

# Wastewater Collection & Treatment

Led by: Water Services & Water Resources

## Description:

This service ensures that over one million customers in Calgary and the region can trust that their wastewater is taken care of and the health of the river is protected. The wastewater collection and treatment service collects water from toilets, sinks and drains, treats it, and returns it to the river. This service protects public health and our rivers by ensuring the necessary investments are made in treatment plants, pipes and people to keep pace with the needs of a growing population. For example, the Bonnybrook Wastewater Treatment Plant is undergoing upgrades to address wastewater demands and regulations that will serve future generations of Calgarians.

## Customers:

Our customers are wastewater generators and haulers in Calgary and the region, including residential customers, commercial customers (e.g. hotels and septage haulers), institutional customers (e.g. hospitals and schools) and industrial customers (e.g. food producers). Developers receive guidance and oversight on infrastructure design and construction.

## What is delivered to customers:

Wastewater from toilets, sinks and drains is collected from homes and businesses, treated and returned to the river. The service also ensures that biosolids from wastewater treatment are responsibly managed.

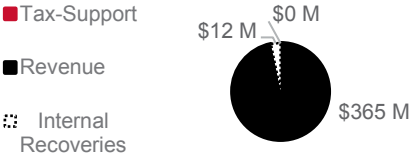

## Partners:

Education partners (Riverwatch, Advancing Canadian Wastewater Assets etc.)  
 Other levels of government (Fisheries and Oceans Canada, Alberta Environment and Parks)  
 Upstream and downstream municipalities  
 Other City services (Waste and Recycling, Planning)  
 Recipients of biosolids  
 Developers  
 Regional municipalities  
 Calgary Metropolitan Regional Board

## Service need (value proposition):

Reliable wastewater treatment provides the foundation to a healthy and green city; it ensures public health, reduced risk to property and is essential to the health of rivers and economy. Downstream communities depend on us to care for the quality of water returned to the river as it passes through the city and it is our responsibility and intent to do exactly that. A healthy river is equally important to fish and wildlife. Three wastewater treatment plants treat over 300 thousand litres of wastewater every minute and the treated water that goes back into the Bow River consistently meets or exceeds all environmental and regulatory requirements. As the city grows, pressure on treatment processes will increase and we must continually find efficiencies and process improvements within our plants to ensure we can serve future generations and continue to protect the health of our rivers.

## Current state service value

<p><b>300,000</b> litres of wastewater treated per minute</p> <p><b>24%</b> plant energy produced by sewage</p>	<p><b>100%</b> wastewater quality regulations met</p> <p><b>94%</b> customers satisfied with service</p>	<p>2018 Budgeted Gross Operating Expenditures Funding Breakdown (\$ Millions)*</p> <p><b>1.40 cents</b> Cost per flush</p>  <p>■ Tax-Support              ■ Revenue              ⚙ Internal Recoveries</p> <p>* Gross operating budget and the service cost ratio may include internal recoveries that are also included in other services gross operating budget.</p>
<p><b>Connections to Citizen Priorities</b></p> 		<p><b>What the service includes</b></p> <p>This service has no subservices.</p> <p><b>Key capital investments</b></p> <p>Investments in wastewater treatment plants continue to be a significant focus to ensure regulatory requirements are met, support population growth and realize efficiencies in operations.</p>



## What we've heard and service outlook

### What we heard: Research & Engagement Results

Customers value river health, reliability, responsiveness, public health, quality, and cost for the service. Overall satisfaction of service is high with 91 per cent satisfied with the reliability of the service and 60 per cent agree they pay a fair price for wastewater services. When it comes to customer inquiries we have heard there is a lack of clarity and concerns with fairness for wastewater billing. Residential customers call us most often related to sewer back-ups on property and commercial customers usually call us about accidental substance releases and the surcharge program.

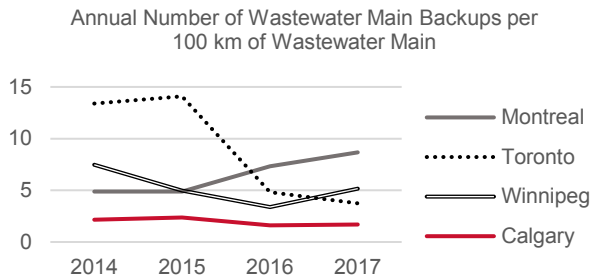
### What Council has directed

H1/H3 - Climate change will alter how and when we receive precipitation in Calgary's watershed, affecting river water quality and river flows. Integrated watershed management is essential to protect public health and the environment, while strengthening our resiliency to a changing climate. N4/N5 - Greenfield community development and redeveloped communities rely on reliability and availability of wastewater services. Wastewater services enables development that meets our Municipal Development Plan and the Calgary Transportation Plan while minimizing the cost of growth. This service aligns to the Policy on Regional Water, Wastewater and Stormwater Servicing (CP2018-01) and the Biodiversity Policy (CSPS037).

### What are we watching

We're a big, growing city on a small river which requires ongoing investment and attention to meet regulatory requirements. Climate change will alter how and when we receive precipitation in Calgary's watershed and a change in river flow may impact the ability to dilute wastewater effluent and changes in river temperature may impact river water quality. Pressures and timing for growth and potential future requirements for regional servicing will impact wastewater collection and treatment capacity and aging wastewater infrastructure may lead to increased service impacts for customers. A growing infrastructure base requires additional operational and maintenance resources. Customers are asking for more information about wastewater charges on their utility bill.

### Benchmarking



Source: Municipal Benchmarking Network Canada

When looking at service reliability, Calgary benchmarks well compared to other similar cities. Wastewater main backups can be caused by blocked sewer mains in homes, businesses and the community. Calgary has fewer wastewater backups and this can be attributed, in part, to a focus on addressing structural failures. We have recently developed a tool to proactively assess critical pipes in the system to ensure they are inspected and maintained with regularity.

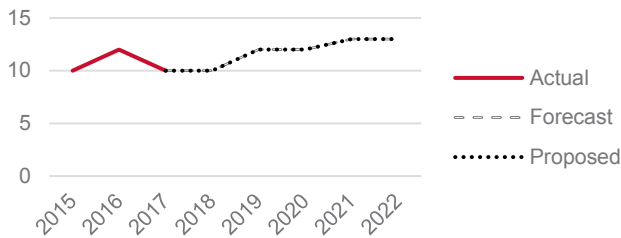
### What matters to Calgarians

VALUE DIMENSION	DESCRIPTION
Reliability	The City works to reduce sanitary sewer backups in homes, businesses and the community.
Environmental	The City manages wastewater from toilets, sinks and drains in a way that protects the environment and public health.
Responsiveness	The City responds quickly to a sanitary sewer backup in homes, businesses and the community.
Quality	The City protects public health for Calgarians and other river users through wastewater treatment.
Affordability	The City provides quality wastewater services that are cost efficient.

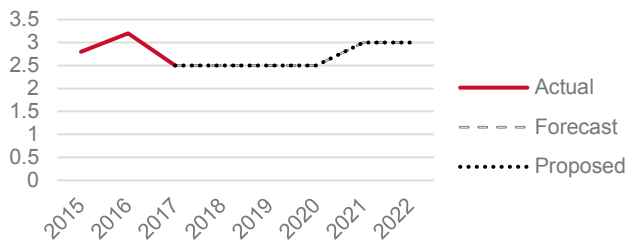


# How is the Service performing? Where we are headed and where do we want to go

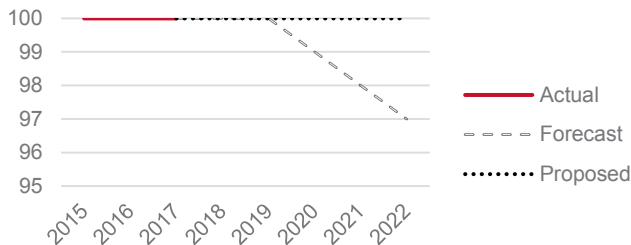
Properties impacted by interruption to wastewater service per 1000 (Number)



Time it takes to restore wastewater service (Hours)



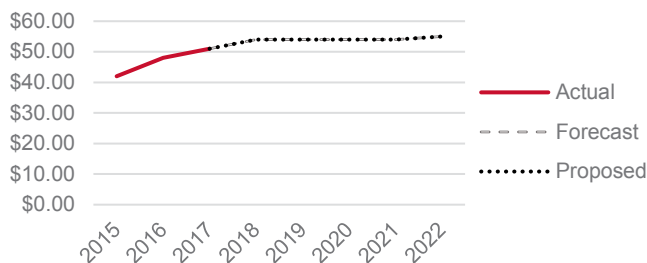
Regulations met for treated wastewater returned to the river (Percent of time)



Sewage releases from the collection system that reached a waterbody, which has resulted in regulatory enforcement actions (Number of releases)



Typical monthly single-family wastewater bill (\$/month)



## Story behind the curve

**Reliability:** Properties impacted by interruption to wastewater service per 1000

A wastewater back-up can be due to many factors such as clogs in sewer pipes, tree roots or collapsed drains. We expect this number will climb slightly due to growth in the number of properties serviced and aging infrastructure. Key strategies to address the curve are: continuing appropriate infrastructure upgrades to collect wastewater from a growing city and increasing capacity and efficiency in capital investment programs.

**Responsiveness:** Time it takes to restore wastewater service

It currently takes about 2.5 hours to restore an interruption to wastewater service. It is anticipated that this curve will climb slightly due to growth, aging infrastructure and an increase in properties who experience wastewater service interruption. Key strategies to address the curve are: investing in no-dig technology to minimize disruption to customers and improving operational response to meet customer needs. We will also better support citizens to prevent and respond to sewer backups through improved communication.

**Quality:** Regulations met for treated wastewater

Significant investments are required to comply with regulations, service a growing city and ensure a healthy river for all Calgarians and downstream river users. These include investments in growth at two of our wastewater treatment plants and working to continually strengthen relationships with regulators and our industrial customers.

**Environmental:** Sewage releases from the collection system that reached a waterbody, which has resulted in regulatory enforcement actions

There are important planned upgrades to sewer trunk pipes to reduce the risk of sewer releases from the collection system. In addition, we will continue to focus on monitoring infrastructure that runs close to water bodies, including rivers and streams. It is anticipated that this measure will remain at 0.

**Cost:** Typical monthly single family wastewater bill

A typical single family wastewater bill is currently \$54 per month. To ensure the wastewater service is cost efficient, this service has optimized personnel, is piloting no-dig technology and is using biogas to power the wastewater treatment plants, which has saved significant energy costs. Efficiencies in fleet, energy and other areas will continue to be the focus to minimize rate increases and provide valuable wastewater services to customers.



## What do we propose to do?

### What we propose to continue doing

STRATEGY
Ensure appropriate infrastructure upgrades are in place to collect and treat wastewater from our customers.
Invest in 'no dig' technology to maintain service levels in a more efficient way to minimize customer disruption.
Look at ways to improve operational response to meet customer needs.
Explore and develop a resource recovery strategy to reduce the environmental footprint and create new products.
Monitor the wastewater network to prevent sewer releases.
Work closely with customers and stakeholders to seek opportunities to improve effectiveness and efficiency of the service.
Look for efficiency opportunities in energy, fleet and the delivery of capital program.

#### Why?

The delivery of wastewater services is essential to protect the health of citizens and the environment. It is important that we continue to optimize operational plans and make investments in infrastructure to meet the needs of a growing city while working closely with regulators to protect property and the river for citizens and all river users. The Water Utility will continue to look for more effective ways to provide the service through new technology.

### What we propose to do less of

STRATEGY
Capital maintenance in 2019-2022 by investigating the appropriate levels of investment to address infrastructure risk.

#### Why?

The Utility has recognized opportunities to reduce capital maintenance programs to determine the appropriate level of investment for infrastructure lifecycle cost, risk and performance.

### What we propose to do more of or include as a new offering

STRATEGY
Work with regulators and make additional investment in wastewater treatment upgrades to meet regulatory compliance.
Work to adapt to the impacts of climate change by considering climate change parameters into capital design and operating activities.
Support citizens to prevent and respond to sewer backups in home through improved communications.

#### Why?

The most significant pressure for this service is continuing to maintain regulatory compliance while supporting a growing economy and population. It is anticipated the service will be out of compliance if efforts are not made to turn the curve. Key strategies include working with regulators, making investments in the wastewater treatment plants and investments in monitoring programs to optimize capital investments, all while considering the impacts of climate change.



## What Operating Budget do we need to achieve these results and strategies?

For Council Approval

SERVICE PERFORMANCE RESULTS FOR 2019-2022	CURRENT	TREND
Properties impacted by interruption to wastewater service per 1000(Number)	10	↑
Time it takes to restore wastewater service (Hours)	2.5	↑
Regulations met for treated wastewater returned to the river (Percent of time)	100	↔
Sewage releases from the collection system that reached a waterbody, which has resulted in regulatory enforcement actions (Number of releases)	0	↔
Typical monthly single family wastewater bill (\$/month)	54	↑

### Breakdown of net operating budget (\$000s)

	2019	2020	2021	2022
Previous Year's Budget	(492)	-	-	-
Less Previous Year one Time	-	-	-	-
Base	(492)	-	-	-
Revenue Changes	(34,198)	(33,380)	(34,993)	(25,123)
Internal Recovery Changes	-	-	-	-
Inflation	3,910	5,562	5,912	6,174
Operating Impact of Previously Approved Capital	3,796	11,565	10,543	5,066
Operating Impact of New Capital (Incremental)	-	-	-	-
Efficiencies	(2,478)	(774)	(308)	(384)
Service Reductions	-	-	-	-
Service Increases	29,449	17,027	18,846	14,267
One Time	-	-	-	-
Realignments	13	-	-	-
Total	-	-	-	-

### Total Operating Budget (\$000s) for Approval

	2018 Budget	2019			2020			2021			2022		
	At Mar 31	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total
<b>Expenditure</b>	377,116	411,806	-	411,806	445,186	-	445,186	480,179	-	480,179	505,302	-	505,302
<b>Recoveries</b>	(12,129)	(12,129)	-	(12,129)	(12,129)	-	(12,129)	(12,129)	-	(12,129)	(12,129)	-	(12,129)
<b>Revenue</b>	(365,479)	(399,677)	-	(399,677)	(433,057)	-	(433,057)	(468,050)	-	(468,050)	(493,173)	-	(493,173)
<b>Net</b>	(492)	-	-	-	-	-	-	-	-	-	-	-	-



# Recommended Capital Investment to Support Service Delivery

For Council Approval

## Capital Budget for Council Approval

ACTIVITY	DESCRIPTION	2019 REQUEST (\$000s)	2020 REQUEST (\$000s)	2021 REQUEST (\$000s)	2022 REQUEST (\$000s)	2023+ REQUEST (\$000s)	Total REQUEST (\$000s)
Annual Investment Program(s)		-	-	-	-	-	-
Project(s)		-	-	-	-	-	-
Program(s)		44,087	53,292	194,377	163,053	-	454,809
455739	Wastewater Treatment Plants	(176)	19,851	123,218	96,546	-	239,439
456129	Wastewater Collection Network	44,263	33,441	71,159	66,507	-	215,370
<b>Sub-Total (New Budget Requests)</b>		44,087	53,292	194,377	163,053	-	454,809
Previously Approved Budget Remaining		223,852	240,577	-	-	-	464,429
<b>Total Capital Investment</b>		267,939	293,869	194,377	163,053	-	919,238

## Explanation of Capital Budget Requests

### Program(s)

#### Activity 455739: Wastewater Treatment Plants

New Budget Request of \$239,439 thousand for treatment capacity expansions to accommodate population growth, and investments to address capital maintenance needs and regulatory requirements.

Funding from Capital Reserves (\$167,724 thousand) and Self-supported Debt (\$71,715 thousand)

Operating Impact of Capital: None

#### Activity 456129: Wastewater Collection Network

New Budget Request of \$215,370 thousand to maintain the delivery of Wastewater services in existing communities, extend services to new Calgary communities, and address annual capital maintenance needs.

Funding from Capital Reserves (\$151,798 thousand) and Self-supported Debt (\$63,572 thousand)

Operating Impact of Capital: None