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The Regional Municipality of Durham
Report

To:	Finance and Administration Committee
From:	Commissioner of Finance
Report:	#2021-F-35
Date:	December 14, 2021

Subject:

Recommended 2022 Water and Sanitary Sewer User Rates

Recommendations:

That the Finance and Administration Committee recommends to Regional Council:

A) That the 2022 Regional Water and Sanitary Sewer User Rates increase by 1.8 per cent for an average residential customer effective January 1, 2022, with the Regional water rates increasing by 0.5 per cent and the Regional sanitary sewer rates increasing by 3.1 per cent from the 2021 user rate levels as set out in Schedule 1 and Schedule 2 of this report respectively;

B) That the 2022 Raw Water rates for the Whitby raw water customer be increased by 0.5 per cent as set out in Schedule 1 of this report, effective January 1, 2022;

C) That the 2022 water charges for the Sun Valley Heights Homeowners Co-operative Water System be as set out in Schedule 3 of this report, effective January 1, 2022;

D) That the 2022 Regional Water and Sanitary Sewer Systems Miscellaneous Fees and Charges be as set out in Schedule 4 of this report, effective January 1, 2022;

E) That the 2022 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 of this report, effective January 1, 2022; 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 outlines the recommended Water and Sanitary Sewer User Rates to be effective January 1, 2022 including background on the parameters used in determining the recommended rates. This report is presented concurrently with the 2022 Current and Capital Business Plans and Budgets and Nine-Year Capital Forecasts for the Water Supply and Sanitary Sewerage Systems report (Report 2021-F-34) which describes the proposed 2022 operating and capital works, nine year capital forecast and associated financing.

1.2 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 the approved user rates. It is imperative that user rates be approved in 2021 in order that they can be implemented with the first customer billings commencing early January 2022.

1.3 The water and sanitary sewage systems are “User Pay” as property taxes are not used to fund water and sanitary sewage systems costs.

1.4 Public notification that the proposed 2022 water and sanitary sewer user fees and related charges will be considered by the Finance and Administration Committee on December 14, 2021 and by Regional Council on December 22, 2021, was provided in local newspapers throughout the Region on October 14, 2021 and November 25, 2021 and was posted on the Region’s website.

2. 2022 Recommended Water and Sanitary Sewer User Rate Increases

2.1 The recommended 0.5 per cent water user rate increase and 3.1 per cent sanitary sewer user rate increase (1.8 per cent combined for an average residential customer) supports an increase in net user rate supported expenditures of 2.3 per cent for water and 5.5 per cent for sanitary sewage.

2.2 The current 2021 and recommended 2022 Water and Sanitary Sewer User Rates are provided in Schedule 1 and Schedule 2 of this report, respectively. The recommended 2022 Regional Water and Sanitary Sewer Rates represent a combined increase of approximately 1.8 per cent for an average residential customer and reflects an estimated annual increase of $19.52 per year.

2.3 The recommended user rates are based on the proposed 2022 operating and capital costs and associated financing which are outlined in detail in the 2022 Current and Capital Business Plans and Budgets and Nine-Year Capital Forecasts for the Consolidated Water Supply and Sanitary Sewerage Systems report (Report 2021-F-34), as well as customer and consumption projections described below.

2.4 For water, the recommended user rate increase of 0.5 per cent is required to finance a proposed 2022 net user rate supported budgeted net expenditure increase of $2.70 million or 2.3 per cent over 2021, which will allow for:

- A net operating cost increase of $2.72 million mainly for annual economic and inflationary increases for services and supplies, annualization of 5.047 Full Time Equivalents (FTEs) from 2021 and 9.001 new FTEs for 2022;
- The user rate capital program contribution is virtually unchanged; and
- Debt servicing costs funded by user rates are also virtually unchanged.

2.5 For sanitary sewer, the user rate increase of 3.1 per cent is required to finance a proposed 2022 user rate supported budgeted net expenditure increase of $6.16 million or 5.5 per cent over 2021, which will allow for:

- A net operating cost increase of $2.31 million mainly for annual economic and inflationary increases for services and supplies, annualization of 2.909 Full Time Equivalents (FTEs) from 2021 and 7.519 new FTEs for 2022;
- A user rate capital program contribution increase of $4.99 million, and;
- A decrease in debt servicing costs funded by user rates of $1.13 million due to debt retirement related to the Courtice Water Pollution Control Plant.

3. Basis for the Proposed 2022 User Rates

3.1 Figure 1 summarizes the projected data used to develop the 2022 user rates includes the following:

Figure 1
Projected Data Used to Develop 2022 Water & Sanitary Sewer User Rates

Parameter	Water	Sanitary Sewage
Customers		
- Number	183,153	178,416
- Growth from 2021 Actual	1.00%	1.05%
Consumption/Flow		
- Cubic metres (millions)	56.32	54.18
- Increase from 2021 Budget	2.4%	2.5%
User Rate Revenue Requirements		
- Total Expenditures	$118,193,284	$117,500,369
- Increase from 2021 Budget	2.3%	5.5%
User Rate Change Required		
- Per cent	**0.5%**	**3.1%**
- Impact on Revenue of 1% Rate Change	**$1,176,000**	**$1,140,000**

- **Impact of a 1 per cent Rate Change** - Any change in either expenditures or other revenues by $1,176,000 for water or $1,140,000 for sanitary sewer is equivalent to a 1 per cent change in the respective user rate.

3.1 The 2022 growth in the number customers is projected at 1.00 per cent for water and 1.05 per cent for sanitary sewer. This is consistent with the growth in the number of customers projected for 2021.

3.3 Billed water consumption for 2022 is projected as follows:

- **Overall –** Total billed 2022 water consumption and sanitary sewage flows are both projected to increase due to residential component increases. No change is projected for the industrial, commercial, institutional (ICI) consumption component.

- **Residential** – Residential consumption represents almost 80 per cent of water consumption and is the main driver in water consumption projections. Residential water consumption has two components: Basic day-to-day usage year-round (Base Consumption) and seasonal usage, with Base Consumption representing the larger share.

  Base Consumption is recalculated for each year using data up to May adjusted to an annual basis. This data excludes seasonal summer usage. Figure 2 illustrates the Residential Base Consumption trend for the last 11 years. From 2000 (not graphed) until 2017 Residential Base Consumption per customer steadily decreased at a rate of about 2.4 per cent per year. Contributing factors to this decline in Base Consumption include the water efficient fixtures required in new construction by the Provincial Building Code and the popularity of more water efficient appliances.

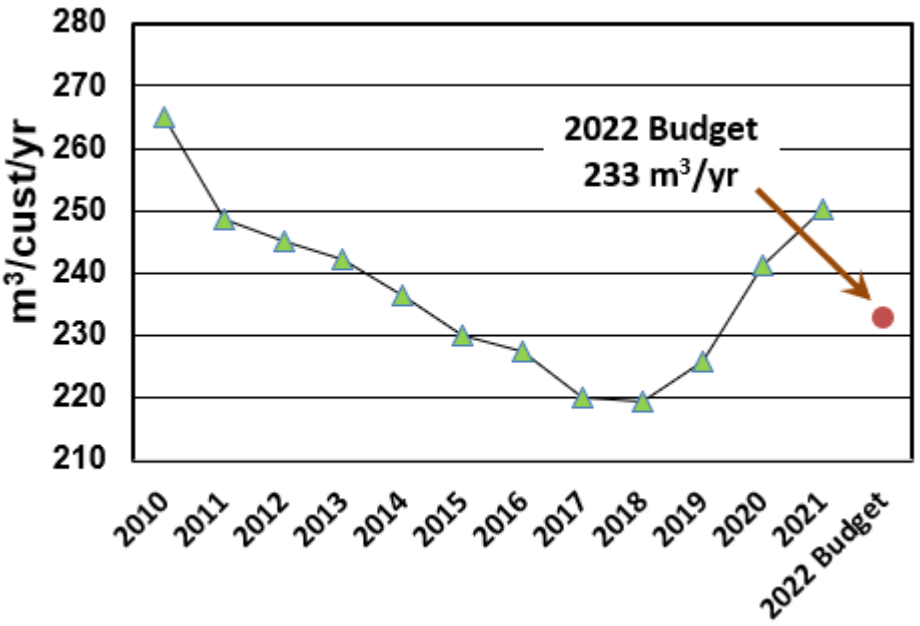
  In 2018 data suggested a levelling off of Residential Base Consumption at 219 m^3/customer/year (similar to 2017), followed by increases to 226 m^3/ customer/year in 2019, 241 m^3/ customer/year in 2020 and 250 m^3/ customer/year projected for 2021. The increase in consumption in 2020 and further in 2021 is in large part attributable to the impact of the COVID-19 pandemic, where many individuals were working from home and school-aged children attending school virtually at home for a significant portion of the year.

  It is difficult to predict the impact that the COVID-19 pandemic will have on Base Residential Consumption in 2022. For purposes of calculating the proposed 2022 user rates, it was assumed that the COVID-19 pandemic will continue to have a positive impact on 2022 Residential Base Consumption. The 2022 proposed user rates reflect projected 2022 Residential Base Consumption at 233 m^3/customer/year (an increase from the 230 m^3/customer/year budgeted for 2021).

  Should actual Residential Base Consumption be lower than projected in 2022, funding from the Water Rate Stabilization Reserve Fund and the Sewer Rate Stabilization Reserve Fund will be required to finance any resulting deficits.

  It is important to note that this higher rate of Residential Base Consumption is not anticipated to continue post pandemic and future Business Plans and Budgets and User Rates may need to be adjusted to reflect updated lower consumption projections.

Figure 2
Residential Base Consumption



Total residential consumption also includes a seasonal component. The projected seasonal usage for 2022 is 12 m^3/customer/year, an increase from the 10 m^3/customer/year budgeted for 2021. The projected 2022 seasonal consumption of 12 m^3/customer/year reflects average historical levels.

Based on a combined basic and seasonal usage of 245 m^3/customer/year (233 + 12) and water customer growth of 1.0 per cent (sewer 1.05 per cent), total residential water consumption is budgeted to increase by 3.1 per cent (sewer by 3.2 per cent) over 2021 budget levels.

- **Non-Residential (ICI) Consumption Share** – ICI (industrial, commercial & institutional) consumption trends this year indicate year-end consumption in the range of that budgeted. Over the 2020/2021 period, COVID resulted in a dip in ICI consumption in all three rate blocks, starting in March 2020 and with recovery in recent months. Based on the uncertain future, 2021 ICI budget consumption levels for all three rate blocks are used for 2022 budget revenue projection purposes.

4. Customer Impacts

4.1 **Average Residential Customer Impact** – Based on the assumptions outlined above for customer growth and consumption and the proposed budgetary increases, the 2022 water user rates are proposed to increase by 0.5 per cent and sanitary sewer user rates are proposed to increase by 3.1 per cent over the approved 2021 user rate levels. The combined proposed water and sewer user rates results in an increase of $4.88 or 1.8 per cent on a quarterly bill ($19.52 per annum) for the average residential customer as outlined in Figure 3.

Figure 3

2022 Proposed Regional User Rate Charges Typical Residential Customer Impact				
Annual Water Consumption		53,900	gallons/year	
		245.0	m^3/year	
Billings ($/quarter)				
	2021 Actual	2022 Proposed	Increase	
Water	$127.52	$128.17	$0.65	0.5%
Sewage	$136.32	$140.55	$4.23	3.1%
Total ($/quarter)	$263.84	$268.72	$4.88	1.8%
Annual Billing ($/year)	$1,055.36	$1,074.88	$19.52	1.8%

4.2 **Large Industry Customer Impact** - The proposed 2022 water and sanitary sewer user rates result in a bi-monthly increase of $1,876 or 2.1 per cent for a large industry customer (a customer in the top 25 users) using 227,272 m^3 annually (50 million gallons) in Figure 4.

Figure 4

2022 Proposed Regional User Rate Charges Large Industrial Customer Impact				
Annual Water Consumption		50,000,000	gallons/year	
		227,272	m^3/year	
Billings ($ bimonthly)				
	2021 Actual	2022 Proposed	Increase	
Water	$35,768	$35,944	$176	0.5%
Sewage	$54,726	$56,426	$1,700	3.1%
Total ($ bimonthly)	$90,494	$92,370	$1,876	2.1%
Annual Billing ($/year)	$542,964	$554,220	$11,256	2.1%

5. Competitiveness of Durham's Water and Sanitary Sewage Rates

5.1 **Residential customers -** Of 13 larger municipalities across Ontario, Durham's 2021 Regional water and sanitary sewer charges are below the average at the 5th lowest.

5.2 **Large users** – Similarly, of the 13 larger municipalities, the Region's 2021 water and sanitary sewer rates were the 2nd lowest for a large user. The Region's declining block rates reflect the Region's reduced unit cost of servicing large customers.

5.3 Durham's average residential water and sanitary sewer charges compare favourably with other municipal water and sanitary sewer rates as well as other utility costs.

5.4 A frequently used metric for assessing affordability compares water and sanitary sewer charges to average family income. A US Environmental Protection Agency report on drinking water affordability lists a number of studies which suggest an affordability threshold for water and/or sanitary sewer charges in the range of 1.5 per cent to 2.5 per cent of average annual income. Durham's combined water and sewer service costs for an average customer are below the threshold at about 1 per cent of the average Oshawa census family income.

5.5 Although these measures indicate that the Region's water and sanitary sewer charges are generally affordable, they do not fully address the issue of affordability for all customers. Staff continue to study the affordability of water and sanitary sewer rates including considering whether there are alternative measures which should be considered to address the affordability of the water and sanitary sewer charges on various segments of the customer base.

6. Other Fees & Charges

6.1 **Schedule 1 – Recommended Raw Water Rate** – The Region operates a raw water system in Whitby which is supplied from the Whitby Water Supply Plant. This raw water system currently serves one large industrial customer (Gerdau Ameristeel Corporation). Due to lower costs, raw water is charged at a lower volumetric rate than the potable water rates. The 2022 raw water rate is proposed to increase by 0.5 per cent, aligned with the increase in the potable water rate and is included in Schedule 1. The proposed 2022 raw water rate is approximately 38.2 per cent of the 3rd block potable water rate.

6.2 **Schedule 3 – Sun Valley Heights Homeowners Co-operative Water System Proposed Charges** – The charges for this local community system serving 17 customers are separate from the Regional water and sewage rates. Based on an analysis of total costs related to this local system, it is recommended that their quarterly bill be increased to $444.00 (an increase of $15.00 or 3.5 per cent - there was no increase in 2021).

6.3 **Schedule 4 – Recommended Miscellaneous Fees & Charges** – This schedule includes a number of water and sewer system related fee categories, which are each reviewed annually. Three changes are recommended for 2022.

- **Item 20** – **Unmetered Water Used for Construction (Building Purposes**) – This charge relates to water used by contractors during home construction, but before meters are installed. The charge is based on prior year water 1st block rate and 200 m^3 of water use. The recommended charge updates the rate.
- **Item 33** – **Final Collection Notification** – Due to a change in collection practice related to unpaid water/sewer bills, an additional category is added as Item 33. The addition is a result of COVID-19 with Collection action on unpaid bills moved to notification of a lien on property tax rather than a water shut-off notification (see Item 17). This action has always been available, but infrequently used and is added to the schedule for clarification. The same $25.00 notification fee is applied as for water shut-off.

- **Item 44** – **Sewer Appeal Application Fee** – Non-residential customers which can demonstrate a significant proportion of water consumption does not discharge to the Regional sanitary sewer system (based on criteria set out in the Sewer System By-Law Number 90-2003 as amended) can apply for relief from their Regional sewer volumetric charge (the Region follows the industry practice of basing sewer charges on water consumption). Such an application requires Regional Works and Finance staff to properly investigate and make recommendations. Based on the time required for such a review, it is recommended that the application fee be set at $1,200.

6.4 **Schedule 5 – Recommended Laboratory Fees** – The recommended 2022 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory, located at the Duffin Creek Water Pollution Control Plant, is provided in Schedule 5. Lab operating costs are offset by means of fees charged for carrying out tests. The proposed 2022 Fee Schedule includes fee increases of approximately 3 per cent for many tests, fees for three new tests and the removal of one test no longer offered.

7. Projected User Rate Considerations Over the Forecast Period (2023 – 2031)

7.1 Based upon projections to 2031, it is estimated that the combined water and sanitary sewer user rate increases of approximately 4 per cent to 6 per cent on average per year may be required over the forecast period depending on future customer growth, water consumption, operating and capital costs. Staff continue to review operating requirements and long-term capital forecast and financing plans to refine these estimates. Information available through modeling under the Region's business planning and budget modernization initiative will allow for better refinement of projected rate increases for future years.

7.2 These projections will be impacted by various factors including:

- Customer growth that may be lower than that experienced over the last number of years;
- Potential for reductions in residential base water consumption and thus related revenues without a resulting offsetting reduction in costs. The 2022 proposed user rates assume an increase in residential base consumption to 233 m^3/customer per year. This increase, in part, is attributable to the continued impact that the COVID-19 pandemic is projected to have on residential base consumption with individuals continuing to work and attend school virtually from home. It is anticipated that this increased rate of residential base consumption will not continue post pandemic and future Business Plans and Budgets and User Rates may need to be adjusted to reflect updated residential base consumption. In addition, any economic decline could result in lower system utilization with consequent decreases in water and sanitary sewer user rate revenues;
- Market price impacts and volatility, including energy costs, and related equipment and supplies; and

- Significant investments are required in water supply and sanitary sewerage infrastructure to meet growth related, asset management, climate change adaptation/mitigation and regulatory requirements. The 2023 to 2031 Capital Forecast is discussed in the 2022 Current and Capital Business Plans and Budgets and Nine-Year Capital Forecasts for the Water Supply and Sanitary Sewerage Systems report (Report 2021-F-34).

8. Schedules of Rates & Fees

8.1 The recommended Durham Region 2022 water and sanitary sewer user rates, fees and charges are set out in the attached schedules, as follows:

- The recommended 2022 Water User Rates are 0.5 per cent higher than the 2021 rates and are set out in Schedule 1.
- The recommended 2022 Raw Water Rate for the Whitby raw water customer is 0.5 per cent higher than 2021 and is set out in Schedule 1.
- The recommended 2022 Sanitary Sewage User Rates are 3.1 per cent higher than the 2021 rates and are set out in Schedule 2.
- The recommended 2022 Water Rate for the Sun Valley Heights Homeowners Co-operative Water System is set out in Schedule 3.
- The recommended 2022 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges are set out in Schedule 4.
- The recommended 2022 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory located at the Duffin Creek WPCP is set out in Schedule 5.

9. Relationship to Strategic Plan

9.1 This report aligns with/addresses the following strategic goals and priorities in the Durham Region Strategic Plan:

a. Goal 5 Service Excellence – To provide exceptional value to Durham taxpayers through responsive, effective and fiscally sustainable service delivery. By responsibly managing the Region's financial assets, the proposed 2022 User Rates for Water Supply and Sanitary Sewerage look to optimize resources to deliver critical infrastructure and services for current and future generations.

10. Conclusion

10.1 The proposed 2022 Regional Water and Sanitary Sewer User Rates reflect a combined increase of 1.8 per cent for an average residential customer effective January 1, 2022, with the Regional water rates increasing by 0.5 per cent and the Regional sanitary sewer rates increasing by 3.1 per cent.

10.2 The proposed combined water and sanitary sewer user rate increase results in an increase of $4.88 on a quarterly bill ($19.52 per annum) for an average residential customer.

10.3 The proposed rate increases are based on projected customer growth of 1.00 per cent in water customers and 1.05 per cent in sewer customers with residential base consumption increasing to 233 m^3/customer/year and seasonal usage at 12 m^3/customer/year (total 245 m^3/customer/year).

10.4 The 2022 Proposed Business Plans and Budget for Consolidated Water Supply and Sanitary Sewerage can be accommodated within the 2022 proposed Regional Water and Sanitary Sewer User Rates recommended in this report.

10.5 The Commissioner of Works has reviewed this report and concurs with its recommendations.

11. Attachments

Schedule 1 – Recommended 2022 Water User Rates

Schedule 2 – Recommended 2022 Sanitary Sewer User Rates

Schedule 3 – Recommended 2022 Water Charges for the Sun Valley Heights Homeowners Co-operative Water System

Schedule 4 – Recommended 2022 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges

Schedule 5 – Recommended 2022 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek Water Pollution Control Plant

Original Signed By

Nancy Taylor, BBA, CPA, CA
Commissioner of Finance

Recommended for Presentation to Committee:

Original Signed By

Elaine Baxter-Trahair
Chief Administrative Officer

Schedule 1 - Recommended 2022 Water User Rates

REGIONAL MUNICIPALITY OF DURHAM

Water User Rate Schedule — 2022 Rate Increase = 0.5%

Monthly

Effective January 1, 2022

Volumetric Charges

Block	Consumption Range				Current		Proposed	
	From		To	Units	2021		2022	
First Block	0	to	45	cubic metres/month	$1.142	/cubic metre	$1.148	/cubic metre
	0	to	10,000	gallons/month	$5.191	/1,000 gallons	$5.217	/1,000 gallons
	0	to	1,600	cubic feet/month	$3.234	/100 cubic feet	$3.250	/100 cubic feet
Second Block	46	to	4,500	cubic metres/month	$0.971	/cubic metre	$0.976	/cubic metre
	10,001	to	1,000,000	gallons/month	$4.415	/1,000 gallons	$4.437	/1,000 gallons
	1,601	to	160,000	cubic feet/month	$2.751	/100 cubic feet	$2.764	/100 cubic feet
Third Block		Over	4,500	cubic metres/month	$0.892	/cubic metre	$0.896	/cubic metre
		Over	1,000,000	gallons/month	$4.053	/1,000 gallons	$4.073	/1,000 gallons
		Over	160,000	cubic feet/month	$2.525	/100 cubic feet	$2.537	/100 cubic feet

Basic Charges ($/month)

		Service Charge		Minimum Charge		Unmetered Fire Line Charge	
Meter/Fire Line Size		Current	Proposed	Current	Proposed	Current	Proposed
Inches	mm	2021	2022	2021	2022	2021	2022
Standard	Standard	$19.19	$19.29	n/a	n/a	n/a	n/a
1-inch	25-mm	$39.00	$39.20	$65.00	$65.00	$14.82	$14.89
1 ½-inch	38-mm	$83.01	$83.43	$125.00	$125.00	$19.92	$20.02
2-inch	51-mm	$179.27	$180.17	$240.00	$241.00	$38.55	$38.74
2 ½-inch	64-mm	n/a	n/a	n/a	n/a	$51.08	$51.34
3-inch	76-mm	$315.15	$316.73	$411.00	$413.00	$67.73	$68.07
4-inch	102-mm	$626.65	$629.78	$811.00	$815.00	$135.47	$136.15
5-inch	127-mm	n/a	n/a	n/a	n/a	$181.89	$182.80
6-inch	152-mm	$1,164.65	$1,170.47	$1,481.00	$1,489.00	$250.15	$251.40
8-inch	203-mm	$1,985.47	$1,995.40	$2,435.00	$2,447.00	$416.81	$418.89
10-inch	254-mm	$3,230.93	$3,247.08	$3,857.00	$3,876.00	$665.11	$668.44
12-inch	305-mm	n/a	n/a	n/a	n/a	$937.77	$942.46

Flat Rate (includes consumption)

	Current	Proposed
	2021	2022
Monthly/unit	$45.15	$45.38
Quarterly/unit	$135.45	$136.14
Annually/unit	$541.80	$544.56

Other - Raw Water Rate — Recommended Raw Water Rate Increase: 0.5%

		Current 2021		Proposed 2022	
All volumes	cubic metres	$0.341	/cubic metre	$0.342	/cubic metre
	gallons	$1.548	/1,000 gallons	$1.556	/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 issued.

Schedule 2 - Recommended 2022 Sanitary Sewer User Rates

REGIONAL MUNICIPALITY OF DURHAM

Sewage User Rate Schedule — 2022 Rate Increase = 3.1%

Monthly

Effective January 1, 2022

Volumetric Charges

Block	Consumption Range				Current		Proposed	
	From		To	Units	2021		2022	
First Block	0	to	45	cubic metres/month	$1.867	/cubic metre	$1.925	/cubic metre
	0	to	10,000	gallons/month	$8.487	/1,000 gallons	$8.750	/1,000 gallons
	0	to	1,600	cubic feet/month	$5.287	/100 cubic feet	$5.451	/100 cubic feet
Sewer rate expressed as a % of water rate					*163.5%*		*167.7%*	
Second Block	46	to	4,500	cubic metres/month	$1.643	/cubic metre	$1.694	/cubic metre
	10,001	to	1,000,000	gallons/month	$7.468	/1,000 gallons	$7.700	/1,000 gallons
	1,601	to	160,000	cubic feet/month	$4.653	/100 cubic feet	$4.797	/100 cubic feet
Sewer rate expressed as a % of water rate					*169.2%*		*173.5%*	
Third Block		Over	4,500	cubic metres/month	$1.381	/cubic metre	$1.424	/cubic metre
		Over	1,000,000	gallons/month	$6.277	/1,000 gallons	$6.472	/1,000 gallons
		Over	160,000	cubic feet/month	$3.911	/100 cubic feet	$4.032	/100 cubic feet
Sewer rate expressed as a % of water rate					*154.9%*		*158.9%*	

Basic Charges ($/month)

Meter	Service Charge		Minimum Charge		Flat Rate/unit	
	Current 2021	Proposed 2022	Current 2021	Proposed 2022	Current 2021	Proposed 2022
Standard	$7.32	$7.55	No minimum charge		$49.76	$51.30
All other sizes						
Monthly	$7.32	$7.55	$50.00	$51.00	$49.76	$51.30
Quarterly	$21.96	$22.65			$149.28	$153.90
Annually	$87.84	$90.60			$597.12	$615.60

Late payment charge is 2%. A bill payment is late if not made within 16 days of the date on which the bill is issued.

Schedule 3 - Recommended 2022 Water Charges for the Sun Valley Heights Homeowners Co-operative Water System

Sun Valley Home Owners Co-Operative 2022 Projected Costs		
Cost Item	**Budget 2021**	**Projected Cost 2022**
	$	**$**
Hydro Electricity	2,000	2,000
Property Taxes	500	600
Laboratory Costs	2,255	2,255
Operator & Reports	16,847	17,634
Vehicle	2,870	2,870
Operation Materials	2,600	2,600
Machinery and Equipment	1,550	1,550
Maintenance Materials & Other	600	600
TOTAL	**29,222**	**30,109**
Property owners	17	17
Charges per Property Owner (billings are sent quarterly)		
Monthly	**$143**	**$148**
Quarterly	**$429**	**$444**
Annually	**$1,716**	**$1,776**

Schedule 4 - Recommended 2022 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 2022 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2021 Charges		Recommended 2022 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:	D1				
a) 19mm (3/4") diameter					
- Base Rate – Apr 1 – Nov 30			3,700.00		3,700.00
- Winter Rate – Dec 1 – Mar 31			4,810.00		4,810.00
b) 25mm (1") diameter					
- Base Rate – Apr 1 – Nov 30			4,600.00		4,600.00
- Winter Rate – Dec 1 – Mar 31			5,980.00		5,980.00
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:	D2		Actual Cost		Actual Cost
a) 19-mm (3/4") diameter minimum charge			3,700.00		3,700.00
b) 25-mm (1") diameter minimum charge			4,600.00		4,600.00
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:		C1			
- Base Rate (Apr 1 – Nov 30)				3,843.00	3,843.00
- Winter Rate (Dec 1 – Mar 31)				5,005.00	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:		C2		Actual Cost	Actual Cost
- Minimum Charge				3,843.00	3,843.00
6) Storm Sewer Service Connections:		C3		Actual Cost	Actual Cost
- Minimum Charge				3,843.00	3,843.00

Schedule 4 - Recommended 2022 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2021 Charges		Recommended 2022 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	125.00	125.00 each
- 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 6)					
9) Frontage charges for non-standard watermain sizes and frontage charges for watermain projects initiated by petition.	E1 & E2		Actual Cost		Actual Cost
10) Standard 150-mm (6-inch) diameter Watermain (Note 3) - /metre - /foot	E1 & E2		460.00 140.21		460.00 140.21
11) Standard 200-mm (8-inch) diameter Watermain - /metre - /foot	E1 & E2		528.00 160.93		528.00 160.93
12) Standard 300-mm (12-inch) diameter Watermain - /metre - /foot	E1 & E2		570.00 173.74		570.00 173.74
13) Frontage charges for non-standard Sanitary Sewer sizes and frontage charges for Sanitary Sewer projects initiated by petition.		D1 & D2		Actual Cost	Actual Cost
14) Standard 200-mm (8-inch) diameter Sanitary Sewer (Note 3) - /metre - /foot		D1 & D2		507.00 154.53	507.00 154.53
15) Standard 250-mm (10-inch) diameter Sanitary Sewer - /metre - /foot		D1 & D2		575.00 175.26	575.00 175.26
16) Standard 300-mm (12-inch) diameter Sanitary Sewer - /metre - /foot		D1 & D2		637.00 194.16	637.00 194.16
Note (1) – Property owners requiring non-standard main sizes charged actual cost.					
Note (2) – Frontage charges may be financed at an annual interest rate of the prime rate of the Region's financial institution plus 1.5 per cent for a payment term of 10 or 15 years. The payment term is at the option of the Property Owner. Frontage charges shall be added to the Property Owner's Water and Sewer bill and will be billed and collected in the same manner as Water and Sewer Rates.					
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 cost recovery.					
Note (5) – Rate may vary if estimated construction costs vary significantly from the rates noted above.					
Note (6) – Frontage charges for petition projects shall be based on actual costs.					

Schedule 4 - Recommended 2022 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2021 Charges		Recommended 2022 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water $	Sewer $	Note: Changes are in Bold $
MISCELLANEOUS CHARGES					
17) Water Shut Off/Turn On					
Initiated by Customer:	F1	E1			
During normal Regional working hours:					
- Shut Water Off			80.00		80.00
- Turn Water On			80.00		80.00
- Shut Off & Turn On During Same Call			80.00		80.00
After normal Regional working hours:					
- Shut Water Off			120.00		120.00
- Turn Water On			120.00		120.00
- Shut Off & Turn On During Same Call			120.00		120.00
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)			80.00		80.00
For Water Shut Off Notification prior to shut off action being taken			25.00 for both		25.00 for both
For Water Shut Off for collection action 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)			94.00 for both		94.00 for both
Turn Water On			80.00 for both		80.00 for both
18) 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
19) Testing of Water Meter					
Initiated by Customer: - Deposit	F3		210.00		210.00
Fee where the meter is found to measure the flow of water within or below AWWA Specifications					
- Up to a maximum size of 25mm			210.00		210.00
- Over 25mm			Actual Cost		Actual Cost
Fee if meter is found to measure the flow of water above AWWA specifications			No Charge		No Charge
20) Unmetered water used for construction (building purposes) per service	F4		222.00		**231.00**

Schedule 4 - Recommended 2022 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2021 Charges		Recommended 2022 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water $	Sewer $	Note: Changes are in Bold $
21) Drawing Regional water from hydrant for purposes other than fire protection (All Users)	F5				
- /cubic metre			3.88		3.88
- /1,000 gallons			17.64		17.64
- Deposit			1,800.00		1,800.00
- Administrative Charge			134.77		134.77
- Minimum Charge per Month			1,800.00		1,800.00
- Valve installation/removal			109.25		109.25
22) Repair or replacement of frozen, damaged or missing water meter	F6				
- Up to a maximum size of 19mm (3/4")			210.00		210.00
- Over 19mm (3/4")			Actual Cost		Actual Cost
23) Thawing of service pipes	F7		No Charge		No Charge
24) Thawing of private hydrants or unmetered Fire Lines	F8		Actual Cost		Actual Cost
25) Cleaning sanitary sewer services		E3		No Charge	No Charge
26) Repair to or renewal of sanitary building sewers		E4		No Charge	No Charge
27) Supplying Statement of Account	F9	E5	35.00 for both		35.00 for both
28) Charge for Regional Solicitor providing information	F10	E6	94.00 for both		94.00 for both
29) Processing of Dishonoured Payments	F11	E7	48.00 for both		48.00 for both
30) Account Payment Transfer Fee	F12	E8	11.00 for both		11.00 for both
31) New Account & Change of Occupancy Fee	F13	E9	42.00 for both		42.00 for both
32) Charge for Late Payment of Water/Sewer Surcharge Rates	F14	E10	2 per cent		2 per cent
33) For Final Collection Notification prior to tax roll transfer action (lien) being taken.	**F22**	**E18**	**-**		**25.00 for both**
34) Lien Administration Fee	F15	E11	50.00 for both		50.00 for both
35) Installation and removal of anti-tampering devices on fire hydrants & curb stops	F16		138.00		138.00
36) Cross Connection Control Program Test Report	New		25.00		25.00
37) Water from Water Supply Plants, Water Pollution Control Plants, Works Depots & Bulk Filling Stations	F17				
- /cubic metre			3.23		3.23
- /1,000 gallons			14.69		14.69
- Service Charge $/month			21.00		21.00
- New Account Fee*			42.00		42.00
- Key Deposit			218.80		218.80
- Refundable on return of key (based on fee in year Key Deposit made)			181.64		181.64
- Access card			36.45		36.45
* The new account fee does not apply to new accounts set up by customers for the use of the Bulk Water Filling Station at the Oshawa/Whitby Depot					

Schedule 4 - Recommended 2022 Miscellaneous Charges Item Number & Description	By-Law Schedule Reference		Existing 2021 Charges		Recommended 2022 Charges
	Water By-law #89-2003	Sewer By-law #90-2003	Water $	Sewer $	Note: Changes are in Bold $
38) Fire Flow tests:					
- Full test (May 1 – Oct 31)	F18		467.20		467.20
- Full test (Nov 1 – Apr 30)			812.90		812.90
- Opening Hydrants (May 1 – Oct 31)			320.30		320.30
- Opening Hydrant (Nov 1 – Apr 30)			652.80		652.80
39) Sewage Surcharge and Compliance Agreements		E12		1,885.00	1,885.00
40) Disposal of Septic Tank and Holding Tank Waste and the disposal of Water Pollution Control Plant Sludge:		E2			
a) Hauled Domestic Waste					
- /cubic metre				19.56	19.56
- /1,000 gallons				88.93	88.93
b) Sludge from WPCP within the Regions of York and Durham and trucked to the incineration facilities at Duffin Creek WPCP					
- /cubic metre				16.19	16.19
- /1,000 gallons				73.59	73.59
c) Annual charge for registration of Haulers (up to 10 vehicles)				175.00	175.00
- Additional stickers if more than 10 vehicles, or replacement stickers – per sticker				10.20	10.20
d) ICI Sector areas (discharges up to 50,000 gallons)				522.75	522.75
e) ICI Sector areas (discharges of 50,001 to 100,000 gallons)				1,024.59	1,024.59
41) Copies of By-laws Water System, Sewer System and Sewer Use (+ Applicable taxes)	F19	E13	20.50/copy		20.50/copy
42) Sewer TV Inspection Reports and Videos per report or video (+ Applicable taxes)		E14		21.51	21.51
43) Sewer Use By-law Agreement extra strength waste ($/kg.)		n/a		0.53	0.53
44) Sewer Appeal Application per request		E15		950.00	**1,200.00**

Schedule 5 - Recommended 2022 Fee Schedule for Laboratory Services at the Regional Environmental Laboratory Located at the Duffin Creek Water Pollution Control Plant

	THE REGIONAL MUNICIPALITY OF DURHAM 2022 FEES AND CHARGES WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY		
			2022 Changed Bold
Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Rate (before appl. Taxes)
	Laboratory Fees Page 1 of 8		
	ONTARIO DRINKING WATER REGULATION 170/03 PACKAGES		
	Microbiological		
1	Presence/Absence Test (P/A for TC, EC)	$14.30	**$15.00**
2	Treated Water (P/A, HPC or BKD)	$26.50	**$27.00**
3	Well Water/Raw/Reg.319 (TC, EC)	$27.50	**$28.00**
4	Well Water/Treated/Distribution (TC, EC, HPC)	$37.70	**$39.00**
5	Single test by membrane filtration (e.g. MFHPC, MFTC)	$13.30	**$14.00**
6	Test for E. coli by membrane filtration	$14.30	**$15.00**
7	**All Parameters required under O.Reg. 170/03 Schedule 23 plus additional metals**	$80.60	**$83.00**
	(Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, U, Zn)		
8	**Inorganic Ions required under O.Regulation 170/03**	$79.60	**$82.00**
	(F, NO2, NO3, Na)		
	Inorganic Ions required under O.Reg. 170/03 plus additional Ions		
9	(Hardness*, Ca, Mg, Na, K, Ammonia, F, Cl, Br, NO2, NO3, PO4, SO4)	$79.60	**$82.00**
10	(Nitrite, Nitrate)	$52.00	**$54.00**
11	(Sodium)	$34.70	**$36.00**
12	(Fluoride)	$34.70	**$36.00**
13	(Lead testing as required under O.Regulation 170)	$35.70	**$37.00**
14	(Lead testing as required under O.Regulation 243) - For Standing & Flushed	$150.00	**$155.00**
15	**Organic Chemical THMs (Trihalomethanes)**	$102.00	**$105.00**
	Bromodichloromethane (bromoform), Dibromochloromethane (chloroform), THM (total)		
16	**All Parameters required under Schedule 24**	$1,400.00	**$1,552.00**
	(Includes all Parameters described under the following test CODES listed in this book - VOC, OC, TRIAZ, OP, PHENAC, CHLORPHEN, CARBUREA, GLYPH, DIPARA, PCB)		
17	**Combined Package York Region Drinking Water Package A**	$1,285.20	**$1,768.00**
	(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

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Changed Bold 2022 Rate (before appl. Taxes)
	Laboratory Fees Page 2 of 8		
	MICROBIOLOGICAL TESTS		
	O.Regulation 170/03		
18	Presence/Absence Test (P/A for TC, EC)	$14.30	**$15.00**
19	Treated Water (P/A, HPC or BKD)	$26.50	**$27.00**
20	Well Water/Raw/Reg.319 (TC, EC)	$27.50	**$28.00**
21	Well Water/Treated/Distribution (TC, EC, HPC)	$37.70	**$39.00**
22	Raw Water Intake, Municipal (TC, EC, BKD)	$32.60	**$34.00**
23	Treated/Distribution Water (TC, EC, BKD, HPC)	$42.80	**$44.00**
24	Single test by membrane filtration (e.g. MFHPC, MFTC)	$13.30	**$14.00**
25	Test for E. coli by membrane filtration	$14.30	**$15.00**
	New Mains		
26	New Water Mains (TC, EC, BKD, HPC)	$42.80	**$44.00**
	Waste Water		
27	E.coli (Final Effluent)	$16.30	**$17.00**
28	E.coli (Sludge / Cake)	$30.60	**$32.00**
29	Faecal Streptococci	$16.30	**$17.00**
30	Final Effluent (TC, EC)	$30.60	**$32.00**
31	Final Effluent (TC, EC, FS)	$40.80	**$42.00**
	Recreational Water		
32	E.coli (Lake/Beach/Creek/Pond/River)	$14.30	**$17.00**
33	Lakes / Bathing beaches (TC, EC, FS)	$37.70	**$39.00**
34	Any Single Membrane Filtration Test (eg. FC - MFFC, AE - MFAE, PS, SA etc.)	$25.50	**$26.00**
	Raw and Treated Water		
35	Algae Enumeration and Identification	$100.00	**$103.00**
36	Algae Cells	$100.00	**$103.00**
37	Algae by Microscopic Particulate Analysis	$500.00	**$515.00**
38	Microcystin	$153.00	**$158.00**
39	F Specific Coliphages	$200.00	**$206.00**
	Protozoa Testing		
40	Cryptosporidium and Giardia (MBCG)	$816.00	**$840.00**
41	Cryptosporidium, Giardia and Microscopic Particulate Analysis (MBCGMPA)	$1,100.00	**$1,133.00**
42	Pigment Bearing Algae and Diatoms (MBPBAD)	$500.00	**$515.00**
43	Cryptosporidium, Giardia and Pigment Bearing Algae and Diatoms (MBCGPBAD)	$1,100.00	**$1,133.00**
	Mycology (Fungi)		
44	Fungal Enumeration	$25.00	**$26.00**
45	Fungal Identification (Consultation Required)	$130.00	**$134.00**
46	Air Quality (Microbial - Bacteria, Yeasts & Molds)	$75.00	**$77.00**
47	Enumeration of Bacteria, Yeast and Molds by RODAC plates (BHI & SAB/MEA)	$75.00	**$77.00**
	Sterility (Spore) Testing		
48	Bacillus subtilis (DRY)	$50.00	**$52.00**
49	Bacillus stearothermophilus (STEAM)	$50.00	**$52.00**
	Other Bacteriological Groups		
50	Private Wells (TC, EC)(Signed Report faxed next day)	$76.50	**$79.00**
51	Iron Bacteria - Presence/Absence	$75.00	**$77.00**
52	Sulphur Bacteria - Presence/Absence	$75.00	**$77.00**
53	Iron & Sulphur Bacteria - Presence/Absence	$125.00	**$129.00**
54	Microscopic Examination	$100.00	**$103.00**
55	Crypto/Gardia Additional Filter Processing	$400.00	**$412.00**

THE REGIONAL MUNICIPALITY OF DURHAM

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)		2022 Changed Bold 2022 Rate (before appl. Taxes)	
	Laboratory Fees Page 3 of 8				
	GENERAL INORGANIC TESTS				
		Water	**S/S/S**	**Water**	**S/S/S**
56	pH, Conductivity, Alkalinity Total (CaCO3)	$27.50	$32.60	**$28.00**	**$34.00**
57	Alkalinity, Total (CaCO3)	$16.30	$21.40	**$17.00**	**$22.00**
58	Alkalinity, Total (CaCO3) (plus hydroxide, carbonate and bicarbonate)	$20.00	$26.00	**$21.00**	**$27.00**
59	Conductivity	$11.20	$16.30	**$12.00**	**$17.00**
60	pH	$11.20	$16.30	**$12.00**	**$17.00**
61	Fluoride by Ion Selective Electrode	$21.40	$27.50	**$22.00**	**$28.00**
62	Total Residual Chlorine	$11.20	$19.40	**$12.00**	**$20.00**
63	Free Residual Chlorine	$11.20	$19.40	**$12.00**	**$20.00**
64	Colour	$16.30	$19.40	**$17.00**	**$20.00**
65	Turbidity	$16.30	$19.40	**$17.00**	**$20.00**
66	Biochemical Oxygen Demand (BOD5)	$35.70	$42.80	**$37.00**	**$44.00**
67	Carbonaceous Biochemical Oxygen Demand (cBOD5)	$35.70	$42.80	**$37.00**	**$44.00**
68	Chemical Oxygen Demand (COD)	$31.60	$37.70	**$33.00**	**$39.00**
69	Dissolved Organic Carbon (DOC)	$29.60	$37.70	**$30.00**	**$39.00**
70	Total Organic Carbon	Subcontractor's Rate		Subcontractor's Rate	
71	Cyanide (Total)	$40.80	$47.90	**$42.00**	**$49.00**
72	Cyanide (Free)	$40.80	$47.90	**$42.00**	**$49.00**
73	Phenol	$37.70	$45.90	**$39.00**	**$47.00**
74	Sulphide (H2S)	$37.70	$45.90	**$39.00**	**$47.00**
75	Dissolved Solids, Ashed Dissolved Solids, Voltaile Dissolved Solids*	$26.50	N/A	**$27.00**	N/A
76	Suspended Solids (SS)	$15.30	$17.30	**$16.00**	**$18.00**
77	Suspended Solids, Ashed Suspended Solids, Volatile Suspended Solids*	$21.40	$24.50	**$22.00**	**$25.00**
78	Total Solids (TS)	$13.30	$15.30	**$14.00**	**$16.00**
79	Total Solids, Ashed Total Solids, Volatile Total Solids*	$19.40	$21.40	**$20.00**	**$22.00**
80	Dissolved Solids, Suspended Solids, Total Solids	$35.70	$42.80	**$37.00**	**$44.00**
81	Total Oil & Grease	$53.00	$63.20	**$55.00**	**$65.00**
82	Total / Mineral / Animal & Vegetable* Oil & Grease	$80.60	$96.90	**$83.00**	**$100.00**
	Ion Chromatography				
83	Hardness*,Ca,Mg,Na,K,Ammonia,F,Cl,Br,NO2,NO3,PO4,SO4	$79.60	$95.90	**$82.00**	**$99.00**
84	F,Cl,Br,NO2,NO3,PO4,SO4	$52.00	$62.20	**$54.00**	**$64.00**
85	Hardness*,Ca,Mg,Na,K,Ammonia	$52.00	$62.20	**$54.00**	**$64.00**
86	Any One of the Above Single Elements by IC	$34.70	$40.80	**$36.00**	**$42.00**
	Nutrients by Segmented Flow Analyzer				
87	NH3+NH4, PO4, NO2, NO2+NO3, TKN, TP	$98.90	$118.30	**$102.00**	**$122.00**
88	NH3+NH4, PO4, NO2, NO2+NO3	$59.20	$70.40	**$61.00**	**$73.00**
89	TKN, TP	$59.20	$70.40	**$61.00**	**$73.00**
90	Any One of the Above Single Nutrients by SFA	$38.80	$46.90	**$40.00**	**$48.00**
91	Ultra Low Dissolved PO4 (clean water only)	$66.30	N/A	**$68.00**	N/A
	Metals				
92	Mercury (Hg) by Cold Vapour AA	$35.70	$42.80	**$37.00**	**$44.00**
93	Acid Soluble Metals by ICP (Al, Fe, Mn, Pb, Zn)	$40.80	N/A	**$42.00**	N/A
94	Cation Scan by ICP (Ca, Mg, Na, K, Hardness*)	$52.00	N/A	**$54.00**	N/A
95	Heavy Metals Scan by ICP: Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, Sb, Zn	$54.10	$64.30	**$56.00**	**$66.00**
96	Heavy Metals Scan by ICP: As, Cd, Co, Cr, Cu, Mo, Ni, Pb, Se, Zn	N/A	$64.30	N/A	**$66.00**
97	Regulation 170 Metals: Al, As, B, Ba, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, U, Zn	$76.50	N/A	**$79.00**	N/A
98	Any One of the Above Single Metals by ICP-OES or ICP-MS	$35.70	$42.80	**$37.00**	**$44.00**
99	(Lead testing as required under O.Regulation 170)	$35.70	N/A	**$37.00**	N/A
100	(Lead testing as required under O.Regulation 243)	$75.00	N/A	**$77.00**	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

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Changed Bold 2022 Rate (before appl. Taxes)
	Laboratory Fees Page 4 of 8		
	INORGANIC MONITORING PACKAGES		
	DRINKING WATER		
101	**Drinking Water Package #1**	$96.90	**$100.00**
	(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*)		
102	**Drinking Water Package #2**	$149.90	**$154.00**
	(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*)		
103	**Drinking Water Package #2 with expanded metals**	$174.40	**$180.00**
	(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*)		
104	**Drinking Water Package #3**	$262.20	**$270.00**
	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, F, NO2, NO3, [NO2+NO3]*, SO4, PO4), DOC, TKN		
	LANDFILL MONITORING		
105	**Surface Water**	$370.30	**$407.00**
	(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)		
106	**Filtration of Raw Landfill samples**	$35.70	**$37.00**
	*Calculation included (no charge).		

THE REGIONAL MUNICIPALITY OF DURHAM

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Changed Bold 2022 Rate (before appl. Taxes)
	Laboratory Fees Page 5 of 8		
	INORGANIC MONITORING PACKAGES		
	SEWAGE & INDUSTRIAL WASTE		
107	**Monitoring Package #1**	$42.80	**$44.00**
	(BOD5, suspended solids)		
108	**Monitoring Package #2**	$100.00	**$103.00**
	(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus)		
109	**Monitoring Package #2 plus Metals**	$161.20	**$166.00**
	(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus		
	Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, Zn)		
110	**Monitoring Package #3**	$149.90	**$154.00**
	(BOD5, susp. solids, total kjeldahl nitrogen, total phosphorus		
	ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)		
111	**Monitoring Package #3 plus Metals**	$211.10	**$217.00**
	(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)		
112	**Monitoring Package #4**	$197.90	**$204.00**
	(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)		
113	**Monitoring Package #4 plus Metals**	$262.10	**$307.00**
	(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)		
	SLUDGE		
114	**Sludge Monitoring Package #1**	$116.30	**$120.00**
	(total solids, total kjeldahl nitrogen, total phosphorus,		
	ammonia+ammonium, nitrite, nitrite+nitrate, diss. phosphate)		
115	**Sludge Monitoring Package #1 plus Metals**	$177.50	**$183.00**
	(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)		
116	**Sludge Monitoring Package #2 (Agrisludge)**	$204.00	**$210.00**
	(total solids, ashed total solids, volatile total solids*,		
	total kjeldahl nitrogen, total phosphorus, ammonia+ammonium		
	nitrite + nitrate, Hg, As, Cd, Co, Cr, Cu, K, Mo, Ni, Pb, Se, Zn)		
	SEWER USE BY-LAW		
117	**Complete Inorganic Package**	$475.00	**$490.00**
	BOD, suspended solids, total kjeldahl nitrogen, total phosphorus, pH, fluoride		
	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		
	*Calculation included (no charge).		

	THE REGIONAL MUNICIPALITY OF DURHAM		
	2022 FEES AND CHARGES		
	WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY		
			2022 Changed Bold
Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Rate (before appl. Taxes)
	Laboratory Fees Page 6 of 8		
	ORGANIC MONITORING PACKAGES		
	DRINKING WATER / SURFACE WATER / GROUNDWATER & WASTEWATER		
118	**THMs (Trihalomethanes)**	$102.00	**$105.00**
	Bromodichloromethane (bromoform), Dibromochloromethane (chloroform), THM (total)		
119	**BTEX by Purge & Trap GC/MS**	$80.60	**$83.00**
	benzene; m, p-xylene; toluene; Ethylbenzene; O-xylene		
120	**Taste & Odour**	$250.00	**$258.00**
	geosmin; 2-isobutyl-3-methoxypyrazine; 2,3,6-trichloroanisole; 2-methylisoborneol (MIB); 2-isopropyl-3-methoxypyrazine; 2,4,6-trichloroanisole		
121	**Haloacetic Acids (Disinfection By-Products)**	$300.00	**$309.00**
	bromochloroacetic acid; dichloroacetic acid; monochloroacetic acid; dibromoacetic acid; monobromoacetic acid; trichloroacetic acid		
122	**Volatile Organic Compounds**	$128.50	**$132.00**
	benzene; bromodichloromethane; bromoform; bromomethane; carbon tetrachloride; chlorobenzene; chlorodibromomethane; chloroethane; chloroform; chloromethane; tetrachloroethylene (perchloroethylene); 1,2-dibromoethane (ethylene dibromide); 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; methyl tert-butyl ether (MTBE); methyl ethyl ketone (MEK); methyl isobutyl ketone (MIBK); 1,1,1,2-tetrachloroethane; cis-1,2-dichloroethylene; trans-1,2-dichloroethylene; dichloromethane; 1,2-dichloropropane; cis-1,3-dichloropropylene; trans-1,3-dichloropropylene; ethylbenzene; Styrene; 1,1,2,2-tetrachloroethane; toluene; 1,1,1-trichloroethane; 1,1,2-trichloroethane; trichloroethylene; trichlorofluoromethane; vinyl chloride; o-xylene; m, p-xylene; THM (Total); xylene (Total); 2-hexanone; acetone; 1,2,4-trichlorobenzene		
123	**1,4-Dioxane Purge and Trap**	**New Test**	**$83.00**
124	**Benzo(a)pyrene (GCMS)**	**New Test**	**$110.00**
	PESTICIDE / HERBICIDE ANALYSIS		
125	**Organochlorine Pesticides**	$123.40	**$127.00**
	aldrin; a-BHC; b-BHC; g-BHC (Lindane); a-chlordane; g-chlordane; p,p' – DDD; p,p' – DDE; p,p' – DDT; o,p' – DDT; dieldrin; endosulphan I; endosulphan II; endosulphan sulphate; endrin; heptachlor; heptachlor epoxide; methoxychlor; mirex; oxychlordane; trifluralin; toxaphene		
126	**Triazine Herbicides**	$107.10	**$110.00**
	alachlor (Lasso); ametryn; atraton; atrazine; cyanazine (Bladex); desethyl atrazine; desethyl simazine; metolachlor; metribuzin (Sencor); prometon; prometryn; propazine; simazine		
127	**Organophosphorus Pesticides**	$107.10	**$110.00**
	chlorpyrifos (Dursban); chlorpyrifos-methyl (Reldan); diazinon; dichlorvos; dimethoate; ethion; fenchlorphos (Ronnel); guthion (Azinphos-methyl); benzo(a)pyrene; malathion; methyl parathion; mevinphos (Phosdrin); parathion; phorate (Thimet); terbufos		
128	**Phenoxy Acid Herbicides**	$161.20	**$166.00**
	2,4-dichlorophenoxyacetic acid (2,4-D); bromoxynil; dicamba; diclofop-methyl; MCPA; picloram		
129	**Chlorophenols**	$161.20	**$166.00**
	2,4-dichlorophenol; 2,4,6-trichlorophenol; 2,3,4,6-tetrachlorophenol		
130	**Carbamate & Phenyl Urea Pesticides/Herbicides**	$239.70	**$247.00**
	Carbaryl; Diuron; Carbofuran; Triallate		
131	**Glyphosate**	$198.90	**$205.00**
132	**Diquat (Paraquat)**	$198.90	**$205.00**

THE REGIONAL MUNICIPALITY OF DURHAM

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)	2022 Changed Bold 2022 Rate (before appl. Taxes)
	Laboratory Fees Page 7 of 8		
	ORGANIC MONITORING PACKAGES		
133	**PCB Analysis**	$80.60	**$83.00**
	Polychlorinated Biphenyls		
134	**PAHs (Polynuclear Aromatic Hydrocarbons) by GC/MSD**	Subcontractor's Rate	Subcontractor's Rate
	Acenaphthene; Acenaphylene; Anthracene; Benzo(a)anthracene; Benzo(a)pyrene; Benzo(b)fluroanthene; Benzo(g, h, i)perylene; Benzo(k)fluoranthene; 1-Chloronapthalene; Chrysene; Dibenz(a, h)anthracene; Fluoranthene; Fluorene; Indeno (1,2,3-cd)pyrene; 1-Methylnaphthalene; 2-Methylnaphthalene; Naphthalene; Phenanthrene; Pyrene		
	Open Characterization (Semi-quantitative)		
135	Volatiles (Scans for Volatile Organic Compounds)	$250.00	**$258.00**
136	Extractables (Scans for Extractable Organic Compounds)	$300.00	**$309.00**
	Industrial Sewer Use By-law Acid/Base/Neutral Compounds		
137	di-n-butylphthalate; bis(2-ethylhexyl)phthalate;	$214.20	**$221.00**
138	Polychlorinated Biphenyls	$80.60	**$83.00**
	SEWER USE BYLAWS		
139	**Industrial Sewer Use By-law Volatile Organic Compounds**	$134.60	**$139.00**
	1,1,2,2, -tetrachloroethane; 1,2-dichlorobenzene; 1,4-dichlorobenzene; benzene; chloroform; cis-1,2-dichloroethylene; dichloromethane; ethylbenzene; methyl ethyl ketone (MEK); m/p-xylene; o-xylene; styrene; tetrachloroethylene; toluene; trans-1,3-dichloropropylene; trichloroethylene; xylene (Total)		
140	**Industrial Sewer Use By-law Nonylphenols & Ethoxylates (Subcontracted)**	Subcontractor's Rate	Subcontractor's Rate
	Nonylphenol; nonylphenol ethoxylates		
141	**Durham/York/Peel Sewer Use By-law Organic Package***	$727.50	**$436.00**
	1,1,2,2, -tetrachloroethane; 1,2-dichlorobenzene; 1,4-dichlorobenzene; benzene; chloroform; cis-1,2-dichloroethylene; dichloromethane; ethylbenzene; methyl ethyl ketone (MEK); di-n-butyl phthalate; PCB (Total); m/p-xylene; o-xylene; styrene; tetrachloroethylene; toluene; trans-1,3-dichloropropylene; trichloroethylene; xylene (Total); bis (2-ethylhexyl) phthalate		
	* If nonyl phenol/nonyl phenol ethoxylates req'd, please request as add-on to package		
	OTHER PACKAGES		
142	**Total Petroleum Hydrocarbons (TPH) in Water (Subcontracted)**	Subcontractor's Rate	Subcontractor's Rate
	This CCME method includes:		
	a). BTEX-Purgeables by P&T GC/MS or HS GC/FID - gasoline range		
	b). Extractables by GC/FID - diesel range		
	c). Total Oil & Grease by Gravimetric - heavy oil range		
143	**PFAS/PFOS (Solid Phase Extraction Method)**	$600.00	$600.00
	Perfluorodecanesulfonic acid (PFDS, Perfluorodecanesulfonate) Perfluorodecanoic acid (PFDA, Perfluorodecanoate) Perfluorododecanoic acid (PFDoA, Perfluorododecanoate) Perfluoroheptanoic acid (PFHpA, Perfluorohepanoate) Perfluorohexanesulfonic acid (PFHxS, Perfluorohexanesulfonate) Perfluorohexanoic acid (PFHxA, Perfluorohexanoate) Perfluorononanoic acid (PFNA, Perfluorononanoate) Perfluorooctanesulfonic acid (PFOS, Perfluorooctanesulfonate) Perfluorooctanesulfonamide (PFOSA) Perfluorooctanoic acid (PFOA, Perfluorooctanoate) Perfluoroundecanoic acid (PFUnA, Perfluoroundecanoate)		

THE REGIONAL MUNICIPALITY OF DURHAM

2022 FEES AND CHARGES

WORKS DEPARTMENT - ENVIRONMENTAL LABORATORY

Item	Description / Test For	2021 Rate (before appl. Taxes)		2022 Changed Bold 2022 Rate (before appl. Taxes)	
	Laboratory Fees Page 8 of 8				
144	**Legal Sample Fees and Legal Storage Fees**				
	Samples submitted under legal chain of custody - per sample	$255.00		**$281.00**	
	(To maintain an unbroken chain of custody for samples that may be used for litigation)				
145	Extended storage for legal samples (longer than 30 days) - per container per month	$3.10		**$5.00**	
	(Samples will be stored free of charge for 30 days from the date of final report)				
146	Court testimony by Regional Environmental Laboratory staff	To be determined case-by-case			
147	Mileage for appearance - per kilometre (actual)	$0.55		**$0.58**	
	Miscellaneous				
148	Sub-contractor Fee	Subcontractor's Rate		Subcontractor's Rate	
	Report re-issue Fees:				
149	- Current Year	$10.00		$10.00	
150	- Previous 2 years	$25.00		$25.00	
151	- Prior Archives	$100.00		$100.00	
	Sample Treatment				
152	Chlorine quenching	$25.00		**$26.00**	
153	Oil & Grease additional extraction	$25.00		**$26.00**	
154	Shipping (Sample Containers)	Actual cost		Actual cost	
155	Sample filtration if required		**New Test**	**$26.00**	

Regional Municipality of Durham

2022 Water and Sanitary Sewer User Rates

Detailed Report

Table of Contents

Exhibits

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 and reflect the actual costs of supplying customers. 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 being considered concurrently by Council and is related to this Water and Sanitary Sewer User Rates Report:

- **Report #2021-F-34:** The recommended user rates are based on operating costs, capital costs and financing as outlined in detail in the 2022 Current and Capital Business Plans and Budgets and Nine-Year Capital Forecasts for the Water Supply and Sanitary Sewerage Systems report (Report 2021-F-34). This report is also included on the December 14, 2021 Finance and Administration Committee agenda.

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

It is imperative that the proposed 2022 user rates be approved in 2021 in order that they can be implemented with the first customer billings commencing early January 2022. 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.

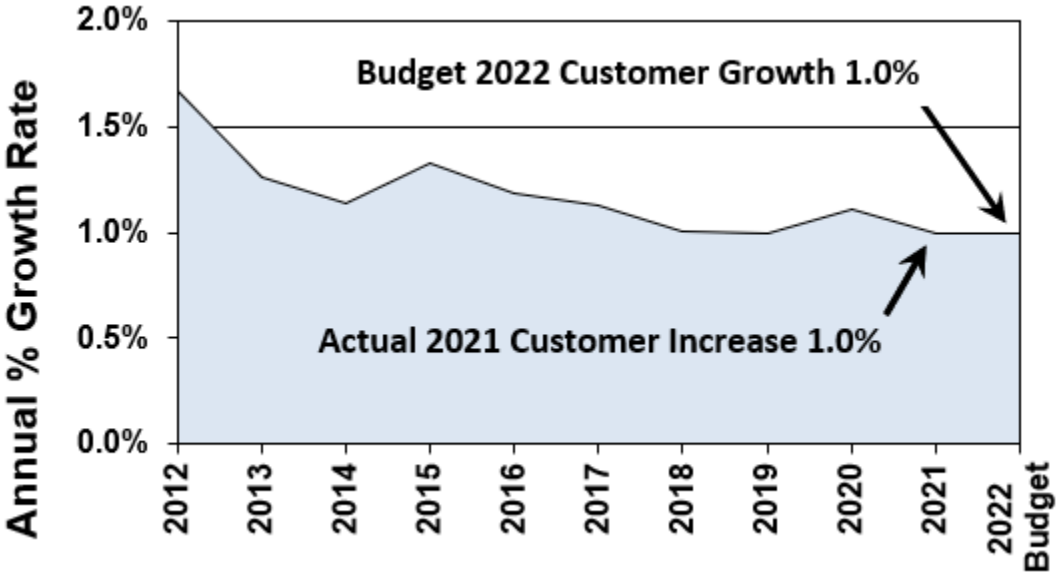
1.3 Public Notification Provided

The proposed 2022 water and sanitary sewer user rates, fees and related charges will be considered by the Finance and Administration Committee on December 14, 2021 and by Regional Council on December 22, 2021. Public notification of this schedule was provided in local newspapers throughout the Region on October 14, 2021 and November 25, 2021. Notification was also posted on the Region's website. This affords the public an opportunity to make representation to the Finance and Administration Committee 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 Region's website.

2 Customer Growth - Moderate

Actual water customer growth from 2012 to 2021 and Budget 2022 (end of June data) is graphed in Exhibit 1. Mid-year figures are used for rate calculation purposes as they represent the "average" number of customers for the year.

Exhibit 1
Annual Per Cent Growth in Water Customers (June data)
2012 to 2021 Actuals and 2022 Budget



Annual water customer growth peaked at about 4.0 per cent in 2004. Since then, growth decreased to 1.0 per cent in 2018 and has since levelled.

There were 181,340 water customers and 176,562 sanitary sewer customers in June 2021. Some customers have multiple units (such as apartment buildings) but only one meter. There are fewer sanitary sewer customers than water customers because there are communities with Regional water supply services, but no Regional sanitary sewer services provided including 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.

Each year sanitary sewer customer growth is slightly higher than water customer growth as some customers who were only connected to the Regional water system, but with Regional service available, connect to the Region's sewage system.

For 2022 rate setting purposes, annual customer growth is projected at 1.00 per cent for water and 1.05 per cent for sanitary sewer (the same growth rates as projected for 2021 for the 2021 User Rates).

The actual water, sanitary sewer and fire line customer data from 2012 to 2021 and projected 2022 budget are tabulated in Exhibit 2.

Exhibit 2
Water & Sanitary Sewer Customers (June data)
2012 to 2021 Actuals and 2022 Budget

	Water			Sewage			Fire Lines
		Increase Over Previous June			Increase Over Previous June		
Year	Total	Number	Percent	Total	Number	Percent	Total
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	175,763	1,749	1.0%	171,658	1,797	1.1%	1,899
2019	177,518	1,755	1.0%	173,431	1,773	1.0%	1,919
2020	179,498	1,980	1.1%	174,757	1,326	0.8%	1,940
2021	181,340	1,842	1.0%	176,562	1,805	1.0%	1,988
2022 Budget	***183,153***	***1,813***	***1.00%***	***178,416***	***1,854***	***1.05%***	***2,008***

The total number of residential and ICI (industrial, commercial and institutional) water customers are projected to increase by 1,813 in 2022 (sewer customers by 1,854).

The projected customer growth for 2022 is:

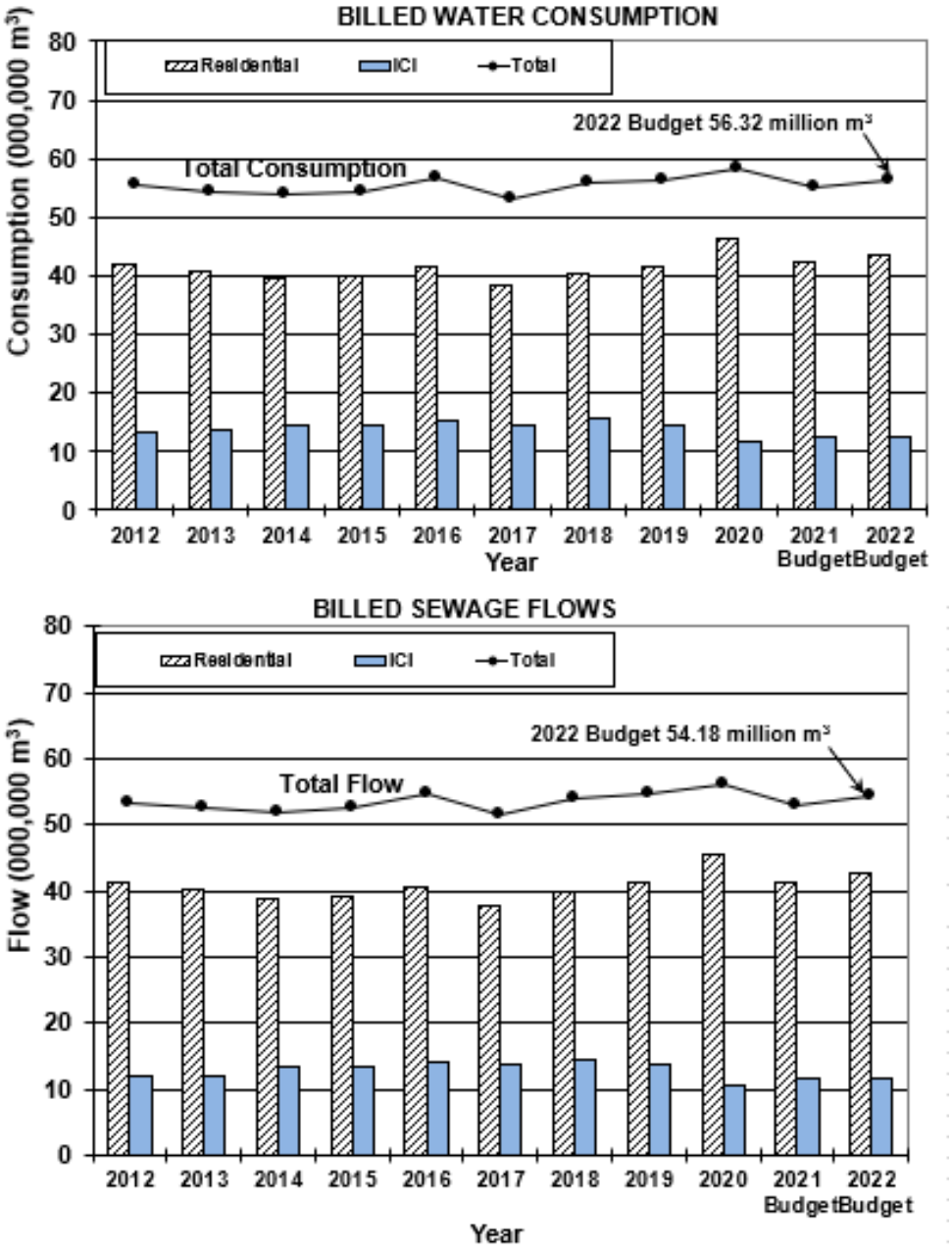
- **Water increases by +1,813 (+1.00 per cent) to a total of 183,153**
- **Sanitary Sewer increases by +1,854 (+1.05 per cent) to a total of 178,416**

3 Water Demand – Some Growth

3.1 Historical Consumption

Exhibit 3 graphs the 2012 to 2020 actual and 2021 and 2022 budgeted residential, ICI and total volumes billed to customers for water supply and sanitary sewerage. Additional information on the basis of the 2022 budget projections for consumption is provided in the following sections.

Exhibit 3
Billed Water & Sanitary Sewer Volumes
2012 to 2020 Actuals and 2021 and 2022 Budgets



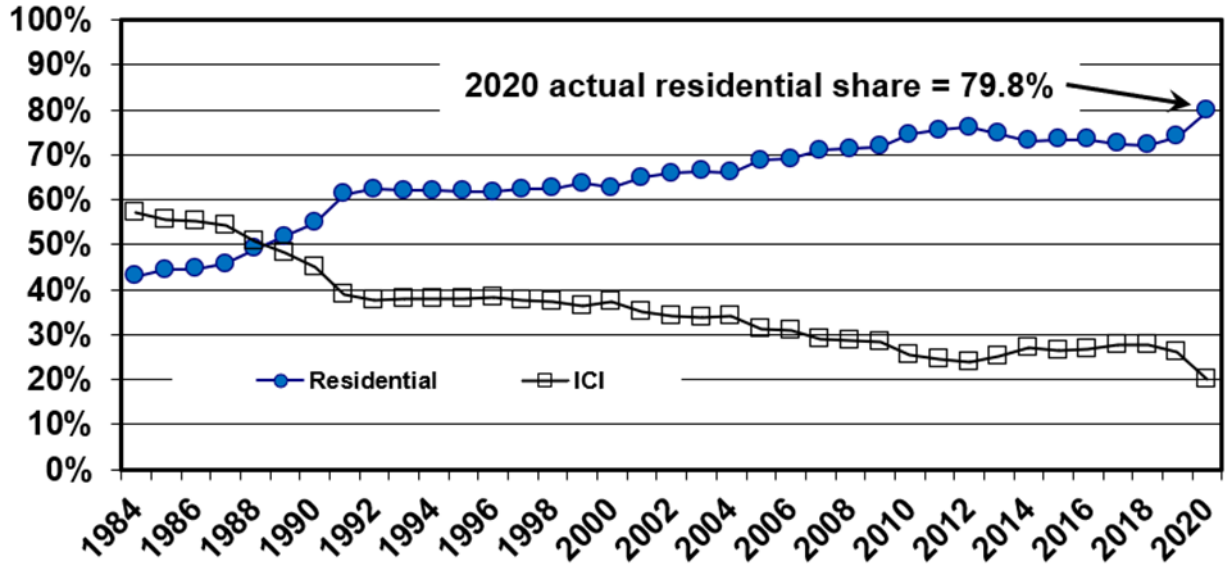
3.2 Residential versus ICI Consumption Share

Prior to 2012 there was a steady increase in the share of consumption by residential customers and a corresponding decrease in the share of consumption by industrial/commercial/institution (ICI) customers. Residential usage grew from about a 43 per cent share in 1984 to a 76 per cent 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 one of the largest ICI customers, a paper production facility that was shut down in 2010. Facilities were upgraded using a different recycling process with a resulting increase in industrial water usage share. Residential share

increased somewhat in 2019 with consumption reductions at General Motors and more significantly last year as a result of many employees working from home due to COVID-19.

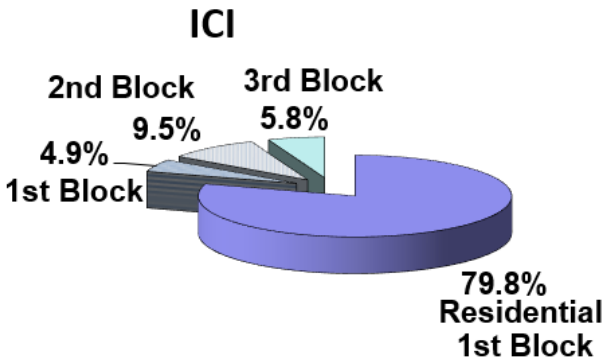
Annual consumption share is illustrated in Exhibit 4. The residential share of consumption is currently 79.8 per cent.

Exhibit 4
Billed Residential versus ICI Water & Sanitary Sewer Volume Share
1984 to 2020 Actual



The distribution of actual 2020 consumption by block and customer class is illustrated in Exhibit 5.

Exhibit 5
Water Consumption Share by Block
2020 Actual



All residential consumption is billed at 1st block rates. ICI water users, depending on usage volume, may enter the 2nd and 3rd rate blocks. Consumption by block is broken down as follows:

- **1st block** (including all residential and ICI up to 45 m^3/month or 10,000 gallons/month) - Residential usage is billed at 1st block rates and these customers represent the majority of usage. Total 1st block consumption for all customers represented 84.7 per cent of all usage in 2020 (ICI 4.9 per cent + Residential 79.8 per cent).

- **2nd block** (ICI 46 to 4,500 m^3/month or 10,001 to 1,000,000 gallons/month) – This segment's consumption decreased to about 9.5 per cent of the total (from 12.0 per cent in 2019).

- **3rd block** (ICI over 4,500 m^3/month or 1,000,000 gallons/month) – Large user consumption share decreased from about 8.6 per cent of total usage in 2019 to about 5.8 per cent in 2020.

3.3 Residential Consumption – Some Growth Budgeted

Although Durham continues to see residential customer growth, starting in 2001 total residential consumption actually levelled off. This is because usage per residential customer trended downwards. The downward trend in consumption per residential customer levelled off in 2017/2018 and has increased since, reversing the long-term trend.

Total residential consumption is made up of two components: day-to-day or "Base" usage plus extra "Seasonal" usage in the summer.

- **Base Usage** - Base 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.

Base Usage – Although the number of residential customers continues to grow, Base (day-to-day) usage per customer had been decreasing from about 320 m^3/customer/year in 2000 to 219 m^3/customer/year in 2018. This steady drop in usage by residential customers tended to offset the impact on total residential consumption from the addition of new customers. The steady decrease in Base usage per customer up to 2018 is apparent in Exhibit 6.

Note that individual residential customers include single family dwellings, duplexes, apartment buildings and condominium townhouses and consumption per residential customer represents a blend of the different categories.

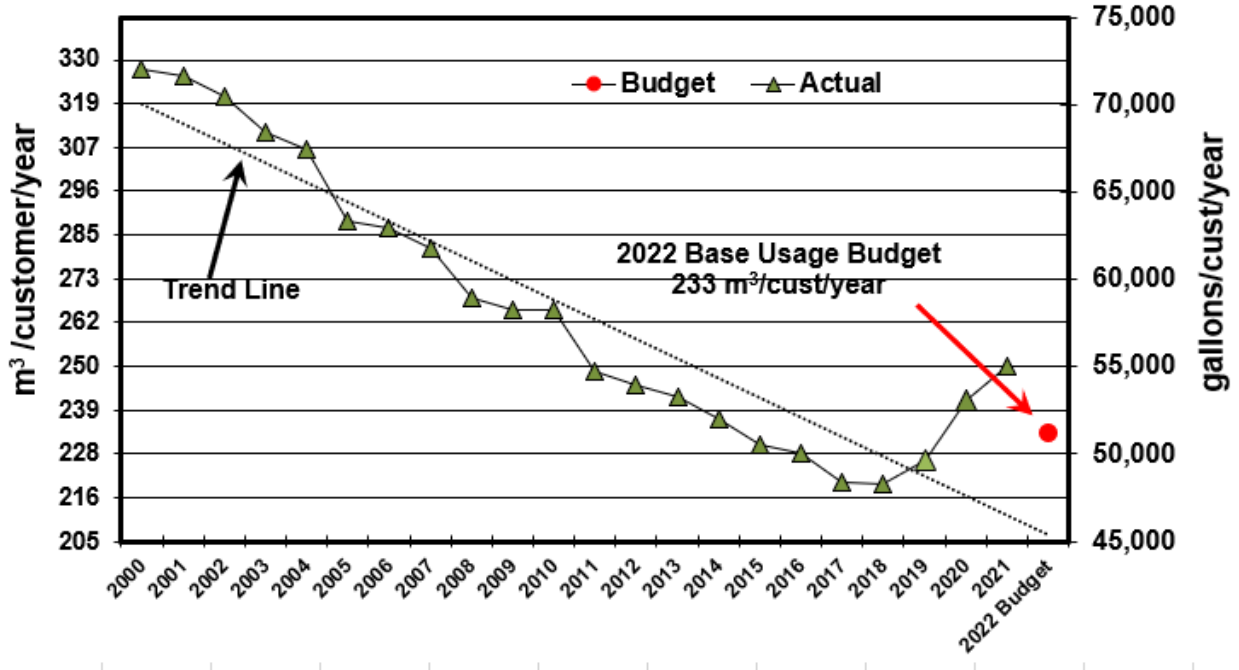
Contrary to historical expectations and trends, Base usage per residential customer started increasing in 2020 and as a result Base residential usage was budgeted at 230 m^3/customer/year for 2021.

An analysis of 2021 residential consumption indicates a continued increase in Base usage. The current increase coincides with the shift to more individuals working and studying from home as a result of the COVID-19 pandemic. It is difficult to predict the impact that the COVID-19 pandemic will have on Base Residential Consumption in 2022. For purposes of calculating the proposed 2022 user rates, it was assumed that the COVID-19 pandemic will continue to have a positive impact on 2022 Residential Base Consumption. The level of base residential usage for 2022 budget purposes has been increased to 233 m^3/customer/year. Should actual residential base consumption be lower than projected in 2022, funding from the Water Treatment Plant/Rate Stabilization Reserve Fund and the Sewer Treatment Plan/Rate Stabilization Reserve Fund may be required if an actual net deficit occurs in the overall Water Supply of Sanitary Sewer fund respectively.

It is important to note that this increased rate in residential base consumption is not anticipated to continue post pandemic and future Business Plans and Budgets and User Rates may need to be adjusted to reflect updated projections.

Base residential usage represents the majority of residential usage and is the most important element in projecting residential use. Since residential use represents the majority of water sales, base residential consumption is also an important factor in projecting total water sales.

Exhibit 6
Base Annual Residential Water Usage per Customer
2000 to 2021 Actuals and 2022 Budget (excludes seasonal usage)



Seasonal Usage - Seasonal consumption is mostly due to outside usage such as lawn/garden 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). Seasonal usage can vary from about 5 m^3/customer/year (1,000 gallons/customer/year) up to about 32 m^3/customer/year (7,000 gallons/customer/year), depending on summer weather conditions. Historically, seasonal usage was budgeted at 6.5 m^3/customer/year, which lies in the bottom 30 per cent of summer usage levels, similar to a wet summer. For 2021 budgeted seasonal usage was increased to 10 m^3/customer/year. For 2022 budget purposes it has been further increased to 12 m^3/customer/year, which is consistent with historical averages.

Total Usage – Total usage per residential customer (including base usage plus an allowance for seasonal usage) was budgeted at 240 m^3 (52,800 gallons) per year for 2021. For 2022 budgeting purposes, due to the projected increase in both base and seasonal usage per customer, total residential usage is budgeted at 245 m^3 (53,900 gallons) per residential customer.

	Per Customer		Total Annual	
Type of Usage	2021 Budget	2022 Budget	2021 Budget	2022 Budget
Cubic Metres				
Basic	230.0	233.0		
Seasonal Allowance	10.0	12.0		
Total	240.0	245.0	42,315,000	43,641,000
Gallons			(000)	(000)
Basic	50,600	51,260		
Seasonal Allowance	2,200	2,640		
Total	52,800	53,900	9,309,000	9,602,000

Based on the projected number of residential customers this is equivalent to total budgeted 2022 residential consumption of 43,641,000 m^3 (9,602,000,000 gallons).

Historical Factors - The downward trend in residential **base usage** (day-to-day consumption) was 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

(1) Ontario Building Code

- The cost of water efficient appliances such as 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.

- There is a changing housing development format which results in smaller lot size, requiring lower seasonal usage.

Priority Green Clarington Demonstration Project - 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 water conservation standards required by the Ontario Building Code. The features include greywater reuse as well as ultra low flow toilets, faucets and showers.

Priority Green Clarington Demonstration Project
Annual Consumption vs Regional SFD Average

	2015		2016		2017		2018		2019		2020	
	m3	gallons	m3	gallons	m3	gallons	m3	gallons	m3	gallons	m3	gallons
Region SFD Average	205	45,100	210	46,200	190	41,800	193	42,460	n/a	n/a	n/a	n/a
Green Demonstration Project	161	35,420	155	34,100	143	31,460	146	32,050	160	35,160	157	34,590
GDP% versus Region Average	79%		74%		75%		75%		n/a		n/a	
Summer Precipitation	Wet		Very Dry		Average		Average		Wet		Average	

Annual 2015 to 2018 consumption data for the homes in the Demonstration Project have been compared with the average Regional consumption in detached single family dwellings (SFD). Consumption in the Demonstration Project homes averaged about 25 per cent less than the Regional SFD average (2019 & 2020 Regional SFD average not available at the time of writing this report). 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. Note that the Green Demonstration Project average consumption per customer actually increased from in 2019 and 2020 compared to prior years which is consistent with the Regional increase in average base consumption per customer (see Exhibit 6).

Future Plans – It is Regional policy to encourage the efficient use of water and to continue to investigate and implement measures to achieve this. The historical effectiveness of the programs outlined above has been reflected in the continued (until recently) decrease in per customer residential usage. Given the Region's commitment to encouraging water efficient usage and the efficiencies already achieved, further reductions in per customer usage may be expected in the long term.

3.4 ICI Consumption – 2021 Budget Used for 2022

ICI consumption for the 2021 Budget and proposed 2022 Budget for water and sanitary sewer by consumption block are detailed below, following the discussion of consumption trends.

1st Block ICI – It is projected that by year-end 2021 first block ICI consumption will be close to budget levels. 2021 first block consumption to date is below historic levels, but similar to 2020. Given the similarity, the 2021 budget consumption is used for 2022.

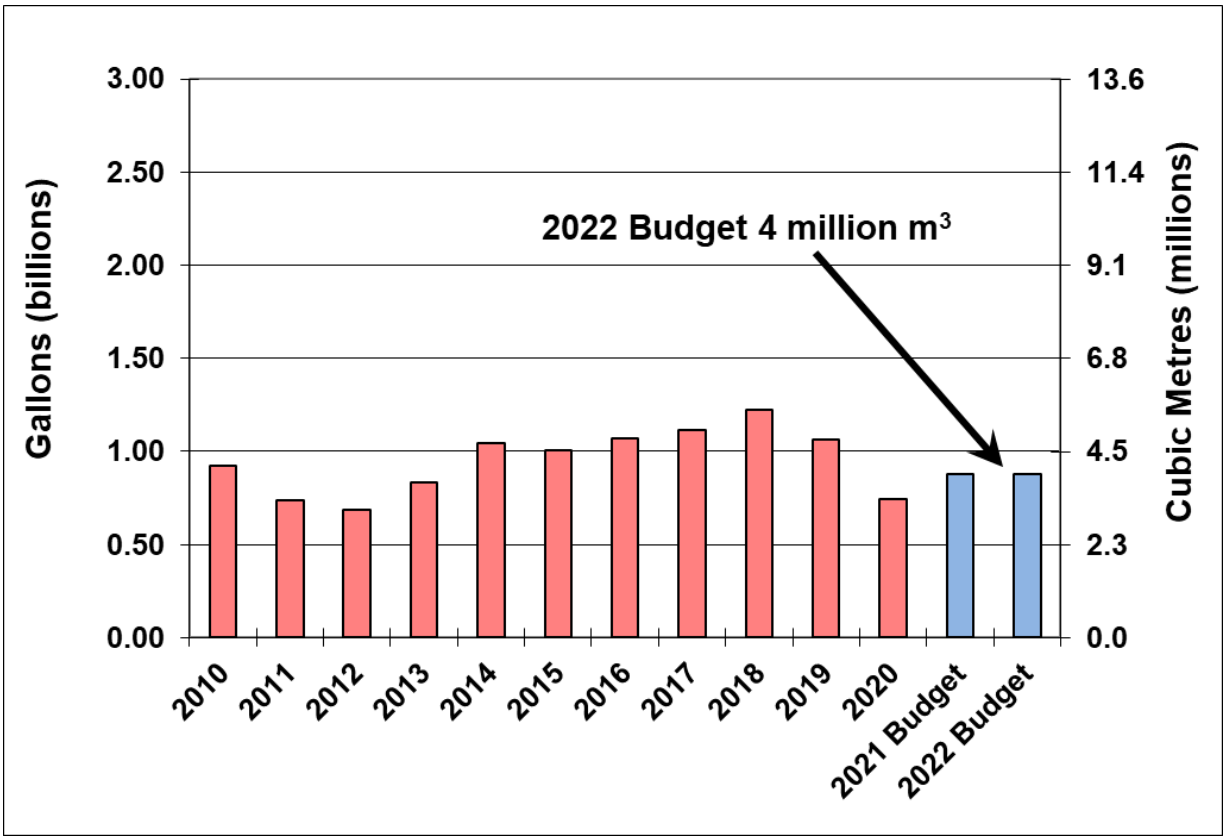
2nd Block ICI – Similarly, 2nd block consumption to date is close to 2020 levels and about 15 per cent lower than previous years. The 2021 budget consumption is used for 2022.

3rd Block ICI – The 2021 Budget incorporated a projected decrease in consumption by GM due to its termination of auto production. However, a modest level of consumption by GM has continued. This, combined with ongoing usage by other major customers, is resulting in 2022 projected 3rd block consumption remaining relatively consistent with 2021 budgeted consumption despite the impacts of the COVID-19 pandemic. Vehicle production has resumed at the GM Oshawa plant and is reflected in recent increases in water usage. GM anticipates moving to three shifts when labour and parts supply permits. This will have an impact on future consumptions levels (particularly 3rd block).

The 3rd block consumption is graphed in Exhibit 7 for 2010 to 2020 actuals along with 2021 and 2022 budgeted consumption. The large industry sector is responsible for 3rd block consumption and represents about 30 per cent of total ICI consumption. There were 26 customers which reached 3rd block rates for at least one billing in 2020 of which 15 were industrial, five utilities, five hospitals and one community centre.

Current 2021 3rd block consumption is projected to surpass 2020 actuals and reach 2021 Budget levels. Based on future uncertainty, 2022 Budget 3rd block consumption levels are maintained at 2021 Budget levels.

Exhibit 7
3rd Block Water Consumption
2010 to 2020 Actuals and 2021 and 2022 Budget



Total ICI – 2022 Budget ICI consumption is projected to remain at 2021 Budget levels (Exhibit 8).

Exhibit 8
ICI Summary

	Water		Sewer	
Type of Usage	2021 Budget	2022 Budget	2021 Budget	2022 Budget
Cubic Metres				
1st Block	3,000,000	3,000,000	2,909,000	2,909,000
2nd Block	5,682,000	5,682,000	4,955,000	4,955,000
3rd Block	4,000,000	4,000,000	3,636,000	3,636,000
Total	12,682,000	12,682,000	11,500,000	11,500,000
Gallons (000)				
1st Block	660,000	660,000	640,000	640,000
2nd Block	1,250,000	1,250,000	1,090,000	1,090,000
3rd Block	880,000	880,000	800,000	800,000
Total	2,790,000	2,790,000	2,530,000	2,530,000

3.5 Total Consumption – Budget Increase

Actual Consumption/Flow for 2016 to 2020 and Budget for 2021 and 2022 are shown in Exhibit 9.

Exhibit 9
Water Consumption & Sanitary Sewer Flows
2016 to 2020 Actuals and 2021/2022 Budgets

	Water			Sewage		
Year	**Residential**	**ICI**	**Total**	**Residential**	**ICI**	**Total**
Cubic Metres*						
2016 Actual	41,458,386	15,091,423	56,549,809	40,686,995	13,942,277	54,629,273
Change	*-7.6%*	*-3.1%*	*-6.4%*	*-7.3%*	*-2.2%*	*-6.0%*
2017 Actual	38,290,805	14,627,364	52,918,168	37,696,582	13,641,905	51,338,486
Change	*5.5%*	*6.8%*	*5.8%*	*5.4%*	*5.2%*	*5.4%*
2018 Actual	40,397,273	15,616,555	56,013,827	39,746,800	14,347,014	54,093,814
Change	*3.3%*	*-6.1%*	*0.7%*	*3.5%*	*-5.2%*	*1.2%*
2019 Actual	41,726,149	14,661,842	56,387,991	41,133,794	13,604,175	54,737,969
Change	*11.2%*	*-19.9%*	*3.1%*	*10.9%*	*-23.3%*	*2.4%*
2020 Actual	46,390,988	11,740,457	58,131,445	45,626,620	10,439,394	56,066,014
2021 Budget	**42,315,000**	**12,682,000**	**54,997,000**	**41,364,000**	**11,500,000**	**52,864,000**
Change	***3.1%***	***0.0%***	***2.4%***	***3.2%***	***0.0%***	***2.5%***
2022 Budget	**43,641,000**	**12,682,000**	**56,323,000**	**42,677,000**	**11,500,000**	**54,177,000**
Gallons (000)*						
2021 Budget	**9,309,256**	**2,790,000**	**12,099,256**	**9,100,000**	**2,530,000**	**11,630,000**
Change	***3.1%***	***0.0%***	***2.4%***	***3.2%***	***0.0%***	***2.5%***
2022 Budget	**9,601,000**	**2,790,000**	**12,391,000**	**9,389,000**	**2,530,000**	**11,919,000**
*** Note: 1 cubic metre = 220 Imperial gallons OR 1,000 gallons = 4.54 cubic metres**						

Due to residential customer growth and budgeted increases in per customer consumption, total 2022 Budget water consumption and sanitary sewer flows are both projected to increase compared to 2021 budget levels.

The 2022 water consumption and sanitary sewer flow projections are based on and take into account the following:

- Number of customers increasing (water by 1.0 per cent; sanitary sewer by 1.05 per cent).
- Total residential usage increasing (water by 3.1 per cent; sanitary sewer by 3.2 per cent), based on
    - An increase in the budgeted base usage per residential customer.
    - An increase in the budgeted allowance for summer seasonal usage by residential customers.
- Usage by ICI customers at 2021 budget levels.

Taking the foregoing into account, 2022 consumption is budgeted as follows:

- **Water consumption projected at 56,323,000 cubic metres (56,323 ML)**
- **Sanitary Sewer flow billed projected at 54,177,000 cubic metres (54,177 ML)**

4 Recommended 2022 Water and Sanitary Sewer User Rates

The recommended 0.5 per cent water user rate Increase (Schedule 1) and 3.1 per cent sanitary sewer user rate increase (Schedule 2) are needed to finance the proposed 2022 Consolidated Water Supply and Sanitary Sewerage Business Plans and Budget.

4.1 Full Cost Recovery

The water and sanitary sewer user rates are an important part of a full cost recovery strategy for Regional water supply and sanitary sewer systems. User rates and miscellaneous fees and charges recover operating costs. Capital costs are paid through a combination of user rate revenues, reserves, reserve funds, 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 development charge revenues. The water and sanitary sewer systems are “User Pay” - property taxes are not used to fund water supply and sanitary sewer system costs.

4.2 User Rate Revenue Requirements

The proposed preliminary 2022 water and sanitary sewerage net expenditure budgets require a water rate increase of 0.5 per cent and a sanitary sewer rate increase of 3.1 per cent (average residential customer combined increase 1.8 per cent).

A breakdown of the proposed preliminary 2022 budget expenditures and revenues, including user rate revenue requirements, is summarized in Exhibit 10 for water supply and Exhibit 11 for sanitary sewerage.

Additional information on the 2022 Business Plans and Budgets is available in Report # 2021-F-34: 2022 Current and Capital Business Plans and Budget and Nine-Year Capital Forecast for the Consolidated Water Supply and Sanitary Sewerage Systems.

4.2.1 Water Supply System

Approximately $2.70 million in additional user rate revenues is required to support increased expenditures as set out in Exhibit 10. This is generated by a combination of:

- **User Rate Increase** - The proposed 0.5 per cent water rate increase generates $0.59 million in additional revenues;

- **Customer Growth** - Customer growth adds $0.56 million, offsetting a rate increase by 0.5 per cent; and

- **Consumption** – Residential consumption is projected to increase which is estimated to contribute an additional $1.55 million which offsets a rate increase by 1.3 per cent.

The proposed preliminary 2022 user rate supported water supply system net expenditures of $118.19 million represents an increase of $2.70 million over 2021 budget levels.

4.2.2 Sanitary Sewerage System

Approximately $6.16 million in additional sewer user rate revenues is required to support increased sanitary sewerage system expenditures as set out in Exhibit 11. This is generated by a combination of:

- **User Rate Increase** - The proposed 3.1 per cent sanitary sewer rate increase generates an additional $3.53 million in revenue;

- **Customer Growth** - Customer growth adds $0.19 million, offsetting the rate increase by 0.2 per cent; and,

- **Consumption** - Projected increased consumption (compared with 2021 Budget) will increase budgeted revenues by $2.44 million. The sanitary sewer user rate increase is offset by 2.2 per cent due to projected residential consumption growth.

The proposed preliminary 2022 user rate supported sanitary sewerage system net expenditures of $117.50 million represents an increase of $6.16 million compared to 2021 budget.

Exhibit 10
Revenues Required from 2022 Water User Rates

Budget Category	2021 Approved Budget ($)	2022 Proposed Preliminary Budget ($)	Increase/(Decrease) ($)	Increase/(Decrease) (%)
A) Operations (net costs)				
Operations, Maintenance & Administration	71,036,041	73,879,580		
Less Other Revenues	(3,217,260)	(3,339,635)		
Operations from Current User Rates	**67,818,781**	**70,539,945**	**2,721,164**	**4.0%**
B) Tangible Capital Assets (gross costs)				
Construction of Municipal Services	76,337,109	118,303,999		
Operations Capital	4,904,880	6,812,818		
Total Capital Program	81,241,989	125,116,817		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	(26,535,780)	(63,792,982)		
- Development Charge Reserve Fund - Commercial	(714,219)	(2,420,268)		
- Development Charge Reserve Fund - Industrial	(1,459,510)	(1,607,001)		
- Other Financing	-	(66,668)		
Total Non User Rate Financing	(28,709,509)	(67,886,919)		
Capital Program from User Rates Revenue Sources	52,532,480	57,229,898		
Less User Rate Financing (Debt/Reserves)				
- Asset Management Reserve Fund	(5,485,600)	(5,622,700)		
- Servicing of Employment Lands Reserve	(250,000)	(500,000)		
- Equipment Replacement Reserve	-	(63,000)		
- Treatment Plant/Rate Stabilization Reserve Fund	-	(4,265,566)		
Total User Rate Financing	(5,735,600)	(10,451,266)		
Current User Rates Capital Program/Contributions	**46,796,880**	**46,778,632**	**-18,248**	**0.0%**
C) Debt				
Expenditure	1,310,735	1,311,799		
Less Development Charge Reserve Funds Applied	(436,737)	(437,092)		
Debt from User Rates	**873,998**	**874,707**	**709**	**0.1%**
D) Current User Rate Revenue Requirements				
Total Expenditures	153,588,765	200,308,196	46,719,431	
Less Total Revenues & Recoveries	(38,099,106)	(82,114,912)	(44,015,806)	
Total Current User Rate Revenues Required	**115,489,659**	**118,193,284**	**2,703,625**	**2.3%**
Equivalent Water User Rate Increase		**0.5%**		
E) Impact of Changes in Customers & Consumption on Rate Increase				
Factors Affecting Revenues		**Revenue Change ($)**	**Rate Increase**	
Expenditures - Increased revenue needed		2,703,625	2.3%	
Consumption - Residential increases offset rate increase		(1,550,000)	-1.3%	
Customers - Growth reduces revenue needed		(565,800)	-0.5%	
Added Revenue From Rate Increase		**587,825**	**0.5%**	

Exhibit 11
Revenues Required from 2022 Sanitary Sewer User Rates

Budget Category	2021 Approved Budget ($)	2022 Proposed Preliminary Budget ($)	Increase/(Decrease) ($)	Increase/(Decrease) (%)
A) Operations (net costs)				
Operations, Maintenance & Administration	112,342,742	115,177,675		
Less Other Revenues	(36,490,389)	(37,019,830)		
Operations from Current User Rates	**75,852,353**	**78,157,845**	**2,305,492**	**3.0%**
B) Tangible Capital Assets (gross cost)				
Construction of Municipal Services	92,417,618	136,460,200		
Operations Capital	2,536,125	4,803,728		
York Durham Capital	1,963,000	4,101,000		
Total Capital Program	96,916,743	145,364,928		
Less Financing & Recoveries Applied				
- Development Charge Reserve Fund - Residential	(22,581,105)	(25,702,792)		
- Development Charge Reserve Fund - Commercial	(1,455,404)	(2,340,749)		
- Development Charge Reserve Fund - Industrial	(1,707,463)	(191,900)		
- Other Financing	(30,639,540)	(63,414,660)		
Total Non User Rate Financing	(56,383,512)	(91,650,101)		
Capital Program from User Rates Revenue Sources	40,533,231	53,714,827		
Less User Rate Financing				
- User Rate Debenture	-	-		
- Asset Management Reserve Fund	(9,049,000)	(9,275,200)		
- Servicing of Employment Lands Reserve	(968,046)	(502,600)		
- Equipment Replacement Reserve	-	(794,250)		
- Treatment Plant/Rate Stabilization Reserve Fund	-	(7,632,233)		
Total User Rate Financing	(10,017,046)	(18,204,283)		
Current User Rates Capital Program/Contributions	**30,516,185**	**35,510,544**	**4,994,359**	**16.4%**
C) Debt				
Expenditures	14,481,558	13,027,552		
Less Development Charge Reserve Fund	(9,514,669)	(9,195,572)		
Net Debt from User Rates	**4,966,889**	**3,831,980**	**-1,134,909**	**-22.8%**
D) Current User Rate Revenue Requirements				
Total Expenditures	223,741,043	273,570,155	49,829,112	
Less Total Revenues & Recoveries	(112,405,616)	(156,069,786)	(43,664,170)	
Total Current User Rate Revenues Required	**111,335,427**	**117,500,369**	**6,164,942**	**5.5%**
Equivalent Sewer User Rate Increase		**3.1%**		
E) Impact of Changes in Customers & Consumption on Rate Increase				
Factors Affecting Revenues		**Revenue Change ($)**	**Rate Increase**	
Expenditures - Increased revenue needed		6,164,942	5.5%	
Consumption - Residential increases offset rate increase		(2,442,600)	-2.2%	
Customers - Growth reduces revenue needed		(189,000)	-0.2%	
Added Revenue From Rate Increase		**3,533,342**	**3.1%**	

4.3 Recommended Water Rates (Schedule 1) and Recommended Sanitary Sewer Rates (Schedule 2)

Based on the foregoing projections of customers (Section 2), consumption (Section 3) and budgets (Section 4 above), as summarized in Exhibit 12, it is recommended that water rates be increased by 0.5 per cent and sewer rates by 3.1 per cent. The recommended 2022 water rates are in Schedule 1 and sewer rates in Schedule 2 of the Executive Summary.

Exhibit 12
Projected Data Used to Develop 2022 Water & Sanitary Sewer User Rates

Parameter	Water	Sanitary Sewage
Customers		
- Number	183,153	178,416
- Growth from 2021 Actual	1.00%	1.05%
Consumption/Flow		
- Cubic metres (millions)	56.32	54.18
- Increase from 2021 Budget	2.4%	2.5%
User Rate Revenue Requirements		
- Total Expenditures	$118,193,284	$117,500,369
- Increase from 2021 Budget	2.3%	5.5%
User Rate Change Required		
- Per cent	**0.5%**	**3.1%**
- Impact on Revenue of 1% Rate Change	**$1,176,000**	**$1,140,000**

4.4 Billings Now on Daily Basis

The user rates are expressed on a monthly basis in Schedule 1 and Schedule 2. Service charges for each bill are based on the actual number of days each bill covers between meter reading dates. As customers' billing periods may vary, daily service charge rates are applied. The daily rates, which are equivalent to the approved monthly rates, are calculated as shown in the adjacent table (using the 2021 standard meter service charge as an example). The service charge may now vary on individual bills depending on the actual number of days covered by the bill, but over time the charges will be the same as the former monthly charge approach.

Calculation of Daily Equivalent Water Service Charge		
Monthly Water Service Charge	$19.19	per month
Months per Year	12	
Annual Equivalent SC	$230.28	per year
Days per Year	365	
Daily Equivalent Service Charge	$0.6309	per day

5 Other Fees & Charges Recommendations

5.1 Recommended 0.5 per cent Raw Water Rate Increase (Schedule 1)

The Region supplies untreated raw water from the Whitby Water Supply Plant (WSP) to Gerdau Ameristeel Corporation located within the South Whitby Industrial Area to the east of South Blair Street. There is a separate raw water pumping station at the WSP and raw water delivery main, both built in 1977. This company is also one of the Region's major users of potable water.

Until 2019 there was a second raw water system which supplied two customers located on South Blair Street. This system is no longer in operation. One of the customers switched to potable water in 2018 and the other in late 2019. This leaves Gerdau Ameristeel Corporation as the only remaining raw water customer, albeit historically the largest and the raw water customer served by the more recently built system. The Region may consider additional raw water customer(s) in the future.

The raw water sales from 2018 to 2020 actuals, 2021 projected and 2022 Budget are provided in Exhibit 13:

Exhibit 13
Raw Water Consumption (m^3)

	Industry			
Year	**A**	**B**	**C**	**Total**
2018	16,580	60,195	563,105	639,880
Actual	3%	9%	88%	100%
2019	0	29,015	568,069	597,084
Actual	0%	5%	95%	100%
2020	0	0	738,440	738,440
Actual [(1)]	0%	0%	100%	100%
2021	0	0	603,460	603,460
Projected	0%	0%	100%	100%
2022	**0**	**0**	**600,000**	**600,000**
Budget	**0%**	**0%**	**100%**	**100%**

(1) Volume higher due to timing of bills with new billing system (i.e. billed sooner after readings taken).

Consumption by Gerdau has remained fairly constant in recent years at about 600,000 m^3 annually. This volume is budgeted for 2022.

Note that the 2020 billing of 738,440 m^3 actually is for more than a year as the new billing system implemented in late 2019, reduced the time between meter reading and billing, causing a temporary increase in the 2020 annual reported billing.

The volume of raw water supplied is metered and customer(s) are charged for this volume based on the approved raw water volumetric rate.

Operating costs related to the raw water system are fully recovered by means of the raw water rate, which is reviewed and updated annually as required. The raw water volumetric rate is included in Schedule 1. 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 upgrades to the raw water supply are 100 per cent recovered directly from the raw water customer(s). There are no capital costs in the raw water rate included in Schedule 1. In the case of the 1977 system serving Gerdau to the east of South Blair Street, the works were constructed by the customer at their expense and turned over to the Region.

An expansion of the Whitby Water Supply Plant is projected to begin in 2022. The need for upgrades has 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. This has led to a review of the raw water systems as part of the upgrade to the Whitby WSP. Capital investments will be required to replace the remaining raw water pumping facilities.

The raw watermain running from the WSP to Gerdau is relatively new and does not require any work at this time.

It is recommended that the 2022 raw water rate be adjusted in tandem with the potable water rate increase of 0.5 per cent. The recommended raw water rate is shown in Schedule 1 – Recommended 2022 Water User Rates.

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

The following provides background information 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 a Minister's 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.

The recommended charges for the Sun Valley Heights Homeowners Co-operative Water System are provided in Schedule 3 – Recommended 2022 Water Charge for the Sun Valley Heights Homeowners Co-operative Water System.

- The charge is based on actual Sun Valley Heights system costs;

- The 2022 costs are projected at $30,109; and

- It is recommended that the 2022 quarterly rate be $444 ($1,776 annually).

5.3 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 cost of providing day-to-day and individual services related to the Region's water and sanitary sewer systems.

Water and sewerage systems rates, fees and charges for 2021 (current) and 2022 (recommended) are set out in Schedule 4 – Recommended 2022 Water & Sanitary Sewer Systems Miscellaneous Fees & Charges of this report.

The fees and charges are based on tracking actual costs over time. For 2022, the following three changes are recommended (bolded in the Schedule):

- **Item 20** – **Unmetered Water Used for Construction (Building Purposes**) – This charge relates to water used by contractors during home construction, but before meters are installed. The charge is based on prior year water 1st block rate and 200 m^3 of water use. The recommended charge updates the rate.

- **Item 33 – Final Collection Notification** – Due to a change in collection practice related to unpaid water/sewer bills, an additional category is added as Item 33. The addition is a result of COVID-19 with Collection action on unpaid bills has moved to notification of a lien on property tax rather than a water shut-off notification (see Item 17). This action has always been available, but infrequently used and is added to the schedule for clarification. The same $25.00 fee is applied (unchanged in 2022) as for water shut-off notification.

- **Item 44 – Sewer Appeal Application Fee** – Non-residential customers which can demonstrate a significant proportion of water consumption does not discharge to the Regional sanitary sewer system (based on criteria set out in the Sewer System By-Law Number 90-2003 as amended) can apply for relief from their Regional sewer volumetric charge (the Region follows the industry practice of basing sewer charges on water consumption). Such an application requires Regional Works and Finance staff to properly investigate and make recommendations. Based on the time required for such a review, it is recommended that the application fee be set at $1,200.

5.4 Recommended Regional Environmental Laboratory Charges (Schedule 5)

The Regional Environmental Laboratory (Regional Lab) is located at the Duffin Creek Water Pollution Control Plant. Durham Region shares the ownership of the Regional Lab with the Region of York. It is operated by Durham Region. The Regional Lab has the capability of carrying out a wide variety of tests and analyses.

The existing 2021 and recommended 2022 laboratory fees/charges are set out in Schedule 5. The objective of the fees/charges is to recover the cost of operating the Regional Lab commensurate with the cost of carrying out the various tests. Schedule 5 lists 155 tests and has been reorganized for greater clarity from previous reports. After several years of only minor fee adjustments, based on cost analysis, it is concluded that most fees/charges should be increased by about 3 per cent with some adjusted more or less. There are also three new tests included in the Schedule and the removal of one test which is no longer offered.

A further review of the fees at the Regional Lab is planned for 2022.

All 2022 fees recommended for change are **bolded**.

6 Customer Impact

6.1 User Rate Impact on Customers of Various Sizes - Summary

Water and sewer charges to various sized customers are provided in Exhibit 14.

Exhibit 14
Rates Impact on Customers of Various Sizes

								Water Rate Increase =			0.5%
								Sewer Rate Increase =			3.1%
								Average Residential Combined Increase =			1.8%
Customer Category			2021 Billing			2022 Billing			Increase			
Gallons/yr	m^3/year	Meter Size	Water	Sewage	Total	Water	Sewage	Total	Water	Sewage	Total	%
			Quarterly Billings ($/qtr)									
20,000	91	Standard Meter	83.53	64.40	147.93	83.96	66.40	150.36	0.43	2.00	2.43	1.6
53,900	**245**	**Avg Std Meter**	**127.52**	**136.32**	**263.84**	**128.17**	**140.55**	**268.72**	**0.65**	**4.23**	**4.88**	**1.8**
60,000	273	Flat Rate	135.44	149.27	284.71	136.13	153.90	290.03	0.69	4.63	5.32	1.9
100,000	455	Standard Meter	187.35	234.15	421.50	188.31	241.41	429.72	0.96	7.26	8.22	2.0
			Bimonthly Billings ($ bimonthly)									
100,000	455	Standard Meter	124.90	156.10	281.00	125.54	160.94	286.48	0.64	4.84	5.48	2.0
200,000	909	Standard Meter	421.82	657.36	1079.18	423.94	677.76	1101.70	2.12	20.40	22.52	2.1
5 million	22,730	2" Meter	4,054	6,258	10,312	4,074	6,452	10,526	20	194	214	2.1
50 million	227,270	4" Meter	35,768	54,726	90,494	35,944	56,426	92,370	176	1,700	1,876	2.1
150 million	681,820	6" Meter	104,394	159,342	263,736	104,910	164,292	269,202	516	4,950	5,466	2.1

The above table provides examples of the impact of the rates on customers with the consumption shown over periods of 90 days (“quarterly billings”) or 60 days (“bimonthly billings”). Note that the billings customers receive are calculated based on actual consumption as registered on customers’ water meters and number of days represented by each bill (which may vary from bill to bill depending on dates of meter readings).

6.2 User Rate Impact on Average Residential & Small ICI Customer

6.2.1 Impact of Recommended 2022 Rates versus 2021 Rates

The impact on a typical residential customer of the proposed 2022 water and sanitary sewer user rate charges are shown below in Exhibit 15.

Exhibit 15
Impact of Proposed Water and Sanitary Sewer User Rate Increases on an Average Residential / Small ICI Customer

	Billings		Increase	
	2021 ($)	2022 Proposed ($)	($)	(%)
Based on 245 m^3/yr (53,900 gal/year) Consumption				
Water	127.52	128.17	0.65	0.5%
Sewage	136.32	140.55	4.23	3.1%
Total ($/quarter)	263.84	268.72	4.88	1.8%
Annual Billing ($/year)	1,055.36	1,074.88	19.52	1.8%

A residential customer who used the same annual average residential per customer consumption of 245 m^3 (53,900 gallons) in both 2021 and 2022 would have a bill increase of 1.8 per cent. This equates to an increase of $4.88 quarterly (residential customers are billed quarterly) or $19.52 annually.

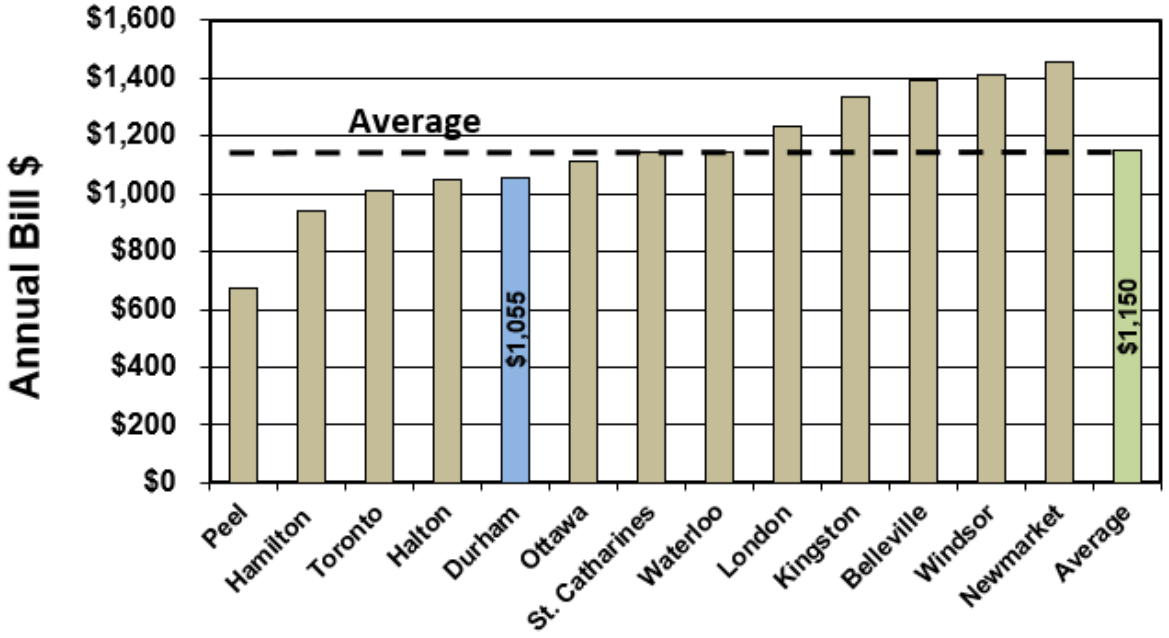
6.2.2 Charges Compared with Other Municipalities

The 2021 water and sewer rates charged in a total of 12 other large municipalities were surveyed along with 7 nearby neighbouring municipalities. Annual water/sewer bills in each municipality were calculated for a residential customer using 245 m^3/year (53,900 gallons/year). This represents the projected usage by a typical 2022 Durham residential customer.

Large Municipalities - Most of the 13 larger municipalities, like Durham, have sole responsibility for water and sanitary sewer. Three, the City of Waterloo (in Waterloo Region), the Town of Newmarket (in York Region) and the City of 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 local sanitary sewers as well as the customer billings.

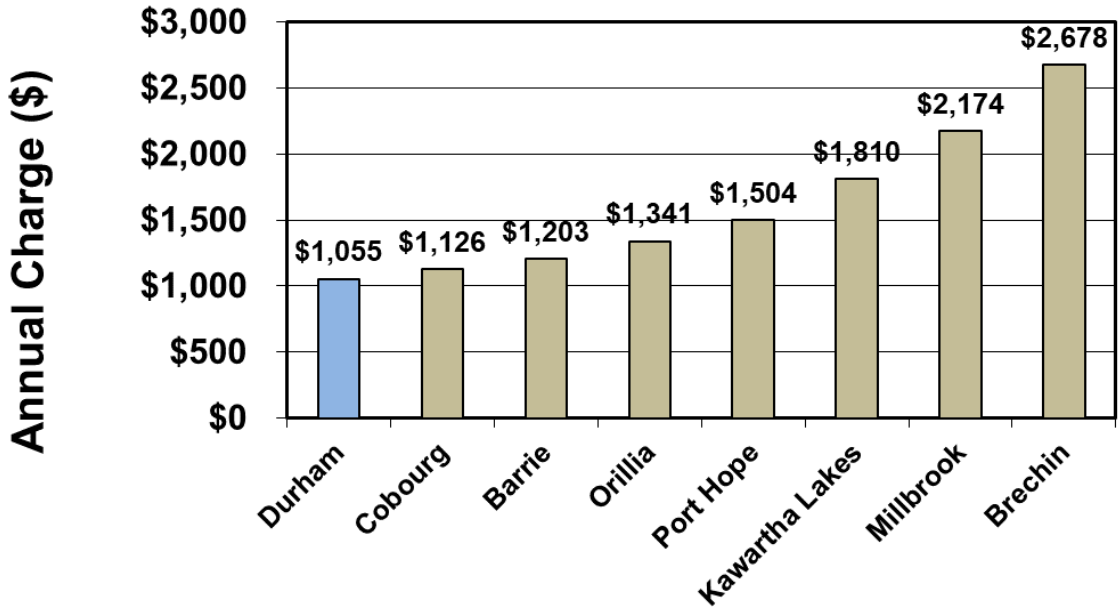
As illustrated in Exhibit 16, Durham is the fifth lowest out of the 13 in the survey. The overall average 2021 combined water and sanitary sewer bill for 245 m^3 (53,900 gallons) annual consumption for the 13 surveyed municipalities is $1,150 per year compared to $1,055 in Durham.

Exhibit 16
Comparative 2021 Residential Water/Sanitary Sewer Charges (245 m^3/year)
Large Municipalities



Neighbouring Municipalities - Typical 2021 charges to a residential customer have also been calculated for seven neighbouring communities - see Exhibit 17.

Exhibit 17
Comparative 2021 Residential Water/Sanitary Sewer Charges (245 m^3/yr)
Neighbouring Municipalities

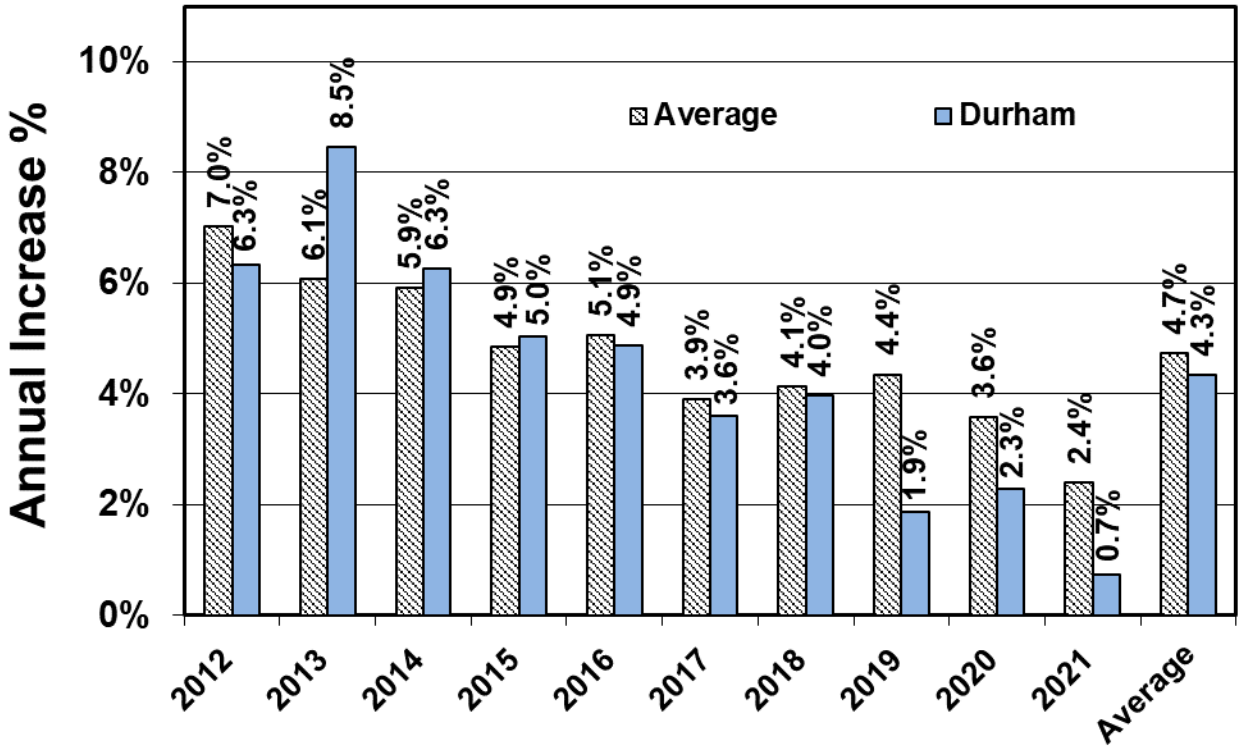


Durham is at the low end of user rate charges. Comparisons are sometimes difficult because of the use of the property tax to recover some costs in other municipalities. For example, Cobourg recovers some sanitary sewer costs from property taxes.

6.2.3 Average Annual Rate Increases Over Past 10 Years in Larger Municipalities Compared with Durham

Average water and sanitary sewer rate increases faced by customers using 245 m^3/year (53,900 gallons) in the 12 other larger municipalities surveyed are graphed in Exhibit 18. 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.

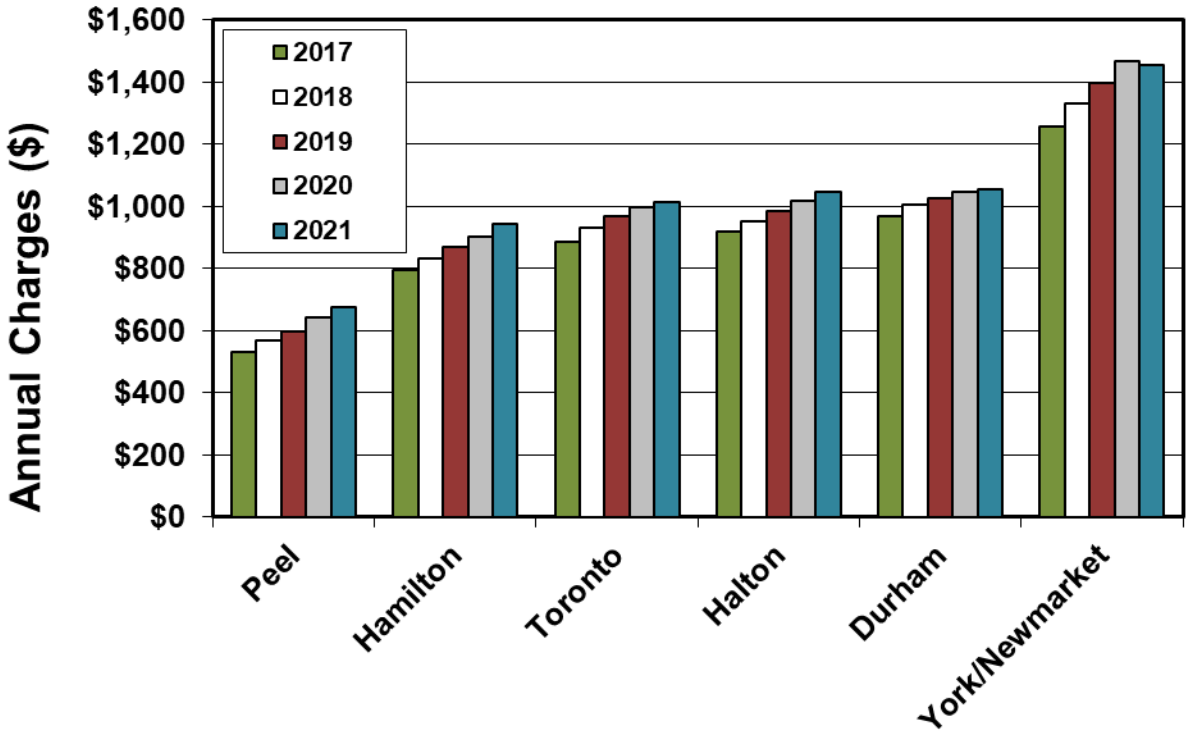
Exhibit 18
Comparative 2012 to 2021 Residential Water/Sanitary Sewer Rate Increases
Large Municipalities (245 m^3/year)



The average annual combined water and sanitary sewer rate increase for all the municipalities was 4.7 per cent for the 10-year period. Durham's average was approximately 4.3 per cent annually.

GTA - Combined water and sanitary sewer user rate increases over the past five years in nearby Regions are graphed in Exhibit 19. The analysis is based on a customer using 245 m^3/year.

Exhibit 19
Comparative 2017 to 2021 Residential Water/Sanitary Sewer Charges
GTA (245 m^3/year)



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

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

Population served and geographic concentration of water and sewer systems is a factor. 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 following observations are made regarding the 12 other larger Ontario municipalities surveyed (see Exhibit 16 and Exhibit 23):

- 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).

- Halton is perhaps closest to Durham in that it has multiple water and sanitary sewer 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 and collection of sanitary sewer from its customers. Water supply and wastewater treatment are provided by York Region.

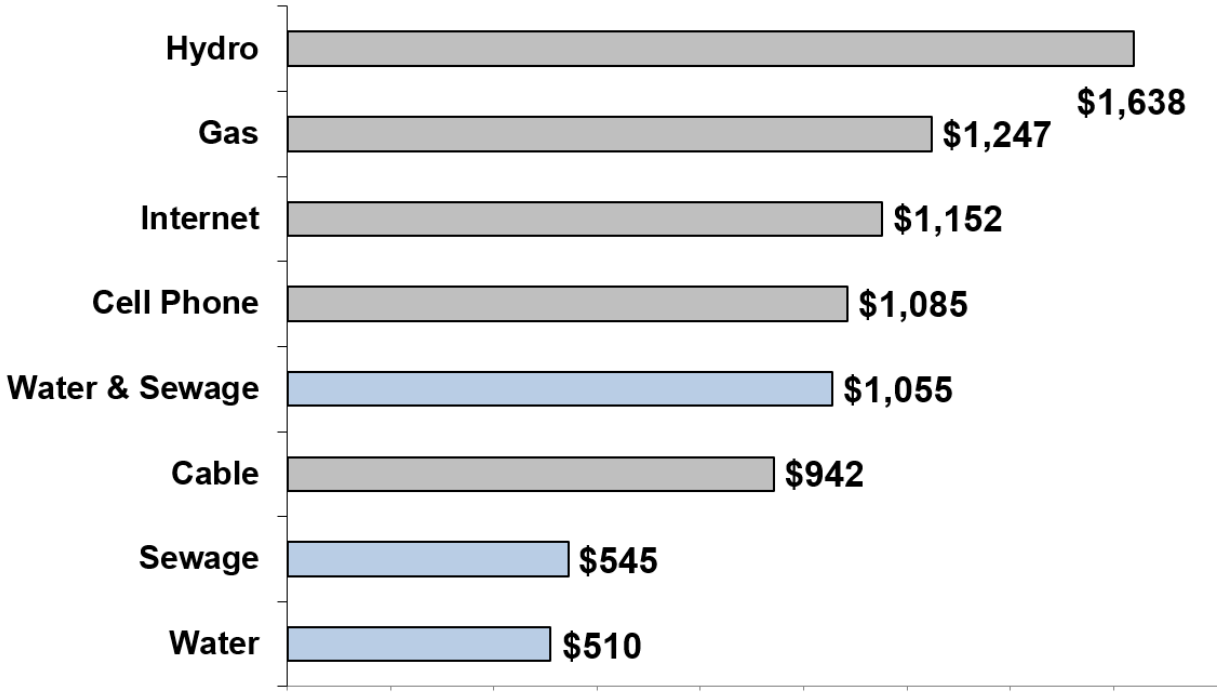
6.2.4 Durham's Average Residential Water & Sanitary Sewer Charges are Much Less Than Typical Hydro, Gas, Telephone or Cable Television Services

Information was gathered on local residential electricity, natural gas, cable television, high speed internet, and cellular phone rates. These rates have been compared with the Region's water and sanitary 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 land line phone at home). The survey is meant to give a general idea of utility costs.

The "most popular" option has been priced in Exhibit 20 where that option is indicated by the supplier. There is a wide range of prices for some services.

Representative 2021 annual residential utility charges in Durham (Oshawa rates used) are graphed in Exhibit 20.

Exhibit 20
Typical Durham Residential Utility Charges 2021



The components of a total annual bill for a representative residential customer are as shown in Exhibit 21.

Exhibit 21
Typical Durham Residential Utility Charges 2021

Utility	Basis of Comparison	Annual Bill ($)	% of Annual Utility Bills
Hydro	Cooling, appliances, lighting, etc.	$1,638	23.0%
Natural Gas	Home & hot water heating	$1,247	17.5%
Internet	One level above basic - 50 Mbps	$1,152	16.2%
Cell Phone	Basic service with long distance package	$1,085	15.2%
Cable	Basic package – no movies	$942	13.2%
Sewage	Average residential use - 225.5 m3/year	$545	7.7%
Water	Average residential use - 225.5 m3/year	$510	7.2%
	Total	$7,119	100.0%

The total combined water and sanitary sewer billing for this residential customer represents only about 14.9 per cent of the total utility charges incurred in a typical home. Water and sanitary sewer charges combined are less than most other individual utility services.

6.2.5 Affordability

Although in comparative terms, Durham's average residential water and sanitary sewer charges compare favorably with other municipalities and utilities, they could still be challenging for some. Staff will continue to study the affordability of water and sanitary sewer rates including considering whether there are alternative measures which should be considered to address the affordability of the water and sanitary sewer charges on various segments of the customer base.

6.3 User Rate Impact on 25 Largest Customers

6.3.1 Recommended 2022 User Rates versus 2021 Rates

Using actual 2020 consumption levels, the impacts on the Region's 25 largest customers of the recommended 2022 user rates, compared with existing 2021 rates, are provided in Exhibit 22.

Exhibit 22
Impact of Proposed 2022 Water and Sanitary Sewer User Rate Increases on 25 Largest Accounts (Using 2020 Actual Consumption Data - $/year)

Rank	2020		2021			2022			Combined Increase	
	(m^3)	(000 gal)	Water	Sewage	TOTAL	Water	Sewage	TOTAL		
			($)	($)	($)	($)	($)	($)	$	%
1	2,299,440	505,880	2,062,290	3,189,910	5,252,200	2,072,470	3,289,010	5,361,480	109,280	2.1%
2	310,100	68,220	288,450	442,720	731,170	289,880	456,470	746,350	15,180	2.1%
3	226,630	49,860	214,040	327,470	541,510	215,100	337,650	552,750	11,240	2.1%
4	222,940	49,050	210,760	134,080	344,840	211,800	138,240	350,040	5,200	1.5%
5	190,570	41,930	181,900	189,590	371,490	182,800	195,480	378,280	6,790	1.8%
6	155,400	34,190	150,530	229,110	379,640	151,270	236,230	387,500	7,860	2.1%
7	144,170	31,720	140,520	213,610	354,130	141,210	220,240	361,450	7,320	2.1%
8	122,260	26,900	120,980	183,350	304,330	121,580	189,050	310,630	6,300	2.1%
9	118,010	25,960	117,170	177,450	294,620	117,750	182,970	300,720	6,100	2.1%
10	112,740	24,800	112,470	170,170	282,640	113,030	175,460	288,490	5,850	2.1%
11	101,530	22,340	102,500	154,730	257,230	103,010	159,540	262,550	5,320	2.1%
12	95,660	21,050	97,270	146,630	243,900	97,760	151,190	248,950	5,050	2.1%
13	85,720	18,860	88,400	132,890	221,290	88,840	137,010	225,850	4,560	2.1%
14	71,050	15,630	75,310	112,610	187,920	75,680	116,110	191,790	3,870	2.1%
15	70,150	15,430	74,490	111,360	185,850	74,870	114,820	189,690	3,840	2.1%
16	65,720	14,460	70,560	105,270	175,830	70,910	108,540	179,450	3,620	2.1%
17	60,900	13,400	66,270	98,610	164,880	66,600	101,680	168,280	3,400	2.1%
18	58,660	12,910	64,280	95,540	159,820	64,600	98,510	163,110	3,290	2.1%
19	51,540	11,340	57,920	5,450	63,370	58,210	5,620	63,830	460	0.7%
20	49,850	10,970	56,420	83,360	139,780	56,700	85,950	142,650	2,870	2.1%
21	49,320	10,850	55,930	82,610	138,540	56,210	85,170	141,380	2,840	2.0%
22	46,740	10,280	53,620	79,030	132,650	53,890	81,480	135,370	2,720	2.1%
23	43,840	9,640	51,030	75,010	126,040	51,280	77,340	128,620	2,580	2.0%
24	40,270	8,860	47,870	46,520	94,390	48,110	47,960	96,070	1,680	1.8%
25	35,610	7,830	43,690	63,650	107,340	43,910	65,630	109,540	2,200	2.0%
Total	4,828,820	1,062,360	4,604,670	6,650,730	11,255,400	4,627,470	6,857,350	11,484,820	229,420	2.0%

Note: Green shaded accounts have reduced sewage charges (sewer appeals).

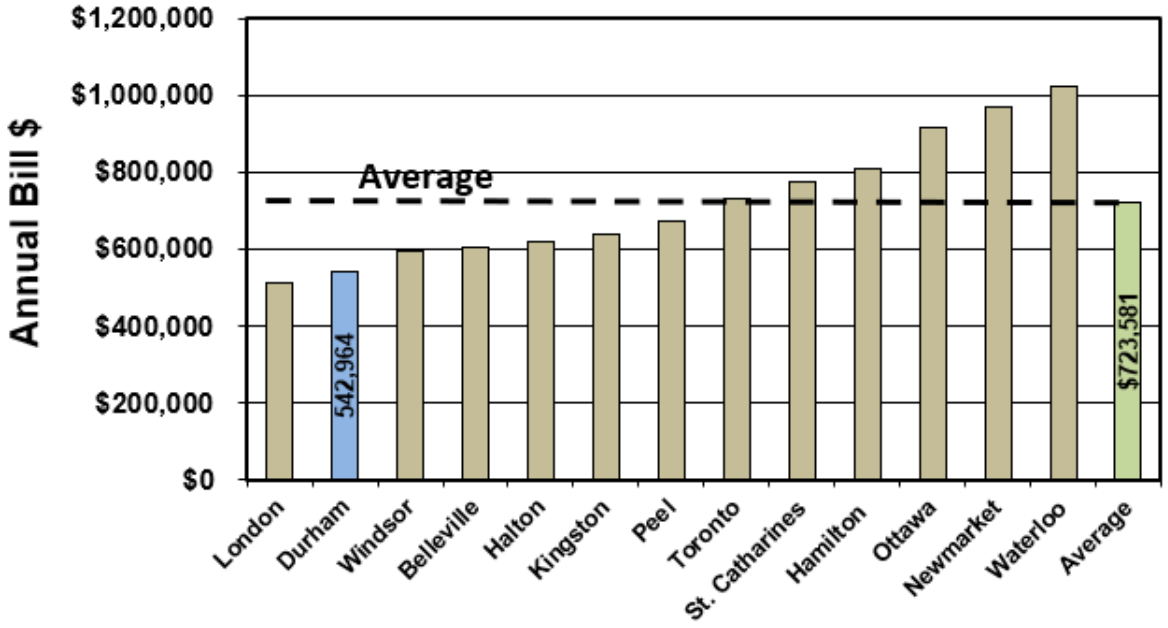
Note that most large customers will have a combined water/sanitary sewer bill increase of about 2.1 per cent. This percentage is higher than the average residential increase of 1.8 per cent because large customer bills are more influenced by the higher sanitary sewer rate increase (the volumetric rate is more dominant for sanitary sewer than for water).

There are four (4) customers among the top 25 users which have significant non-sanitary water usage and have been granted reduced sanitary sewer charges based on their relatively lower consumption. As a result, their reduced sewer charges have less impact on their total bill than the sewer charges for other large customers.

6.3.2 Charges Compared with Other Municipalities

The analysis is based on 227,272 m^3/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 the 3rd largest customer. Comparative charges are graphed in Exhibit 23.

Exhibit 23
Comparative 2021 Large Industry Water & Sanitary Sewer Charges
Large Municipalities (227,272 m^3/year)



Durham was the second lowest out of the 13 in the survey. The overall average combined water and sanitary sewer bill for all the municipalities surveyed was $723,581 per year compared to $542,964 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 Durham's User Rate Formats Compared with Other Ontario Municipalities

6.4.1 Background on User Rate Formats

Water and sanitary sewer rate structures typically include a service charge and a volumetric charge. The rate structures used in each municipality are designed and approved locally. There are no Provincial regulations related to municipal water and sanitary sewer rate structures. The survey found very little consistency across the province in terms of rate structures used in the various municipalities.

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.

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.

Exhibit 24 is a summary of how often the different rate structures were encountered in the survey:

Exhibit 24
Summary of Rate Structures Used in 20 Surveyed Municipalities

Description	Residential		ICI	
	Number	%	Number	%
Service Charges				
Based on Meter Size	15	75%	18	90%
Single Charge	3	15%	0	0%
No Service Charge	2	10%	2	10%
Total	20	100%	20	100%
Volumetric Rates				
Single Block Rate	12	60%	10	50%
Declining Block Rate	1	5%	6	30%
Increasing Block Rate	6	30%	4	20%
Humpback Rate	1	5%	0	0%
Total	20	100%	20	100%

- **Service Charges** – Most municipalities (90 per cent) include a service charge (either a single rate or one based on meter size) as part of their water rates. Only Toronto and Peel have consumption-only rates. No differentiation is made by them between residential and ICI customers.

- **Residential Volumetric Rates** – The majority (60 per cent), including Durham, charge single block rates to residential customers. Another 35 per cent essentially charge increasing block rates (including the 5 per cent using humpback rates). One charges declining block rates.

- **ICI Volumetric Rates** – The largest category is single block rates at 50 per cent of municipalities. Declining block rates is the next most prevalent at 30 per cent. Increasing block rates are used in 20 per cent 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 m^3/month. They initially increase for small usage volumes.

Other features:

- **Sanitary Sewer Charged Based on Water Usage** – All surveyed municipalities base sanitary sewer charges on water consumption.

- **Allowance for Seasonal Usage on Sanitary Sewer Bill** – The majority bill sanitary sewer year-round based on water consumption. For residential usage only, Peel deducts 15 per cent from water usage when calculating the sanitary sewer bill. Windsor bills for sanitary sewer 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 (not surveyed this year) caps the sanitary sewer charge at 45 m^3 monthly which would only benefit large water users.

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

6.4.2 Rates Summary

The adoption of declining block rates by Durham was based on an analysis of the actual cost of supplying customers and 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 sewer 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 have found it necessary to implement higher annual rate increases than were previously needed.

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 funding of water and sanitary sewer systems to sustainable levels and have been increasing rates in a similar manner.

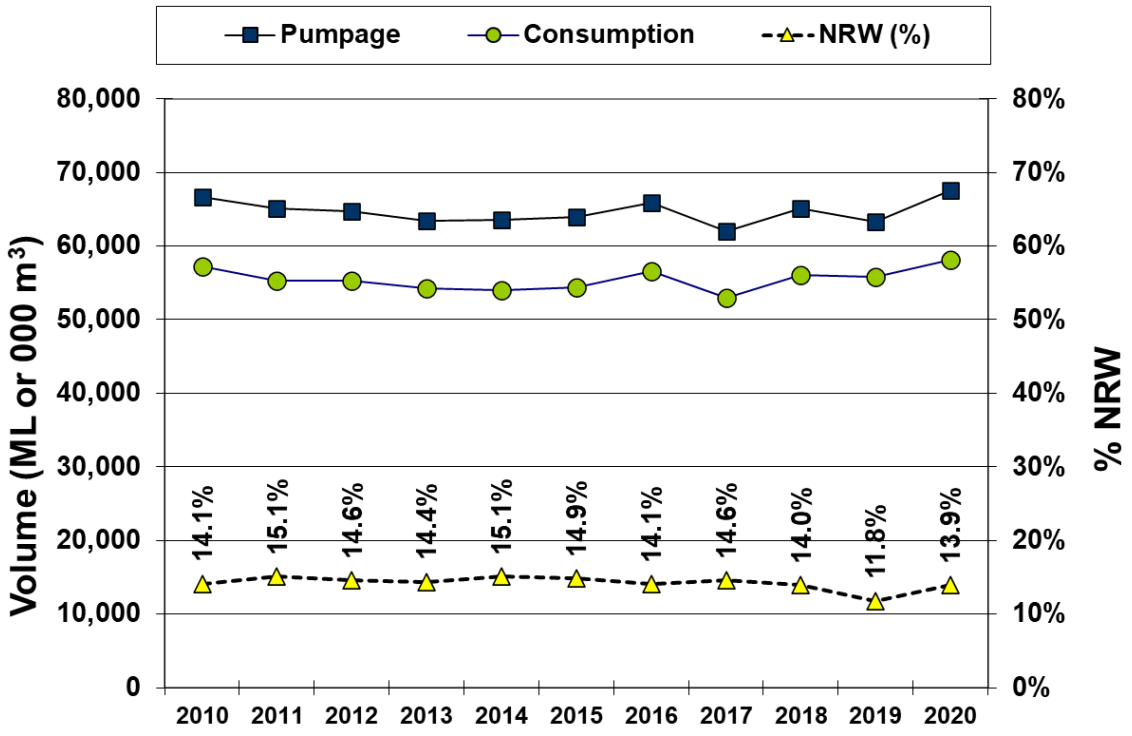
7 Water System Performance

7.1 Durham Water System Losses Update (Billed Consumption vs. Supply)

Some water is lost from the water system between water supply plants and customers. The traditional terminology used in 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. While some of these losses are actually unmetered usage such as water used for main flushing and firefighting, the biggest component is loss due to watermain leakage.

Durham's NRW from 2010 to 2020 is graphed below in Exhibit 25.

Exhibit 25
Water Pumpage, Consumption & Non-Revenue Water
2010 to 2020 Actual



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

NRW in recent years has been in a range of about 14 per cent to 15 per cent. This is considered to be fairly normal, but efforts are continually made to limit or reduce NRW 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 2019 data indicates a NRW decrease to 11.8 per cent. The new water billing system introduced in October 2019 (this is where consumption data is generated) carries out billings closer to actual use than the older legacy system and so may have introduced an initial transitional increase in reported consumption following the implementation of the new system. The 2020 data reflects NRW levels more in line with historical experience.

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 losses represented by NRW.

7.2 Other Water System Performance Comparisons

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 – Exhibit 26.

Exhibit 26
IWA Standard Water Balance Terminology

<table>
<tr><td rowspan="8">System Input Volume</td><td rowspan="2">Authorized Consumption</td><td rowspan="2">Billed Authorized consumption</td><td>Billed Metered Consumption</td><td rowspan="2">Revenue water</td></tr>
<tr><td>Billed Unmetered Consumption</td></tr>
<tr><td rowspan="2">Unbilled Authorized Consumption</td><td>Unbilled Metered Consumption</td><td rowspan="6">Non Revenue Water (NRW)</td></tr>
<tr><td>Unbilled Unmetered Consumption</td></tr>
<tr><td rowspan="4">Water Losses</td><td rowspan="2">Apparent Losses</td><td>Unauthorized Consumption</td></tr>
<tr><td>Metering Inaccuracies</td></tr>
<tr><td rowspan="3">Real Losses</td><td>Leakage on Transmission and/or Distrubution Mains</td></tr>
<tr><td>Leakage and Overflows at Utility's Storage Tanks</td></tr>
<tr><td>Leakage on Service Connections up to point of Customer Metering</td></tr>
</table>

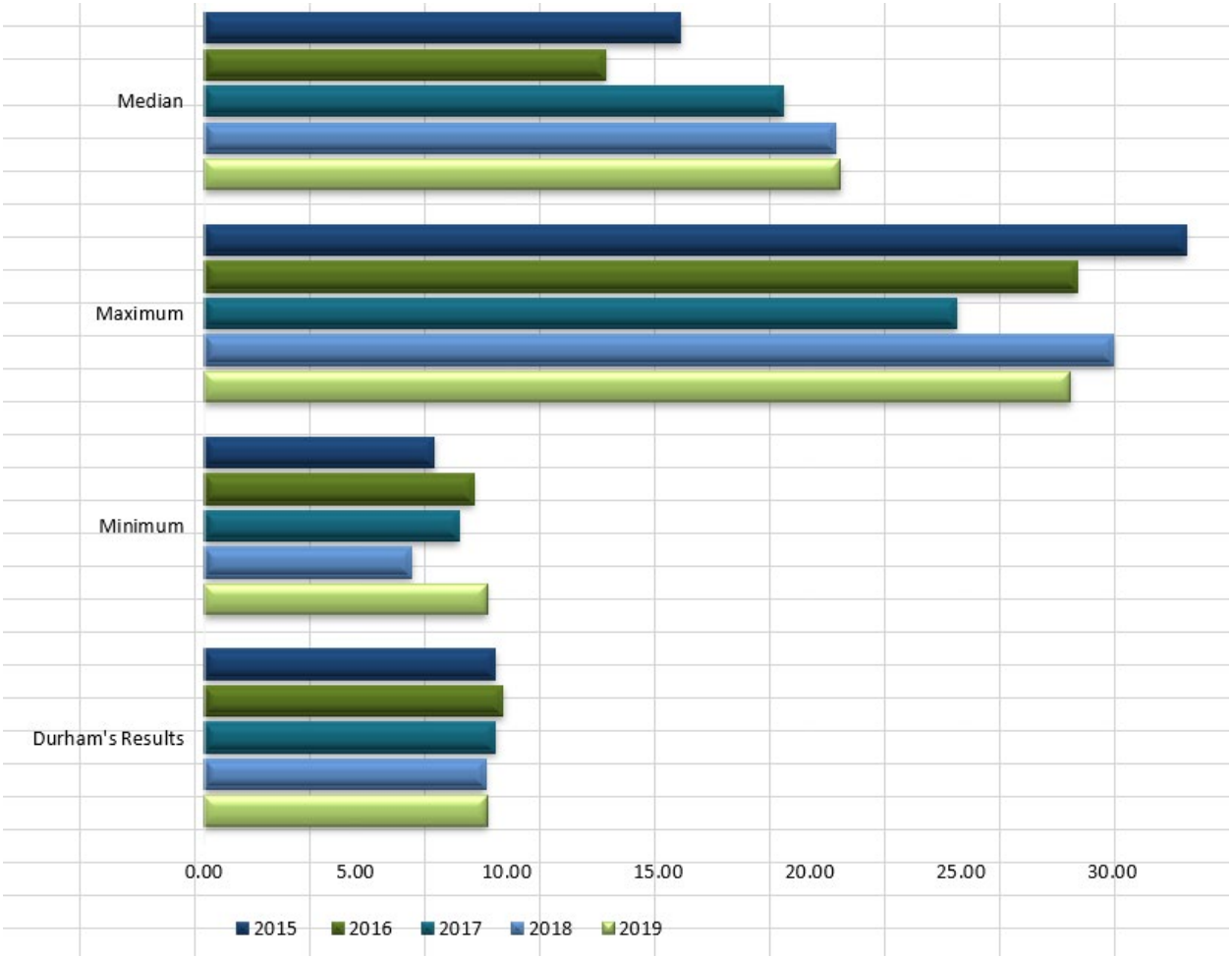
The IWA/AWWA methodology is now an industry recognized standard approach and has been utilized to assess water losses in Durham Region. Water loss performance measures such as the Infrastructure Leakage Index (ILI) and NRW per kilometre of mains were calculated first during the Water Loss Control Strategy 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. Taking the length of mains into account makes the comparison more meaningful. The lower the performance measure the better.

A graph of NRW per kilometre of main from the MBN survey for 2015 to 2019 is provided in Exhibit 27.

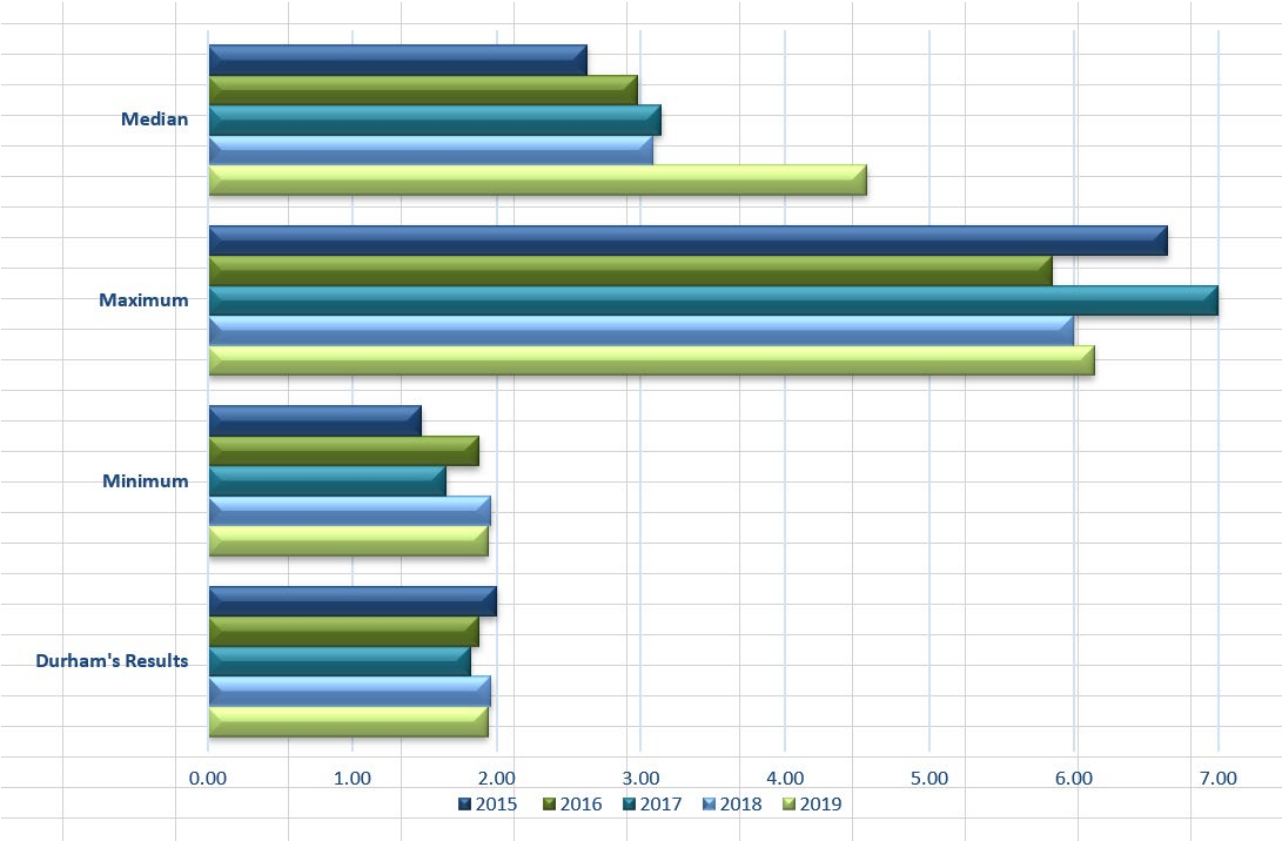
Exhibit 27
NRW in m^3/km of Main per Day (MBN data)



Durham's 2019 NRW versus main length of is much lower than the median level.

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 28 for the 2015 to 2019 survey results.

Exhibit 28
Infrastructure Leakage Index ILI (MBN data)



The 2019 Infrastructure Leakage Index (ILI) for Durham was lower and thus better than the median.

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 continued on an ongoing basis.

8 Future Considerations (2023 to 2031)

8.1 Future Customer & Consumption Trends

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

- **Residential Consumption** – After at least 20 years of decreases in residential base (non-seasonal) per customer, the trend bottomed out in 2017/2018 and has reversed since with subsequent increases in 2019, 2020, and now 2021. The increases in 2020 and 2021 have been magnified by the impact of the COVID-19 due to individuals working and students attending school from home. It is anticipated that this increase in residential base consumption will abate post pandemic and future Business Plans and Budgets and User Rates will need to be adjusted to reflect updated residential base consumption.

- The 2022 proposed user rates assume an increase (compared to budget 2021) in residential base (non-seasonal) consumption to 233 m^3/cust/year.

- **Small to Medium Commercial** – This sector historically has been fairly constant, but recently has also shown decline. It is expected that post COVID-19 pandemic, consumption will stabilize.

- **Large Industrial** – Projections assume fairly consistent consumption post COVID-19 pandemic. One current positive factor is the recent restart of vehicle assembly at the General Motors Oshawa plant. GM has historically been one of the larger water users, although not as significant as it once was. Staff continue to monitor the GM impact on future projected consumption.

- **Total Consumption** – For planning purposes, it is projected that post COVID-19 pandemic, total consumption will continue to remain level. Static or lower usage means revenues will not increase in step with increased customer growth.

- **Regulatory** - Both provincial and federal water and sanitary sewer regulations are expected to become stricter resulting in increased cost to remain compliant.

- **Asset Management** - Asset management forms a basis for prioritizing future water and sewage systems infrastructure rehabilitation and replacement investments. The annual user rate revenue requirements include contributions to the Asset Management Reserve Fund to address the most critical asset management needs.

Staff will continue to monitor consumption trends, regulatory requirements, asset management priorities and determine the impact on future user revenues over the longer term and on capital plans for both rehabilitation/replacement and growth-related projects.

8.2 Future Cost Trends

The possibility of consumption level decreases will affect future budget levels and consequently rate increases over time. 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 consumption trends decrease.

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

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 68 per cent of combined water and sanitary sewer user revenues are based on consumption.

Capital investments are rising due to pressures to invest in aging infrastructure in order to maintain levels of service and address critical priorities and respond to growth pressures. Increased capital investments are projected to 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 sanitary sewer rates are expected to require, on average, annual increases of 4 per cent to 6 per cent. Staff continue to review operating requirements and long-term capital forecasts and financing plans to refine these estimates. Information available through the Region's new water billing system and enhancements to the capital forecast modeling under the Region's business planning and budget modernization initiative will allow for better refinement of projected rate increases for future years.

The water and sanitary sewer user rate forecasts are based on a capital program of known asset management 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 and include:

- Customer growth that may be lower than that experienced over the last number of years;
- Potential for reductions in residential base water consumption and thus related revenues without a resulting offsetting reduction in costs. In addition, any economic decline could result in lower system utilization with consequent decreases and water and sanitary sewer user rate revenues;
- 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;
- Increase in construction costs;
- Significant capital investments required to meet growth related pressures;
- Low development resulting in shortfall in Development Charges to be funded by user rates;

- 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, regulatory and financial perspective replacement is required; and

- The impact of climate change on water and sanitary sewer systems infrastructure investment levels must also be considered and factored into future capital planning and its impact on user rates.

8.4 Future Actions

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

- Incorporate in the user rate revenue requirements the funding of the following water supply and sanitary sewerage systems investment needs:

    - Rehabilitation and replacement needs related to asset management; and

    - Adaptions required to address climate change.

- A shift from using customer readings to a more automated collection of readings. This will increase accuracy and potentially the frequency of billings. Starting in 2022, Works staff, in conjunction with Finance staff, are initiating a three-year project to retrofit existing water meters with radio frequency remote reading devices (RF) to minimize manual meter readings;

- 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;

- Assessment of water losses and reduction of unaccounted for losses, where possible. This would include continued 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; and

- Focus attention on the opportunities for intensification to maximize the use of existing infrastructure.