

Infrastructure & Engineering

Led by: Director of Business & Engineering Services

Service 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
- Field surveying
- Right of way management
- Grants, Partner & Industry Relations

Service Updates

Key Service Results

Awards

2023 CAMA Environmental Leadership & Sustainability Award – Determining the Value of Natural Assets

In alignment with The City's Climate Strategy to achieve net zero and a climate-resilient Calgary by 2050, we've updated our Sustainable Building Policy and Guidance Documents to make our buildings more energy efficient. We are making progress to secure renewable energy sources to allow our service delivery to have less carbon footprint.

To modernize our service and embrace innovative solutions, we've expanded The City's survey network, introduced an online solution for shallow utility service, and implemented an award-winning approach for natural asset management.

To ensure the City's infrastructure design and delivery comply with standards, we've surveyed for 1,300 projects, conducted 320 design reviews, 165 Access Design Standards reviews, and 200 building assessments. We've completed asset management assessments and conducted Value Management studies to identify opportunities to maximize the value of our assets. We've created the Corporate Project Management platform and offered e-learning courses with daily support.

We've identified 45 health and safety issues in building engineering and improved incident reporting for a safer work environment for our field surveying staff.

Service Challenges

Staffing remains a top priority, but recruiting challenges and turnover in senior roles complicate efforts, and workspace for new hires is a potential constraint.

Regulatory uncertainties arise from the provincial new rules on renewable energy development.

Financial concerns stem from the TELUS Fibre-To-The-Premises project cancellation, impacting the revenue of our Right of Way services. Grant programs with low returns and difficulty in finding internal matching funds are notable challenges. Stiff budget practice poses challenges to project planning.

In operation, a slow supply chain affects vehicle uptime in Field Surveying Services. Effectively addressing safety remains an ongoing and challenging goal.

Strategic planning faces hurdles in addressing Project Management training needs, closing the infrastructure gap, and dealing with post-realignment process disconnection. Uncertainties in addressing the housing crisis pose challenges to Right of Way planning.

Trends & Potential Uncertainties

Regulatory:

Approval rule changes on renewable energy development
Government's future funding opportunities to support low carbon building design
Expiring union contracts and updated employee policies

Operational:

Knowledge loss through staff attrition
Potential reduced demand for internal services challenges workforce management
Prolonged impact of resourcing issue
Impacts on Right of Way planning resulting from projects addressing housing crisis
Resilience uncertainties in climate change, economy, and infrastructure

Organizational:

Uncertain division functions result in duplicate functions in BUs, staff turnover thus knowledge loss
Collaboration across BUs to address climate change
Maintaining positive relationships with industry
Changes in internal structure and funding programs



Measuring Our Performance

Legend

— Actuals

■ Expected Future Performance

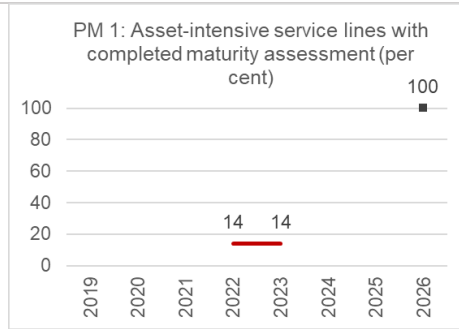
➔ Progressing as planned

⊖ Not progressing as planned

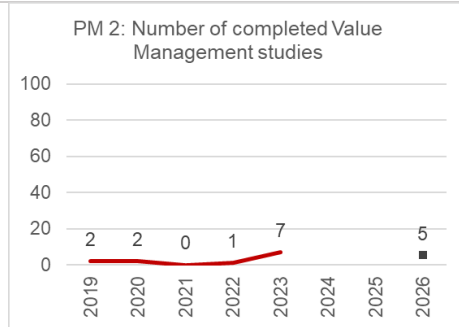
Performance Measures

Story behind the numbers

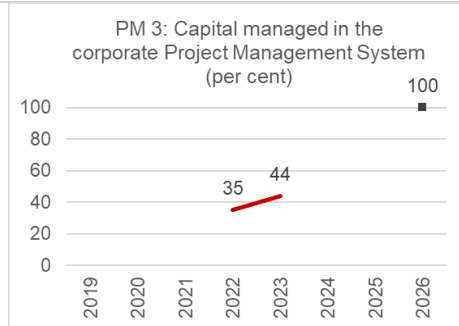
Status



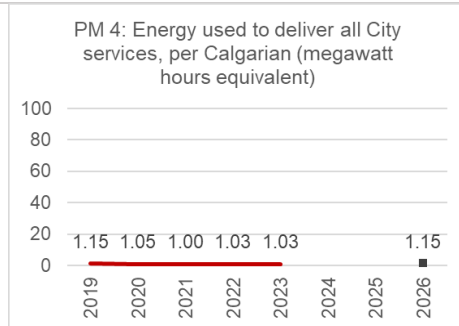
Our goal is to complete seven service areas by 2026 with only those fully completed being included in the performance measure. We have completed the maturity assessment for all asset classes in the entire Mobility service area. The results of the maturity assessment have been reflected in the asset management plan for bridges and structures. Maturity assessment is underway for Utility service area in line with the development of the numerous asset management plans within the Utility. While it's nearing completion by the end of 2023, it has not been counted as completed and is thus not included in the 14 per cent.



We have conducted seven Value Management studies and one peer review, comprising four studies for Utilities Delivery, two for Public Spaces Delivery, one for an external client (Comox Valley District), and one peer review for Utilities Delivery.



We have implemented the P2M (Program and Project Management) system and incorporated more than 1,600 capital programs and projects within the system for efficient project management. The percentage is calculated by dividing the capital budget managed in P2M by the total capital budget in a given year.



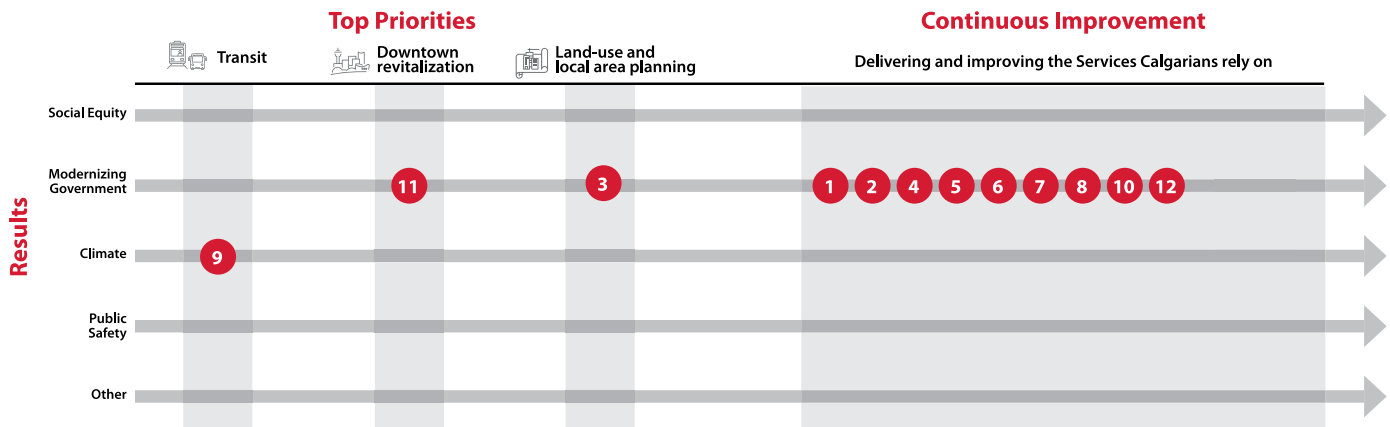
On average, 1.03 megawatt-hour-equivalent (MWh) is used per capita to deliver all City services in 2023. Since 2017, the energy consumption has remained stable at approximately 1.4 million MWh, except for the year 2020-2021. The decrease in energy use during this period was primarily attributed to the pandemic, with a subsequent recovery observed in 2022 and 2023. Population growth has consistently trended upward. While energy consumption in 2023 is only 1.2% higher than that in 2017, energy use per capita has decreased by 9.2%, dropping from 1.13 MWh to 1.03 MWh.





Progress on Service Delivery


Alignment with Council Refined Priorities and Result Areas



- Legend**
- ✔ Completed
 - ➔ Progressing as planned
 - ⊖ Not progressing as planned
 - ⏻ Not started
 - 1 Initiative number

Initiative	Initiative Update	Status
1 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.	This initiative is not a capital investment. We have trained over 900 employees to use the new Program and Project Management (P2M) System, and created over 1,600 programs, projects, and AIPs (Annual Investment Programs) in P2M. The system is also enhanced to support the future external Capital Project Map. The system is managed by designated FTEs.	➔
2 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.	This initiative is not a capital investment. We have re-visioned the Project Management Policy for Capital Projects administration policy and launched the daily support sessions for P2M (Program and Project Management) providing training and support to departments across the City.	➔
3 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.	This initiative is not a capital investment. We are currently working with Collaboration, Analytics & Innovation team on mapping wireless infrastructure deployment and project analysis. A demo is expected in mid to late February 2024. A pilot project is underway to map business processes for implementing a new online tool for the effective processing of requests. Business process mapping for street use and hoarding permits is in progress, aiming for IT development in 2024-2025. The online tool will be fully functional in 2025 or 2026, depending on how fast the business case rolls out.	➔
4 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.	This initiative is not a capital investment. We have communicated with funding agencies to proactively prepare and advocate for grant opportunities. Internally, collaborative efforts have been made with the Climate group for grant matching and addressing climate resilience, and with PICS to identify additional grant opportunities for the Equity Program. A database is in progress to track, assess, and monitor grant activities. Also, we have organized the annual Partnering with Industry event and other ad-hoc industry events on timely and relevant topics to foster collaboration with industries.	➔

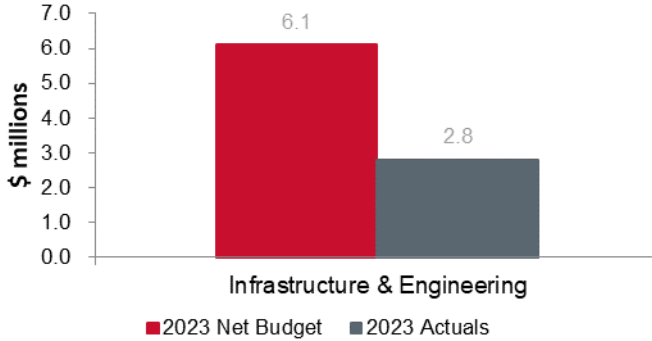
Initiative	Initiative Update	Status
5 Maximize The City's infrastructure value for Calgarians by optimizing capital contract management practices across the organization.	In pursuit of advancing this initiative, we have initiated an RFSO for Project Manager Resourcing, engaged an external firm for two workshops on Collaborative Construction Contracts in Q3/Q4, drafted both a project delivery methodology toolkit and a project resource management toolkit for project managers, conducted knowledge-sharing sessions for project managers on risk and claim management, and project collaboration. Additionally, we have hosted workshops on risk allocation for construction projects. Currently, an RFP to acquire project engineer services through Agency model is underway.	
6 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.	Several significant milestones have been achieved in advancing our initiative, underscoring our commitment to excellence in surveying engineering. We have successfully expanded the survey control network into downtown and Beltline areas, enhanced the Survey Central Records Management System to the 2nd generation with GIS capabilities, improved processes and procedures to ensure the highest standards in delivering surveying professional services, refined drone and laser scanning data processing for infrastructure projects, and implemented a storage solution for very large geospatial data sets.	
7 Improve building safety, reliability and efficiency by providing building engineering advisory services and by ensuring adherence to engineering and/or architectural professional standards across The City.	We've completed over 320 design reviews within service standards and 200 Building Condition Assessments, identified 45 health and safety issues, contributed to Sustainable Building Guidance for Climate, conducted over 165 Access Design Standards reviews, completed multiple design guidelines, and provided Discipline Champion services, such as 4 Engineering & Architecture Consultant Pre-qualifications, RFP scope review and recommendations for over 15 projects and 2 Request for Standing Offers, scope and fee review for over 15 projects, participation in 3 Consultant Evaluation Committees.	
8 Oversee the practice of engineering and geoscience at The City by ensuring that professional members have completed the required professional practice training and development.	This initiative is not a capital investment. In 2023, the Professional Practice Management Plan training was significantly improved for better accessibility and involvement. Traditionally held quarterly with a maximum of 25 in-person participants, it shifted to virtual sessions on Teams, accommodating up to 100 attendees. To ensure broad participation, PPMP training became mandatory via the Learning Management System, tracking those required to complete the course. Over 90% of engineering employees have taken the PPMP training within the last 2 years.	
9 Advance The City's climate goals by guiding business units across the Corporation towards efficient energy management and reduction of green house gas emissions through advisory services, stewarding relevant City policies, standards and initiatives.	This initiative is not a capital investment. We have enhanced our sustainable building policy for more efficient energy management and reduced GHG emissions. Concurrently, we have supported capital projects aligning with these goals. We have facilitated the delivery of the ENMAX Community Solar program, involving the development and deployment of \$5 million in solar installations at community buildings in Calgary. Additionally, we have completed the CPA Impound Lot Parkade solar installation, thereby boosting our corporate renewable energy generation portfolio by 155 KW.	
10 Optimize City-wide infrastructure investments to ensure safety and reliability through stewardship and implementation of asset management policy, practices, processes, and systems across corporation.	This initiative is not a capital investment. Addressing this initiative involves continuous advancement in the asset management plan. The infrastructure Principle Corporate Risk is updated. The City Asset Management Administration Policy is being updated and expects to be complete in Q2 2024.	
11 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 (BVCA) program.	This initiative is not a capital investment. A city-wide assessment for asset management service lines is completed. The design of a change management process is completed, and in-depth analysis of candidate asset classes for a new asset ownership model will be underway in 2024.	

Initiative	Initiative Update	Status
12 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.	This initiative is not a capital investment. Amongst other actions, we have completed the asset management plan for Bridges and Structures and commenced Pavement and Concrete within the Mobility service area and started Stormwater asset management planning with Utility. Condition inspection with Recreation, Parks and Open Spaces for engineered structures is ongoing as a foundation to an asset management approach.	



Service Updates on Financial Performance

Net Operating Budget and Actuals as of December 31, 2023

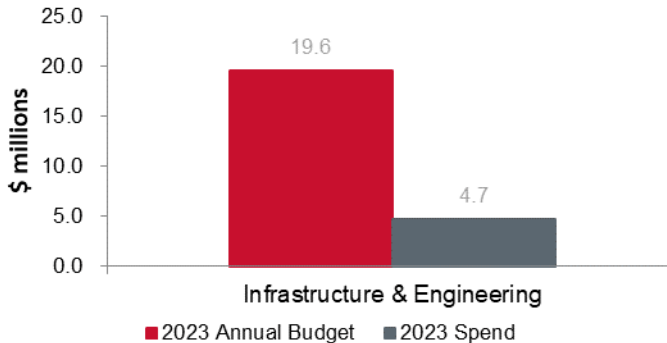


Operating Budget Updates - 2023 net operating budget vs actuals:

Infrastructure & Engineering has a favourable operating variance of \$3.3 million. The main reasons that have contributed to the variance are the sale of Renewable Energy Certificates (RECs) to ENMAX for \$1.6 million, higher than budgeted Utility Line Assignment revenue of \$1.3 million, and savings in salary due to vacancies amounting to \$0.9 million. These favourable variances were partially offset by unbudgeted salary and wages related to Community & Business Relations of \$0.5 million

In 2023, Infrastructure & Engineering faced challenges in managing costs, particularly in the areas of contract and consulting services, equipment and supplies, and recoveries by business units. Despite these challenges, we have made significant strides in fortifying financial health through unexpected robust revenues and effective workforce management.

Capital Budget and Spend as of December 31, 2023



Capital Budget Updates - 2023 total capital budget vs 2023 spend:

Infrastructure & Engineering has spent 23.9 per cent of the 2023 approved capital budget. The underspend is mainly attributed to delays and challenges in project initiation and execution, specifically due to resource limitations and the need for additional training on the Project and Portfolio Management (P2M) system.

In 2023, the capital expenditures have been primarily used to address critical initiatives.

Approximately \$1.0 million has been invested in expanding The City's Survey Control Network and acquiring new equipment to enhance its future surveying and mapping capabilities.

P2M system has been launched and enhanced support for the future external Capital Project Map. This integrated platform for corporate project management aims to improve consistency and efficiencies in planning, delivery, monitoring, and reporting on capital projects.

Also, the expenditures have been used to develop the first version of an innovative capital project reporting dashboard called Capital Project Map, and Phases 1 and 2a of the Better Value for City Assets program, as well as to continue program work for City-wide asset management software and to initiate a Request for Proposal process, ensuring the City-wide infrastructure asset capital planning platform meet future needs.