



The Regional Municipality of Durham Report

To: Committee of the Whole
From: Commissioner of Finance
Report: #2017-COW-256
Date: December 6, 2017

Subject:

Recommended 2018 Water and Sanitary Sewer User Rates

Recommendations:

That the Committee of the Whole recommends to Regional Council:

- A) That the 2018 Regional water rates increase by 5.2% and Regional sanitary sewer rates increase by 2.8% from the 2017 user rate levels as set out in Schedule 1 and Schedule 2 respectively (attached), effective January 1, 2018 (increase for an average residential customer of 4.0%);
- B) That the 2018 Raw Water rates for the Whitby raw water customers be as set out in Schedule 1 (attached), effective January 1, 2018;
- C) That the 2018 water charges to the Sun Valley Heights Homeowners Co-operative Water System be as set out in Schedule 3 (attached), effective January 1, 2018;
- D) That the 2018 Regional Water and Sanitary Sewer Systems Miscellaneous Fees and Charges be as set out in Schedule 4 (attached), effective January 1, 2018;
- E) That the 2018 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, 2018; and
- F) That the Regional Solicitor be instructed to prepare the necessary by-laws to implement the foregoing recommendations.

Executive Summary:**1. Background**

- 1.1 This report relates to the recommended Water and Sanitary Sewer User Rates to be effective January 1, 2018. It is presented concurrently with and supports Report #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study which describes the financing of proposed capital works in 2018 and future years.
- 1.2 This printed Executive Summary is supplemented by a Detailed Report available in the attached booklet.
- 1.3 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.
- 1.4 It is imperative that user rates be approved in 2017 in order that they can be implemented with the first customer billings commencing early January 2018. 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.
- 1.5 Public notification that the proposed 2018 water and sanitary sewer user fees and related charges will be considered by the Committee of the Whole on December 6th, and by Regional Council on December 13th, was provided twice in local newspapers throughout the Region on November 13th and 23rd, 2017 and was posted on the Region's website.

2. Highlights

- 2.1 2018 Recommended Water and Sanitary Sewer User Rate Increases
 - 2.1.1 The recommended 5.2% water user rate increase and 2.8% sanitary sewer user rate increase (4.0% combined for an average residential customer) supports an increase in user rate supported expenditures of 4.8% for water and 1.4% for sanitary sewage. The current 2017 and recommended 2018 Water and Sanitary Sewer User Rates are provided in Schedule 1 and Schedule 2 respectively (attached).

2.1.2 The recommended user rates are based on operating, capital costs and financing as outlined in detail in Report #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study, as well as customer and consumption projections described below.

2.1.3 For water, the user rate increase of 5.2% is required to finance a proposed preliminary 2018 user rate supported budgeted expenditure increase of \$4.89 million or 4.8% over 2017, which, will allow for:

- A net Operating Cost decrease of \$0.77 million;
- A Capital Program/Contribution increase of \$5.67 million (user rate share) due mainly to capital upgrades and replacement of water infrastructure including the Newcastle WSP (Water Supply Plant).

2.1.4 For sanitary sewer, the user rate increase of 2.8% is required to finance the proposed preliminary 2018 user rate supported budgeted expenditure increase of \$1.38 million or 1.4% over 2017, which will allow for:

- A net Operating Cost decrease of \$0.61 million;
- A Capital Program/Contribution increase of \$2.0 million (user rate share) due mainly to increased Tangible Capital Asset investments.

2.2 Basis for the Proposed 2018 User Rates

- The projected data used to develop the 2018 user rates includes the following:

Projected Data Used to Develop 2018 Water & Sewage User Rates

Parameter	Water	Sanitary Sewage
Customers		
- Number	176,102	171,984
- Growth from 2017 Actual	1.20%	1.25%
Consumption/Flow		
- Gallons (billions)	11.45	11.01
- Cubic metres (millions)	52.05	50.05
- Change from 2017 Budget	-1.6%	-1.6%
Projected User Rate Supported Expenditures		
- Total Expenditures	\$106,384,700	\$99,281,400
- Change from 2017 Budget	4.8%	1.4%
User Rate Change Required		
- Percent	5.2%	2.8%
- Impact on Revenue of 1% Rate Change	\$1,011,000	\$966,000

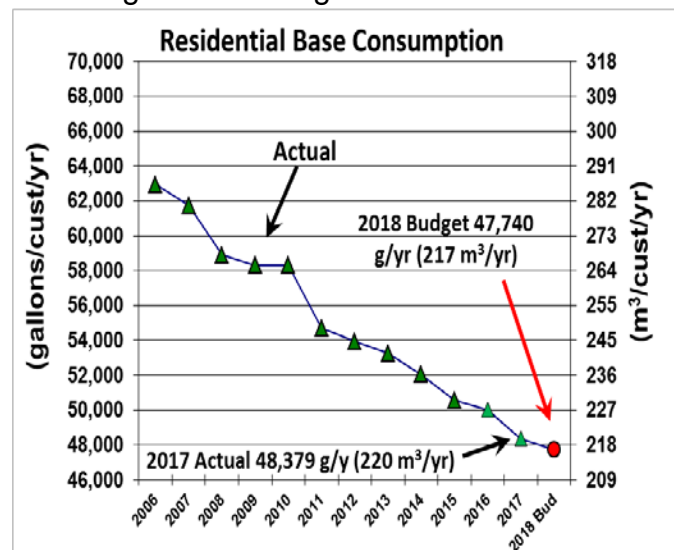
- **Impact of a 1% Rate Change** - Any change in either expenditures or other revenues by \$1,011,000 for water or \$966,000 for sanitary sewer is equivalent to a 1% change in the respective user rate.

2.3 Customer and Consumption Projections

2.3.1 Customer growth in 2018 is projected at 1.20% for water and 1.25% for sanitary sewage.

2.3.2 Total water consumption and billed sewage flows budgeted for 2018 are 1.6% lower for both water and sanitary sewage than budgeted in 2017.

- **Overall** – Total billed water consumption and sewage flows are projected to decrease in 2018. The consumption decrease is due to lower consumption projections in both the residential and ICI (industrial, commercial and institutional) sectors.
- **Residential** – Basic 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. The average decline in basic usage over the past 10-years has been 2.4% per year. Continuing reduction in base usage per residential customer is expected for 2018 and into the future. Total residential consumption is projected to decrease by 1.6% in 2018 due to decreases in residential and small ICI customers more than offsetting a projected increase in large ICI usage.



- **Non-Residential (ICI) Consumption Share** – ICI consumption share relative to residential usage, after years of decrease, is expected to remain stable at 27% in 2018. In the mid 1980's, ICI represented 56% of all water usage.
- **Small to Medium Size ICI Water Users** – Consumption remains stable in the 1st ICI consumption block but has decreased in the 2nd block. A combined 5% decrease is projected for 2018.
- **Large Water Users** – The 3rd block water usage was in decline up to 2012 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. Some further increases by several large customers has resulted in 2018 projected 3rd block consumption about 5% higher than budgeted for 2017.

2.4 Customer Impacts

- 2.4.1 **Average Residential Customers** – It is projected that in 2018, the average annual residential per customer consumption (including base and summer usage allowances combined) will use 223.6 m³ (49,200 gallons). The recommendation that the 2018 water and sanitary sewer user rates be increased over 2017 rate levels results in an increase of \$9.02 or 4.0% on a quarterly bill (\$36.08 per annum) for the average customer.

2018 Proposed Regional User Rate Charges				
Typical Residential Customer Impact				
	Water	49,200	gallons/year	
	Usage	223.6	m ³ /year	
Billings (\$/quarter)				
	2017	2018		
	Actual	Proposed	Increase	
Water	\$111.16	\$116.93	\$5.77	5.2%
Sewage	\$115.86	\$119.11	\$3.25	2.8%
Total (\$/quarter)	\$227.02	\$236.04	\$9.02	4.0%
Annual Billing (\$/year)	\$908.08	\$944.16	\$36.08	4.0%

- 2.4.2 **Industry** - The proposed 2018 water and sanitary sewer user rates result in a bi-monthly increase of \$3,108 for a customer using 227,272 m³ (50,000,000 gallons) annually (a customer in the top 25 users) as indicated below:

2018 Proposed Regional User Rate Charges				
Large Industrial Customer Impact				
	Water	50,000,000	gallons/year	
	Usage	227,272	m ³ /year	
Billings (\$ bimonthly)				
	2017	2018		
	Actual	Proposed	Increase	
Water	\$32,740	\$34,442	\$1,702	5.2%
Sewage	\$50,184	\$51,590	\$1,406	2.8%
Total (\$ bimonthly)	\$82,924	\$86,032	\$3,108	3.7%
Annual Billing (\$/year)	\$497,544	\$516,192	\$18,648	3.7%

2.5 Competitiveness of Durham's Water and Sewage Rates

- 2.5.1 **Residential customers** - Of 13 larger municipalities surveyed across Ontario, Durham's 2017 Regional water and sewage charges are below average and are the 5th lowest.
- 2.5.2 **Large users** - The Region's 2017 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.

2.5.3 **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 Other Fees & Charges

2.6.1 **Schedule 3 –Sun Valley Heights Homeowners Co-operative Water System Recommended Charges** – The charges for this local system serving 17 customers are separate from the Regional water and sewage rates. The 2018 recommended rate has been adjusted based on projected costs for this local system.

2.6.2 **Schedule 4 – Recommended Miscellaneous Fees & Charges** – This schedule includes a number of fee categories, each reviewed individually. Most of the recommended 2018 charges increases vary from no increase to about 5%. The recommended charges which differ from current 2017 fees and charges are **bolded**.

Specific considerations and circumstances warrant changes beyond 5% to the following fees and charges:

- **Items 5) to 14) Water & Sanitary Sewer Systems Frontage Charges** – An analysis of actual construction costs has led to a recommendation to significantly increase the frontage charges for water and sewage servicing.
- **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 one-time charge is \$110.00 which is equivalent to about 110m³ (24,200 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. It is recommended that the existing rate be phased-in to a 200 m³ basis over the period 2018 to 2020 with 2018 based on 140 m³ (30,800 gallons). Monitoring of development sites will continue where feasible.

2.6.3 **Schedule 5 – Recommended Laboratory Fees** – The recommended 2018 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory is provided in Schedule 5. There have been four (4) fees increased and four (4) new tests added.

3. Risk Factors

3.1 The water and sanitary sewer user rate forecasts to 2027 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 economic decline could result in lower system utilization with consequent decrease in water and sewage user rate revenues; and
- Market price impacts and volatility, including energy input prices and related equipment and supplies.

3.2 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 #2017-COW-82: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study.

4. Future Issues

4.1 Based upon projections to 2027, 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;
- 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 in order to maintain assets in a good state for operations, as well as a portion of growth costs (net of development charge contributions and grants).

4.2 Total and user rate share of major water and sewage systems capital projects over the forecast period (2019-2027) are discussed in detail in Report #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study.

5. Schedules of Rates & Fees

5.1 The recommended Durham Region 2018 water and sanitary sewer user rates, fees and charges are set out in the attached schedules, as follows:

- The recommended 2018 Water User Rates are 5.2% higher than the 2017 rates and are set out in Schedule 1.
- The recommended 2018 Raw Water Rate for the Whitby raw water customers is set out in Schedule 1.
- The recommended 2018 Sewage User Rates are 2.8% higher than the 2017 rates and are set out in Schedule 2.
- The recommended 2018 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System is set out in Schedule 3.
- The recommended 2018 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges (adjusted to reflect changes in cost structures and inflation) are set out in Schedule 4.
- The recommended 2018 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory located at the Duffin Creek WPCP is set out in Schedule 5.

6. Attachments

Schedule 1 – Recommended 2018 Water User Rates

Schedule 2 – Recommended 2018 Sewage User Rates

Schedule 3 – Recommended 2018 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System

Schedule 4 – Recommended 2018 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges

Schedule 5 – Recommended 2018 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP

Detailed Report – Provided in enclosed booklet

Original signed by

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

Recommended for Presentation to Committee

Original signed by

G.H. Cubitt, MSW
Chief Administrative Officer

Schedule 1 - Recommended 2018 Water User Rates

REGIONAL MUNICIPALITY OF DURHAM										
Water User Rate Schedule				2018 Rate Increase = 5.2%						
Monthly										
Effective January 1, 2018										
Volumetric Charges										
Block	Consumption Range			Current		Proposed				
	From	To	Units	2017		2018				
First Block	0	to 45	cubic metres/month	\$1.045	/cubic metre	\$1.100	/cubic metre			
	0	to 10,000	gallons/month	\$4.752	/1,000 gallons	\$4.999	/1,000 gallons			
	0	to 1,600	cubic feet/month	\$2.960	/100 cubic feet	\$3.114	/100 cubic feet			
Second Block	46	to 4,500	cubic metres/month	\$0.889	/cubic metre	\$0.935	/cubic metre			
	10,001	to 1,000,000	gallons/month	\$4.041	/1,000 gallons	\$4.251	/1,000 gallons			
	1,601	to 160,000	cubic feet/month	\$2.518	/100 cubic feet	\$2.648	/100 cubic feet			
Third Block		Over 4,500	cubic metres/month	\$0.816	/cubic metre	\$0.859	/cubic metre			
		Over 1,000,000	gallons/month	\$3.710	/1,000 gallons	\$3.903	/1,000 gallons			
		Over 160,000	cubic feet/month	\$2.311	/100 cubic feet	\$2.432	/100 cubic feet			
Basic Charges (\$/month)										
Meter/Fire Line Size		Service Charge		Minimum Charge		Unmetered Fire Line Charge				
		Current	Proposed	Current	Proposed	Current	Proposed			
Inches	mm	2017	2018	2017	2018	2017	2018			
Standard	Standard	\$17.57	\$18.48	n/a	n/a	n/a	n/a			
1-inch	25-mm	\$35.70	\$37.56	\$59.00	\$63.00	\$13.56	\$14.27			
1 ½-inch	38-mm	\$75.99	\$79.94	\$114.00	\$120.00	\$18.23	\$19.18			
2-inch	51-mm	\$164.12	\$172.65	\$220.00	\$231.00	\$35.29	\$37.13			
2 ½-inch	64-mm	n/a	n/a	n/a	n/a	\$46.77	\$49.20			
3-inch	76-mm	\$288.49	\$303.49	\$376.00	\$396.00	\$62.00	\$65.22			
4-inch	102-mm	\$573.65	\$603.48	\$742.00	\$781.00	\$124.01	\$130.46			
5-inch	127-mm	n/a	n/a	n/a	n/a	\$166.51	\$175.17			
6-inch	152-mm	\$1,066.15	\$1,121.59	\$1,356.00	\$1,427.00	\$228.99	\$240.90			
8-inch	203-mm	\$1,817.56	\$1,912.07	\$2,229.00	\$2,345.00	\$381.56	\$401.40			
10-inch	254-mm	\$2,957.68	\$3,111.48	\$3,531.00	\$3,714.00	\$608.86	\$640.52			
12-inch	305-mm	n/a	n/a	n/a	n/a	\$858.46	\$903.10			
Flat Rate (includes consumption)										
		Current	Proposed							
		2017	2018							
Monthly/unit		\$41.33	\$43.48							
Quarterly/unit		\$123.99	\$130.44							
Annually/unit		\$495.96	\$521.76							
Other - Raw Water Rate										
			Current 2017	Proposed 2018						
All volumes			\$0.286	/cubic metre	\$0.301	/cubic metre				
			\$1.300	/1,000 gallons	\$1.368	/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 2018 Sewage User Rates

REGIONAL MUNICIPALITY OF DURHAM						
Sewage User Rate Schedule				2018 Rate Increase = 2.8%		
Monthly						
Effective January 1, 2018						
Volumetric Charges						
Block	Consumption Range			Current 2017		Proposed 2018
	From	To	Units			
First Block	0	to 45	cubic metres/month	\$1.712	/cubic metre	\$1.760 /cubic metre
	0	to 10,000	gallons/month	\$7.783	/1,000 gallons	\$8.001 /1,000 gallons
	0	to 1,600	cubic feet/month	\$4.849	/100 cubic feet	\$4.985 /100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				163.8%		160.1%
Second Block	46	to 4,500	cubic metres/month	\$1.507	/cubic metre	\$1.549 /cubic metre
	10,001	to 1,000,000	gallons/month	\$6.849	/1,000 gallons	\$7.041 /1,000 gallons
	1,601	to 160,000	cubic feet/month	\$4.267	/100 cubic feet	\$4.387 /100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				169.5%		165.6%
Third Block		Over 4,500	cubic metres/month	\$1.266	/cubic metre	\$1.302 /cubic metre
		Over 1,000,000	gallons/month	\$5.756	/1,000 gallons	\$5.917 /1,000 gallons
		Over 160,000	cubic feet/month	\$3.586	/100 cubic feet	\$3.686 /100 cubic feet
<i>Sewer rate expressed as a % of water rate</i>				155.1%		151.6%
Basic Charges (\$/month)						
Meter	Service Charge		Minimum Charge		Flat Rate/unit	
	Current 2017	Proposed 2018	Current 2017	Proposed 2018	Current 2017	Proposed 2018
Standard	\$6.71	\$6.90	No minimum charge		\$45.63	\$46.91
All other sizes						
Monthly	\$6.71	\$6.90	\$46.00	\$47.00	\$45.63	\$46.91
Quarterly	\$20.13	\$20.70			\$136.89	\$140.73
Annually	\$80.52	\$82.80			\$547.56	\$562.92
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 2018 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System

Sun Valley Home Owners Co-Op 2018 Projected Costs

Cost Item	Budget	Projected Cost
	2017	2018
	\$	\$
Hydro Electricity	2,200	2,000
Property Taxes	320	420
Laboratory Costs	2,255	2,255
Vehicle	2,870	2,870
Operator & Reports	15,580	15,850
Operation Materials	2,600	2,600
Maintenance Materials & Other	600	600
Machinery and Equipment	1,550	1,550
TOTAL	27,975	28,145
Monthly charges per property owner (billings sent quarterly)	\$137	\$138
Annual cost to the 17 property owners	\$1,644	\$1,656

Schedule 4 - Recommended 2018 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 2018 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2017 Charges		Recommended 2018 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water \$	Sewer \$	Note: Changes are in Bold \$
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		3,344.00 4,383.00 3,901.00 5,032.00		3,344.00 4,383.00 3,901.00 5,032.00
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 3,344.00 3,901.00		Actual Cost 3,344.00 3,901.00
3) Inspection of an installation of a separate fire line on private property	D3		125.00		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		3,843.00 5,005.00	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 3,843.00	Actual Cost 3,843.00
6) Storm Sewer Service Connections: - Minimum Charge		C3		Actual Cost 3,843.00	Actual Cost 3,843.00

Schedule 4 - Recommended 2018 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2017 Charges		Recommended 2018 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			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			296.00		724.00
- /foot			90.22		220.68
ii) Per annum (see Note 2)					
- /metre			40.22		98.37
- /foot		12.26		29.98	
10) Standard 200-mm (8-inch) diameter Watermain	E1 & E2				
i) Cash cost (standard)					
- /metre			344.00		841.00
- /foot			104.85		256.34
ii) Per annum (see Note 2)					
- /metre			46.74		114.26
- /foot		14.25		34.83	
11) Standard 300-mm (12-inch) diameter Watermain	E1 & E2				
i) Cash cost (standard)					
- /metre			381.00		932.00
- /foot			116.13		284.07
ii) Per annum (see Note 2)					
- /metre			51.77		126.63
- /foot		15.78		38.60	
12) Standard 200-mm (8-inch) diameter Sanitary Sewer (Note 3)		D1 & D2			
i) Cash cost (standard)					
- /metre				331.00	949.00
- /foot				100.89	289.26
ii) Per annum (see Note 2)					
- /metre				44.97	128.94
- /foot			13.71	39.30	
13) Standard 250-mm (10-inch) diameter Sanitary Sewer		D1 & D2			
i) Cash cost (standard)					
- /metre				378.00	1,083.00
- /foot			115.21	330.10	

Schedule 4 - Recommended 2018 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2017 Charges		Recommended 2018 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water \$	Sewer \$	Note: Changes are in Bold \$
ii) Per annum (see Note 2) - /metre - /foot				51.36 15.75	147.14 44.85
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		421.00 128.32 57.20 17.43	1,207.00 367.89 163.99 49.98
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) Water Shut Off/Turn On 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		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	80.00 80.00 80.00 115.00 115.00 115.00 80.00 39.00 for both 94.00 for both 80.00 for both

Schedule 4 - Recommended 2018 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2017 Charges		Recommended 2018 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water \$	Sewer \$	Note: Changes are in Bold \$
16) Standby charge while water service is shut off but not disconnected or water service is available for fire protection purposes but not connected	F2		Standard Service Charge		Standard Service Charge
17) <u>Testing of Water Meter</u> 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		210.00 210.00 Actual Cost No Charge
18) Unmetered water used for construction (building purposes) per service	F4		110.00		146.00
19) Drawing Regional water from hydrant for purposes other than fire protection Area Municipalities & Others (All Users) - /cubic metre - /1000 gallons - Deposit - Administrative Charge - Minimum Charge per Month	F5		3.55 16.14 1,000.00 121.40 1,000.00		3.73 16.95 1,200.00 128.00 1,200.00
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		210.00 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	33.00 for both		34.00 for both
26) Charge for Regional Solicitor providing information	F10	E6	88.00 for both		92.00 for both
27) Processing of Dishonoured Payments	F11	E7	46.00 for both		48.00 for both
28) Account Payment Transfer Fee	F12	E8	10.00 for both		10.50 for both
29) Change of Occupancy	F13	E9	40.00 for both		42.00 for both
30) Charge for Late Payment of Water/Sewer Surcharge Rates	F14	E10	2%		2%
31) Lien Administration Fee	F15	E11	71.00 for both		74.00 for both
32) Installation and removal of anti-tampering devices on fire hydrants & curb stops	F16		132.00		138.00

Schedule 4 - Recommended 2018 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2017 Charges		Recommended 2018 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 35.00		3.00 13.64 52.10 37.70 123.40 210.10 174.40 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		467.20 812.90 320.30 652.80
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	19.10/copy		20.10/copy
38) Sewer TV Inspection Reports and Videos per report or video (+ Applicable taxes)		E14		20.43	20.43
39) Sewer Use By-law Agreement extra strength waste (\$/k.g.)				0.53	0.53
40) Sewer Appeal Application per request		E15		650.00	750.00

Schedule 5 - Recommended 2018 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2017 Rate		2018 Changes Bold		
	(before appl. Taxes)		(before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 1 of 9					
ONTARIO DRINKING WATER REGULATION 170/03 PACKAGES					
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	
Single test by membrane filtration (e.g. MFHPC, MFTC)		\$13.30		\$13.30	
Test for E. coli by membrane filtration		\$14.30		\$14.30	
Inorganic Chemical					
All Parameters required under O.Reg. 170/03 Schedule 23		\$80.60		\$80.60	
(As, B, Ba, Cd, Cr, Hg, Sb, Se, U)					
All Parameters required under O.Reg. 170/03 Schedule 23 plus additional metals		\$80.60		\$80.60	
(Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, U, Zn)					
Inorganic Ions required under O.Regulation 170/03		\$79.60		\$79.60	
(F, NO ₂ , NO ₃ , Na)					
Inorganic Ions required under O.Reg. 170/03 plus additional Ions		\$79.60		\$79.60	
(Hardness*, Ca, Mg, Na, K, Ammonia, F, Cl, Br, NO ₂ , NO ₃ , PO ₄ , SO ₄)					
(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		\$150.00		\$150.00	
Organic Chemical					
THMs (Trihalomethanes)		\$102.00		\$102.00	
bromodichloromethane	bromoform				
dibromochloromethane	chloroform				
THM (Total)					
All Parameters required under Schedule 24		\$1,087.30		\$1,087.30	
(Includes all Parameters described under the following test CODES listed in this book - VOC, OC, TRIAZ, OP, PHENAC, CHLORPHEN, CARBUREA, GLYPH, DIPARA, PCB)					
Combined Packages					
York Region Drinking Water Package A		\$1,285.20		\$1,285.20	
(Includes DW2M (less TURB), Hg, B, Ba, U, VOC, OC, TRIAZ, OP, PHENAC, CHLORPHEN, CARBUREA, GLYPH, DIPARA, PCB)					
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM				
2018 FEES AND CHARGES				
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY				
Description	2018 Changes Bold			
	2017 Rate		2018 Rate	
	(before appl. Taxes)		(before appl. Taxes)	
	\$	\$	\$	\$
Laboratory Fees Page 2 of 9				
MICROBIOLOGICAL TESTS				
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
Single test by membrane filtration (e.g. MFHPC, MFTC)		\$13.30		\$13.30
Test for E. coli by membrane filtration		\$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		\$70.00		\$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		\$100.00		\$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		\$100.00		\$100.00
Algae by Microscopic Particulate Analysis		\$500.00		\$500.00
Microcystin		\$153.00		\$153.00
F Specific Coliphages		\$200.00		\$200.00
Mycology (Fungi)				
Fungal Enumeration		\$25.00		\$25.00
Fungal Identification (Consultation Required)		\$130.00		\$130.00
Air Quality (Microbial - Bacteria, Yeasts & Molds)		\$75.00		\$75.00
Enumeration of Bacteria, Yeast and Molds by RODAC plates (BHI & SAB/MEA)		\$75.00		\$75.00
Protozoa Testing				
Cryptosporidium and Giardia (MBCG)		\$800.00		\$816.00
Cryptosporidium, Giardia and Microscopic Particulate Analysis (MBCGMPA)		\$1,100.00		\$1,100.00
Pigment Bearing Algae and Diatoms (MBPBAD)		-		\$500.00 New
Cryptosporidium, Giardia and Pigment Bearing Algae and Diatoms (MBCGPBAD)		-		\$1,100.00 New
Sterility (Spore) Testing				
Bacillus subtilis (DRY)		\$50.00		\$50.00
Bacillus stearothermophilus (STEAM)		\$50.00		\$50.00
Other Bacteriological Groups				
Private Wells (TC, EC)(Signed Report faxed next day)		\$76.50		\$76.50
Iron Bacteria - Presence/Absence		\$75.00		\$75.00
Sulphur Bacteria - Presence/Absence		\$75.00		\$75.00
Iron & Sulphur Bacteria - Presence/Absence		\$125.00		\$125.00
Enumeration for (TC, EC, FC, HPC, BKD, PS, AE or FS) per parameter		\$51.00		\$51.00

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2017 Rate		2018 Changes Bold		
	(before appl. Taxes)		(before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 3 of 9					
GENERAL INORGANIC TESTS					
	Water	S/S/S	Water	S/S/S	
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	\$35.70	N/A	
Dissolved Solids, Ashed Dissolved Solids, Volatile Dissolved Solids*	\$26.50	\$29.60	\$26.50	N/A	
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	\$42.80	
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	N/A	\$19.40	N/A	\$19.40	
S/S/S = Sewage, Sludge and Soil					
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2017 Rate		2018 Changes Bold		
	(before appl. Taxes)		(before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 4 of 9					
GENERAL INORGANIC TESTS					
	Water	S/S/S	Water	S/S/S	
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	
Ultra Low Dissolved PO₄ (clean water only)	-	-	\$66.30	N/A	
Metals					
Mercury (Hg) by Cold Vapour AA	\$35.70	\$42.80	\$35.70	\$42.80	
Acid Soluble Metals by ICP (Al, Fe, Mn, Pb, Zn)	\$40.80	N/A	\$40.80	N/A	
Cation Scan by ICP (B, Ba, Be, Ca, K, Li, Mg, Na, SiO ₃ , Sr, U)	\$40.80	N/A	\$40.80	N/A	
Heavy Metals Scan by ICP: 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: As, Cd, Co, Cr, Cu, Mo, Ni, Pb, Se, Zn	N/A	\$64.30	N/A	\$64.30	
Regulation 170 Metals: Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, U, Zn	\$76.50	N/A	\$76.50	N/A	
Any One of the Above Single Metals by ICP-OES or ICP-MS	\$35.70	\$42.80	\$35.70	\$42.80	
(Lead testing as required under O.Regulation 170)	\$35.70	N/A	\$35.70	N/A	
(Lead testing as required under O.Regulation 243)	\$75.00	N/A	\$75.00	N/A	
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					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2017 Rate		2018 Changes Bold		
	(before appl. Taxes)		2018 Rate		
	\$	\$	\$	\$	\$
Laboratory Fees Page 5 of 9					
<u>INORGANIC MONITORING PACKAGES</u>					
<u>Drinking Water</u>					
Drinking Water Package #1					
(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*)					
	\$96.90		\$96.90		
Drinking Water Package #2					
(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*)					
	\$149.90		\$149.90		
Drinking Water Package #2 with expanded metals					
(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*)					
	\$174.40		\$174.40		
Drinking Water Package #3 with expanded metals					
Colour, (Al, Sb, As, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Se, U, Zn), Hg					
pH, Conductivity, Alkalinity, (Ca, Mg, K, Na, NH3, Hardness*)					
(Br, Cl, R, NO2, NO3, [NO2+NO3]*, SO4, PO4), DOC, TKN					
	-		\$262.20	New	
<u>Landfill Monitoring</u>					
Surface Water					
(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)					
	\$370.30		\$370.30		
(Filtration of Raw Landfill samples)					
	\$35.70		\$35.70		
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description	2017 Rate		2018 Changes Bold		
	(before appl. Taxes)		(before appl. Taxes)		
	\$	\$	\$	\$	
Laboratory Fees Page 6 of 9					
<u>INORGANIC MONITORING PACKAGES</u>					
Sewer Use By-law					
Complete Inorganic Package	\$415.10		\$475.00		
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					
(BOD5, suspended solids)	\$42.80		\$42.80		
Monitoring Package #2					
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus)	\$100.00		\$100.00		
Monitoring Package #2 plus Metals					
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)	\$161.20		\$161.20		
Monitoring Package #3					
(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)	\$149.90		\$149.90		
Monitoring Package #3 plus Metals					
(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)	\$211.10		\$211.10		
Monitoring Package #4 plus Metals					
(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)	\$262.10		\$262.10		
<u>Sludge</u>					
Sludge Monitoring Package #1					
(total solids, total kjeldahl nitrogen, total phosphorus, ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)	\$116.30		\$116.30		
Sludge Monitoring Package #1 plus Metals					
(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)	\$177.50		\$177.50		
Sludge Monitoring Package #2 (Agrisludge)					
(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)	\$204.00		\$204.00		
*Calculation included (no charge).					

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description		2017 Rate		2018 Changes Bold	
		(before appl. Taxes)		2018 Rate	
		\$	\$	\$	\$
Laboratory Fees Page 7 of 9					
ORGANIC MONITORING PACKAGES					
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	Xylene (Total)				
Taste & Odour					
geosmin	2-methylisoborneol (MIB)	\$250.00		\$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					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description		2017 Rate		2018 Changes Bold	
		(before appl. Taxes)		(before appl. Taxes)	
		\$	\$	\$	\$
Laboratory Fees Page 8 of 9					
ORGANIC MONITORING PACKAGES					
<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				
Organophosphorus Pesticides					
chloryrifos (Dursban)	malathion	\$107.10		\$107.10	
chloryrifos-methyl (Reldan)	methyl parathion				
diazinon	mevinphos (Phosdrin)				
dichlorvos	parathion				
dimethoate	phorate (Thimet)				
ethion					
fenchlorphos (Ronnel)	terbufos				
guthion (Azinphos-methyl)					
benzo(a)pyrene					
Phenoxy Acid Herbicides					
2,4-dichlorophenoxyacetic acid (2,4-D)	MCPA	\$161.20		\$161.20	
bromoxynil					
dicamba	picloram				
diclofop-methyl					
Chlorophenols					
2,4-dichlorophenol	2,3,4,6-tetrachlorophenol	\$161.20		\$161.20	
2,4,6-trichlorophenol					
Carbamate & Phenyl Urea Pesticides/Herbicides					
Carbaryl	Carbofuran	\$239.70		\$239.70	
Diuron	Triallate				
Glyphosate		\$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 (Scans for Volatile Organic Compounds)		\$250.00		\$250.00	
Extractables (Scans for Extractable Organic Compounds)		\$300.00		\$300.00	

THE REGIONAL MUNICIPALITY OF DURHAM					
2018 FEES AND CHARGES					
WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY					
Description		2017 Rate		2018 Changes Bold	
		(before appl. Taxes)		(before appl. Taxes)	
		\$	\$	\$	\$
Laboratory Fees Page 9 of 9					
ORGANIC MONITORING PACKAGES					
Industrial Sewer Use By-law Acid/Base/Neutral Compounds					
di-n-butylphthalate	bis(2-ethylhexyl)phthalate	\$214.20		\$214.20	
Polychlorinated Biphenyls		\$80.60		\$80.60	
Industrial Sewer Use By-law Volatile Organic Compounds					
1,1,2,2,-tetrachloroethane	m/p-xylene	\$134.60		\$134.60	
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)					
nonylphenol	nonylphenol ethoxylates	Subcontractor's Rate		Subcontractor's Rate	
Durham/York/Peel Sewer Use By-law Organic Package*					
1,1,2,2,-tetrachloroethane	m/p-xylene	\$386.50		\$386.50	
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)					
* If nonyl phenol/nonyl phenol ethoxylates req'd, please request as add-on to package					
Total Petroleum Hydrocarbons (TPH) in Water (Subcontracted)					
This CCME method includes:		Subcontractor's Rate		Subcontractor's Rate	
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 (To maintain an unbroken chain of custody for samples that may be used for litigation)	per sample	\$255.00		\$255.00	
Extended storage for legal samples (longer than 30 days) (Samples will be stored free of charge for 30 days from the date of final report)	per container per month	\$3.10		\$3.10	
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
2018 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 #2017-COW-147: 2017 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 #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study** – The implications of recommendations included in this report have been considered in developing the proposed 2018 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 2017 in order that they can be implemented with the first customer billings commencing early January 2018. 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

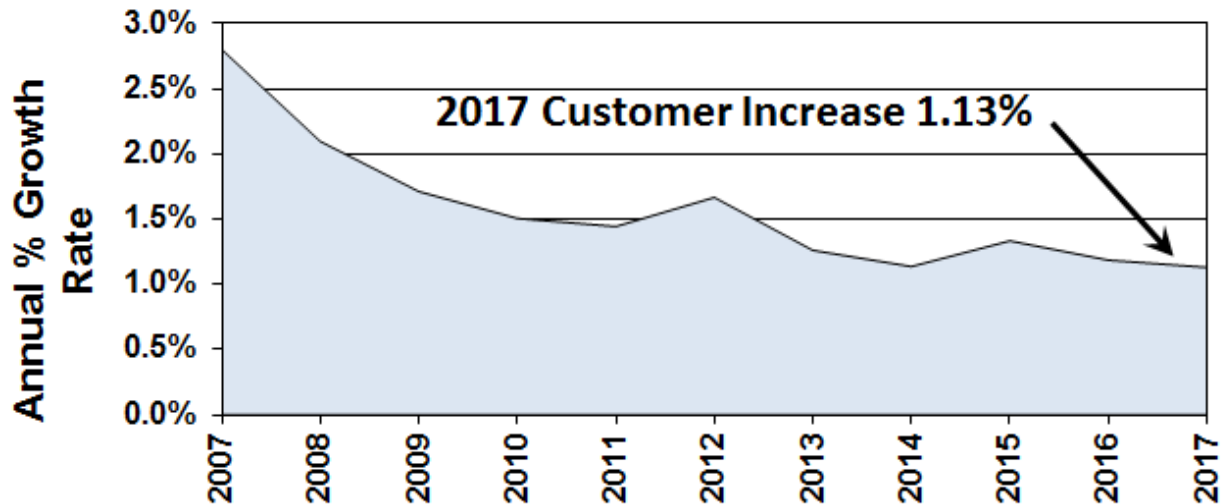
The proposed 2018 water and sanitary sewer user rates, fees and related charges will be considered by the Committee of the Whole on December 6th and by Regional Council on December 13th 2017. Public notification of this was provided twice in local newspapers throughout the Region on November 16th and 23rd, 2017 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 2007 to 2017 (June data) is graphed 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 2007 to 2017
Actual (June data)**



Customer growth peaked at about 4.0% in 2004. Since then, the growth rate has decreased to 1.13% over the past year (June to June data).

For 2018 rate setting purposes, annual customer growth is projected to increase to 1.20% for water and 1.25% for sewage.

The actual June customer data from 2007 to 2017 and projected 2018 budget are tabulated in Exhibit 2.

There were a total of 174,014 water customers and 169,861 sewage customers in June 2017. 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 2007 to 2017 Actual & 2018 Budget (June to June)

Year	Water			Sewage			Fire Lines
	Total	Increase Over		Total	Increase Over		
		Number	Percent		Number	Percent	
		Previous June			Previous June		
2007	150,724	4,109	2.8%	146,400	4,148	2.9%	1,617
2008	153,884	3,160	2.1%	149,553	3,153	2.2%	1,654
2009	156,520	2,636	1.7%	152,219	2,666	1.8%	1,706
2010	158,877	2,357	1.5%	154,598	2,379	1.6%	1,730
2011	161,172	2,295	1.4%	156,907	2,309	1.5%	1,749
2012	163,860	2,688	1.7%	159,605	2,698	1.7%	1,775
2013	165,927	2,067	1.3%	161,683	2,078	1.3%	1,802
2014	167,813	1,886	1.1%	163,575	1,892	1.2%	1,783
2015	170,051	2,238	1.3%	165,844	2,269	1.4%	1,835
2016	172,068	2,017	1.2%	167,894	2,050	1.2%	1,863
2017	174,014	1,946	1.1%	169,861	1,967	1.2%	1,877
2018 Budget	176,102	2,088	1.20%	171,984	2,123	1.25%	1,900

Note: As illustrated in Exhibit 2, the annual increase in the number of sewage customers is greater than the increase in number water customers. This is due to the gradual servicing with sewage of existing water-only customers.

The projected 2018 increase in the number of water customers of 2,088 includes both residential and ICI (industrial, commercial and institutional) customers and is still less than the increase in dwelling units provided in Report #2017-COW-255: 2018 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 211,100 *residential dwelling units* compared to about 169,200 *residential water customers* billed.

2018 projected customer growth is summarized as follows:

The projected customer growth for 2018 is:

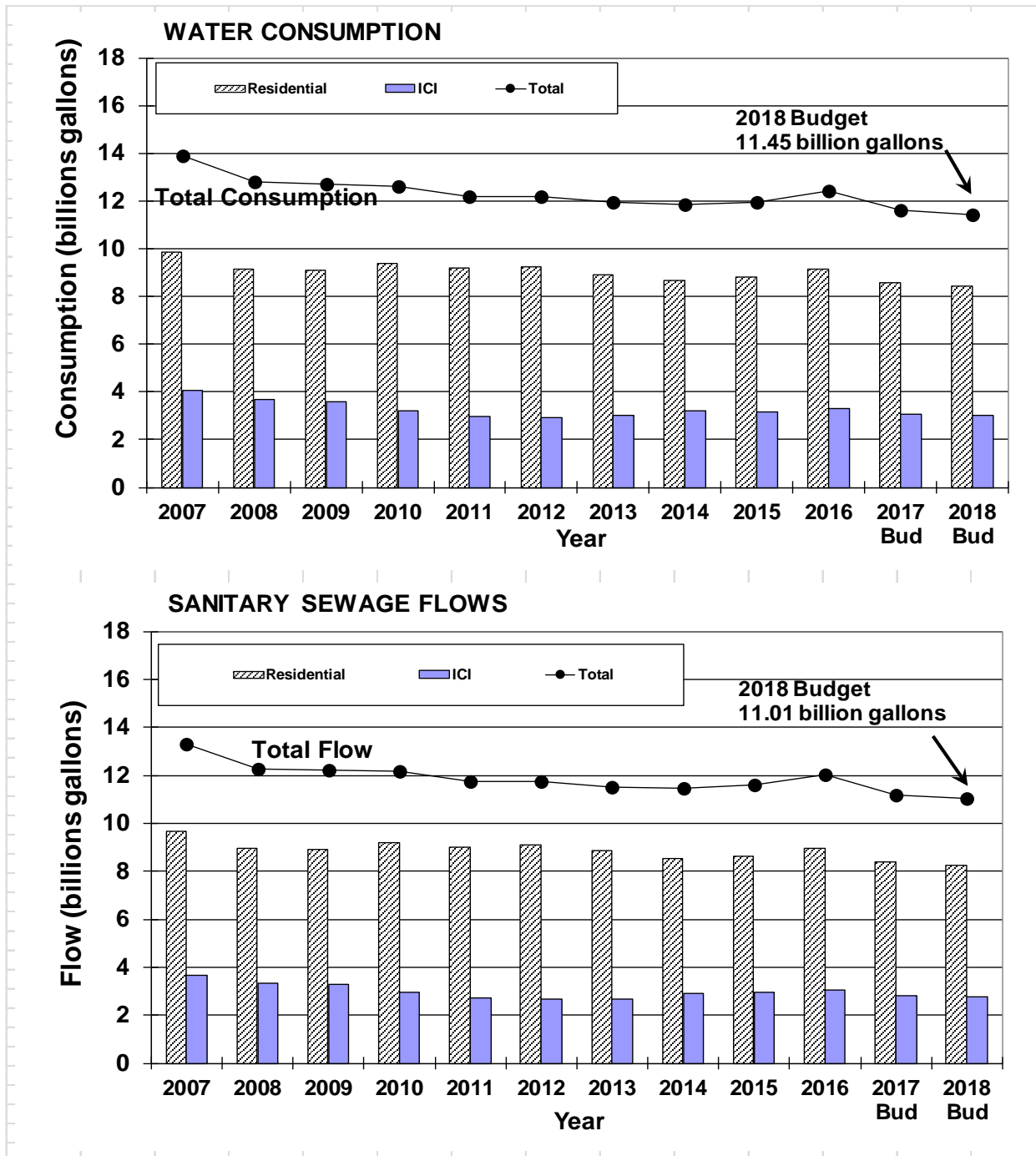
- **Water increase by +2,088 (+1.20%) to a total of 176,102**
- **Sewage increase by +2,123 (+1.25%) to a total of 171,984**

3 Water Demand – Gradually Decreasing

3.1 Historical Consumption

Actual residential, ICI (industrial, commercial and institutional) and total volumes billed to customers for water and sewage from 2007 to 2016, and the 2017 and 2018 Budgets (discussed further following), 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.

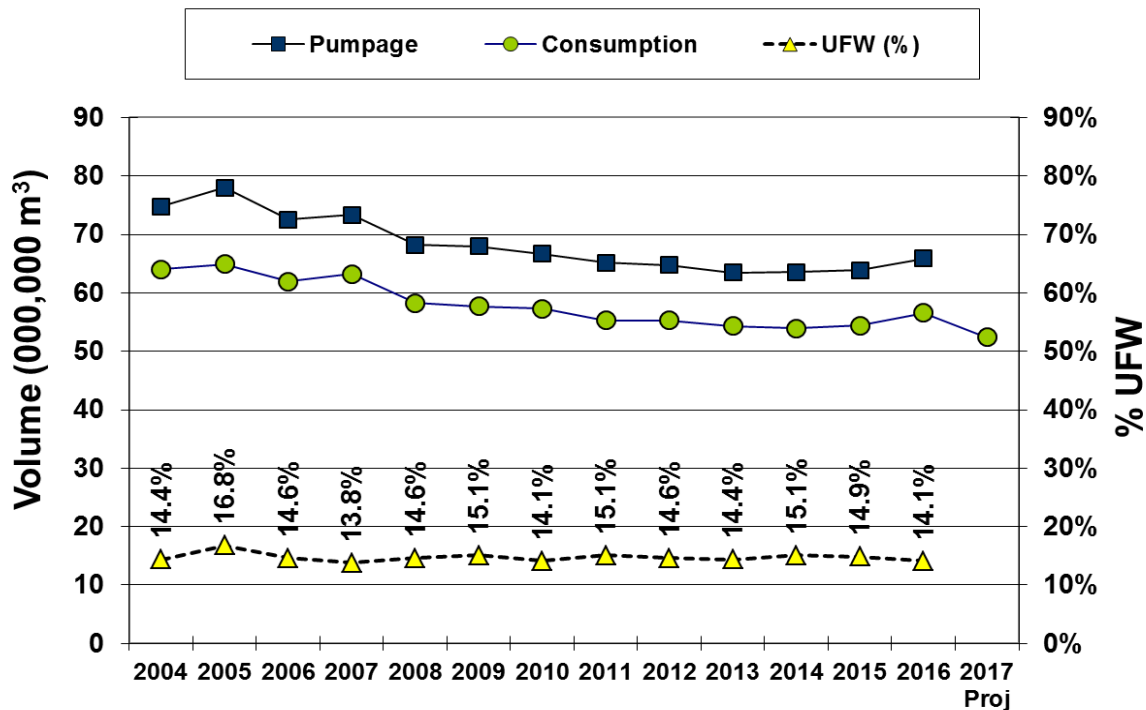
Exhibit 3 Billed Water Consumption & Flows



3.2 Consumption versus Supply

Actual water supply, consumption billed and Unaccounted For Water (UFW) volumes from 2004 to 2016 actual and 2017 projected consumption are shown below in Exhibit 4.

Exhibit 4 Water Pumpage, Consumption & Unaccounted for Water



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

The projected 2017 consumption drop compared to actual 2016 is related to summer residential usage. Summer 2016 was hot and dry resulting in high residential usage with summer 2017 the opposite resulting in low summer usage.

Total pumpage and billed consumption follow parallel paths. The trend has been generally downward over the period. Exceptions were 2005, 2007 and 2016, very dry summers with attendant higher seasonal usage. The projected 2017 consumption reflects a more normal-to-wet level of summer precipitation with consumption settling back into the long-term downward trend.

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 7.3](#) for a detailed update on water system losses.

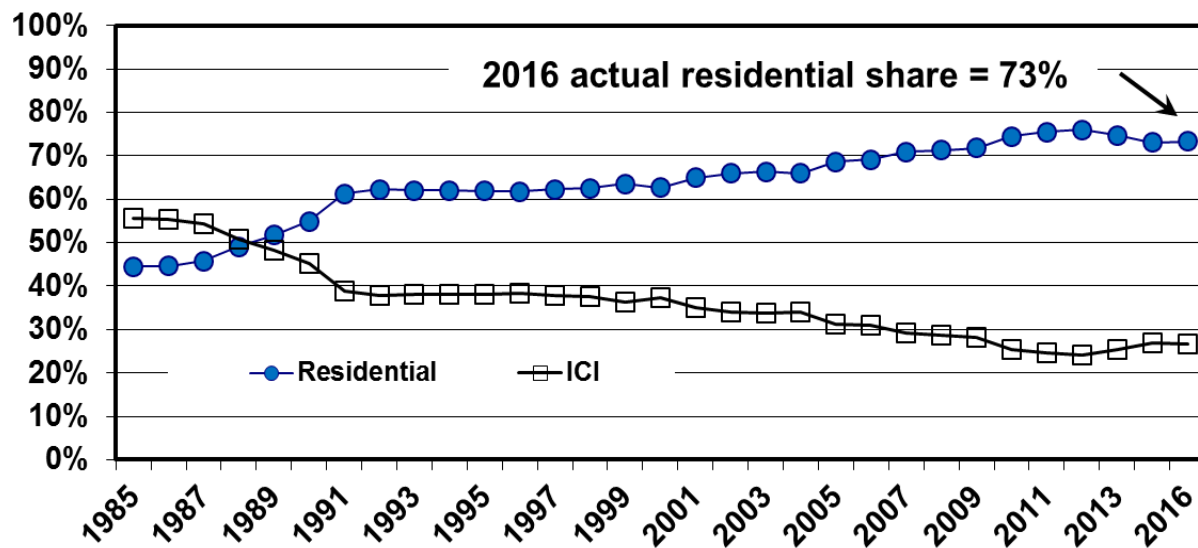
3.3 Residential Consumption

3.3.1 Residential Usage Share

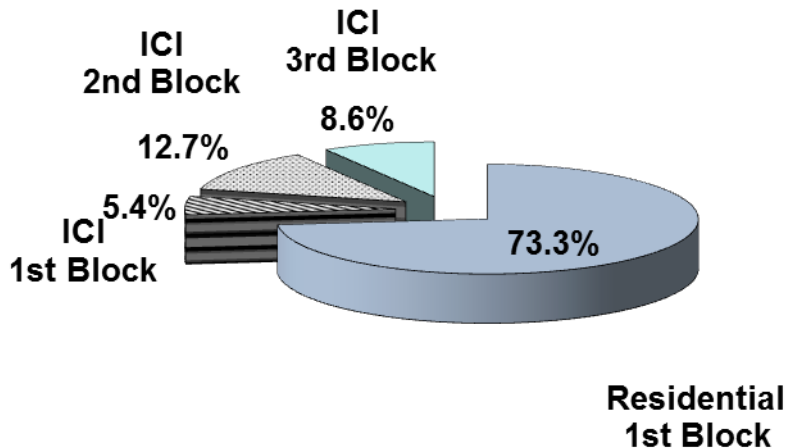
Up until recently there has been a steady increase in the share of consumption by residential customers and a corresponding decrease by ICI customers. Residential usage has grown from about a 44% share in 1985 to a 76% share in 2012. The change was due to a combination of strong residential growth, and, 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 share.

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

Exhibit 5 Billed Water & Sewage Volume Share – Residential versus ICI (1985 to 2016)



The distribution of 2016 consumption by block and customer class is illustrated in [Exhibit 6](#).

Exhibit 6 2016 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 all residential and 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 78.7% of all usage in 2016 (ICI 5.4% + Residential 73.3%).
- **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 increased from about 8.4% of total usage in 2015 to about 8.6% in 2016.

3.3.2 Residential Usage - Decreasing

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 with each component discussed in more detail following:

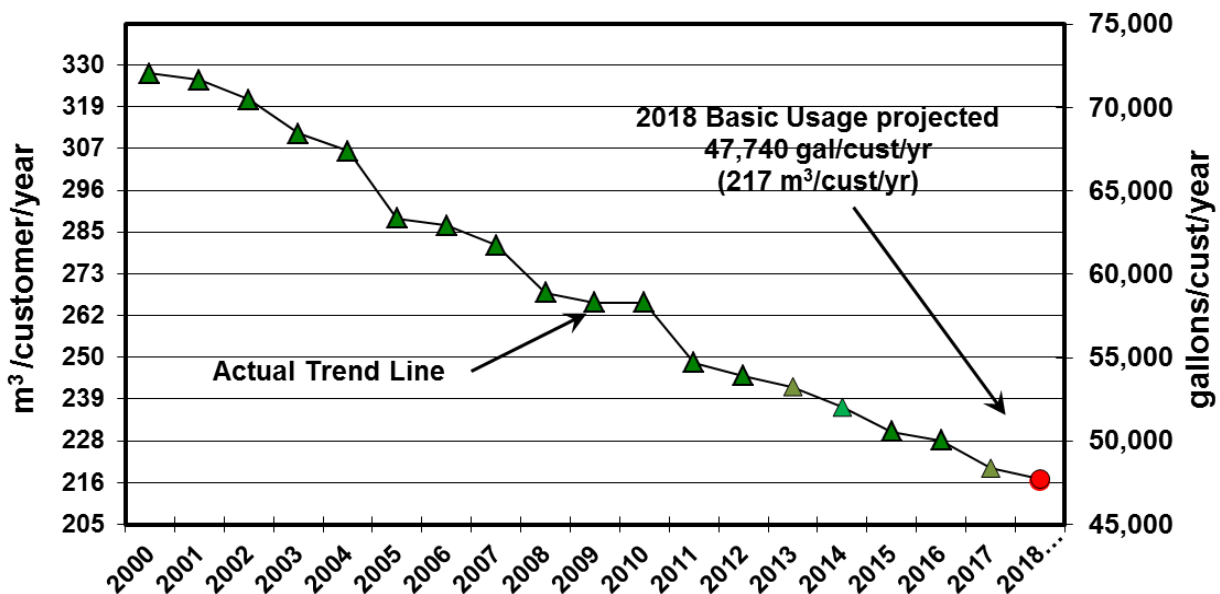
- **Basic Usage** - Basic usage is due to day-to-day activities that occur year-round such as kitchen, bathroom and laundry usage.
- **Seasonal Usage** – Seasonal usage is mostly outdoors during the summer months (May to September) and varies from year-to-year. During dry

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 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 2017 **basic usage** is 220 m³/cust/yr (48,400 gal/cust/yr). This is a blend of all residential customers including single family dwellings, duplexes apartment buildings and townhouses. It is trending downward over time – with 2017 dropping by 3.3%. Projected 2018 basic usage is 217 m³/cust/yr (47,740 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 participated in the Priority Green Clarington Demonstration Project. Six new homes were built in Bowmanville and Courtice in 2014, with features that go beyond energy efficiency and water conservation standards required by the Ontario Building Code. The features include greywater reuse as well as low flow toilets, faucets and showers. Their energy and water usage was being monitored by the municipality. This will potentially provide information on the impact of advanced water conservation measures on residential customer usage.

Two full years of water consumption, 2015 (a wet summer) and 2016 (a very dry summer), are now available. Consumption in the homes in the Demonstration Project has been compared with the average consumption in

single family dwellings (SFD) across the Region. Consumption in the Demonstration Project homes averaged 22% and 27% less

Priority Green Clarington Demonstration Project				
Annual Consumption vs Regional SFD Average				
	2015		2016	
	m3	gallons	m3	gallons
Region SFD Average	206	45,320	211	46,420
Green Demonstration Project	161	35,420	155	34,100
GDP% versus Region Average	78%		73%	
Summer Precipitation	Wet		Very Dry	

in 2015 and 2016 respectively (see table). The higher average in 2016 might reflect the average Regional customer using more water seasonally due to

the dry summer while the Demonstration Project customers had their greywater available for summer irrigation. The Demonstration Project indicates that there is still potential for future reduction in residential per customer water use as conservation measures continue to be adopted.

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, 2013 and 2017) to significant **seasonal usage** in dry years (examples 2005, 2007 and 2016). 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 2018 the assumption has been increased modestly but is still below 85% of historical annual seasonal usage levels. 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 50,500 gallons (229.5 m³ per year in 2017. For 2018 budgeting purposes, due to the decrease in basic usage per customer, total residential usage is budgeted based on 49,200 gallons (223.6 m³) per residential customer.

Residential Consumption per Year

Type of Usage	Per Customer		Total Annual	
	2017 Budget	2018 Budget	2017 Budget	2018 Budget
Cubic Metres				
Basic	223.0	217.0		
Seasonal Allowance	6.5	6.6		
Total	229.5	223.6	38,911,000	38,282,000
Gallons			(000)	(000)
Basic	49,060	47,740		
Seasonal Allowance	1,440	1,460		
Total	50,500	49,200	8,560,000	8,422,000

With customer growth factored in, total annual residential water consumption is budgeted to decrease by 1.6% from 38.9 million m³ in 2017 to 38.3 million m³ in 2018.

3.4 ICI Consumption

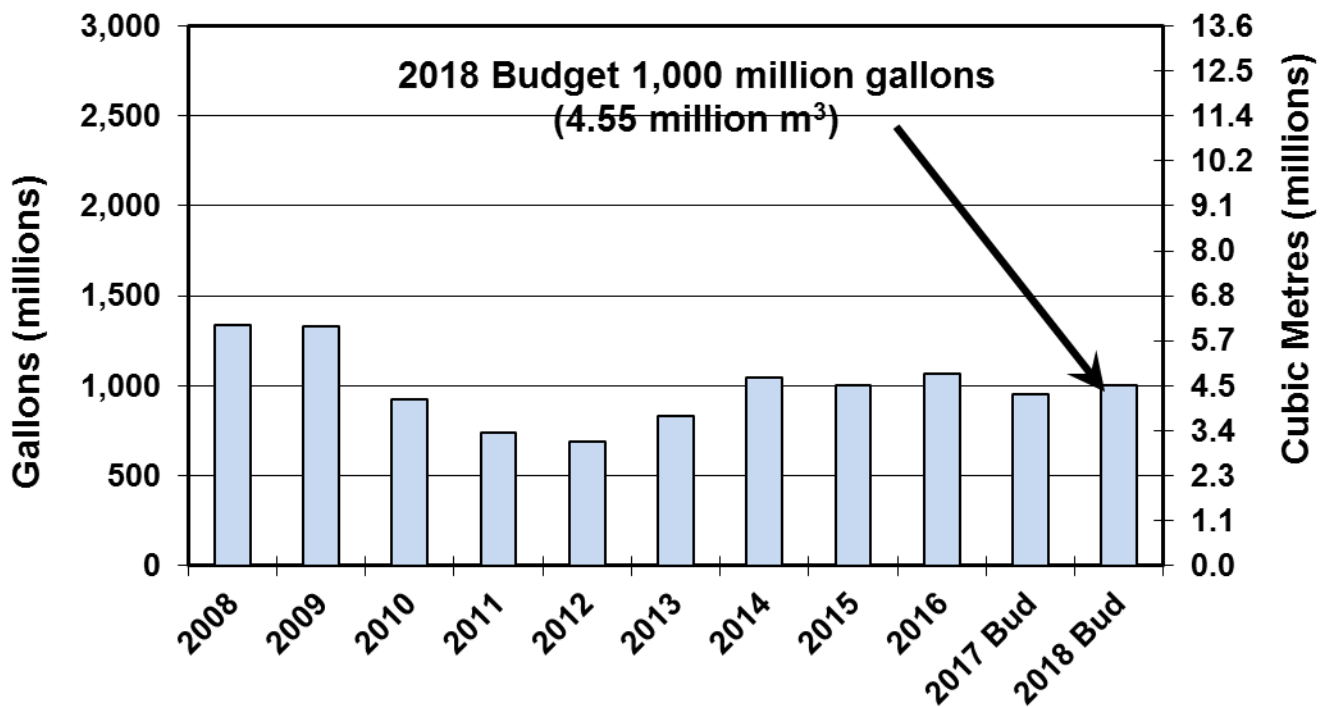
3.4.1 Small to Medium ICI Customer Usage – Decrease

Water usage in the 1st block has remained constant in recent years and is budgeted to be unchanged in 2018. The 2nd block has shown some decrease and thus the 2018 2nd block consumption is budgeted to reflect this and has been decreased by about 7%.

3.4.2 Large Industry Usage - Increase

Actual 3rd block consumption is graphed for 2008 to 2016 in Exhibit 8, as well as 2017 and 2018 Budget consumption. The large industry sector is responsible for 3rd block consumption and represented about 8.6% of total consumption in 2016.

Exhibit 8 3rd Block Water Consumption 2008 to 2018



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

By October of this year, 32 customer accounts representing 24 customers (same numbers in 2016) had reached 3rd block rates. Consumption to October of this year compared with October 2016 by these customers has increased by 6%. The increase is spread over 18 existing customers.

3rd block consumption is projected to increase over 2017 budget by about 5% in 2018.

The projected 2018 3rd block Water Budget usage is 4.5 million cubic metres (1,000 million gallons).

3.4.3 ICI Consumption Summary

ICI consumption is projected to decrease in 2018 by 1.7% (water/sewage combined) compared to the 2017 Budget. The decrease is due to lower projected 2nd block consumption more than offsetting the projected increase in 3rd block consumption.

3.5 Total Consumption - Decreasing

ICI Consumption Summary

ICI Summary	Water	Sewage
Cubic metres		
<i>1st block</i>	2,864,000	2,773,000
<i>2nd block</i>	6,364,000	5,636,000
<i>3rd block</i>	4,545,000	4,182,000
Total	13,773,000	12,591,000
Gallons (000)		
<i>1st block</i>	630,000	610,000
<i>2nd block</i>	1,400,000	1,240,000
<i>3rd block</i>	1,000,000	920,000
Total	3,030,000	2,770,000
Budget Decrease	-1.6%	-1.8%
Combined	-1.7%	

Actual Consumption/Flow for 2012 to 2016 and budget levels for 2017 and 2018 are shown in [Exhibit 9](#).

Exhibit 9 Water Consumption & Sewage Flows 2012-2016 Actual & 2017/18 Budget

Year	Water			Sewage		
	Residential	ICI	Total	Residential	ICI	Total
Cubic Metres*						
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
<i>Change</i>	3.8%	4.3%	3.9%	3.6%	4.2%	3.8%
2016 Actual	41,458,386	15,091,423	56,549,809	40,686,995	13,942,277	54,629,273
2017 Budget	38,911,000	14,000,000	52,911,000	38,059,000	12,818,000	50,877,000
<i>Change</i>	-1.6%	-1.6%	-1.6%	-1.6%	-1.8%	-1.6%
2018 Budget	38,282,000	13,773,000	52,055,000	37,464,000	12,591,000	50,055,000
Gallons (000)*						
2017 Budget	8,560,000	3,080,000	11,640,000	8,373,000	2,820,000	11,193,000
<i>Change</i>	-1.6%	-1.6%	-1.6%	-1.6%	-1.8%	-1.6%
2018 Budget	8,422,000	3,030,000	11,452,000	8,242,000	2,770,000	11,012,000

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

The water consumption and sewage flows are projected to decrease by about 1.6% in 2018 from 2017 budget levels.

The 2018 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 decreasing.

Taking the foregoing into account, 2018 consumption is budgeted as follows:

- **Water consumption is projected to decrease by 1.6% compared to 2017 Budget to 52,055,000 cubic metres (52.1 MegaLitres) (11,452,000,000 gallons)**
- **Sewage flow billed is projected to decrease by 1.6% to 50,055,000 cubic metres (50.1 ML) (11,012,000,000 gallons)**

4 The Recommended 5.2% Water User Rates Increase & 2.8% Sanitary Sewer User Rates Increase are Needed to Finance the Proposed 2018 Expenditure Budgets

4.1 Full Cost Recovery

The water and sewage user rates are an important part of a full cost recovery strategy for Regional water and sewage systems. User rates and miscellaneous fees and charges recover operating costs. Capital costs are recovered through a combination of user rate revenues, miscellaneous charges, development charges and grants (where available). The user rate share of capital costs includes the capital cost for system replacements, upgrades related to meeting regulatory requirements and growth related costs not covered by DC revenues. The water and sanitary sewage systems are “User Pay” - property taxes are not used to fund water and sewage system costs.

4.2 User Rate Revenue Requirements

The proposed preliminary 2018 water and sanitary sewerage expenditure budgets require a water rate increase of 5.2% and a sewer rate increase of 2.8%.

The proposed preliminary 2018 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 #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study. Detailed 2018 Budgets and Business Plans are scheduled for presentation to Committee and Council in early December 2017.

4.3 Water Supply System

Approximately \$4.89 million in additional user rate revenues is required to support increased expenditures. This is generated by a combination of:

User Rate Increase - The proposed 5.2% water rate increase generates \$5.25 million in additional revenues;

Customer Growth - Customer growth adds \$0.57 million, offsetting a rate increase by 0.6%; and,

Consumption Increase - Projected decreased consumption (compared with 2017 Budget) will decrease revenues by \$0.93 million. The water user rate includes an increase of 0.9% to compensate for this revenue decrease.

The proposed preliminary 2018 user rate supported water system expenditures of \$106.38 million represents an increase of \$4.89 million over 2017 budget levels.

4.4 Sanitary Sewerage System

Approximately \$ 3.18 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 2.8% sewage rate increase generates an additional \$2.70 million in revenue;

Customer Growth - Customer growth adds \$0.15 million offsetting the rate increase by 0.2%; and,

Consumption Increase - Projected decreased consumption (compared with 2017 Budget) will decrease budgeted revenues by \$1.47 million. The sewage user rate includes an increase of 1.5% to offset this revenue loss.

The proposed preliminary 2018 user rate supported sanitary sewerage system expenditures of \$99.28 million represents an increase of \$1.38 million compared to 2017 budget.

Exhibit 10 Revenues Required from 2018 Water Rates

Budget Category	2017 Approved Budget (\$)	2018 Proposed Preliminary Budget (\$)	Increase/(Decrease)	
			(\$)	(%)
A) Operations (net)				
Operations, Maintenance & Administration	58,783,000	58,011,000		
Less Other Revenues	10,000	10,000		
Operations from Current User Rates	58,773,000	58,001,000	(772,000)	-1.3%
B) Tangible Capital Assets				
Construction of Municipal Services (Gross Cost)	64,327,000	114,533,200		
Operations Capital	2,481,000	2,352,000		
Total Capital Program	66,808,000	116,885,200		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	8,482,000	27,245,200		
- Development Charge Reserve Fund - Commercial	248,000	2,416,400		
- Development Charge Reserve Fund - Industrial	0	1,400,000		
- Development Charge Debenture	0	5,857,400		
- Other Financing	15,576,000	20,335,200		
Total Non User Rate Financing	24,306,000	57,254,200		
Capital Program from User Rates Revenue Sources	42,502,000	59,631,000		
Less User Rate Financing (Debt/Reserves)				
- User Rate Debenture	0	11,722,800		
- Asset Management Reserve Fund	4,293,000	4,509,000		
Total User Rate Financing	4,293,000	16,231,800		
Capital Program from Current User Rates	38,209,000	43,399,200		
Contribution to Asset Management Reserve Fund	4,509,000	4,984,500		
Current User Rates Capital Program/Contributions	42,718,000	48,383,700	5,665,700	13.3%
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	125,591,000	174,896,200	49,305,200	
Total Reserve Fund Contributions	4,509,000	4,984,500	475,500	
Less Total Revenues & Recoveries	(28,609,000)	(73,496,000)	(44,887,000)	
Total Current User Rate Revenues Required	101,491,000	106,384,700	4,893,700	4.8%
Equivalent Water User Rate Increase		5.2%		
F) Impact of Changes in Customers & Consumption on Rate Increase				
Component		Revenue Change (\$)	Rate Increase	
Increased revenue needed for expenditures		4,893,700	4.9%	
Increased revenue needed due to lower consumption		936,400	0.9%	
Reduced revenue needed due to customer growth		(572,500)	-0.6%	
Added Revenue From Rate Increase		5,257,600	5.2%	

Exhibit 11 Revenues Required from 2018 Sewage Rates

Budget Category	2017	2018 Proposed	Increase/(Decrease)	
	Approved Budget (\$)	Preliminary Budget (\$)	(\$)	(%)
A) Operations (net)				
Operations, Maintenance & Administration	59,656,000	59,035,400		
Less Other Revenues	37,000	29,000		
Operations from Current User Rates	59,619,000	59,006,400	(612,600)	-1.0%
B) Tangible Capital Assets				
Construction of Municipal Services (Gross Cost)	72,029,000	49,517,500		
Operations Capital	1,862,000	2,825,000		
York Durham Capital	304,000	432,000		
Total Capital Program	74,195,000	52,774,500		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	14,495,000	8,624,500		
- Development Charge Reserve Fund - Commercial	531,000	736,700		
- Development Charge Reserve Fund - Industrial	0	1,800,000		
- Other Financing	29,907,000	11,497,500		
Total Non User Rate Financing	44,933,000	22,658,700		
Capital Program from User Rates Revenue Sources	29,262,000	30,115,800		
Less User Rate Financing				
- User Rate Debenture	0	0		
- Asset Management Reserve Fund	3,778,000	6,900,000		
- Treatment Plant/Rate Stabilization Reserve Fund	3,875,000	0		
Total User Rate Financing	7,653,000	6,900,000		
Capital Program from Current User Rates	21,609,000	23,215,800		
Contribution to Asset Management Reserve Fund	7,842,000	8,234,100		
Current User Rates Capital Program/Contributions	29,451,000	31,449,900	1,998,900	6.8%
C) Debt				
Expenditures	21,431,000	21,432,400		
Less Development Charge Reserve Fund	12,604,000	12,607,300		
Net Debt from User Rates	8,827,000	8,825,100	(1,900)	0.0%
E) Current User Rate Revenue Requirements				
Total Expenditures	155,282,000	133,242,300	(22,039,700)	
Total Reserve Fund Contributions	7,842,000	8,234,100	392,100	
Less Total Revenues & Recoveries	(65,227,000)	(42,195,000)	23,032,000	
Total Current User Rate Revenues Required	97,897,000	99,281,400	1,384,400	1.4%
Equivalent Sewer User Rate Increase		2.8%		
F) Impact of Changes in Customers & Consumption on Rate Increase				
Component		Revenue Change (\$)	Rate Increase	
Increased revenue needed for expenditures		1,384,400	1.5%	
Increased revenue needed due to lower consumption		1,466,400	1.5%	
Reduced revenue needed due to customer growth		(146,900)	-0.2%	
Added Revenue From Rate Increase		2,703,900	2.8%	

5 Rate Schedule Recommendations

5.1 Recommended 5.2% Water Rate & 2.8% Sewage Rate Increases (Schedules 1 & 2)

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.

<i>Proposed 2018 User Rate Increases</i>	
Water	+5.2%
Sewage	+2.8 %
Combined Average Residential Impact	+4.0 %

This report is part of the 2018 Regional Business Planning and Budget Process.

In order to support the proposed preliminary 2018 Water Supply and Sanitary Sewerage Budgets, it is recommended that current user rates be increased by 5.2% for water and 2.8% for sewage (**average residential customer combined increase of 4.0%**).

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 2017 Budget levels.

Based on 2018 customer and consumption projections, these rates are estimated to generate \$106.38 million for water and \$99.28 million for sanitary sewer. With the application of other revenues and reserve funds and debenture financing the total expenditures supported are \$174.90 million for water and \$133.25 million for sanitary sewer.

The recommended 2018 water and sanitary sewer user rates are provided in Schedule 1 - Recommended 2018 Water User Rates and Schedule 2 - Recommended 2018 Sewage User Rates of the Summary to this Detailed Report.

5.2 Recommended 5.2% Raw Water Rate Increase (Schedule 1)

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

The raw water system shares the Whitby WSP water intake and wet well with the potable water treatment carried out at the WSP. After the wet well there are two separate pumping stations and raw water distribution systems. The raw water is treated with chlorine at the intake to deal with zebra mussels, but otherwise receives no further treatment.

There are two raw water delivery systems which consist of raw water pumping stations followed by distribution mains:

- One delivery system is located on South Blair Street and is serviced by one of the raw water pumping stations and a repurposed (formerly potable) watermain that was installed in 1912. This system is basically end-of life due to age.

The larger raw water user of the two South Blair Street customers uses the water for cooling and has opted to install water recycling equipment and convert raw water use to the Region's potable water system. This will be complete this year.

The second raw water customer does not use significant amounts of raw water. The loss of the larger raw water customer means continuing the raw water system over the longer term has cost implications for the smaller customer that make it unattractive. Thus this customer has indicated that it will also convert its raw water usage to potable water.

As a result, the two South Blair Street raw water customers will both be converted to potable water and this raw water system will be decommissioned, probably in 2018.

- 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. This customer plans to continue to utilize raw water.

Operating costs related to the raw water system 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 which occur from time to time and 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.

Raw Water System Components Reaching End of Life – An upgrade to the Whitby WSP is projected for 2020. The need for upgrades have been identified as part of ongoing asset management reviews. In particular the raw water pumping capacity at the Whitby WSP has reached end of life. The upgrade to the Whitby WSP is a catalyst for needed raw water system upgrades. This has led to a review of the raw water systems.

As noted above the South Blair Street system is now planned to be decommissioned and thus no future upgrade investments will be needed on this system. The main running from the WSP to the property to the east is relatively new and does not need any work at this time.

Upgrades to the Whitby WSP will result in capital costs related to the remaining raw water pumping system. The existing customer has been apprised of potential capital costs.

Large Potable Water Customer Has Expressed Interest in Raw Water - In addition to meeting the needs of existing raw water customers, a nearby existing large potable water user has expressed potential 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's property. It would also affect the raw water rate and recovery of capital costs related to raw water system improvements. The capital cost of raw water system upgrades will be charged to the benefitting raw water customers as described above.

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 has 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.

The recommended 2018 raw water rate of \$0.301/m³ (\$1.368/1,000 gal) represents a 5.2% increase over the 2017 raw water rate. This increase reflects current operating costs for the water plants in the southern operational area, as well as the impact on the rate of lower projected 2018 raw water consumption. The recommended raw water rate is shown in Schedule 1 – Recommended 2018 Water User Rates.

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

5.3 Recommended Sun Valley Heights Homeowners Co-operative Water System Charges (Schedule 3)

The recommended charges for the Sun Valley Heights Homeowners Co-operative Water System are provided in Schedule 3 – Recommended 2018 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 0.7% from \$1,644 to \$1,656 annually (\$137 to \$138 monthly) for 2018.

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.

5.4 Recommended Miscellaneous Fees & Charges (Schedule 4)

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 2017 (current) and 2018 (recommended) are set out in Schedule 4 – Recommended 2018 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges of this report. All fees and charges where changes are recommended are **bolded**.

The recommended 2018 fees and charges are based on tracking actual costs over time. Many fees remain unchanged from 2017. Others have been adjusted higher due to increased costs relative to 2017 (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** – An analysis of actual construction costs has led to a recommendation to significantly increase the frontage charges for water and sewage servicing.
- **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. The 2017 charge of \$110.00 is equivalent to about 110 m³ (24,200 gallons) of water usage per water service. An investigation indicates water usage could be upwards of 200 m³ (44,000 gallons) per home or more. A 3-year (2018 to 2020) phase-in to a level of 200 m³ is proposed with a recommended 2018 charge of \$146.00 (140 m³ /30,800 gals) (see also Section 7.4.1).

5.5 Recommended Regional Environmental Laboratory Charges (Schedule 5)

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 2018:

- Four (4) existing fees have been increased (see Exhibit 5 pages 2, 3, & 6 of 9),
- Four (4) tests have been added and are noted as "New" in Exhibit 5 (see pages 2, 4 & 5 of 9).

Some of the test descriptions have been reworded for clarity.

The recommended charges for laboratory services are set in Schedule 5 – Recommended 2018 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek WPCP.

6 Customer Impact

6.1 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 =	5.2%		
									Sewer Rate Increase =	2.8%		
									Average Residential Combined Increase =	4.0%		
Customer Category			2017 Billing			2018 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	76.47	59.05	135.52	80.44	60.71	141.15	3.97	1.66	5.63	4.2
49,200	224	Avg 2017 Std Meter	111.16	115.86	227.02	116.93	119.11	236.04	5.77	3.25	9.02	4.0
60,000	273	Flat Rate	123.99	136.88	260.87	130.43	140.72	271.15	6.44	3.84	10.28	3.9
100,000	455	Standard Meter	171.51	214.71	386.22	180.42	220.74	401.16	8.91	6.03	14.94	3.9
Bimonthly Billings (\$ bimonthly)												
100,000	455	Standard Meter	114.34	143.14	257.48	120.28	147.16	267.44	5.94	4.02	9.96	3.9
200,000	909	Standard Meter	386.12	602.86	988.98	406.18	619.76	1025.94	20.06	16.90	36.96	3.7
5 million	22,730	2" Meter	3,710	5,740	9,450	3,902	5,900	9,802	192	160	352	3.7
50 million	227,270	4" Meter	32,740	50,184	82,924	34,442	51,590	86,032	1,702	1,406	3,108	3.7
150 million	681,820	6" Meter	95,558	146,118	241,676	100,530	150,206	250,736	4,972	4,088	9,060	3.7

6.2 User Rate Impact on Average Residential Customer

The impact on a typical residential customer of the proposed 2018 water and sewage user rate charges are shown below in Exhibit 13.

Exhibit 13 Rates Impact on Average Residential Customer

			Water Rate Increase = 5.2%	
			Sewer Rate Increase = 2.8%	
			Combined Increase = 4.0%	
	Billings		Increase	
	2017	2018		
	(\$)	Proposed		
		(\$)	(\$)	(%)
Based on 49,200 gal/year (223.6 m³/yr) Consumption				
Water	111.16	116.93	5.77	5.2%
Sewage	115.86	119.11	3.25	2.8%
Total (\$/quarter)	227.02	236.04	9.02	4.0%
Annual Billing (\$/year)	908.08	944.16	36.08	4.0%
Impact of Reduced Base Usage on an Average Customer				
Average Consumption Reduction =		1,300	gallons/cust/year	
		5.9	m ³ /cust/year	
Average Water + Sewage Bill Savings =		\$16.90	\$/year or 1.9%	

A residential customer who used the projected average residential per customer consumption of 223.6 m³ (49,200 gallons) in both 2017 and 2018 would have a bill increase of 4.0%.

However, if the average annual reduction in water usage by residential customers of 1,300 gallons/customer/year (5.9 m³) is taken into account (see Section 3.3.2), the water/sewage bill increase would be 1.9% less for a combined increase of (4.0% - 1.9% =) 2.1% (combined impact of rate increase and consumption decrease).

6.3 User Rate Impact on 25 Largest Customers

Examples of projected water and sewer charges to the Region's 25 largest customers, using actual 2016 consumption levels, the current 2017 user rates and recommended rates for 2018, are provided in Exhibit 14.

Exhibit 14 Rates Impact on 25 Largest Users (Using 2016 Actual Consumption Data - \$/year)

										Water Rate Increase = 5.2%	
										Sewer Rate Increase = 2.8%	
Rank	2016 Consumption		2017 Rates			2018 Rates			Combined Increase		
	(m ³)	(000 gal)	Water	Sewage	TOTAL	Water	Sewage	TOTAL	\$	%	
			(\$)	(\$)	(\$)	(\$)	(\$)	(\$)			
1	2,273,150	500,090	1,866,280	2,891,830	4,758,110	1,963,360	2,972,720	4,936,080	177,970	3.7%	
2	441,720	97,180	371,480	572,680	944,160	390,800	588,700	979,500	35,340	3.7%	
3	430,290	94,660	362,130	558,170	920,300	380,970	573,790	954,760	34,460	3.7%	
4	367,530	80,860	310,930	478,740	789,670	327,100	492,130	819,230	29,560	3.7%	
5	294,410	64,770	251,240	355,870	607,110	264,300	365,830	630,130	23,020	3.8%	
6	275,900	60,700	236,140	362,700	598,840	248,420	372,850	621,270	22,430	3.7%	
7	244,060	53,690	210,130	322,350	532,480	221,060	331,370	552,430	19,950	3.7%	
8	203,480	44,770	177,040	271,000	448,040	186,240	278,590	464,830	16,790	3.7%	
9	153,810	33,840	136,490	208,090	344,580	143,590	213,920	357,510	12,930	3.8%	
10	153,530	33,780	136,260	207,750	344,010	143,350	213,560	356,910	12,900	3.7%	
11	144,170	31,720	128,620	195,890	324,510	135,310	201,370	336,680	12,170	3.8%	
12	137,100	30,160	122,830	186,910	309,740	129,220	192,140	321,360	11,620	3.8%	
13	128,060	28,170	115,450	175,460	290,910	121,460	180,370	301,830	10,920	3.8%	
14	120,200	26,440	109,030	99,300	208,330	114,700	102,080	216,780	8,450	4.1%	
15	115,560	25,420	105,250	159,630	264,880	110,720	164,100	274,820	9,940	3.8%	
16	89,240	19,630	83,770	126,300	210,070	88,120	129,840	217,960	7,890	3.8%	
17	85,940	18,910	81,100	7,330	88,430	85,310	7,530	92,840	4,410	5.0%	
18	88,480	19,470	83,170	125,380	208,550	87,500	128,890	216,390	7,840	3.8%	
19	83,190	18,300	78,830	99,550	178,380	82,930	102,340	185,270	6,890	3.9%	
20	80,940	17,810	77,020	115,820	192,840	81,020	119,070	200,090	7,250	3.8%	
21	77,050	16,950	73,830	110,870	184,700	77,660	113,980	191,640	6,940	3.8%	
22	70,680	15,550	68,630	102,810	171,440	72,200	105,700	177,900	6,460	3.8%	
23	70,000	15,400	68,080	170	68,250	71,610	170	71,780	3,530	5.2%	
24	65,020	14,300	63,990	95,620	159,610	67,320	98,300	165,620	6,010	3.8%	
25	63,160	13,900	62,510	93,320	155,830	65,760	95,930	161,690	5,860	3.8%	
Total	6,256,670	1,376,470	5,380,230	7,923,540	13,303,770	5,660,030	8,145,270	13,805,300	501,530	3.8%	

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

Note that most large customers will have a combined water/sewage bill increase in the 3.7% to 3.8% range. This percentage is lower than the average residential increase of 4% because large customer bills are more influenced by the lower sewage rate increase (the volumetric rate is more dominant for sewage than for water).

There are five (5) customers with reduced sewage charges. These customers have significant water usage that does not discharge to the sanitary sewer. They are billed for sewage based on this lower volume. For these, the sewage rate is less of a factor since their sewage volume billed is less than the water volume billed.

6.4 Durham's User Rates Compared with Other Ontario Municipalities

6.4.1 Background on User Rate Formats

A water and sewage rates survey was conducted for 20 municipalities (including Durham) across Ontario. The 2017 rate information, the most recent available for all municipalities, is used for this comparison.

Durham owns and operates water and sanitary sewer 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. One municipality has HBR. 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	13	65%	10	50%
Increasing Block Rate	5	25%	4	20%
Declining Block Rate	1	5%	6	30%
Humpback Rate	1	5%	0	0%
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. Only Toronto and Peel had consumption-only rates. No differentiation is made between residential and ICI customers.
- **Residential Volumetric Rates** – The majority (65%), including Durham, charge single block rates to residential customers. Another 30% essentially charge increasing block rates (including the 5% using humpback rates). One charges declining block rates.
- **ICI Volumetric Rates** – The largest category is single block rates at 50% of municipalities (Halton abandoned humpback rates in 2017). Declining block rates is the next most popular at 30%. Increasing block rates are used in 20% of the municipalities. Although London has humpback rates, they are essentially declining block rates for ICI since the rates decline compared to the first block after 35 m³/month. They initially increase for small usage volumes.

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. Barrie caps the sewage charge at 45 m³ monthly which would only benefit large water users.

➤ **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.

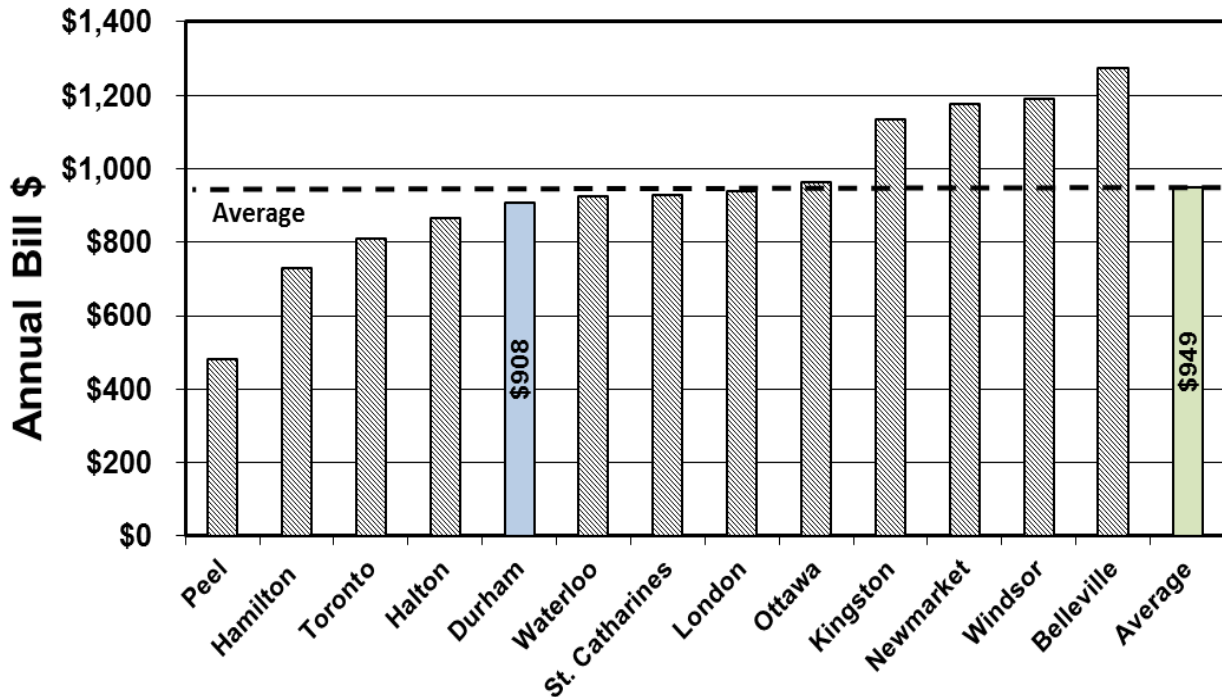
6.4.2 Residential Customer Impact

The analysis is based on a customer using 223.6 m³/year (49,200 gallons/yr). This represents a typical 2017 Durham residential usage per residential customer. It is about 19 m³/month/cust (4,100 gal/month/cust).

Large Municipalities - 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 2017 Residential Water/Sewage Charges (223.6 m³/year) – Large Municipalities

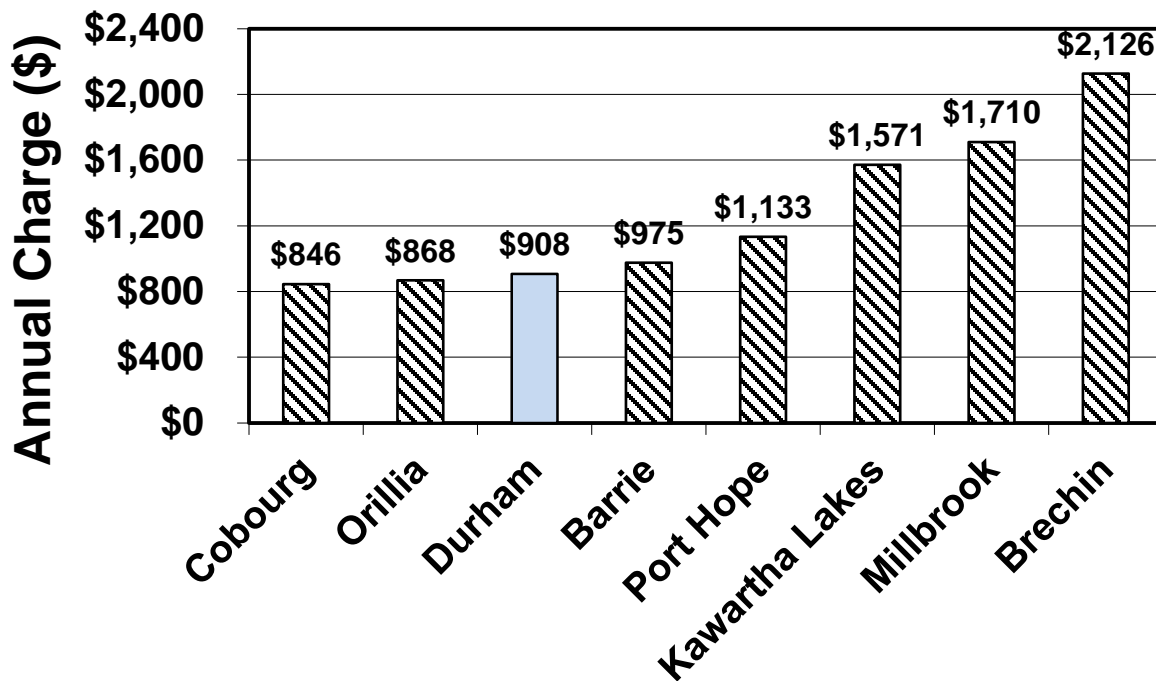


Durham is the fifth lowest out of the 13 in the survey.

The overall average 2017 combined water and sewage bill for 223.5 m³ (49,200 gallons) annual consumption is \$949 per year compared to \$908 in Durham.

Neighbouring Municipalities - Typical 2017 charges to a residential customer have also been calculated for seven neighbouring communities - see Exhibit 17.

Exhibit 17 Comparative 2017 Residential Water/Sewage Charges (223.6 m³/yr) – Neighbouring Municipalities

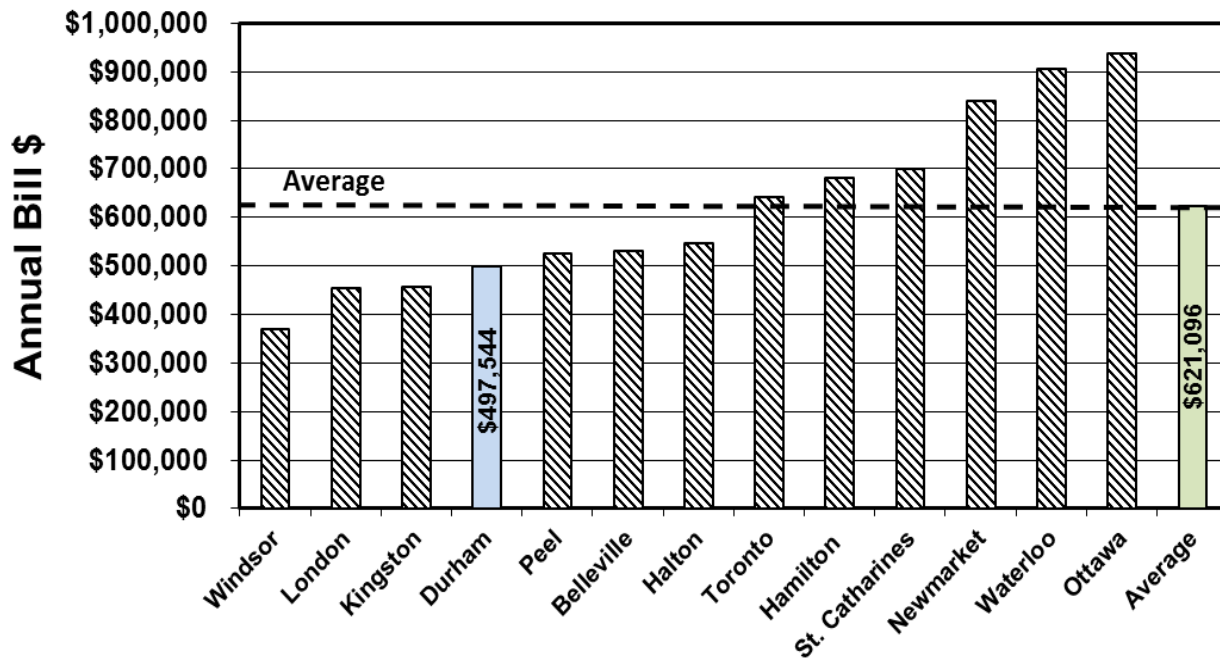


Durham is at the low end of user rate charges. Comparisons are sometimes made difficult because of the use of the property tax to recover some costs. For example, Cobourg recovers some sewage costs from property taxes.

6.4.3 Large Customer Impact

The analysis is based on 227,272 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 would represent our 8th largest customer. Comparative charges are graphed in Exhibit 18.

Exhibit 18 Comparative 2017 Large Industry Water & Sewage Charges (227,272 m³/yr) – Large Municipalities



Durham was the fourth lowest out of the 13 in the survey. The overall average combined water and sewage bill for all the municipalities surveyed was \$621,096 per year compared to \$497,544 in Durham.

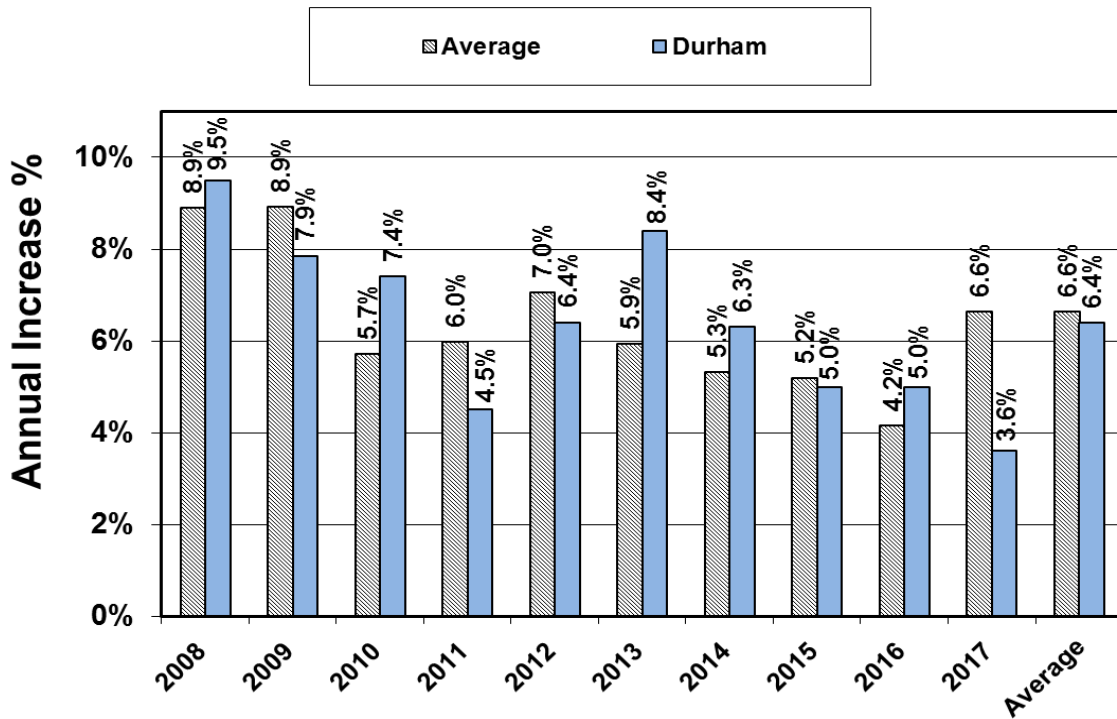
No comparative analysis was done for small local municipalities since most, if not all, would not have customers with this level of consumption.

6.4.4 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 223.6 m³/year (49,200 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 since decreasing usage would offset some of the increase due to higher rates.

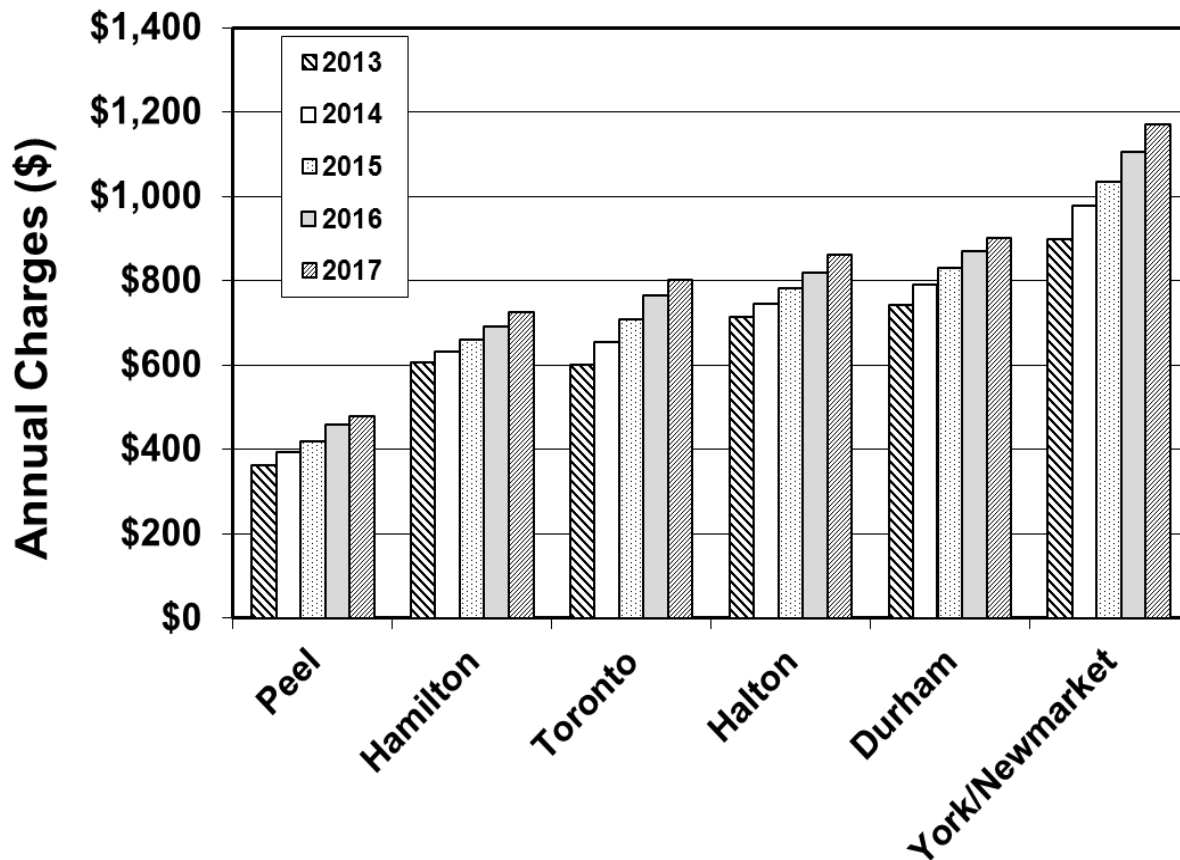
Exhibit 19 Comparative 2008 to 2017 Residential Water/Sewage Rate Increases (223.6 m³/yr) – Large Municipalities



The average annual combined water and sewage rate increase for all of the municipalities was 6.6% for the 10-year period. Durham’s average was approximately 6.4% 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 223.6 m³/year (49,200 gallons).

Exhibit 20 Comparative 2013 to 2017 Residential Water/Sewage Charges (223.6 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 which service a large geographic area (the largest in the GTA).
- 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 and collection of sanitary sewage from its customers. Water supply and wastewater treatment are provided by York Region.

6.4.5 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 sanitary 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 sanitary 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 6.4.2 have been tracked from 2008 to 2017. The average annual water and sewage rate increase of the 14 municipalities over the 10-year period has been 6.6% per year compared with Durham at 6.4% (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.

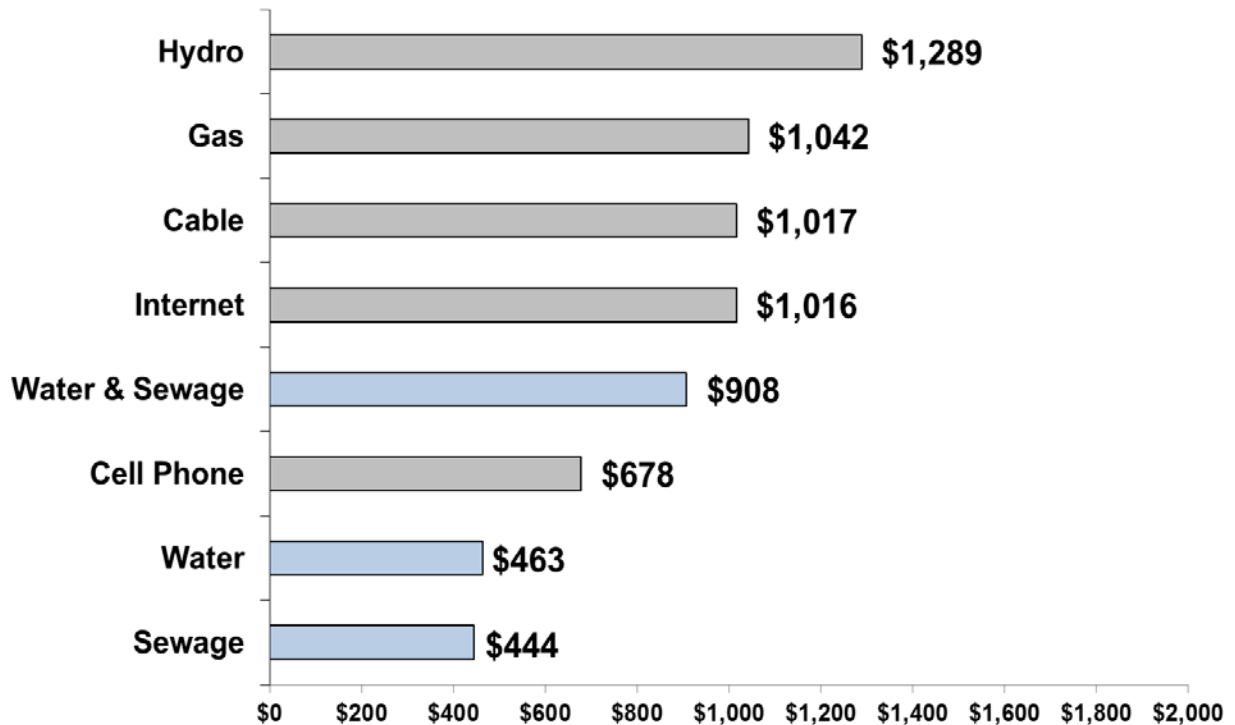
6.5 Durham's Average Residential Water & Sanitary Sewer Charges are Much Less Than Typical Hydro, Gas, Telephone or Cable Television Services

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 2017 annual residential utility charges in Durham (Oshawa rates used) are graphed in Exhibit 21.

Exhibit 21 Typical Durham Residential Utility Charges 2017
(graph)



The components of a total annual bill for a representative residential customer are as shown in [Exhibit 22](#).

Exhibit 22 Typical Durham Residential Utility Charges 2017
(table)

Utility	Basis of Comparison	Annual Bill (\$)	% of Annual Utility Bills
Hydro	Cooling, appliances, lighting, etc.	\$1,289	21.6%
Gas	Home & hot water heating	\$1,042	17.5%
Cable	Basic package – no movies	\$1,017	17.1%
Internet	One level above basic - 50 Mbps download	\$1,016	17.1%
Cell Phone	Basic service with long distance package	\$678	11.4%
Sewer	Average residential use - 224 m3/year	\$463	7.8%
Water	Average residential use - 224 m3/year	\$444	7.5%
Total		\$5,950	100.0%

The **total combined water and sewer billing** for this residential customer represents only about 12.8% of the total utility charges incurred in a typical home. This is less than most other individual utility services.

7 Other Issues

7.1 Water Meter Investment Plan

Water meters are used to determine the volume of water used by customers so that they can be billed for the amount of water they actually use based on the approved Regional user rates. Overall, almost 70% of water and sewage billings are volume-based representing about \$126 million in revenue.

The Region places a high priority on water meter accuracy. 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. A change of only 1% in overall meter accuracy represents about \$1.26 million in revenue.

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 technical 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.

Note that the Region does not levy an extra charge to individual customers for the installation of new or replacement meters or for remote reading devices. The cost of the metering capital program is recovered as part of the Regional water service charges.

Report #2017-COW-147: 2017 Asset Management Plan noted that 2.2% of standard meters were overdue for replacement in 2016. Due to an increase in user-rate supported TCA capital funding in 2011 there has been a steady improvement towards meeting Regional meter replacement standards (it was 6.4% in 2012). It is expected that the Regional standard will be effectively achieved by 2018.

7.2 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 the 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 and consequently actual readings are obtained. Approximately 90% of locations have remote reading capability. The remaining 10% 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 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 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.
 - In order to achieve remote reading capability for all water meters, since 2013 the Region has been upgrading direct read meters not due for replacement with remote reading devices. Remote reading capability for all water meters is expected to be completed in 2018.
 - 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.

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. Remote reading capability will also facilitate future plans to read/bill more frequently (e.g. quarterly to bi-monthly for residential customers).

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

7.3 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 in recent years has varied between 14% to 15% and for 2016 NRW was 14.1% - see Exhibit 4.

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 24.

Exhibit 23 IWA Standard Water Balance Terminology

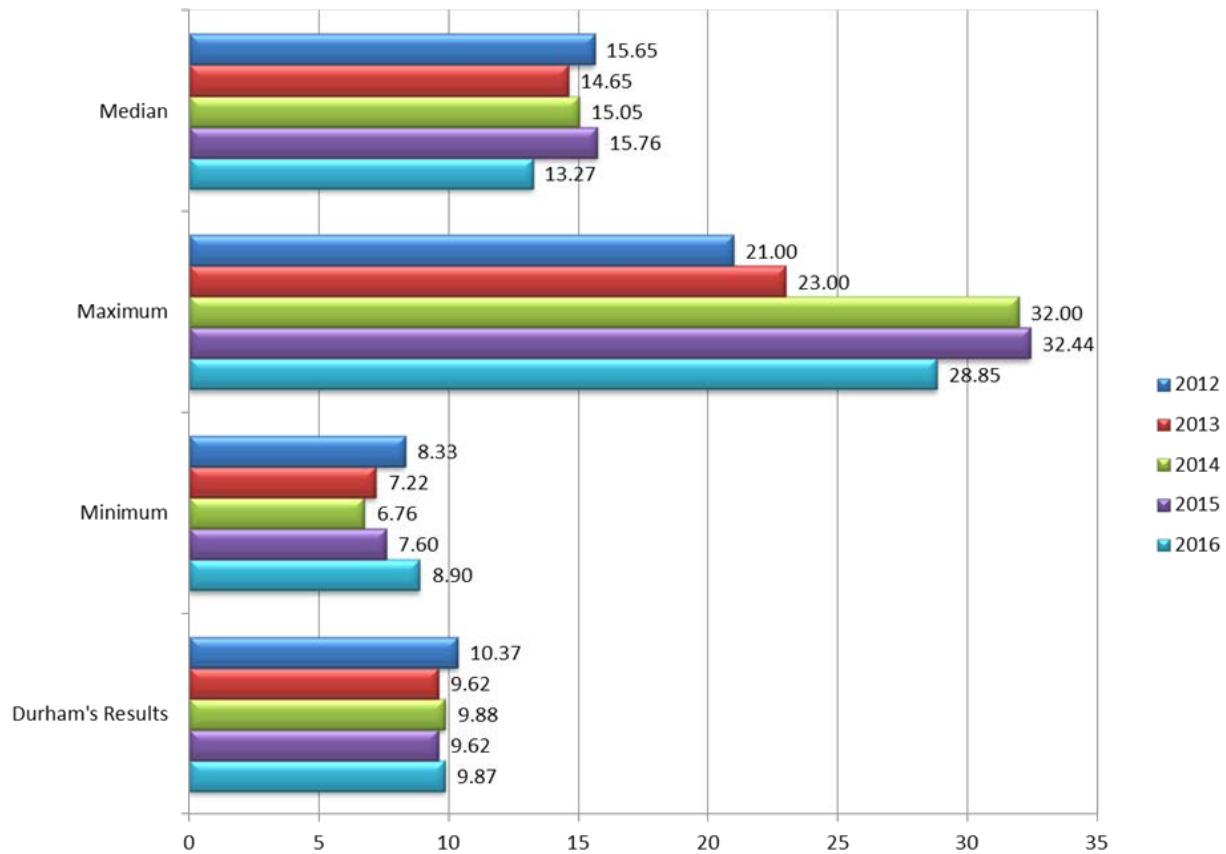
System Input Volume	Authorized Consumption	Billed Authorized consumption	Billed Metered Consumption	Revenue water
			Billed Unmetered Consumption	
		Unbilled Authorized Consumption	Unbilled Metered Consumption	Non Revenue Water (NRW)
			Unbilled Unmetered Consumption	
	Water Losses	Apparent Losses	Unauthorized 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) 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 2012 to 2016 is provided in Exhibit 25.

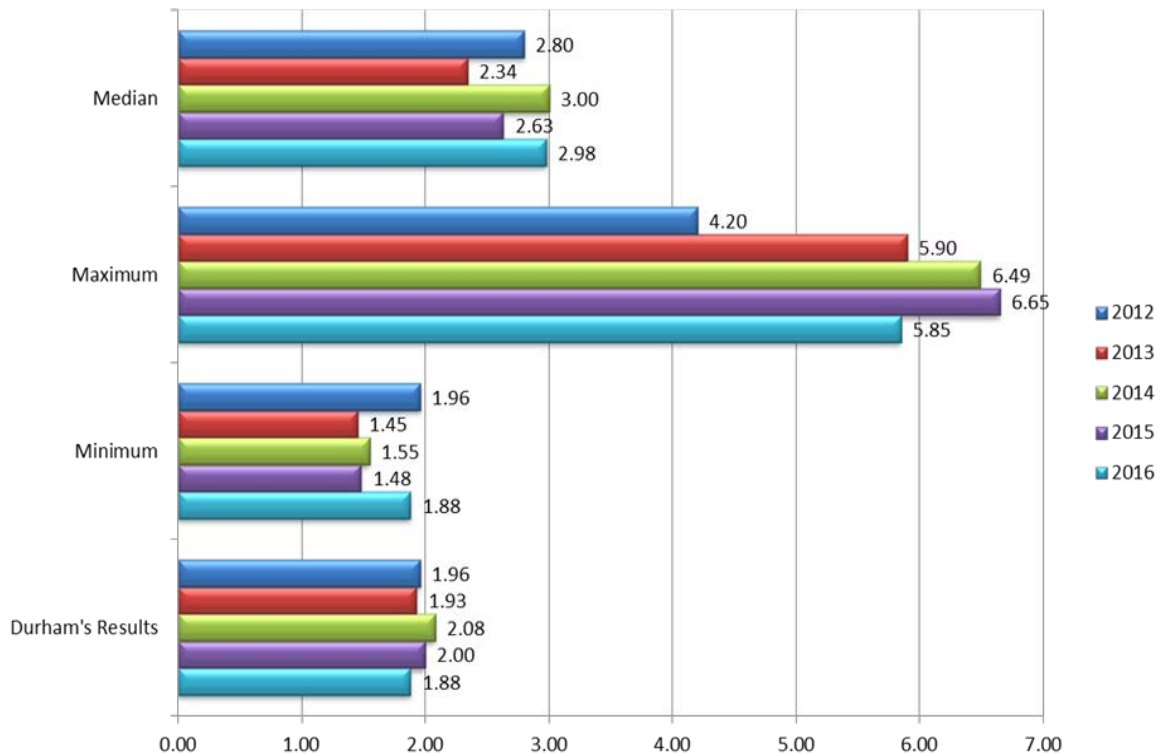
Exhibit 24 NRW in m³/km of Main per Day (MBN data)



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 26](#) for the 2012 to 2016 survey results.

Exhibit 25 Infrastructure Leakage Index ILI (MBN data)



The 2016 Infrastructure Leakage Index (ILI) for Durham was calculated to be 1.88, lower than the median of 2.98.

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.

7.4 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 Depots & Bulk Filling Stations

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.

7.4.1 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 2017 BP Charge of \$110.00 per water service is equivalent to 110 m³ (24,270 gallons).¹

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 has been 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).

¹ Note that for practical purposes the annual charge is calculated based on prior year rates (current year rates are not yet approved when it is calculated) - in this case based on the 2016 first block water rate of \$0.997/m³.

In order to more closely recover the cost of unmetered water used in residential construction it is proposed that a more realistic Building Purposes Charge be phased-in over the next three years based on the following consumption levels:

- Current 2017 level 110 m³ (24,200 gallons)
- 2018 based on 140 m³ (30,800 gallons) – Equivalent to \$146 per home using the current 2017 first block water rate - (see [Section 5.4](#))
- 2019 based on 170 m³ (37,400 gallons)
- 2020 based on 200 m³ (44,000 gallons)

Further monitoring where feasible of new subdivision construction water volumes will be carried out as the opportunity arises.

7.4.2 Bulk Water Filling Stations

The Region currently has five automated bulk water filling stations (built in the early 1970s) which are available to water haulers. They are located at:

- Bowmanville WSP;
- Whitby WSP;
- Harwood Avenue Water Pumping Station in Ajax;
- Port Perry (at Municipal Wells #3 and #4); and
- Beaverton WSP.

The water hauler usage is metered and invoices are sent out to the haulers by the Finance Department on a monthly basis based on their usage. Each water hauler is assigned an individual meter, which is accessed by a key on which a water hauler must pay a deposit. Each meter can be accessed by only one water hauler.

The benefits of the filling stations include being accessible any time of the day all year, providing accurate reading flows to ensure cost recovery of usage and being equipped with backflow prevention.

The major disadvantages to the Region's existing water filling stations are the slow fill rate and the limitation on the number of users at each of the five existing water filling stations to the number of meters at each filling station. There are also issues with the specific locations of the existing filling stations as follows:

- The two stations at the Bowmanville and Whitby WSP are deemed to be out of the way for water haulers;
- The filling stations at the Harwood Avenue Pumping Station and Port Perry Municipal Wells # 3 and #4 have traffic concerns; and
- The Bowmanville WSP location has potential issues with the citing of filling station and the proximity of the plant's air intake.

There are concerns that existing bulk water filling stations are often in non-preferred locations and can only service a limited number of water haulers. In order to address this, the addition of bulk water filling stations is planned. The phase-in of additional water filling stations will also allow the gradual phase-out of hydrant permits – see below.

The design of the two new bulk water filling stations in Ajax / Pickering and Oshawa / Whitby will be undertaken in 2018 and implementation of the new filling stations is anticipated in early 2019. In 2018, staff will also explore options to coordinate the installation of additional bulk water filling stations throughout the Region, including the opportunity to construct water filling stations on Regional property in conjunction with the future construction of Regional infrastructure (i.e. as part of a new pumping station or reservoir).

7.4.3 Drawing Water From Hydrants

Hydrant permits are provided at the five Regional depots which include the Ajax / Pickering, Oshawa / Whitby, Sunderland, Scugog and Orono Depots. A hydrant permit is issued for usage on a particular hydrant location and is valid for one year. Meters are not installed on the hydrants, therefore water volume estimates are provided to the Region by the permit holder.

Hydrant permits provide a convenient and accessible water source with no waiting time for permit holders. However, this method of providing bulk water is vulnerable to unaccountable water use and can put the security and water quality of the Region's system at risk as appropriate backflow prevention measures may not always be utilized.

Staff have developed a strategy to address security and unaccountable water concerns with the existing hydrant permitting system:

- The implementation of bulk water filling stations throughout the Region;
- Gradually phasing out the issuance of hydrant permits once new bulk water filling stations are implemented and provide appropriate coverage;
- Purchasing ten hydrant meter assemblies (including the backflow preventer and tamper resistant cage, estimated total cost of \$45,000) which will be used to monitor usage at select hydrants throughout the Region, targeting the largest bulk water hydrant users; and
- Increasing the penalty provisions within the Water Supply System By-law to deter theft.

7.5 Water System Fire Protection Costs

The rate structure adopted is consistent with industry best practices while at the same time respecting suitable aspects of the rate structures in existence when the Region was formed.

The rates have been established using water industry standard methodology as developed by the American Waterworks Association (AWWA – the guiding water industry organization) and set out in their Water Rates Manual M1.

Durham recovers water system costs related to fire protection from all of its water customers using a combination of water service charges and fire line charges. The Region uses the water service and fire line sizes as the method of apportioning fire protection costs between customers. The service charge is based on meter size and the fire line charge is based on fire line connection size. The service charges and the fire line charges include the following cost components:

- **Service Charges** – Includes costs related to billing, collecting, meters, meter reading, service connections and fire protection.
- **Unmetered Fire Lines** – Includes system fire protection costs and unmetered fire line service connection costs (Regional portion). In order to avoid double billing for fire protection costs, an adjustment is made to the calculation of the fire line rate compared to the fire protection component in the service charge.

8 Future Considerations (2018 To 2027)

8.1 Future Customer & Consumption Trends

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

- **Customers** – Report #2017-COW-255: 2018 Water Supply & Sanitary Sewerage Servicing and Financing Study indicates a 2018 to 2025 increase in the number of urban residential units of 4,400. 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 growth averaging 1.2% 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** – Consumption has been decreasing gradually. For planning purposes it is projected that total consumption will continue to decrease at 0.5% 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 #2017-COW-147 2017 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.

8.2 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 energy 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 #2017-COW-255: 2018 Water Supply and Sanitary Sewerage Servicing and Financing Study.

8.3 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 43% of water and sewage user rate supported budget expenditures, increased capital investments would 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*, the *Lake Simcoe Protection Act* and *Water Opportunities and Water Conservation Act*);
- Market price impacts or volatility for input commodities, including energy and chemicals and cost impacts for the pending Provincial Cap and Trade program;
- Increase in construction costs;

- Low non-residential development resulting in shortfall in non-residential DC's to be funded by user rates;
- Loss in CWWF grant funding due to tight project timelines; 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.

8.4 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 investment in 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.
- 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.
- v) Focus attention on the opportunities for intensification to maximize the use of existing infrastructure.