

Water, Wastewater, and Stormwater Lines of Service Cost of Service Study

EXECUTIVE SUMMARY

As part of preparing the 2019-2022 service plans and budgets, the Water Utility has undertaken a Cost of Service Study (COSS) for its three lines of service: Water Treatment and Supply (Water), Wastewater Collection and Treatment (Wastewater) and Stormwater Management (Stormwater). The COSS determines the makeup of each customer class, and its demands on the system. Most Water Utility customers are Residential Metered (e.g. single-family dwelling and duplex), Multi-family (e.g. condominium and apartment buildings) or General Service (e.g. industrial, commercial and institutional).

Utility rate changes approved by Council reflect the change in total revenue requirements for the Water Utility, or the total size of the pie. The COSS determines the cost of providing services to specific customer classes, or how the pie will be divided. Costs are assigned to each customer class based on consumption characteristics and the demand that class places on the system. This results in different customer classes paying different utility rates to ensure they are paying their fair share for the services they receive. In setting the rates, the cost of providing services to the customer class is balanced with consideration of financial sustainability, fairness and equity to customers, and natural resource management.

The COSS identified that some changes to cost recovery are required to improve fairness among customer classes. Multiple scenarios were considered to develop strategies for 2019-2022 with two options highlighted in this report. One option aims to maximize the degree of cost recovery for each customer class to achieve customer fairness. The other option proposes to close the gap between cost recovery and the outcome of the COSS to a smaller degree, moderating the impact of the rate change on customer classes while moving towards fair and equitable cost recovery for each customer class.

The option to close the gap with moderate customer impact is recommended over the maximizing fairness option. The maximizing fairness option creates challenges for industrial, commercial and institutional customers, as it requires significant increases with the trade-off being relatively small decreases for Residential Metered customers.

The recommendations are reported as cost recovery strategies that will inform rates for Water, Wastewater and Stormwater services for 2019-2022 and will be reported back to Council as part of One Calgary in 2018 November. The COSS also examined strategic issues the Water Utility is facing, and the results are reported under the investigation section of this report.

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ADMINISTRATION RECOMMENDATIONS:

That the Standing Policy Committee on Utilities and Corporate Services recommends that Council:

1. Direct Administration to develop water, wastewater and stormwater rates for 2019-2022 for each inside city customer class, and for outside city customers following the strategies articulated in Attachment 2 of this report, and report back to Council as part of One Calgary in 2018 November.
2. Direct Administration to prepare related Bylaw amendments and report back to Council in 2018 November.
3. Direct Administration to develop an implementation plan for a variable stormwater rate structure and report back to Council by Q4 2020 for potential implementation for the 2023 to 2026 business cycle.
4. Direct Administration to report back on rates and limits for Wastewater extra strength surcharge parameters no later than 2020 November.

PREVIOUS COUNCIL DIRECTION / POLICY

At 2014 May 05 Strategic Session of Council, Council approved 2015-2018 Utilities Indicative Rates (C2014-0103) and directed Administration to incorporate a Cost of Service Study for 2019-2022 in the 2015-2018 Action Plan.

At 2014 October 06 Combined Meeting of Council, Council adopted the recommendations for Water and Wastewater Cost of Service Study for 2015-2018 (UCS2014-0611) and Drainage Cost of Service Study for 2015-2018 (UCS2014-0612).

At 2018 March 19 Combined Meeting of Council, Council approved Financial Plan 2019-2022 for Water and Wastewater Lines of Service (UCS2018-0223) and for Stormwater Line of Service (UCS2018-0230).

At 2018 June 18 Strategic Council Meeting, Council approved 2019-2022 Utilities Indicative Rates and Funding New Growth (C2018-0787).

BACKGROUND

The City of Calgary's (The City's) Water Utility provides Water, Wastewater and Stormwater services to 1.25 million Calgarians, totalling approximately 380,000 accounts. Most customers are:

- Residential Metered customers: e.g. single-family dwelling and duplex.
- Multi-family customers: e.g. condominium and apartment buildings.
- General Service customers: e.g. industrial, commercial and institutional.

Water and Wastewater services are also provided to municipalities and general service customers outside of Calgary.

In providing these services to customers, The City incurs ongoing operating and capital expenses. These expenses are subject to the combined effects of growth, inflation, and the need to maintain, upgrade and extend existing infrastructure to deliver services to customers and meet regulatory requirements.

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The COSS determines the makeup of each customer class and their demands on the system that change over time. It also aims to maintain equitable cost recovery among customer classes. The COSS is also an analytical tool supporting financial management. It ensures sufficient and predictable revenues are maintained, allowing financial plans and targets to be met. In 2017 April, the Water Utility engaged Stack'd Consulting Inc. to perform a COSS for each line of service for 2019-2022. The approach considered best practices and recommended COSS methodologies from industry associations.

In the COSS methodology, a base year's cost (in this case, 2016), consumption and customer information is studied alongside projected operating and capital costs. Customers are grouped based on their characteristics of consumption and demands on the system. This methodology helps to inform how much should be recovered from each customer class to then determine a rate structure that can meet the following objectives:

- to deliver sufficient and predictable revenue through stable rates;
- to apply user pay philosophy; and
- to promote water conservation and watershed protection.

The following circumstances were considered in the COSS:

- Rate design considered a mix of fixed and variable rates by customer class; and
- Outside city customers are a distinct customer class and are treated differently because they benefit differently than inside city customers.

The stormwater line of service is also approached differently because the current rate structure for stormwater will be maintained in 2019-2022. The overall cost required to provide stormwater service is equally allocated across all inside city customers, including both residential and non-residential customers.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

The customer, consumption and cost analysis performed identified that some changes to cost recovery are required to improve fairness among customer classes. Specifically, if we keep the current rate unchanged, the cost recovery for combined Water and Wastewater Services by year 2022 will be 114% for Residential Metered customers; 95% for Multi-family customers, and 85% for General Service customers. Detailed information by each line of service is provided within the Cost of Service Study for Water, Wastewater and Drainage Services Executive Summary Report by Stack'd Consulting Inc. (Attachment 1).

To aid decision making among multiple scenarios, prioritized rate-making objectives and key criteria were identified for each line of service. In addition, input from stakeholders and general community attitudes were considered prior to the development of strategies for 2019-2022.

The two options presented have been evaluated against key criteria. Both options incorporate the indicative rate increases in Wastewater and Stormwater, which were approved by Council on 2018 June 18. However, the up to 0.5 per cent increase per year in Water that Council approved in 2018 June 18 (C2018-0787) relating to New Community Growth Strategy has not been incorporated in this COSS. The impact for each customer class is a combination of the overall indicative rate increases and the changes in cost recovery to improve customer fairness. Each line of service will continue to recover all costs associated with service delivery under both options.

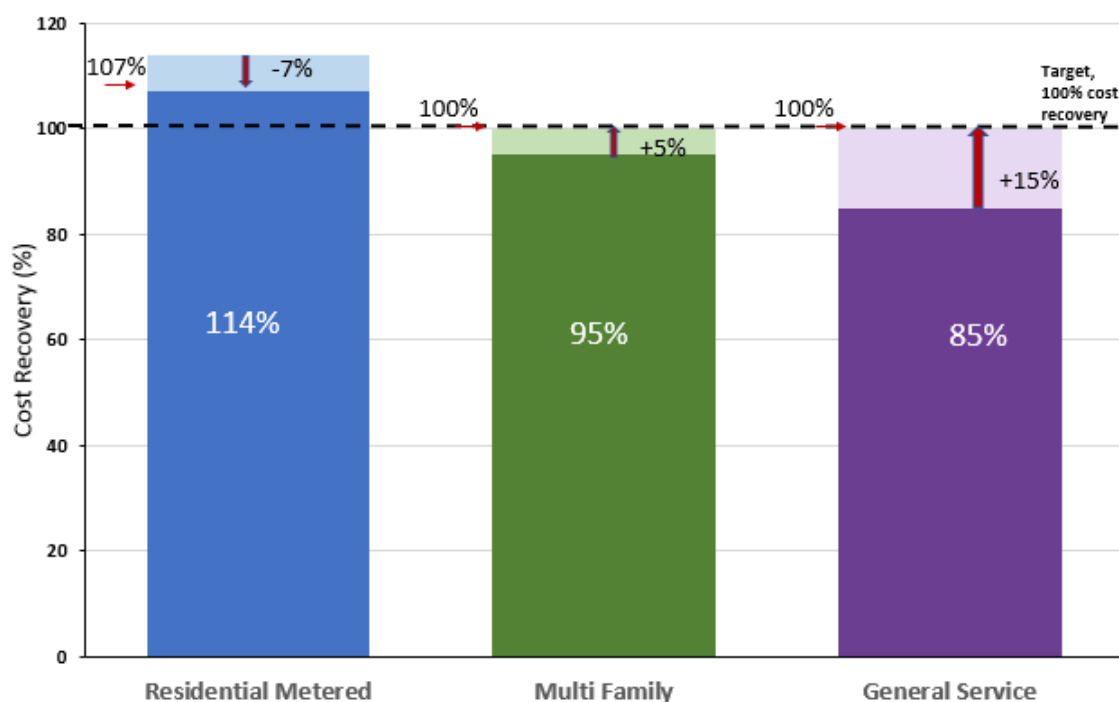
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Maximizing the Degree of Customer Fairness for each Customer Class

This option aims to maximize the degree of cost recovery for each customer class to achieve customer fairness, as illustrated by Figure 1 below.

In this Option, typical Residential Metered customers will have about a 1 to 2 per cent decrease to their combined Water and Wastewater monthly bills. This equates to about \$1 to \$2 savings per month for each of the four years. The 5 per cent increase in cost recovery for Multi-family customers will result in a monthly bill increase of about 2 per cent per year. For example, if a property owner of a multi-family dwelling has a Water and Wastewater monthly bill for \$2,000 in 2018, the bill increase will be about \$40 per month in each year of 2019-2022. Analysis on bill impacts to General Service Large (GSL) and General Service Regular (GSR) customers indicates a monthly bill increase at 3 to 6 per cent. This means if a GSL customer has a Water and Wastewater monthly bill for \$30,000 in 2018, the bill increase will be between \$900 and \$1,800 per month in each year of 2019-2022.

Figure 1: Current and Proposed Cost Recovery for Option of Maximizing Customer Fairness



Moderating Customer Impact to each Customer Class

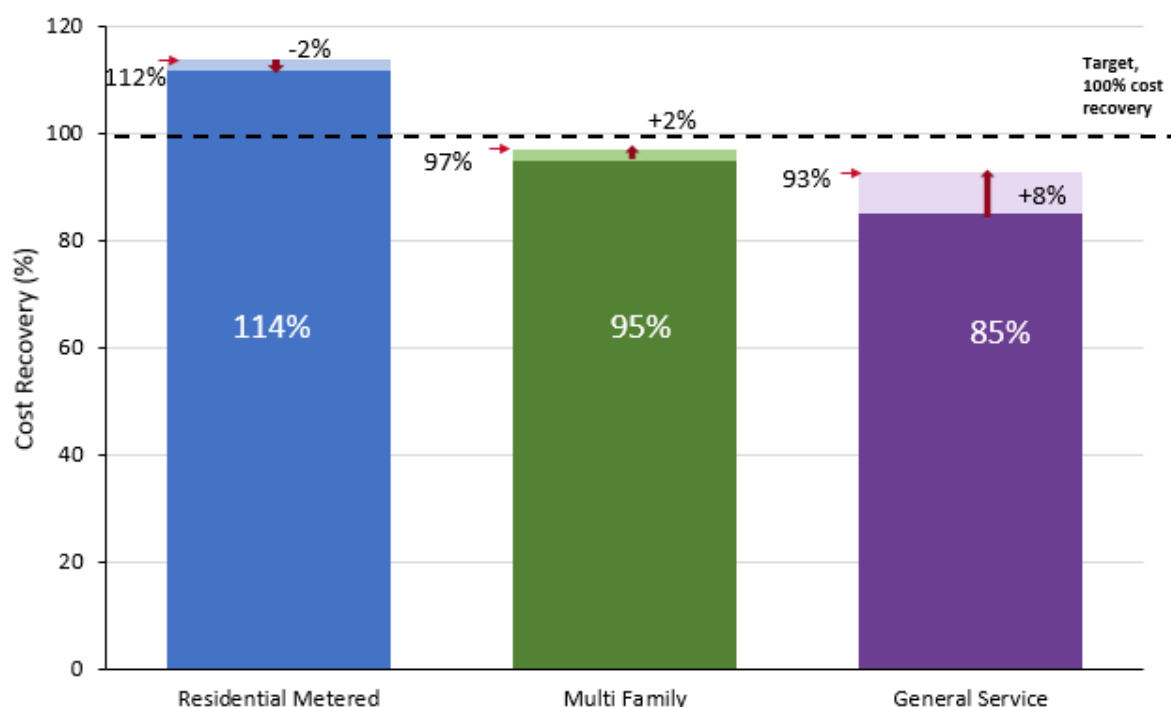
This option varies the extent of cost recovery by customer class to ensure the impact of the rate change on customer classes are moderate, and moves towards fair and equitable cost recovery for each customer class.

The gap between the cost recovery and the exact cost of service (as recognized by the COSS) was identified. It was then proposed that the gap be closed to different degrees for each customer class. This improves fairness and ensures customer bill impacts will be moderate. Figure 2 shows current and proposed cost recovery among major customer classes under this option. Typical Residential Metered customers will see slight decrease to their combined Water

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and Wastewater monthly bills. The decrease will be less than \$1 per month in each of the four years. The 2 per cent increase in cost recovery for Multi-family customers will result in a monthly bill increase of about 1 per cent per year for each of the four years. For example, if a property owner of a multi-family dwelling has a Water and Wastewater monthly bill for \$2,000 in 2018, the bill increase will be about \$20 per month in each year of 2019-2022. Analysis on bill impacts to GSL and GSR customers indicate a monthly bill increase of 2 to 3 per cent. For example, if a GSL customer has a monthly bill for \$30,000 in 2018, the bill increase will be between \$600 and \$900 per month in each year of 2019-2022.

Figure 2: Current and Proposed Cost Recovery for Option of Moderating Customer Impact



The above two options have been evaluated against five rate-setting criteria. The table below summarizes the results, which concludes that Moderating Customer Impact is preferred option, due to moderate bill increases and that all rate-setting criteria are met.

Table 1: Compare and Contrast of the two options Relative to Each Criteria

Criteria	Rationale
1 Revenue Sufficiency & Predictability	Both options target same level of sufficient and predictable revenue to recover the cost of services
2 Accessible & Simple	Option with more moderate customer impact is easier for customers to understand and accept

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	Criteria	Rationale
3	Rate Stability & Customer Impact	Option with more moderate customer impact will result in higher rate stability and lower customer impact
4	Customer Equity & User Pay Philosophy	Option that maximizes fairness (greater user pay) results in more significant customer impact
5	Conservation (Wastewater)	Both options provide same charges for treatment of wastewater loadings

To adjust the disproportionate share of costs among customer classes, a set of cost recovery strategies have been developed under the option of Moderating Customer Impact, as listed in Attachment 2. Implementing these preferred cost recovery strategies for customers within Calgary (inside city customers) will result in differences in rates among customer classes.

Regional Customers Cost of Service Study

Regional customers are treated differently because they do not benefit from all the infrastructure or services provided to customers within Calgary. As per Master Servicing Agreements (MSAs) between The City and Regional Customers, usage rates and fees for services are to be determined by the following:

- The COSS guiding principles;
- Alberta Utilities Commission (AUC) regulatory standards in Part 2 of the Public Utilities Act; and
- Industry standard water/wastewater utility service practices.

As per each MSA, Regional customers provide their current and future Water and Wastewater capacity requirements, while The City commits to undertake the COSS through open and transparent communication. This approach aligns with the mutually agreed principles and ensures regional customers cover 100 per cent of the cost for the services they receive.

Strategic Issues

A number of questions, characterized as strategic issues, were also addressed in the COSS. Key issues are summarized below with more details articulated in Attachment 1, Appendix B.

1. Moving customers into the correct customer class

Analysis of customer consumption patterns resulted in the following recommended changes to customer classes:

- Triplexes, fourplexes and all individually-metered, multi-unit dwellings be classified as Residential Metered customers instead of Multi-Family customers.
- Townhouses with more than four units that are not individually-metered, as well as apartments be classified as Multi-Family customers.

This results in approximately 3,000 customers being moved to a different customer class. Specifically, from General Service to Multi-Family, or from Multi-Family to Residential metered. Further analysis and verification is required to confirm the correct customer class changes. This

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will result in rate changes for impacted customers. Any required Bylaw amendments will be presented to Council in 2018 November. Subsequent work on customer class correction will be completed in 2019-2022 and an implementation plan will be prepared.

2. Stormwater variable rates

Currently, the same stormwater rate applies to all customers. Implementing a variable stormwater rate would improve customer fairness and be a strategic tool to promote customer behaviour for watershed protection and stormwater quality improvement. It is recommended to maintain the same rate structure for 2019-2022, and to develop an implementation plan for a variable stormwater rate structure to be reported back to Council by Q4 2020 for potential implementation for the 2023 to 2026 business cycle.

3. Wastewater extra strength customers and parameters

The City's wastewater treatment plants must treat high strength wastewater. Analysis indicates that two pollutants (Total Kjeldahl Nitrogen (TKN) and Total Phosphorous (TP)) currently not used to calculate monthly wastewater surcharges, should be added to the surcharge calculation. Conversely, Fats, Oils, and Grease (FOG) are included in the Bylaw as an extra strength surcharge parameter but should be removed and classified under a penalty structure. The Water Utility will investigate further and will report back to Council by 2020 November on proposed new wastewater extra strength surcharge parameters for TP and TKN, and transferring the surcharge rate (FOG) to a penalty structure.

4. Customer Assistance Program

The Water Utility is investigating a Customer Assistance Program (CAP) to assist low-income customers in accessing affordable Water, Wastewater and Stormwater services. Implementing a CAP will also enhance the revenue predictability for the Water Utility by reducing the number of customers in arrears. It is recommended that costs of offering a CAP be shared across all inside city customers (not including Bulk Water or Hauled Wastewater). The Water Utility is developing a CAP pilot project and will report to Council in Q4 2018.

5. Wastewater return factor

Not all the water consumed is returned to the Wastewater system (e.g. irrigation). Because wastewater is not metered, the application of a wastewater return factor to determine wastewater charges is considered best practice in the wastewater utility industry. Through analysis the COSS concluded that on average over the course of a year the wastewater return factors are: 90 per cent for Residential Metered customers; 92 per cent for General Service customers, and 97 per cent for Multi-Family customers. Bylaw amendments to reflect this will be brought to Council in 2018 November.

6. Customers who use water in their products

The COSS investigated how to fairly treat customers who use potable water in their products (e.g. water bottlers, breweries). It is not recommended to charge these customers differently than General Service customers as other jurisdictions are not creating a separate class for these customers. To do so would create a competitive disadvantage for Calgary in terms of economic development opportunities.

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7. Alternative Water and Wastewater rate structure

There are several different rate structures used by utilities across North America, such as Fixed Charges, Uniform Rate, Inclining Block, Declining Block etc. After considering these options and examining specific cost components, the COSS recommended the continuation of the current fixed and variable rate structure. These rate structures will mitigate revenue risks and ensure fairness and equity amongst customer classes.

Stakeholder Engagement, Research and Communication

Customers place high value on the water services that they pay for and receive. Based on the 2017 Citizen Satisfaction Survey, 94 per cent of citizens are satisfied with the quality of drinking water. Furthermore, 2017 Citizen's Perspective Survey results indicate 95 per cent of Calgarians are in favour of a user pay approach for water and wastewater, and the vast majority believe that those who use more should pay more.

The Water Utility is planning future customer communication and engagement based on the COSS recommendations to identify and involve impacted stakeholders, and to further establish open and transparent communication between The City and customers.

Strategic Alignment

It is crucial for the Water, Wastewater and Stormwater lines of service to ensure adequate supply of water for a growing city, and maintain river water quality downstream of Calgary. The COSS contributes to strategic alignment with The City's 2020 Sustainability Direction, and the Corporate Growth Management Framework by ensuring there is sufficient funding available to support growth, operate and maintain the system, as well as expand and upgrade the treatment plants. The COSS recommendations will also strengthen the financial capacity that enables Water, Wastewater and Stormwater lines of service to deliver commitments on the following three Council Priorities:

1. To support a city of inspiring neighbourhoods, the Water, Wastewater and Stormwater lines of service provide the infrastructure needs of a growing city, enhance The City's ability to prepare for and respond to natural disasters, and build resiliency to flooding.
2. Contributing to a healthy and green city, the Water, Wastewater and Stormwater lines of service, lead by example to protect public health and the environment, and ensure regulatory compliance.
3. The financial discipline demonstrated through the Water, Wastewater and Stormwater lines of service's performance within their financial plans is an example of commitment to a well-run city.

Social, Environmental, Economic (External)

The COSS requires a balanced approach to rate setting that considers the social, environmental, and economic implications of cost and cost recoveries. In alignment with the guiding principles for COSS, results and recommendations will reflect fairness and equity to customers, be capable of recovering the Water Utility's costs of providing services and continue to meet regulatory requirements. This approach will enable the Water Utility to achieve financial targets and timelines for compliance, as well as support reaching The City's environmental goals.

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Financial Capacity

COSS is an effective method to ensure financial plans and targets are achieved for the Water, Wastewater and Stormwater lines of service, but the COSS itself has no operating nor capital budget implications.

Current and Future Operating Budget:

The COSS incorporates the Council approved 2019-2022 financial plan targets for Water and Wastewater lines of service (UCS 2018-0223) and for the Stormwater line of service (UCS 2018-0230).

Current and Future Capital Budget:

The COSS has considered investments planned for 2019-2022 for the Water, Wastewater and Stormwater lines of service.

Risk Assessment

With the recommended cost recovery strategies (Option of Moderating Customer Impact), the Water Utility will increase fairness and equity among customers. The main risk is adverse reaction to a rate increase by a customer or set of customers, especially under current economic situations. The Water Utility is planning targeted customer communication and engagement for those with greater impacts, including but not limited to education on how to mitigate rate impacts by identifying opportunities to save water and limit pollutants in wastewater.

It is also likely that new rate increases will cause customers to change their usage patterns. These changes could lead to less revenue than anticipated and lack of alignment between those that use the system and those that pay for the system over the next business cycle. To mitigate such inequity, a future COSS will be conducted in the next business cycle (2019-2022) to prepare for 2023-2026.

REASON(S) FOR RECOMMENDATION(S):

The COSS methodology and process is a journey towards fair and equitable rates among customer classes. Closing the outstanding cost recovery gap among customers over time allows customers to adjust behaviours to reduce their proportional use of the system. Achievement of full equity within this business cycle would create challenges for General Service Large and General Service Regular customers, as it would require significant increases for them in a short period of time, with only relatively small decreases for Residential Metered customers.

Approving the recommendations of this report will result in closing the cost recovery gap while balancing the impacts to each customer class.

ATTACHMENT(S)

1. Attachment 1 - Cost of Service Study for Water, Wastewater and Drainage Services Executive Summary Report
2. Attachment 2 - Cost of Service Study Recommendations for the Water, Wastewater and Stormwater Lines of Service