

Clause 5 in Report No. 15 of Committee of the Whole was adopted, without amendment, by the Council of The Regional Municipality of York at its meeting held on November 16, 2017.

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Direct Purchase Traffic Signal Control Equipment

Committee of the Whole recommends adoption of the following recommendations contained in the report dated October 17, 2017 from the Commissioner of Transportation Services:

1. Council authorize an agreement between the Region and Econolite Canada Inc. for the supply and delivery of traffic signal control equipment in the total amount of \$4,944,811.50, excluding HST, for a term of four years commencing May 1, 2018, pursuant to the direct purchase provisions of the Purchasing Bylaw.
2. The Commissioner of Transportation Services be authorized to execute the agreement on behalf of the Region.

Report dated October 17, 2017 from the Commissioner of Transportation now follows:

1. Recommendations

It is recommended that:

1. Council authorize an agreement between the Region and Econolite Canada Inc. for the supply and delivery of traffic signal control equipment in the total amount of \$4,944,811.50, excluding HST, for a term of four years commencing May 1, 2018, pursuant to the direct purchase provisions of the Purchasing Bylaw.
2. The Commissioner of Transportation Services be authorized to execute the agreement on behalf of the Region.

2. Purpose

This report seeks Council approval for the Commissioner of Transportation Services to execute an agreement with Econolite Canada Inc. (Econolite) for the supply and delivery of traffic signal control equipment to continue to support the Centracs Centralized Traffic Control System (CTCS) conversion. Council approval is required pursuant to the direct purchase provisions of the Purchasing Bylaw. Compatibility of the traffic signal control equipment assembly with the existing Centracs CTCS is the paramount consideration while ensuring good value to the Region.

3. Background and Previous Council Direction

The Econolite Centracs CTCS was introduced to the Region under the vivaNext project

York Region Rapid Transit Corporation, as part of the vivaNext Rapidway construction on Highway 7, established a new CTCS to meet performance criteria for the transit rapidway and state-of-the-art centralized traffic control. Invitations were issued to all vendors within the marketplace outlining project requirements and performance criteria. As part of the process, a series of interviews and demonstrations of both traffic signal control equipment and central systems were conducted and an evaluation was completed comparing various functionalities. Three vendors participated in this process. Econolite was the successful vendor, providing the Centracs CTCS to the Region under the vivaNext project. The Econolite controller is the only traffic signal control equipment assembly available that is 100 per cent compatible with the Centracs CTCS and ensures compatibility with future system upgrades.

Original direct purchase allowed conversion of 400 traffic signal control cabinets

The new system (Centracs) has been implemented with the vivaNext installations. Under the vivaNext project there will be approximately 100 traffic signal control cabinets replaced along the rapidway sections and funded by Metrolinx.

To accelerate a system conversion program, a [2014 Council report](#) provided authorization to negotiate an increase in the number of traffic signal control cabinets obtained from Econolite. By accelerating the Centracs program, the original direct purchase provided for completion of a total of 400 traffic signal

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conversions. The original direct purchase also included central system license capacity for the connection of 750 signalized intersections at no additional cost.

A new direct purchase for 350 traffic signal control cabinets will complete the migration to the new Centracs CTCS

Migration from the existing CTCS to the Centracs CTCS requires new traffic signal control equipment that is compatible with the Centracs system to take advantage of its full functionality. This new direct purchase contract is for the procurement of 350 traffic signal control cabinets over a four-year period to complete the conversion to Centracs outside of the rapidways and to accommodate future transit signal priority expansion. This also includes expanding the central system license capacity for the connection of up to 1,000 signalized intersections, at no additional cost. Table 1 provides the costs for the original contract and proposed direct purchase.

Table 1
Contract Cost of Traffic Signal Cabinets

Year	Quantity	Unit Price	Total
Original Contract (\$5.4 million)			
2014/2015	200	\$13,500.00	\$2,700,000.00
2015/2016	200	\$13,500.00	\$2,700,000.00
			\$5,400,000.00
New/Proposed Contract (\$4.9 million)			
2018	100	\$13,770.00	\$1,377,000.00
2019	100	\$14,045.40	\$1,404,540.00
2020	100	\$14,326.30	\$1,432,630.00
2021	50	\$14,612.83	\$ 730,641.50
			\$4,944,811.50

Completing the conversion will provide one centralized traffic control system to monitor and manage congestion in the Region. Approximately 410 signalized intersections have been converted to the Centracs CTCS to date, including traffic signal control cabinet replacements for the Viva Rapidways (funded by Metrolinx), through capital and new development programs as well as conversions completed for Ministry of Transportation of Ontario and 407ETR; both at their expense.

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This request for a new direct purchase contract for an additional 350 traffic signal control cabinets manufactured by Econolite, will provide one centralized traffic control system for monitoring and managing traffic flow within York Region. The Econolite traffic signal control equipment is the Region's product of choice ensuring system consistency and capability to support traffic signal operations.

4. Analysis and Implications

Conversion to the Centracs system will provide consistent programming and functionality across the Region

Currently, two separate Central Traffic Control Systems operate Regional traffic signals. The older system has obsolete and non-compatible traffic signal control equipment that has limited programming and functionality. With one system under the Centracs conversion, functionality will be the same at any Regional signalized intersection.

Enhanced central monitoring of the Regional road network aligns with the strategies and initiatives in the Region's Travel Smart Program.

An upgrade to the CTCS will enable the Region to take advantage of new features and technologies and allow the Region to continue to expand the number of roadside technologies that can be deployed and operated to better respond to current and future traffic demands to help improve traffic flow.

In terms of monitoring, the Centracs CTCS has significant capabilities to monitor in real time the status and operations of each traffic signal within the network from a central location. The Centracs CTCS allows staff to understand the status of each intersection including:

- Confirmation of operational status/power
- Status of pedestrian push buttons and vehicle sensors
- Status of emergency vehicle and transit priority equipment
- Operation of left turn priority signal phases and other signal timing parameters
- Ability to capture controller data at the central location

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Status checks and controller data can be confirmed network-wide from a central or remote location without having to travel to individual intersections across the Region. Enhanced central monitoring provides considerable travel time and cost savings for staff and our contractors allowing the ability to respond quicker.

Direct purchase of the Econolite traffic signal control equipment is recommended due to compatibility and system cost benefits

The advantage of a direct purchase from Econolite for the traffic signal control equipment to complete the conversion is compatibility with existing equipment and central management software. It also avoids unnecessary risk, reliability uncertainty and additional costs related to training, implementation and integration with the central system. Additional benefits and savings include:

- Consistent maintenance experience due to uniformity in equipment design and functionality
- Monitoring and management of one central system software, including software licenses and system support
- Managing one set of spare parts only
- Uniformity and consistency in associated services needed to manage an efficient traffic signal control system, such as programming, signal coordination and staff training

A cost comparison of neighbouring jurisdictions in the Greater Toronto Area has confirmed this direct purchase offers the Region the best value

An environmental scan of traffic signal control equipment costs has been carried out for various jurisdictions in the Greater Toronto Area. In all cases, the current direct purchase unit price offered by Econolite to the Region is the lowest offered throughout the four-year term. This low cost is because Econolite is prepared to honour the current unit cost to the Region, which has remained fixed the past four years, subject to an annual consumer price index increase, as shown in Table 2.

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Table 2
Cost Comparison of Traffic Signal Control Equipment

Contract	Year	Average Unit Cost
Region's existing contract	2014-2017	\$13,500
Current GTA pricing	2017	\$14,724
New/proposed direct purchase – Year 1	2018	\$13,770
Year 2*	2019	\$14,045
Year 3*	2020	\$14,326
Year 4*	2021	\$14,612

*For budgeting purposes an annual two per cent CPI increase has been used

Other jurisdictions have converted their traffic signal control equipment within the Region in order to operate on the Centrac's CTCS

Ministry of Transportation and 407ETR have partnered with the Region in conversion of their traffic signal control equipment, at their cost, to enable them to operate on the Centrac's system within the Region.

Next generation controller software upgrades will accommodate connected vehicle application support

Econolite intends to release next generation traffic controller software, offering improved usability that will accommodate connected vehicle applications.

Future Centrac's system upgrades and support, such as for connected vehicles, will be possible through the Econolite controller system compatibility allowing the Region to be well-positioned for the advent of connected vehicles.

Optimizing the Regional road network supports Vision 2051 and the 2015 to 2019 Strategic Plan

The Region's CTCS allows staff to optimize the Regional road network to accommodate all travellers, and manage congestion through traffic signal monitoring and signal timing adjustments, directly supporting objectives of Vision 2051 and the Strategic Plan. Regional Official Plan policies and the objectives and framework of both the Transportation Master Plan and Travel Smart Program are also supported.

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The four objectives forming the framework of the Travel Smart Program are:

- To optimize the safe and efficient use of the transportation network
- To improve the reliability of travel throughout York Region
- To leverage technologies and practices that facilitate transit use and schedule adherence
- To inform travellers of mobility operations and real time traffic conditions

5. Financial Considerations

Original fixed unit costs will be honoured subject to Consumer Price Index increases over the term of the contract

Under the terms of the original contract, Econolite provided 400 traffic signal control cabinets at a fixed price for four years. Under the new direct purchase, Econolite will continue to honour their previous unit cost, subject to an annual Consumer Price Index increase not to exceed three per cent. For budgeting purposes, an annual two per cent CPI increase has been used. This is consistent with the Bank of Canada's interest rate target.

The traffic signal control equipment will be funded through the Traffic Control Signal and Electrical Improvement capital program, within the Capital Spending Authority, and subject to approval in the Transportation Services Capital Program, through the annual budget process.

An additional 250 Centracs licenses will be supplied at no cost

Econolite has agreed to provide central system software license expansion for an additional 250 intersections at no additional cost. This equates to an \$114,000.00 savings for the Region. The additional licenses will bring the total system intersection capacity for Centracs from 750 to 1000. These licenses will provide system capacity for future expansion beyond 2022.

6. Local Municipal Impact

A state-of-the-art CTCS will benefit all local municipalities

The implementation of a more sophisticated state-of-the-art CTCS provides the tools necessary to centrally monitor and adjust traffic signal timings to improve traffic flow along the Regional road network. This will assist in the management of traffic flow on Regional roads benefitting all local municipalities.

7. Conclusion

Completing the conversion to the Centrac system will provide a Region-wide Centralized Traffic Control System allowing improved management of traffic flow within the Region through state-of-the-art traffic signal control and monitoring. Next generation controller software will accommodate connected vehicle applications and place the Region at the forefront of emerging technologies.

The direct purchase provides 100 per cent system compatibility, good value and ensures the Region is well-positioned for future traffic signal technologies.

Staff recommends Council authorize the Commissioner of Transportation Services execute a contract with Econolite Canada Inc. for the supply and delivery of traffic signal control equipment, to complete the conversion to the Centrac Centralized Traffic Control System.

For more information on this report, please contact Joseph Petrungaro, Director Roads and Traffic Operations, at 1-877-464-9675 ext. 75220.

The Senior Management Group has reviewed this report.

October 17, 2017

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