Community Services & Protective Services Report to
Priorities and Finance Committee
2015 December 15

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INNOVATION FUND REPORT – INTERACTIVE PARKS AND ROADS MAP

EXECUTIVE SUMMARY
In 2014 April, Parks and Roads submitted a collaborative Council Innovation Fund application and received a one-time grant of $300,000 to create an automated, interactive Parks and Roads Map. This report includes a summary of the milestones and successes, challenges, and next steps of the pilot project. The main purpose of the project was to improve communication to citizens by publishing real-time work accomplishments such as snow clearing of pathways and roadways, spring clean-up on roads, and turf mowing on www.calgary.ca. Portable Global Positioning System (GPS) units were purchased and the data collection system was built and tested successfully internally in 2014 and 2015. The snow clearing intermodal map is scheduled to go live during the winter of 2015/2016 pending two major snowfall events that will allow final capacity testing of the system to occur. The pilot project aimed to achieve efficiencies within Parks and Roads service delivery and tracking. Final testing and implementation of the automation technology will enable Administration to track impacts to Snow and Ice Control Program service requests, website visits, and routing efficiencies.

ADMINISTRATION RECOMMENDATION(S)
That the Priorities and Finance Committee recommends that Council receive this report for information.

RECOMMENDATION OF THE PRIORITIES AND FINANCE COMMITTEE, DATED 2015 DECEMBER 15:

That the Administration Recommendation contained in Report PFC2015-0954 be approved.

PREVIOUS COUNCIL DIRECTION / POLICY
On 2014 April 28, Council approved the Council Innovation Fund Application – Interactive Parks and Roads Map on www.calgary.ca (PFC2014-0384) in the amount of $300,000.

BACKGROUND
The pilot project was initiated in response to outcomes contained in the 2013 Year End Accountability Report (PFC2014-0170). This report identified a desire for access to real-time information as an emerging customer service trend. In addition to this, in the winter of 2013/2014, the manual data entry process for the Snow and Ice Control Program (SNIC) map was overwhelmed during several severe snow events. Excessive numbers of 311 Service Requests (SRs) and the need for large-scale snow removal activities limited Administration's ability to provide citizens with accurate, up-to-date information.

In order to respond to customer service trends and issues with the existing manual process, the pilot project built an interactive Parks and Roads map that would automate manual processes and provide citizens with interactive, online access to real-time service schedules including snow clearing of pathways and roadways, spring clean-up on roads, and turf mowing.

The Innovation Fund application proposed that the pilot project be executed in two phases:

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1. Technology Phase: Administration purchased GPS technology, evaluated the system, and created an internal, automated map that displays work progress on a number of City services.
2. Implementation Phase: Implementation of an automated map system on www.calgary.ca that will improve citizen access to up-to-date data for Parks and Roads services.

INVESTIGATION: ALTERNATIVES AND ANALYSIS
Technology Phase

The initial phase of the project saw the purchase of 30 portable Common Fleet Operational System (CFOS) units to share between Parks and Roads depending on season and business unit work plans. The CFOS units transmit the vehicle's location data to a central server.

Between July 2014 and December 2014, Administration developed the automation software system to seamlessly load work completion data from the vehicles containing a CFOS unit. This data is currently accessible via a map on The City's Intranet site and to 311 agents to supplement citizen inquiries. Roads also tested the applicability of using this data in an iPhone or Android app. They found that functionality was limited and will not pursue this format as the website functions on mobile devices.

Implementation Phase
Snow Clearing

The prototype software developed in the first phase was used to collect live data from Parks and Roads snow-clearing vehicles. Initial results collected were promising but limited due to the lack of snow in the winter of 2014/2015. The table below summarizes snowfall levels and visits to the Roads SNIC map between 2010-2015:

Year	Roads SNIC Map Visits	Total Annual Snowfall (cm)	Combined Snowfall (cm) during Winter (spans 2 adjacent years) Q4+Q1+Q2	Combined Snowfall (cm) during Winter (spans 2 adjacent years) Q4+Q1
2010	27,959	130.9		
2011	89,142	168.1	183.5 (2010-11)	125.5
2012	54,801	141.2	112.7 (2011-12)	72.8
2013	114,407	146.3	122.2 (2012-13)	110.4
2014	37,441	175.3	179.7 (2013-14)	150.4
2015	19,316*	73.4	134.7 (2014-15)	108.5
2016	-	-	11.6 (2015-16)	8.0

*as of 2015 November 30

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Before the general release of the automated SNIC map to the public can occur, two steps must be field tested during one or two large snow events. These two steps are interdependent and integral to publishing live data for public use:
   a) Confirm CFOS system can accommodate the anticipated large volume of data from all active vehicles assigned to SNIC; and
   b) Confirm the capacity of the internal automation process to load data into the website map.

For the 2015/2016 SNIC season, Roads has equipped 118 vehicles with permanent CFOS units and Parks will deploy 35 portable units for pathway clearing. Snow removal on pathways is based on a priority route classification system that encompasses 22 major winter regional pathway routes and approximately 350 kilometres of pathways. Roads has a prioritization system in place to ensure major roadways and some other system elements are plowed, sanded and salted within 24 or 48 hours depending on classification and use in accordance with the Council-approved Seven Day Snow Event Plan. Parks, Roads and IT are ready to perform this final testing phase; if major snow events and subsequent testing can occur, the new automated SNIC map will go live to the public in 2016. When the automated map is published, tracking and analysis of SNIC service requests, website visits, and routing efficiencies will occur. Roads SNIC services is anticipated to be added to the next phase of the Citizen Dashboard.

Roads Spring Clean-up and Parks Mowing
The proposed technology has additional applications. In spring 2015, the clean-up work completed by Roads was captured with a combination of 30 permanent and portable CFOS units. This data was collected and successfully published internally. Roads is evaluating the data internally to determine if this information will be made public as part of the online interactive map or if the data will be directed to specific stakeholders.

In summer 2015, 20 portable units and 5 permanent CFOS units were tested in the Parks mowing fleet in portions of Wards 11 and 14. Logistical challenges with the portable CFOS units limited the number of mowers tested during the operating season; there were issues with providing power to portable CFOS units in both mowers and snow-clearing equipment that are used by contractors. At this time the technology will not be applied citywide due to limitations in functionality and cost to purchase additional CFOS units for all City and contractor mowing fleets. The use of portable CFOS units for tracking mowing services offers strategic opportunities for addressing citizen and sport user group concerns, and for creating efficiencies for routing in new communities and optimizing horticulture practices. Parks and Roads continue to investigate these opportunities as well as the use of CFOS units to track progress of the joint pilot mowing program (Dandelion Control on City Property, CPS2015-0738) that was approved by Council on 2015 September 28. Both business units will also look for ways to advance the technology in accordance with their respective 2015-2018 Action Plans.

Stakeholder Engagement, Research and Communication
The project required research and investigation into software and collection of live service delivery data. Parks and IT staff collaborated to demonstrate online map features to City staff

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and members of the public at an eCity event. Representatives from Parks, Roads, IT and Customer Service and Communications continue to collaborate on this project.

Strategic Alignment
This report meets the following Council Priorities and Strategies:
- A city that moves (M2: Maximize the flow of traffic on the existing transportation network through the application of technology)
- A well-run city (W6: Effectively manage The City's inventory of public assets, optimizing limited resources to balance growth and maintenance requirements; and W7: Continue to transform the organization to be more citizen-focused in its approach and delivery of service)

This report supports the following 2015-2018 Action Plan objectives (Parks and Roads):
- N9.1: Use customer feedback to drive service improvements, process efficiencies and value for money.
- P10.1: Provide citizens access to Roads information online such as travelers' information and road works locations and schedules.
- M2.3: Investigate technologies that optimize existing/new systems to lower operating costs and maximize efficiency.
- W2: Be as efficient and effective as possible, reducing costs and focusing on value-for-money.

This project aligns with the Council Innovation Fund purpose of one-time start up or "seed" funds for initiatives or programs which will support or contribute to Council's priorities.

Social, Environmental, Economic (External)
Customer responsiveness and efficient service delivery are a primary focus for Administration. This project will allow staff to manage work requests more efficiently through current technologies and will increase transparency of City services. Externally viewed work accomplishment maps will provide citizens with up-to-date information that can be used to select an optimal travelling route during the winter season. The internal maps will be available to 311 agents.

Financial Capacity
Current and Future Operating Budget:
One time in-kind budget in the amount of $200,000 was provided by the partner business units (Parks, Roads and IT). The existing SNIC map is maintained by IT and this maintenance forms part of the larger Roads and Parks IT operating budgets. This maintenance cost will be re-negotiated following system automation but is not expected to change significantly. The annual cost of life-cycling CFOS units and the supporting wireless charges to collect data are included in ongoing operating budgets for each business unit.

Current and Future Capital Budget:
Of the total $300,000 Innovation Fund received, $261,000 has been used to develop digital routes in GIS, to build required web interfaces, and to purchase 30 CFOS units. The remaining

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$39,000 will be used for final testing and implementation. Parks and Roads will continue to share the portable CFOS units and jointly evaluate the need to purchase portable and permanent units in the future.

Risk Assessment
This project considered the balance of providing accurate data in a timely manner against the amount of information provided and how this information can be used most easily. Employees can leverage modern technology to expedite workflows and respond to citizens more efficiently. Automation of data intake will lead to more accurate information to be shared.

REASON(S) FOR RECOMMENDATION(S):
As part of the Innovation Fund application, Administration committed to reporting back to Council on the Interactive Parks and Roads Map pilot project.