



City of Greater Sudbury

Water and Wastewater Rate Analysis

Final Report

August 25, 2017



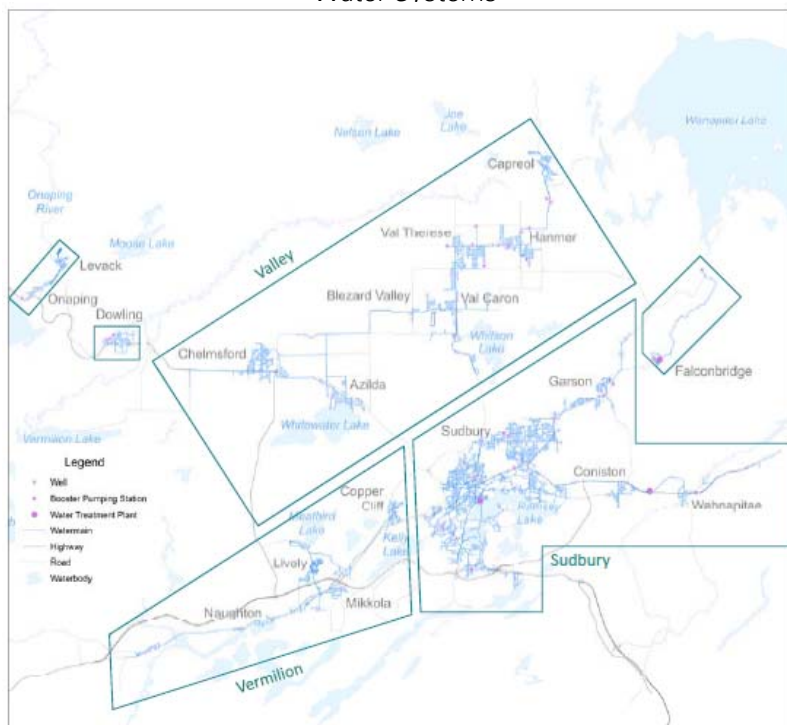
City of Greater Sudbury Water and Wastewater Analysis

Water and Wastewater Overview

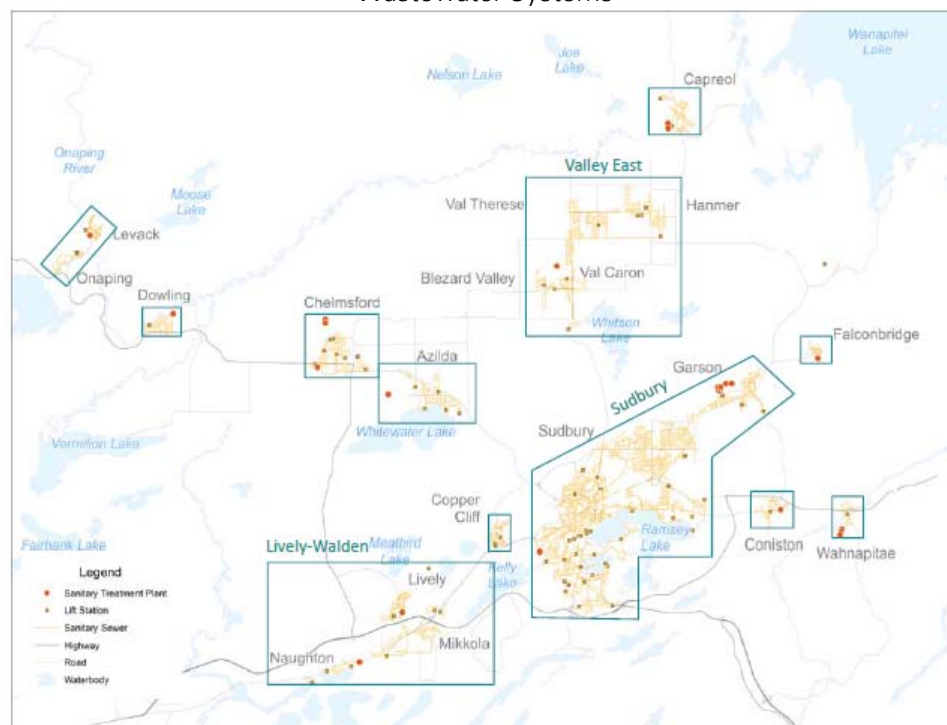
The City operates a total of six water systems and 13 wastewater systems, which provide services to more than 51,000 residential and non-residential customers. The City's water infrastructure includes two surface water treatment plants, two fluoridation facilities, 21 wells, nine pumping (booster) stations and 10 water storage facilities. The City's wastewater infrastructure includes 10 wastewater treatment plants, 4 sewage treatment lagoons and 68 lift stations. In total, the City maintains 948 kms of water distribution mains and 777 kms of wastewater collection mains.

The overall replacement cost of the City's water and wastewater infrastructure is estimated to be in the order of \$2.8 billion.

Water Systems



Wastewater Systems



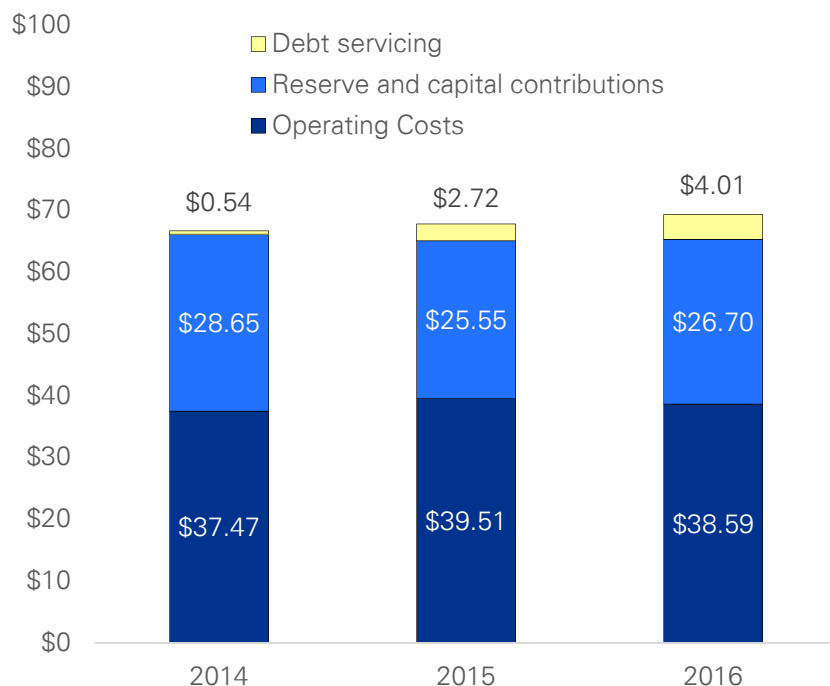
City of Greater Sudbury Water and Wastewater Analysis

Water and Wastewater Overview

The total cost of operating the City's water and wastewater systems amounted to \$38.6 million, with an additional \$30.7 million incurred for debt servicing (\$4.0 million) and contributions to reserves and capital (\$26.7 million). Over the last three years, operating costs have increased by an average of 2.5% per year, while contributions to reserves and capital and debt servicing costs have increased by an average of 1.3% per year.

As noted below, the largest increases were experienced in energy costs, materials and supplies and debt servicing costs.

Water and wastewater costs (in millions)



(in millions)	2016	2014	Average Annual Increase
Salaries and benefits	\$12.38	\$12.15	↑0.9%
Materials and supplies	\$4.20	\$4.42	↓2.5%
Energy	\$4.74	\$4.09	↑7.7%
Purchased services	\$10.32	\$10.11	↑1.0%
Internal recoveries	\$6.85	\$6.64	↑1.6%
Other operating costs	\$0.10	\$0.06	↑29.1%
Total operating costs	\$38.59	\$37.47	↑1.5%
Reserve and capital	\$26.70	\$28.65	↓3.5%
Debt servicing	\$4.01	\$0.54	↑172.5%
Total	\$69.30	\$66.66	↑2.0%

City of Greater Sudbury Water and Wastewater Analysis

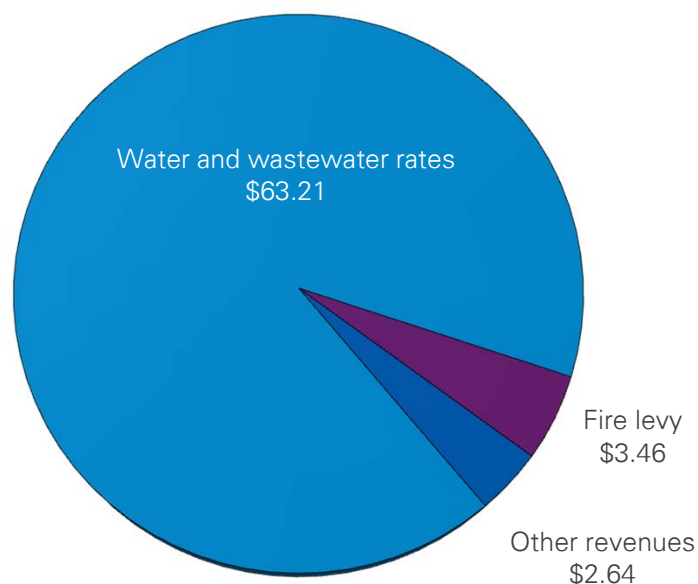
Water and Wastewater Overview

Financing for water and wastewater costs is derived from three main categories:

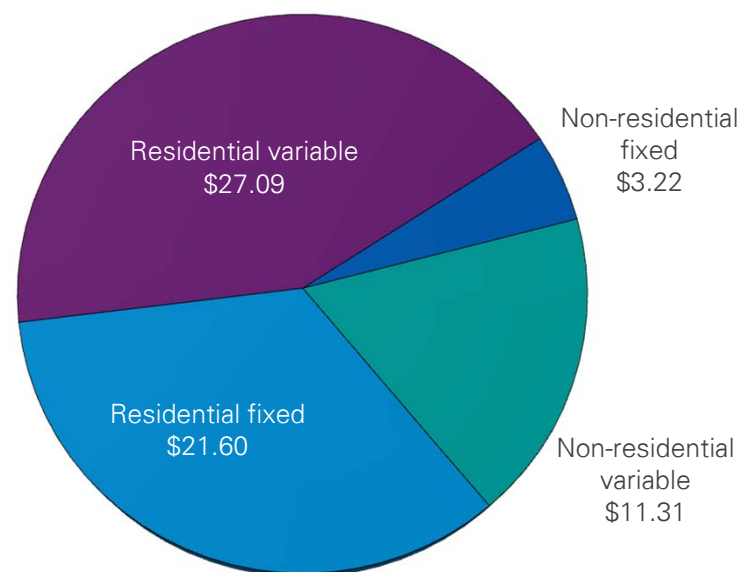
- Water and wastewater rates, which include a fixed and variable component. During 2016, the variable component accounted for 61% of total water and wastewater revenue;
- Fire protection levy, representing the portion of water costs relating to fire protection that are funded through the municipal levy as opposed to user fees; and
- Other revenue sources.

The majority of water and wastewater rates (77%) are paid by residential customers.

Water and wastewater revenues by category (in millions)



Water and wastewater rates by type (in millions)

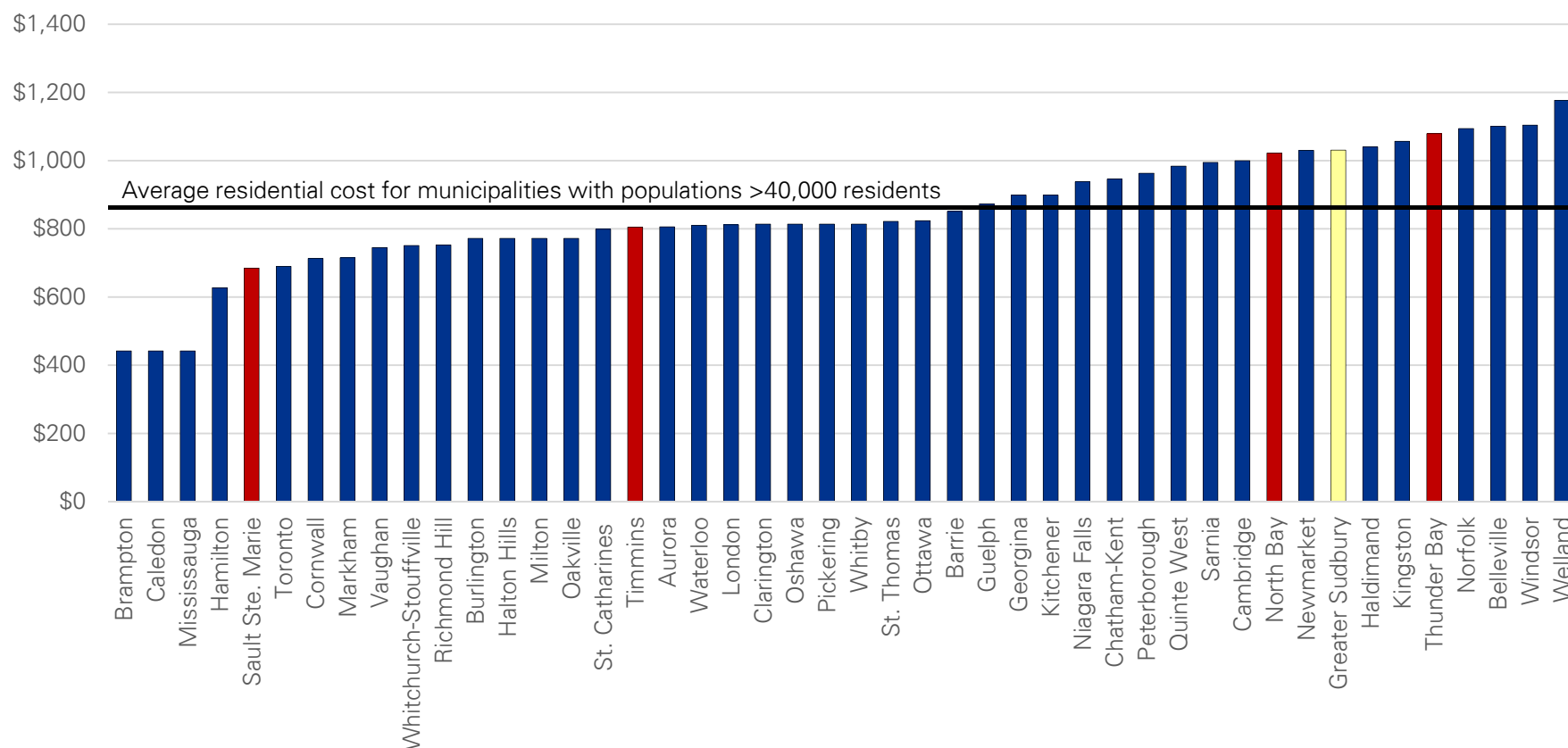


City of Greater Sudbury Water and Wastewater Analysis

Residential Water and Wastewater Costs

Based on the 2016 BMA Municipal Study, a residential customer in Greater Sudbury consuming 200 m³ of water would have paid \$1,031 for water and wastewater services in 2016, compared to an average residential cost of \$850 for Ontario municipalities with populations of more than 40,000 residents.

Residential water and wastewater costs (200 m³ consumption)



City of Greater Sudbury Water and Wastewater Analysis

Residential Water and Wastewater Costs

The higher costs for residential water and wastewater services in Greater Sudbury are related to the City's geographic area, which translates into a high number of water and wastewater systems (six and 13 respectively) and associated infrastructure. As noted below, in comparison to other municipalities with lower residential water and wastewater costs, aspects of the City's water and wastewater infrastructure are overbuilt for the number of households served. The requirement to maintain a greater level of infrastructure in relation to the number of residents served impacts operating and capital cost requirements by challenging the City's ability to achieve the same level of economies of scale as municipalities with greater household densities.

	Sudbury	Peel Region ¹	Toronto	Vaughan	Barrie
Total households	75,158	430,000	1,132,602	94,765	53,198
Number of water systems	6	5	4	2	6
Number of wastewater systems	13	3	4	2	1
Number of wastewater lift stations	68	36	n.a.	10	6
Length of kilometers of mains (water and wastewater)	1,725	8,053	11,688	1,754	1,163

Indicators:					
Average residential cost	\$1,031	\$442	\$690	\$745	\$851
Total households per water system	12,500	86,000	283,200	47,400	8,900
Total households per wastewater system	5,800	143,300	283,200	47,400	53,200
Total households per system (all)	4,000	53,800	141,600	23,700	7,600
Total households per lift station	1,100	11,900	n.a.	9,500	8,900
Total households per kilometer of mains	43.5	53.4	96.9	54.0	45.7

City of Greater Sudbury Water and Wastewater Analysis

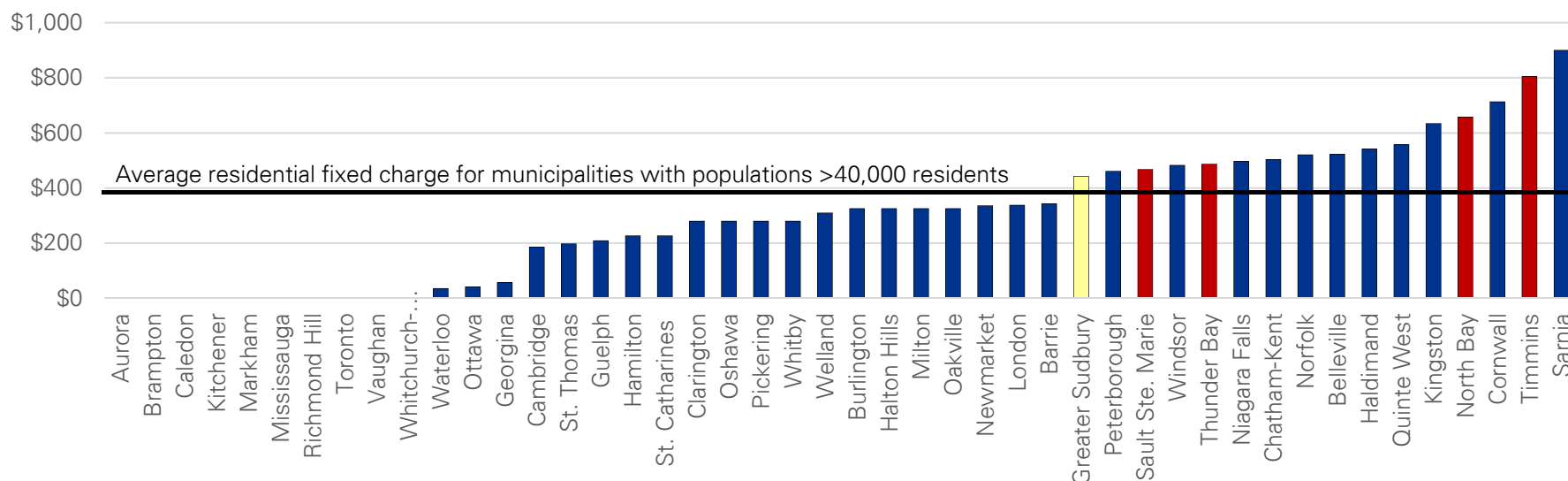
Analysis of Rate Structure

The City's current rate structure for water and wastewater consists of both a fixed component (determined based on meter size) and a variable component, which is the same regardless of the level of water consumed. This rate is consistent with the majority of Ontario municipalities with populations in excess of 40,000 residents:

- 36 of 46 municipalities with populations in excess of 40,000 residents (78%) have some form of fixed charge; and
- Approximately two-thirds of municipalities included in the BMA study use uniform variable rates (i.e. the rate per m³ of water consumed does not vary based on consumption).

For a residential customer in Greater Sudbury consuming 200 m³ of water, the fixed charge for water and wastewater services would have been \$443 in 2016, which is just above the average fixed charge for municipalities with populations in excess of 40,000 residents that have a fixed charge component (\$393).

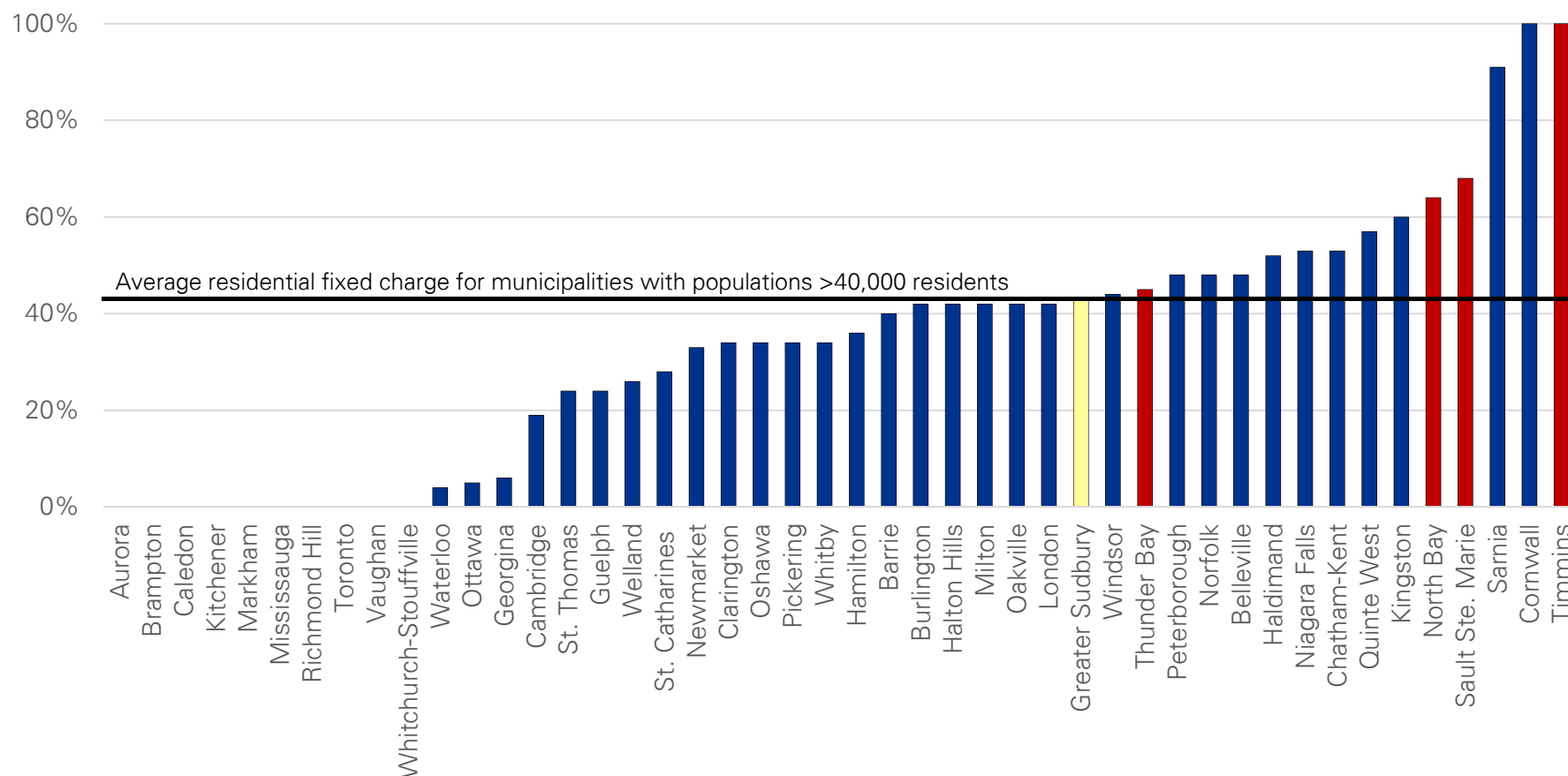
Residential fixed charge for water and wastewater customers (2016)



City of Greater Sudbury Water and Wastewater Analysis

Analysis of Rate Structure

For Greater Sudbury residential customers consuming 200 m³ of water, the fixed component of their water and wastewater bills amounted to 43% of their total water and wastewater costs, which is consistent with the average for municipalities with populations in excess of 40,000 residents that have a fixed charge component.



KPMG Observations and Suggested Course of Action

Based on the results of our analysis, we suggest that the City continue with its current rate structure for water and wastewater services, which incorporates both a fixed and variable component. The rationale for continuation of the current rate structure includes the following:

1. The City’s current rate structure is consistent with the general practice for larger Ontario municipalities

As noted earlier in our report, the City’s current approach to water and wastewater rates is reflective of common practice for municipalities with populations in excess of 40,000 residents:

- The majority of municipalities (77%) have a fixed component for water and wastewater services that does not vary based on consumption levels;
- The majority of municipalities (two-thirds) use a uniform consumption charge per m³ of water consumed that does not vary based on the level of water consumed; and
- The percentage of residential water and wastewater costs that are recovered by the City through the fixed charge is consistent with the average for municipalities with populations in excess of 40,000 residents (43%).

2. Reducing the fixed component of water and wastewater rates appears to be inconsistent with the nature of the City’s costs

We understand that the majority (but not all) of operating activities associated with water and wastewater services are based on time as opposed to the level of water and wastewater treated. For example, under the Drinking Water Quality Management Standard, the City is required to perform periodic testing for bacteria, chlorine residual levels and other indicators of water quality, as well as maintain records demonstrating that the specific activities have been performed, on a time basis rather than volume basis, with the minimum standards provided below for some but not all testing (which the City exceeds in certain instances):

- | | |
|-------------------------------|----------------|
| • Chlorine residuals | Bi-weekly |
| • Bacteriological testing | Weekly |
| • SCADA equipment calibration | Every 72 hours |
| • Alkalinity and lead | Quarterly |

KPMG Observations and Suggested Course of Action

2. Reducing the fixed component of water and wastewater rates appears to be inconsistent with the nature of the City's costs (continued)

Similarly, we understand that preventative maintenance on treatment, distribution and collection infrastructure is performed based on scheduled intervals that do not necessarily conform to the volumes of water and wastewater treated. As a result, the majority of the City's water and wastewater costs are regarded to be fixed as opposed to variable in nature as they do not fluctuate based on the volume of water and wastewater treated.

Based on the City's reported costs for 2016, we have estimated that approximately 82% of the City's water and wastewater operating costs and 90% of its total water and wastewater costs are primarily fixed in nature and as such, will not vary significantly with changes to the level of water and wastewater treated. In comparison, the fixed component of water and wastewater rates accounts for 40% of total water and wastewater rate revenue. This exposes the City to the potential for financial deficits during years when consumption is less than forecasted as the variable component of water and wastewater rate revenue (60%) will decrease at a greater rate than operating costs will decrease (as only 18% of operating costs will vary based on consumption levels).

(in millions)	Primarily Fixed Costs	Primarily Variable Costs
Salaries and benefits	\$12.383	–
Chemicals	–	\$1.295
Insurance	\$0.308	–
Property taxes	\$0.752	–
Other materials and supplies	\$1.848	–
Energy costs	–	\$4.740
Sludge haulage	–	\$0.284
Biosolids treatment	\$2.730	–
Purchased water services	–	\$0.650
Purchased wastewater services	\$0.415	–
Other purchased services	\$6.300	–
Internal recoveries	\$6.851	–
Operating costs	\$31.587	\$6.969
Debt servicing	\$4.010	–
Capital and reserve contributions	\$26.703	–
Total	\$62.300	\$6.969
Percentage of operating costs	81.92%	18.08%
Percentage of total costs	89.94%	10.06%

KPMG Observations and Suggested Course of Action

3. Reducing the fixed component of water and wastewater rates will challenge the City from an infrastructure perspective

The City's recently completed asset management plan has identified assets with a replacement cost in excess of \$600 million that have reached the end of their useful lives, with an additional \$250 million in assets reaching the end of their useful lives over the next ten years. Given the quantum of its infrastructure requirement, the City's ability to meet its capital investment needs are contingent upon a sustainable and consistent revenue source, which is provided by the fixed component of its water and wastewater rate structure. To the extent that the fixed component is reduced, reductions in consumption levels will translate into reduced funding for capital expenditures through a reduction in overall funding.

4. While water and wastewater costs in Greater Sudbury are relatively high compared to other larger Ontario municipalities, this can be attributed (in part) to the City's geographic area

As demonstrated earlier in our report, the City's water and wastewater infrastructure is overbuilt from the perspective of the number of customers served in comparison to other municipalities. While we have not attempted to quantify the impact of this inability to achieve comparable economies of scale, the financial implications are significant. Accordingly, we suggest it is important to recognize that water and wastewater rates in Greater Sudbury reflect the inherent cost of providing the desired level of water and wastewater services to most of the City's residents. While significant cost reductions may be possible, the likelihood of their attainment:

- Is likely remote through operational strategies alone as the provision of water and wastewater services is highly regulated and the discontinuance of services to existing residents is not considered by KPMG to be a potential option; and
- Through a reduction in capital expenditures is not recommended as this would (i) adversely impact the City's operating costs (through increased repair costs and reduced operating efficiencies); (ii) potentially challenge its ability to meet regulatory requirements with respect to water quality; and (iii) be contradictory to the City's other infrastructure planning efforts, which have identified a significant capital investment requirement.

KPMG Observations and Suggested Course of Action

4. While the City can change the percentage of water and wastewater revenues recovered through fixed and variable user fees, changes to financing of water and wastewater costs represents a zero-sum game

With the exception of the fire protection levy, all water and wastewater operating costs are funded through non-taxation sources that are user-pay. While we understand that the issue of the fixed charge component of water and wastewater rates is not universally accepted, it should be recognized that decreases in the fixed charge component will be accompanied by increases in the variable charge component of the City's water and wastewater rates. While this will benefit users that have lower than average water consumption, it will increase costs for those with higher levels of consumption. Under any scenario that considers a change in the fixed cost component of user fees, the total amount of revenue to be recovered by the City will remain consistent.

Based on 2016 consumption and billing information, we have calculated that, for residential customers only, the elimination of the fixed component of water and wastewater rates would have required the variable component (per m³) to increase from the 2016 rate of \$1.364 per m³ for water and \$1.577 per m³ for wastewater to \$2.608 per m³ for water and \$3.01 per m³ for wastewater, representing an increase in the variable rate of 91.2%. Under this scenario, we have also calculated that 40% of residential customers would have realized a reduction in the cost of water and wastewater services, while the remaining 60% of residential customers would experience an increase. No residential customers were identified as not being impacted by the elimination of the fixed component of water and wastewater rates.

City of Greater Sudbury Water and Wastewater Analysis

Restrictions

This report is based on information and documentation that was made available to KPMG at the date of this report. KPMG has not audited nor otherwise attempted to independently verify the information provided unless otherwise indicated. Should additional information be provided to KPMG after the issuance of this report, KPMG reserves the right (but will be under no obligation) to review this information and adjust its comments accordingly.

Pursuant to the terms of our engagement, it is understood and agreed that all decisions in connection with the implementation of advice and recommendations as provided by KPMG during the course of this engagement shall be the responsibility of, and made by, the City of Greater Sudbury. This report includes or makes reference to future oriented financial information. Readers are cautioned that since these financial projections are based on assumptions regarding future events, actual results will vary from the information presented even if the hypotheses occur, and the variations may be material.

Comments in this report are not intended, nor should they be interpreted to be, legal advice or opinion.

KPMG has no present or contemplated interest in the City of Greater Sudbury nor are we an insider or associate of the City of Greater Sudbury or its management team. Our fees for this engagement are not contingent upon our findings or any other event. Accordingly, we believe we are independent of the City of Greater Sudbury and are acting objectively.