



**CORPORATE SERVICES DEPARTMENT  
FINANCE DIVISION**

**Report Number: 2018 - 52**

**Date: April 16, 2018**

**SUBJECT: PROPOSED 2018 WATER AND WASTEWATER RATES**

**1) PURPOSE:**

This report is prepared to present to City Council the proposed 2018 Water and Wastewater Rates for the municipality.

**2) HISTORY, BACKGROUND, COUNCIL POLICY, PRACTICES**

The water and wastewater rate structures are fairly complex calculations which incorporate all of the components of the total expenditure and revenues, including historical flows, maintenance items, capital components, Regional rates for purchase of water, Regional costs for wastewater treatment, unbilled/unaccounted for water and wastewater calculations, increases to salaries and operating costs, administrative charges and takes into consideration the Water Financial Plan approved by Council on June 28, 2010. As in the past, typical low, average and high consumption households are compared to indicate the impact of any rate increases.

**3) STAFF COMMENTS AND DISCUSSIONS**

In preparation of the 2018 budget, a review of the 2017 year end was required to determine where changes were needed to continue to meet a financially stable water and wastewater budget in 2018 and future years. This will also pave the way for staff to prepare the next Water Financial Plan for the next 10 years which, under the requirements of the Safe Drinking Water Act, 2002, must be updated, approved by Council and submitted to the Ministry of Municipal Affairs and Housing in the spring of 2019, prior to renewing the City's Municipal Drinking Water Licence and Drinking Water Works Permit.

Over the past years, as Council is aware, the amount of cubic metres being used by customers, and thus the revenues from the sale of water, have declined. Over the past 10 years, water rates have been kept at minimal increases of about 2% per year, with the exception of 2012 and 2013, where contrary to the recommendations of the Water Financial Plan, water rates were actually reduced, but have now caught up to us in that actual sales revenue have not met the budgeted revenue and are not covering all expenses.

In 2017, our actual water revenue was \$542,000 under the budget and caused a deficit of \$351,000. To avoid the deficit, budgeted capital funds were not allocated to the capital reserves.

The shortfall in water revenue is partly attributed to the difference between the predicted annual water sales to our customers and the actual annual water sales. Projected annual water sales of 2.1 million cubic meters were budgeted, while the actual water sales over the past few years have declined to between 1.7 and 1.9 million cubic meters. This equals

about \$500,000 in revenue, and therefore the rates in 2017 were not high enough to generate the predicted revenues.

Additionally, while the average amount of water purchased from the Region annually has levelled out at approximately 3 million cubic meters, the water sales to our customers has continued to decline, resulting in what is believed to be a higher amount of unaccounted for water than expected and budgeted. The City pays the Region for the unaccounted for water flows but does not recoup any sales.

Wastewater flows, as Council is aware, are very unpredictable, with weather having the greatest impact on annual fluctuations (Table 1). The wastewater costs charged by the Region are based on a 3 year rolling average of flows to the treatment facility and must be reconciled each year based on actual flows. Additionally, the Region determines the percentage share each local municipality contributes to the Region's total annual costs to treat wastewater and issues either an additional charge or a credit each year upon reconciliation. Therefore, depending upon the wastewater flows in a given year, and the percentage share assigned by the Region, customer sales revenue may not cover all expenses. It is very challenging to budget correctly and ensure the wastewater rates are enough to cover costs.

Weather has the greatest impact on flows due to extraneous flow, or inflow and infiltration, into the City's sanitary collection system. Extraneous flow is otherwise clean storm water or groundwater getting into the sanitary system. Extraneous flows enter the sanitary sewer by a number of pathways, some intentional, some not:

- infiltration of groundwater through cracks, unsealed pipe joints and other defects in the underground pipe network, including the sewer mains, manholes and sewer laterals
- inflow of water from inadvertent cross-connections with the storm sewer system or from surface drainage in through manhole lids
- inflow and infiltration of water from private-side sources including rooftop drainage (downspouts) and foundation drainage (connected weeping tile or sump pumps)

**Table 1: Comparison of Total Annual Wastewater Volumes vs. Total Annual Precipitation – 2010-2017**

Year	Total Wastewater Volume (m <sup>3</sup> )	Year over Year % Increase (Decrease)	Three Year Rolling Average (m <sup>3</sup> )	Total Annual Precipitation (mm)	Year over Year % Increase (Decrease)
2010	3,784,855			902	
2011	4,953,455	31		1115	24
2012	3,870,263	(22)	4,313,000	628	(44)
2013	5,062,028	31	4,202,858	1191	89
2014	4,462,442	(12)	4,628,582	908	(24)
2015	4,401,125	(1.5)	4,464,911	862	(5)
2016	3,330,377	(24)	4,641,865	721	(16)
2017	4,388,882	32	4,064,648	1072	33

Table 1, above, illustrates the relationship between precipitation and wastewater flows, which can be directly attributed to extraneous flows. Note that there is not always a direct correlation between the percent change in precipitation and the percent change in wastewater volume. The amount of extraneous flow that enters the wastewater collection system may depend upon whether the precipitation occurred in the form of snow, freezing rain or rain and whether or not the ground was frozen. However, although the percentages may not directly match, in general, years with more precipitation experience higher wastewater volumes, while years with less precipitation experience lower wastewater volumes.

The challenge the City, and most other municipalities in the Province, face is the fact that the storm sewer system is not as extensive or robust as it should be to enable sources of extraneous flows (downspouts, sump pumps) to be disconnected from the sanitary sewer system. For instance, in the urban area of Port Colborne, less than 40% of the City is serviced by storm sewer infrastructure, therefore, many homes and businesses discharge their downspouts, sump pumps etc. into the sanitary sewer system, and during years with high amounts of precipitation, the flows the City sends to the Region's wastewater treatment facility increase, and the City pays more. Properties cannot simply be forced to disconnect their downspouts etc from the sanitary system, as there is not sufficient capacity in the existing ditches, soak away drains etc. to efficiently remove the excess stormwater – and flooding would likely occur.

A dedicated storm sewer fund is required to build the much needed infrastructure so that extraneous flows, and the associated wastewater treatment costs, can be reduced. Engineering staff have been leveraging funding whenever practical and available, in order to either disconnect sources of extraneous flow from the sanitary sewer system, or build storm sewer infrastructure. The Nickel Storm project, which is currently in the final stages, in addition to the Arena project that was completed in 2011-2012, are two recent examples of projects that have been undertaken to reduce extraneous flows. Staff will be coming forward either later in 2018, or in early 2019 with a report to council detailing the need for a storm sewer fund, and providing options for different funding models. Investments in storm sewers will have direct benefits in reducing extraneous flows.

Extraneous flows are essential “lost revenue” as we cannot meter wastewater flows (with the exception of some large industrial customers who have separate flow meters) and can only bill our customers for wastewater based on their metered water usage.

In 2017, our actual wastewater revenue was \$1,280,000 under the budgeted revenue and caused a deficit of \$872,000. To avoid the deficit, budgeted capital funds were not allocated to the capital reserves.

Wastewater usage revenues, based on metered water volumes, and on separately metered industrial customers, have in the past been predicted to be approximately 2.8 million cubic metres whereas revenue have now declined from 2.4 million to 1.8 million cubic metres in 2016, 1.4 million in 2017 and predicted to be 1.2 million in 2018. The decline in actual revenue is due in part from industrial facilities reducing and/or eliminating wastewater flows into the system which helped subsidize the unaccounted for flows. The industrial sector that once contributed approximately 50% of wastewater flows is now down to 6% and has an impact on the rates to generate enough revenue to cover the cost of unaccounted for wastewater.

In 2017, a major industrial customer came off the wastewater system by building their own treatment plant which accounted for approximately 500,000 cubic metres and \$600,000 in less revenue. This contributed to the 2017 deficit of \$872,000. This will have a large impact on the wastewater budget for 2018 in an approximate amount of lost revenue of \$900,000 which will increase the rates considerably in 2018 as we do not see our costs being reduced proportionally.

To soften the increases required to generate sufficient revenue for both water and wastewater budgets to be sustainable in the future and in anticipation of a new 10 year Water Financial Plan in 2019, staff are phasing in the actual unaccounted for water and wastewater percentages, especially with not knowing the full effect of the industrial facilities coming off the system, phasing in the known sales revenue reductions, phasing in the staff addition requested, reducing operating expenditures for both water and wastewater budgets, no increase any capital contributions and applying the wastewater rate stabilization reserve to the 2018 wastewater capital budget.

### **Water and Wastewater Rate Structure**

As discussed above, there are many issues to consider for the 2018 budget and future budgets to ensure a sustainable financial model. The following issues are being addressed in this budget as recommended by staff:

- The base budget before any new staff, sales reductions accounted for, reduction in industrial wastewater flows, allocation of unaccounted for water and wastewater flows, allocation of reserves, a cost of living increase was applied for both water and wastewater for a combined increase of 2.37% or an annual increase of \$34
- There was no increase in the 2018 capital allocation of funds to limit expense increases, although capital increases are required in future budgets for capital asset management purposes to reduce the infrastructure deficit of what the City currently funds for capital to what is required under the City's Asset Management Plan for future capital replacements.
- Increased staff for one Certified Water/Wastewater Operator as discussed in the 2017 budget to increase Operators by one staff in 2017 and in 2018. The budgets include the cost of a new Operator for 3 months to be hired in the last quarter of 2018
- Staff reduced expenditures in both water and wastewater budgets by \$45,000 and \$34,500 respectively
- Applied the wastewater rate stabilization reserve to the 2018 wastewater capital budget for \$300,000
- Region increase in water purchase rate of 2.17% and wastewater purchase rate of 4.22% based on the 3 year rolling average and percentage allocated to the City of the total Regional flows is incorporated into the budget

Staff recommends rate increases in 2018 for the base operating budget of 2.37% or \$34 annually as a starting base and recommends the addition of one Certified Water/Wastewater Operator to be hired in the last quarter of the year. In 2015, Council approved the rate stabilization funding into reserves to be added to the fixed charge to remain on the rates and be allocated in future years to either increase the rate stabilization reserve, the wastewater reconciliation reserve and/or future capital. The 2018 budget requires the allocation of \$300,000 from the wastewater rate stabilization reserve to the wastewater capital budget. Staff have phased in the actual unaccounted for water and

wastewater percentages, phased in the known sales revenue reductions, phased in the staff addition requested and reduced operating expenditures for both water and wastewater budgets.

The proposed operating budget rates for 2018 have an overall annual increase of \$119.12 or 8.36% for the average user of 0.75 cubic metres per day. This incorporates an increase to the water usage rate from \$1.173 to \$1.274 or \$27.51 annually, an increase to the annual water fixed charge from \$351.12 to \$369.33 (\$18.21), the wastewater usage rate from \$1.250 to \$1.295 or \$12.18 annually and the annual wastewater fixed charge from \$410.76 to \$471.98 (\$61.22).

This is an overall annual estimated increase of \$85.32 (\$7.11/month) from the base budget increase of \$33.80 (\$2.82/month) to \$119.12 (\$9.93/month) or 8.36% increase for the average user of 0.75 cubic metres per day.

## **Water System**

### **Usage Rates**

The proposed usage rates for the water system were generated by incorporating the 2018 Regional water rate, which is increased by 2.17% from \$0.554/m<sup>3</sup> to \$0.566/m<sup>3</sup>. The fact that the 3 year average water flow forecast has increased slightly from 3,068,803 m<sup>3</sup> to 3,085,923 m<sup>3</sup> (17,120m<sup>3</sup>) and the Regional water rate to the municipalities increased, there is a slight increase in the cost of water purchased from the Region amounting to \$51,405.

The proposed usage rates include the City's 2018 budget expenditures in general operations and administration with a net operating budget decrease of \$21,662 (2017-increase of \$48,570). The actual budget decrease in operations is the result of a 2% cost of living increase, net of expense reductions and the cost (3 months) for one new Certified Water/Wastewater Operator in operating expenditures.

The City's non billable and unaccounted for water loss has fluctuated between 27% and 40% over the last few years and therefore the 2018 rate structure is compiled based on a 36% (2017-30%) unbilled water flow projections. The annual water purchase volumes have stabilized around 3 million m<sup>3</sup>. Although, 2016 water flows were down to approximately 2.8 million m<sup>3</sup> and 3.2 million m<sup>3</sup> in 2017, the 3 year average still calculated at 3 million m<sup>3</sup>.

In 2011 to 2013, the water volumes stabilized at 2.9 million m<sup>3</sup>. The volumes again increased in 2014 and 2015 to above 3 million m<sup>3</sup>. In establishing the 2018 estimated water purchases, staff used the 3 year average of water volumes at 3,085,923 (2017 - 3,068,803m<sup>3</sup>) to establish the usage rate.

### **Comparison to Water Financial Plan**

Based on the Regional and City expenditures, and the required changes discussed previously in this report, the water usage rate has increased to \$1.274 from \$1.173, an increase of \$0.101 (2017 - \$0.026) or 8.57% (\$27.51) above 2017 rates. This rate is considerably lower than the Water Financial Plan proposed for 2018 at \$1.340 per cubic

metre. Although, with the increase it does bring the rate closer to the plan. This is due to water purchases being considerably higher than anticipated in the Plan and the fact that the water purchases have stabilized at a higher water volume than what was anticipated. In addition, as discussed previously, the actual sales have been considerably lower than the predicted and budgeted sales. See Schedule B and C attached.

The fixed cost charge in the proposed budget has an increase from \$351.12 to \$369.33 or \$18.21 (2017 - \$8.54) or 5.18% which is slightly higher than the Financial Plan of 3.27%. The Water Financial Plan proposed a 2.56% increase to the overall cost to the average consumer, including the fixed cost, which would have been comparable to the cost of living budget increase of 2.37%.

Overall, the proposed budget estimates that an average user will have an annual cost of approximately \$718.07 (2017-\$672.34) in comparison to the Water Financial Plan for 2018 with an annual cost of \$708.26 (2017-690.59). Therefore, the proposed rate structure and budget is actually more in line with the anticipated annual cost to the average user from the Water Financial Plan approved by Council in 2010. See Schedule C attached.

### **Fixed Charge**

The water service fixed charge for capital projects/programs that includes vehicle replacements, debentures, unbilled/unaccounted for water flows, capital projects, fixed administration and Regional fixed water purchases will increase from \$351.12 to \$369.33. This is an annual increase of \$18.21 or \$1.52 a month.

The fixed charge annual increases are based on the 2010 Water Financial Plan, which allocates an increase of net costs to the fixed charge over the next 10 years to 50% of costs. This budget increases the net fixed costs to 48.5% from 47% of total budget costs in 2018 (Schedule B). This is related to the Region moving towards water purchases being a fixed cost to the municipality, which was 49.6% in 2017 and 51.7% in 2018 of the Regional cost of water purchases being allocated to the fixed charge. The \$369.33 proposed fixed charge rate is slightly higher than the Council approved Water Financial Plan proposed rate at \$341.43 and closer to the 2019 proposed rate of \$345.01 (Schedule C). This proposal of fixed charges better aligns with meeting the Asset Management Plan, the current Infrastructure Needs Study and PSAB capital allocations for replacement of infrastructure in the future. It also takes into account the additional debenture cost for the completion of the meter replacement program.

In 2009, the Region of Niagara introduced a new water rate setting and cost recovery method to be charged to the lower tier municipalities. In previous years the Region billed the City for actual flow usage based on a unit rate. In 2009, the Region established a cost recovery based on 25% fixed cost recovery plus the remaining 75% costs, recovered from a unit rate based on actual water volume usage.

The Region would like to move to a larger fixed component for billing of water stating, "that the majority of the Region's system costs are fixed, in the event that actual volumes are less than the forecast, the Region will incur a requisition deficit because billings to area municipalities will be inadequate to fund the Region's system operating and capital costs." The Region continued to use the above method for 2010 to 2017 and has approved the same methodology in 2018. The Region revisited the methodology for the 2018 budget with Area Treasurers with the result being to keep the status quo in methodology.

The Regional fixed cost component attributed to the City of Port Colborne should not have a great impact on the consumer water rate as the City's proposed rate structure currently recovers approximately 48.5% (47% in 2017) of the total cost on the fixed charge of \$369.33 per customer. The remaining 51.5% is recovered from the water usage rates passed on to the consumer. As it is anticipated that the Region may progress toward at least a 50% fixed cost to municipalities from the current 25%, staff have prepared the budget, phasing in the fixed cost over a number of years as approved in Council's Water Financial Plan.

### **Average User Annual Cost**

The water rate has a blended increase for capital and usage rates of 6.80% for the average residential user, which is based on a usage rate increase of 8.57% or \$27.51 and the fixed cost charge increase of \$18.21 or 5.18%. The total increase amounts to a \$45.72 annual increase or \$3.81 a month.

### **Schedules**

In addition to Schedule C, the Water Financial Plan, attached to this report are Schedules B, D and E. The Analysis of Water Systems Costs (Schedule B) provided some comparisons year over year which shows that the overall budget increase in net costs is 2.35% (2017 – 1.96%) compared to the increase proposed in the Water Financial Plan of 2.56%. The Water System Budget Review (Schedule D) compares 2012 to 2017 actual results and a comparison between the 2017 and 2018 budgets. The Water Rate Calculations 2018 (Schedule E) provides a simple display of the 2018 water budget with costs allocated for consumption (usage rate) and fixed costs (fixed charge rate) to calculate both the usage and fixed charge rates.

## **Wastewater System**

### **Usage Rates**

The proposed rates for the wastewater system were generated by incorporating the 2018 Regional wastewater budgeted costs. The overall fixed cost to the City for wastewater treatment decreased \$95,586 from \$4,005,249 to \$3,909,663 (-2.39%).

As mentioned previously, and illustrated in Table 1, the wastewater flows are based on a 3 year rolling average and are affected by weather condition fluctuations from year to year, which affects the extraneous flows being directed to the wastewater system.

The 3 year average decreased from approximately 4,313,000 m<sup>3</sup> in 2012 to 4,202,858 m<sup>3</sup> in 2013, increased to 4,628,582 m<sup>3</sup> in 2014, reduced to 4,464,911 m<sup>3</sup> in 2015 and increased to 4,641,865 in 2016 and reduced again in 2017 to 4,064,648 m<sup>3</sup>. The 3 year average based on 2015, 2016 and 2017 flows has decreased to 4,040,128 m<sup>3</sup>. As per the above, wastewater flows continue to fluctuate year to year making it difficult to predict. The Region is billing the City in 2018 based on 3,934,000 m<sup>3</sup>, down from 4,200,000 m<sup>3</sup> in 2017 and is included in the 2018 budget.

The proposed rates include the City 2018 budget (Schedule F) decrease to general operations with a net operating budget decrease of \$15,025. The actual budget decrease in operations is the result of a 2% cost of living increase, net of expense reductions and the cost (3 months) for one new Certified Water/Wastewater Operator in operating expenditures. Although the Regional and City operating costs decreased, the matters previously discussed regarding the meeting of budgeted revenues, customer sales revenue which are not covering all expenses, other sources of unaccounted for wastewater flows and the decline in actual revenue due in part from industrial facilities reducing and/or eliminating wastewater flows into the system (a shift of industrial lost revenue amounting to \$415,000), the wastewater usage rate has increased to \$1.295 from \$1.250 per cubic metre, an increase of \$0.045 (2017 - \$0.018) above 2017 rates. This is reflected in the usage rate increase of 3.56% or \$12.18 (2017 - \$5.12) to the average user in 2018.

### **Fixed Charge**

The wastewater service fixed charge for capital projects, rate stabilization, equipment, extraneous flows, CSO Programs and debentures increased 14.90% or \$61.22 from \$410.76 to \$471.98. This increase is mainly due to a shift in Regional costs for extraneous flows from the usage rate to the fixed rate in the amount of \$687,725 less the \$300,000 allocated from the rate stabilization reserve to account for the inconsistency of the 3 year averages for the treatment of wastewater, unaccounted for wastewater and the reduction in industrial wastewater revenue.

The Regional cost recovery model for wastewater bases the charges to the City on a 100% fixed cost. As previously mentioned, it is based on previous 3 year average wastewater volumes (October 2014 through September 2017). The decrease in the 2017 wastewater flows caused a decrease to the City's share of Regional costs with a slightly lower 3 year average being 3,934,000 m<sup>3</sup> (2017 - 4,200,000 m<sup>3</sup>) for 2018.

The City's unaccounted for and unbilled wastewater flows have fluctuated between 35% and 50% over the years and therefore the 2018 rate structure is compiled based on a 56% (2017-35%) unbilled wastewater flow projections.

### **Average User Annual Cost**

The wastewater rate has a blended increase for capital and usage rates of 9.75% for the average residential user which is based on a usage rate increase of 3.56% or \$12.18 and the fixed cost charge in the proposed budget increase of \$61.22 or 14.90%. The total increase amounts to a \$73.40 annual increase or \$6.12 a month.

### **2018 Rates**

The rates proposed in this report for the average user consuming 0.75 m<sup>3</sup> per day, will have an approximate increase of \$119.12 (2017 - \$45.42) for the year or \$9.93 (2017 - \$3.79) per month or 8.36% (2017 - 3.29%) increase. Schedule A provides the impact on the cubic metre usage for various users for the proposed changes for 2018 compared to 2017.

#### **4) OPTIONS AND FINANCIAL CONSIDERATIONS:**

##### **a) Do nothing.**

The water and wastewater rates would remain at the 2017 levels resulting in a shortage of revenues and a deficit to the water and wastewater operating systems.

(Not recommended)

##### **b) Other Options**

1. Council can approve alternate rates for water and wastewater and not approve the new Water/Wastewater Operator. This is not recommended in order to have enough resources in Water/Wastewater Operators to meet the needs of the Division and legislation.
2. Staff is presenting for Council's consideration a budget and rate structure which takes into consideration the generation of sufficient revenue for both water and wastewater budgets to be sustainable in the future and in anticipation of the new 10 year Water Financial Plan to be prepared by staff and presented to Council for approval in 2019, phasing in the actual unaccounted for water and wastewater percentages, especially with not knowing the full effect of the industrial facilities coming off the system, phasing in the known sales revenue reductions, phasing in the staff addition requested, reduced operating expenditures for both water and wastewater budgets, did not increase any capital contributions and applying the wastewater rate stabilization reserve to the 2018 wastewater capital budget. The water rates were adjusted in accordance with the Water Financial Plan approved by Council.

#### **5) COMPLIANCE WITH STRATEGIC PLAN INITIATIVES**

To comply with the June 21, 2010 Water Financial Plan as approved by Council.

#### **6) ATTACHMENTS**

- Schedule A - Proposed Water & Wastewater Rates (typical consumptions)
- Schedule B - Analysis of Water System Costs
- Schedule C - Anticipated Future Water Rates (Water Financial Plan-2010)
- Schedule D - Water System Budget Review
- Schedule E - Water Rate Calculations 2018
- Schedule F - Wastewater System Budget Review
- Schedule G - Water and Wastewater Reserves at December 31, 2017
- Memo re: 2017 and 2018 Additional staff Requirements
- Memo re: 2018 Budget
- Memo re: 2018 Water/Sewer Budget

**7) RECOMMENDATION**

***That the 2018 Water and Wastewater Rates be approved as follows:***

<b><i>Water Usage Rate</i></b>	<b><i>\$ 1.274</i></b>	<b><i>per m<sup>3</sup></i></b>
<b><i>Water Service Fixed Charge</i></b>	<b><i>\$ 369.33</i></b>	<b><i>annual fixed rate</i></b>
<b><i>Wastewater Usage Rate</i></b>	<b><i>\$ 1.295</i></b>	<b><i>per m<sup>3</sup></i></b>
<b><i>Wastewater Service Fixed Charge</i></b>	<b><i>\$ 471.98</i></b>	<b><i>annual fixed rate; and</i></b>

***That the 2018 Water and Wastewater budgets as presented in Corporate Services Department, Finance Division Report 2018-52, be approved; and***

***That the Water and Wastewater Rates by-laws be approved.***

**8) SIGNATURES**

Prepared on April 9, 2018 by:

Reviewed by:



Peter Senese  
Director of Corporate Services

Chris Lee  
Director of Engineering & Operations

Reviewed and Respectfully Submitted:



C. Scott Luey  
Chief Administrative Officer