Water Treatment & Supply

Led by: Water Services & Water Resources

Description:

This service ensures access to drinking water now and for generations to come. This service treats and delivers water to customers, ensuring reliability and availability. It protects public health and ensures long-term sustainability of water resources. Water is our most valuable natural resource. Plants, pipes, pumps and people work 24/7, 365 days a year to protect public health by providing clean drinking water for over one million Calgarians and the region. Calgarians are able to turn on the tap and receive safe and clean drinking water thanks to a dedicated team of experts and forward-thinking investment in infrastructure.

Customers:

Our customers are water users in Calgary and the region. This includes residential users, commercial customers (e.g. hotels and restaurants), institutional customers (e.g. hospitals and schools) and industrial customers (e.g. food producers). Developers also receive direct guidance and oversight on infrastructure design and construction.

What is delivered to customers:

Customers receive high-quality, safe drinking water and a protected water supply for the future.

Partners:

Non-governmental organizations, community groups and education partners
Other orders of government (e.g. Alberta Health, Alberta Environment and Parks)
Upstream and downstream municipalities and river users
Other City services (e.g. Fire, Emergency Management, Roads, Parks, Planning)
Developers
Regional municipalities
Calgary Metropolitan Regional Board

Service need (value proposition):

Reliable water service provides the foundation to a healthy and green city. It ensures public health, allows for fire protection, and the health of the rivers and the economy.
Calgary's roots are at the confluence of the Bow and Elbow rivers, and our city continues to grow around these two safe water supplies. Protecting and managing the health of our rivers today ensures high-quality drinking water is available for future generations. As Calgary's population continues to grow, so does the demand on our rivers. Since we have a finite supply of water, we need to use it wisely to ensure we have enough to meet our future water demands. Customers are committed to water efficiency and protecting Calgary's rivers, and we play a leadership role in supporting Calgarians and businesses to reduce their water consumption.

Current state service value

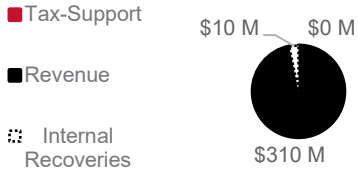
100%
water quality regulations met

187 litres
of water used by average citizen daily

30%
expected reduction in water use by 2033

96%
customers satisfied with drinking water

2018 Budgeted Gross Operating Expenditures Funding Breakdown ($ Millions)*



** Gross operating budget and the service cost ratio may include internal recoveries that are also included in other services gross operating budget.*

0.04 cents
Cost per glass

Connections to Citizen Priorities

What the service includes

This service has no sub-services.

Key Capital Investments

Significant investments will be made to improve resiliency to drought, support population growth, maintain aging infrastructure and reduce the energy footprint and costs of supplying water.

What we've heard and service outlook

What we heard: Research & Engagement Results

Customers value public health, availability, sustainability and cost. 94 per cent of citizens are satisfied with the quality of water and 60 per cent agree they pay a fair price. Customers believe that everyone should pay for the water they use. Commercial customers have expressed need for cost efficiency. Customers call with questions about water use, monthly service charges and how their water meter works. Further, when service is interrupted, customers want to know when service will be returned. Customers actively participate in water efficiency and 83 per cent of citizens care about The City's commitment to protect river areas.

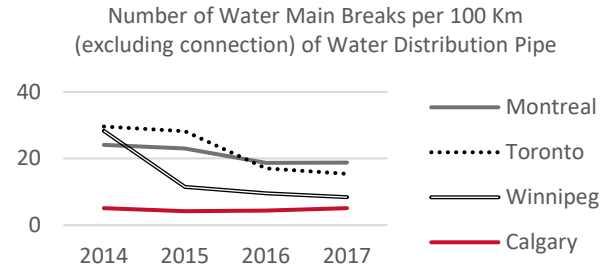
What Council has directed

H1/H3 – Climate change will alter how and when we receive precipitation in Calgary's watershed, affecting both water quantity and quality. Improving water management practices, land use planning and storage capacity will strengthen resiliency to a changing climate. The Water Utility is focused on ensuring a sustainable water supply for the future. N4/N5 – Greenfield community development and redeveloped communities rely on reliability and availability of drinking water. A reliable water service enables development to meet goals of the Municipal Development Plan and Calgary Transportation Plan while minimizing the cost of growth. This service aligns to the Water Efficiency Plan, the Policy on Regional Water, Wastewater and Stormwater Servicing (CP2018-01) and the Water Management Strategic Plan (CSPS026).

What are we watching?

It is expected that peak day demand (demand on the highest water use day of the year) will go down as less water is used per capita and this impacts timing of infrastructure investments. Climate change will alter how and when we receive precipitation in Calgary's watershed. The City's water supply will be impacted by an increased likelihood of flood events and multi-year drought conditions. Water supply and demand will need to be managed effectively, and water storage capacity will become increasingly important. Warming temperatures will affect water quality, impacting the ability of water treatment facilities to meet Calgary's needs. In addition, there is uncertainty on the expectations for water supply service in the region. Changing regulatory expectations and associated processes and documentation requirements means flexibility in operational planning is required.

Benchmarking



Source: Municipal Benchmarking Network Canada

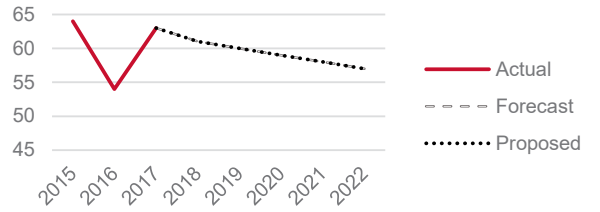
The number of water main breaks is one indicator of service performance and provides a view into the reliability and availability of drinking water. Most unplanned service interruptions can be attributed to water main breaks. Main breaks occur for a variety of reasons including: pipe age, pipe material, soil conditions, ground and water temperature, and pressure changes in the water supply system. Calgary continues to perform well compared to similar cities. Through leading edge pipe inspection tools and advanced data analysis, Calgary aims to replace the most critical pipes at the right time.

What matters to Calgarians

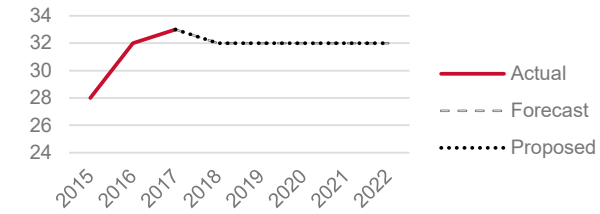
VALUE DIMENSION	DESCRIPTION
Quality	Drinking water is high quality and safe to drink.
Sustainability	The City works to protect the water supply.
Reliability	Drinking water is available easily and with few disruptions.
Responsiveness	The City restores water service quickly.
Affordability	The City provides quality water services that are cost efficient.

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

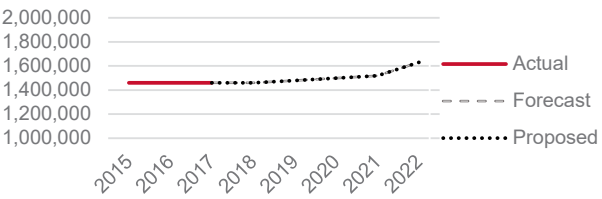
Average time to restore water service during a main break (Hours)



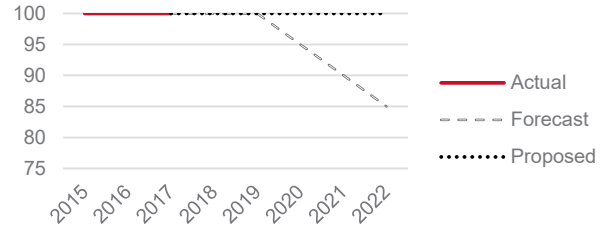
Properties impacted by interruptions to water service per 1000 (Number)



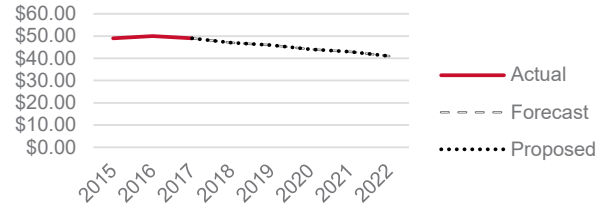
Total population Calgary can provide water to on peak day (Population)



Regulations met for treated drinking water quality (Percent of time)



Typical monthly single family water bill ($/month)



Story behind the curve

Responsiveness: Average time to restore water service during a main break.

It is expected that time to restore service will improve in the next four years as operational improvements are realized. In addition, the water service will improve operational practices during water service interruption and improve communication to impacted customers.

Reliability: Properties impacted by interruption to water service per 1000.

It is expected that this number will be maintained over the next few years. This is due to the benefit of past investments to reduce watermain breaks and a focus on pipe valve repair to ensure continuity of water service. As well, the water service will continue to implement risk-based operational maintenance plans to minimize customer disruption.

Sustainability: Total population that can be accommodated on a peak day.

Calgarians have an expectation that The City's water supply is managed for the future. Over the long-term it is expected that maximum day demand will stay consistent as an increasing population is serviced and this impacts water treatment infrastructure planning. Key strategies include: increased peak day demand conservation programming, regional supply planning, monitoring growth and capacity of water treatment plants and increasing the ability to address water loss in the system.

Public health: Regulations met for treated water.

Operational planning and increasing documentation is required to meet regulations and process requirements. Key strategies in this business cycle to maintain compliance include continual evaluation and mitigation of risks to water quality events occurring, implementation of source water protection activities, strengthening relationships with regulators and doing more to optimize water treatment assets and resources.

Cost: Typical monthly single family water bill.

A typical single family water bill is $47 per month. The service continues to provide services that are cost efficient by implementing opportunities including optimizing fleet and energy saving opportunities at the water treatment plants. A long-term metering strategy will also be developed to meet the needs of a new servicing contract and to understand the costs and benefits of alternative metering opportunities.

What do we propose to do?

What we propose to continue doing

STRATEGY
Implement and complete risk-based operational maintenance plans to minimize customer disruption.
Work with stakeholders to reduce the risk to our source water to ensure the quality and quantity of the City's drinking water.
Strengthen relationships with regulators to maintain regulatory compliance.
Partner with customers to conserve water and to reduce peak day water demand.
Monitor growth and optimize capacity of water treatment plants.
Optimize resources to ensure water is restored quickly.
Look for efficiency opportunities in energy, fleet and the delivery of the capital program.

Why?

The delivery of water service is essential to maintain public health and the Utility will continue to evaluate and address risks to water quality. Reliability of water service is vital to Calgarians. We will continue to ensure continuity of water service by improving pipe valve maintenance and replacement. When water service interruptions occur, we will restore water as quickly as possible.

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 to adapt to the impacts of climate change by considering climate change parameters into capital design and operating activities.
Improve operational practices during a water service interruption and improve communication to impacted customers.
Improve the ability to address water loss in the water system.
Develop a long-term meter strategy and the cost and benefits of alternative metering opportunities.

Why?

Secure, high-quality water supplies are essential for Calgary and the region. To facilitate future growth and long-term sustainability, including climate resiliency, the water service models and manages source water and treated water storage while optimizing water treatment plant production. New efforts are required to address water loss in the system, development of a metering strategy and understand the costs and benefits of future metering opportunities.

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

For Council Approval

SERVICE PERFORMANCE RESULTS FOR 2019-2022	CURRENT	TREND
Average time to restore water service during a main break (Hours)	61	↓
Properties impacted by interruptions to water service per 1000 (Number)	32	↔
Total population Calgary can provide water to on peak day (Population)	1,460,000	↔
Regulations met for treated drinking water quality (Percent of time)	100	↔
Typical monthly single family water bill ($/month)	47	↓

Breakdown of net operating budget ($000s)

	2019	2020	2021	2022
Previous Year's Budget	-	-	-	-
Less Previous Year one Time	-	-	-	-
Base	-	-	-	-
Revenue Changes	(7,534)	(3,489)	(2,856)	(912)
Internal Recovery Changes	-	-	-	-
Inflation	4,537	3,029	2,895	3,491
Operating Impact of Previously Approved Capital	(1,244)	2,717	2,856	1,116
Operating Impact of New Capital (Incremental)	-	-	-	-
Efficiencies	(1,593)	(812)	(633)	(243)
Service Reductions	-	-	-	-
Service Increases	5,834	(1,445)	(2,262)	(3,452)
One Time	-	-	-	-
Realignments	-	-	-	-
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
Expenditure	320,368	327,903	-	327,903	331,392	-	331,392	334,248	-	334,248	335,160	-	335,160
Recoveries	(10,396)	(10,396)	-	(10,396)	(10,396)	-	(10,396)	(10,396)	-	(10,396)	(10,396)	-	(10,396)
Revenue	(309,972)	(317,507)	-	(317,507)	(320,996)	-	(320,996)	(323,852)	-	(323,852)	(324,764)	-	(324,764)
Net	-	-	-	-	-	-	-	-	-	-	-	-	-

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)		40,735	99,108	97,763	114,100	-	351,706
460989	Facilities, Equipment & Technology	8,353	11,860	11,449	10,710	-	42,372
459259	Water Treatment Plants	(4,011)	21,449	19,817	21,566	-	58,821
460940	Water Distribution Network	36,393	65,799	66,497	81,824	-	250,513
Sub-Total (New Budget Requests)		40,735	99,108	97,763	114,100	-	351,706
Previously Approved Budget Remaining		81,040	58,273	-	-	-	139,313
Total Capital Investment		121,775	157,381	97,763	114,100	-	491,019

Explanation of Capital Budget Requests

Program(s)

Activity 460989: Facilities, Equipment & Technology

New Budget Request of $42,372 for investments in two categories. Technology: the majority of the budget is dedicated to technology software and hardware. Facilities and Equipment: this category includes investments in small tools and equipment, lab equipment and building maintenance.
Funding from Capital Reserves
Operating Impact of Capital: None

Activity 459259: Water Treatment Plants

New Budget Request of $58,821 thousand for investments primarily focused on capital maintenance programs, upgrades to pump stations, energy efficiency, and plants capacity optimization.
Funding from Capital Reserves ($44,327 thousand) and Self-supported Debt ($14,494 thousand)
Operating Impact of Capital: None

Activity 460940: Water Distribution Network

New Budget Request of $250,513 thousand to maintain the delivery of Water services in existing communities, extend services to new Calgary communities, and address annual capital maintenance needs.
Funding from Capital Reserves ($206,036 thousand) and Self-supported Debt ($44,477 thousand)
Operating Impact of Capital: None