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Item No. 14.2.4
Halifax Regional Council
November 8, 2016

TO: Mayor Savage and Members of Halifax Regional Council

Original Signed

SUBMITTED BY:

Councillor Linda Mosher, Chair, Audit & Finance Standing Committee

DATE: October 19, 2016

SUBJECT: Parking Ticket Management System

ORIGIN

October 5, 2016 meeting of the Audit & Finance Standing Committee, Item No. 12.1.4

LEGISLATIVE AUTHORITY

Audit & Finance Standing Committee Terms of Reference section 3.8, which states “to review and make recommendations on proposals coming to Halifax Regional Council outside of the annual budget or tender process including but not limited to:

- New Programs or services not yet approved
- Programs or services that are being substantially altered
- Proposed changes in operating or budget items
- Committing of funds where there is insufficient approved budget, or,
- New or increased capital projects not included in the approved budget
- Increases in project budget due to cost sharing
- Creation or modification of reserves and withdrawals not approved in the approved budget

RECOMMENDATION

The Audit and Finance Standing Committee recommends that Halifax Regional Council increase Capital Project CI990031 Parking Ticket Management System in the amount of \$108,000 to be funded from the Capital Fund Reserve to begin the implementation of the Parking Strategy Roadmap

BACKGROUND

A staff report dated September 19, 2016 pertaining to a Parking Strategy Roadmap Multi-Year Implementation Budget was before the Audit & Finance Standing Committee for consideration at its meeting held on October 5, 2016.

For further information, please refer to the attached staff report dated September 19, 2016.

DISCUSSION

The Audit & Finance Standing Committee considered the staff report dated September 19, 2016 at its meeting held on October 5, 2016 and forwarded the recommendation to Halifax Regional Council as outlined in this report.

FINANCIAL IMPLICATIONS

As outlined in the attached staff report dated September 19, 2016.

RISK CONSIDERATION

As outlined in the attached staff report dated September 19, 2016.

COMMUNITY ENGAGEMENT

The Audit & Finance Standing Committee meetings are open to public attendance, a live webcast is provided of the meeting, and members of the public are invited to address the Committee for up to five minutes at the end of each meeting during the Public Participation portion of the meeting. The agenda, reports, and minutes of the Audit & Finance Standing Committee are posted on Halifax.ca

ENVIRONMENTAL IMPLICATIONS

Not applicable.

ALTERNATIVES

The Audit & Finance Standing Committee did not discuss alternatives.

ATTACHMENTS

1. Staff report dated September 19, 2016

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.

Report Prepared by: Liam MacSween, Legislative Assistant, 902.490.6521

Item No. 12.1.4
Audit and Finance Standing Committee
October 5, 2016

TO: Chair and Members of Audit and Finance Standing Committee

SUBMITTED BY:  Original Signed

Jacques Dubé, Chief Administrative Officer

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Bob Bjerke, Chief Planner & Director, Planning & Development

DATE: September 19, 2016

SUBJECT: Parking Strategy Roadmap Multi-Year Implementation Budget

ORIGIN

Motion of April 1, 2014, that Halifax Regional Council:

Direct staff in Planning and Infrastructure to review the 2008 Regional Parking Strategy Functional Plan and to come forward with a roadmap that addresses the implementation considerations in the August 2008, Halifax Regional Municipality, Regional Parking Strategy Functional Plan.

And further that the review specifically address the recommendations of: governance, use of technology for parking payment (such as pay by plate technology) and the management of parking in high-demand residential neighbourhoods.

Motion of February 2, 2015, that Halifax Regional Council approve:

1. The approach to parking as outlined in the Parking Roadmap contained in Attachment 1 of the January 12, 2015 staff report.
 - (a) Identify parking as a defined municipal service
 - (b) Approve the Phase 1 GIS Mapping Project and the Handheld Device Replacement Project in 2015-16 for an estimated cost of \$80,000 covered by existing operating funds
 - (c) Direct staff to commence development of supply demand management policy framework based on active parking management strategies including supply management, pricing, demand management and other supporting strategies to optimize parking

- (d) Direct staff to investigate parking technology options to be presented to Regional Council for consideration and approval
- 2. Direct staff to return to Regional Council for approval of each of the future year projects contained within the Parking Roadmap prior to project implementation.

LEGISLATIVE AUTHORITY

Halifax Charter section 120(6) - The Municipality may maintain other reserve funds for such purposes as the Council may determine;

Halifax Regional Municipality policy on Changes to Cost Sharing for Capital Projects - Changes requiring Council approval; and the Halifax Regional Municipality Administrative Order 2014-015 Reserve Funding Strategies (5) The Audit and Finance Standing Committee shall review and recommend to the Council for its consideration all impacts to the Reserves; (6) The Chief Administrative Officer may recommend to the Council that Reserve funds be expended. Reserve Guidelines (4) No reserve funds will be expended without the CAO's recommendation and Council approval.

RECOMMENDATION

It is recommended that Audit and Finance Standing Committee recommend to Regional Council to increase Capital Project CI990031 Parking Ticket Management System in the amount of \$108,000 to be funded from the Obligation Reserve: Capital Fund Reserve, Q526 to begin the implementation of the Parking Strategy Roadmap.

BACKGROUND

The 2008 Regional Parking Strategy was a deliverable from the 2006 Regional Plan and identified a long term strategy to ensure parking is integrated with all elements of transportation and land use planning. The Parking Strategy Roadmap built on the recommendations of the Regional Parking Strategy and was approved by Regional Council in 2014. The Roadmap focused on three aspects of the Regional Parking Strategy: Governance, Technology and Supply/Demand and developed a three year implementation plan.

To support the implementation of the Roadmap, the Regional Parking Strategy & Urban Core Improvement Reserve (Q329) was established. Although, at the time, individual projects had not been determined, Council's intent was to commit future capital funds by approving (April 1, 2014) the creation of a roadmap addressing the implementation considerations of the Functional Plan. The Reserve (Q329) Business Case states that "These have initially been identified as: governance; use of technology for parking payment (such as pay by plate technology); and the management of parking in high-demand neighbourhoods. The intent is to include the private sector in the plan for partnering opportunities. The source of funds for this reserve is the annual net revenue from the MetroPark Parkade."

DISCUSSION

This report deals with options for Parking Technology. Implementing an effective management structure to support parking as dedicated services as well as developing a supply demand policy framework is underway, and will be the focus of future reports.

An Opportunity Assessment was developed for Parking Technology and approved by the Information, Communication & Technology (ICT) Committee on July 7, 2016. The Opportunity Assessment focused

on six technologies identified in the Parking Roadmap that support the management and enforcement of parking and stressed the need for these technologies to be upgraded and connected to each other.

Those technologies are:

- Replacement of hand-held enforcement devices
- GIS mapping
- Parking payment solution (meter replacement)
- Parking permit solution
- Parking ticket management system replacement
- Digital signage

The Executive Summary for the Parking Technology Opportunity Assessment is included as Attachment A. In addition to outlining the challenges and benefits of implementing parking technology changes, the Parking Technology Opportunity Assessment lays out a Business Plan for implementation and identifies a time line and resource requirements, both internal and external.

Within the remainder of the 2016-17 fiscal year, staff proposes to prepare a Request for Proposal (RFP) to engage an implementation team. The resulting RFP will be issued when funding is secured through the 2017/2018 Capital Budget process. The \$108,000 requested will be used to engage a business analyst to develop the request for proposal, as well as engage consulting resources to execute the Public Information/Engagement process. The process, which will include involvement of the five Business Districts within the Regional Centre, is planned for early 2017.

Public engagement is an important early deliverable identified in the Parking Roadmap. The five business associations, along with major public parking providers (like Waterfront Development Corporation, Halifax Port Authority and private sector operators), will be important partners in this undertaking. In addition to gaining an understanding from stakeholders regarding the needs of parking as a service, key deliverables will include a scoping of roles in the management of downtown parking supply.

The work plan laid out in the Parking Technology Opportunity Assessment includes estimates for time and cost of each step in developing a comprehensive and integrated parking technology solution that covers all aspects of parking management including payment, enforcement, collection, adjudication and issuance of permits. The Assessment estimates an implementation schedule of 40 months, a total capital cost of \$4.68 million, including the funding request in this report. (This is a refinement of a preliminary capital cost estimate of \$11.5 million that was included in the Parking Roadmap approved by Regional Council in April, 2014). The future \$4.37 million Parking Roadmap investment will be identified for approval of Regional Council in Project Budgets beginning in 2017/18 budget. The operating cost implications (OCC) of the solution will also be included in the project Supplemental Report. The Opportunity Assessment identified benefits totaling \$270,000 per year due to improved efficiency and increased revenue. However, software licensing and mobility charges are estimated to be \$525,000. These estimates will be refined as the technology solution is developed.

The Regional Parking Strategy & Urban Core Improvement Reserve had an opening balance of \$2,022,516 (as of April 1, 2016) and will continue receiving revenue of \$1,000,000 per year. This balance and future revenue flow is more than sufficient to fund the planned roll-out of the parking technology project. On July 26, 2016 Regional Council approved the consolidation of HRM reserves. The Regional Parking Strategy & Urban Core Improvement Reserve (Q329) is being consolidated into the Capital Funds Reserve, Q526. The plan for implementing parking technology described in this report is consistent with the previous reserve business case as well as the approved reserve business case of September 20, 2016 for Q526. Reserve consolidation is not expected to change the future revenue flow or delivery of the project.

The Regional Parking Strategy & Urban Core Improvement Reserve was also intended to fund projects generated from the *Downtown...I'm In* initiative. While a work plan for *Downtown...I'm In* is still being

developed, the withdrawal requested in this report for parking technology will not compromise that plan. In fact, the parking technology and public awareness work proposed in this report is an action item from *Downtown...I'm In*.

FINANCIAL IMPLICATIONS

If approved there will be an increase to reserve withdrawals. The available reserve funding, as confirmed by Finance, is summarized below:

Budget Summary: Capital Project CI990031 – Parking Ticket Management System

Cumulative unspent budget	\$ 75,916
Plus increase from Reserve Q526	\$ 108,000
Projected balance after increase	\$ 183,916

Budget Summary: Obligation Reserve: Capital Fund Reserve, Q526

Balance in Reserve, August 31, 2016	\$ 14,900,605
Pending Revenue to March 31, 2017 as at August 31	\$ 7,906,966
Commitments to March 31, 2017 as at August 31	\$(14,287,613)
September 20, 2016 Council Approvals of withdrawals:	
Buyback property	\$ (179,630)
Withdrawal per recommendation	\$ (108,000)
	\$ 8,232,328

Obligation Reserve: Capital Fund Reserve, Q526 (September 20, 2016)

The business case for this reserve includes “capital costs for the Parking Strategy Project – Roadmap, identified in Functional Plan. Funding identified for governance, use of technology for parking payment (such as pay by plate technology and the management of parking in high-demand neighbourhoods). Projects from the roadmap should support three broad themes: (1) Strategies that increase the efficiency of the existing parking system; (2) Strategies that reduce parking demand; and (3) Additional supporting parking related strategies.” The requested withdrawal meets the requirements of the reserve’s intended use.

RISK CONSIDERATION

Business Unit Resources

Insufficient business input and/or project schedule delay may result if business unit resources are not available as needed. Key business unit resources may not be available due to retirement, vacations, or other unavoidable absences that may impact the project.

Mitigation: Obtain management support for business unit resource engagement. Provide backfill and advance notice for required resources.

Resistance to Change

Staff may be resistant to accepting and using information and process changes introduced by the new solution.

Mitigation: Project team includes an Organizational Change Management Specialist to work with the business units and Human Resources to develop and implement a change management plan.

Citizen Resistance

Citizens may be resistant to accepting and using new technology.

Mitigation: Citizen awareness campaigns done early and frequently using multi-channel communications. Corporate Communications will be involved in the planning and execution of all citizen communication.

Business Processes

Business processes may not be modified adequately to achieve the benefits and to support the adoption of the new technology by the business units.

Mitigation: The Process Improvement division will be the lead in business process improvements. Project team includes Business Analysts and Organizational Change Management Specialist and Business Unit Subject Matter Experts to define and implement business process changes.

Project Schedule

In a multi-year complex project, project schedules are subject to change. If not managed closely and/or project dependencies miss schedule deadlines, the entire project begins to slip which extends the project duration and adds to the total cost.

Mitigation: A dedicated project team with a professional Project Manager to manage all aspects of the project.

Reserve Revenues

The proposal relies on fully funding the multi-year project from the Obligation Reserve: Capital Fund Reserve, Q526-

Mitigation: This risk is low, as MetroPark revenues have been historically consistent. Nonetheless, the project will be designed so that some implementation phases can be delayed thereby allowing the revenue stream to "catch up".

COMMUNITY ENGAGEMENT

No community engagement has taken place since 2009 when public consultation sessions were held as part of the Regional Parking Strategy. Additional community engagement is planned for early 2017.

ENVIRONMENTAL IMPLICATIONS

There are no significant environmental implications associated with this project.

ALTERNATIVES

The Standing Committee may choose to defer the transfer of funds to this project until the 2017-18 fiscal year. This will result in a delay of about six months to the initiation and completion of the project.

ATTACHMENTS

Attachment A: Opportunity Assessment - Parking Technology (Executive Summary)

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

Report Prepared by: Dave McCusker, P.Eng., Program Manager, Transportation Planning, 902.490.6696

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Report Approved by: Peter Duncan, P.Eng., Manager, Asset & Transportation Planning, 902.490.5449

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ICT Approval by: Donna Davis, Chief Information Office, Finance & Information Technology, 902-476-8486

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Financial Approval by: Amanda Whitewood, Director of Finance and Information Technology/CFO, 902.490.6308

OPPORTUNITY ASSESSMENT

Parking Technology

Executive Summary

1. Opportunity Assessment Scope

The scope of this Parking Technology Opportunity Assessment is primarily parking technology focused, but as technology is a business enabling tool, some of the business processes and procedures were reviewed to ensure there is technology alignment with business. This resulted in some business process recommendations as well as parking technology recommendations. The seven (7) technology projects identified in the Parking Roadmap were looked at with an integrated “end-to-end” lens. This approach ensures better integration, creates more efficiency, and reduces the overall project cost, as well as, implementing a world class parking technology solution to support the business of parking within the Halifax Regional Municipality.

Future Considerations for Project

During the interview process, a number of suggestions for future consideration were raised. They are recorded here for consideration and further analysis in the initial planning phases of the project, however, were considered out of scope for detailed research as part of the OA. They are, in no particular order:

- Paperless tickets
- Integration with other jurisdictions (other provincial registries of Motor Vehicles)
- License Plate Recognition (LPR) technology – this assumes that the Pay-by-Plate payment option was decided and implemented
- Off-street parking – bring back in house as contracts expire
- Raise rates of on-street parking – to help increase / ensure turnover
- Integration with Halifax Regional Police ticketing system
- Integration with potential parking partners, such as, Waterfront Development Corporation, Port of Halifax, Downtown Halifax Business Commission, the universities, etc.

1.1 Business Context

The business of parking within the Halifax Regional Municipality (the “municipality”) consists of multiple functions, including but not limited to, location, duration, type, rate, payment, policy, regulations, and compliance/enforcement. Decisions need to be made as to where parking should and can be assigned, how long parking should be permitted in each area, the type of parking, whether metered or permitted, the rate or cost for parking in that area, the methods of payment for parking and parking tickets, and how parking regulations will be enforced. While each one of these functions can be considered unique, they are also each a piece within the integrated whole business of parking. These parking functions and

the business functions that support them need to work together in order to provide citizens with a streamlined parking experience. The usage of technology to enable these functions is imperative in today's consumer market. Citizens are expecting to be able to pay for their parking with methods other than coins, to be able to apply for and renew parking permits without having to visit customer centres, to be able to pay or appeal parking tickets from the comfort of their home, to be able to more easily find parking, especially in the downtown core. The Municipality wants to meet and exceed these expectations.

While the Halifax Regional Municipality currently provides all of these parking functions, the Planning and Development business unit is primarily responsible for the parking governance within the municipality. Planning and Development is sponsoring the development of this Opportunity Assessment to be able to better understand the technology options that exist in the market to provide streamlined parking services to Halifax. The management of specific functional areas of parking are distributed across the organization in various business units and departments, but the parking business decisions are primarily managed by Planning and Development. The separation of parking functionality across other business units (for example, the location of parking is determined by TPW and the physical meters are managed by Finance), creates coordination and communication issues, and as such, increases the complexity of managing the business of parking. This is why Planning and Development have been taking the lead in organizing the parking functions. They have created and filled a new FTE position, "Parking Strategy Coordinator" in their business unit as a way to address communication and alignment.

The current parking technology is also functionality specific with little or no integration. Add to this the fact that the current technology used to support these functions is considered to be "end of life", and is at risk of failure, (i.e. the hand held devices for issuing tickets and the Parking Technology Management solution that tracks payments), the complexity and risk of managing an integrated parking business has been dramatically increased in recent years.

In addition to internal Municipal complexity, there are external agencies such as the Waterfront Development Corporation, Port of Halifax, and Dalhousie University that are involved in providing parking services and who use the Municipality enforcement and collection functions. Today there is no technology integration between the Municipality and these organizations. Ideally, all parties would use the same or compatible technology and both payment and enforcement information would be electronically transferred between the parties. This would provide a more seamless experience for the consumer of parking services.

1.2 Business Problem/Opportunity

All Halifax parking technology needs to be replaced. By having to replace it all, the municipality can properly plan and implement an integrated, "end-to-end" modern parking solution rather than an uncoordinated, disjointed approach to replacing the old and failing technology one technology at a time. This is both the problem and the opportunity for parking technology in the Halifax Regional Municipality.

Technology currently used to support different aspects of parking (parking meters, handheld ticketing devices, the parking ticket management system (PTMS), and residential parking permits) are all at end of life and require replacement. In addition, this current technology, as documented in the Parking

Roadmap no longer meets business or citizen needs. Some examples of the current problems and issues are:

- Revenue is being lost. Broken meters do not generate revenue.
- Integration issues between the municipal compliance software and Registry of Motor Vehicles has caused lost collections of parking tickets.
- The current technology is obsolete and cannot be fixed or replaced (replacement components no longer exist in the market). Neither the current meter head nor the current handheld ticket machines are sold by their vendors.
- There is little integration between the technologies. The parking payment application does not integrate with the Parking ticket management system. This lack of integration creates not only extra work (data entry), but also creates duplication and errors which increases operational costs and reduces revenues.
- Current technology does not have modern payment methods for customer convenience, i.e. credit card, debit cards, online, pay-by-phone capabilities. Citizens today want to be able to pay with credit cards, on-line, and their phones. Citizen satisfaction would improve if they had these additional options of payment.
- There are inefficient and non-automated business processes. Many of the processes have little or no technology supporting them. Even those processes that have technology require manual intervention which adds to the complexity and cost of the process.
- Information is not available for decision making. The parking related information is spread across multiple solutions and linking it for operational and strategic decision making is difficult and sometimes impossible.
- There is a high cost of sustaining the old technology and processes.

Halifax Regional Municipality has an excellent opportunity to invest in modern, integrated, end-to-end parking technology that will improve the citizen experience around parking (increase the ease of payment, more payment options, easier interactions with parking functionality, more available parking), improve employee job satisfaction and productivity with new tools, and improve the data available for operational, planning, and strategic decision making.

1.3 Parking Vision

The future vision for parking in the Halifax Regional Municipality as stated in the 2014 Parking Roadmap is: "to optimize parking as a service component of mobility in Halifax contributing to the livability, economic health and accessibility of the city." The following long term goals for parking were identified and documented in the 2014 Parking Roadmap:

- To optimize short-term parking supply both on- and off-street in support of the needs of local businesses, residents, institutions and tourism by encouraging turnover.
- To optimize the supply of long-term parking for commuters and extended length parkers in a manner that balances Halifax Transit ridership, Active Transportation and Transportation Demand Management objectives with the needs of automobile users and in collaboration with other parking providers.

- To improve the customer experience through support strategies such as way-finding and/or pricing that provide options and a variety of choices.
- To work collaboratively with other public and private parking operators and stakeholders on an integrated approach to parking that supports other strategic initiatives while improving the user experience for those who need/desire to park.

This vision includes both public and private parking operators. While the focus of this Opportunity Assessment is parking technology within the public sector (Halifax Regional Municipality), there are opportunities to expand the technology integration between the public and the private sector. Further collaboration between the public and private sectors will benefit both parties as well as the citizens and visitors who use parking services.

The three (3) foundational aspects of parking management (parking streams) from the Parking Roadmap must be coordinated and managed together to fulfill this vision. Technology is an enabler for this vision. An integrated, "end-to-end" technology solution, fully supporting the governance and supply/demand management of parking, meeting and exceeding the expectations of citizens, the municipal staff, Council, and business, is the ultimate vision for parking in the Halifax Regional Municipality.

1.4 Business Objective

First, and foremost, the business objective of the Parking Technology stream of the Parking Roadmap is to replace the old and failing parking technology and add new technology where there is none today. The new parking technology must support the business functions of parking in a strategic and integrated manner that supports staff in providing parking services and meets the need and expectations of the citizens and users of the service as indicated by feedback collected in citizen surveys. The new parking technology should be an integrated "end-to-end" solution that meets all the identified parking requirements and establishes a foundation for future parking enhancements.

1.5 Business Benefits and Implications

A new integrated "end-to-end" parking technology solution will provide significant benefits to the municipality. The following benefits have been identified:

- Increase workforce capacity, effectiveness, and efficiency;
- Reduce operational costs;
- Increase revenue;
- Increase citizen satisfaction;
- Increase staff satisfaction;
- Reduce number of parking ticket appeals and adjudication;
- Increase functionality;
- Improve operational and strategic planning reporting and capabilities; and
- Establish a platform for future capabilities.

For the details regarding these benefits, see the Business Benefits section of this OA.

Implications of Not Proceeding

Several implications of not proceeding were identified. The full explanation of these implications can be found in the Implications section of this OA.

- Parking Technology and solutions need to be replaced due to their end of life status, and will be done resulting from immediate necessity in an uncoordinated approach. While the cost of such incremental replacement is marginally less, the lost benefits and savings of an integrated “end-to-end” solution will end up costing the city more in the long term.
- Increased risk of technology failure, impacting services to the citizens;
- Continued risk of having no disaster recovery or business continuity, therefore, the solution would not be highly available. With no back up mechanisms in place, in the event of a failure of technology, the city would no longer be able to support parking with technology;
- Missed opportunity to enhance service delivery to public and citizen satisfaction;
- Missed revenue opportunities;
- Council expectations will not be met; and,
- Staff expectations.
-

1.6 Solution Options

Solution Options

The following solution options were identified through stakeholder input as well as the jurisdictional and market scans.

1. **Strategic/Other Vendor Solution (potential to leverage existing contracts to acquire a Parking Technology solution)**
 - a. **SAP:** SAP does not have technology in this space that would meet Halifax’s needs, and was therefore discontinued from further research.
 - b. **Microsoft:** Microsoft does not have technology in this space that would meet Halifax’s needs, and was therefore discontinued from further research.
 - c. **ESRI:** ESRI does have the GIS components required for parking GIS technology, but does not have any other technology in this space that would meet Halifax’s needs. ESRI will certainly be used for the GIS requirements and as such a requirement for all the other technology components will be an integration to ESRI GIS.
2. **Request for Proposal (Procurement of a solution):**
 - a. Single RFP for end-to-end solution with single vendor
 - b. Single RFP for end-to-end solution with multiple vendors with one as prime

Based on the analysis of the high level stakeholder requirements, jurisdictional scan findings, and solution options market research, the solution direction that represents the best balance of functionality, technology risk, implementation timeline and cost is either **Option 2.a Single RFP for end-to-end solution with single vendor** or **2.b Single RFP for end-to-end solution with multiple vendors**

with one as prime. The important aspect here is that the municipality wants a single contract for a hosted “end-to-end” solution

The majority of leading vendors in the parking solution market are providing Software as a Service (SaaS) deployment models for their software and some of their supporting hardware are hosted in the vendor’s environment (i.e. in the cloud) and are fully managed by the vendor. There is an industry trend towards this implementation method across all business and functional areas. This is also the technology architectural direction the Municipality favors and as such is the recommended direction for this initiative. Acquiring this solution as a service, rather than a product, helps to implement it sooner, with less effort, and at a lower cost.

1.7 Project Recommendations, Estimated and Costs and Duration

Recommendations

The following recommendations are based on consultation with and analysis of the information collected from the key players in the parking related business units and Planning and Development senior staff, as well as jurisdictional and market scans.

End-to-end integration

Parking technology should be looked at from an “end-to-end” integrated perspective. This will better support the operations, planning, and strategic decision making pertaining to parking within the Halifax Regional Municipality.

Pay-by-Plate

Implement Pay-by-Plate as the parking payment option. Pay-by-Plate is the current trend with organizations (public and private). Pay-by-Plate provides a common identification (license plate number) across technologies. This will simplify integration between payment and enforcement, and it also will simplify additional payment types (internet and pay by phone).

Pay by Plate was compared against other parking methods (Pay and Display, and Pay by Space).

Pay and Display	Pay-by-Space	Pay-by-Plate
Least efficient	Better efficiency	Best efficiency
Display ticket/permit	Spaces numbered	Marking optional
More pay stations	Less pay stations	Less pay stations
Cannot assign rates to spaces	Can assign rates to spaces	Can assign rates to areas/zones
Revenue leakage via Pass-Back	Less opportunity for revenue leakage	No opportunity for revenue leakage
Visual inspection enforcement	Wireless handheld enforcement	LPR system enforcement
Least integrated with Pay-by-Phone	Easily integrates with Pay-by-Phone	Easily integrates with Pay-by-Phone
Least user friendly	More user-friendly	Most user-friendly

Establish a dedicated parking solution implementation project team

This is a multi-year, complex implementation and must be managed as such for a successful implementation. A dedicated parking technology/solution implementation project team must be established which includes dedicated resources from the sponsoring BU (Planning and Development) that will see the project through from initial planning to final completion. While not all members of this team need to be committed full time for the duration of the project, there is a core membership that must be dedicated to overseeing and completion of the implementations. A high level draft plan is in Appendix C.

Integration and Change Management

Integration and Change Management must be given the utmost attention. Every jurisdiction contacted has listed these as the two most critical aspects for project success. They need to be planned and managed from the initiation of the project. These need to be a key focus of the project team.

Alignment with other Parking Roadmap Streams

The Parking Technology Project must remain aligned with the other two Parking Roadmap streams: the Parking Governance Stream and the Supply and Demand Stream.

Technology alignment with process and procedural improvements

Technology improvements go hand in hand with business improvements. The process and procedural improvement work that will happen within and across the parking functions needs to be captured and be incorporated into the technology solutions. The Business Services division of Planning and Development, the Parking Strategy Coordinator, Municipal Compliance, external stakeholders such as Registry of Motor Vehicles and the Department of Justice, and the Parking Technology project team must work very closely together to ensure success.

Single Source of Truth

With an “end-to-end” integrated solution, determine the “single source of truth” for parking related data. The parking payment machines back office solution is the most logical repository for the single source of truth, especially if the decision is to go with the “Pay by Plate” payment option. The licence plate number becomes the common link across all components and technology of parking.

Procurement of Parking Technology

The procurement process should be a non-binding Request for Proposal (RFP).

The RFP should be for an “end-to-end” integrated solution with either a single vendor or multiple vendors with one being the prime. The municipality wants a single contract with a single vendor. This also transfers most (but not all) of the integration risk from the municipality to the vendor. This again stresses the importance of understanding and documenting the integration requirements. The ICT Architecture and Review Board must be involved in the writing, issuance, and evaluation of the RFP to ensure that the integration expectations are met.

The RFP should have site visits to vendor's clients (municipalities) sites (and without vendor presence) as part of the evaluation. The municipality wants actual proof of successful implementations.

The RFP must have a strong Service Level Agreement (SLA) with clearly defined and measurable service levels and strong (financial) consequences of not meeting those service levels.

Planning Process

The replacement of the parking technology project is estimated to be approximately 40 months in duration (divided into various phases that may change during detailed project planning). Over those months, the project plan will need to be reviewed and revised as things change and evolve. The project plan is a tool used to manage the project, and the project plan itself needs to be managed to reflect the current reality of project scope, resources, time, events, vision, and objectives. Appendix C provides a high level project plan. This project plan is only a starting point.

Estimated Costs and Duration

This scenario involves the planning, management, and implementation of the integrated end-to-end Parking Technology solution with a dedicated project team. Specific implementations will be phased over a multi-year life cycle. This approach helps to manage the demand on the business functional areas, ICT, and vendor while containing the overall deployment duration and cost to the project plan. The project spans an approximate estimated total of **3.5 years**. The capital investment required is estimated at **\$4.736M**. The annual operating cost is estimated at **\$525,000**.

1.8 Summary

This scenario and approach involves the planning, management, and implementation of an integrated "end-to-end" parking technology solution that fully supports the operational model and the parking vision for the Halifax Regional Municipality. A dedicated project team, supplemented with additional resources as required, needs to be established to oversee and implement this multi-year initiative. Special focus on integration and change management throughout the implementation is crucial to the success of this project. It is a large and complex endeavour with many interconnected parts, but the end result will be a world class parking technology solution with a strong foundation for future parking related initiatives.