Data, Analytics & Information Access
Led by: Director of Collaboration, Analytics & Innovation

Service Description

Data, Analytics & Information Access (DA&IA) provides Geographic Information System (GIS) platforms, Imagery, intellectual property management, innovation training and consulting services, Computer-Aided Design and Drafting (CADD) platforms, asset drafting, base maps, addressing and open data hubs for administration, council and citizens.

We connect customers with accurate, consistent location intelligence data and analytics. We also support emergency response and recovery under the Municipal Emergency Plan, 911 dispatch routing and mapping, open data, advanced analytics and engineering design, to enable more proactive data-driven decisions, improved services, reduced cost and time saved.

Service Updates

Key Service Results

Geographic Information Systems (GIS) is a critical tool used extensively at The City of Calgary that enable the collection, management and analytics of locational data and are integrated into several day-to-day operations and business systems. The GIS platform modernization is continued through the expanded use of GIS data portals, ArcGIS Hub, ArcGIS Urban, automations, server upgrades and improvements to various Corporate base maps and GIS applications to ensure the Corporation and Calgarians can capitalize on new functionalities and efficiencies.

Powered by Collaboration, Analytics & Innovation's Innovation Lab, a cross-corporate team was trained by the Bloomberg Center for Public Innovation at John Hopkins University to tackle challenges affecting Calgary's Youth. Youth ideas gathered and input are now forming the foundation for developing a Youth Strategy within Community Strategies.

The Calgary Equity Index (CEI) is a data-driven tool to help residents, planners, researchers, and decision-makers identify disparities or equity concerns across Calgary. The CEI is composed of 20 indicators across five domains that affect overall health and wellbeing of Calgarians.

Service Challenges

Managing the velocity and volume of technology changes including training, governance, upgrades, integrations, security, and authoritative data availability, while maintaining transparency of City operations.

Challenges to recruit, develop and retain staff with high demand skill sets that support the region's economic diversification efforts (e.g., data, technology and innovation sectors) due to increasing competition with the private sector.

Trends & Potential Uncertainties

Increased integration of location-based technologies and data with other technologies to create a reliable system of applications that optimize data-driven decision making through analysis and visualization, with an emphasis on 3D, Geospatial Artificial Intelligence (GeoAI), and real-time data.

Opportunities to use innovation methodologies to improve service value and Calgarians' customer experience.
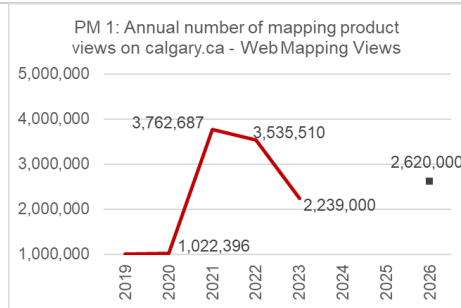
Measuring Our Performance

Performance Measures	Story behind the numbers	Status

PM 1: Annual number of mapping product views on calgary.ca - Web Mapping Views

Chart values: 1,022,396 (2020); 3,762,687 (2021); 3,535,510 (2022); 2,239,000 (2023); 2,620,000 (2026 Expected Future Performance). Y-axis: 1,000,000 to 5,000,000. X-axis: 2019–2026.
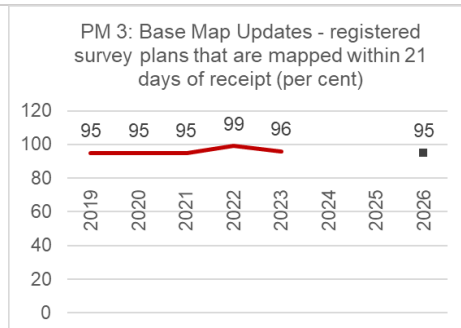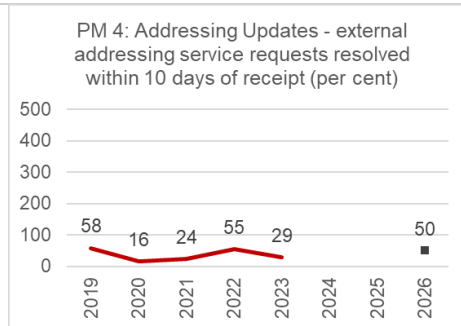
Map views in 2023 were lower than expected and likely due to no extreme weather events (heavy snowfall) in the fourth quarter (Q4) which can often significantly increase visits to traffic map data. This data is the total of Map Gallery visits and Calgary.ca embedded map views.

Status: 🔵➔

PM 2: Number of City employees accessing GIS data and mapping products - GIS Technology Adoption

Chart values: 7210 (2022); 13879 (2023); 9500 (2026 Expected Future Performance). Y-axis: 6000 to 18000. X-axis: 2019–2026.
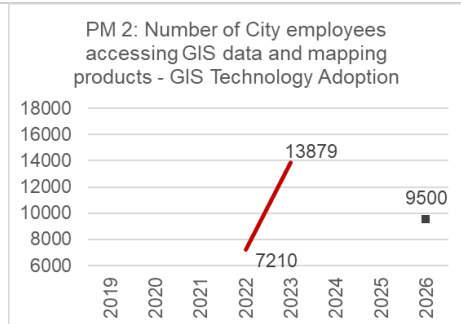
Over the last year, more advanced analytics have become available for us to track and analyze Geographic Information System (GIS) users across the enterprise system. As a result of this more accurate insight into user patterns, we have discovered the usage of Geographic Information System (GIS) licenses and tools is greater than expected from across the organization and our year-end metrics indicate that usage is almost double what was expected. This follows the trend of technology usage to create operational efficiencies and data driven decisions increasingly across our organization, contributing to a modernized government.

Status: 🔵➔

PM 3: Base Map Updates - registered survey plans that are mapped within 21 days of receipt (per cent)

Chart values: 95 (2019); 95 (2020); 95 (2021); 99 (2022); 96 (2023); 95 (2026 Expected Future Performance). Y-axis: 0 to 120. X-axis: 2019–2026.
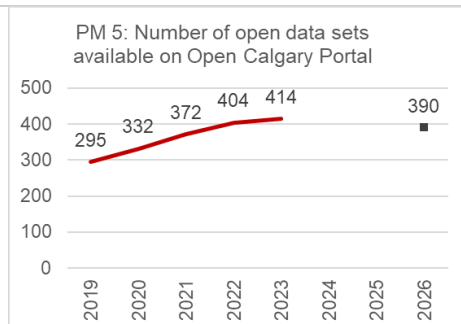
There was a significant increase in workload as twice the area was mapped in 2023 (783) versus what was mapped in 2022 (385). Although there is a significant increase in workload, base mapping staff were still able to maintain the efficiency of operations and meet targets for processing

Status: 🔵➔

PM 4: Addressing Updates - external addressing service requests resolved within 10 days of receipt (per cent)

Chart values: 58 (2019); 16 (2020); 24 (2021); 55 (2022); 29 (2023); 50 (2026 Expected Future Performance). Y-axis: 0 to 500. X-axis: 2019–2026.
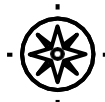
The lower than expected performance result is mainly due to work load increases as a result of new developments and redevelopments (i.e. 56% more addresses were created in 2023). More on-line systems leveraging addressing information in recent years also requires extensive triage for suspected invalid addresses, creating additional delays in address validation.

Staffing levels continue to be an issue due to increased workload and requested staffing increases not being approved for 2023-2026 budget cycle. However, contingent staffing was hired to ensure service continuity.

Status: 🔵➔

PM 5: Number of open data sets available on Open Calgary Portal

Chart values: 295 (2019); 332 (2020); 372 (2021); 404 (2022); 414 (2023); 390 (2026 Expected Future Performance). Y-axis: 0 to 500. X-axis: 2019–2026.
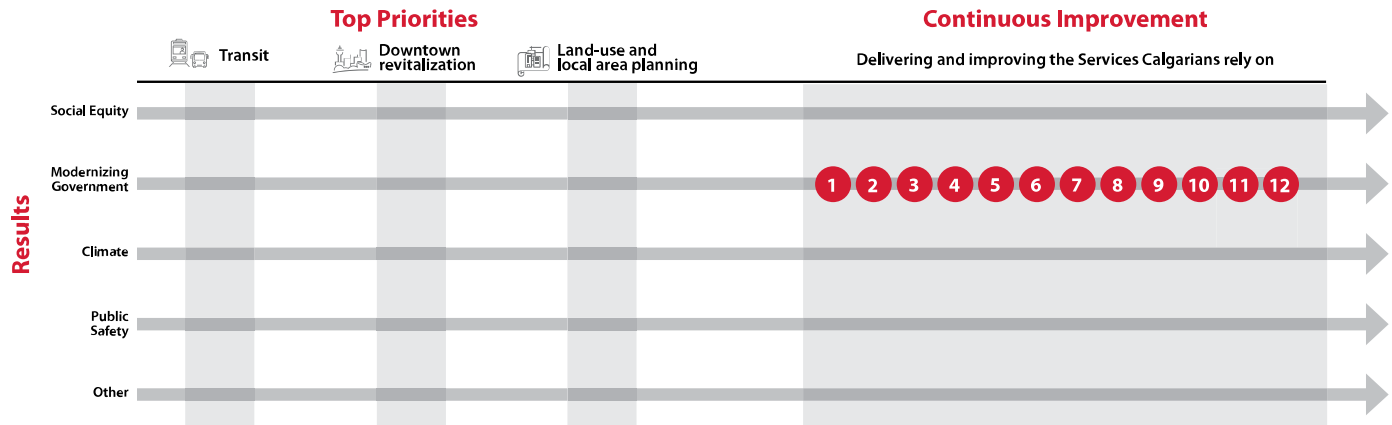
Continual work to increase organizational awareness of the value, policy requirements, and efficiency of publishing and consuming open data, is helping to achieve our projected targets for 2023.

Status: 🔵➔

Progress on Service Delivery

Alignment with Council Refined Priorities and Result Areas

Top Priorities
- Transit
- Downtown revitalization
- Land-use and local area planning

Continuous Improvement
Delivering and improving the Services Calgarians rely on

Results: Social Equity, Modernizing Government, Climate, Public Safety, Other

Initiatives 1–12 shown under Modernizing Government / Continuous Improvement.

Legend
- ✅ Completed
- ➡️ Progressing as planned
- ⊖ Not progressing as planned
- ⏻ Not started
- 1 Initiative number

|	Initiative	Initiative Update	Status
1	Create, manage and provide corporate-wide geospatial technology, data and analytics that are reliable, secure and accessible for customers and Calgarians.	The corporate-wide geospatial technology, data and analytics are widely used by researchers, businesses, Calgarians, and other levels of government that benefit the wider community. Some projects that completed in 2023 include: drone pilot project for asset inspection of eight bridges, Light Detection and Ranging (LiDAR) volume/slope analysis for eight Waste & Recycling sites, 15 servers being updated to Window Server 2019 and standards & guidelines for web maps & ArcGIS portal being developed for the Corporation.	➡️
2	Provide City operational groups with tools and analytics to deliver their services more efficiently and providing them greater insight into strategic decision making.	Provided preparatory work in advance of the spring run-off season to validate and update evacuation zone data and mapping in support of Calgary Emergency Management Agency (CEMA) and the Calgary Police Service (CPS). Provided in-person support to CEMA at the Emergency Operations Centre (EOC) during annual Spring Run-Off Season, Stampede and World Petroleum Congress by providing situational awareness with mapping information through the Common Operating Picture (COP) Tool, which was shared with agency members, Calgary Fire Department, CPS, Alberta Health Services (AHS) and Calgary 911.	➡️
3	Promote and expand the use of location-based tools and data by customers and Calgarians to enable self-service and open access to geospatial information.	Updated city-wide transportation networks to ensure emergency dispatch and publicly available maps have the most timely, accurate & complete data. Collaborated with neighboring municipalities and universities to ensure maps and transportation networks are updated to support emergency services and logistics. Included are Mount Royal University (MRU), Southern Alberta Institute of Technology (SAIT), University of Calgary (UofC), Regional Geographic Information System (GI)S Council, Lethbridge College. Align standards with Customer Service & Communications (CSC) and Information Technology (IT).	➡️
4	Develop and support the Corporation's advanced analytics practice, providing guidance, sharing best practices and developing corporate data analytics and governance solutions.	In partnership with Waste & Recycling Services (WRS) and private contractor, a strategic approach was designed to improve the black cart collection services by evaluating the performance of private sector service delivery versus public sector black cart collection to gain insight in managing contract service providers for residential waste collection. Continue to work on artificial intelligence (AI) / machine learning (ML) applications in coordinated safety probability model, Fire response time analysis, detecting vehicles/pedestrians from video and pavement AI initiative for Mobility.	➡️

	Initiative	Initiative Update	Status
5	Support information access by creating a corporate infrastructure and business process for automated inbound and outbound transfers of information regarding critical City infrastructure assets (Gas. Electric, Telecommunications, Water, Sewer).	Two new portals were developed for secure data exchange that allows the exchange data and documents with external parties without unauthorized third parties being able to access, view or manipulate this information. Continue to support the City's existing repositories for exchanging data with external partners including Underground Utility Location and Damage Prevention (USIC) and Parcel's Ownership for the Alberta Government, ENMAX, ROGERS, Telus etc.	→
6	Provide professional learning opportunities and consulting to build City employee's innovation capacity and continue to partner on cross-corporate innovation projects with business units, to nurture a culture of innovation and human-centered design & prototyping, supporting the development of the next generation of civic services to Calgarians.	The Innovation Lab continues to grow both through recruitment and requests for support. In 2023, the Lab delivered training to 818 staff across 36 business units. Project completed includes: Project to improve storm pond safety for Calgarians with the Water Utility. Recommendation is in varying states of implementation. Completed project with Green Line to better understand youth safety concerns. Presently working on a project with Recreation to improve pool-side safety for Calgarians.	→
7	Increase the number of data sets available in the Open Data Catalogue and promote easy self-serve access to City data for Calgarians, businesses, researchers and educational institutions.	Although workload have increased significantly in data migration and harmonization due to technology upgrades and data and metadata realignment, the team continues to add new and update existing datasets to support transparency of operations with Calgarians. In 2023, 19 new datasets were added to Open Data Catalogue.	→
8	Modernize eCommerce across the Corporation through standardization of commerce transaction processes, a rationalization of technologies, improved data insights, and improved customer experiences.	The City Online platform modernizes and standardizes the online user experience, improving the site navigation from Calgarians in need of City products. The integration of this platform with myID application is complete. Requirements for sustainability and stability of the platform are identified. The hiring of resource to support the eCommerce program is currently underway.	→
9	Standardize Computer-Aided Design and Drafting (CAD) data and practices by maintaining, updating and expanding The City CAD Standard and make it easily assessable to all customers. Further ensure the use of vendor supported versions of CAD software by managing CAD software licenses and users. Develop an on-demand Engineering Block Profile tool to make the creation of Profiles more efficient.	The City Computer-Aided Design (CAD) Standards and Templates Project was completed and has moved into the maintenance phase. The work completed in 2023 include: The annual update has been completed for the CAD standards and templates. An annual review and revision of the 2023 submitted inputs and requests has been conducted. The applicable revisions have been updated to The CAD Standard. Communications have been sent to all internal and external users.	→
10	Centralize the storage and lifecycle of construction drawings by creating a Construction Drawings Repository (CDR) to store, organize and enable accessibility to City CAD drawings, and pilot the electronic submission of construction drawings initiative to align with the CDR.	Construction Drawings Repository (CDR) Project (AIM 2.0): The Projectwise software has been implemented and is now accessible to the entire corporation. The Projectwise Integration effort is the next phase. Computer-Aided Design (CAD) Drawing and Quality Control (QC) Checker project charter and IT business case is being developed. eSubmission Project is in preliminary discussions/planning phase. This initiative will create greater efficiencies by creating a drawing checker for the public to use prior to drawing submission and creating a new process to submit drawings to The City.	→

	Initiative	Initiative Update	Status
11	Transition data maintenance from CAD to GIS environments where permissible, to create more robust attribute rich data that allows for analysis and informed decision making. Support clients with the transition of data and processes between CAD and GIS technology platforms.	The Transportation Computer-Aided Design (CAD) Drawing Maintenance and Modernization Project Statement of Work (SOW) is scheduled to be completed by the first quarter 2024. This project falls under the CAD Technology Modernization Program.	→
12	Enhance base map and addressing management, stability, quality, and efficiency by transitioning data maintenance processes to modern 3D mapping environments. This modern 3D base mapping product will be the fabric upon which the City's digital twin is created and maintained, allowing for greater accuracy in simulations, and better engagement of citizens in envisioning the future of Calgary's urban form.	In partnership with Geospatial Business Solutions (GBS) on the Location Data Basemap Modernization Program, Basemap Improvement Project charter was signed off.

Information Technology (IT) business case was approved by the IT Project Board and will be submitted to the Corporate Technology Committee (CTC) Board in March 2024 for approval.

JUMP Modernization is on hold until the end of the first quarter in 2024. Project will modernize the databases and data to ensure critical utility information is more accessible and convenient to access by utility partners and business units. | → |

# Service Updates on Financial Performance

Net Operating Budget and Actuals as of December 31, 2023
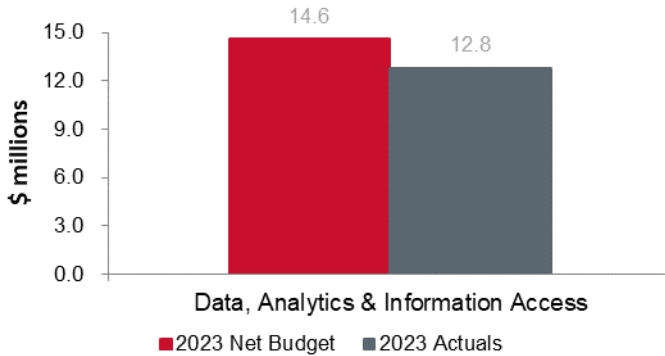
Operating Budget Updates - 2023 net operating budget vs actuals:

Data, Analytics & Information Access has a favorable operating variance of $1.8 million. The main reasons that have contributed to the variance are savings in salary and wages of $2 million due to intentionally managing the workforce; partially offset by higher communications expenses of ($0.2) million.

Capital Budget and Spend as of December 31, 2023
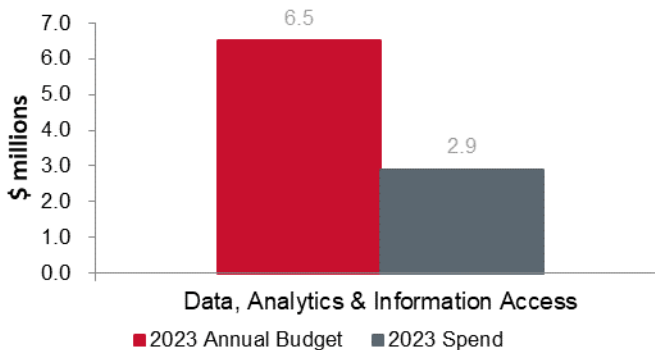
Capital Budget Updates - 2023 total capital budget vs 2023 spend:

Data, Analytics & Information Access has spent 44.8 per cent of the 2023 approved capital budget. The capital expenditures have been used to deliver the following:

Corporate Imagery Program: Significant improvement was made in 3D capture, visualization, intervisibility and measurements on calgary.ca Map Gallery. Pictometry 2023 (an aerial imaging system) is available to the Corporation to be consumed in ArcGIS, Pictometry Connect and all City apps such as Building Repository and Corporate Imagery app. We continue to pilot innovative work with Drones such as bridge inspections.

Corporate GIS Upgrades: Successfully updated software for 12 ArcGIS Enterprise Portals plus operating system updates on various servers and an update to essential GIS desktop software, while ensuring continued functionality and seamless service delivery to clients.

Location Data Modernization: Significant progress was made on clarifying scope definition for the six sub projects. Four project charters, two current state analysis documents and two IT Business Cases were approved. Resource requirements for these projects have been identified and recruitment is underway.

Modernizing Commerce: Lower than expected spend rate due to the impact of business unit structural changes on resource availability.