METROLINX

REGIONAL ROAD NETWORK CHARACTERIZATION

2041 Regional
Transportation Plan

Prepared by WSP
2017

SUMMARY REPORT

October 2017

METROLINX

GREATER TORONTO & HAMILTON AREA
ROAD NETWORK CHARACTERIZATION STUDY

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1.0 STUDY BACKGROUND & APPROACH

This report was developed to inform the update of the Regional Transportation Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA). The RTP update will build upon progress made since the last RTP – "The Big Move," was released in 2008. The RTP update will aim to develop a transportation system that supports complete communities by firmly aligning the transportation network with land use, providing travellers with convenient and reliable connections, and supporting a high quality of life, a prosperous and competitive economy, and a protected environment. Although the RTP update will include policies and actions related to the multiple components that make up our transportation system, this report will focus on informing the policies and actions specifically related to the road network.

Decisions about how roads are used, operated and maintained involve many actors and jurisdictions including municipal governments, transit providers, Metrolinx, and the Ontario Ministry of Transportation (MTO). For example, municipalities manage local roads, regions manage regional roads, and highways are managed by MTO. Different policy objectives often result in compatibility issues between the different right of way users, and priorities among the various policy documents such as the local Transportation Master Plans (TMPs), the RTP, Active Transportation (AT) plans, and transit agency plans, are not always clear. Therefore, to ensure successful implementation of the next RTP, Metrolinx must work collaboratively with many other local and provincial partners in the region.

STUDY AREA & ROAD NETWORK

The study focused on the Greater Toronto and Hamilton Area (GTHA). The map on the following page shows the

Figure 1 – Overview map of municipalities in the GTHA

existing road network in the GTHA, based on data obtained from the Ontario Road Network file obtained from the Land Information Ontario open data system. The map shows the existing road classes ranging from expressways and highways to arterials roads and local collectors. In addition, the following graph summarizes the total length of all roads by class. These figures are intended to provide general context to the following discussion of key road related issues and policy recommendations.
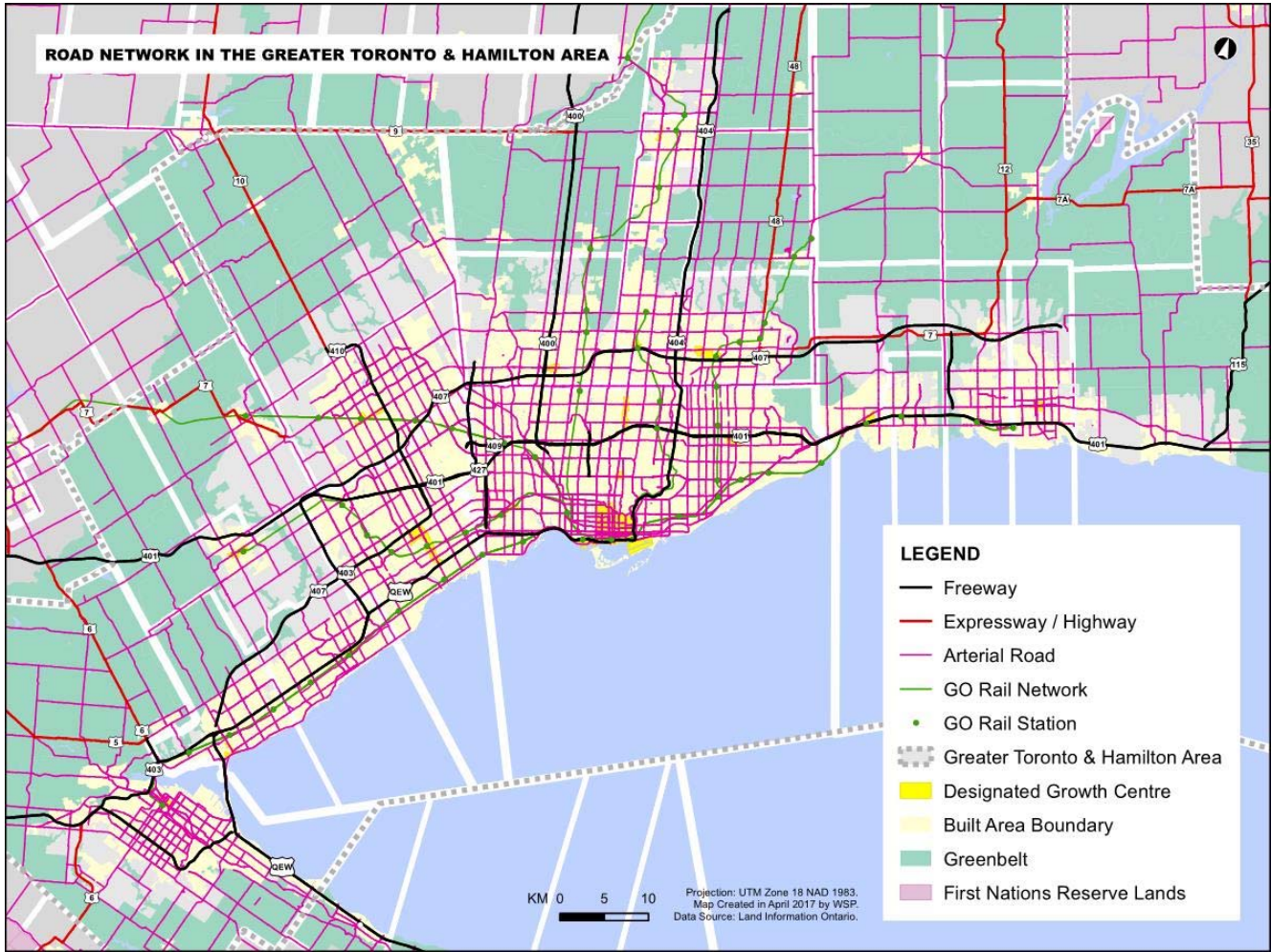
Figure 2 – Overview map of the road network in the GTHA

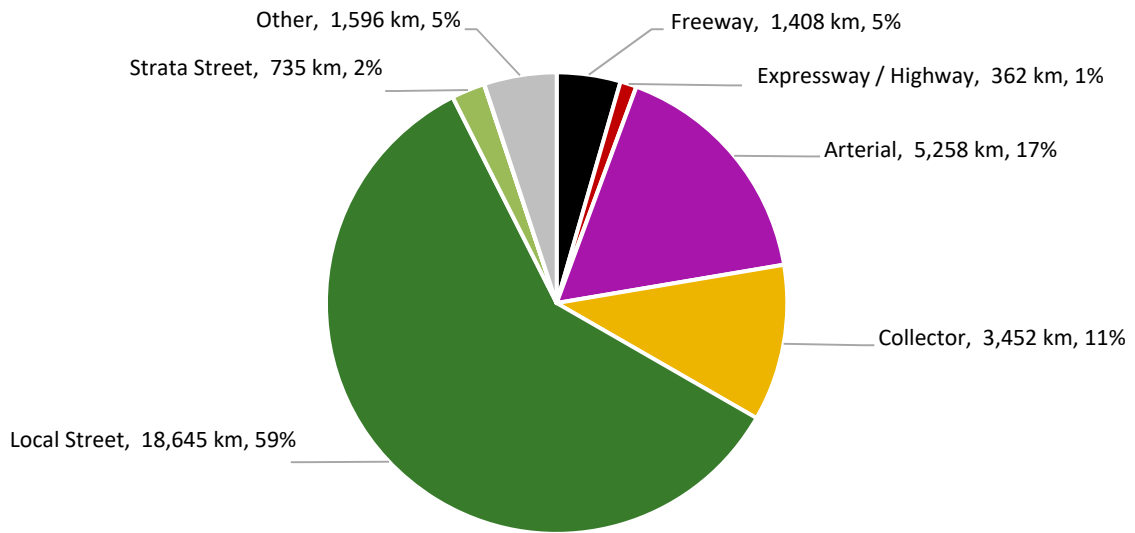
Other, 1,596 km, 5%
Strata Street, 735 km, 2%
Freeway, 1,408 km, 5%
Expressway / Highway, 362 km, 1%
Arterial, 5,258 km, 17%
Collector, 3,452 km, 11%
Local Street, 18,645 km, 59%

Figure 3– Total road network length per road class in the GTHA

TOPIC AREAS AND APPROACH

To assist with developing road related policies for the RTP, the following topic areas were explored:

- Complete Streets, including on-street parking
- Active Transportation
- Safety & Vision Zero
- Off-Street Parking (developed as a separate report for Metrolinx)
- Transit
- High Occupancy Vehicles (HOV) & Managed Lanes
- Intelligent Transportation Systems (ITS)
- New Mobility

Topic area experts from WSP, as well as staff from Metrolinx and municipalities from across the GTHA, participated in a road network workshop that served as the basis for this report. The information presented to the workshop participants included key issues and policy directions for each topic area, which was updated during the course of the workshop based on the participants' feedback. Background information in support of the workshop included: regional case studies, the planning and regulatory context, existing policies, stakeholder responsibilities, and issues/opportunities.

The workshop participants were asked to rank the top 3 policy directions per topic area they felt were important. The results of the ranking exercise, as well as the key issues and policy directions that were updated during the course of the workshop, are presented in the body of this report.

2.0 TOPIC AREA SUMMARIES

The topic area summaries provide a brief introduction of the topic; the key issues/opportunities identified; a summary of the key policy directions developed at the workshop, and the results of a ranking exercise for the key policy directions. The key issues/opportunities were developed ahead of workshop to support the discussion and therefore may not always align with policy directions developed by workshop participants.

The ranking exercise involved the workshop participants ranking their top 3 most valuable policy directions. The top ranking policy directions submitted were awarded 3 points, the second ranking policies 2 points, and third ranking policies 1 point. The tables in the section below represent the results of the tallied points with the darkest green representing the top ranked policy direction and lightest green the lowest.

COMPLETE STREETS & ON-STREET PARKING

The concept of complete streets is one that is being widely embraced and promoted by cities across North America and beyond. Complete streets are planned, designed and operated to provide safe space for all modes, including walking, cycling, transit and vehicular traffic. They reconsider the allocation and use of space in the public right-of-way, making their adoption a key policy question. There is an opportunity to accelerate the introduction of complete streets in the region, particularly for roads which provide access to mobility hubs, but they do require coordination across regional boundaries for consistent design treatments.

An important related topic is on-street parking. While complete streets can be a tool in the drive for balance among modes by supporting greater choice, management of parking supply and fees can be used to discourage over-reliance on single occupant private-vehicle trips.

KEY ISSUES/OPPORTUNITIES

Safety for All Modes - Complete streets must be planned, designed and operated to provide safe space for all modes, including walking, cycling, transit and vehicular traffic and should consider utilities and green infrastructure.

Regional Coordination - Regional coordination could assist in advancing complete streets initiatives.

Integration with Rapid Transit Projects – Complete streets initiatives can be integrated with rapid transit initiatives.

Balance On-street Parking Provisions – On-street parking provisions can be considered in the context of cycling & pedestrian infrastructure and transit service.

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KEY POLICY DIRECTIONS

A. Promote complete streets as a vehicle to achieve multi-modal mobility in master plans

B. A symposium on complete streets should be planned to address questions of policy, networks and ongoing coordination

C. Local partners can integrate parking into TMPs, so they are actively thinking about on-street parking in regards to performance-based pricing, when and where it should be considered, and on-street electric vehicle charging

D. Promote municipal policies that support on-street parking for shared vehicles

E. Disseminate guidance and develop regional complete streets guidelines

F. Metrolinx should fund complete streets a initiatives conditionally as part of its transit projects

G. Metrolinx can act as the facilitator and integrator of the region, and build on best practices with partners based on a bottom up process

POLICY RANKING RESULTS

Complete Streets & On-Street Parking	
	Metrolinx should fund complete streets initiatives conditionally as part of its transit projects
	Metrolinx can act as the facilitator and integrator across the region, build on best practices with partners based on a bottom up process
	Promote complete streets as a vehicle to achieve multi-modal mobility in master plans
	Metrolinx can disseminate guidance and develop their own complete streets guidelines
	A symposium on complete streets should be planned to address questions of policy, networks and ongoing coordination
	Local partners can integrate parking master plans into TMPs, so they are actively thinking about on-street parking in regards to performance-based pricing - when and where it should be considered and on-street EV charging
	Promote municipal policies that support on-street parking for shared vehicles

ACTIVE TRANSPORTATION

Over the past decade, there has been increasing policy priority towards active transportation for commute trips in particular. To meet and encourage the growing demand for active transportation, new safe, protected routes can be planned and constructed along key desire lines that connect residential locations to employment, commercial, and educational hubs. Beyond infrastructure, a multi-sectoral approach is needed because behaviour is impacted by actions of many partners including government policies at all levels, tourism associations, safety organizations, businesses, and health units.

KEY ISSUES/OPPORTUNITIES

Safety and Regional Connectivity – In order for Active Transportation (AT) to be safer and more successful, crossings across regional roads should be improved and regional spines on key roads should be developed for cyclists.

Consistent Design - New provincial guidelines (OTM Book 15 and OTM Book 18) for walking/ pedestrian crossings and cycling should be used by municipalities.

Bike Share Expansion – Continued partnerships between Metrolinx and the Toronto Parking Authority to expand existing bike share program (Bike Share Toronto).

KEY POLICY DIRECTIONS

A. Provide a safe, connected network with consistent design standards across municipalities; design for all ages and abilities where feasible

B. Develop Active Transportation plans and integrate them into Official Plans and Transportation Master Plans; clarify Metrolinx's role in planning and funding

C. Address first/last mile gaps by leading bike share expansion, improving bike parking at transit, and connecting cycling routes directly to stations entrances

D. Invest in marketing and promotion to encourage use of active transportation

E. Develop a regional active and sustainable school travel program

F. Maintain cycling and pedestrian infrastructure to support all-season access

G. Improve access to consistent, high-quality spatial data about existing/planned cycling infrastructure and travel patterns; establish a centralized open data portal

> **WORKSHOP PARTICIPANT QUOTE**
>
> *"Everyone has issues around schools, we need more guidance from Metrolinx."*

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POLICY RANKING RESULTS

	Active Transportation
	Provide a safe, connected network with consistent design standards across municipalities; design for all ages and abilities where feasible
	Address first/last mile gaps by leading bike share expansion, improving bike parking at transit, and connecting cycling routes directly to stations entrances
	Develop a regional active and sustainable school travel program
	Develop Active Transportation plans and integrate them into Official Plans and Transportation Master Plans; clarify Metrolinx role in planning and funding
	Improve access to consistent, high-quality spatial data about existing/planned cycling infrastructure and travel patterns; establish a centralized open data portal
	Maintain cycling and pedestrian infrastructure to support all-season access
	Invest in marketing and promotion to encourage use of active transportation

SAFETY & VISION ZERO

In 1996, Canada adopted the international Vision Zero approach to road safety, which says that any life lost or impacted by severe injury on our roads is one life too many. Now in its fourth phase, Road Safety Strategy 2025 encourages continued improvements to Canada's road system of users, infrastructure, and vehicles, to reduce the number of Canadians that will die or be injured on our roads. It has slowly begun to be embraced, first in Edmonton, now in Toronto, and several other cities are starting to consider it as an option as well, including Hamilton.

Vision Zero takes a vastly different approach to death and serious injuries on our roadways, in comparison to what has been the norm until now, by placing the value of human life above all else. Since it is documented that vehicle-pedestrian crashes are generally survivable at low speeds, Vision Zero tends to focus on three areas of road safety improvements in urban settings: traffic calming, speed management, and the pedestrian-vehicle interface.

KEY ISSUES/OPPORTUNITIES

Paradigm Shift - Road safety is traditionally seen as an engineering problem focused on improving corridors and intersections; however, Vision Zero is a paradigm shift that approaches safety as a system, including a long-term commitment to zero deaths or serious injuries.

A Collaborative Shared Vision - A safe system approach requires participation from the broader community including leadership from the planning, community design, transportation, enforcement, population health, and political sectors as well as all road users.

Consistent Standards & Timely Data - In the GTHA there is a need for greater coordination of strategies across borders. Creation of a centralized, standardized road safety portal would be useful for extracting crash information and monitoring patterns and trends.

KEY POLICY DIRECTIONS

A. Conduct a baseline study of problem areas and issues across the region and set phased reduction targets
B. Require ongoing collection and analysis of crash statistics (e.g. death and serious injuries, all modes) to determine the cause of incidents and opportunities to reduce severity
C. Promote a safety culture through communication, advice to municipalities and celebration of improvements
D. Develop a regional Vision Zero road strategy and approach to road and rail safety
E. Focus on expanding enforcement practices including electronic enforcement

> **WORKSHOP PARTICIPANT QUOTE**
>
> *"Provincial leadership with Vision Zero would be helpful just like the Climate Change Action Plan."*

POLICY RANKING RESULTS

SAFETY & VISION ZERO
Develop a regional Vision Zero strategy and approach to road and rail safety
Conduct a baseline study of problem areas and issues across the region and set phased reduction targets
Require ongoing collection & analysis of crash statistics (death and serious injuries, all modes) to determine the cause of incidents and opportunities to reduce severity
Promote a safety culture through communication, advice to municipalities and celebration of improvements
Focus on expanding enforcement practices including electronic enforcement

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OFF-STREET PARKING

There have been several trends arising internationally and nationally regarding off-street parking provisions. These trends are changing how municipalities are approaching off-street parking facilities – including the number of spaces being required; the types of spaces being developed (no longer just for personal automobiles, but for shared vehicles, electric vehicles, and bicycles as well); the costs of the spaces to users, and the types of technologies being integrated with the facilities.   Because off-street parking has important implications for on-street parking, travel demand, and use of road space in general, it has been included in this discussion of regional road policy issues.

KEY ISSUES/OPPORTUNITIES

Subsidies - Automobile parking is being subsidized both implicitly and explicitly in municipal zoning regulations, at workplaces, transit stations, and publicly owned lots.

Sustainable Mode Priority - Sustainable parking provisions for car-pool spaces and lots, car-share vehicles, electric vehicles and bicycles are often encouraged but not mandated.

Future Demands - Policies and regulations have yet to be established for emerging parking-related technologies i.e. smart parking, mobile payment, demand-responsive parking pricing, peer-to-peer parking apps, connected vehicles, and automated vehicles (AVs).

KEY POLICY DIRECTIONS

A. Investigate pricing for automobile parking, and rationalize subsidies
B. Mandate/prioritize parking for sustainable modes and vehicles e.g. bicycles, electric vehicles
C. Plan, design and develop new parking structures with consideration for new and emerging technologies and demands such as dynamic parking prices and adaptable parking structures
D. Implement parking requirements that are site/context specific
E. Data collection towards mandatory reporting of supply and utilization
F. Encourage parking master plans and more regular updates to parking pricing policies

WORKSHOP PARTICIPANT QUOTE

"We need to be designing lots that can be adapted, if demands change in the future."

POLICY RANKING RESULTS

Off-Street Parking
Mandate/prioritize parking for sustainable modes
Plan, design and develop new parking structures with consideration for new and emerging technologies and demands such as dynamic parking prices and adaptable parking structures
Implement parking requirements that are site/context specific
Encourage parking master plans and more regular updates to parking pricing policies
Investigate pricing for automobile parking, and rationalize subsidies if required or remove them
Data collection towards mandatory reporting of supply and utilization

TRANSIT

While the emphasis placed on transit in municipal, regional, and provincial roadway planning and design has grown significantly in recent years, there still exist opportunities for improvements to the inter-regional transit system at all levels.

The implementation of transit priority measures is often challenged by the needs of other road users and is complicated by the multiple stakeholders involved, resulting in compromised implementation. As development intensifies in the GTHA, traffic levels will grow and the potential for delays to transit at key hubs and destinations is anticipated to be a key factor in the attractiveness of transit. The ability for municipalities to address this through the implementation of transit priority measures will be critical to the success of both local and inter-regional transit.

KEY ISSUES/OPPORTUNITIES

Efficiency - Transit in the region can become more efficient through the implementation of transit priority measures (transit signal priority, queue jump lanes, etc..).

Design Consistency - There are many regional inconsistencies in signage and operational treatments when implementing transit priority measures. For instance, lane markings are inconsistently applied with some jurisdictions using painted lanes, others using solid white lines and others still using double dashed lines. Signal priority measures have been implemented with different indications that specific signals are only for transit.

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KEY POLICY DIRECTIONS

    A.   Strengthen language towards transit priority in road-related policies

    B.   Establish consistent planning and implementation approaches/guidelines for transit priority measures in key roads for transit corridors and transit hub areas

    C.   Establish consistent design and operational policies for roads that include transit priority measures

POLICY RANKING RESULTS

Transit	
	Strengthen language towards transit priority in policies
	Establish consistent planning and implementation guidelines for transit priority measures in key transit corridors and transit hub areas
	Establish consistent design and operational policies for transit priority measures

HIGH-OCCUPANCY VEHICLE (HOV) & MANAGED LANES

High occupancy vehicle (HOV) lanes provide access to vehicles that meet minimum occupancy thresholds, while managed lanes are roadway facilities where operational strategies are pro-actively implemented and managed in response to changing conditions These management techniques provide choice to road users, increase system reliability, provide operational flexibility and improve efficiency of the multi-modal transportation system.

There are many ways to manage transportation demand and HOV lanes can work with other initiatives or conditions to be very effective at influencing individual travel decisions. HOV lanes can be created by either designating an existing lane or lanes for HOV use, or by adding lanes to an existing road. From the GTHA experience, adding an HOV lane to a congested road is generally the preferred approach. It has been observed that the value of HOV facilities in municipal roadways has not been as successful as compared to provincial highways, where there are advantages of continued speed and reliability for carpoolers. The municipal HOV facilities are generally more successful when there is a high use of buses in that it almost becomes a bus lane.

A managed lane is generally a lane physically separated from a general use lane or general toll lane within a roadway corridor. Managed lanes can be tolled by using dynamic pricing through electronic tolling in which toll amounts are set based on traffic conditions. Managed lanes can be located within tolled or non-tolled facilities, they can include congestion pricing, vehicle restrictions, and may be operated as reversible flow or bi-directional facilities to best meet peak demands. The long-term vision of managed lanes is to improve regional mobility by providing travel time reliability, travel options for drivers, and enhanced transit operations.

KEY ISSUES/OPPORTUNITIES

Variable Success - There has been some success with arterial HOVs but most have been unsuccessful compared to provincial highways, where there are advantages of continued speed and reliability for carpoolers.

Policy Consideration - Lane management policies including eligibility, access and pricing must be determined.

Connectivity - Gaps currently exist in the GTHA's managed lane network.

Enforcement - Proper enforcement of managed lanes helps contribute to the success of the system.

KEY POLICY DIRECTIONS

A. Continue support of HOV policy but strengthen it to ensure its success - e.g. address gaps and connections
B. Support emerging managed lanes projects such as the pilot HOT lane project on QEW; when expanding provincial highways, managed lanes should be included unless proven to be not viable
C. Support the synergy that exists between HOV and/or managed lanes and higher-speed, higher-quality bus transit
D. Develop a framework to rationalize tolling existing highways and road pricing strategies
E. Identify a network of HOV lanes on across the GTHA that looks at both highways and the regional roads

> **WORKSHOP PARTICIPANT QUOTE**
>
> *"Integrate HOV lanes in new roads – these lanes can be converted to bus only lanes in the future."*

POLICY RANKING RESULTS

HOV & Managed Lanes	
	Support the synergy that exists between HOV and/or managed lanes and higher-speed, higher-quality bus transit
	Identify a network of HOV lanes on across the GTHA that looks at both highways and the regional roads
	Continue support of HOV policy but strengthen to ensure its success - e.g. address gaps and connections
	Support emerging managed lanes projects such as the pilot HOT lane project on QEW; when expanding provincial highways, managed lanes should be included unless proved not viable
	Develop a framework to rationalize tolling existing highways and other road pricing strategies

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INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Intelligent Transportation Systems (ITS) cover any application of technology to transportation. ITS can be used for all modes of transportation including transit, personal vehicles, commercial vehicles, pedestrians and cyclists. ITS is generally considered as a tool to help solve transportation problems or issues. For example, congestion pricing is a strategy that could be used to help alleviate congestion and traveller information can be used to help users determine modal choice by providing them with current, real-time information about the length of time to travel via different modes.

ITS applications are commonly defined by using the Canadian ITS Architecture that groups ITS applications into 9 service bundles: traveler information, traffic management, public transportation management, electronic payment, emergency management, advanced vehicle safety systems, commercial vehicle operation, information management, and maintenance & construction management.

KEY ISSUES/OPPORTUNITIES

Integration - Transportation agencies within the GTHA have a rich history of deploying ITS solutions, however there is limited system integration

Coordination – Coordination is also limited between transit agencies related to ITS solutions in the GTHA

KEY POLICY DIRECTIONS

A. Enable transportation agencies across the GTHA to apply technology, or intelligent transportation systems, as a tool to support delivery of the Regional Transportation Plan
B. Plan, deploy, integrate, and operate ITS to provide a cohesive, end to end solution for all transportation users
C. Implement performance monitoring with a focus on travel time reliability and make data available across the GTHA for all modes of transportation to see if initiatives create benefits
D. Remove barriers to seamless transit fare payments and information
E. Provide operating funds to manage reliability and improve customer experience

POLICY RANKING RESULTS

Intelligent Transportation Systems
Plan, deploy, integrate, and operate ITS to provide a cohesive, end to end solution for all transportation users
Implement performance monitoring with a focus on travel time reliability and make data available across the GTHA for all modes of transportation to see if initiatives create benefits
Enable transportation agencies across the GTHA to apply technology, or intelligent transportation systems, as a tool to support delivery of the Regional Transportation Plan
Remove barriers to seamless transit fare payments and information
Provide operating funds to manage reliability and improve customer experience

NEW MOBILITY

Just as private automobiles reshaped cities in the 1900s, today's rapidly changing technologies seem likely to disrupt mobility in the GTHA. It is not just the technologies themselves that matter, but how they are applied, and how people interact with them. Already, new models of mobility, like transportation network companies (TNCs), are blurring the lines between public and private transportation, and changing the very definitions of travel modes as we know them.

New Mobility includes transportation options arising from: new technologies (apps, automation, electric), new business and ownership models (private sector entry), the shared and on-demand economy, and changing customer expectations. While new mobility offers exciting opportunities to enhance the movement of people and goods in the GTHA, its effects seem likely to reach beyond transportation and impact our overall quality of life. This reality will challenge all levels of government to define an appropriate policy and planning response for the GTHA.

New **Mobility**

July 2016

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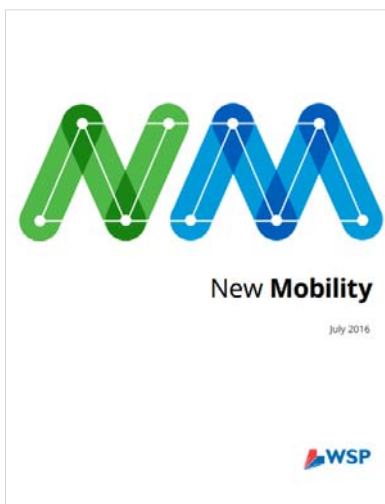
KEY ISSUES/OPPORTUNITIES

New Transportation Options - The term "new mobility" includes many forms of transportation arising both from changing needs and demands, and new and emerging capabilities. Examples include transportation network companies, vehicle- and bike-sharing services, and autonomous vehicles.
Disruptive Potential – including the potential for greater space needed for pick up and drop activities; ridership and revenues loss for some transit services; a change in the mix of vehicles on the roadways, a change in station access modes, the need for on-street charging facilities, and the potential for increased vehicle kilometres and congestion.

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KEY POLICY DIRECTIONS

A. Create a New Mobility Innovation Centre with mandate to support planning and policy

B. Review and update policies on roadway design and the allocation of road space on an on-going basis in response to developments in new mobility to ensure that public and private mobility are balanced with wider civic needs

C. Monitor developments in the freight industry regarding automation and new mobility

D. Foster collaboration among different levels of government, between government and the private sector, and within the private sector

E. Collect and analyze data for new mobility patterns and trends

F. Advance discussion on governance of mobility, as part of a wider discussion, including: design standards, signals and operation practices

G. Implement an AV trial and develop an approach to planning, circulation issues and parking

POLICY RANKING RESULTS

New Mobility	
	Foster collaboration among different levels of government, between government and the private sector, and within the private sector
	Review and update policies on roadway design and the allocation of road space on an on-going basis in response to developments in new mobility to ensure that public and private mobility are balanced with wider civic needs
	Advance discussion on governance of mobility, as part of a wider discussion, including: design standards, signals and operation practices
	Implement an Autonomous Vehicle trial and develop an approach to planning, circulation issues and parking
	Create a New Mobility Innovation Centre with mandate to support planning and policy
	Monitor developments in the freight industry regarding automation and new mobility
	Collect and analyze data for new mobility patterns and trends

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3.0   FINAL RECOMMENDATIONS

GENERAL

Although the road network workshop focused on the specific topic areas noted above, it also provided an opportunity to discuss general challenges of policy implementation in the region. The following is a list of suggestions made by workshop participants to improve the implementation of the RTP:

- A focus should be made on pilot projects or demonstration projects to gain a better understanding of project impacts
- Focus on initiatives that support transit infrastructure
- Initiatives that benefit funded projects should be linked together
- Strengthen policy by adding more detail and using more assertive language
- Develop a provincial Transportation Policy Statement [eg. a Transportation Planning Policy Statement (TPPS) as per the Metrolinx Act]
- Establish priorities among potentially conflicting initiatives
- Clarify intended leaders of initiatives (local, regional, etc..)

In addition to the suggestions made for strengthening policy implementation, the workshop participants (particularly municipal representatives) also identified how Metrolinx can contribute to their local implementation efforts:

- Metrolinx can provide ministerial direction by clarifying provincial goals
- Metrolinx can provide examples of quick wins
- Metrolinx can provide technical resources and guidance to municipalities on a range of topic areas including sample policies, best practice examples and design guides.
- Metrolinx can play a facilitation and coordination role in assisting municipalities develop more detailed policies that also have some consistency across the region.

TOPIC SPECIFIC

The following section summarizes the highest ranking policy directions as voted on by the workshop participants. The full list of policy directions and rankings can be found in the 'TOPIC AREA SUMMARIES' sections above.

COMPLETE STREETS & ON-STREET PARKING

- Metrolinx should fund complete streets initiatives conditionally as part of its transit projects
- Metrolinx can act as the facilitator and integrator across the region and build on best practices with partners based on a bottom-up process
- Promote complete streets as a vehicle to achieving multi-modal mobility in master plans
- Metrolinx can disseminate guidance and develop its own complete streets guidelines

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ACTIVE TRANSPORTATION

- Provide a safe, connected network with consistent design standards across municipalities; design for all ages and abilities where feasible
- Address first/last mile gaps by leading bike share expansion, improving bike parking at transit, and connecting cycling routes directly to stations entrances
- Develop a regional active and sustainable school travel program

SAFETY AND VISION ZERO

- Develop a regional Vision Zero strategy and approach to road and rail safety
- Conduct a baseline study of problem areas and issues across the region and set phased reduction targets
- Require ongoing collection and analysis of crash statistics (death and serious injuries, all modes) to determine the cause of incidents and opportunities to reduce severity

OFF-STREET PARKING

- Mandate/prioritize parking for sustainable modes
- Plan, design and develop new parking structures with consideration for new and emerging technologies and demands such as dynamic parking prices and adaptable parking structures
- Implement parking requirements that are context specific

TRANSIT

- Strengthen language towards transit priority in policies
- Establish consistent planning and implementation guidelines for transit priority measures in key transit corridors and transit hub areas

HIGH-OCCUPANCY VEHICLE (HOV) & MANAGED LANES

- Support the synergy that exists between HOV and/or managed lanes and higher-speed, higher-quality bus transit
- Identify a network of HOV lanes across the GTHA that looks at both highways and the regional roads
- Continue support of HOV policy but strengthen to ensure its success - e.g. address gaps and connections
- Support emerging managed lanes projects such as the pilot HOT lane project on QEW; when expanding provincial highways, managed lanes should be included unless proved not viable

INTELLIGENT TRANSPORTATION SYSTEMS

- Plan, deploy, integrate, and operate ITS to provide a cohesive, end to end solution for all transportation users
- Implement performance monitoring with a focus on travel time reliability and make data available across the GTHA for all modes of transportation to see if initiatives create benefits
- Enable transportation agencies across the GTHA to apply technology, or intelligent transportation systems, as a tool to support delivery of the Regional Transportation Plan

NEW MOBILITY

- Foster collaboration among different levels of government, between government and the private sector, and within the private sector
- Review and update policies on roadway design and the allocation of road space on an on-going basis in response to developments in new mobility to ensure that public and private mobility are balanced with wider civic needs
- Advance discussion on governance of mobility, as part of a wider discussion, including: design standards, signals and operation practices

AKNOWLEDGEMENTS

This report is based on the outputs of a workshop held in May, 2017 with government stakeholders from across the GTHA region.