

Peterborough

То:	Members of the General Committee		
From:	W.H. Jackson, Commissioner of Infrastructure and Planning Services		
Meeting Date:	May 28, 2018		
Subject:	Report IPSTR18-014 Award of Request for Proposals P-07-18 for Intelligent Transportation System for Peterborough Transit		

### Purpose

A report to recommend award of Request for Proposals P-07-18 for Intelligent Transportation System for Peterborough Transit.

# Recommendations

That Council approve the recommendations outlined in Report IPSTR18-014, dated May 28, 2018 of the Commissioner of Infrastructure and Planning Services, as follows:

- a) That Request for Proposals P-07-18 for Intelligent Transportation System for Peterborough Transit, be awarded to Strategic Mapping Inc., 2345 Yonge Street, 3<sup>rd</sup> Floor, Toronto, ON M4P 2E5 for an estimated cost of \$1,688,220.00 plus HST of \$219,468.60 for a total cost of \$1,907,688.60;
- b) That the 2018 Capital budget for Phase 2 Transit ITS Program (Reference 5-11.01) be increased by \$181,000, from \$650,000 to \$831,000, with \$169,800 to be transferred from the uncommitted balance of the 2013 Bus Refurbishment Capital Account (Reference 5-11.07) and \$11,200 to be transferred from the Transit Reserve Fund; and
- c) That a contingency fund of \$150,000.00 be authorized to the Purchase Order and the Commissioner of Infrastructure and Planning Services be delegated authority to adjust the Purchase Order to an upset limit of \$1,838,220.00 plus HST of \$238,968.60, if required.

# **Budget and Financial Implications**

The total cost of \$1,890,572.60 (net of HST rebate) for RFP P-07-18, is calculated as described in Table 1.

Line	Description	Amount
1	Bid Price P-07-18	\$1,688,220.00
2	Provisional Work	\$ 150,000.00
3	Sub-total	\$1,838,220.00
4	HST Payable by the City	\$ 32,352.67
5	Staffing Backfill	\$ 57,300.00
6	Total Estimated Project Cost (Net of HST rebate)	\$1,890,572.67

### Table 1: Total Project Costs (net of HST rebate) for RFP P-07-18

Funding for P-07-18 will come from the sources shown in Table 2:

#### Table 2: Funding Source for RFP P-07-18

Line	Description	Amount
1	2013 Capital Budget (5.11.03) Electronic Scheduling System	\$ 340,569.00
2	2017 Capital Budget (5-11.04) ITS Passenger Info System	\$ 700,000.00
3	2018 Capital Budget (5-11.01) Phase 2 - ITS Passenger Info System	\$ 650,000.00
4	2013 Capital Budget (5-11.07) Refurbish Buses	\$ 169,800.00
5	Transit Reserve Fund	\$ 11,200.00
6	Provincial Gas Tax Reserve Fund	\$ 57,300.00
7	Total	\$1,891,569.00

The uncommitted balance in the Transit Reserve Fund, after the recommended \$11,200.00 draw will be \$98,777.00.

The Proponent is required to provide hardware and software maintenance support and warranty for all equipment and all software licence fees for a period of 1 year from the acceptance of the installed system as part of the bid price. The RFP also included an option for the vendor to provide fixed prices for years 2-5 to provide software hosting services, software licensing fees, extended warranty coverage, and hardware and software maintenance and support services. These costs are summarized in Table 3 and are fixed for the entire 5-year period of the contract. Funding for these costs will be reflected in future operating budget submissions.

Item	Year 2 Cost	Year 3 Cost	Year 4 Cost	Year 5 Cost
Next Stop Software Licence	\$14,950.00	\$14,950.00	\$15,350.00	\$15,350.00
Real Time Website - Updates	\$4,000.00	\$4,000.00	\$4,000.00	\$4,000.00
Hardware / Software Warranty	\$8,000.00	\$8,000.00	\$8,500.00	\$8,500.00
Maintenance / Support Services	\$6,000.00	\$6,000.00	\$6,500.00	\$6,500.00
CAD/AVL Software Licence	\$18,000.00	\$18,000.00	\$19,000.00	\$19,000.00
Transit Planning Software Licence	\$28,000.00	\$28,000.00	\$28,000.00	\$28,000.00
Scheduling Software Licence	\$55,000.00	\$55,000.00	\$55,000.00	\$55,000.00
Sub Total	\$133,950.00	\$133,950.00	\$136,350.00	\$136,350.00
Net HST (After Rebates)	\$ 2,357.52	\$ 2,357.52	\$ 2,399.76	\$ 2,399.76
Credit - Existing Annual Stop Announcement System Software Licence	(\$48,670.65)	(\$48,670.65)	(\$48,670.65)	(\$48,670.65)
New Annual Net Operating Cost	\$87,636.87	\$87,636.87	\$90,079.11	\$90,079.11

Table 3:	Annual O	perating	Costs	RFP	P-07-18
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Initially, it is proposed to second an existing employee to undertake the duties of a Transit Operations Supervisor and backfill this position by temporarily converting 2 part time positions to full time, allowing an existing Transit Operations Supervisor to work closely with the vendor for the implementation of the ITS. Staff will review the degree of change created by the new systems as the implementation proceeds and consider the need for this temporary Transit Operations Supervisor position to be retained as a permanent position as part of the 2019 budget process.

The estimated 2018 cost of these secondments are \$57,300, funds for which are available in the Provincial Gas Tax Reserve Fund. After the proposed \$57,300 draw and the 2018 contributions, the uncommitted balance in the Provincial Gas Tax Reserve Fund is estimated to be \$253,700.

# Background

#### **Brief Description of the Work**

The introduction of an Intelligent Transportation System for Peterborough Transit fulfills a number of recommendations first identified in the 2012 Transit Operations Review such as:

- Computerized scheduling systems to improve efficiency, reduce operating costs, and improve customer service on the conventional transit fleet;
- Upgraded GPS software and an Automated Vehicle Location system (AVL) to allow for real time tracking of buses on the road; and
- Software for Transit Signal Priority at intersections.

Since the completion of the review, new technology applications that go well beyond the original needs identified in the review have emerged and gained more prominence and usage in the transit industry. Customers today expect that GPS systems onboard transit vehicles can be used to let them know where their bus is and when the next bus will arrive at their transit stop. New transit customers are also expecting transit agencies to provide more proactive trip planning and trip management services (such as Google Transit) which show them how to use the transit service to get where they are going, and tell them in real time about service disruptions that may impact their commute. These enhanced features improve customer service and support ridership growth.

Peterborough Transit has already implemented advance technology to address the Accessibility for Ontarians with Disabilities Act (AODA) requirements for on-board electronic next stop announcements and external pre-boarding announcements, but has lagged behind other municipalities in deploying the more advanced technology solutions to enhance customer service and improve operational performance of the fleet.

Over the past 2 years staff have been reviewing best practices in other transit agencies, talking to various suppliers to understand what technologies and services they can offer to enhance transit in the City, and have been developing the technical specifications for an Intelligent Transportation System for Peterborough Transit. At the same time, staff have established various capital budgets over time to fund various components of the system.

#### **Components of an Integrated ITS**

Based on discussions with other transit agencies, staff were advised to bundle all of the new technologies together into one integrated RFP process to ensure that all of the new technologies and systems are interoperable, can share data and information, and can be controlled through one master on-board device. Accordingly, in January 25, 2018 staff issued a Request for Proposals document to acquire a new integrated system for Peterborough.

The RFP issued has multiple components as described in more detail below.

#### 1) Automatic Vehicle Location (AVL)

All conventional buses will have installed on-board equipment to allow for integrated control of all on-board systems and real time tracking of the bus position on a second by second basis.

#### 2) Computer Aided Dispatch (CAD) Software

This software will allow dispatchers to track buses, monitor on time performance, manage late / early buses, manage transfer requests, manage and implement detours and diversions on the fly in response to incidents / weather, and communicate with drivers without having to use the handheld radios. Use of handheld radios is being phased out by legislation and, although the transit industry has an exemption from MTO for now, that may end in the next 3-5 years.

#### 3) Real Time Bus Arrivals

This hardware and software will capture the real time location of the buses and predict the arrival times at all of the next stops across the City. This information is collected every second and updated arrival times are generated and sent out to customers automatically every 30 seconds, taking into account prevailing traffic conditions, historical travel times. The system will sense if the bus stops to pick-up or unload passengers, updating the arrival times accordingly.

#### 4) Transit App and Website

Implementation of a transit app and website will allow customers to obtain the time of next bus arrival at any stop on their home computers, smart phones, or by email, text message or Interactive Voice Response.

#### 5) Trip Planning

A trip planning application will be available on the transit website, or on a smart phone, allowing a passenger to plan a trip from an origin to a destination in the City on transit, including walk routes, which stops to board and disembark, travel and walk time, and what time the buses arrive / depart.

#### 6) Transit Signal Priority

A bus will be able to automatically send a signal to a traffic signal as it approaches to hold the green light so that the bus can get through if the bus is running late.

#### 7) Transit Scheduling/Transit Route Planning

Scheduling and Route Planning will link to and share data with the Computer Aided Dispatch and Automatic Vehicle Location systems. Computerized scheduling software will allow optimization of driver resources, and testing of different schedule scenarios to reduce overtime and operating costs and improve services. The transit planning software will allow the testing of different route structures to compare feasibility and costs to operate and will be used extensively during the Transit Route Review study beginning this summer.

#### 8) Automatic Passenger Counters

Automatic passenger counters will be installed on both doors of all conventional buses and the Community Bus to provide accurate on/off counts at each stop for each route, every day. This data is not available now, making planning for stop locations, shelter needs and route demands more difficult. Currently this data has to be collected by hand and input into a spreadsheet for subsequent analysis, the cost of which makes it difficult to set up counts to capture different seasonal demand patterns;

#### 9) Interior and Exterior Cameras

Installing interior and exterior cameras on each bus will improve passenger and driver safety and security and drastically reduce the cost of claims. Over the past 5 years there have been 879 incidents on the transit system resulting in 36 claims, 20 harassment incidents and threats, 60 public disturbances or altercations, and over 330 collisions.

In addition to the safety benefits for drivers, who are often working alone at late hours of the evening or early morning, the camera system can provide video evidence to defend against at fault collisions or claims against the municipality. The cost associated with the claims that have been settled to date is over \$225,000, and this does not include claims that exceed our deductible or the many open claims which are still being handled by our insurance company. In a number of cases where video camera footage has been available at the terminal, some of the claims have been dismissed due to the irrefutable evidence provided by the camera system.

Implementation of the new camera system will require an update to the Video Surveillance Policy to include use on buses prior to the new system being activated. Signage indicating that video surveillance is in use will be installed on all transit vehicles with cameras.

#### 10) Covert Alarm System

This is an alarm that can be activated by the driver in the event of emergency on the bus. The alarm will discretely notify dispatch of the incident, switch the on-board cameras to high resolution mode to record the incident, and set up an automatic incident report to track the incident in real time.

#### 11) Vehicle diagnostic equipment

This equipment will monitor the health of the various vehicle systems and engine performance, for training and driver improvement programs (i.e. fuel saving programs), and to identify maintenance needs in real-time helping to avoid breakdowns on route.

#### 12) Variable message signs

The installation of variable message signs at the transit terminal and at major stops, such as Fleming College, Trent University or future satellite terminals will provide arrival times for the routes serving those stops for customers who do not have cell phones or data plans.

#### 13) Training

Training for operational and maintenance staff on the new systems and equipment being installed on the buses is extremely important to ensure all the various elements are used to their best advantage and that the City gets the maximum benefit from these systems.

#### **Operation of an Integrated ITS**

The advanced systems being implemented as part of this RFP will transform the way the Transit System operates in Peterborough. Real time monitoring and reporting of the position and arrival time of each bus will emphasize schedule adherence all along the route. As drivers get used to the new system, the mid-route time points currently used will likely disappear and schedule adherence will be monitored at each stop. This has the potential to increase ridership by drawing more riders to transit as potential users begin to understand how reliable and on-time the transit system is. Providing real-time updates for next bus arrivals can make transit more reliable and predictable for users, a major factor in attracting new riders.

Dispatch staff will have much more operational control of the bus routes and can monitor system performance in real-time instead of on a complaint driven basis. Current paper based schedules and driver assignment rosters will be replaced by computerized schedules and systems to record driver attendance and work undertaken, simplifying the timesheet and payroll processes. The more precise scheduling together with the opportunity to quickly examine multiple potential driver schedules will reduce overtime, improve operational efficiency, and improve driver sign-up times. Dispatchers will also be able to send broadcast messages to drivers, passengers on the buses and other customers via their smart phones to notify users of detours and temporary stops, implemented in response to construction, accidents, snow routes, or other delays on the system again improving service and helping to maintain schedule adherence.

Drivers will benefit from increased security on the buses, especially for late night services where some drivers are operating on their own until after 3:00 am.

Real time tracking of passenger boardings will notify dispatchers when buses are getting full on various routes, allowing them to send out additional buses to pick up passengers along the route who are missed when a full bus by-passes the stop. This happens quite frequently on the Trent and Fleming express routes which are currently running over capacity during peak periods. By minimizing the number of passengers that cannot board a bus because the bus is full, complaints of this nature will be reduced.

Passengers will benefit from knowing when their next bus will arrive at their stop and can have custom notifications sent to them about routes or transit stops that they use frequently. The data collected and stored by the system will assist staff in monitoring on-time performance of the system, responding to public complaints, monitoring passenger boardings by stop, and identifying intersections where buses are getting delayed by heavy traffic.

#### **New Transit Supervisor Position**

As part of this project a new computerized scheduling system will be purchased. Prior to 2017, all of the transit schedules and driver rosters were prepared by hand using manual methods and spreadsheets. Given the seasonal nature of the transit services, where additional runs and routes are added during school periods and dropped during holidays or during the summer, there are six different schedule sign up periods where work is assigned throughout the year. Each sign up period requires the development of a master schedule to account for all of the planned work, and the bundling of the available work to create driver rosters to define the work each driver is doing for the 8-9 weeks covered by the sign up period. Doing this by hand is a very time consuming process, which makes it difficult to review a particular schedule or test out different ways of optimizing the work to find efficiencies or improve the way work is set up and distributed. In the past, numerous pieces of work (short segments of work that could not be incorporated into a regular weekly shift) were assigned by dispatch staff to available drivers on a daily basis, based on driver availability and seniority, often through the use of overtime.

In the fall of 2017, Transit moved to the use of computerized scheduling, and hired an external company to develop new schedules for the fall and spring sign-ups, since the City does not currently have scheduling software of our own. While each schedule cost \$8,000-10,000 in consulting fees to produce, immediate efficiencies were found in scheduling and assigning the work, reducing non-driving time, and reducing weekly

overtime to the extent that the savings in overtime easily paid for hiring the consultant. Moving forward, over the course of a year, \$60,000 in consulting services alone can be saved by hiring a Transit Operations Supervisor to manage this process and eliminate the outside consultant. Additional savings are anticipated to come through scheduling efficiencies, which can be re-invested in enhanced service.

With the potential change away from a hub-based route structure to a distributed hub or grid type of route structure being contemplated during the upcoming route review, scheduling staff resources will become much more complicated. Staff have identified additional opportunities for savings that can come from additional refinement and optimization of the current transit schedules and driver assignment processes once we have the software in house. As part of the route review, the new software will allow staff to quickly assess new route structure alternatives to better identify potential new operational costs or cost savings as part of the review and decision making process.

The purchase of the new software as part of this project will bring this work in house and reduce the reliance on outside consultants to generate new schedules and driver rosters for each sign up period. With the numerous changes anticipated in transit over the next 5 years, a new supervisor of Scheduling and Dispatch position is needed to coordinate the scheduling and staff rostering process, provide supervisory leadership and support for the dispatchers, lead and develop new process and protocols required by the use of the new advanced CAD/AVL technology, monitor performance data generated by the new ITS system and provide operational reports to transit management on system performance, and co-ordinate training of staff in the use of the new system.

In the interim, beginning in July 2018, it is proposed to second an existing employee to undertake the role of Transit Operations Supervisor while one of the existing Transit Operations Supervisors manages the contract with the vendor to ensure that all scheduling and dispatch components are tested and deployed in a manner that minimizes service disruptions and guide the deployment of the new systems by working closely with the vendor during implementation. To backfill this position, 2 part time staff will be converted to full time for the rest of 2018. It is estimated that this secondment will cost in the order of \$57,300, funds for which are available in the Provincial Gas Tax Reserve Fund.

The need for this additional FTE to be added on a permanent basis will be evaluated as part of the 2019 budget process, based on the degree of change created by the new processes and new systems that are implemented. The estimated annual cost of a new Transit Supervisor position is \$98,000 in salary and benefits.

#### Procurement Type, Closing Date, Prepared by, Reviewed by

Request for Proposal P-07-18 was released on January 25, 2018 and closed on March 15, 2018. The RFP was prepared and evaluated by the Manager of Transportation, Manager of Transit Operations, Transit Operations Supervisor, and staff from Peterborough Technology Services.

#### **RFP Statement**

This solicitation process was a Request for Proposals where a number of criteria were used to evaluate submissions. The criteria and their relative weighting were clearly set out in the RFP document. Part 6.5.3.i of the City's Purchasing By-law 14-127 states that "as price is only one of the criteria evaluated, the award report will show the rating summary for each proponent and the total points. The award report will disclose the price of the recommended supplier but not the price submitted by other proponents.

#### **RFP Bidder Submission Evaluation Chart**

Chart 1 below provides a summary of the RFP results:

Evaluation Criteria	Maximum Score	ISR Transit	Strategic Mapping Inc.	Tripspark Technologies
Project Understanding	5	4.0	4.5	3.5
Project Workplan and Schedule	10	8.0	8.8	6.8
Experience – Company / Team / Suppliers	10	6.0	8.5	7.8
Service and Support Plan	10	8.0	8.8	5.3
Compliance with Technical Specifications	35	31.9	33.2	31.1
Warranties	10	7.8	8.0	5.8
Pricing	20	20.0	16.6	11.5
Rating Total	100	85.7	88.3	71.6
Ranking		2	1	3

Chart 1 RFP P-07-18 Bidder Submission Evaluation Chart

#### **Recommended Bidder**

Strategic Mapping Inc. has provided the best overall submission and their proposed system best meets the technical specifications outlined for the new system. The proponent scored well on the qualifications, experience and project plan sections of the RFP and have provided a clear understanding of the City's needs. Strategic Mapping Inc. is a Canadian company, based in Toronto, and has successfully worked with the City of Peterborough for the past 6 years, by supplying the City's stop announcement and pre-boarding announcement system on transit buses. Their location in Toronto allows them to provide an excellent level of service to their customers and over the 6 years that Peterborough Transit has worked with them, their customer support has been outstanding.

#### Contingency

The contingency amount identified for this project will allow for the City to accommodate any changes to the scope of work that could not be realistically estimated at the time of bidding or to add equipment to any new additional buses purchased over the life of the 5-year contract. The Proponent also identified some value added options and services that may be considered if sufficient budget remains after finalizing all of the deliverables under this contract.

#### **Council Approval Required**

Section 8.2.1 of the Purchasing By-law 14-127 states Council must approve an award where the expenditure is greater that \$100,000 and is not a Request for Tenders awarded to the lowest bidder. RFP P-07-18 for the Intelligent Transportation System for Peterborough Transit meets this requirement and must be approved by Council.

#### Timelines

If the recommendation is approved, the purchase will be confirmed via a purchase order and a contract, signed by the CAO and Clerk, will be finalized with the recommended proponent before the work commences.

The contractor will commence the work on June 18, 2018 with full deployment of the new systems anticipated by March 31, 2019.

# Summary

RFP P-07-18 for the Intelligent Transportation System for Peterborough Transit has been issued in accordance with the City's Purchasing By-law 14-127 and can be awarded within amended budgets as recommended in this report.

Submitted by,

W.H. Jackson, P. Eng. Commissioner, Infrastructure and Planning Services

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