

# Infrastructure & Engineering

Led by: Director of Business & Engineering Services

## Description

The Infrastructure & Engineering service enables the highest asset and project management standards on The City's infrastructure projects for public safety, regulatory compliance and investment optimization. This support service is provided to teams involved in new capital projects or managing existing assets. The service includes:

- Asset and project management
- Capital contract management
- Corporate energy oversight
- Engineering practice oversight
- Field surveying
- Right of way management
- Grants, Partner & Industry Relations

## Value and benefits

The City's front-line operations require support to ensure that infrastructure value for Calgarians is maximized, while minimizing service disruption and public safety and security risks. This service reduces The City's legal, financial and reputational risks and environmental impacts. It improves accountability and transparency to taxpayers by using industry best practices and following legislative requirements in sustainability, engineering, survey control and asset and project management.

## Customers

City of Calgary business units, civic partners and related authorities, external utilities, private/not for profit organizations.

## What we deliver

We provide information and services that enable infrastructure investment plans, lifecycle cost and risk analysis, project documentation, energy audits, drawings, and survey control. Examples include: Infrastructure Status Report, Asset Management Plan, Project Plan, Engineering Compliance Review, Block Profile, Field Survey Report.

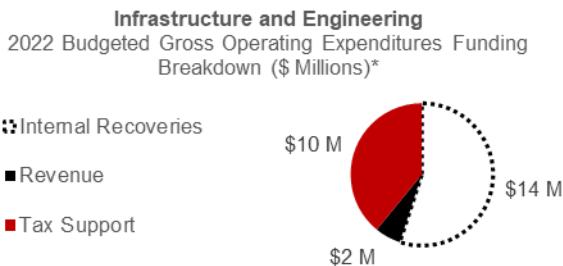
## Partners

Information Technology, Supply Management, Law, ENMAX Corporation, Association of Professional Engineers and Geoscientists of Alberta (APEGA), Consulting Engineers of Alberta, Calgary Construction Association, Government of Alberta

\$100.3 billion	The City's infrastructure asset value
20,813,068 kWh	Total City solar electricity production
1,500	Requests for surveying services
1,008,047	Meters of utility alignments reviewed

## Key assets

Asset management software systems, project and portfolio management software system (P2M), field surveying equipment.



\* Gross operating budget may include internal recoveries that are also included in other services' gross operating cost.

Note: Internal recoveries is how The City accounts for the costs of goods or services between services

# What we have heard & what we are watching

## What we have heard

Calgarians believe in prioritizing investments in our city, including new businesses that will help create jobs, encourage trade and tourism, and invest in multipurpose infrastructure and downtown revitalization. Calgarians continue to expect high value for their tax dollars and depend on our services such as: engineering and project management services and energy management through sustainable building policy. We will continue to oversee the practice of engineering and geoscience at The City to deliver safe and resilient infrastructure. Resilience is a Council focus, including investing in infrastructure lifecycle maintenance and a review of asset strategy to ensure citizens are getting best value for infrastructure investment. We will continue to build partnerships, improve service delivery and protect The City's interests.

## What Council has directed

**Economic Resilience:** asset/project management and engineering services support planning and delivering safe and resilient infrastructure.

**Climate Resilience:** identify and implement ways to reduce energy consumption, energy costs and environmental impacts.

**Invest in Infrastructure:** optimize and prioritize capital funding for services by guiding how we use and manage corporate assets for effective service delivery.

**Build Strong Communities:** manage utility rights-of-way, which helps plan and develop accessible neighbourhoods. Surveys and technological solutions support transportation and mobility optimization.

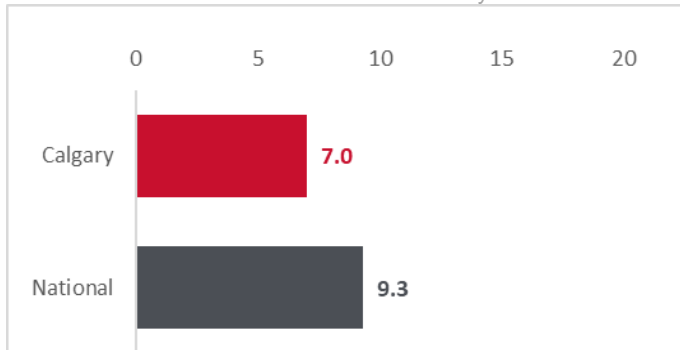
**Downtown Revitalization and Transit:** enable transparent and accountable infrastructure decision-making and play a role in Council's focus areas where infrastructure decisions are embedded

**Modernizing Government:** provide innovative solutions and cost savings that mitigate infrastructure risks.

## What we are watching

Limited and unpredictable funding will widen the infrastructure gap (difference between available and needed investment to fund maintenance, growth, and operating requirements of our assets). Along with inflation and supply chain issues, this could delay infrastructure investments impacting service levels and our ability to address assets deterioration. We must monitor climate change impacts to our assets and services and develop mitigation strategies by leveraging innovative technology. Infrastructure asset management plays a large role in reaching net-zero emissions by 2050. There is continued public expectation for strict compliance to engineering standards and practices, legislation/regulation requirements and industry best practices to ensure public safety. Given the trends and competing priorities, the service plays a crucial role in supporting investment decision-making and project delivery while balancing public safety, municipal resiliency, and affordability.

Per cent of Infrastructure in Poor and Very Poor Condition



2020 City of Calgary Infrastructure Status Report (Calgary Data);  
2019 Canadian Infrastructure Report Card (National Data)

## Comparing our service

Analysis of infrastructure condition is important for identifying short and long infrastructure risks and investment needed to address it. Comparison with national data indicates that Calgary is in a similar, but slightly better, situation as many Canadian municipalities when it comes to addressing infrastructure condition challenges. Active and continuous monitoring of infrastructure's state and ensuring budget decisions align with identified infrastructure needs will allow us to ensure service continuity and address any conditions where public safety is at risk.

# Measuring performance & where we want to go

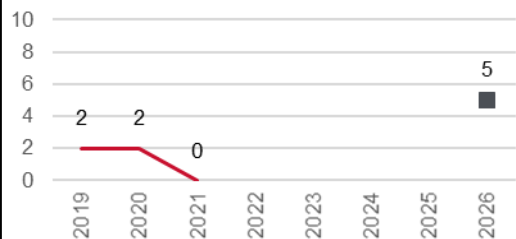
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— Actuals ■ Expected Future Performance

PM1: Asset-intensive service lines with completed maturity assessment (per cent)



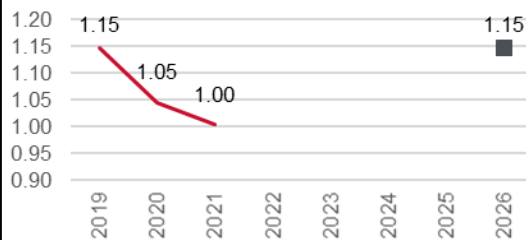
PM2: Number of completed Value Management studies



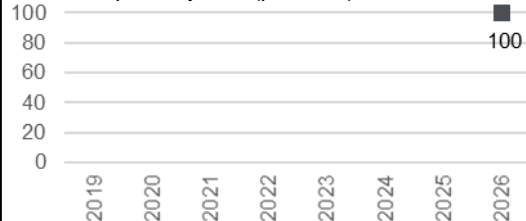
PM3: Capital managed in the corporate Project Management System (per cent)



PM4: Energy used to deliver all City services, per Calgarian (megawatt hours equivalent)



PM5: Professional members who have completed Professional Practice Management Plan training within the past 2 years (per cent)



## Story behind the curve

The City services provided to Calgarians are grouped into 61 service lines with 21 of them being asset-intensive. Robust asset management practices are a foundation for advancing City's goals to provide safe, effective and efficient service delivery and keeping the assets maintained, repaired and upgraded as needed. Maturity assessments identify strengths and gaps in asset management practices and inform recommendations and actions for asset performance and management. No historical data is available as maturity assessments will now be completed for service lines rather than business units.

Value management study is an assessment of any capital program or project on the service/functions/benefits that the future asset will be delivering to Calgarians and that identifies the investment required to build and maintain the asset during its lifecycle. This approach maximizes the value of the City's investment in infrastructure. This performance measure is about increasing capacity to provide this service to projects that require this work.

In 2022, The City started implementing a corporate-wide project management system for infrastructure-related projects over a three-year period. Using the corporate project management system will improve consistency and alignment in capital project management and will enable accurate reporting on capital spending. This metric will show the percentage of our capital that is managed and reported in this new system.

The City strives to be efficient in its use of energy. Tracking total energy use to provide services to Calgarians provides a measurement of how well The City is achieving this goal. The City uses various energy sources to run its operations (e.g., gasoline and diesel to run its fleet, electricity and natural gas for its buildings). These various energy sources are converted into one standardized measurement unit. Note: during the pandemic years City's energy needs declined, however City's population was maintained/increased that resulted in skewed data for those years.

This measures the percentage of Association of Professional Engineers and Geoscientists of Alberta (APEGA) members who have completed the mandatory Professional Practice Management Plan training within the past 2 years. Engineering governance is developing a tool to champion, track and audit this training as part of The City's responsibility as an APEGA Permit to Practice Holder.

## What we plan to do

### Result for 2023-2026

Continue further adoption and improvement of the asset and project management practices and infrastructure-related services while modernizing technology (including implementation of the project and asset management systems) and implementing a shift to a more centralized asset management network.

### How we are going to get there

Optimize investment in Calgary infrastructure by successful integration of the corporate project management software system across City operations to improve consistency and maximize efficiencies in planning, delivery, monitoring and reporting on capital projects.

Champion project and contract management excellence at The City as foundational for successful project delivery by providing project and contract management supports, training and stewarding of policy and standards.

Deliver a seamless customer service experience for Calgary businesses by continuing to effectively manage access to City lands for installation of shallow utilities and implementing a new online solution for effective processing of requests for access to City assets for installation of wireless infrastructure.

Maximize The City's efforts in securing funding for capital projects and strengthen our relationship with the development and construction industry by launching a capital grant management program and continuing to organize annual partnering with industry events.

Maximize The City's infrastructure value for Calgarians by optimizing capital contract management practices across the organization.

Ensure the highest infrastructure and land development standards through delivery of land measurement surveys, modernizing surveying technology and ongoing maintenance of survey control networks for which The City is responsible.

Improve building safety, reliability and efficiency by providing building engineering advisory services and by maintaining strict adherence to engineering and/or architectural professional standards across The City.

Oversee the practice of engineering and geoscience at The City by ensuring that professional members have completed the required professional practice training and development.

Advance The City's climate goals by guiding business units across the Corporation towards efficient energy management and reduction of greenhouse gas emissions through advisory services, stewarding relevant City policies, standards and initiatives.

Optimize City-wide infrastructure investments to ensure safety and reliability through stewardship and implementation of asset management policy, practices, processes, and systems across corporation.

Ensure tax and rate payers receive full value from investments in infrastructure assets through a City infrastructure asset portfolio evaluation to be undertaken within the Better Value for City Assets program.

Deliver service and asset-specific asset management plans, condition inspections and performance assessments to drive optimal infrastructure asset investment, with a particular focus on critical infrastructure in Roads, Transit, Water, and Waste and Recycling.

## Operating budget needed to achieve results

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

	2023		2024		2025		2026	
	Base	One-time	Base	One-time	Base	One-time	Base	One-time
Previous Year's Net Budget	8,465		5,603		5,648		5,648	
Previously approved One-time budget		-		-		-		-
2022 One-time carry forward		-		-		-		-
Revenue Changes	-	-	-	-	-	-	-	-
Internal Recoveries Changes	(3,217)	(375)	(65)	-	(74)	-	(63)	-
Inflation	53	-	65	-	74	-	63	-
Operating Impact of Previously Approved Capital	-	300	-	-	-	-	-	-
Operating Impact of New Capital (Incremental)	-	-	-	-	-	-	-	-
Service Reductions	-	-	-	-	-	-	-	-
Service Increases	3,278	75	45	-	-	-	-	-
Transfers to/(from) reserves	-	-	-	-	-	-	-	-
Transfers (to)/from services**	(2,976)	-	-	-	-	-	-	-
<b>Total net budget*</b>	<b>5,603</b>	<b>-</b>	<b>5,648</b>	<b>-</b>	<b>5,648</b>	<b>-</b>	<b>5,648</b>	<b>-</b>

\* The previous year's One-Time Budget is not carried forward to the following year.

\*\* Base budget transfer to Data Analytics and Innovation.

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

	2022 Budget	2023			2024			2025			2026		
	At April 30	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total
Expenditures	25,387	18,019	375	18,394	18,129	-	18,129	18,203	-	18,203	18,266	-	18,266
Recoveries	(13,967)	(11,486)	(375)	(11,861)	(11,551)	-	(11,551)	(11,625)	-	(11,625)	(11,688)	-	(11,688)
Revenue	(1,501)	(930)	-	(930)	(930)	-	(930)	(930)	-	(930)	(930)	-	(930)
<b>Net</b>	<b>9,919</b>	<b>5,603</b>	<b>-</b>	<b>5,603</b>	<b>5,648</b>	<b>-</b>	<b>5,648</b>	<b>5,648</b>	<b>-</b>	<b>5,648</b>	<b>5,648</b>	<b>-</b>	<b>5,648</b>
Base	8,465												
One-Time	1,454												

Note: Figures may not add up due to rounding.

# Capital budget needed to deliver service

For Council Approval

Activity	Investment Name	2023 Request (\$000s)	2024 Request (\$000s)	2025 Request (\$000s)	2026 Request (\$000s)	2027+ Request (\$000s)	Total Request (\$000s)
<b>Annual Investment Program(s)</b>							
		-	-	-	-	-	-
<b>Program(s)</b>							
480706	Asset Management Systems	4,465	1,950	960	910	-	8,285
461812	Green Building Investments	2,275	2,275	2,275	2,275	-	9,100
480705	PM Governance and Technology	5,395	1,900	1,200	1,200	-	9,695
482100	Value Management	500	500	500	500	-	2,000
482151	Asset Management Programs	1,550	1,500	1,200	1,200	-	5,450
480702	Survey Control Program	555	485	465	495	-	2,000
482153	Advance Design to Shovel Ready	-	25,000	25,000	-	-	50,000
<b>Projects(s)</b>							
482101	Naming Web Portal	100	100	-	-	-	200
432412	WID - Online	750	750	-	-	-	1,500
482102	Surveying Technology	200	200	200	200	-	800
Sub-Total (New Budget Requests)		15,790	34,660	31,800	6,780	-	89,030
Previously Approved Budget Remaining		277	-	-	-	-	277
Total Capital Investment		16,067	34,660	31,800	6,780	-	89,307

## Explanation of capital budget requests

### Program(s)

#### Activity 480706: Asset Management Systems

This program will continue to manage and enhance the corporate asset management technology, systems, processes and architecture. Asset management is essential to ensure safe and reliable infrastructure depended on by Calgarians.

Funding From: Municipal Sustainability Initiative (\$5,054 thousand) Canada Community-Building Fund (\$3,231 thousand)

Contributing Services: None

Operating Impact: None

#### Activity 461812: Green Building Investments

In support of the Sustainable Building Policy to implement policy recommendations and actions for new construction projects and building retrofits. Delivering and operating infrastructure in a sustainable and climate resilient manner while ensuring investments are made in priority areas.

Funding From: Municipal Sustainability Initiative (\$4,100 thousand) Capital Reserve (\$5,000 thousand)

Contributing Services: Facility Management; Fleet Management

Operating Impact: None

#### Activity 480705: PM Governance and Technology

The program includes funding to complete the rollout of the project and program management software and its enhancements. The program is to ensure consistency in project management (PM) methodology and acceptable systems/standards corporation wide.

Funding From: Pay-As-You-Go (\$9,695 thousand)

Contributing Services: None

Operating Impact: None

#### Activity 482100: Value Management

The program provides a central value management (VM) fund for capital programs/projects. Value management studies funded through the program will ensure optimization of the City's infrastructure investments.

Funding From: Pay-As-You-Go (\$2,000 thousand)

Contributing Services: None

Operating Impact: None

**Activity 482151: Assets Management Programs**

This program enables analysis, reporting and effective management of The City's entire asset portfolio. It is intended to minimize cost of our infrastructure while ensuring public safety, asset performance and resilience in our communities.

Funding From: Pay-As-You-Go (\$5,450 thousand)

Contributing Services: None

Operating Impact: None

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**Activity 480702: Survey Control Program**

The investment is for inspection, maintenance, expansion, and lifecycle activities for The City's portion of the Alberta Survey Control Marker Network. The City is responsible for maintaining the Alberta Survey Control Marker Network within the city limits.

Funding From: Pay-As-You-Go (\$2,000 thousand)

Contributing Services: None

Operating Impact: None

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**Activity 482153: Advance Design to Shovel Ready**

This corporate funding is for advancing capital projects to a shovel-ready state required to qualify for external grant/next cycle funding. The City needs a pool of shovel ready projects to qualify for funding available for projects with tight completion deadlines.

Funding From: Municipal Sustainability Initiative (\$40,000 thousand) Pay-As-You-Go (\$10,000 thousand)

Contributing Services: None

Operating Impact: None

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## Projects(s)

**Activity 482101: Naming Web Portal**

Public web portal for easy navigation and visual representation of historical and current asset naming, and sponsorship/naming rights opportunities. Citizens and organizations currently have little information on the naming of City assets and sponsorship opportunities.

Funding From: Pay-As-You-Go (\$200 thousand)

Contributing Services: None

Operating Impact: None

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**Activity 432412: WID – Online**

A new online system for processing wireless service providers' applications to access City infrastructure for Wireless Infrastructure Deployment (WID) The current manual processing of applications to access City infrastructure for wireless infrastructure installations is ineffective and laborious.

Funding From: Pay-As-You-Go (\$1,500 thousand)

Contributing Services: None

Operating Impact: None

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**Activity 482102: Surveying Technology**

Investigation, evaluation and determination of new surveying technologies and processes that could benefit The City. Upgrading field surveying technology is critically important for supporting the development and maintenance of City infrastructure and land projects.

Funding From: Pay-As-You-Go (\$800 thousand)

Contributing Services: None

Operating Impact: None

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