

Infrastructure Support

Led by: Corporate Analytics & Innovation

Description:

Infrastructure Support (IS) provides the specialized expertise to our customers to support their business functions of energy, project and asset management, land planning management, capital construction and policy development. Specifically, the service includes:

- Engagement, planning, design, delivery and sustainment of infrastructure assets.
- Energy and environmental resources to front-line service providers.
- Development and provision of field surveying reports, base maps.
- Asset management and budget plans.
- Advisory services in project management, engineering and energy consumptions areas.
- Managed access to City rights-of-way and infrastructure to enable risk management.

Customers:

The Corporation and Client Business Units, Civic Partners and Related Authorities, External Utilities, Private/Non-Profit Organizations.

What is delivered to customers:

Information and services which enable infrastructure investment plans, lifecycle cost and risk analysis, project documents, energy audits, drawings, survey control, and base maps.

Examples include: Infrastructure Status Report, Asset Management Plan, Project Plan, Engineering Compliance reviews, Engineered Block Profiles, Field Survey reports.

Partners:

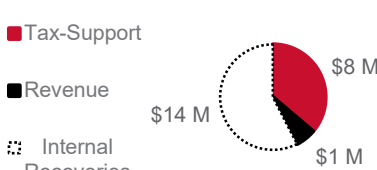

Information Technology, Supply Management, Law, Infrastructure Calgary, ENMAX, Association of Professional Engineers and Geoscientists of Alberta (APEGA), University of Calgary Urban Alliance, Consulting Engineers of Alberta, Calgary Construction Association, Government of Alberta.

Service need (value proposition):

The City's front-line services and operations require support from infrastructure assets, energy and environmental resources to ensure that value to citizens is maximized while minimizing service disruption, public safety and security risk, energy/environmental impact and cost.

Specifically, this service is required to reduce legal and reputational risks to The City and acts to improve accountability and transparency to the tax payer based upon industry-recognized sustainability, engineering, survey control, as well as asset and project management practices. As a result, it ensures The City is following legislative requirements for the above noted practice areas.

Current state service value

<p>1,700 surveying projects</p> <p>5,300 buildings mapped</p>	<p>35,054 new addresses created in 2017</p> <p>\$ 84.5 B worth of assets guided by IS</p>	<p>2018 Budgeted Gross Operating Expenditures Funding Breakdown (\$ Millions)*</p>  <p>\$1,300 Annual operating cost per employee</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 (\$000s)</p> <p>Asset Drafting/Base Mapping (Design, drafting, mapping, record management, addressing): \$9,395</p> <p>Field Survey (Survey control, engineering and legal surveys, positioning): \$5,437</p> <p>Engineering Services (Eng. advisory, building system audits): \$797</p> <p>Energy Services (Energy conservation and efficiency): \$910</p> <p>Asset Management: \$1,634</p> <p>Project Management: \$3,925</p> <p>Utility Rights-of-Way (City access to municipal ROW): \$1,060</p> <p>Industry Engagement: \$284</p> <p>Key Capital Investments</p> <p>The programs and projects will maintain and improve essential tools and systems to support cross-corporate infrastructure service delivery. It will also ensure we are in compliance with Provincial legislations.</p>



What we've heard and service outlook

What we heard: Research & Engagement Results

This is a diverse service. Our customers value low-cost solutions to find efficiencies; manage technical, business and public safety risk; and identify sustainable options. They value our expertise, accurate and accessible information and affordability. Citizens value public safety and resiliency, affordability and accessibility of the City's infrastructure. Council has concern regarding risk of poor infrastructure condition and performance. Eighty-five per cent of customers rated our collaborative efforts valuable. We will continue to build partnerships, improve service delivery, analyze infrastructure performance and protect The City's interests.

What Council has directed

W2/W4 – Uses metrics and business analytics to streamline processes, create innovative solutions and cost savings, and manage infrastructure risk.

N5 – Uses integrated and automated business tools to enable timely, transparent and accountable infrastructure decisions, and promotes The City's Sustainable Infrastructure Capital Program to improve the energy efficiency of The City's infrastructure.

M4 – Uses survey, mapping and technological solutions to support transportation optimization.

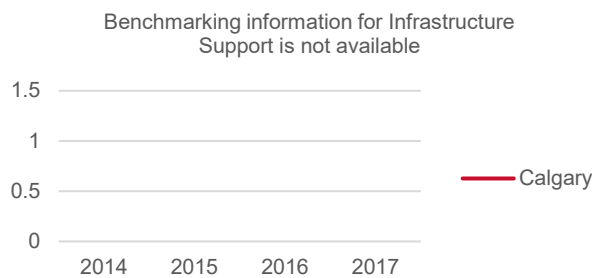
H2 – Helps organization to better understand their energy consumption, energy interdependencies, and identifies ways to reduce energy consumption and associated costs.

This service aligns to Community Standards Bylaw (Addressing), Sustainable Building Policy, Asset Management Policy, Project Management Policy, Municipal Naming, Sponsorship and Naming Rights Policy and Municipal Rights-of-Way Bylaw.

What are we watching?

Population growth in Calgary will result in increased demand for infrastructure, higher consumption of energy, emissions and distribution costs. Additionally, the better and greater use of technology becomes a growing trend, creating opportunities to improve service delivery that are integrated, quicker and more scalable. For example, City infrastructure continues to require more connectivity to support automation and integration of sensor systems. We are also seeing an increased use of 3D modeling in infrastructure planning and design. Given the Infrastructure Gap and nearly \$2 billion of assets in poor to critical condition, this service will play a crucial role in supporting the management of City infrastructure via project and asset management practices, risk and lifecycle cost analysis and investment prioritization as part of The City's Resiliency and Climate Change Strategies.

Benchmarking



Sufficient data is not available to build the benchmarking process for IS at this time. Work is underway to develop a process to track energy, asset and project management performance. The discussion with ENMAX has started to explore the possibility of obtaining energy data from other cities. Work is also underway to identify benchmark infrastructure reinvestment rates against the Canadian Infrastructure Report Card as well as asset and project management maturity. IS is developing infrastructure condition, service level and performance metrics, and implementation of technology to track that data.

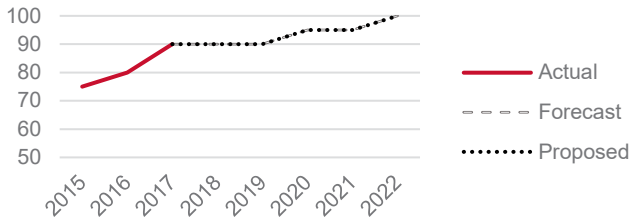
What matters to Calgarians

VALUE DIMENSION	DESCRIPTION
Accessibility	Outputs from the service are easily accessible by the customer.
Affordability	Cost of service is reasonable and can be budgeted for appropriately.
Quality	All outputs continue high standard and proficient experts' inputs/solutions/recommendations.
Responsiveness	Provides the requested output in a timely manner.
Reduces effort	Analysis provided gives information and insight to gaining more value from City investments.

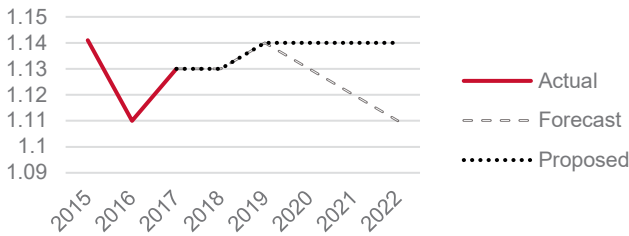


How is the Service performing? Where we are headed and where do we want to go?

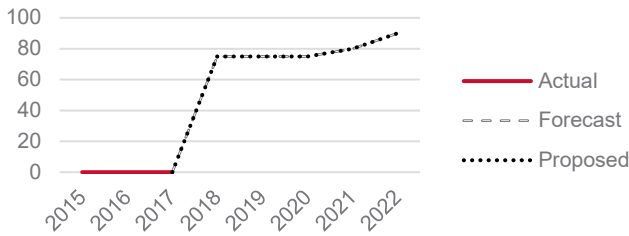
Per cent of City of Calgary business units that have an increase in Asset Management maturity (Per cent)



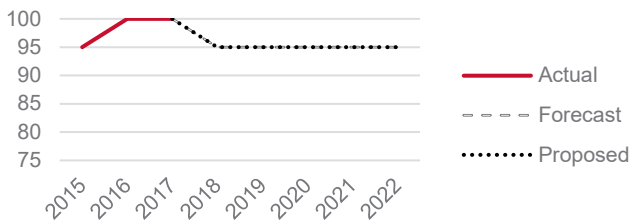
Energy used to deliver all City services, per citizen (MWh per citizen (megawatt hours equivalency))



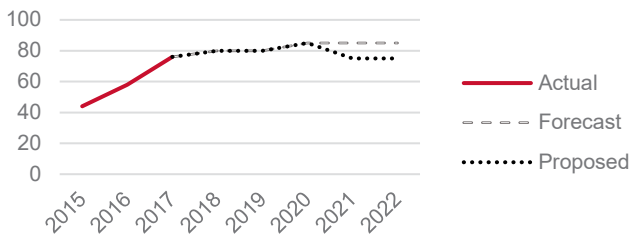
Per cent of Utility Line Assignment turnaround times to meet processing time standards (Per cent)



Per cent of registered survey plans that are mapped within 21 days of receipt (Per cent)



Per cent of external addressing service requests resolved within 10 days of receipt (Per cent)



Story behind the curve

PM 1:

The increase in Asset Management helps to measure the understanding of The City's asset and service performance. The corporate-wide Asset Management Technology Capital Program is currently funded by cost recovery from participating business units. The proposed base operating budget shifts from a recovery model to a centralized corporate program. This permanent funding, although only the minimal amount required, will enable the sustainment of critical software. IS has proposed additional capital and operating cuts, which will reduce The City's ability to manage, analyze and report on asset data within this system.

PM 2:

Assumptions for energy used: (1) fuel component assumes flat future consumption, (2) natural gas and district energy components are normalized to a five-year Heating Degree Days average, and (3) the new Composting Plant gas use was included in a full-year 2018 forecast. The annual consumption was assumed flat after 2018.

Budget reduction will result in less delivery of work related to energy efficiencies, climate actions and support to other business units. The City may potentially spend slightly more on energy bills.

PM 3:

Implementation of the Calgary Rights-of-Way Management (CROWM) system will improve turnaround time through better coordination of utility providers' projects for efficient use of rights-of-way corridors. The performance data will be available in 2018 as the phase one work is completed this year. The phase two work is proposed to continue to add needed functionality and integrations to the system to support service line alignment with citizen expectations of minimal disruption with coordinated work by utility providers.

PM 4:

This measures the service level (in terms of turnaround time) to our clients. We forecast 2019–2022 to remain at 95 per cent because there may be complex cases that go beyond the 21 days. We may also see a slight increase in requests from our clients as a result of a favorable economic environment.

PM 5:

This measures the service level (in terms of turnaround time) to our clients and citizens. Our 2019–2020 forecast remains in the range of 80 per cent as an efficiency gain will be realized through the consolidation of certain business functions in 2020. However, a budget reduction in 2021 will negatively impact this performance measure. We expect a drop in efficiency (below current levels) in resolving addressing requests.



What do we propose to do?

What we propose to continue doing

STRATEGY
Provide precision surveys to support the design, construction and asset lifecycle phases of infrastructure projects.
Create a corporate database and business process for construction drawings and implement online submission tools.
Maintain engineering and geological practices, including maintaining the Engineer-In-Training Program.
Provide building commissioning, green building consultations, energy audits information and education.
Implement the Climate Mitigation Strategy through leading by examples in our own operations.
Implement quality and risk management approaches, automated business tools for corporate asset and project management programs.
Manage municipal rights-of-way using Utility Line Assignment System to ensure public safety, cost avoidance and regulation compliance.

Why?

These strategies deliver on Council Directives and support our key value proposition of quality, affordability and accessibility as top values for our customers. We will continue to address the infrastructure gap and associated risk of infrastructure failure/service impact, identify and implement energy and cost saving opportunities, provide surveying services, and improve time to process developer and City led subdivision applications.

What we propose to do less of

STRATEGY
Management of work related to energy efficiencies, climate actions and consultations for clients.
Support for Real Time positioning and navigation systems.
Asset and project management analysis and planning.
Infrastructure Support employee engagement events.
Contracting and consulting for innovation, business development, research, pilot projects and process improvements.

Why?

To absorb the required reduction in operating costs, citizen-facing service lines will face a reduction in support for asset management and infrastructure investment planning, energy planning and monitoring, base mapping and surveying. Reduced support to our clients may result in response time delay and limited capacity for new work.

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

STRATEGY
Centralize software management (including technical support) for existing asset management enterprise applications, including InforEAM, PowerPlan (formerly RIVA) in order to achieve corporate savings on licensing. This is supported by a base operating budget request.
Implement Project and Portfolio Management software (Microsoft Project Online) to support infrastructure investment prioritization (Infrastructure Calgary), project and cost management. This is supported by both the one-time operating budget request (for licensing/sustainment) and an essential capital budget request for software implementation.

Why?

The more effective and efficient support will be provided to manage the implementation of the enterprise programs (e.g. corporate-wide asset and project management technology) across all business units, so that asset and project risks can be appropriately mitigated. Infrastructure Support will be focusing on optimizing resources and consolidating numerous licences into one enterprise licence and program.



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

For Council Approval

SERVICE PERFORMANCE RESULTS FOR 2019-2022	CURRENT	TREND
Per cent of City of Calgary business units that have an increase in Asset Management maturity (Per cent)	90	↑
Energy used to deliver all City services, per citizen (MWhr per citizen (megawatt hours equivalency))	1.13	↓
Per cent of Utility Line Assignment turnaround times to meet processing time standards (Per cent)	75	↑
Per cent of registered survey plans that are mapped within 21 days of receipt (Per cent)	95	↔
Per cent of external addressing service requests resolved within 10 days of receipt (Per cent)	80	↔

Breakdown of net operating budget (\$000s)

	2019	2020	2021	2022
Previous Year's Budget	8,483	9,857	9,935	9,791
Less Previous Year one Time	-	(753)	(1,000)	(1,000)
Base	8,483	9,104	8,935	8,791
Revenue Changes	-	-	-	-
Internal Recovery Changes	-	-	-	-
Inflation	43	51	47	49
Operating Impact of Previously Approved Capital	-	-	-	-
Operating Impact of New Capital (Incremental)	825	15	15	15
Efficiencies	(52)	(60)	(56)	(58)
Service Reductions	(138)	(175)	(150)	(135)
Service Increases	-	-	-	-
One Time	753	1,000	1,000	870
Realignments	(57)	-	-	-
Total	9,857	9,935	9,791	9,532

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	23,442	24,270	753	25,023	24,101	1,000	25,101	23,957	1,000	24,957	23,828	870	24,698
Recoveries	(13,500)	(13,707)	-	(13,707)	(13,707)	-	(13,707)	(13,707)	-	(13,707)	(13,707)	-	(13,707)
Revenue	(1,459)	(1,459)	-	(1,459)	(1,459)	-	(1,459)	(1,459)	-	(1,459)	(1,459)	-	(1,459)
Net	8,483	9,104	753	9,857	8,935	1,000	9,935	8,791	1,000	9,791	8,662	870	9,532



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)		20	20	20	20	-	80
480900	Indigenous Consultation	20	20	20	20	-	80
Project(s)		604	733	669	65	-	2,071
480701	CROWM Phase II	475	475	475	-	-	1,425
480704	Base Mapping Improvements	129	258	194	65	-	646
Program(s)		4,050	2,294	1,301	1,287	-	8,932
461812	Sustainable Infrastructure Capital Program (SICP)	500	500	500	500	-	2,000
480702	Survey Control Program	130	400	400	400	-	1,330
480705	Project and Portfolio Mgmt	2,655	980	-	-	-	3,635
480706	Corporate AM Technology	765	414	401	387	-	1,967
Sub-Total (New Budget Requests)		4,674	3,047	1,989	1,372	-	11,083
Previously Approved Budget Remaining		987	941	-	-	-	1,928
Total Capital Investment		5,661	3,988	1,989	1,372	-	13,011

Explanation of Capital Budget Requests

Annual Investment Program(s)

Activity 480900: Indigenous Consultation

New Budget Request of \$80 thousand to support project management activities that are involved with consulting to Indigenous and Métis nations.

Funding from Pay-As-You-Go

Operating Impact of Capital: None



Recommended Capital Investment to Support Service Delivery

For Council Approval

Project(s)

Activity 480701: CROWM Phase II

New Budget Request of \$1,425 thousand to add integrations to the Calgary Rights of Way Management (CROWM) system to support citizen expectations of minimal disruption of coordinated work by utility providers.

Funding from Pay-As-You-Go

Operating Impact of Capital: None

Activity 480704: Base Mapping Improvements

New Budget Request of \$646 thousand to update essential base map service technology.

Funding from Pay-As-You-Go

Operating Impact of Capital: None

Program(s)

Activity 461812: Sustainable Infrastructure Capital Program (SICP)

New Budget Request of \$2,000 thousand to continue an existing investment program started in 2012, which is intended to direct strategic investments in improved infrastructure engineering/design practices, proven technologies, technology trials, performance monitoring and benchmarking.

Funding from Pay-As-You-Go

Operating Impact of Capital: None

Activity 480702: Survey Control Program

New Budget Request of \$1,330 thousand for maintaining government Survey Control networks in Calgary. The survey networks is used to accurately build, locate and map all city and private infrastructure such as buildings and roads.

Funding from Pay-As-You-Go (\$1,030 thousand) and Developer & Other Contributions (\$300 thousand)

Operating Impact of Capital: None

Activity 480705: Project and Portfolio Mgmt

New Budget Request of \$3,635 thousand to implement the desired functionality for the project management community with a focus on improving project and portfolio management at The City.

Funding from Pay-As-You-Go

Operating Impact of Capital: This request requires \$753 thousand one-time funding of operating costs in 2019, \$1,000 thousand one-time funding of operating costs in 2020, \$1,000 thousand one-time funding of operating costs in 2021 and \$870 thousand one-time funding of operating costs in 2022.

Activity 480706: Corporate AM Technology

New Budget Request of \$1,967 thousand to improve asset management technology, asset information, business intelligence and management maturity at The City.

Funding from Pay-As-You-Go

Operating Impact of Capital: This request requires \$825 thousand base funding of operating costs starting in 2019 and \$15 thousand base funding of operating costs starting in 2020, 2021 and 2022.