

Committee of the Whole (2) Report

DATE: Wednesday, October 11, 2023

WARD(S): ALL

TITLE: INTELLIGENT TRANSPORTATION SYSTEM SINGLE SOURCE
PROCUREMENT OF AN ADVANCED TRAFFIC MANAGEMENT
SYSTEM

FROM:

Zoran Postic, Deputy City Manager, Public Works

ACTION: DECISION

Purpose

To seek approval to proceed via Single Source procurement of an Advanced Traffic Management System (ATMS) from Econolite with annual support services which will form the foundation for the City's Intelligent Transportation System Strategy integrating future smart mobility technologies.

Report Highlights

- At the March 10, 2021 Council meeting, the MoveSmart Mobility Management Strategy (MoveSmart) was endorsed by Council. The Intelligent Transportation System (ITS) was identified as a major program deliverable under MoveSmart.
- An Advanced Traffic Management System (ATMS) will allow the City of Vaughan to monitor, update, diagnose, and communicate with its traffic signal network from a central remote location.
- In May 2017, Council approved the Committee of the Whole recommendation for the City to purchase and install 14 traffic signal controllers and cabinets supplied by Econolite Canada as part of the Clark Avenue Pilot Project.
- The results of the Clark Avenue Pilot Project have been successful, and 45 percent of the City's traffic signal controllers and cabinets are scheduled to be upgraded to Econolite hardware by 2024.

Report Highlights continued

- Among the prominent GTA municipalities including York Region, Town of Oakville, City of Burlington, Niagara Region, Halton Region, and Durham Region, 70 per cent use Econolite.
- A Single Source procurement will allow the City to avoid unnecessary hardware and software integration risks and expedite the implementation of the ATMS system, building upon the success of the Clark Avenue Pilot Project.
- The software solution supports Econolite's products of controllers and equipment. Software and hardware are provided by the same vendor with the capability to implement a traffic adaptive system and adjust signal timings in real-time, creating a complete customer-centric focused ATMS service.
- A common and integrated traffic signal system will ensure transparency, and better corridor optimization, refine critical emergency response times, and coordinate signal operations between the City, York Region, and local municipal partners.

Recommendations

1. That Council direct staff to proceed with a Single Source procurement with the identified Supplier, Econolite, for a period of approximately 3 years for the installation of an Advanced Traffic Management System (ATMS) consisting of:
 - a. hardware signal cabinets and controller upgrades in the field; and
 - b. ongoing annual maintenance and support servicesat a cost that is yet to be negotiated with the Single Source vendor Econolite;
2. That the Deputy City Manager of Public Works together with the Director of Procurement Services be directed to negotiate, execute, and administer any resulting administrative acts and agreements in a form satisfactory to the City Solicitor; and
3. That the City Clerk forward a copy of this report to York Region.

Background

One of the major initiatives identified under the MoveSmart Mobility Management Strategy is the implementation of an Advanced Traffic Management System.

Currently, the City maintains approximately 100 traffic signals throughout its road network. The majority of the signal control hardware is reaching the end of its service life of 20 years. Additionally, the City of Vaughan currently lacks a centralized traffic signal management solution that allows for remote updates, diagnosis, and maintenance. The current signal system cannot be accessed remotely or modified to

consider special events, emergency travel patterns, or implement essential changes in signal timing.

The City's pilot project with 14 advanced traffic control signals has been successful in improving traffic operations and enhancing safety.

In an effort to adopt a more modernized solution, in 2017, Council approved the Committee of the Whole recommendation for the City to purchase and install 14 traffic signal controllers from Econolite Canada as part of the Clark Avenue Pilot Project. The result of that pilot project has been successful in improving mobility and signal coordination along the corridor and enhancing York Region transit operations. The advanced traffic control signals address both mobility management and improve safety for all road users.

The integration of an ATMS represents a pivotal step towards achieving efficient mobility management across the City of Vaughan's transportation network.

Previous Reports/Authority

MoveSmart Mobility Management Strategy, Extract from Council Meeting Minutes of March 10, 2021 (Report No. 10, Item 1 of the Committee of the Whole (Working Session)):

[filestream.ashx \(escribemeetings.com\)](#)

MoveSmart Mobility Management Strategy Annual Progress Report, Extract from Council Meeting Minutes of March 22, 2022 (Report No. 11, Item 1 of the Committee of the Whole (Working Session)):

<https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=104298>

Traffic Control and Management System Upgrade Clark Avenue - Ward 5, Extract from Council Meeting Minutes of May 16, 2017 (Report No. 17, Item 5 of the Committee of the Whole):

https://www.vaughan.ca/sites/default/files/CW0502_17_5.pdf?fileverison=1695824691872

Analysis and Options

The City's new Council-adopted Corporate Procurement Policy came into effect on July 1, 2023. A single-source procurement is one where other suppliers are available, however, there are valid and sufficient reasons for selecting one supplier in particular. The City's Procurement Policy provides criteria that must be met in order to procure via Single Source Procurement. Given the need for standardization and compatibility with

previously acquired services and the special knowledge, skills, and expertise required, it is the Director of Procurement Services' determination that this justifies the use of Single Source Procurement in this case. The Procurement Policy further provides the City protection in that a Single Source procurement must be undertaken to obtain Best Value for the City.

Given the anticipated amount of the award, Council must first approve proceeding via Single Source procurement.

The City of Vaughan requires the ability to monitor, update, diagnose, and communicate with the entire traffic signal network from a central remote location.

An ATMS solution supported by Econolite's products of controllers, cabinets, and traffic management software will support the City's effort to create an adaptive and intelligent traffic signal system. The Econolite software solution allows for a customer-centric ATMS platform that is scalable and proven to deliver innovative solutions to support the City's growth and future transportation needs.

York Region, along with 70 percent of GTHA municipalities currently use Econolite for their Advanced Traffic Management System needs.

Choosing Econolite as a Single Source supplier will enable better network optimization and coordination with York Region's Econolite traffic signal system and will help the City continue the expansion of its traffic signal modernization efforts.

Single Source Procurement will result in the Best Value for the City of Vaughan.

The City obtained the professional consultation services of Arcadis IBI Group to advise on the design and procurement of the overall Intelligent Transportation System (ITS) to meet the goals of MoveSmart's Mobility Management Program. A thorough analysis was conducted with stakeholders' input inclusive of Procurement Services, Office of the Chief Information Officer (OCIO), Emergency Services, York Regional Police, York Region, YorkNet, York Region Transit, and other local municipalities. Two major options were evaluated to address stakeholder interests and enhance transportation management:

1. **Single Source – Econolite ATMS Integration:** Econolite will allow for better and more efficient hardware integration, telecommunications network establishment, data sharing, and real-time communication which will form the foundation for a future-ready Intelligent Transportation System. This solution will create a single-tiered, familiar, easy-to-maintain ATMS that meets all of the City's design criteria.

2. **Open Bid - Alternative Hardware and Technologies:** While alternative solutions were considered, such as other ATMS providers or piecemeal technology adoption, they did not offer the same level of seamless integration, familiarity, and cost-effectiveness as Econolite's product and would be more costly to install and maintain throughout the lifecycle of the product.

A Single Source Procurement will avoid unnecessary network integration risks and will shorten the implementation of an Advanced Traffic Management System by approximately nine months.

Choosing a vendor other than Econolite will result in:

- A lack of integration with neighbouring municipalities including York Region which currently uses an Econolite system.
- No interoperability with York Region.
- A lack of product familiarity within the City of Vaughan – which is scheduled to have 45 percent of cabinets operate on the Econolite ecosystem by 2024.
- A two-tiered hardware and software system, requiring the contractor to be cross-trained on both systems resulting in a lack of integration within the network. This would increase ongoing maintenance costs and require additional resources.
- An additional timeline of up to nine months to issue a new competitive bid.

Financial Impact

The capital cost associated with the single-source procurement of an Advanced Traffic Management System from Econolite will be negotiated and reported back to the Committee of the Whole.

Transportation and Fleet Management Services has secured the necessary capital funding (Capital Project No. RP-6768-18) through the annual budget process to begin the installation of the full ATMS solution from Econolite.

The ongoing cost to maintain the ATMS solution is estimated to be \$25,000 per annum (increasing annually with the Consumer Price Index) and will be incorporated into future year operating budgets through the annual budget process.

Once the contract has been executed, staff will report back with details including the negotiated price. Staff have prepared a confidential attachment to this report (as outlined in Confidential Attachment 1).

Operational Impact

By establishing an Advanced Traffic Management System solution, the City of Vaughan will benefit from the advances in intelligent traffic signal management through:

- **Enhanced Traffic Management:** The integrated ATMS provides real-time incident detection, proactive monitoring, and efficient traffic signal control, leading to improved traffic flow and better-managed congestion.
- **Data-Driven Decision-Making:** Mutual data sharing, and advanced data collection technologies empower informed decision-making, enabling responsive and targeted traffic solutions.
- **Collaboration and Knowledge Sharing:** The widespread use of Econolite technology among peer municipalities fosters collaboration, shared standards, and collective advancement in transportation management practices.
- **Traffic Congestion Management:** When an ATMS is integrated with real-time data, it can work to prioritize high-volume routes, helping achieve the greatest benefit for the largest number of road users, thereby optimizing travel times across a corridor.
- **Improved Traffic Signal Maintenance:** A centralized ATMS enables the operator to remotely diagnose and dispatch maintenance support from a central location, reducing response times and improving signal maintenance efforts.
- **Emergency Services Pre-emption:** allowing onboard systems and traffic light vehicle sensors to give priority access to emergency service vehicles.
- **Enhanced Road Safety:** An upgraded ATMS allows for efficient signal timing, enabling prioritizing vulnerable road users and enhancing system-wide traveler safety.
- **Public Transit Priority:** A well-calibrated ATMS can detect and prioritize selected transit vehicles along specific corridors, helping to prioritize transit routes as needed.

The City already has programs in place to onboard Econolite products. By 2024, 45 percent of the existing traffic signals will be upgraded to Econolite.

There are currently 30 upgraded traffic signals; 13 signals are already connected to the Region's Econolite system with 17 signals coming online by the end of 2023, via 2 pilot projects to achieve inter-operability with York Region, with the goal of signal timing optimization, protecting vulnerable road users, and promoting multi-modal network use.

It is anticipated that hardware upgrades under this Single Source procurement will begin in early 2024. Additionally, once this project is complete, City staff will work to

standardize Econolite as a product for future capital upgrades related to traffic signal systems. This will help ensure a one-system approach toward traffic signal design across the City and help maintain standardization with the Region and with our municipal neighbors.

Broader Regional Impacts/Considerations

An innovative and scalable Advanced Traffic Management System platform achieves the goal of coordinated traffic signal operations between the City and the Region.

The integration of Econolite as a mutual platform will foster collaboration, enhance transportation management practices, and help manage congestion. It will also allow for shared standards, promote data sharing, and facilitate cooperation with local municipal partners. Benefits include:

- **Real-Time Information Sharing and Coordination** between the City and York Region's existing Econolite system; optimizing travel efficiency and helping reduce travel times for motorists.
- **York Region Standard Alignment**, adhering to the York Region standard, ensuring compatibility and consistency with regional transportation systems.
- **Interconnected Signals** with York Region promotes real-time traffic management, responsive incident detection, event management, and enhancing traffic signal coordination.
- **Shared Data:** The ATMS enables mutual access and sharing of critical traffic signal data and knowledge, fostering informed decision-making.
- **Regional Adoption of Econolite**, as 70 percent of municipalities in Southern Ontario, particularly those of similar sizes to Vaughan, are utilizing Econolite. This strongly supports the effectiveness and reliability of this product in addressing regional traffic management needs.

Conclusion

Staff recommends proceeding with a Single Source procurement for the City's Advanced Traffic Management System and supporting technical services from Econolite.

Econolite has proven to be an industry leader throughout the GTHA for ATMS solutions. Procurement through a Single Source will result in the most direct and effective path for the City to achieve its ATMS and ITS goals. This will benefit the City with increased interoperability with York Region and local municipalities, resulting in a more advanced traffic signal system.

For more information, please contact Peter Pilateris, P.Eng., Director, Transportation and Fleet Management Services, ext. 6141.

Attachments

1. Confidential Attachment

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