survey has been carried out of 20 municipalities (including Durham) across Ontario. The 2016 rate information, the most recent available for all municipalities, is used for this comparison.

Durham owns and operates water and sewage systems that range from large urban areas in the south to smaller urban areas in the rural north. The survey includes 12 other larger municipalities (see [Exhibit 16](#)) that offer a comparison for Durham's southern tier systems as well as 7 nearby smaller municipalities (see [Exhibit 17](#)) which might be of more interest to customers in Durham's smaller systems.

Water and sewage rate structure formats typically include a fixed service charge and a volumetric charge. The rate structure formats used in each municipality are decided locally. There are no Provincial regulations related to municipal water and sewage rate formats. The survey found very little consistency across the province in terms of rate formats used in the various municipalities.

Fixed service charges fall into three categories:

- **Single Rate** - All customers pay the same service charge.
- **Rate Based on Meter Size** - Service charge based on customer meter size. A higher rate is applied for larger meters.
- **No Service Charge** – Charges are based solely on volume of water used. Toronto and Peel only have volumetric rates and do not have fixed charges.

Volumetric charges fall into four categories. Customer meter readings are used to calculate the volumetric charges. All municipalities surveyed have volumetric rates. The volumetric rate formats are mostly the same for all customers in a municipality, but vary in some municipalities between residential and non-residential customers:

- **Single Block Rate (SBR)** – The same rate is charged for all usage.
- **Increasing Block Rate (IBR)** – Rates increase in steps as usage increases (normally targets higher residential usage).
- **Declining Block Rates (DBR)** – Rates decrease in steps as usage increases (normally for non-residential only).
- **Humpback Rates (HBR)** – Consumption blocks initially increase and then decrease as consumption increases. Two municipalities have HBR. Halton's rates increase and eventually decrease to the initial rate. Kingston's rates eventually decrease below the initial rate so that large customers in essence receive declining block rates.

The following is a summary of how often the different rate formats were encountered in the survey:

Exhibit 15 Summary of Rate Formats Used in 20 Surveyed Municipalities

Description	Residential		ICI	
	Number	%	Number	%
Service Charges				
Single Charge	4	20%	4	20%
Based on Meter Size	14	70%	14	70%
No Service Charge	2	10%	2	10%
Total	20	100%	20	100%
Volumetric Rates				
Single Block Rate	12	60%	9	45%
Increasing Block Rate	5	25%	4	20%
Declining Block Rate	1	5%	5	25%
Humpback Rate	2	10%	2	10%
Total	20	100%	20	100%

- **Service Charges** – Most municipalities (90%) include a service charge (either a single rate or one based on meter size) as part of their water rates.
- **Residential Volumetric Rates** – The majority (60%), including Durham, charge single block rates to residential customers. Another 35% essentially charge increasing block rates (including the 10% using humpback rates). One charges declining block rates.
- **ICI Volumetric Rates** – The largest category is single block rates at 45% of municipalities. Declining block rates is the next most popular at 25% which increases to 30% if the fact that London's humpback rates go into declining block rates for higher volumes. Increasing block rates are used in 20% of the municipalities. Humpback rates are used in 10% of municipalities (5% if London's declining rates for large volume users is considered declining block rates).

Other features:

- **Sewer Charged Based on Water Usage** – All surveyed municipalities base sewage charges on water consumption.
- **Allowance for Seasonal Usage on Sewage Bill** – The majority bill sewage year-round based on water consumption. For residential only, Peel deducts 15% from water usage when calculating the sewage bill. Windsor bills for sewage in the summer based on a customer's winter usage. This is feasible because Windsor bills residential customers monthly based on actual meter readings.

➤ **Universal Metering** - All surveyed municipalities are metered.

Note that Durham does not recover water and sewage costs from the property tax levy. Some municipalities may use property taxes to recover a portion of water and sewage costs with the result that the user charge comparison may not pick up all of the costs faced by customers in the other municipalities.

5.4.2 Residential Customer Impact

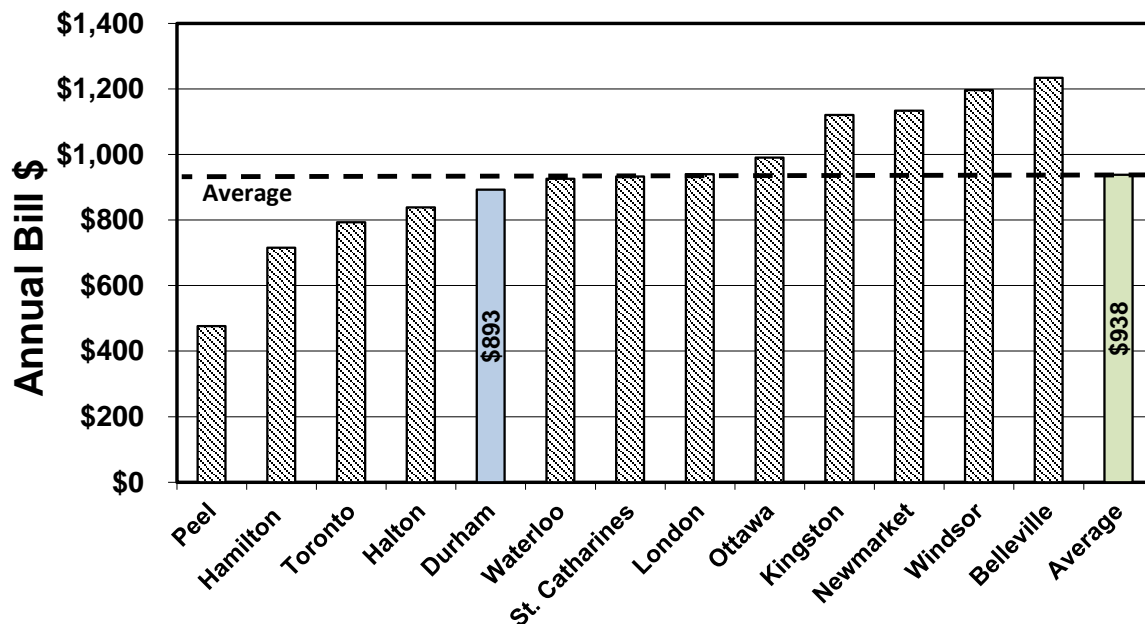
The analysis is based on a customer using 230 m³/year (50,500 gallons/yr). This represents a typical 2016 Durham residential usage per dwelling unit. It is just under 20 m³/month/unit (4,200 gal/month/unit).

Large Municipalities - Water and sewage rates have been surveyed for 12 other medium to large-sized municipalities across the province (13 including Durham).

Most of the municipalities, like Durham, have sole responsibility for water and sewage. Three, the City of Waterloo (in Waterloo Region), the Town of Newmarket (in York Region) and St. Catharines (in Niagara Region), are part of two-tier utilities. In these three municipalities the upper tier regions are responsible for major facilities such as treatment, water storage and trunk mains. The lower tier local municipalities are responsible for local facilities, such as distribution mains and street sewers as well as the customer billings.

Comparative charges are graphed in Exhibit 16.

Exhibit 16 Comparative 2016 Residential Water/Sewage Charges (230 m³/year) – Large Municipalities

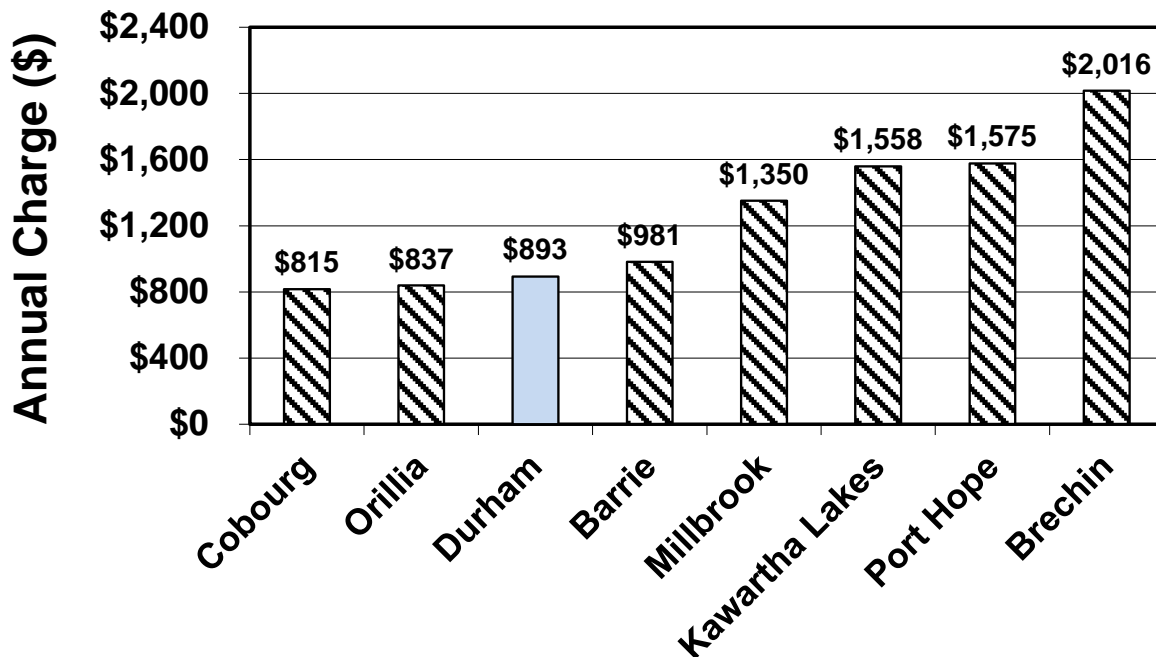


Durham is the fifth lowest out of the 13 in the survey.

The overall average 2016 combined water and sewage bill for 230 m³ (50,500 gallons) annual consumption is \$938 per year compared to \$893 in Durham.

Neighbouring Municipalities - Typical 2016 charges to a residential customer have also been calculated for seven neighbouring communities - see [Exhibit 17](#).

Exhibit 17 Comparative 2016 Residential Water/Sewage Charges (230 m³/yr) – Neighbouring Municipalities

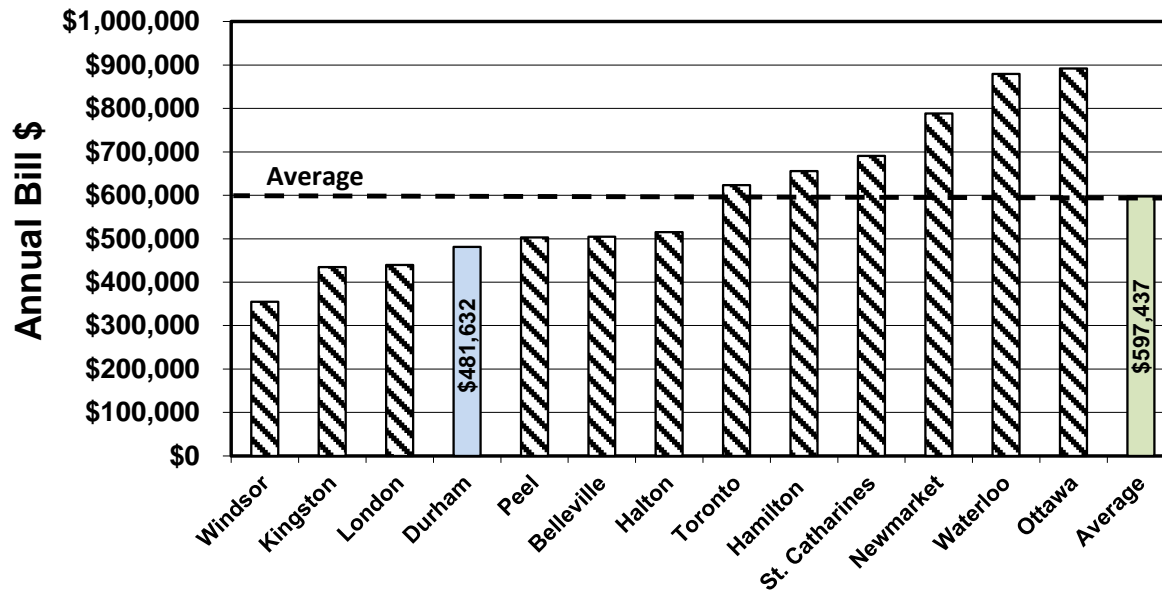


Durham is at the low end of user rate charges. Comparisons are sometimes made difficult because of the use of the property tax to recover some costs. For example, Cobourg recovers some sewage costs from property taxes.

5.4.3 Large Customer Impact

The analysis is based on 227,000 m³/year (50 million gallons). This is a large water user and may not exist in some of the municipalities in the comparison. In Durham it represents about our 7th largest customer. Comparative charges are graphed in [Exhibit 18](#).

**Exhibit 18 Comparative 2016 Large Industry Water & Sewage Charges
(227,000 m³/yr) – Large Municipalities**



Durham was the fourth lowest out of the 13 in the survey. The overall average combined water and sewage bill was \$597,437 per year compared to \$481,632 in Durham.

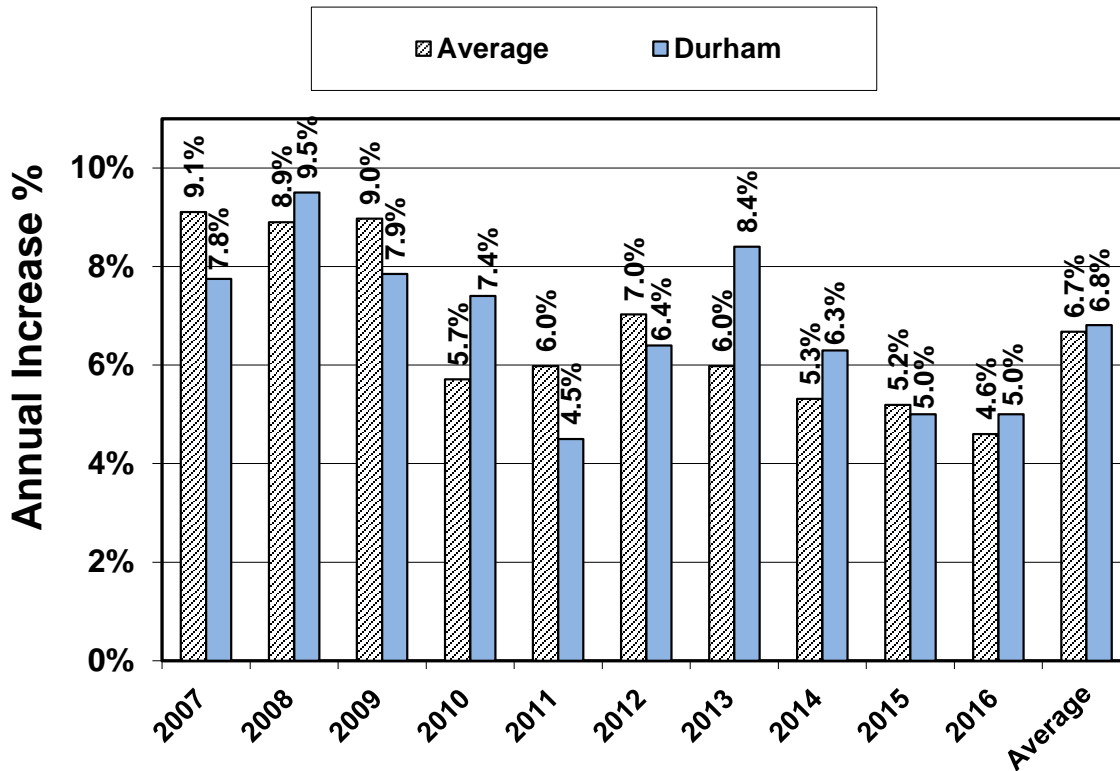
No comparative analysis was done for small local municipalities since most, if not all, would not have customers with this level of consumption.

5.4.4 Historical Rate Increases

Province Wide - The Walkerton tragedy forced municipalities and the province to recognize growing infrastructure deficiencies. Ontario municipalities have needed to increase water and sewage user rates in order to fund ever increasing regulatory requirements as well as investments needed to fund infrastructure replacement needs. Rate increases also need to be incorporated to offset decreased water usage.

Average water and sewage rate increases faced by customers using 230 m³/year (50,500 gallons) in the 13 larger municipalities surveyed are graphed in Exhibit 19. Note that since average consumption per customer is generally falling over time, the actual impact on customer bills would be less than shown as usage decreases.

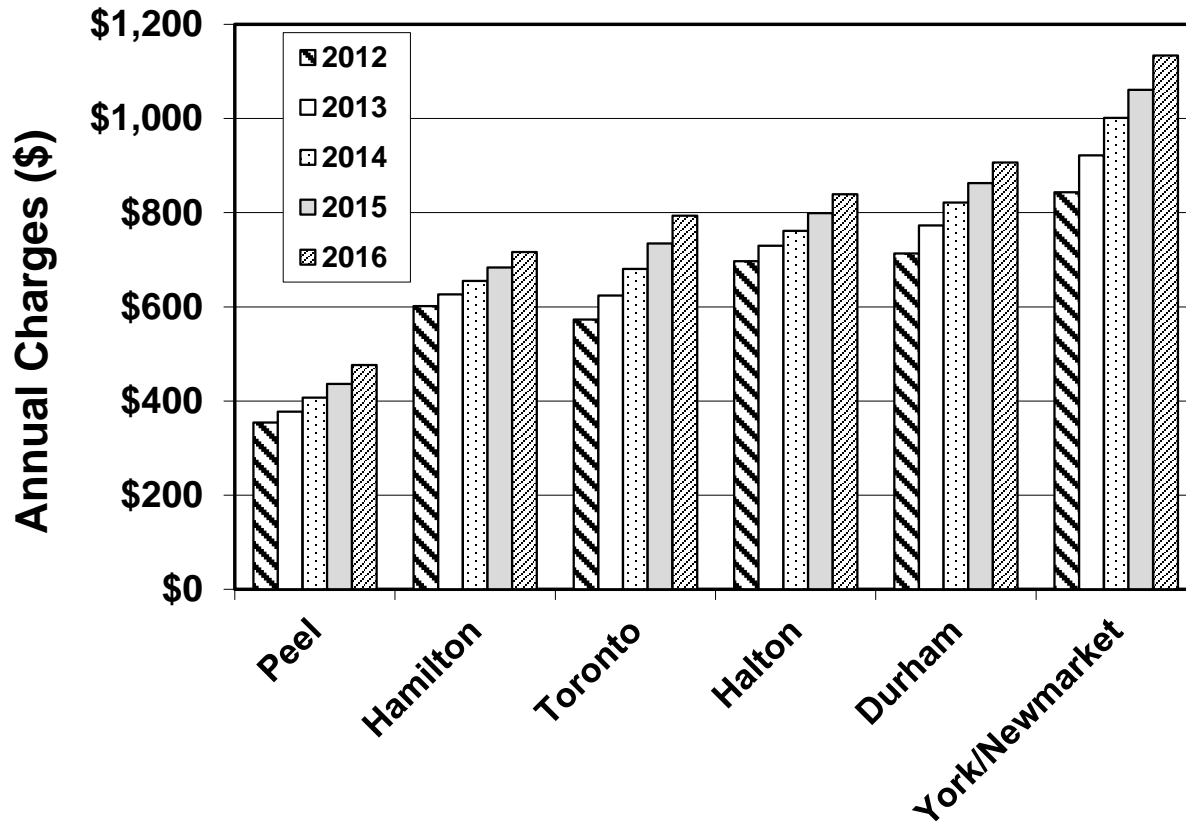
Exhibit 19 Comparative 2007 to 2016 Residential Water/Sewage Rate Increases (230 m³/yr) – Large Municipalities



The average annual combined water and sewage rate increase for all of the municipalities was 6.7% for the 10-year period. Durham’s average was approximately 6.8% annually.

GTA - Combined water and sewage user rate increases over the past five years in nearby Regions are graphed in Exhibit 20. The analysis is based on a customer using 230 m³/year (50,500 gallons).

**Exhibit 20 Comparative 2012 to 2016 Residential Water/Sewage Charges
(230 m³/yr) – GTA**



Durham is above average in terms of level of charges in this group.

The following observations are made:

- Peel is dominated by a single, very large municipality with major Lake Ontario treatment plants and as a result has lower rates than the other nearby regions (including Durham which has many local small systems).
- Peel, Toronto and Hamilton have either a single large metropolitan area or are anchored by one. This leads to economies of scale that Durham cannot match with its many diverse systems spread over a large geographic area.
- Toronto has recognized the need to move towards full cost pricing and has been adopting aggressive rate increases.
- Halton is perhaps closest to Durham in that it has multiple water and sewage systems (although less than half of Durham's) and has adopted rate increases lower than the norm in recent years.
- Newmarket is responsible for distribution of water to its customers. The water is supplied by York Region.

5.4.5 Summary

The adoption of declining block rates by Durham was based on an analysis of the actual cost of supplying these customers and is possible due to Durham's sole jurisdiction over the complete water and sewer systems. As a result, Durham's stepped metered rate blocks result in lower rates for large volume ICI consumption, which is advantageous to industrial customers while being fair in terms of cost recovery. Municipalities which only have jurisdiction over local systems must purchase water at one wholesale rate, leaving less scope for passing on cost savings related to large volume supply to the customers. As a result, the charges in these municipalities are amongst the highest for large customers. Conversely, these municipalities have lower charges for the smaller volume customers.

Water and sewage systems have faced rapid growth for years. When infrastructure is new, maintenance and replacement costs are relatively low. However, over time, increasing investment is needed to refurbish and replace aging infrastructure. In addition, upgrades are needed to meet more stringent regulations. The end result is that most systems must increase investments to reach sustainable levels. Since 2002, Durham and most other municipalities has found it necessary to implement higher annual rate increases than were previously needed.

Annual rate increases for the 13 other municipalities discussed in Subsection 5.4.2 have been tracked from 2007 to 2016. The average annual water and sewage rate increase of the 14 municipalities over the 10-year period has been 6.7% per year compared with Durham at 6.8% (see Exhibit 19).

Although Durham's rates are established based on Durham's systems investment needs, and not in reference to others, it is noted that the other municipalities have been facing the same challenges of increasing funding of water and sewage systems to sustainable levels while experiencing decreased consumption and have been increasing rates in a similar manner.

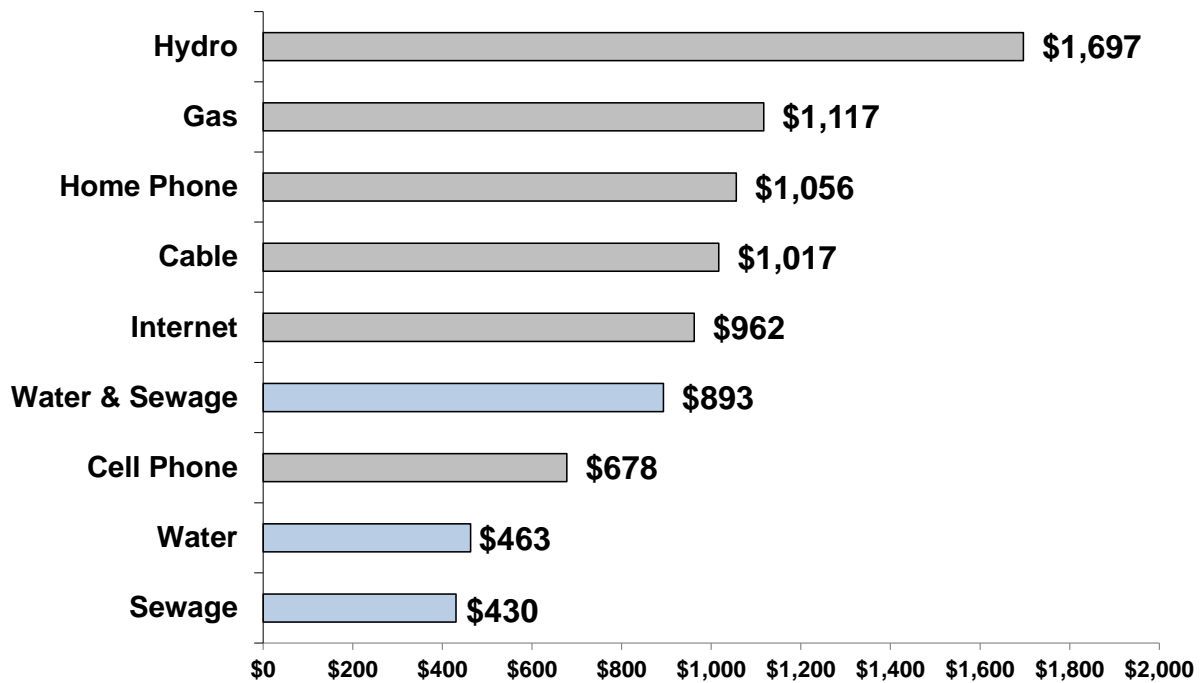
5.5 Durham's Residential Water Charges and Sanitary Sewer Charges Are Much Less Than Typical Hydro, Gas, Telephone or Cable Television Services

Information was gathered on local residential electricity, natural gas, cable television, high speed internet, cellular phone and home telephone rates and compared with the Region's water and sewer rates. Note that the survey provides typical bills for each service. Individual customers will often have a different mix of services (such as no home land line phone). The survey is meant to give a general idea of utility costs.

The "most popular" option has been priced below where that option is indicated by the supplier. There is a wide range of prices for some services.

Representative 2016 annual residential utility charges in Durham (Oshawa rates used) are graphed in Exhibit 21.

Exhibit 21 Typical Durham Residential Utility Charges 2016



The components of a total annual bill for a representative residential customer are as shown in Exhibit 22.

Exhibit 22 Typical Residential Utility Charge 2016

Utility	Basis of Comparison	Annual Bill (\$)	% of Annual Utility Bills
Hydro	Cooking, lighting, etc.	\$1,697	22.9%
Gas	House heating & water heater	\$1,117	15.1%
Home Phone	Basic service with long distance	\$1,056	14.2%
Cable	Basic package – no movies	\$1,017	13.7%
Internet	One level above basic - 25 Mbps download	\$962	13.0%
Cell Phone	Basic service with long distance package	\$678	9.1%
Sewer	Average residential use - 230 m3/year	\$464	6.2%
Water	Average residential use - 230 m3/year	\$430	5.8%
Total		\$7,421	100.0%

The **total combined water and sewer billing** for this residential customer represents only about 12.0% of the total utility charges incurred in a typical home. This is less than most other individual utility services.

6. Other Issues

6.1 Water Meter Investment Plan

Water meters are used to determine the volume of water used by customers and to bill them for this usage. Overall, about 70% of water and sewage billings are volume-based representing about \$126 million in revenue. The Region places a high priority on meter accuracy since a change of only 1% in overall meter accuracy represents about \$1.26 million in revenue.

Water meter accuracy must be maintained at a high level in order to ensure that customers are billed fairly and the Region is recovering the cost of providing customers with water and treating sewage.

The Region's Quality Standards set out water meter replacement and maintenance criteria.

Durham's water meter accuracy targets are based on a combination of actual meter testing and criteria set by of the American Waterworks Association (AWWA) – the organization which sets the standards used by the potable water supply industry in North America.

The Region's water capital budget includes \$3.1 million annually for the customer water metering program. In addition, the water operating budget includes about \$0.6 million for meter maintenance and testing. These levels are based on the funding required to maintain the following:

New Customers - Installation of meters for new customers.

Meter Replacement - Replacement of meters up to 51-mm size (2-inch) on a cycle based on accuracy considerations. Testing programs have been carried out to determine the optimal replacement cycle. "Standard Meters" – those installed in most locations – are targeted for replacement on a 20-year cycle. Meter replacement has been found to be more economical than meter repair for such meters.

Meter Testing & Replacement – Due to the magnitude of revenues involved, larger meters (larger than 51-mm or 2-inch) are tested and maintained frequently (every 6 months for the largest) in accordance with the Region's Quality Standards.

Remote Reading – The program includes investments in upgrading meter reading capability to allow fully remote readings (see following Section).

6.2 Residential Water Meter Reading Status Update

Residential customer meters are read quarterly. The readings are obtained in one of two ways:

1. Self-Assessment - For three readings a year, self-assessment cards are mailed to customers requesting that they read their water meter and either phone in the readings to the Region's TeleRead System or mail back the cards with the reading entered in the space provided. There is a customer response rate of approximately 65% using this self-assessment method to obtain water meter readings. The remaining 35% of the related billings where the customer does not provide readings are based on estimates.
 2. Meter readers – Meter readers are scheduled to obtain one meter reading per year. Actual readings are obtained for the 80% of locations with remote reading capability. The remaining 20% of locations have direct read only meters where the reading must be taken from the meter itself and which require access to premises to read the meter. Only about 10% of the time are meter readers able to gain access to obtain readings from direct read meters. Self-assessment cards are left when if no reading is obtained by the meter reader.
- When first adopted, the Region's residential customer self-assessment meter card program had a high participation rate and low cost compared to inside meter readings taken by meter readers.
 - With lower customer participation (currently 65% response despite promotion programs), higher costs (including most recently a postage rate increase) and low accessibility for meter readers to inside-read meters, the Region has since the mid 1990's been installing remote read devices ("remotes") on new and replacement meters so that meter readings can reliably be obtained by meter readers from outside the premises.
 - The Region's standard remote is a "ProRead" terminal mounted on an outside wall and connected to the meter by wire. The Region also has Radio Frequency (RF) remotes which are mounted near a meter and do not require a wire to be run outside. ProRead remotes must be physically contacted to obtain a reading. The RF remotes can be read wirelessly from the street.
 - The ProRead wiring is not always feasible to install in finished basements. The RF remotes have been found to be a less intrusive option for customers. RF remotes are being installed as needed to allow all water meters to be remotely readable.
 - RF remotes use the same technology as other common household devices such as cordless phones, garage door openers, internet routers and TV/VCR/DVD remotes and are similarly subject to Health Canada Safety Code 6 guidelines.
 - The breakdown of success by meter readers of obtaining actual readings for the period 2011 to 2015 is provided in Exhibit 23.

Exhibit 23 Meter Reader Residential Customer Success

Year	Meter Reader Success			Read Success Rate %
	Total Attempts	Reading Obtained	Card Left	
2011	165,459	98,348	67,111	59%
2012	167,192	105,348	61,844	63%
2013	167,009	111,424	55,585	67%
2014 (1)	166,327	110,298	56,029	66%
2015	170,384	125,385	44,999	74%

Note (1) Actual readings reduced during labour disruption.

The existence of outside and RF remotes has resulted in an increase in the share of actual readings taken at the time of the meter reader visit and a decrease in the reliance on readings supplied by customers.

Due to rising postal costs as well as remote meter reading technological advances obtaining actual meter readings by meter readers is now less expensive than the self-assessment program.

As residential billing districts achieve complete remote meter reading capability they will be considered for moving to meter readers obtaining all quarterly readings. This will result in actual readings being available for all billings, eliminating the estimates which are currently necessary when customers do not provide their self-assessment readings.

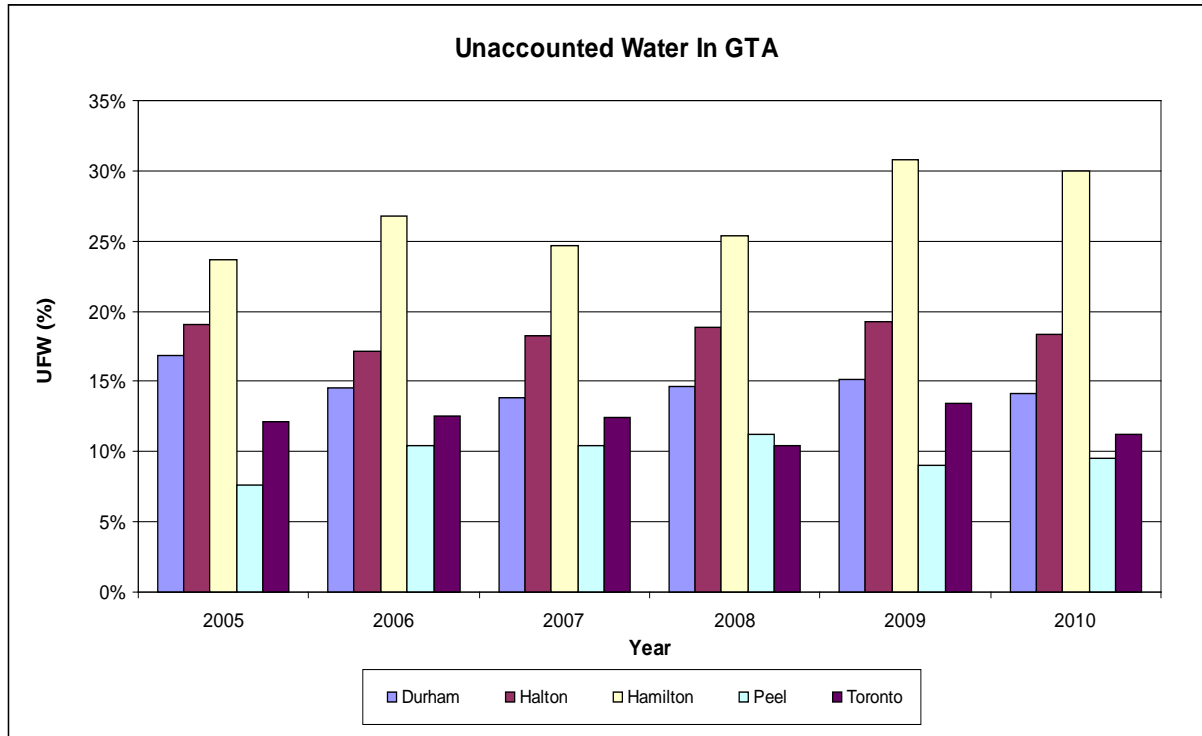
Bimonthly billed customers (ICI) have over 98% actual readings due mostly to the vast majority having remotes installed.

6.3 Water System Losses Update

The traditional approach to expressing water system losses is “unaccounted for water” (UFW). A more recent term is “non-revenue water” (NRW) which highlights the fact that water loss is not sold and does not produce revenue. The two terms are synonymous.

Durham's NRW has varied between 13.8 to 16.8 per cent over a recent six-year period. Durham's performance is compared with other Greater Toronto Area (GTA) municipalities in Exhibit 24. Durham's 2015 NRW was 14.9% - see Exhibit 4.

Exhibit 24 Unaccounted for Water (UFW) in GTA (2005 to 2010)*



*Data sources from RPWCO – 2010 Water Demand Survey (most recent survey)

The use of NRW as a measure of water system performance, although common, is of limited use as it does not take in account the diversity of infrastructure in each municipality. The International Water Association (IWA) has developed and the American Water Works Association (AWWA) recommends a more comprehensive approach which takes into account individual system characteristics. The IWA recommends a process be followed which they refer to as the Standard Water Balance. It breaks water losses into a number of categories in order to better understand the nature of the losses – see [Exhibit 25](#).

Exhibit 25 IWA Standard Water Balance Terminology

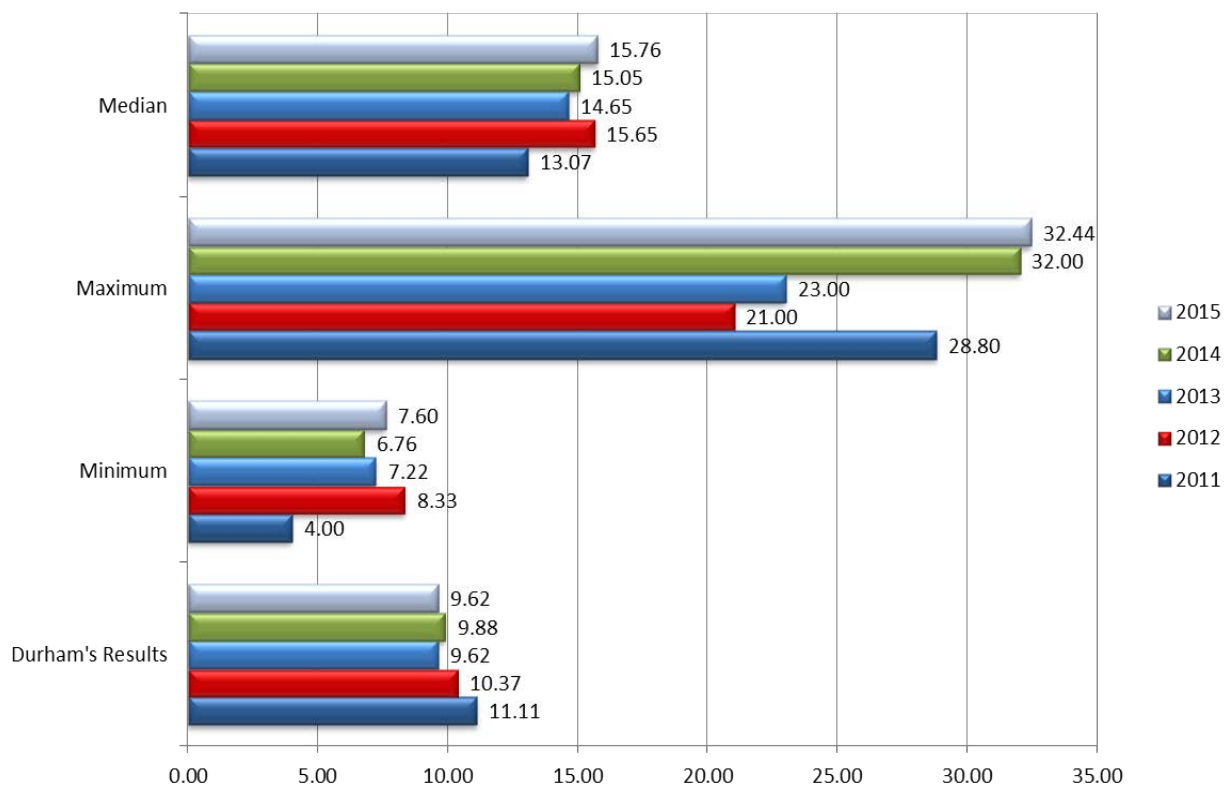
System Input Volume	Authorized Consumption	Billed Authorized consumption	Billed Metered Consumption	Revenue water
			Billed Unmetered Consumption	
		Unbilled Authorized Consumption	Unbilled Metered Consumption	Non Revenue Water (NRW)
			Unbilled Unmetered Consumption	
	Water Losses	Apparent Losses	Unauthorized Consumption	
			Metering Inaccuracies	
		Real Losses	Leakage on Transmission and/or Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
Leakage on Service Connections up to point of Customer Metering				

The IWA/AWWA methodology is now an industry recognized standard approach and has been utilized to assess water losses in Durham Region. Water Loss performance measures such as the Infrastructure Leakage Index (ILI) and NRW per kilometre of mains were calculated first during the Water Loss Control Strategy Report based on 2006 data and have been repeated annually by Regional staff.

Durham Region is a long term participant in the Municipal Benchmarking Network Canada (MBN) – formerly the Ontario Municipal Benchmarking Initiative (OMBI) which facilitates comparison of statistical data with other municipal jurisdictions in Ontario.

One performance measure used by MBN is NRW per kilometre of main. This is a measure which expresses total water losses, but takes into account density or spread of the water service in a municipality. For example NRW for systems in similar condition would be higher for a spread-out municipality than for one more densely developed. A graph of NRW per kilometre of main from the MBN survey for 2011 to 2015 is provided in Exhibit 26.

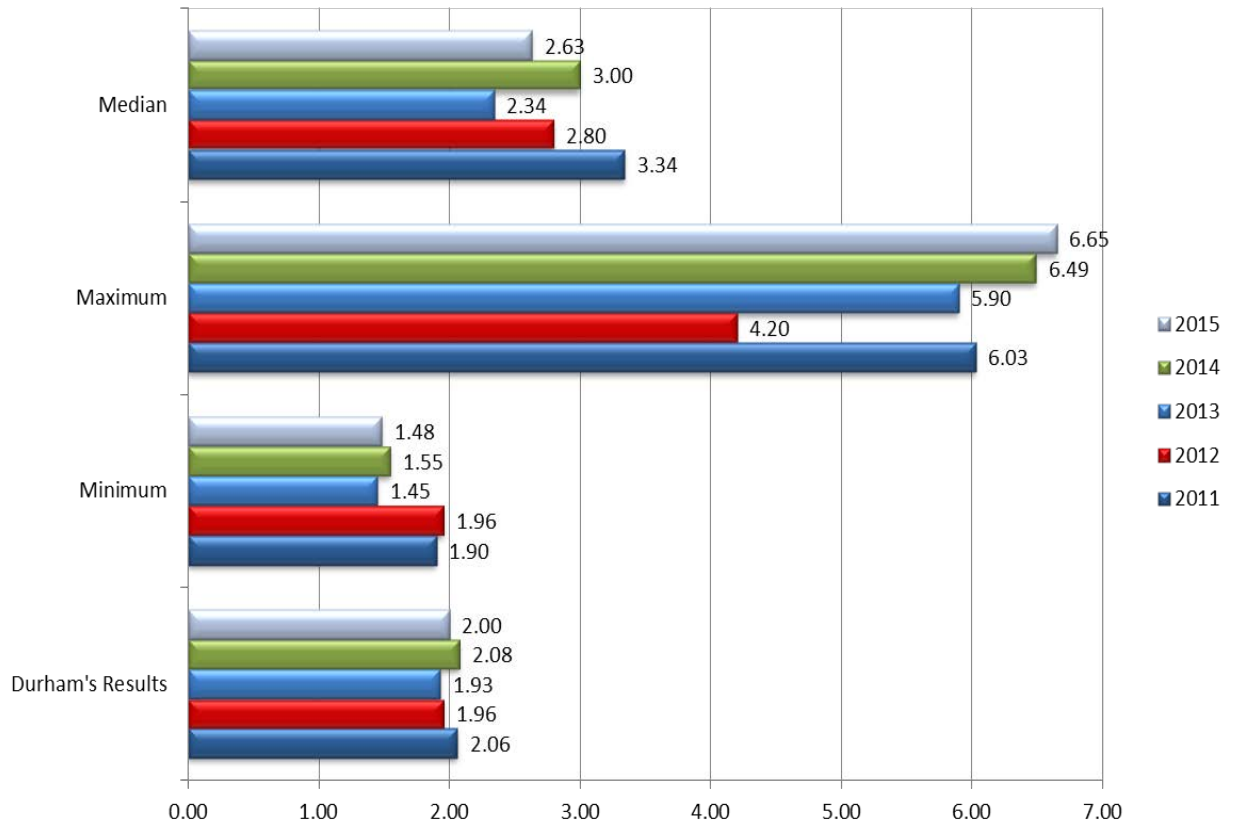
Exhibit 26 NRW in m³/km of Main per Day (MBN data)



Durham's NRW versus main length has trended downwards and is in the bottom third of the survey.

Another performance indicator which takes a number of factors into account is the Infrastructure Leakage Index (ILI). A lower number indicates better performance. See [Exhibit 27](#) for the 2011 to 2015 survey results.

Exhibit 27 Infrastructure Leakage Index ILI (MBN data)



The 2015 Infrastructure Leakage Index (ILI) for Durham was calculated to be 2.00, lower than the median of 2.63.

These performance measures indicate that system investment and operational practices are resulting in generally improved results. Given that infrastructure continues to age, investments and operational efforts will have to be continuing on an ongoing basis.

6.4 Bulk Water

In addition to the normal water supplied through meters installed in premises, water is also supplied in bulk from bulk meter locations, hydrants and unmetered services in new subdivisions. The water is put to various uses such as building construction, landscape watering and pool filling from tanker trucks. There are three charges in Schedule 4: Water and Sanitary Sewer Systems Miscellaneous Fees and Charges which are intended to recover bulk water costs:

- Item 18) Unmetered water used for construction (building purposes)
- Item 19) Drawing water from hydrants for purposes other than fire protection

- Item 33) Water from Water Supply Plants, Water Pollution Control Plants & Works

The following sections outline strategies that have been developed in order to improve the delivery of bulk water to customers as well as tracking and cost recovery of the above bulk water usage.

6.5 Building Purposes Charge

Regional water from local mains is used during the construction of subdivisions by builders prior to the installation of water meters in homes. Since the water is not metered, in order to recover the cost of providing the water, the Region levies a Building Purposes (BP) Charge for each water service. The charge is Item #18 of Schedule 4: Water and Sanitary Sewer Systems Miscellaneous Fees and Charges:

The 2016 BP Charge of \$87.00 per water service is equivalent to 87.3 m³ (19,198 gallons) based on a first block water rate of \$0.997/m³.

The purpose of the BP Charge is to recover the cost of unmetered Regional water used by builders during construction.

The BP Charge is levied for new residential development. It is charged against residential single family dwellings that are subject to Subdivision Agreements. This type of development typically has meters installed when house construction nears completion, so the bulk of construction water usage goes unmetered. The water used not only relates to the homes themselves but to construction in common areas.

BP Charges are not levied for multi-unit residential (such as condominiums), one-off home construction, model homes (which should have meters installed early on) nor non-residential (commercial/industrial).

The BP Charge is billed to the builder as a final bill on an individual home basis after a new account is set up and a meter is installed and when the new account is transferred to a new homeowner.

Anecdotal observations of water usage at construction sites indicates that water usage is much higher than is covered by the BP Charge. However, unfortunately the actual volume of water delivered by watermains to a subdivision under construction is not normally known. It is not normally feasible to obtain this information because water systems are a network of pipes with multiple possible supply directions, none of which is bulk metered.

There is one subdivision serviced by a metered pumping station where it is possible to determine the volume of water supplied to the area under construction. The metering data from that subdivision is being monitored and analyzed. Initial indications are that water used for building purposes is well in excess of 200 m³ (44,000 gallons) or about \$200 per serviced home (versus 87.3 m³ /19,198 gallons or \$87 currently charged).

The investigation is ongoing to refine this amount to a final figure. Before recommending a final BP Charge volume basis, discussions will be held with building industry representatives. In the meantime an initial interim increase in the BP Charge for 2017 based on an allowance of 110 m³ (24,200 gallons) per home is proposed, which results

in a charge which is still well below the likely final amount (see Section 4.7).

6.6 Drawing Water From Hydrants

A phased project to improve the control of hydrant usage by bulk water haulers and more accurately bill for actual volume used is outlined in **Report #2016-COW-82: 2017 Water and Sewer Servicing and Financing Study**. Proposals for related fees and charges are outlined below.

Currently, water haulers are allowed to apply for a permit to draw water from hydrants for purposes other than fire protection. The application is annual and hydrants are generally allowed to be used from April 1 to November 1 (none allowed under winter conditions so dates may vary in a given year). Water haulers can make an application at a Regional depot to draw water from a specified hydrant. An administration fee is charged along with a deposit and minimum charge. The Region installs a backflow preventer and valve to which the water hauler connects. Billings for the estimated volume used are issued monthly. All charges are based on Item 19) of Schedule 4 – Water & Sanitary Sewer System Miscellaneous Fees & Charges.

The main change in the phased project from the current process is the addition of a meter on the hydrant to measure water usage and the issuance of billings based on actual metered volumes. Currently, water usage is based on estimated volumes provided by the water hauler. It is proposed that charges during the phased project period be based on the following revisions or additions to the current fee structure:

- An administration fee for the application (current charge applies \$121.40);
- A refundable deposit to cover the cost of the Region providing the hydrant metering assembly which would include a backflow preventer, valves and meter. The water hauler is responsible for any damage to or loss of the assembly no matter by whom it is caused. If the metering assembly is found to be damaged, the cost of repair/replacement will be charged to the water hauler. The deposit refund will be net of any damage costs. (new - refundable \$1,000);
- The metering assembly would be installed and later removed by the Region for which there would be a meter assembly installation/removal charge (new combined charge \$104.00);
- A meter rental fee to recover amortization of initial capital cost plus annual meter and backflow preventer maintenance/calibration based on the period the meter assembly is installed (new daily fee of \$3.50 daily, minimum \$25.00);
- A volumetric charge based on monthly meter readings taken by Regional staff. It is proposed that the volumetric rate be unchanged from the current rate (current hydrant volumetric rate \$3.20/m³ (\$15.36/1,000 gals)).
- A bill would be issued monthly and would include a monthly service charge to cover the cost of reading the meter and issuing the bill (new \$25.00/month).
- The monthly bill would include the service charge, the volumetric charge and the meter rental fee.

The proposed 2017 fees are shown in Item 19) of Schedule 4 – Water & Sanitary Sewer System Miscellaneous Fees & Charges. All rates and fees related to this program will be reviewed as part of the phased project.

6.7 Bulk Water Filling Stations

Currently water haulers can obtain bulk water from some of the Region's water supply plants. A water hauler first applies to the Region for a key which can be used at the filling station to draw water. The volume of water drawn is recorded and later charged to the water hauler. A business case for building bulk water filling stations at locations on the water system is outlined in Report #2016-COW-82: 2017 Water Supply and Sewer Sewerage Servicing and Financing Study.

The charges are covered in Item 33) of Schedule 4 – Water & Sanitary Sewer System Miscellaneous Fees & Charges which includes charges which can be used for filling stations (Item 33) currently lists Water Supply Plants, Water Pollution Control Plants and Works Depots).

6.8 Home Hemodialysis

Inquiries have been received recently regarding home hemodialysis.

Background - Hemodialysis (HD) is a medical treatment which uses a dialysis machine as an artificial kidney to cleanse the blood when there is kidney failure. The patient is hooked up to a dialysis machine and the patient's blood is run through it in order to cleanse the blood. The dialysis machine requires an ample supply of purified water for flushing the waste away. It is electrically powered and uses municipal water for supply as well as the municipal sewage system for waste disposal.

Originally Hemodialysis was carried out in central (in-centre) facilities such as hospitals and clinics. This meant travel for patients and a schedule to be followed. Home Hemodialysis has become more prevalent in the past 10 years or so. Instead of travelling to a conventional in-centre HD facility operated by medical professionals, the Hemodialysis is done at home either by the patient or with the help of a trained assistant, usually a family member. Typically, a room is set up for dialysis, with dedicated electrical wiring, water and sewage plumbing, and equipment including a reverse osmosis (R/O) machine for water purification and the dialysis machine itself. Typically treatment takes about four (4) hours each session, three (3) times a week¹.

When the treatment was done at a clinic or hospital, the cost of utilities such as hydro, water and sewage was not an issue since they were covered by the facility. By moving the treatment to a patient's home, the patient has increased flexibility and presumably convenience, but at the same time the cost of utilities is also shifted from the health system to the patient.

Cost - In order to quantify the financial impact on customers of carrying out hemodialysis in-home rather than at a central location, consumption data was gathered

¹ There are three treatment approaches - Conventional (3 times per week), Short Daily (5 times per week) and Nocturnal (5 to 6 times a week while sleeping).

from the homes of nine (9) hemodialysis patients in Durham.

Based on billed consumption data, the impact on annual water and sewage for Durham customers is provided below in Exhibit 28.

Exhibit 28 Increase in Home Hemodialysis Customer Water & Sewage Bills

Description	2016 Rate (\$/m ³)	Customer Bill Increase		
		Lowest	Highest	Average
Consumption (m ³)		40.8	137.4	73.3
Water Bill	\$0.997	\$40.70	\$137.01	\$73.08
Sewage Bill	\$1.647	\$67.23	\$226.33	\$120.73
Total (\$/qtr)		\$107.93	\$363.34	\$193.81
Annual (\$/yr)		\$431.71	\$1,453.35	\$775.24

The increase in water and sewage charges, after the introduction of home hemodialysis, for the Durham customers monitored, averaged \$775 per household per year or about \$5.00 per treatment (based on 2016 water and sewage rates).

Prior to the switch to home hemodialysis from a central health facility, this treatment cost was absorbed by the Provincial health system.

Survey of Cost Recovery Programs – Staff have surveyed programs or methods available to offset the transfer of hydro, water and sewage costs from central facilities to individual home hemodialysis.

- **No Other Local Utility Cost Subsidies** – None of Veridian Connections, Whitby Hydro or Oshawa PUC Networks subsidize power costs for Home HD customers.
- **Ontario Municipal Water Cost Subsidy Survey** – A survey was carried out to determine if Ontario municipalities have water subsidy programs for Home HD customers. All 14 of the medium to large sized municipalities that are surveyed for the user rate impact analysis were contacted. An internet search was also carried out. The only Ontario municipality found to have a Home HD grant program is the City of Ottawa.
- **City of Markham Provincial Submission** – In 2013 the City of Markham considered the increased water and sewage costs faced by homeowners of the transfer of hemodialysis treatments from central facilities to in-home and concluded that this was a transferred cost that should be covered by the Province. They recommended that “Council, on behalf of the affected patients in Markham and York Region request the Ministry to take into consideration in their development of their health service programs, the impact of transferred utility costs on the patients.” In fact, the Province of Manitoba Health Ministry reimburses patients for the increased water, sewage and electricity cost related to home hemodialysis treatment.
- **Income Tax Deduction** - The Region’s auditors, Deloitte LLP, advised that the Canada Revenue Agency (CRA) has indicated that

water/electricity incurred for home dialysis will qualify as a medical expense.” Paragraph 118.2(2) (i) of the Canadian Income Tax Act indicates that the cost of both electricity and water for Home HD are considered medical expenses and can be included, along with other medical expenses, when calculating the Federal and Ontario non-refundable tax credits.

Conclusions & Recommendations - A rebate program for Home Hemodialysis customers is not recommended for the following reasons:

- Medical expenses are the responsibility of the Province and any subsidy related to utility costs should be the responsibility of the Province.
- The cost of water for Home Hemodialysis, like hydro, is treated as a medical expense by the CRA. As such it is a medical deduction for tax purposes, which, if sufficient, should provide a tax benefit. All customers are in the same position regarding medical expenses and whether they are sufficient to result in a tax credit.
- Given there are no water or sewage billing exceptions or rebates for other medical expenses, it is not considered appropriate to make an exception in this case.
- A water rebate program for Home Hemodialysis could set a precedent for other such programs where water use is required for medical or therapeutic treatment.
- The water is supplied and waste treated by the Regional systems. These are all costs which must be recovered from the users or subsidized by the other users.
- Water system grants for medical expenses from water and sewage revenues are not generally provided by Ontario municipalities and in fact one province (Manitoba) has taken responsibility for those costs and covered them as part of the health system.

7. Future Considerations (2018 To 2026)

7.1 Future Customer & Consumption Trends

Elements expected to affect future customer and consumption levels are as follows:

- **Customers** – Report #2016-COW-82: 2017 Water Supply & Sanitary Sewerage Servicing and Financing Study indicates a 2017 to 2025 increase in the number of urban residential units of 48,600. This growth rate is higher than projected last year and closer to longer term trends. Since this includes multi-unit (e.g. condominiums – about 30% of residents are in multi-unit locations), not all additional units represent new customers, so the growth in number of customers would be less than the growth in units. A lower pace of growth averaging 1.3% annually is conservatively adopted for revenue projection purposes.

- **Residential Consumption** – Basic (non-seasonal) consumption per residential customer is expected to continue to decrease for the foreseeable future. New housing being equipped with water efficient fixtures and appliances, and ongoing retrofitting of existing homes are all factors placing downward pressure on residential consumption. When combined with a low customer growth rate, residential consumption is projected to continue to decrease.
- **Small to Medium Commercial** – This sector historically has been fairly constant, but recently has also shown decline. It is expected that this will stabilize in the future.
- **Large Industrial** – With the reopening of a paper fibre operation, this segment has recovered somewhat after a long-term decline. It is projected to remain stable going forward.
- **Total Consumption** – Over the period 2010 to 2015 total consumption has decreased an average of about 1.0% annually. For planning purposes it is projected that total consumption will continue to decrease at 1.0% annually.

At one time, consumption growth generated additional water and sewage system funding on an annual basis. But this has not been occurring for some time. Static or lower usage means revenues will not increase in step with increased customer growth. This has been occurring during a period when both provincial and federal water and sewer regulations have been becoming stricter. Durham's Report #2016-J-25 2016 Asset Management Plan forms a basis for prioritizing future water and sewage systems infrastructure replacement investments. The annual user rate revenue requirements include contributions to Asset Management Reserve Funds to address the most critical asset management needs.

Staff will continue to monitor consumption trends and determine the impact on future user revenues over the longer term and on capital plans for growth related projects.

7.2 Future Cost Trends

The possibility of continued consumption level decreases will affect future budget levels and consequently rate increases over time. However, over the short term the expenditure budget impact is relatively small, since savings are limited to variable operating costs such as power and treatment chemicals.

Over the long-term, permanent trends in consumption can affect water supply and sanitary sewer system capacity requirements and design criteria. This in turn would impact the growth capital program, particularly treatment plant expansions. Decreased demand by existing customers frees up capacity for development, which may result in short term deferral of specific water and sanitary sewerage projects if decreasing consumption trends continue.

Capital costs related to rehabilitation, replacement and regulatory upgrades are not expected to be affected by changes in consumption patterns.

For more detailed information on long term capital requirements see Report #2016-COW-82: 2017 Water Supply and Sanitary Sewerage Servicing and Financing Study.

7.3 Projected User Rates

Since user rates are set on a year-to-year basis, change in water consumption in the near-term is the most important factor in user rates revenues. About 70% of combined water and sewer user revenues are based on consumption. Consumption in recent years has trended downwards.

Capital investments are rising due to pressures to invest in aging infrastructure. Currently at about 39% of water and sewage user rate supported budget expenditures, increased capital investments will have a significant impact on future user rate revenue requirements and as a consequence on future user rate levels.

In order to fund the forecasted operating and capital costs based on the customer and expenditure growth assumptions, water and sewage rates will expected to require annual increases of 5% to 7% or higher.

The water and sewage user rate forecasts are based on a capital program of known needs. However, there are potentially other factors that will have cost implications that are unknown at this time and as a result cannot be quantified. Risks include:

- Future customer trends, including reduced residential customer consumption due to conservation and water efficient appliances, reduced water sales to large customers and slower customer growth trends; Financial impact of works needed to comply with Provincial and Federal Regulatory requirements associated with the Region's water supply and water pollution control plants (i.e. the *Clean Water Act* and the *Lake Simcoe Protection Act*);
- Market price impacts or volatility for input commodities, including energy and chemicals and cost impacts for the pending Provincial Cap and Trade program; and,
- Asset management program investment requirements to replace aging and failing infrastructure which has reached or passed the end of its useful life. Although repairs can often extend the life of aged facilities, at some point this is not feasible and from an operational and financial perspective replacement is required.

8. Future Actions

Staff will continue to undertake the following initiatives to ensure the most efficient on-going water and sewage programs:

- i) Assessment of water losses and reduction of unaccounted for losses, where possible. This would include the following initiatives:
 - a. Initial investment in two modern bulk water filling stations and modifications of the metering and use of hydrants for bulk water users in order to ensure that such use is controlled and costs adequately recovered by the Region.

- b. Continue to address the issue of high water volumes used for home construction, including developing a forward-looking strategy for recovering the full cost of this use, encouraging a reduction in water use and discussing a more equitable and effective approach with the Building Industry and Land Development Association (BILD);
- ii) Incorporate in the user rate revenue requirements the funding of the following water supply and sanitary sewerage systems investment needs:
 - a. Rehabilitation and replacement needs related to asset management;
 - b. Adaptions required to address climate change;
- iii) As remote meter reading capability reaches sufficient penetration in billing districts, transition to meter readings by meter readers for all billings in order to reduce the cost of meter readings while increasing their accuracy; and
- iv) Assessment of emerging trends within residential and non-residential water consumption to project future usage for user rate purposes and monitoring usage trends that might influence future capital programs for treatment plant expansions.