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Item No. 9
Halifax Regional Council
July 18, 2017

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed by 

Jane Fraser, Director of Corporate and Customer Services

DATE: June 29, 2017

SUBJECT: Smart City Challenge Fund – Federal Program

INFORMATION REPORT

ORIGIN

The Federal Government is announcing a federal cost shared program called the Smart City Challenge. Representatives from ACOA have met with senior staff and the Mayor on the objectives of the program.

Update to delegates at the Federation of Canadian Municipalities 2017 Conference in Ottawa.

LEGISLATIVE AUTHORITY

HRM Charter Section 74 – permits HRM to enter agreements with the Province or Government of Canada to provide or administer municipal services.
Administrative Order #58, section 16(1) provides that revenue generating agreements for the municipality must be approved by Council when HRM is receiving more than \$500,000.

BACKGROUND

The 2017 federal budget proposed to provide \$300M over 11 years to Infrastructure Canada to launch a Smart Cities Challenge Fund to improve the quality of life for urban residents, through better city planning and implementation of clean and digitally connected technology. The fund will support a competition among cities across Canada to develop Smart Cities Plans, bringing together local governments, citizens, businesses and civil society.

The Smart Cities initiative is one of two streams of the Impact Canada Fund, which aims to help focus and accelerate efforts toward solving big challenges facing Canadian cities. While based on a similar initiative launched in the United States, it is expected that the challenge will incorporate best practices from other jurisdictions that have successfully launched programs to help cities use technology to meet challenges.

Canadians who live in urban communities face many challenges, from traffic congestion that takes time away from family and friends to poor-quality air that can make it difficult to enjoy all benefits cities offer. Participants will create ambitious plans to improve the quality of life for urban residents, through better city planning and implementation of clean, digitally connected technology including greener buildings, smart roads and energy systems, and advanced digital connections for homes and businesses. Winning cities will be selected through a nationwide, merit-based competition, facilitated by the Government's new Impact Canada Fund.

The prizes to be awarded to the winning cities include:

- One large prize of \$50M
- Two prizes of \$10M for mid-sized communities
- One prize \$5M for a small community; and
- One prize of \$5M available for an Indigenous community

To accelerate innovation further, infrastructure and transportation will also be eligible sectors under the Government's commitment to support business-led innovation "superclusters" that have the greatest potential to accelerate economic growth. <http://www.infrastructure.gc.ca/plan/cities-villes-eng.html>

It is anticipated that details of the fund will be released in the Fall. Based on the communication thus far it is anticipated that the program roll out will be in the form of three rounds.

DISCUSSION

Staff within the ICT branch of Corporate and Customer Services have been meeting with several stakeholders and industry leaders in Smart City thinking to gather information on how to best position HRM to be successful when the details of the Federal Program are announced.

In addition to meeting with industry, staff have conducted a jurisdictional review of best practices around the world and have carried out an evaluation of the HRM's state of readiness when it comes to Smart Cities.

When looking at Smart Cities there are generally seven areas of focus:

- Smart Infrastructure
- Smart Services
- Smart Transportation
- Smart Citizen Engagement
- Smart Administration
- Smart Innovation
- Smart Decision Making

HRM has projects underway, to varying degrees, in six of the seven of the areas. The area where we do not currently have projects is in Smart Innovation. When evaluating HRM's performance in the seven areas of focus, HRM seems to be more engaged in Smart Transportation through some of the work that is being carried out in LED street light technology, parking meters and Halifax Transit. HRM is also involved in the early stages of Smart Decision through providing open data, and the use of standardized bench marks through Municipal Benchmarking of Canada (KPI's) and development of HRM business intelligence. (see Appendix A, for a complete list of HRM projects underway). The benefit of looking at all the initiatives within HRM is we can see where we have opportunities for collaboration among HRM business units, community partners, other municipalities and our vendor community. As an example, Halifax Regional Water Commission's installation of mesh network to support smart water meters may provide shared opportunity for communications.

While HRM has projects within many smart city domains there is a need to develop a focused long term vision and plan to align Citizen need and Council direction with a coordinated technology roadmap.

Developing this plan will allow HRM to advance foundational technology solutions which in turn will provide a footing to develop transformative solutions in an integrated manner.

It is currently understood that developing partnerships will better position cities for a winning bid. Partnerships can include such groups as municipal business units, key stakeholders within the city, other municipalities who may want to learn or leverage what may be developed, and local vendors. Understanding the importance of partnerships, HRM has an internal Smart Cities working group comprised of key internal stakeholders to guide the direction and engagement of external parties. The group is seeking engagement or has already engaged external parties such as, and not limited to, Halifax Partnership, Halifax Water, Halifax Higher Education Partnership, and Citizens. HRM will lead the collaboration to review and develop a proposal based on current work within HRM and opportunities within the community to identify solutions to enhance the lives of citizens.

The Federal government has yet to release a comprehensive document outlining the details of the challenge and it is currently understood that the challenge is based on the 2015 US Smart Cities Challenge and will have a broader focus than just transportation. The US Challenge framework was comprised of 3 phases as follows:

Phase 1: Initial submission of a 30-page document outlining the high-level ideas for solving the issue(s) with technology and innovation for revolutionizing transportation. From this phase, 5 finalists were to be selected with each receiving 100K.

Phase 2: Detailed submission of the business case. The US challenge was not just looking for how to implement various technologies but how to integrate them to maximize their benefit for the city and citizens.

Phase 3: Winner announced. One of the key pieces in selecting a winner was leadership within the city to carry the initiative forward.

The challenge was seeking to leverage technology and innovation ideas through:

- Automation
- Open Data
- Internet of Things
- Machine Learning
- Connected Vehicles
- Mobility on Demand

Benefits the challenge was seeking to achieve were:

- Order of Magnitude safety improvements
- Reduced congestion
- Reduced emissions and use of fossil fuels
- Improved access to jobs and services
- Reduced transportation costs for government and users
- Improved accessibility and mobility through Mobility on Demand (MOD)

There were 12 Vision elements that the challenge was seeking divided into 3 categories:

Technology Elements:

- Urban Automation
- Connected Vehicles
- Intelligent, Sensor-Based Infrastructure

Innovative Approaches to Urban Transportation Elements

- Urban Analytics
- User-Focused Mobility Services and Choices
- Urban Delivery and Logistics

- Strategic Business Models and Partnering
- Smart Grid, Roadway Electrification, & EVs
- Connected, Involved Citizens

Smart City Elements

- Architecture and Standards
- Low-Cost, Efficient, Secure, & Resilient ICT
- Smart Land Use

The selection process followed a procurement process which included strict criteria which had to be met before the proposal would be reviewed for ideas and solutions. HRM is expecting that this same process will be in place for this Smart Cities Challenge and will work with the collaborative group to ensure the details surrounding the procurement process are met to avoid disappointment of the proposal being disqualified on a procurement technicality.

FINANCIAL IMPLICATIONS

There is currently limited information available regarding expenses for the Federal Smart Cities Challenge, we will share more information as it becomes available.

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Administrative Order #58, section 16(1) provides that revenue generating agreements for the municipality must be approved by Council when HRM is receiving more than \$500,000.

COMMUNITY ENGAGEMENT

The establishment of community partnerships is a key objective of the HRM Smart City Working Group. This group will identify key partners to engage in the development of the Smart Cities Challenge proposal for the idea generation and solution identification for the proposal. The working group will work with these partners to develop a proposal that can be leveraged by other communities, where possible, across Atlantic Canada and beyond. The engagement will also include solicitation of citizens through various forms including social media.

There are currently many community groups and initiatives tackling a variety of issues facing our citizens daily. Our goal will be to focus on a need and the associated ideas for resolving this need while avoiding the desire to tackle everything. A focused approach with our community partners will ensure the proposal remains aligned with HRM priorities and provide maximum community benefit through an innovative and strategically planned approach. HRM will also be positioned to align the proposal to current innovation and technology plans within the city which will present our leadership and commitment to the initiative with our community partners.

ATTACHMENTS

Appendix A – HRM Smart City Projects Underway

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.php> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

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Appendix A – HRM Smart City Projects Underway

Smart Infrastructure	
Asset Management	Enterprise wide mobility-enabled technology solution which supports maintenance management of Halifax’s non-vehicle assets as well as remote electronic workflow management from the field.
Street Lights	<p>Conversion of the Municipality’s 43,789 streetlights to LED technology, plus addition of a central management system and supporting communication network that enables the streetlights to be remotely monitored and controlled. The conversion project is anticipated to provide operational savings from energy efficiency gains and lower maintenance costs, as well as opportunities for improved public safety and service delivery.</p> <p>*NS municipalities are obligated under provincial regulation to convert all street lights to LED by Dec 31, 2022.</p>
Smart Services	
Prioritized City Services	<p>Encompasses a number modern technology solutions that will support core municipal functional areas as well as the capability to manage and deliver high-value digital services to citizens and businesses. Solutions include:</p> <ul style="list-style-type: none"> • A Mobile-first designed Website and Content Management system which will support the delivery of digital services from across Business Units; Initial phase scheduled to be implemented in first quarter of 2017 • A Permitting and Licensing solution which will support the fulfilment of services received through a variety of services channels including but not limited to the web and mobile; currently in the early stages of this project, full implementation of all solution phases is estimated to be completed in early 2020. • An enterprise Recreation Management software solution deployed to Halifax facilities as well as to several Multi-district recreation facilities across the municipality. The solution will enable the provision of common (and facility-specific) services; citizens will be able to access, request and pay for these services through a variety of service channels including Web and Mobile. Currently in the early stages of this project, full implementation of all solution phases is estimated to be completed in late 2018
ePayment	A corporate payment processing solutions that will enable citizens and businesses to seamlessly pay for specific services requested through digital service channels. Currently in the early stages of this project, initial implementation of the solution is estimated to be completed in early-mid 2018.
Smart Citizen Engagement	
High Speed Connectivity	The Municipality is in contract with a major TelCo (Bell) for a Public Wi-Fi service in key areas within the Downtown Core. This project is anticipated to enable three strategic outcomes: 1) Economic Development, 2) “Smarter City” Service Delivery, and 3) Closing the Digital Divide.
Smart Decision Making	
Open Data	Municipal Council adopted the Respecting Open Data Administrative Order on Aug 5, 2014, which enables the release of HRM data sets to the public free of charge. Key objectives include 1) Increased Transparency & Access to Data; 2) Enhanced Public Engagement; 3) Economic Development; and 4) Municipal Leadership. A

	total of 45 data sets have been released to date; new data sets are released on a regular cycle. Halifax was one of the first Canadian municipalities to adopt an Open Data program.
KPI - Measurement (Key Performance Indicators)	A greater commitment to customer service has resulted in the development of a comprehensive Customer Service Strategy for Halifax. One of the key objectives established is to ensure better responsiveness to customers through the development of specific customer service standards and performance measurements. A “Customer Service & Performance Excellence” (business) area has been established within of the Corporate Customer Service business unit that will focus on customer service performance. In addition Halifax has committed to sign on to Municipal Benchmarking Network Canada (MBNC) which is a partnership between Canadian municipalities “who believe in the power of measurement to inspire continuous improvement in the delivery of services”
Business Intelligence	<p>ICT’s Business Intelligence group (BI) has begun working on Smart City related initiatives with several Halifax business units.</p> <p>One initiative is with Halifax Transit and data being collected from their new Automatic Vehicle Location (AVL) and Automatic Passenger Counters (APC) technologies. While still in the early stages, Transit’s objective is to have their data displayed in electronic dashboards and reports that will enable management to analyze the right information and make smart decisions on the services they are delivering. One example of this would be analysing ridership and bus routes, to help determine route optimization</p> <p>Another example is a predictive analysis initiative with emergency services and Halifax Fire. BI has begun working with Fire data and overlaying it with Spatial Analysis data to reveal if dispatch time for apparatuses are appropriate and if there are any geographical areas within the municipality that are at risk.</p>
Smart Transportation	
City Transit	Through the implementation of improved transit technology including Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL), Electronic Fare Management Systems, and Bus Stop Announcement, Halifax Transit is transforming the way customers interact with the transit system. In addition to providing improved service reliability and enhanced customer experience, new technology will provide data and management opportunities to inform increased efficiency of the transit system.
	Transit Computer Aided Dispatch/Automated Vehicle Locator System – final stages of Implementation are underway. This system is providing improved service reliability and real time information to the travelling public. Additional planned functionality includes enabling customers to confirm the location of a bus using real-time data supplied to 3rd-party web and mobile application providers. Automated stop announcements and head sign integration are improving the quality of the service provided.
	Fare Management Solution – Implementation is anticipated to begin this FY. Objectives include increasing revenues, increasing operator safety, and providing timely data for management decisions. Features may include easy, electronic fare payment, automated transfers, smart fare technology, electronic web purchasing, fare vending machines and re-loadable smart cards.

	<p>The Bus Surveillance System Upgrade Project will improve the surveillance capabilities for the Halifax Transit fleet with high definition digital cameras that leverage the capabilities of the currently fitted analog camera suite. The project will also introduce Wi-Fi uploading for greater efficiency and improve analysis capabilities.</p> <p>NOTE: this project received a \$2M funding match from the Federal Government.</p>
Parking	<p>Development of an Integrated Mobility Strategy is currently underway and will bring together the Road Network, Transit, Parking, and Active Transportation strategies, as well as a complete streets policy and other Transportation Demand Management plans. The Regional Parking Strategy is a comprehensive 25-year plan addressing a wide range of issues related to parking. The Parking Strategy Roadmap is a focused examination of high priorities from the Strategy and provides a three-year program of deliverables with a concentration on governance, new technologies and supply/demand inventory.</p>
	<p>The Municipality plans to issue an RFP in FY 17/18 for a comprehensive parking technology solution that provides citizens & businesses with a streamlined parking experience, improved business operations. The solution is anticipated to include the following functionality: new payment options (replacement of antiquated parking meters), parking permit management, enforcement and compliance, data and data analytics (including spatial), and integration with other systems within the municipality or other external partners (i.e.: the Province).</p>
	<p>The municipality is currently in the process of procuring a Mobile Parking Payment Service via RFP to allow customers the option of paying for parking via a mobile app. This is intended to be a “quick win” in advance of the comprehensive parking technology solution, and may be leveraged by partner organizations such as Waterfront Development and the Business Improvement Districts.</p>
Traffic Signal / Traffic Management	<p>The municipality completed implementation of its iNet Advanced Traffic Management System (ATMS) in 2016 through Phase 1 of the Traffic Signal Integration project. Phase 1 also involved upgrading on-street equipment/technology at 91 signalized intersections and connecting these to the ATMS via cellular communications, enabling real-time detection (of pedestrians, bicycles and vehicles), and remote monitoring and control of the signals. Phase 2, planned to begin this FY, will see expansion to the remaining ~180 signalized intersections. Additional capabilities enabled by this solution include: emergency vehicle pre-emption, transit signal priority, automated traffic flow adjustments based on real-time conditions.</p> <p>Some of the many project objectives include: improve public safety including EMO/evacuation measures and improved emergency vehicle response time, improve service delivery to the public, reduce vehicular delays and related greenhouse gas emissions, increase roadway capacity without roadway widening, and enable remote trouble-shooting and remote adjustment of traffic signal timings which previously had to be done in the field.</p>
	<p>The municipality employs an emergency vehicle pre-emption system (Opticom), that allows emergency vehicles outfitted with the on-board technology to communicate with equipped signalized intersections. This enables the normal traffic signals to be pre-empted (for example, by extending a green light) so that the emergency vehicle can quickly pass through the intersection.</p>

	<p><i>(Proposed)</i> A top priority for TPW is to close the existing gap around Road/Traffic Disruption Management in order to 1) effectively coordinate planned & unplanned road / lane closures with internal and external partners; and 2) communicate these planned & unplanned traffic-disrupting events to the public in real or near-real time, along with responses such as alternate routes and detours to the public. Technologies are available in the market place that would pool real-time data from several sources, such as ATMS, Maintenance Management and Permitting systems. This is the top priority project reflected on TPW's recently completed Technology Roadmap.</p>
<p>Smart Administration</p>	
<p>Smart Administration, while less outward facings that more familiar Smart City focus areas (e.g. Smart Infrastructure, Smart Transportation, etc.) is no less important. Smart Administration areas tend to focus on speeding up and simplifying administrative processes, ultimately resulting in improved services to citizens and businesses. The following represents Halifax's key Smart Administration initiatives now.</p>	
<p>Revenue Management Replacement</p>	<p>This initiative will replace Halifax's existing Revenue Management solution with a more modern business solution. Once installed, it will improve many core accounting related functions, process workflow and enable easier integration with other core municipal business solutions.</p>
<p>Corporate Scheduling</p>	<p>Corporate Scheduling will provide an online tool for managers, schedulers and employees to review, update, request changes, and approve schedules. This solution will ensure HRM services are appropriately staffed with the available staff in an efficient process that aids in monitoring staffing levels to meet HRM services commitments to citizens.</p>
<p>Enterprise Content Management</p>	<p>An Enterprise Content Management (ECM) solution captures, stores, preserves, and delivers "information" across an organization. As a municipality matures and undertakes more major business/IT initiatives, ECM's underlying technology is required to support the management of information (Structured & Non-structured). (Note: ECM funding exists however the initiative is not yet underway, at this time)</p>