

VIA EMAIL

Legislative & Planning Services
Department
Office of the Regional Clerk
1151 Bronte Road
Oakville ON L6M 3L1

April 20, 2018

City of Burlington, Angela Morgan
Town of Halton Hills, Suzanne Jones
Town of Milton, Troy McHarg
Town of Oakville, Vicki Tytaneck
Halton Regional Police Service, Chief Stephen Tanner
Halton Regional Paramedics Services, Chief Greg Sage
City of Hamilton, Rose Caterini
Region of Peel, Kathryn Lockyer
Ministry of Transportation, Fabio Saccon

Please be advised that at its meeting held Wednesday, April 18, 2018, the Council of the Regional Municipality of Halton adopted the following resolution:

RESOLUTION: PW-10-18 - Regional Advanced Traffic Management System (ATMS), Our File: PR-3205A

1. THAT Regional Council approve the implementation of a Regional Advanced Traffic Management System as outlined in Report No. PW-10- 18 re: "Regional Advanced Traffic Management System (ATMS), Our File: PR-3205A".
2. THAT the Regional Clerk forward a copy of Report No. PW-10-18 to the City of Burlington, the Town of Halton Hills, the Town of Milton, the Town of Oakville, the Halton Regional Police Service, Halton Regional Paramedics Services, the City of Hamilton, the Region of Peel and the Ministry of Transportation for their information.

Included please find a copy of Report No. PW-10-18 for your information.

If you have any questions please contact me at extension 7110 or the e-mail address below.

Sincerely,



Graham Milne
Regional Clerk
graham.milne@halton.ca



The Regional Municipality of Halton

Report To:	Regional Chair and Members of Regional Council
From:	Jim Harnum, Commissioner, Public Works
Date:	April 18, 2018
Report No. - Re:	PW-10-18 - Regional Advanced Traffic Management System (ATMS), Our File: PR-3205A

RECOMMENDATION

1. THAT Regional Council approve the implementation of a Regional Advanced Traffic Management System as outlined in Report No. PW-10-18 re: "Regional Advanced Traffic Management System (ATMS), Our File: PR-3205A".
2. THAT the Regional Clerk forward a copy of Report No. PW-10-18 to the City of Burlington, the Town of Halton Hills, the Town of Milton, the Town of Oakville, the Halton Regional Police Service, Halton Regional Paramedics Services, the City of Hamilton, the Region of Peel and the Ministry of Transportation for their information.

REPORT

Executive Summary

- The 2015 – 2018 Strategic Action Plan identified improvements to Halton Region's transportation network as a key priority.
- An Advanced Traffic Management System is a state-of-the-art traffic signal control system that will improve the performance of the existing road infrastructure through active traffic management.
- IBI Group was retained in April 2016 to undertake a comprehensive Feasibility Study to determine if a Regional Advanced Traffic Management System would be beneficial for Halton Region. The study was undertaken in cooperation with the Local Municipalities in an effort to identify opportunities for operational improvements to the current system(s) or to determine if Halton Region should consider a Regional Advanced Traffic Management System in partnership with the Local Municipalities.

- The Feasibility Study found that Halton Region is well positioned to implement an Advanced Traffic Management System due to our ongoing investments in our intersections and road projects.
- It is recommended that Halton Region proceed with the implementation of a Regional Advanced Traffic Management System.
- In 2018 a detailed implementation plan will be developed and the Advanced Traffic Management System software will be purchased. This was included in the 2018 Budget.
- The Advanced Traffic Management System will be implemented in 2019 - 2022. The estimated \$12 million cost will be included in the 2019 Budget and Forecast.
- Staff will work and coordinate with Local Municipalities to determine their level of participation that meets their needs and timelines should they decide to access Halton Region's Advanced Traffic Management System.

Background

The 2015 – 2018 Strategic Action Plan identified improvements to Halton Region's transportation network as a key priority. As Halton Region's population continues to grow, the demand on our existing transportation system is also increasing. Intelligent Traffic Systems (ITS) will be critical to operating our current and future roadway systems at maximum capacity. Poorly timed signals can waste time and fuel, increase air emissions and create frustrating and safety related situations for motorists.

In April 2016 staff retained the IBI Group, an engineering consulting firm that specializes in Intelligent Transportation Systems, to initiate a comprehensive Feasibility Study to determine if a Regional Advanced Traffic Management System (ATMS) would be beneficial for Halton Region. The study was undertaken in cooperation with the Local Municipalities (Project Partners) to determine if Halton Region should consider a Regional Advanced Traffic Management System in partnership with the Local Municipalities.

The work plan of the IBI Group consisted of the following:

- Task 1 – Project Management;
- Task 2 – Review of Existing Conditions and Needs Assessment to establish a clear understanding of the current traffic technologies, policies and standards, institutional arrangements, operations, issues, and needs of the Project Partners;
- Task 3 – Industry Review to assess and evaluate the current best practices associated with ATMS, Adaptive Traffic Control Systems (ATCS), and select ITS solutions in North America;

- Task 4 – System Architecture Evaluation to review the need for an ATMS and description of four alternate ATMS system architectures that can be deployed in Halton Region;
- Task 5 – Identify ITS Communication Medium to assess the existing communication system in the selected control areas; and
- Task 6 – Gap Analysis and Preliminary Implementation Plan to identify the gaps between the Region’s current practices, their future needs, and the industry best practices used by other municipalities.

Work is continuing to complete Task 5 and Task 6 which provides detail at the intersection level.

Some of the key observations identified in the Feasibility Study included:

- The Regional road network continues to grow and change because of urbanization and intensification. This is resulting in higher traffic volumes and congestion.
- The road network in several locations is at or near capacity during the morning and evening peak hours.
- Existing operational system procedures/response protocols are primarily reactive as opposed to “pro-active”.
- Incident management for Regional Roads and 400 series highways incidents is not in “real-time”.
- Incidents on 400 series highways negatively impact the entire community.

As part of the Industry Review, it was noted that most major Municipalities/Regions have implemented or are in the process of implementing an ATMS. Due to its growing population and intensification the consultant stated that it was imperative that Halton Region consider an Advanced Traffic Management System (ATMS), if it was to maintain its current levels of service on Regional roadways.

The Feasibility Study also found that Halton Region is well positioned to implement an ATMS due to our ongoing investments in our intersections and road projects. As part of Halton Region’s capital roads construction, the Public Works Department has been installing interconnect fibre and “state-of-the-art” traffic controllers for the past several years in preparation for the implementation of a Regional ATMS.

Discussion

Advanced Traffic Management System

An Advanced Traffic Management System is a “state-of-the-art” traffic signal control system consisting of a very powerful central processing unit programmed with complex algorithms, working together with equipment in the field such as detection devices (loops, video cameras, radar etc.), closed circuit television cameras, traffic signals, warning and travel time information signs/messaging boards, emergency and transit pre-emption devices, monitoring and data collection devices etc. All these intelligent devices work

together to move traffic safely and efficiently in response to real-time traffic demands and allow staff to make informed decisions based on real-time data.

As the ATMS expands the number of intersections being managed will also increase and as such a Traffic Management Centre will be established to provide for the required video display boards, the work stations for staff, etc. Connections or feeds to the video displays/data can be made available to other agencies or departments such as the Police, Emergency Medical Services, Local Municipalities, and Ministry of Transportation etc.

Vision/Goals of an Advanced Traffic Management System

The primary goal of an Advanced Traffic Management System is to provide the safest and most efficient traffic signal operation and traffic coordination within the physical constraints of the geometrics of the Regional Road Network balanced against the conflicting demands, while allowing staff to:

- Improve the performance of the existing road infrastructure via technology, services and system processes;
- Move from “Passive” to “Active” traffic management;
- Maintain and improve public confidence in traffic management;
- Maximize the number of vehicles through each intersection or group of intersections under computer control;
- Provide adequate and safe crossings for pedestrians;
- Minimize overall traffic delay;
- Improve the quality of traffic flow on the Regional Road Network reducing overall travel time which in turn reduces driver frustrations; and
- Reduce fuel consumption and pollution associated with inefficient traffic flow.

The existing system and processes are cumbersome and somewhat disconnected as issues or problems with the system are typically generated from motorists or the general public who notify Halton Region or the Local Municipalities that the system is malfunctioning or not performing properly. Once received, it takes a significant amount of time to react to these concerns and make operational adjustments to the system as required. It would be advantageous to have a system that could make remote operational adjustments (where feasible) based on the need and the demand of traffic volumes in real-time or have staff contact maintenance crews immediately once a problem has been identified through the monitoring system, thereby reducing downtime, “false calls” and sending out field staff unnecessarily.

Benefits of an Advanced Traffic Management System

An Advanced Traffic Management System coupled with a package of Intelligent Traffic System strategies will benefit Halton Region by providing staff with the ability to actively manage traffic by:

- Undertaking real-time traffic monitoring and traffic signal control Region-wide from one central location.
- Implementing strategies in real-time to reduce impacts and minimize congestion to road users.
- Assisting in the provision of emergency services and coordination with the Emergency Operations Centre.
- Disseminating information to all stakeholders in a more enhanced and streamlined process.
- Providing a stronger connection among Regional and Local agencies, including the Ministry of Transportation thereby “pro-actively” managing traffic throughout Halton Region.
- Leveraging the extensive Regional fibre optic cable and state-of-the-art traffic signal controllers that are already in place on Regional corridors. Halton Region has been installing fibre on capital road projects for several years.
- Improving traffic efficiency, energy savings and reducing carbon emissions.
- Providing a safer and more efficient transportation network to the public while addressing the demands of growth.

Implementation Plan

With Council’s approval to proceed, the next step will be the development of a detailed implementation plan. The implementation plan will identify priority corridors and priority intersections based on criteria that could include:

- Congestion/capacity of the intersection or corridor;
- Readiness with respect to the technology and ability to connect to the network; and
- Consultation/coordination with the Local Municipalities.

It is anticipated that on average, over a four year implementation timeframe, 20 to 25 per cent of the intersections per year will be added to the system at an average cost of \$2 to \$3 million per year. The actual cost per intersection will vary depending on the technology already implemented and other technical considerations at each site. It is anticipated that within a four year timeframe a majority of Halton Region’s key intersections will be implemented on the system.

In addition to the completion of the detailed implementation plan in 2018, the ATMS software will be selected and implemented. Initially the software will be implemented on desktop computers but as the system expands there will be a requirement for a more sophisticated Traffic Management Centre.

Conclusion

The implementation of a Regional Advanced Traffic Management System essentially sets the stage for establishing Regional Roads as Smart Corridors. These roadways will leverage new intelligent transportation systems through advanced and coordinated

technologies and strategies in order to maintain acceptable levels of service and improve safety through better road space management, intersection optimization and incident management.

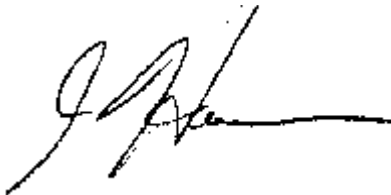
FINANCIAL/PROGRAM IMPLICATIONS

The approved 2018 Roads Capital Budget includes \$1.35 million under R3205A and R2146A for this project. That funding will be sufficient to fund the detailed implementation plan and the acquisition of software. The funding to implement the intersections into the ATMS will be included in the 2019 Budget and Forecast and is expected to total \$12 million for 2019 – 2022. The costs will be further refined through the detailed implementation plan and as the implementation of the system proceeds.

Respectfully submitted,



Rob Rivers CET
Director, Waste Management and Road
Operations



Jim Harnum
Commissioner, Public Works

Approved by



Jane MacCaskill
Chief Administrative Officer

If you have any questions on the content of this report,
please contact:

Rob Rivers

Tel. # 8289

Attachments: None