

Stormwater Management

Led by: Water Services & Water Resources

Description:

This service ensures that property is protected from flooding and ensures our watersheds are healthy by working with citizens and partners. The stormwater management service collects and manages water from rain or snow/ice melt by moving it into the nearest river or creek through storm drains, pipes and ponds. To ensure Calgarians are prepared for flooding, we work with the community and other orders of government. We monitor the river to determine water quality and quantity, assess river bank health, and we are involved in land use and development issues that can impact our water quality and flood risk.

Customers:

All Calgarians benefit directly from this service, specifically homes, businesses and communities at higher risk of flooding. Reducing storm runoff and sediment in the river creates city-wide benefits, as does improving the health of river banks. Developers also receive direct guidance and oversight as they conduct stormwater design and planning.

What is delivered to customers:

Stormwater, the water from rain and melting snow, is collected and diverted, reducing local and river flooding. Stormponds and green infrastructure treat the stormwater, sediment and other pollutants, and it is then discharged to rivers, creeks and other natural water bodies.



Partners:

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

Service need (value proposition):

Reliable stormwater service provides the foundation to a healthy and green city. This service plays a critical role during rainfall events by collecting and diverting rain. It reduces risk to property, ensures public safety, and allows customers to maintain mobility and access services in the city. Through a multi-pronged approach to flood mitigation, improving the quality of river banks and public flood preparedness and readiness programs, this service improves our city's resilience. Our rivers and wetlands are a big part of what makes Calgary such a great place to live – 83 per cent of Calgarians say that river areas are important to them. This service limits the sediment going into the river, ensuring healthy rivers and river banks, which allows the quality of the rivers to be maintained for Calgarians and downstream users and to preserve healthy fish and wildlife populations.

Current state service value

<p>83% of Calgarians say rivers are important</p> <p>260 flood projects completed since 2013</p>	<p>30,000 tonnes sediment kept out of river per year</p> <p>10:1 payback on flood investments</p>	<p>2018 Budgeted Gross Operating Expenditures Funding Breakdown (\$ Millions)*</p>  <p>\$1,000 Cost to manage rainfall and snowmelt for one square block</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>Connections to Citizen Priorities</p> 		<p>What the service includes This service has no sub-services.</p> <p>Key Capital Investments Investments address flooding resiliency and stormwater quality. These include stormwater management upgrades in older communities, projects to reduce the impact of flood events and ongoing maintenance of stormwater management infrastructure.</p>



What we've heard and service outlook

What we heard: Research & Engagement Results

Customers value river health, reducing risk, resilience, and service cost. We've heard from customers about the importance of flood prevention and protecting natural areas and rivers. There is also a shared responsibility with flood preparedness: The City's responsibility to protect flood-prone communities and property owners' acceptance of flood risk. Most 311 service requests are related to storm ponds (e.g. aesthetics, odours, and amenities) and catch basin clearing. Developers have expressed concern for consistency with developing stormwater infrastructure and they believe cost and effort are barriers to development.

What Council has directed

H1/H3 Climate change will alter how and when we receive precipitation in the watershed. Improving water management practices, land use planning and design capacity of stormwater systems will strengthen resiliency.

N4/N5 Greenfield community development and redeveloped communities rely on stormwater management services.

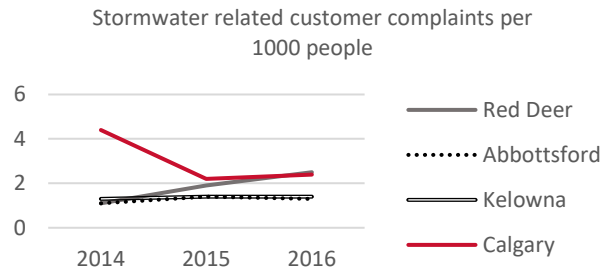
Stormwater management services supports development to meet goals of the Municipal Development Plan and Calgary Transportation Plan while minimizing the cost of growth.

This service aligns to the Stormwater Management Strategy, the Riparian Strategy, the Bow Basin Watershed Management Plan, the Policy on Regional Water, Wastewater and Stormwater Servicing(CP2018-01) the Wetland Conservation Plan and Policy(CSPS029), Complete Streets Policy(TP021) and the Residential Street Design Policy(TP018).

What are we watching

Climate change will alter how and when we receive precipitation and could lead to increased localized and river flooding. Past natural disasters will influence government and insurance industry support and cost recovery. Improvements in land use policies may be required to protect property. The regulatory environment continues to evolve, resulting in the need to manage and design stormwater infrastructure to meet changing standards and regulatory requirements. This requires flexibility in operational planning and has implications for future operational needs. The complexity of this service also demands improved engagement with customers and stakeholders. With a better understanding of customer expectations, we can be more responsive to address complexity around stormwater infrastructure: from maintaining storm ponds, working with developers and working with customers on lot drainage needs.

Benchmarking



Source: National Water & Wastewater

Customer complaints captured in this indicator provides a view into the resiliency of the system. When benchmarked against comparable cities, complaints are typically relative to the number and duration of storms experienced, the total precipitation, and the urban density of the impacted areas. Due to Calgary's urban density, we are currently on the high side of complaints when compared to similar cities. To improve resiliency, we will prioritize catch basin cleaning, continue to engage the community around storm infrastructure and improve communication during storm events.

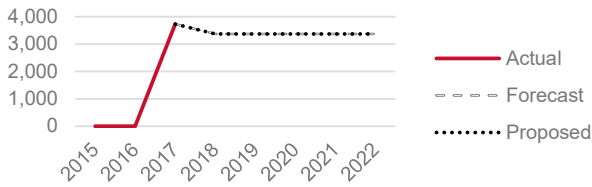
What matters to Calgarians

VALUE DIMENSION	DESCRIPTION
Reduces risk	The City works to reduce flooding from rain and snow melt that impacts homes, businesses and the community.
Resilient	Calgary is prepared for flooding and recovers quickly.
Environmental	The City works to keep our rivers and surrounding natural areas healthy by reducing the impact of urban activities and development.
Affordability	The City provides quality stormwater management services that are cost efficient.

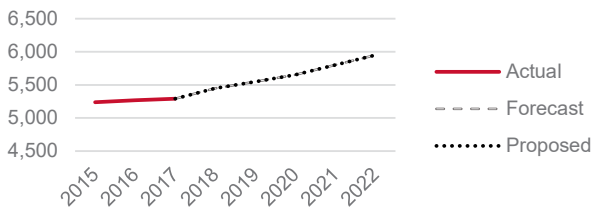


How is the Service performing? Where we are headed and where do we want to go?

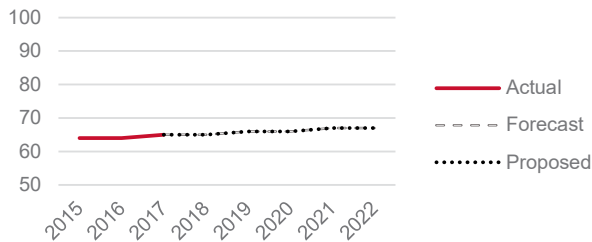
Number of flood prone properties (Properties at risk of localized flooding for 1 in 100 return period) (Number of properties)



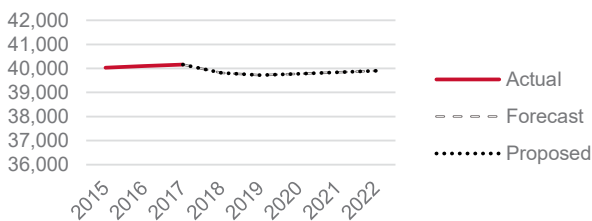
Properties at risk of river flooding for 1 in 100 return period (Number of properties)



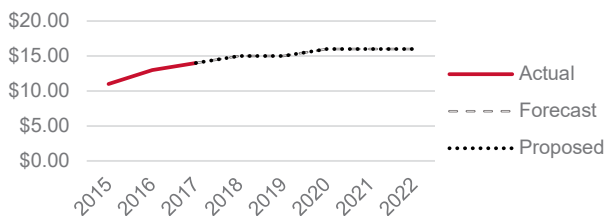
River bank areas that are healthy (Percentage)



Stormwater quality entering the Bow river (Kilograms of sediment)



Typical monthly stormwater bill for all customers (\$/month)



Story behind the curve

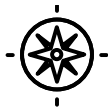
Resiliency and reduces risk: Number of properties at risk of localized flooding for 1 in 100 return period. The curve will not immediately reflect the improvements that have been made; however, as more analysis is conducted on projects at the design stage over time, data will be available to show any improvements to the curve. A key strategy in this area is implementing the Community Drainage Improvement (CDI) program which typically focuses on reducing local flooding during 1:50 year events. In some neighbourhoods, achieving the 1:100 standard is cost prohibitive; in others the investment is an intermediate step.

Resiliency and reduces risk: Properties at risk of river flooding for 1 in 100 return period. The curve is expected to worsen if strategies are not implemented to address risk of flooding. Key strategies include advocacy for land use policy that supports flood resiliency, continued engagement with the Province on the Flood Mitigation Plan and continued flood resiliency capital investments such as barriers and outfalls.

Environmental: River bank areas that are healthy. The Riparian Action Program 2026 target is to improve city wide river health (achieve 72 per cent, up from 65 per cent today.) Healthy river banks are integral to maintaining a healthy river system and can play a role in slowing flood waters. Key activities aligned to the Action Program are increased monitoring of river bank sites, rehabilitation of unhealthy sites and continued education for stakeholders and citizens on the value of these areas.

Environmental: Stormwater quality entering the Bow river. Efforts are required to ensure long-term mitigation of sediment loading to the river to address regulatory compliance. Key strategies include increasing knowledge to maintain and operate stormwater infrastructure, proactive risk based education to address erosion and sediment control and improved customer and stakeholder engagement to address barriers to stormwater infrastructure development.

Cost: Typical monthly stormwater bill. A typical stormwater bill is currently \$15 per month. To be cost efficient, the service has implemented a variety of strategies including engaging with customers to make informed choices on future investments for flood resiliency and working with other orders of government to fund flood resiliency work. Efficiencies in fleet and other areas will continue to be a focus to minimize rate increases and provide valuable stormwater services to customers.



What do we propose to do?

What we propose to continue doing

STRATEGY
Advocate for land use policy that supports flood resiliency.
Engage and advocate with the Government of Alberta to fund and implement the Flood Mitigation Plan.
Work with Calgarians to ensure they are prepared for future flooding, and are more resilient to floods.
Invest in flood resiliency capital projects such as barriers and storm outfalls and other infrastructure.
Look for efficiency opportunities in fleet and the delivery of the capital program.
Develop our knowledge and practices to maintain and operate green (natural) and grey (traditional) stormwater infrastructure.

Why?

Customers report that reducing risk of flooding is important so we will continue to invest in community drainage improvements and implement a multi-pronged flood resiliency approach. As stormwater practices and standards evolve and new issues emerge, we must continue to develop our understanding of how to effectively build, operate and maintain stormwater infrastructure to meet water quality guidelines while city densification and growth increases.

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 find savings through reducing the maintenance program for storm ponds in order to determine the appropriate level of investment in the future.

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

STRATEGY
Improve localized flooding efforts, proactive maintenance and operational response, including time to resolve drainage issues.
Deliver the Riparian Action Program implementation activities.
Engage with customers and evaluate and implement strategies to effectively manage stormwater including tools to improve customer equity.
Provide proactive risk based erosion and sediment control education and inspection activities.
Work to adapt to the impacts of climate change by considering climate change parameters into capital design and operating activities.

Why?

The stormwater service will set new direction for the Water Utility's approach to stormwater management and how it works with customers and stakeholders to be successful in managing stormwater runoff and sediment loading to the river. More activities will take place to address river bank health and work will also be required to support the assessment of a variable rate funding model to support customer equity.



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

For Council Approval

SERVICE PERFORMANCE RESULTS FOR 2019-2022	CURRENT	TREND
Number of flood prone properties (Properties at risk of localized flooding for 1 in 100 return period) (Number of properties)	3,371	↔
Properties at risk of river flooding for 1 in 100 return period (Number of properties)	5450	↑
River bank areas that are healthy (Percentage)	65	↑
Stormwater quality entering the Bow river (Kilograms of sediment)	39810	↔
Typical monthly stormwater bill for all customers (\$/month)	15	↑

Breakdown of net operating budget (\$000s)

	2019	2020	2021	2022
Previous Year's Budget	13	-	-	-
Less Previous Year one Time	-	-	-	-
Base	13	-	-	-
Revenue Changes	(1,252)	(3,391)	(2,992)	(2,252)
Internal Recovery Changes	-	-	-	-
Inflation	1,978	531	544	691
Operating Impact of Previously Approved Capital	(499)	1,778	2,070	86
Operating Impact of New Capital (Incremental)	-	-	-	-
Efficiencies	(1,550)	(124)	(104)	(68)
Service Reductions	-	-	-	-
Service Increases	1,323	1,206	482	1,543
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
Expenditure	73,898	75,137	-	75,137	78,528	-	78,528	81,520	-	81,520	83,772	-	83,772
Recoveries	(1,322)	(1,322)	-	(1,322)	(1,322)	-	(1,322)	(1,322)	-	(1,322)	(1,322)	-	(1,322)
Revenue	(72,563)	(73,815)	-	(73,815)	(77,206)	-	(77,206)	(80,198)	-	(80,198)	(82,450)	-	(82,450)
Net	13	-	-	-	-	-	-	-	-	-	-	-	-



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)		209	77,612	75,087	58,585	-	211,493
453429	Drainage Facilities & Network	209	77,612	75,087	58,585	-	211,493
Sub-Total (New Budget Requests)		209	77,612	75,087	58,585	-	211,493
Previously Approved Budget Remaining		72,621	9,558	-	-	-	82,179
Total Capital Investment		72,830	87,170	75,087	58,585	-	293,672

Explanation of Capital Budget Requests

Program(s)

Activity 453429: Drainage Facilities & Network

New Budget Request of \$211,493 thousand to maintain the delivery of Stormwater services in existing communities, extend services to new Calgary communities and improve service in flood prone areas.

Funding from Capital Reserves (\$104,349 thousand), Other Provincial Grants (\$56,590 thousand) and Self-supported Debt (\$50,554 thousand)

Operating Impact of Capital: None