



HALTON REGION 2018 Transportation Progress Report

Executive Summary

The 2018 Transportation Progress Report provides an overview of activities related to the operations and maintenance of the Regional Transportation System.

Halton Region continues to ensure the safe and efficient operation of the Regional Road Network through proactive programs such as the Comprehensive Road Safety Action Plan (CROSAP), Drive SAFE (Safety Awareness For Everyone), and intersection and speed reviews. Ongoing adherence to maintenance standards and pavement condition reviews ensure that all Regional roads are maintained in a good state of repair for residents and visitors.

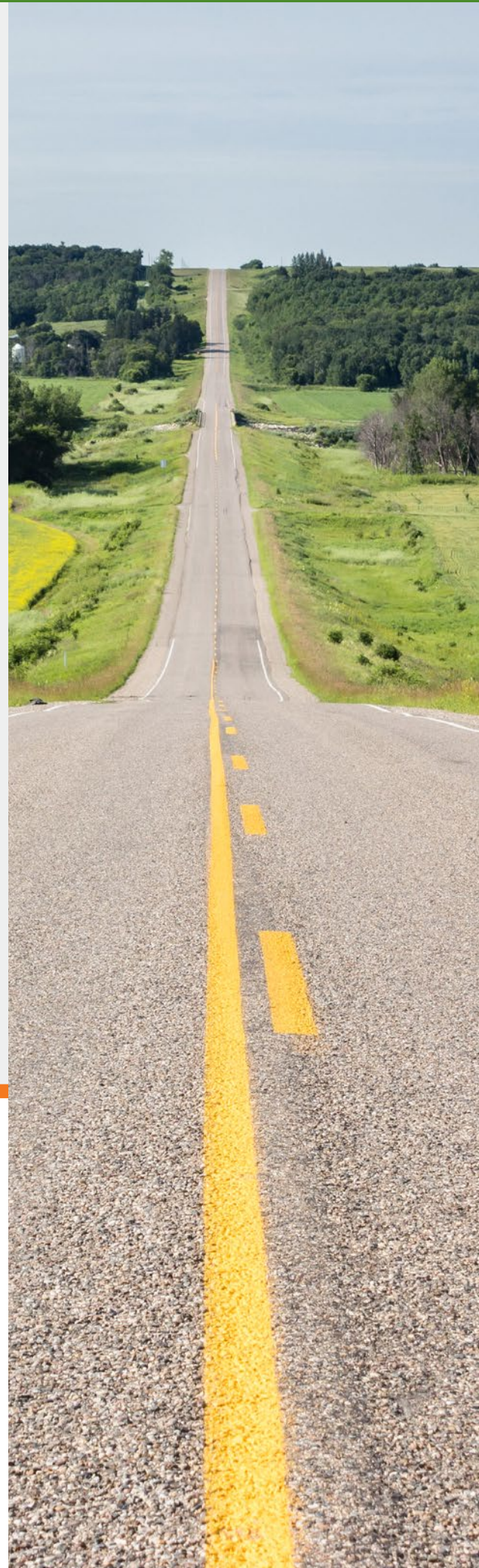
To meet the demands of economic and population growth, the Region has continued to deliver a roads capital improvement program. In 2018, Halton Region committed to \$207 million towards ongoing and new construction projects.

Overall, the Regional Transportation System is operating well with the Regional roads offering a smooth, convenient and safe mode of travel.



Table of contents

Section 1.0 Introduction	1
Section 1.1 Purpose	1
Section 1.2 Background	1
Section 1.3 System profile	1
Section 2.0 Transportation operations and maintenance	3
Section 2.1 Minimum maintenance standards	3
Section 2.2 Roadway asset management	3
Section 2.2.1 Pavement management	4
Section 2.2.2 Road needs	4
Section 2.2.3 Bridges and culverts	4
Section 2.2.4 LED street light conversion program	5
Section 2.3 Traffic and road safety engineering	6
Section 2.3.1 Traffic speeds	6
Section 2.3.2 Traffic operations	8
Section 2.3.3 Road safety	12



List of figures

Figure 1: The 2018 Regional Road Network.....	1
Figure 2: Results of the 2018 Annual Speed Review.....	6
Figure 3: Comparison of 85th percentile speeds, 2016 vs. 2017 vs. 2018	6
Figure 4: Top 20 road segments identified for priority speed monitoring and enforcement in 2019	7
Figure 5: Level of Service comparison with other municipalities (a.m.)	10
Figure 6: Level of Service comparison with other municipalities (p.m.).....	11
Figure 7: Total # of injury- and fatal-related collisions and average annual vehicle kilometres travelled.....	13

List of tables

Table 1: Summary of level of service for study corridors.....	10
Table 2: Red light camera program collision statistics	14

List of appendices

Appendix 1: Regional Road Network.....	16
Appendix 2: 2018 Annual Speed Review	17
Appendix 3: Top 20 Road Segments Identified for Priority Speed Monitoring and Enforcement for 2019.....	18



1.0 Introduction

1.1 Purpose

To maintain a safe and efficient road system, an ongoing review of the systems' performance is required to identify existing and future capacity issues, potential opportunities for improvement regarding safety, level of service and state of repair requirements. Annual programs are undertaken to ensure that Regional roads are operating in the safest and most efficient way possible, and that the service life of infrastructure is optimized. Consistent with these objectives, Section 173(19) of the Regional Official Plan Amendment (ROPA) 38 requires staff to monitor the overall performance of the Region's Transportation System and to report annually to Council.

The purpose of the annual Transportation Progress Report is to summarize the systems' performance and highlight some of the accomplishments in the operations and maintenance of the system. Key system performance indicators provided in the report will enable the overall state of the Regional Road System to be tracked and measured over time.

Information obtained in the monitoring of the system is important in deciding what improvements should be made to the system and when to carry out these improvements.

1.2 Background

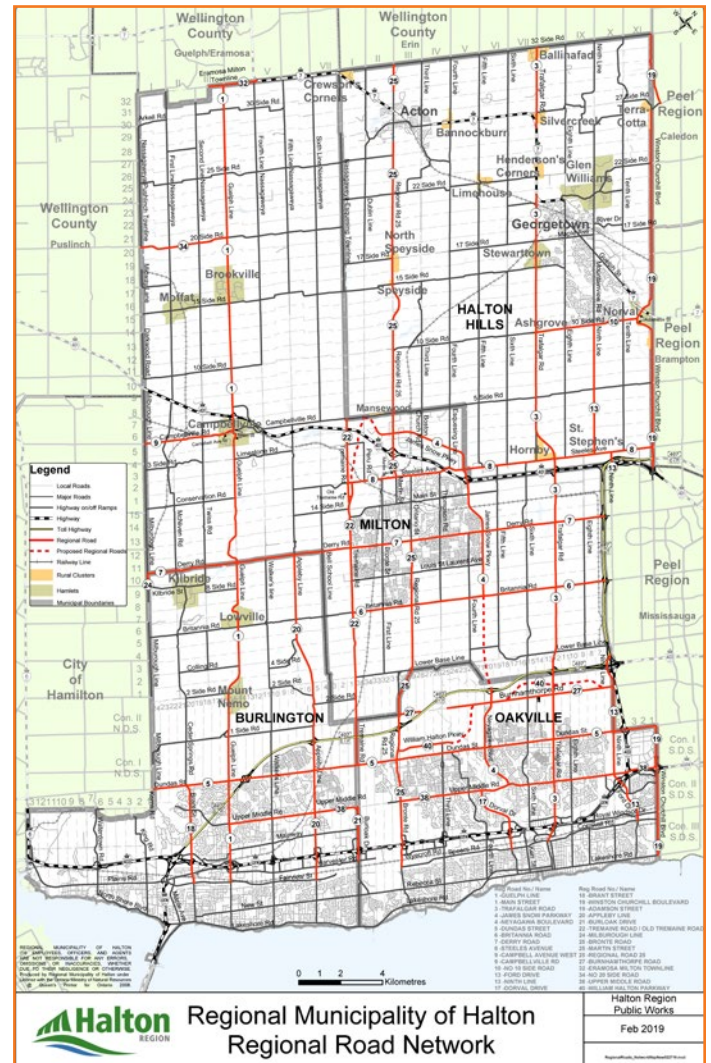
The 2018 Transportation Progress Report provides an update and summary of the activities completed to ensure that the Regional Road System is operating in the safest and most efficient way possible. The report also highlights a number of activities that have been expanded during the last year such as asset management and the Drive SAFE program.

1.3 System profile

The Regional Road Network in Halton (2018) is shown in Figure 1.

Growth in the Regional Transportation System is summarized on page 2.

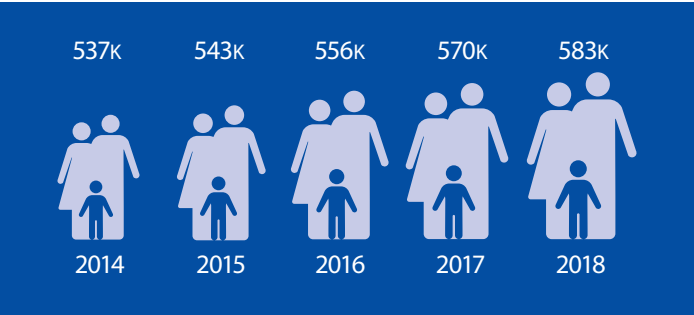
Figure 1: The 2019 Regional Road Network



See Appendix 1 on page 16

Halton Region statistics

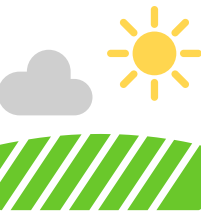
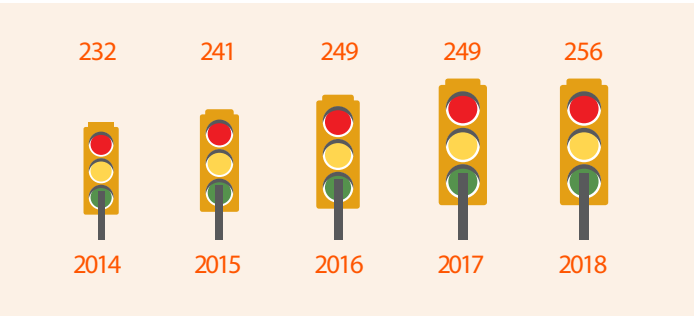
Population



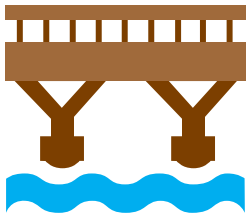
Lane-km



Signalized intersections



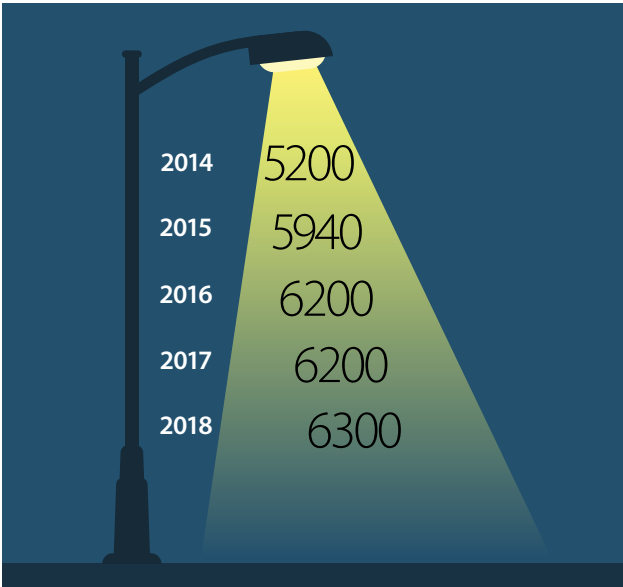
Surface area (sq km)



Bridges and structures (greater than 3m)



Street lights



On road cycling facilities (km)



2.0 Transportation operations and maintenance

2.1 Minimum maintenance standards

To ensure that monitoring and maintenance of the Regional Road Network is undertaken in accordance with established Provincial standards, Halton Region adopted the road classification system used by the Ministry of Municipal Affairs and Housing in O.Reg. 239/02 called the Minimum Maintenance Standards for Municipal Highways (MMSMH), made under the Municipal Act, 2001. The regulation was amended and last updated May 3, 2018 under O.Reg. 366/18. The MMSMH establishes six roads classifications.

To comply with the Provincial standards, road patrol activities must be conducted.

The objectives of road patrolling are:

- that road surface conditions are monitored, recorded, and reported without delay if adverse conditions or problems exist;
- that all roads are inspected on a regular basis;
- that all roads are in a safe condition;
- that all road deficiencies are recorded for subsequent action and compliance monitoring;
- that minor deficiencies are taken care of “on the spot” where possible;
- that citizens’ needs are respected; and
- compliance with the MMSMH requirements.

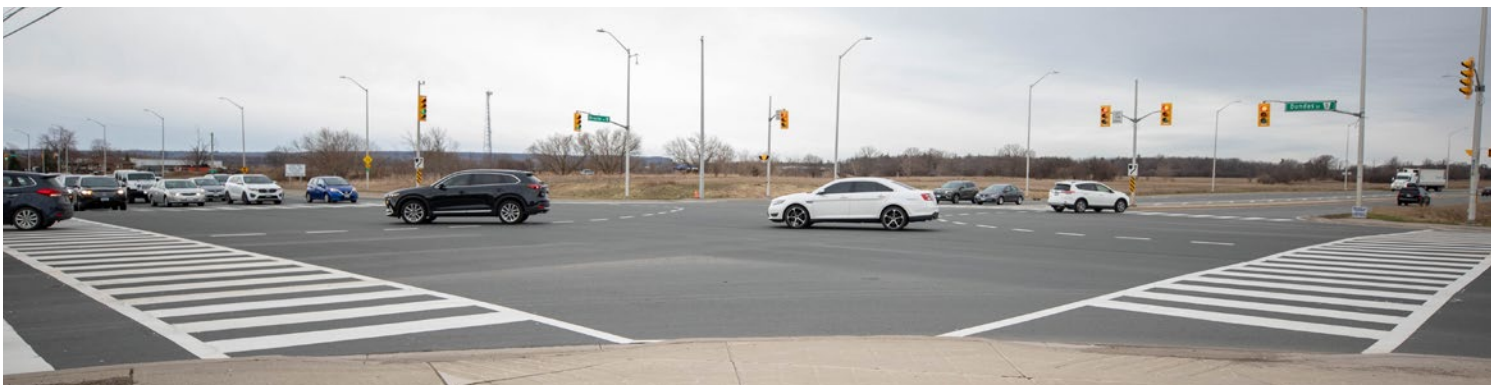
The frequency of road patrols depends on the road classification, which in-turn depends on the Average Annual Daily Traffic (AADT) and the posted speed. This criterion is reviewed annually to ensure the standards are met.

2.2 Roadway asset management

Halton Region is responsible for the management of road infrastructure assets including bridges, culverts, retaining walls, noise walls, streetlights, safety devices and traffic control devices, but excluding sidewalks and multi-use paths which are owned and maintained by the local municipalities.

The overall condition of the Regional Road System is monitored through the Pavement Management Application, yearly Road Needs Study and Biennial Bridge, Culvert and Retaining Wall inspections. Each provide an inventory of assets, quantitative condition and performance measures, performance prediction, and engineering and economic analysis tools to provide costs for needs such as resurfacing, rehabilitation, replacement and reconstruction. The Pavement Management Application is a technology system-based tool to manage and predict pavement condition while the Road Needs Study and Structure inspections determine work required to ensure Regional assets are preserved in a state of good repair.

Currently, the Region’s transportation infrastructure is in a state of accelerated growth, expansion and transition with more urbanization and road widening taking place. Recent road infrastructure additions and increased demands on the Regional Road System are driving the need for operational, maintenance and capacity improvements on roads and structures. The majority of existing road infrastructure is in good condition. Infrastructure that is categorized as being in poor to critical condition is being addressed through current and future planned capital improvement projects. Work within the capital program replaces and rehabilitates a portion of the overall road infrastructure as part of state of good repair annually to minimize deterioration and maximize its remaining service life. As per the 2019 Budget and Business Plan, 89 per cent of all regional road infrastructure assets are in good to very good condition based on the 2017 actual condition.



2.2.1 Pavement management

Halton Region utilizes a Pavement Management Application (Road Matrix) to evaluate, analyze and help develop a list of roads for the annual road resurfacing program for the Regional Road Network. This computer-based pavement management system utilizes pavement information collected and assembled from the road network such as pavement distress, ride quality and pavement condition. The pavement data collected and subsequent data analysis provide a means to prioritize the maintenance and rehabilitation work for the network based on observed pavement conditions. The end result is a list of road sections requiring rehabilitation and/or resurfacing that is used in the development of capital programs. Prioritization is accomplished through asset management by way of a coordinated review of current and future planned Public Works programs as part of Asset Planning and Life Cycle Management. Using a Road Matrix as a part of asset management enables staff to make decisions over a long term to manage the life of the roadway surface and base. The system ensures that informed decisions are being made by keeping up-to-date information and tracking changes to the roads that occur on a regular basis. This is the optimum way of measuring how well road pavements are performing over time.

The data gathered for each road section is given a Pavement Quality Index (PQI) rating which provides an overall indication of a pavement section's condition based on surface distresses and rider comfort. This rating is based on a scale of 1 to 10, with 10 being an optimum or the highest performance rating.

In fall 2016, pavement condition data was collected throughout our road system as part of a three-year survey cycle. The next major pavement condition data collection update is scheduled to occur in 2019. This was adopted to enable comparison with historical data collected in previous surveys to update the pavement management system and continue asset management planning for the entire Regional Road Network. Since 2016, all major changes made to the road network through road reconstruction, widening, resurfacing, spot repairs and other capital works projects are captured within the system.

In 2018, \$8.289 million worth of pavement resurfacing was completed and \$425,000 worth of various spot repairs were completed, both through the 2018 operating budget. In 2018, additional resurfacing candidate roads were budgeted and planned to occur from 2019 to 2029. The investment in resurfacing extends the life of the pavement and assists in the deferral of more expensive reconstruction works. It is anticipated that as the Region's road network grows, additional resurfacing funds, spot repair and crack seal funding will be required to ensure that state of good repair objectives continue to be met.

Staff will continue to monitor the quality of the Region's road pavements and provide recommendations to Council regarding required resurfacing investment through the annual transportation capital budget submissions.

2.2.2 Road needs

A Road Needs Study is performed annually through a visual examination to inventory and appraise improvement needs within each road section. The study provides an overall rating of the road system by section, including factors such as surface type, surface width, capacity, structural adequacy, drainage and geometry. The study reports on the deficiencies, needs and conditions captured through the Road System Inventory, Road Appraisal Sheets and Railway Level Crossing Inventory.

The study also identifies recommended timing and estimated cost of the proposed construction and/or rehabilitation improvements. The recommendations guide the scheduling of improvements to ensure that preservation, upgrading, and timely replacement of roadway assets are undertaken through cost effective management and programming in conjunction with the annual capital works in progress.

The overall Regional Road System adequacy in 2018 was 73.6 per cent compared to 79.3 per cent in 2017 based on lane kilometres.

The overall decline in system adequacy and good to very good roads over the last five years is due to the revised planned construction start of coordinated road rehabilitation and resurfacing projects bundled with road reconstruction and widening projects that are planned. Based on resurfacing and capital works in progress planned in the forthcoming years, it is anticipated that the network system adequacy and percentage of good to very good will increase and stabilize to be adequate.



2.2.3 Bridges and culverts

The monitoring of Halton Region's bridges and major culverts is done through biennial Ontario Structural Inspection Manual (OSIM) inspections as per Provincial Legislation O.Reg. 104/97 'Standard For Bridges'. This legislation requires that inspections be undertaken on all structures that have a span greater than three metres in accordance with the OSIM, every two years under the direction of a professional engineer. Retaining walls are also inspected every two years under the direction of a professional engineer through an OSIM.

An engineering consulting firm (or firms) is retained to update and keep an inventory of the bridges, culverts and retaining walls through a close-up visual inspection and appraisal of each structure. An OSIM inspection report is completed for each structure including material and performance ratings, functional data and recommendations for engineering investigations, rehabilitations, repairs and/or replacements. The overall inventory and report summarizes the results of the inspections, weight limit assessment, structure priorities, recommendations and estimated cost for rehabilitation or replacement of each asset by its time of need. The recommendations ensure that preservation, upgrading, and timely replacement of bridge and culvert assets are performed through cost-effective management and programming.

In 2018, Halton Region re-inspected all bridges, culverts and retaining walls through an OSIM inspection. Re-inspection of bridges, culverts and retaining wall structures has provided reliable and current data to ensure structures are kept safe and in good repair. Maintenance of the Bridge, Culvert and Retaining Wall Asset Management programs is done through the annual inventory updates.

In 2020, the Region will re-inspect all its bridges, culverts and retaining walls through OSIM inspections.

This year end 2018 Average Bridge Condition Index for bridges and culverts with a span of three metres and greater was 77.4 out of 100 compared to 83.34 out of 100 in 2016.

The investment in rehabilitation minimizes deterioration, and maximizes remaining service life and assists in the deferral of more expensive replacement works. As of the end of 2018, there were 88 bridges and 75 major culvert structures greater than three metres along Regional roads in Halton.

Based on the 2018 retaining wall locations, approximately 87 per cent of the retaining walls are rated as good to very good based on the Condition Index. At present, funding for the retaining wall rehabilitation and replacement program is provided in the capital budget. The investment in retaining wall rehabilitation minimizes deterioration and maximizes remaining service life and assists in the deferral of more expensive replacement works.

It is anticipated that as the Regional Road Network continues to grow, additional rehabilitation and replacement funds will be required to ensure that state of good repair objectives continue to be met. Staff will continue to monitor the rehabilitation and replacement requirements with the current and future planned Public Works improvement projects and provide recommendations to Council with respect to required rehabilitation and replacement investment through the annual transportation capital budget submissions.

2.2.4 Light-Emitting Diode (LED) street light conversion program

As reported in the 2017 Transportation Progress Report, the Region commenced the conversion of existing High Pressure Sodium (HPS) street lights to Light-Emitting Diode (LED) technology in order to reduce energy consumption, and realize cost savings in operations and maintenance for transportation infrastructure along the Regional Road Network. The Region has been working in partnership with the local municipalities on this project resulting in streamlined administration. It has provided economies of scale, savings in operations, maintenance expenses, procurement costs and the stocking of inventory.

To date the Region has completed the installation of new LED lighting along Regional roads within the Town of Halton Hills, the Town of Oakville and the City of Burlington. The conversion program within the Town of Milton commenced in May 2018 and it's anticipated that the project will be completed by the end of 2019.

As part of the LED conversion program, new adaptive control technology is being added to the street light network. This technology provides many beneficial features such as dimming capabilities, notification of trouble alerts, remote diagnostics reports for voltage issues, power consumption reports and more. This system also eliminates the need to undertake yearly night patrols by staff to fulfill requirements under the minimum maintenance standards.



2.3 Traffic and road safety engineering

2.3.1 Traffic speeds

Annual Speed Review

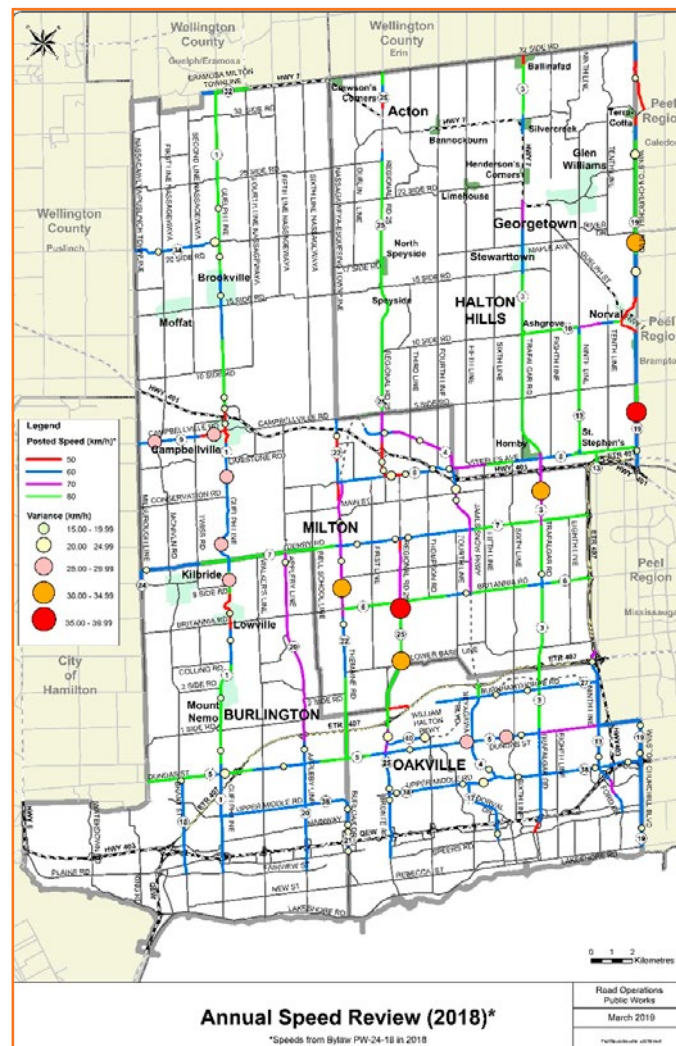
In June 2000, Regional Council approved Report PPW46-00, which outlined a speed control policy for Regional roads. The policy recommends the undertaking of an annual review of posted speed limits throughout the Regional Road System. The annual speed review provides a proactive, systematic approach to ensuring that speed limits within the Regional Road Network are set and maintained at appropriate levels.

The annual speed review involves the measurement of actual speeds at selected locations and compares the 85th percentile of the measured (operating) speeds to the posted speed limits. 85th percentile speed is a commonly used threshold in transportation engineering. The definition of 85th percentile speed is "The speed at or below which 85 per cent of all vehicles are observed to travel under free flowing conditions". Where there are significant variances between these two speed values, a review of the posted speed limit will be conducted.

The review of individual locations may or may not result in a recommendation to increase or decrease the posted speed limit. Recommendations may also be made to undertake specific actions, such as increased enforcement, education programs, installation of countermeasures such as driver speed feedback signs, and physical changes to the roadway.

Figure 2 illustrates the results of the 2018 Annual Speed Review and Figure 3 illustrates a comparison of 85th percentile speeds for 2016, 2017 and 2018.

Figure 2: Results of the 2018 Annual Speed Review



See Appendix 2 on page 17

Figure 3: Comparison of 85th percentile speeds, 2016 versus 2017 versus 2018

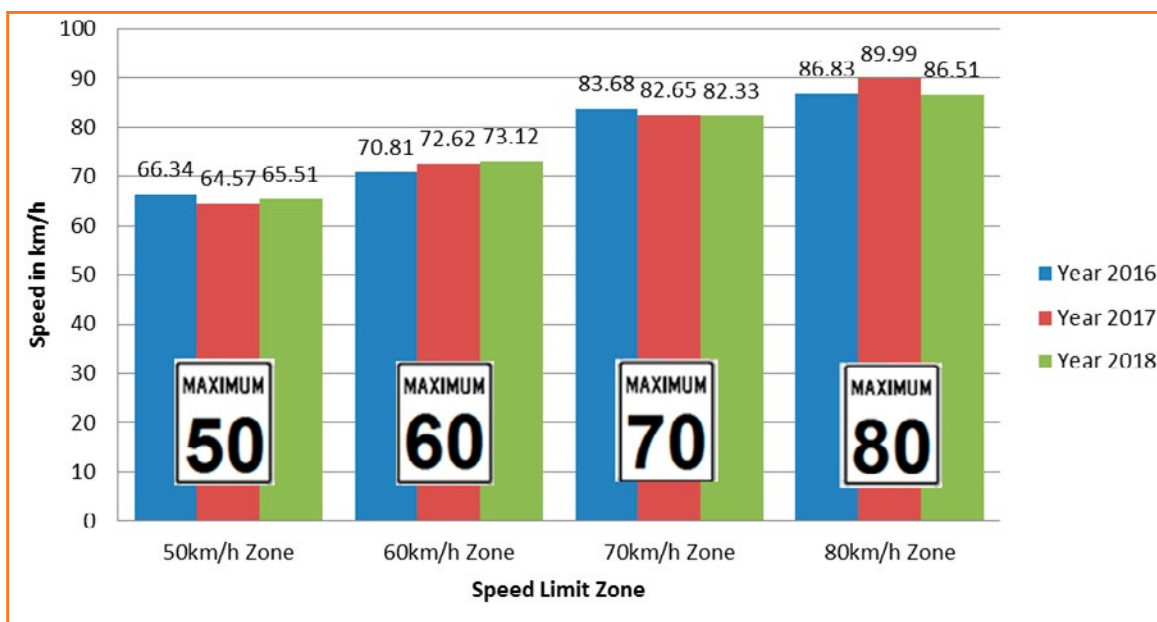


Figure 4 and the list below documents the top 20 roadway segments that were identified as having the highest variances between posted speed limit and 85th percentile operating speeds.

- Winston Churchill Boulevard north of Steeles Avenue
- Regional Road 25 south of Britannia Road
- Winston Churchill Boulevard 200m north of Side Road 22
- Tremaine Road north of Britannia Road
- Trafalgar Road between CP Rail and Hwy 401 eastbound off-ramp
- Dundas Street between Harman Gate and Sixth Line
- Campbellville Road between Milborough Line and First Line
- Campbellville Road between Twiss Road and Kingsbury Circle
- Guelph Line between Derry Road and Steeles Avenue
- Dundas Street between Lions Valley Park Road and Neyagawa Boulevard
- Guelph Line 1000m north of Steeles Avenue
- James Snow Parkway between Main Street and Hwy 401 eastbound off-ramp
- Winston Churchill Boulevard 200m north of River Road
- Winston Churchill Boulevard - 300m south of railroad crossing
- No. 20 Side Road 200m west of Guelph Line
- Steeles Avenue between Ontario Street and Martin Street
- Upper Middle Road between Dorval Drive and Neyagawa Road
- William Halton Parkway west of Third Line
- Dundas Street between Guelph Line and 407 westbound off-ramp
- Regional Road 25 between Dundas Street and Burnhamthorpe Road

The information gathered in our annual speed review provides us with locations on our road network which require detailed review and possibly the implementation of countermeasures to assist in the reduction of road user speeds.

Speed management countermeasures

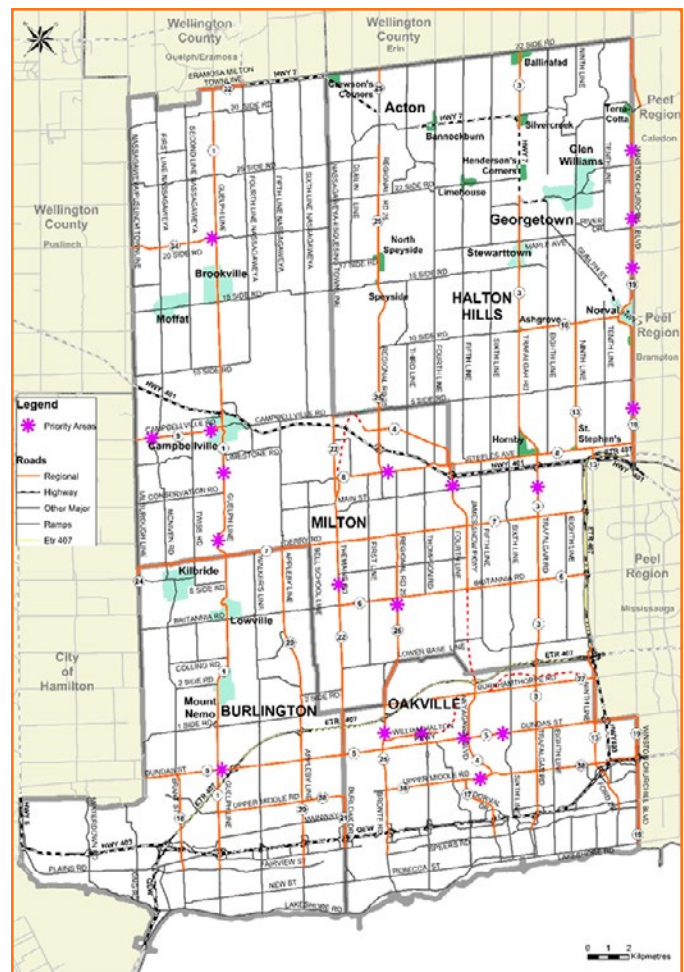
This section provides information on countermeasures that the Region implements to promote the reduction of road user speeds on Regional roads where identified speeding problems exist. Countermeasures include the following:

- Fixed driver speed feedback signs; and
- Police enforcement

Driver speed feedback signs:

The Region owns a fleet of driver speed feedback signs. Throughout the year, the Region installs the signs on the roadside at locations identified with high rates of travel speeds from our annual speed review. The signs are configured to detect the travel speeds of approaching traffic and provide feedback to the road users on their speeds relative to the posted limit. In order to justify the continuation of this program, the Region conducts compliance assessments in order to determine the effectiveness of the signs. The results of our assessments continually conclude that the signs assist in the reduction of speeds, and therefore, are a benefit to our road network. The signs continue to remain a significant part of our speed management toolbox. The Region is continually increasing our fleet of signs in order to expose more of our road network to this beneficial countermeasure. The Region has installed 12 signs as of 2018. The Region plans to install more signs in 2019 at locations which correspond with our Top 20 road segments identified for priority speed monitoring and enforcement (noted above).

Figure 4: Top 20 road segments identified for priority speed monitoring and enforcement in 2019



See Appendix 3 on page 18

Police enforcement:

Results from our annual speed review are shared with Halton Regional Police Service for consideration of targeted speed enforcement through the local District Response Units (DRUs).

Annual requests for posted speed limit review

To encourage compliance with the posted speed limit, both a consistent message and reasonable speed limit must be posted. The ideal speed limit is impacted by factors including roadside environment, prevailing operating speeds, horizontal or vertical alignment, traffic volume, density of driveways, presence of pedestrians/cyclists, and adjacent land use. When a posted speed is too low or too high for a particular road segment, motorists' compliance with the posted speed limit is low. Visual cues from the road and adjacent environment, such as pavement width, shoulder width, and pavement quality, can contribute to operating speeds deviating from the posted speed limit. A large speed discrepancy between vehicles in the traffic flow is undesirable from a traffic operations perspective.

The Region's policy on posting speed limits is in line with the Highway Traffic Act and Ontario Traffic Manual, which are recognized industry wide. Our policy recommends defining speed zones based on a number of criteria including those noted above. In order to determine compliance with the posted speed, the Region conducts an annual assessment of road user operating speeds (described in Section 2.3 of this document). We then determine the 85th percentile operating speed and assess the requirement to adjust posted speeds. This is a proactive approach to ensuring speed limits are appropriately and reasonably set on Regional roads.

In 2018, Halton Region received three requests to review the posted speed limit on Regional roads. The details are as follows:

- Guelph Line in Lowville – resulting in a lowered speed limit from 80 km/h to 70 km/h;
- Trafalgar Road near Southwinds Drive - resulting in a lowered speed limit from 80 km/h to 70 km/h; and
- 10 Side Road (Regional Road 10) between Winston Churchill Boulevard (Regional Road 19) and 310m east of Tenth Line – resulting in a lowered speed limit from 80 km/h to 70 km/h.

2.3.2 Traffic operations

Advanced Transportation Management System

The Region recently completed a comprehensive feasibility study that concluded a Regional Advanced Traffic Management System (ATMS) would be beneficial for Halton Region.

Subsequently, through report PW-10-18, Regional Council approved the implementation of a Regional ATMS, including the various Intelligent Traffic System (ITS) components needed for the network system. As a result, a Request for Proposal (RFP-P85-18) to retain a consultant to prepare procurement specifications and tender documents was awarded in March 2019.

Intelligent traffic systems will be critical to operating our current roadway systems at maximum capacity. Efficient and safe transportation networks play a key role in the economic vitality, growth and quality of life for most major urban centres. Poorly timed signals can waste time and fuel, increase air emissions and create frustrating and safety-related situations for motorists. Intelligent signal controls can help ease congestion and its negative effects.

An ATMS is a 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 and more), 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 and more. All these intelligent devices work together to move traffic more safely and efficiently in response to real-time traffic demands and allow staff to make informed decisions based on real-time data.

The Traffic Management Centre is the facility that houses the ATMS, video display boards, work stations for staff and meeting rooms. Connections or feeds to the video displays/data can be made available to other agencies or departments such as the police, paramedics, local municipalities, the Ministry of Transportation and others.



Benefits of an ATMS

An ATMS 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 and “proactively” managing traffic throughout Halton.
- leveraging the extensive Regional fibre optic communications network and state-of-the-art traffic signal controllers that are already in place on Regional corridors. Halton Region has been installing fibre optic cable 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 economic and population growth.

Traffic signal optimization

A key component to maintaining a safe and efficient road network is the effective management of traffic through major road corridors. To achieve this, traffic signal timings are coordinated to minimize vehicular delay. In order to ensure our signals are coordinated in the most efficient manner, the Region commissions studies aimed at optimizing our signal network along major corridors. To ensure the best possible service on our roads, the Region has completed these studies on an annual basis since 2011 and optimized a number of corridors.

In 2018, optimization studies were completed for the following corridors and are currently being implemented:

- Upper Middle Road from Bronte Road to Ninth Line
- Derry Road from Tremaine Road to James Snow Parkway
- Dundas Street from Tremaine Road to Hospital Gate

Through the optimization studies, the Region reviews the existing traffic conditions and optimizes the traffic signals for flow during the directional peak hours. In Halton, this is typically the eastbound and southbound direction in the a.m. peak period, and westbound and northbound during the p.m. peak period.

These studies review each intersection within a corridor and the corridor as a whole, to ensure that traffic volumes are flowing in the safest and most efficient manner.

Traffic signal timing adjustments developed from the optimization studies aim to reduce road user delay along the study corridors; particularly along corridors where congestion has been problematic and progression is difficult to achieve due to overall traffic volume on the roadway, and the proximity of major traffic generators and freeway systems.

As capital improvements are completed along our major corridors, state-of-the-art traffic signal interconnect infrastructure is being provided to ensure that the long-term goal of an efficient traffic signal network is achieved.

In 2019, optimization studies are planned along Neyagawa Boulevard from Upper Middle Road to Burnhamthorpe Road, Steeles Avenue from Industrial drive to James Snow Parkway, and Bronte Road from Speers Road to Dundas Street.



Travel speed and delay studies for monitoring levels of service

This section provides a snapshot of the operational performance of Regional roads in 2018.

Halton Region conducts travel speed and delay studies annually, along 12 specific roadway corridors to determine the travel time and thereby level of service* provided to road users throughout the region. Travel time is measured by comparing the average time to travel between two points on a roadway corridor during periods of peak traffic volumes with the time required to travel the corridor at the posted speed limit free of delay.

**Level of service is a qualitative measure describing operational conditions within a traffic stream, generally described in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience. [The Highway Capacity Manual - Transportation Research Board]*

Table 1: Summary of level of service for study corridors

Level of service	a.m. peak period	p.m. peak period
A/B	41%	25%
C	49%	47%
D	8%	18%
E	2%	8%
F	0%	2%

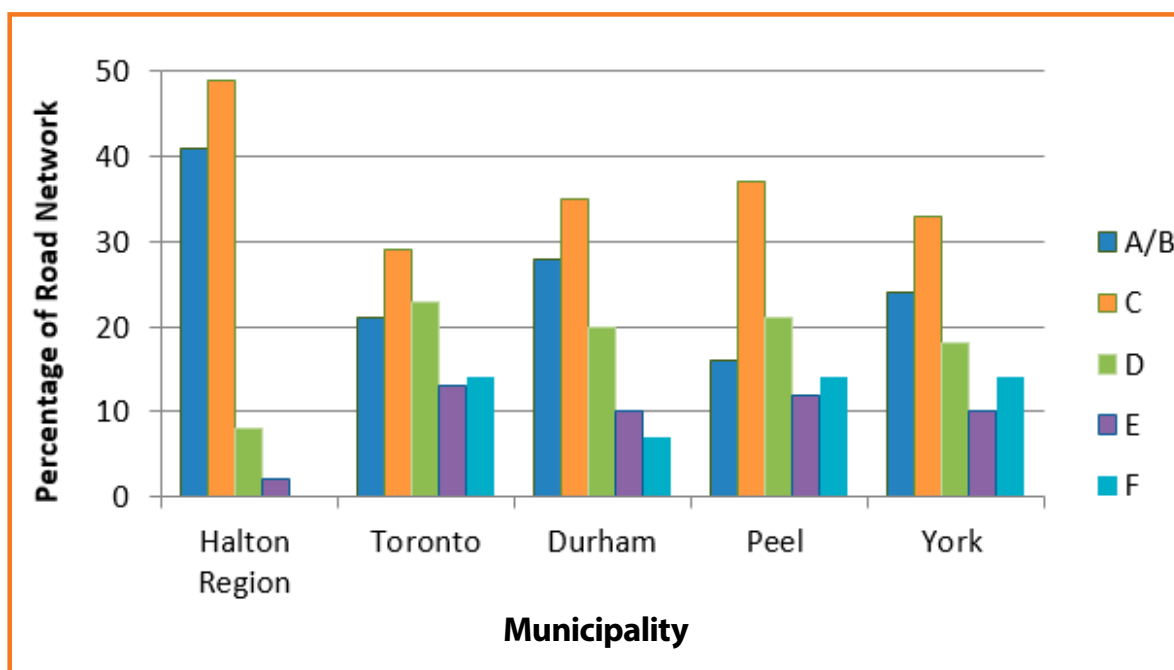
Note: Measured (observed) speeds associated with levels of service A through F are indicated in the table below. For example, where the observed travel speed is 70 per cent or greater of the posted speed, the level of service is "A/B".

Average travel speed (% of posted speed)	Level of service
90%	A
70%	B
50%	C
40%	D
32%	E
Less than 32%	F

Figures 5 and 6 (below and on the next page) compares the results from the Region's study with similar studies conducted in other Greater Toronto Area municipalities for a.m. and p.m. peak periods.¹

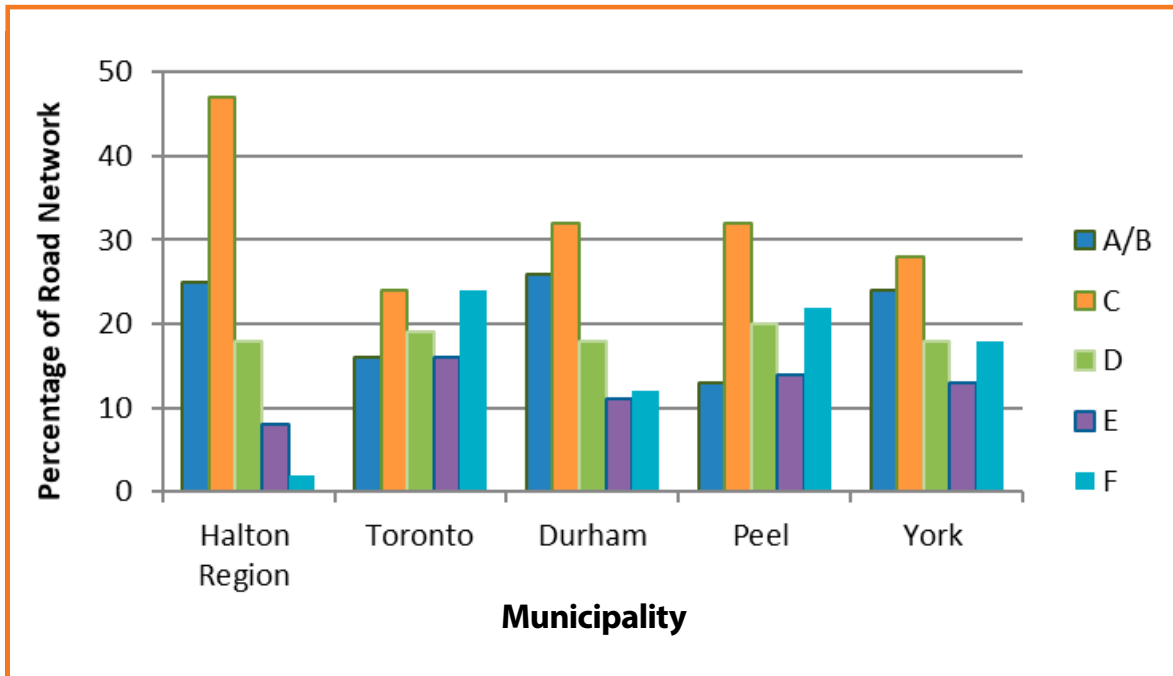
The following tables compare the travel time results of the study with that of other municipalities. It should be noted that the latest data from other municipalities reflects studies completed in 2016 and is provided by the Ministry of Transportation of Ontario.

Figure 5: Level of Service comparison with other municipalities (a.m.)



¹ Ministry of Transportation of Ontario's (MTO) Travel Time Survey.

Level of Service comparison with other municipalities (p.m.)



Note: Annually, this study is completed during typical peak periods between September and early December. In 2018, however, the studies were carried out between December 10 and 18 and holiday traffic impacted the study results.

The study can be affected by detouring from road closures and detours associated with Halton's roads capital improvement program, as well as deviations from typical routes from public reliance on navigation devices, which detour traffic to the quickest route at the time of travel.

As our lane kilometres and population density increases, and therefore vehicle kilometres traveled increases, continuous improvement, like the improvements noted herein, are required in order to maintain quality service levels.

New intersection signalization

This section describes the process in which the Region determines where new traffic signals should be installed for the following program-year, as well as the locations.

To determine if traffic signals are required at an intersection, a signal warrant analysis is undertaken annually of all un-signalized intersections. The signal warrant is a provincially accepted standard developed by the Ministry of Transportation and outlined in the Ontario Traffic Manual. The methodology behind the warrant utilizes the most up-to-date traffic volume (vehicular and pedestrian) and road user collision experience, and locations are individually analyzed to determine if standards or warrants, related minimum traffic and/or delay to cross traffic, are met.

The signal warrant also considers the number of "preventable" collisions that occurred within the previous consecutive three-year period at the intersection. Preventable collisions are those involving traffic which, under signalized conditions, would move on separate phases (for example, left turns).

Although the warrant analysis considers benefits of signaling an intersection, the Region also considers other forms of intersection control, such as roundabouts. Consideration of this type of measure must also involve planning-level programs and future plans. Therefore, the analysis results of the traffic signal justification warrant are reviewed with Transportation Planning and Design and Construction in order to ensure feasibility prior to moving forward.

Based on the above guidelines and practices, the Region is in the process of constructing Traffic Control Signals at the following intersections in 2018, scheduled for completion based on the following dates:

1. Steeles Avenue and Harrop Street (2019)
2. Guelph Line and 25 Side Road (2019)
3. Guelph Line and 32 Side Road (2021)
4. Upper Middle Road at Buckingham Drive (2019)

Intersection signalization identified through development and capital road construction are noted in Section 3.0 of this report.

¹ Ministry of Transportation of Ontario's (MTO) Travel Time Survey.

2.3.3 Road safety

One of the main goals of operating the road network is to help facilitate the safe and efficient movement of people and goods. We achieve this goal by maintaining and continually improving our road network where we identify opportunity for improvement. In order to improve our road network, we continually assess performance and implement infrastructure improvements where opportunities exist. This allows us to maximize road safety and operate efficiently, as well as facilitate as little delay to traffic as possible. Over the past decade we have implemented, and currently maintain many safety initiatives to assist with this goal. This section describes the Region's road safety programs, projects and initiatives.

Comprehensive Road Safety Action Plan program

The Comprehensive Road Safety Action Plan (CROSAP) is an ongoing, continuous improvement program focused on facilitating a safe and efficient Regional Road System. The action plan is proactive and managed by the Region which allows us to ensure road safety is given high priority. The program incorporates engineering, enforcement and educational components and is one piece of an overall road safety strategy to minimize road user collision risk.

CROSAP includes the following three elements:

1. Road Network Screening and identification of locations with Potential for Safety Improvement
2. Diagnostic review
3. Implementation of preferred solutions

Road Network Screening and identification of locations with Potential for Safety Improvement

This task is achieved by comparing similar entities (intersections and road segments) within our road network and calculating their safety performance; and ranking said entities based on an index called the Potential for Safety Improvement (PSI). The index considers collision history (based on statistically significant variables) and traffic exposure (volume).

Diagnostic review

This task consists of conducting formal road safety assessments of the top-ranked locations from the network screening task, identification and selection of possible solutions, and a cost/benefit analysis to compare the potential societal benefits and cost of the potentially feasible solutions.

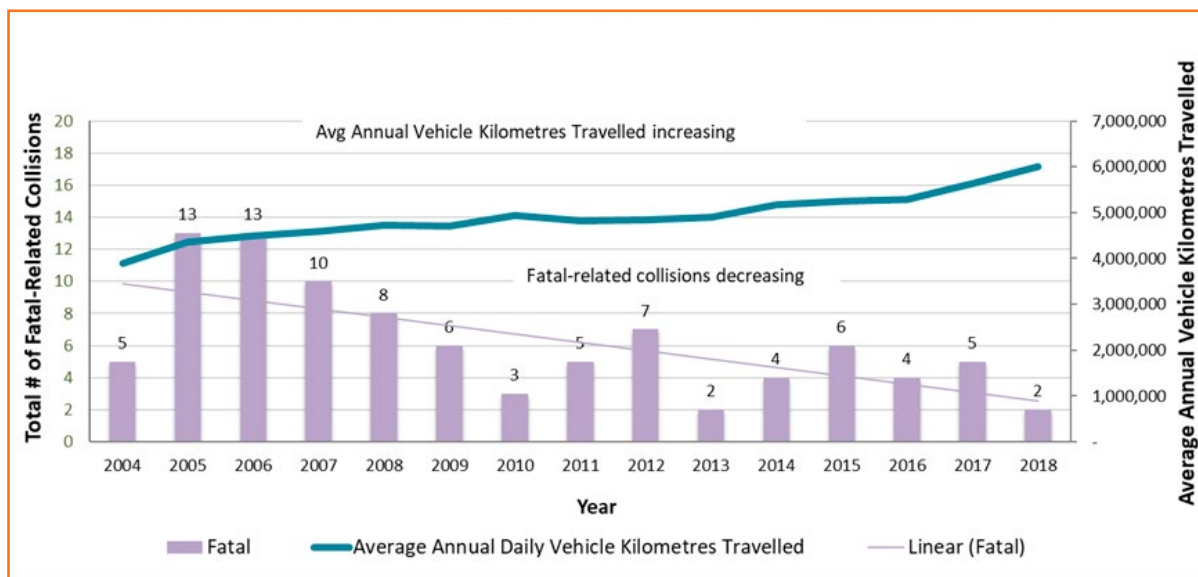
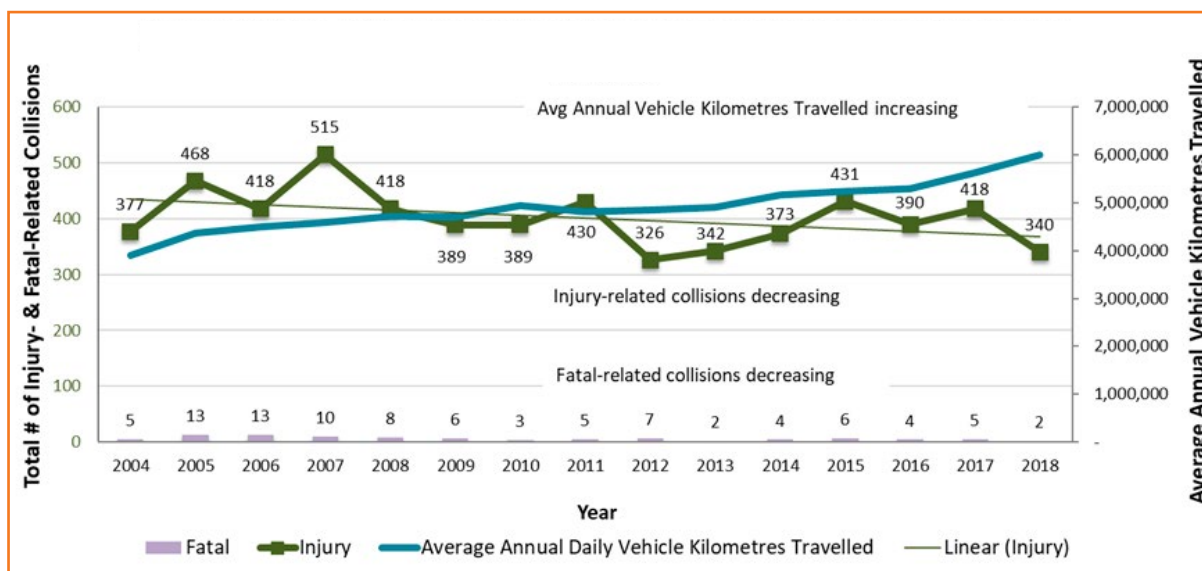
Implementation of preferred solutions

This task consists of the implementation of feasible solutions, particularly considering societal benefit. Where possible, solutions are implemented along with infrastructure improvements. This process encourages wise planning and spending and ensures proactive consideration of safety in design. Improvements are funded through the Regional capital budget.

CROSAP program performance

Since the inception of CROSAP in 2001, the Region has formally assessed over 130 locations (intersections and road segments) along the Regional Road Network specifically identified with safety improvement potential through a network screening process. The Region has implemented a number of improvements related to roadway signage, positive guidance for road users, pavement markings, traffic signals and phasing, road geometry, and roadside safety. Said improvements have been implemented as part of our capital construction projects. Over this time period, a significant downward trend has been observed in the safety improvement potential, indicating that Regional roads are operating more safely and efficiently year-over-year, while traffic volumes continue to increase through population and business growth. The following graphs present the trend lines of the total number of injury- and fatal-related collisions on Regional roads and the average annual vehicle kilometres travelled (exposure) between 2004 and 2018. Note the increase in exposure and decrease in collision trend lines.

Figure 7: Total # of injury- and fatal-related collisions and average annual vehicle kilometres travelled



CROSAP in 2019:

In 2019, the Region will complete Network Screening and conduct safety and operational reviews of locations identified with significant improvement potential and implement feasible improvements to the road network.

Safety Strategic Plan

In 2019, staff will undertake a Region-wide Traffic Operations Safety Study (TOSS) that includes an operational and geometric assessment of the Regional road system to ensure that the network is operating as safe and efficiently as possible and in conformance with industry standards and new safety initiatives similar to Vision Zero.

The study will also include a review and update of all existing operational policies and procedures/practices such as the speed limit and the roadway illumination policies.

The need for this study has been identified in the Capital program to take place on a regular five-year cycle in advance of the Transportation Master Plan (TMP) Update so that any recommendations arising from the TOSS can be incorporated into the TMP Update which also has been identified in the Capital program on a five-year cycle.

The Red Light Camera Program

Halton Region participates in the Provincial Red Light Camera (RLC) program. The goal of the RLC program is to reduce the frequency of high-severity angle-type collisions at signalized intersections. The program utilizes an enforcement technique targeted at reducing red light running associated with specific movements known to result in angle collisions.

Since 2012, The Region has installed 17 RLCs at signalized intersections. The Region has been successful with the program, reducing high-severity angle collisions at the intersections. The following table presents statistics for right angle collisions for 12 of our 17 RLC locations. Data from intersections with

RLCs installed in 2017 was omitted given the short time period following installation and the fact that the data would therefore be unrepresentative. Collisions occurring in 2018 were also not included as the data set is incomplete. The subject analysis, as reported in PW-11-19, compared collisions five years before each RLC was installed with the available years of data until December 31, 2017. On average, the RLC Program has resulted in a decrease of right angle type collisions at the 12 RLC locations.

Staff are currently analyzing the current status of collision statistics at the intersection of Derry Road and Trafalgar Road and will develop a recommended solution.

Table 2: Red Light Camera collision statistics

Location	Activation Date	Before	After	Difference	% Change
Trafalgar Road and Upper Middle Road	2012-03-16	9	8	-1	-11%
Brant Street and North Service Road	2013-11-31	15	13	-2	-13%
Trafalgar Road and Leighland Avenue / Iroquois Shore Boulevard	2013-11-31	24	14	-10	-42%
Derry Road and Trafalgar Road ¹	2013-11-31	8	14	6	75%
No. 10 Side Road and Ninth Line	2013-11-31	4	5	1	25%
Upper Middle Road and Oxford Avenue	2015-03-04	8	1	-7	-88%
Derry Road and James Snow Parkway	2015-03-04	10	5	-5	-50%
Derry Road and Ontario Street	2015-03-04	15	7	-8	-53%
Trafalgar Road and 5 Side Road ²	2015-03-04	1	3	2	200%
Appleby Line and Mainway	2015-03-04	4	2	-2	-50%
Guelph Line and Upper Middle Road ³	2013-11-31	11	4	-7	-64%
Guelph Line and Mountainside Drive / Davidson Court	2015-03-04	22	4	-18	-82%
Guelph Line and South Service Road	2017-10-06	N/A			
Derry Road and Savoline Boulevard	2017-10-06	N/A			
Derry Road and Commercial Street / Santa Maria Boulevard	2017-07-21	N/A			
10 Side Road and Eighth Line	2017-08-03	N/A			
Upper Middle Road and Sixth Line	2017-10-06	N/A			

¹ Derry Road & Trafalgar Road has been offline since May, 2017 for capital works project.

² A fatal collision in July, 2014 made installing RLC imperative. There has only been one fatal collision at intersections with RLC.

³ Camera was initially monitoring westbound approach but was relocated to monitor the southbound approach in March, 2015.

N/A means incomplete data; collision data for 2018 is still being received.

In 2019, the Region will be installing RLCs at the following locations:

- Steeles Avenue and Ninth Line North
- Upper Middle Road and Third Line
- Royal Windsor Drive and Ford Drive

Drive SAFE Program

The Drive SAFE (Safety Awareness For Everyone) public awareness program is an initiative targeting speeding, aggressive driving, and generally unsafe behaviour on Halton roads. To promote safe driving to the public, the Region has completed several initiatives in previous years, such as:

- poster campaigns;
- safety brochures;
- cyclist safety commercials;
- Emergency Medical Services (EMS) safety commercials;
- winter driving tips on Weather Network;
- 911 call program; and
- driver speed feedback roadway signs.

A major component of the Drive SAFE program is the Region's targeted speed monitoring and enforcement program noted herein. The Drive SAFE program also lends itself to work in partnership assisting other Regional departments and divisions to promote safe roads in Halton. Halton Regional Police Service, Halton Region Health Department, and Public Works staff will continue this partnership and coordinate efforts through 2018. In 2019, the Region will be investing in our speed management program by purchasing more portable speed message display signs to make drivers more aware of their operating speeds in an effort to reduce speeds.

Portable speed message display sign

Similar to our driver speed feedback signs, two portable variable message display signs are used as a speed compliance tool to display vehicle traveling speeds to motorists. The signs are strategically placed on the Regional Road Network at known areas of concern based on high speed locations and requests from the public.

In 2018, the signs were deployed to the following locations:

On average, a reduction in the 85th percentile speed of approximately 5-10 km/h was observed at the above listed locations. Staff continue to monitor the speeds in the locations where the message boards are deployed.

1. Dorval Drive – between North Service Road and Leewood Drive
2. Upper Middle Road – 350m east of Bronte Road (Regional Road 25)
3. Dundas Street – east of Eighth Line
4. Ninth Line (Regional Road 13) – between 407 ETR interchange and Burnhamthorpe Road (Regional Road 27)
5. Regional Road 25 – south of 15 Side Road
6. Trafalgar Road – south of Hwy 7
7. Neyagawa Boulevard – between Munns Avenue and River Oaks Boulevard
8. Bronte Road – south of Upper Middle Road
9. Lakeshore Road near Appleby College
10. Regional Road 25 – north of 15 Side Road

In addition to the above locations, the portable speed message display signs were deployed for information relating to capital works projects, special events, and road closures.



