



NIAGARA REGION TRANSPORTATION MASTER PLAN

FINAL REPORT

October 2017



IBI Group in association with
Parsons and Brook McIlroy



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- B. Regional Travel Forecasting Model Update Summary**
- C. Context, Vision and Directions Report**
- D. Needs and Opportunities Report**
- E. Niagara Region's Complete Streets: Vision and Direction for a Changing Region**
- F. Niagara Region Complete Streets Design Guidelines**
- G. Strategic Cycling Network Development Technical Paper**
- H. Bikeway Identification and Destination Wayfinding Signage for Cyclists**
- I. Transit Strategy Technical Paper**
- J. Subarea Analysis Summary**
- K. Road Network Strategy Technical Paper**
- L. Niagara-Hamilton Trade Corridor Technical Paper**
- M. Operating Policies Review Technical Paper**
- N. Goods Movement Technical Paper**



1 INTRODUCTION

Niagara Region is undergoing significant change and by 2041 will have grown and evolved on economic, demographic, social and technological fronts. To prepare for this change, and to maximize the growth potential and opportunities that will accompany this change, Niagara Region is actively planning for new growth, in conformity with Places to Grow – the Province’s Growth Plan for the Greater Golden Horseshoe. As part of the Niagara 2041 Growth Strategy, Niagara Region is undertaking three supporting studies that will guide development and accommodate change over the next twenty-five years: a Municipal Comprehensive Review (**How We GROW**), a Water and Wastewater Master Servicing Plan (**How We FLOW**), and this Transportation Master Plan (**How We GO**).

This Transportation Master Plan (TMP) is intended to set out a strategic vision for transportation and its implications in the Niagara Region over the next twenty-five years, and illustrate how effective transportation can enhance quality of life. It will ensure that future transportation needs are addressed through pedestrian and cycling facilities, demand-responsive and conventional transit, and an integrated network of roads and highways.

The overarching goal of the Transportation Master Plan is to improve the Region’s existing transportation system within each of its 12 municipalities, with strategies to enhance the movement of people and goods across all modes.

1.1 What is a Transportation Master Plan?

The purpose of a Transportation Master Plan is to present a long-term strategy to guide the planning, development and renewal of a multi-modal transportation system in a manner that is consistent with projected needs, and aligned with the region's growth and with the overall vision for a sustainable Niagara Region.

Nearly a decade ago, as part of the Niagara Growth Management Strategy, the “Anticipating Niagara Report (2008)” stated that:

“...Growth can be an exciting and tumultuous experience for municipalities. On the one hand municipalities look forward to the benefits that come with growth, such as an expanding economy, a rejuvenated population base and more vibrant communities. On the other hand municipalities must also come to grips with a series of questions whose potential outcomes can have serious environmental, financial and social implications for the future health of the municipality. Where do we grow? How do we grow? What does growth mean for the health of our natural environment? How will we pay for the infrastructure that is needed to accommodate growth? These are just a few questions that municipalities need to address when planning for long term growth and a Growth Management Strategy can help provide answers to these complicated questions...”

This is equally true today. One of the key components to providing a quality of life all citizens will value, regardless of age, income or ability, is a well-planned transportation system that can accommodate growth and embrace innovation in a sustainable manner.

Between 2016 and 2041, the residential population of Niagara Region is expected to grow from 450,000 to 610,000 residents, an increase of 36%. During the same period, the number of jobs in Niagara Region is expected to grow 203,000 to 265,000, an increase of 31%. These are aggressive targets, and must be planned for.

With this growth comes both opportunities and challenges. Growth fuels change – change provides opportunities such as the creation of more compact and vibrant communities, greater opportunity for economic development and increased justification for infrastructure renewal and

expansion. However, rapid growth also presents challenges in that policies and infrastructure need to be in place to support growth – and must be delivered in a manner that is sustainable economically, socially and environmentally.

A TMP establishes the long-term transportation vision or “blueprint” for the study area. TMPs also tend to include policies, programs and implementation plans, which collectively create a framework for future transportation planning and decisions. In this time of significant technological advancement, societal change and the emergence of a shared economy, the Plan would be remiss if it did not also address these new priorities and their impacts.

This TMP is intended to set out a strategic vision for transportation in the Niagara Region over the next 25 years. It will ensure that future transportation needs for an integrated network of cycling and pedestrian facilities, transit, roads, and highways can be planned and budgeted for as the Region implements its future growth plan outlined in **How We GROW**. The TMP also recommends an updated and expanded set of policies to guide future transportation and land development decisions.

It should be recognized that the TMP is a long-term, strategic planning document and as such is not intended to address site-specific or corridor-specific issues. Rather, it is intended to present a package of actions that, when implemented over time, will help the Region achieve its strategic vision. The TMP is a dynamic document that is responsive to changing conditions and new innovations through reviews and updates on a regular basis, typically every five years.

How a TMP can shape a region

Municipalities across Ontario have developed TMPs as planning tools to help shape how the City or Region will develop over time. The City of Hamilton has used its TMP (2007, updated 2016) to accelerate a shift towards sustainable transportation and transformation through signature projects. Waterloo Region’s TMP (1999, 2011 and current update on-going) is strongly tied to the Region’s Growth Management Strategy and has provided a framework for subsequent detailed studies and master plans for rapid transit, cycling and travel demand management. York Region’s TMP (2002, 2009, and 2016) that has resulted in an interconnected system that includes the first phases of a regional

bus rapid transit system, pedestrian and cycling master plans, and a detailed road improvement implementation plan. Overall, TMPs are a tool to execute an overarching vision for a region, translating goals and objectives into implementable policies and actions with specific implementation timelines and costs.

For Niagara Region, a transportation master plan is needed to foster local sustainable transportation options to serve and connect residents in all of its cities, towns, and villages. A Complete Streets policy will spur change from the traditional automobile-focused road network towards a user-focused, integrated and sustainable transportation system.

1.2 How We GO

The Official Plan and the Transportation Master Plan

Within a larger planning context, the goals and visions of a Transportation Master Plan must also be consistent with the Regional Official Plan. An Official Plan (OP) is a legal, long-term master planning document that lays out a community's vision and key concerns for future growth and development. An OP guides physical, economic, and social development, and plays a key role in shaping a municipality's urban structure. It provides policies to help the municipality reach its goals, and will also lay out a framework and direction for subsequent projects and developments that are to occur to support existing and future land uses across Niagara Region, which can range from a local urban area (i.e., St. Catharines, Niagara Falls, etc.) to the entire Niagara Region.

Common issues covered in OPs include: land use and zoning, timing, how and where to grow, transportation, and the natural environment. In Ontario, Official Plans must also be consistent with the Provincial Policy Statement (PPS) and also conform to OPs of an upper-tier municipality, Ontario's Growth Plan, the Greenbelt Plan, and other applicable provincial plans.

The TMP will inform the development of transportation policies in the OP, which is in the process of being updated subsequent to the approval of the TMP. The new OP policies will be reflective of the major components of the TMP:

- Regional Road System
- Transportation Demand Management (TDM) and Transportation Systems Management (TSM)
- Public Transit
- Active Transportation
- Complete Streets
- Goods Movement



The Study Area

The primary focus area of the study is Niagara Region, which is comprised of twelve local area municipalities as identified on Map 1 Niagara Region Context. Niagara is bordered to the west by the City of Hamilton and Haldimand County, to the north by Lake Ontario, the south by Lake Erie and to the east by New York State. These adjacent areas have a major influence on travel patterns within and through Niagara Region, therefore a number of wider transportation considerations are included in this plan.

Refer to Map 1

How was the Plan Prepared?

This TMP was prepared by IBI Group in association with Parsons Inc. and Brook McIlroy. The development of the TMP was guided by the Project Team:

- Jack Thompson, Project Manager
- Greg Bowie, Niagara Region Planning
- Jackie Gervais, Niagara Region Public Health
- Phill Lambert, Niagara Region Infrastructure Planning and Engineering
- Diana Morreale, Niagara Region Community Planning

The TMP was prepared following the Municipal Class Environmental Assessment (EA) process, which is a pre-approved provincial process for municipal projects. The Municipal Class EA lays out the types of projects covered, the process for approval, consultation requirements, and additional directions to conduct Municipal Class EAs.

A Master Plan can be integrated with the Class EA process such that the Master Plan fulfils Phases 1 and 2 of the Municipal Class EA process for the individual projects within it and subsequent Class EA studies for the individual projects need only to fulfill Phases 3 and 4, as required.

The TMP was conducted in four stages. The first stage was to establish the vision and context for the TMP; the second was to identify the transportation needs and opportunities in Niagara, the third was to develop the supporting strategies, and finally, the Plan was prepared. During each stage, stakeholders and the public were consulted and provide an opportunity for input.

1.3 Stakeholder and Public Consultation

The TMP is a guiding document for transportation that will impact Niagara Region's existing and future residents and stakeholders. Not only is consultation a requirement of the Class EA process, it is a critical contributor to the development of the TMP as it provides the study team opportunities to identify issues, concerns and opportunities from a broad range of perspectives.

A range of consultation activities provided opportunities for both key stakeholders and members of the public to provide feedback and help shape this document. Given the large geographic scope of the study, a significant challenge for the TMP was raising awareness of the study and emphasizing its importance as an integral planning tool in shaping Niagara Region's future. Through the efforts of these consultation activities, many issues were identified and ideas generated. Consideration was given to all concerns and comments brought forward by stakeholders and the public.

Over the course of the study, various methods were used to engage with stakeholders and the public to provide opportunities for input, suggestions and feedback. Key activities included stakeholder advisory group meetings, targeted meetings with stakeholders and agencies, four rounds of Public Information Centres (PICs), two online surveys, and engagement through social media.

A Stakeholder Advisory Group (SAG) was formed consisting of representatives from local municipalities, technical agencies, community groups, and industry groups. Over the course of the study, three workshops/meetings were held with the SAG to gather information, present interim findings and draft recommendations. In addition to representatives from Niagara Region and the local area municipalities, the SAG consisted of representatives from:

- Brock University
- Brock University Students Union
- City of Hamilton
- Coach Canada
- Greater Buffalo Niagara Transportation Commission
- Greater Niagara Chamber of Commerce
- Metrolinx
- Ministry of Tourism, Culture and Sport
- Ministry of Transportation – Corridor Management
- Ministry of Transportation – Planning and Design
- Niagara Central Airport Commission
- Niagara College
- Niagara District Airport Commission
- Niagara Health System
- Niagara Home Builders Association
- Niagara International Transportation Technology Coalition
- Niagara North Federation of Agriculture
- Niagara Parks Commission
- Niagara Peninsula Conservation Authority
- Niagara Regional Police Service
- Niagara School Transportation Services
- Niagara South Federation of Agriculture

- Ontario Provincial Police
- St. Catharines Transit
- Trillium Railway
- Venture Niagara
- Via Rail

Additional targeted meetings included sessions with the local area municipalities, active transportation stakeholders, and Six Nations of The Grand River Territory.

For the general public, four rounds of PICs were held at various locations in Niagara. Each round of PICs was promoted with advertisements in local newspapers, notices on the Region's website, various social media posts and emails and letters to study mailing list of interested members of the public and stakeholders. Attendees at the PICs were invited to submit written comments or questions using comment forms or via email, and had the opportunity to discuss issues with study team members.

Concurrent with each of the first and second round of PICs, an online survey was conducted to provide an opportunity for those who could not attend the public meetings in person to participate in the study and provide feedback. Over 2,100 respondents provided input in the first survey and over 1,100 respondents provided input in the second survey.

Further information on the consultation process is provided in the background report *Public and Stakeholder Consultation Summary*.



14 PUBLIC INFORMATION CENTRES

- 3 - Grimsby, Port Colborne, St. Catharines
- 3 - Fort Erie, West Lincoln, Welland
- 4 - Niagara Falls, Thorold, Niagara-on-the-Lake, Lincoln
- 4 - Welland, St. Catharines, Grimsby, Niagara Falls



2 ONLINE SURVEYS

- March 2016: 2,100+ respondents
- June 2016: 1,100+ respondents



KITCHEN TABLE MEETINGS

Municipalities and transit operators



3 STAKEHOLDER ADVISORY GROUP (SAG) MEETINGS

January 2015, June 2016, January 2017



SOCIAL MEDIA INTERACTION

Project Website, Facebook, Twitter



ADDITIONAL STAKEHOLDER ACTIVITIES

Freight Industry Survey, Six Nations Meetings, Active Transport Group Meetings

1.4 About this Report

The TMP is organized in such a way as to capture the logic of the process to derive the plan itself. The content of each chapter is intentionally kept to a high level in order to maintain the document's readability. If required, further detail is always available in the referenced documents. The chapters are organized as follows:

Introduction

The purpose of the current chapter is to describe the process and context of the TMP project. This section does not contain technical content.

A Transportation Vision for Niagara Region

This chapter presents the strategic transportation vision which captures "Where we want to go", and is further supported in the associated strategic goals.

TMP Driving Forces

The purpose of this chapter is to articulate the forces driving the direction of the TMP. These can be broken down into two fundamental classes, those which describe "What we know", and those articulating "Where we want to go"

"What we know", represents the constraints, and constitutes a description of all the current conditions and forces that will shape how the vision and goals are identified. "What we know" is described in detail in the Needs and Opportunities Report, and can be summarized according to the 4 contexts below:

- What we know about current policy
- What we know about what local people think
- What we know about the current network
- What we know about changing demand for travel

The understanding of these conditions provides the premise by which the vision and goals for the TMP were identified.

Needs and Opportunities

Based on the Driving Forces presented in the previous section, this section describes four cross-cutting themes that summarize the most important needs and opportunities to be addressed by Niagara Region's TMP:

- Transportation as a catalyst for change
- Connecting the Region
- Meeting the needs of residents
- Taking advantage of new technologies

Complete Streets

This chapter introduces the Complete Streets concept and discusses implementation and its value in the Niagara Region context.

Transportation Choice

This chapter outlines the opportunities to enhance and improve travel choice within the Region. The first section deals with matters of overarching applicability, including that of technology and innovation, while the subsequent sections discuss mode-specific initiatives that include active transportation, public transit, road, rail, and marine.

Goods Movement

Reflecting that efficient freight travel is vital to Niagara's economic development, this chapter specifically sets out the opportunities to enhance the movement of goods within and through the Region.

Implementation

This last chapter identifies the strategies required to implement the TMP in order to meet the vision and objectives for transportation in Niagara Region.



2 *A TRANSPORTATION VISION FOR NIAGARA REGION*

2.1 Vision for the TMP

Niagara Region Council has set Strategic Priorities that focus on economic development, supporting growth and improving Niagara's position globally. Transportation will play a key role in achieving these priorities and the TMP will be the driving force behind setting the process and articulating the goals. In response to the Council directives, the TMP identified and adopted a strategic transportation vision that incorporates these priorities and addresses the key trends expected to impact the Region.

This vision is derived from:

- Six key trends that are expected to have significant impact on transportation and growth patterns within the Region over the next 25 years;
- Five Strategic Priorities for supporting strategic growth in Niagara Region that were approved in 2015 by Regional Council; and
- Consideration of the arguments in favour of and against both maintaining the status quo and of identifying a new focus.

This vision for the TMP recognizes that the transportation network is a resource for improving the Region’s quality of life and competitiveness. In order to implement this vision, strategic goals were identified for the TMP and are outlined in the section below.

The background document, Context, Vision and Directions Report (April 2016), captures the process of determining the direction of the development of the TMP.

6 Key Trends

1. Changing Demographics
2. Emerging Technologies
3. A Transitioning Economy
4. Revitalizing Town Centres
5. Sustainability
6. Interregional Connectivity

5 Strategic Priorities

1. Moving People and Goods
2. Fostering Innovation, Investment and Entrepreneurship
3. Building a Labour-ready Workforce
4. Positioning Niagara Globally
5. Doing Business Differentially and Advancing Organizational Excellence

The design of the Region's transportation system for the next 25 years will be driven by a combination of "what we know" about current conditions, and how the Region chooses to respond to those conditions, through the transportation vision and supporting goals.

Based on the above considerations, the Region has identified and adopted a transportation Vision as follows:

Transportation Vision for Niagara Region

In 2041, Niagara Region will be supported by a transportation network that will help establish Niagara as a leader in: building, preserving and enhancing liveable communities; economic development; tourism; sustainable transportation practices; and the emerging shared economy.

This vision for the TMP recognizes that the transportation network is a resource for improving the Region's competitiveness and quality of life. The strategic goals of the TMP are outlined in the section below.

2.2 Goals for the TMP

Through the vision development process, seven high-level goals were identified for the TMP, as shown below. The vision and goals for transportation in Niagara Region are critical to achieving a balanced and sustainable transportation system for the Region and form the foundation of the opportunities and strategies contained within this TMP.

GOALS FOR THE TMP



Integrate transportation and land use

Transportation and land use planning will be coordinated and reflect the unique needs of the Region's communities.



Support economic development

The transportation network will support the efficient movement of goods, provide adequate connections to support the tourism industry, and provide high-quality access to employment for all residents.



Enhance multi-modal connectivity

Modes of travel will be fully integrated across the Region, allowing seamless connections and more travel choices.



*Improve options
for sustainable
modes of
transportation*

A balance between modes will be achieved, minimizing the need for new infrastructure and reducing greenhouse gas emissions.



*Maintain and
improve the
efficiency of the
goods movement
network*

The transportation network will optimize the efficiency of the freight transportation sector.



*Promote the
development
of healthy
communities*

The TMP will support and promote active transportation options for all network users.



*Develop a
realistic yet
innovative
blueprint for
implementation*

The TMP will provide the blueprint for decision-making that will be transparent, inclusive and accountable, and that will provide better value to households, businesses and governments.



3 **TMP DRIVING FORCES**

The TMP is driven by what we know about current and future conditions and by how the Region will respond to them.

A summary of “What We Know” about current conditions is outlined below in Sections 3.1 through 3.4. It comprises, in addition to the physical network, a review of the other forces shaping the TMP such as policy, public opinion and the changing nature of transportation demand. The background document, Context, Vision and Directions Report (April 2016), provides further information on the current context of Niagara Region.

3.1 What We Know About Policy

There are a number of provincial and regional policies and plans that will have an impact on the TMP, either compulsory or advisory. These are identified in the table below, including the salient points that will influence the TMP.

In addition to these key Regional planning documents, the TMP also leverages policy, planning, and background information from seven other Regional reports ranging from business case assessments for GO Rail service in Niagara Region to the 2003 Regional Bikeways Master Plan. The Context, Vision and Directions Report provides a comprehensive discussion of the information contained in those documents and how they were incorporated into this TMP.

Policy or Plan	Impact on TMP
PROVINCIAL	
Provincial Policy Statement (2014)	Ontario's <i>Provincial Policy Statement</i> , 2014 (PPS) sets a vision for livable and resilient communities. It encourages development of a built environment that provides transportation choices, and supports planning for the long-term management of land and resources. The policies within the PPS guide land use and transportation planning, and promote active transportation and public transit over other travel modes. This TMP must align with the goals and policies of the PPS.
Growth Plan for the Greater Golden Horseshoe (2006)	<p>The Province guides transportation and land use planning for the Greater Golden Horseshoe, including Niagara Region, through the <i>Growth Plan</i>. In addition to specifying population and employment growth targets that Niagara Region must plan for, the <i>Growth Plan</i> requires that:</p> <ul style="list-style-type: none"> • Transportation and land-use planning be integrated to optimize the movement of goods and people, making best use of existing infrastructure in preference to building new infrastructure; • Planning for public transit and active transportation be integrated into planning of transportation networks; and • Transit infrastructure be designed and operated to help shape development and land use patterns. <p>A review of the <i>Growth Plan</i> began in 2015 using a coordinated approach aligns with the reviews of the <i>Greenbelt Plan</i>, the <i>Oak Ridges Moraine Conservation Plan</i>, and the <i>Niagara Escarpment Plan</i>.</p>
Greenbelt Plan (2005)	The <i>Greenbelt Plan</i> applies to the entire Greater Golden Horseshoe, including Niagara Region. It describes policies to protect the agricultural land base, sensitive ecological features, and a range of recreational and tourism land uses in the region. While these policies do not preclude new transportation infrastructure in protected areas, it strictly defines the conditions under which any new development in the Greenbelt can occur.

Policy or Plan	Impact on TMP
Niagara Escarpment Plan (2005)	The area covered by the <i>Niagara Escarpment Plan</i> (NEP) falls within the Greenbelt and the policies of the NEP are the policies of the <i>Greenbelt Plan</i> within the NEP area. As with the <i>Greenbelt Plan</i> , the NEP protects the Niagara Escarpment by limiting where development can occur. It also identifies potential locations where cycling and pedestrian trails can improve access to these pristine lands. As with the <i>Greenbelt Plan</i> , these policies do not preclude new transportation infrastructure in protected areas, it strictly defines the conditions under which any new development can occur.
Regional Transportation Plan (The Big Move, 2008)	Adopted in 2008 and last updated in 2013, this Plan describes the vision for coordinated, efficient, and sustainable transportation in the Greater Toronto and Hamilton Area (GTHA). While <i>The Big Move</i> does not cover Niagara Region, the improvements envisioned for rapid transit and commuter rail in Hamilton have direct implications for GO Transit rail service into Niagara Region. In 2015, Metrolinx started a legislated review of <i>The Big Move</i> , with an updated plan expected in 2017.
#CycleON: Ontario's Cycling Strategy (2013)	#CycleON is a 20-year strategy designed to promote cycling as a practical transportation mode for Ontarians. It presents five strategic directions to accomplish this, which will be implemented through action plans that describe specific policies and actions. In 2014, Action Plan 1.0 of this strategy was published. Among other policies, it lays out directions for building a province-wide cycling network that includes Niagara Region.
REGIONAL	
Regional Official Plan (2013)	The <i>Regional Official Plan</i> guides Niagara Region's development under the <i>Provincial Planning Act</i> . Amendment 6 specifically protects future transportation corridors and transit station areas from undesirable development. It includes the protection of lands identified for: <ul style="list-style-type: none"> • The Niagara-to-GTA East Area Corridor and the Highway 20 Smithville by-pass; • Upgraded or new VIA Rail and/or GO Stations in Grimsby, Beamsville, St. Catharines, and Niagara Falls.
Niagara Transportation Strategy Update (2012)	This precursor to the TMP provides a basis for strategic transportation planning in Niagara Region. It provided eight guiding principles and eight action items that together outline how the Region's pedestrian, cycling, transit, and road, networks should be planned. This TMP builds on that foundation, detailing policies and infrastructure needs, and a well-structured implementation plan.
Fostering an Environment for Economic Prosperity (2014)	This document provided the background information that led Niagara Regional Council to adopt its five strategic priorities for 2014-2018. Among those priorities is improving the movement of people and goods, and this TMP is a cornerstone in supporting this priority.

3.2 What We Know About What People Think

Residents and stakeholders involved in all elements of consultation were passionate about transportation in Niagara Region.

The public and stakeholder consultation program was described in Section 1.3. While a variety of issues were identified, a few common themes were clear as they recurred time and again. Following is a summary of the key messages to emerge from the process as a whole:

- Complete Streets road design and complete neighbourhood development;
- Expanded and connected cycle network with consistent wayfinding;
- A solution to QEW congestion, including safe provincial highway alternatives;
- Expanded GO Rail service to Niagara Region for connectivity to the GTHA;
- Improved inter-municipal transit to connect more communities in Niagara Region;
- Transportation improvements along QEW, Highway 406, a new Niagara Escarpment Crossing, a new South Niagara East-West Arterial Road, and the Niagara-to-GTA East Area Link; and
- Localized road improvements that improve overall efficiency and operations.

3.3 What We Know About the Existing Network

The following sections provide an overview and assessment of the transportation network and systems in Niagara as they are today as illustrated on Map 2 Transportation Infrastructure.

Refer to Map 2

Active Transportation

In 2011, Niagara residents made 4% of their daily trips by active modes—amounting to 6,100 cycling trips and 27,300 walking trips. Active transportation also plays an important role in the tourist experience across Niagara Region, with popular cycling destinations including the Waterfront Trail, the Niagara River Recreational Trail, the Niagara Wine Route that links almost 60 wineries, and the Greater Niagara Circle Route that is a major 140-km trail of primarily off-road facilities which encompasses much of Niagara Region including Niagara-on-the-Lake, Niagara Falls, Thorold, Welland, Port Colborne and Fort Erie.



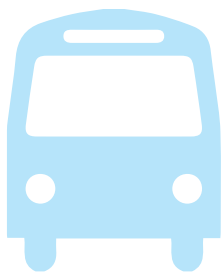
In 2003, Niagara Region prepared its first Bikeways Master Plan. It addressed recreational, tourism, and utilitarian cycling for both on and off-road facilities. It had two main goals:

- To develop a visible and connected cycling network that is easily accessible and actively used by all types of cyclists; and
- To connect, integrate, enhance, and expand the existing on- and off-road cycling network as a means of facilitating the use of bicycles for leisure, tourism, and utilitarian purposes.

The current active transportation network, including 352 km of bicycle lanes and 409 km of trails, is well used. However, this network has many gaps and discontinuities.

Niagara has reached several transportation planning milestones in recent years. A new Active Transportation Sub-Committee has been established under the Transportation Steering Committee to provide stronger representation within the larger transportation group. This Sub-Committee provides input on active transportation issues.

The 2015 Niagara Active Transportation Summit identified three directions as priorities for Niagara included creating consistent wayfinding signage, engaging school communities to increase active transportation, and developing Complete Streets.



Public Transit

Niagara Region is served by nine transit agencies operating on behalf of local, regional, provincial, and federal governments, including Niagara Region Transit (NRT) which provides “inter-municipal” transit. The primary mandate of these providers is to serve travel demand within their jurisdiction and, although efforts are in place to facilitate fare and service integration, it can still be a challenge for travelers to navigate this operating environment. Revenue sharing allows passengers to pay only once. NRT ridership is up 12% from 2014 to 2015, but at 7.1 riders per bus there is still plenty of capacity for increased ridership.

A key theme of public input has been the poor connectivity of transit services between residents’ homes and their destinations. This is supported by analysis which shows Niagara Region has a low level of transit provision when compared to peer jurisdictions in Southern Ontario. Travel patterns in Niagara do not align to administrative boundaries, and residents and workers need to be able to travel throughout the Region easily and seamlessly. On average, the total transit travel time from point A to point B in the region is four times greater than for the same trip by car.

Furthermore, a large portion of Niagara Region’s land area is rural, and residents of these areas often need to travel to urban centres to fulfill most of their basic daily activities. Operating fixed-route public transportation service in low-density areas and small urban centres is costly while service can only be provided to the degree that is supportable by the local tax base.

Niagara Region is not served well by rail, with only a summer service from GO Transit, and a single service each day in each direction with Amtrak. Niagara Region has successfully advocated for daily GO Train commuter service to Toronto with stops in Grimsby, Beamsville, St. Catharines and Niagara Falls. The advocacy was led by the 12 mayors of Niagara, Niagara Region staff, municipal CAOs, post-secondary institutions, the non-profit sector, industry partners, associations and businesses. GO Transit rail service expansion to Grimsby is expected in 2021 and service to Niagara Falls by 2023.

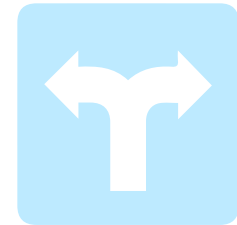
A regional paratransit service, Niagara Specialized Transit, has been in operation since November 2006 and operated by BTS Network Inc. To be eligible, one must be travelling from one municipality to another,

have some form of physical limitation, and have a trip purpose that is either for medical appointments, employment, or educational activities.

Road

Currently, the roadway network within Niagara Region falls under four jurisdictions:

- Provincial;
- Regional;
- Local; and
- Niagara Parks Commission.



At the network level, most of the road network has adequate capacity for current conditions, and will be able to accommodate most of Niagara's projected growth, though some operational or capacity improvements are needed at specific hotspots, barriers and bottlenecks.

The exception to this is the provincial highway network, most critically the QEW which is the primary provincial facility in the region. The QEW experiences reoccurring congestion during weekday peak periods and during peak tourist traffic periods. As the lands adjacent to the QEW continue to grow, commute times are also increasing, especially along the corridor from St. Catharines through to Hamilton.

MTO, through its Southern Highways Program and the Niagara to GTA Corridor Planning and Environmental Assessment Study Phase 1, has recommended a program of key improvements in Niagara Region including:

- Widening and rehabilitation of the QEW from McLeod Road to Mountain Road (Southern Highways Program);
- Garden City Skyway bridge replacement (Southern Highways Program);
- Widening and introduction of HOV lanes along the QEW from Fifty Road to Highway 406 (NGTA Corridor Planning and EA Study Phase 1);
- Extension of Highway 406 southerly from Welland (Hwy 140) to NGTA East Corridor (NGTA Corridor Planning and EA Study Phase 1); and

- NGTA East Corridor from Highway 406 Extension to QEW (NGTA Corridor Planning and EA Study Phase 1).

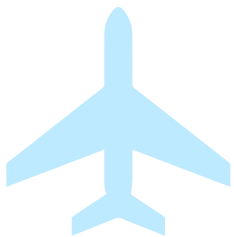
Over the past 15+ years, multiple studies have examined the existing highway network and possible outcomes for a proposed NGTA Corridor connecting Niagara to the Greater Toronto and Hamilton Area (GTHA). Analysis shows that such a corridor will be required over the long term to provide necessary capacity and required operational redundancy. However, while planning of this corridor is underway, it has not yet reached the point of identifying a corridor right-of-way. Such a major corridor will take a considerable time to be approved, for the acquisition of right-of-way and for construction, suggesting an operational NGTA Corridor could still be in excess of 25 years into the future.



Trucking

Trucking within Niagara Region faces many constraints. The QEW can be very congested on weekday peak periods and during high-tourist times. Trucking on the QEW represents approximately 15% of the total traffic volumes on the QEW on an average weekday.

Many truckers look for alternative routes to traverse Niagara but face challenges there as well. The Niagara Escarpment is considered a significant barrier to trucking activities. The limited number of crossings and the steep grades of 6% to 12% across the face of the escarpment creates safety and operating concerns for local and regional deliveries.



Air

Niagara has access to three international commercial and cargo airports within a one and a half hour drive. The largest airports are Lester B. Pearson International Airport located in Mississauga, and Buffalo-Niagara International Airport located in Buffalo, New York. Although Hamilton International Airport is significantly smaller, it also services international carriers. Each of Buffalo-Niagara, Lester B. Pearson and Hamilton airports have the capabilities to ship products non-stop internationally.

Within Niagara Region there are currently two publicly-owned airports, each operated by its own Commission:

- St. Catharines/Niagara District Airport (Niagara-on-the-Lake); and
- Welland/Niagara Central Dorothy Rungeling Airport (Pelham).

In June and July of 2015, each of the two Commissions, as well as the local municipalities that fund the airports, passed similar motions requesting that Niagara Region assume, or consider assuming, operation of these airports. In September 2016, Niagara Region's Public Works Committee had approved recommendations to support in principle adopting responsibility for operations and governance of the two public airports pending a Phase 2 Environmental Assessment to be undertaken by the local municipalities.

There are other privately operated airports in the region including the Grimsby Airport on the Niagara Escarpment brow that primarily serves local business operators and recreational private uses.

Marine

The Welland Canal is part of the St. Lawrence Seaway and Great Lakes System. With 10 lock chambers, bridges and multiple key docking areas between Lake Ontario and Lake Erie, it is an international, national and regional marine trade corridor that supports both transportation and economic benefits to the Canadian, US and the Niagara regional economy.



Less than one hour away, The Port of Hamilton handles the largest volume of cargo and shipping traffic of all the Canadian Great Lake ports, ranking it among the top ten ports in Canada. The port is equipped to handle cargoes that range from raw materials such as coal, iron, salt, sand, grains and soybeans to liquid fertilizer and jet fuel.

In 2014, the Welland Canal carried over 31,000,000 tonnes of cargo representing an almost 9% increase over the cargo carried in 2013. While the agricultural product tonnage carried was up significantly from 2013 to 2014, mine products were down which reflects the changing economy in Canada and the slowdown of mineral and natural resources extraction activities. Currently enjoying a resurgence in the Great Lakes / Seaway System is overnight passenger cruising.

The St. Lawrence Seaway Management Corporation, as part of its Assets Renewal Plan, regularly develops long range Assets life planning

direction that will include opportunities to maximize the economic and transportation benefits and use of the Welland Canal trade corridor, and, among other priorities, will look at improving operations and enhancing security. Key considerations of the long range planning direction include: re-energize the use of existing ports; expand opportunities for improved integration of transportation modes/services at ports and economic development opportunities of Crown Lands adjacent to the corridor.

The St. Lawrence Seaway Management Corporation has recently completed a comprehensive infrastructure life cycle cost assessment of bridges providing vehicle access across the Welland Canal which concluded that, with appropriate maintenance, the life span of the existing bridge structures is beyond the 2030 planning horizon.

The St. Lawrence Seaway Management Corporation has an extensive and effective Assets maintenance program to ensure that the Welland Canal operations meet the federally mandated operation reliability of vessel movements through the canal and Seaway system. The maintenance program provides coordination with Ministry of Transportation and Niagara Region transportation services regarding communication of bridge closures, maintenance or emergency services procedures.



Rail

In 2012, VIA Rail cancelled twice daily, weekday return trains and Saturday and Sunday trains that operated from Niagara Falls to Toronto. With the absence of a VIA rail choice, riders instead rely on Amtrak (one train daily, in each direction) and GO Transit rail service (summer weekend GO train service) for inter-municipal rail service and multiple daily trips year round by GO Transit bus service.

Niagara has several short line railways and two national railway systems running through the region. The short line systems include Trillium Railway, Norfolk Southern, and Railink Southern Ontario. The two national railways are Canadian National Railway (CNR) and Canadian Pacific Railway (CPR). These railways feature several suitable train-loading facilities. The rail corridors are often shared with passenger carriers such as Amtrak, but also between the freight carriers. Many routes have been reconciled in recent years to avoid urban centres such as Niagara Falls although long train sets still travel through the urban area of Niagara Falls impacting adjacent communities and travel routes.

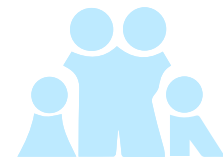
One of the short line railways, the Trillium Railway, operates Port Colborne Harbour Railway, which connects rail infrastructure with interchanges to the major lines in the area. Through the interchanges, customers are connected to the vast North American railway network and marketplace.

3.4 What We Know About Demand for Travel

After a prolonged period of relatively limited growth, Niagara's population is expected to increase more rapidly and with this growth will be a corresponding growth in the demand for travel.

Population and Employment Growth

Based on the Provincial Growth Plan, both the population and the number of jobs in Niagara Region will grow faster over this Plan period than in the past 25 years. Population is forecast to grow by 36% between 2016 and 2041, representing an increase from 450,000 to 610,000 residents. This will represent a growth rate of over 1.2% per year, which is double compared to the current 0.6%.



Similarly, the number of jobs is expected to rise by 31% between 2016 and 2041, representing an increase from 203,000 to 265,000 jobs. Again, this rate of 1.1% is significantly higher than Niagara's average increase of 0.8% per year over the past 25 years. At the same time, a shift in employment from the manufacturing and trade sector to professional and sales/service sectors is anticipated. Together these provide an opportunity to boost the economy through business development, new housing, infrastructure, research and innovation, and assessment growth.

The province is calling for greater density in urban areas, and greater protection of greenbelt areas. The Region has set goals of becoming more sustainable, livable and prosperous. Niagara Region is taking a pro-active approach in planning for this new growth through the Municipal Comprehensive Review, a parallel study under Niagara 2041. The new growth strategy will respond to these objectives by focusing the growth of population and jobs in existing urban areas, and defining a strategy that will facilitate growth and diversify the local economy.

Growth options that increase land use density, integrate land uses and maximize existing infrastructure within the built boundary are more beneficial from a transportation perspective as:

- higher densities are more supportive of transit;
- integrated land uses encourage shorter-distance trips and active modes of transportation; and
- allocating growth in areas with existing transportation infrastructure reduces the capital costs of building new transportation facilities.

Through significant review and analysis, including consultation with local municipalities, the Municipal Comprehensive Review put forward a Strategic Policy Growth Option as the preferred growth scenario. This growth option focuses much of the growth in existing settlement areas with established services with the desire to create complete communities and meet the broader policy objectives of the Growth Plan and the Region.



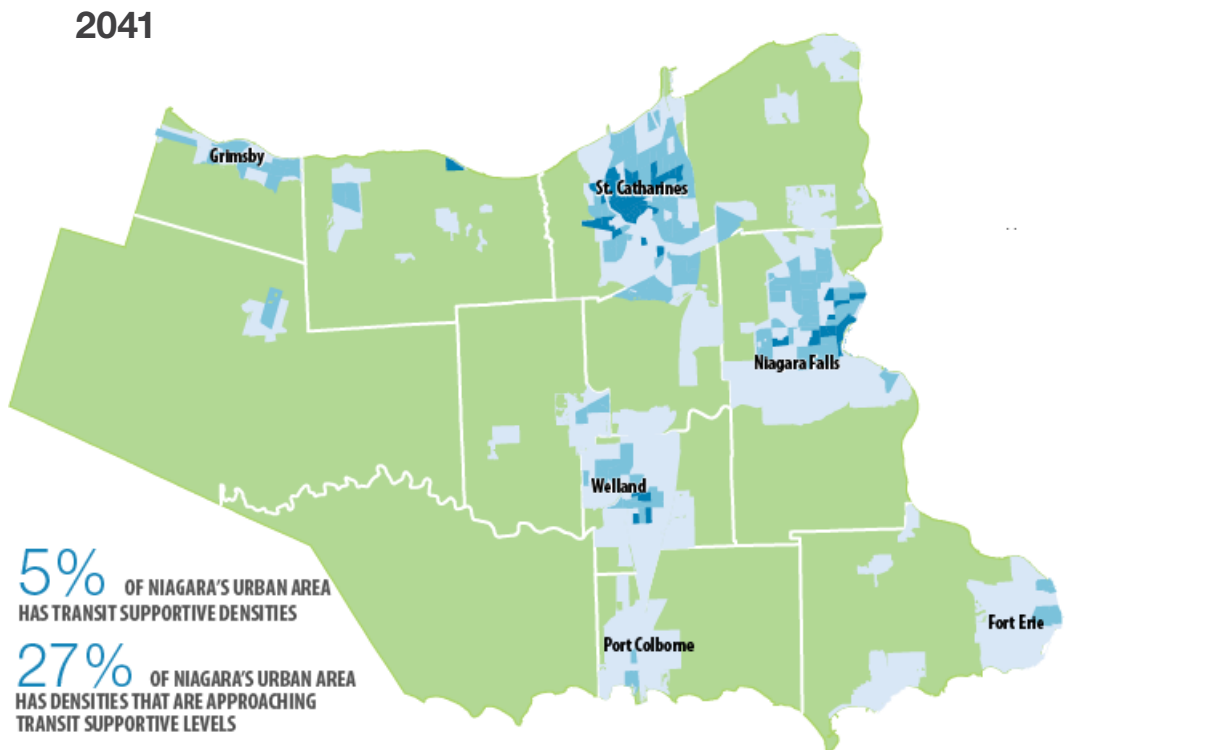
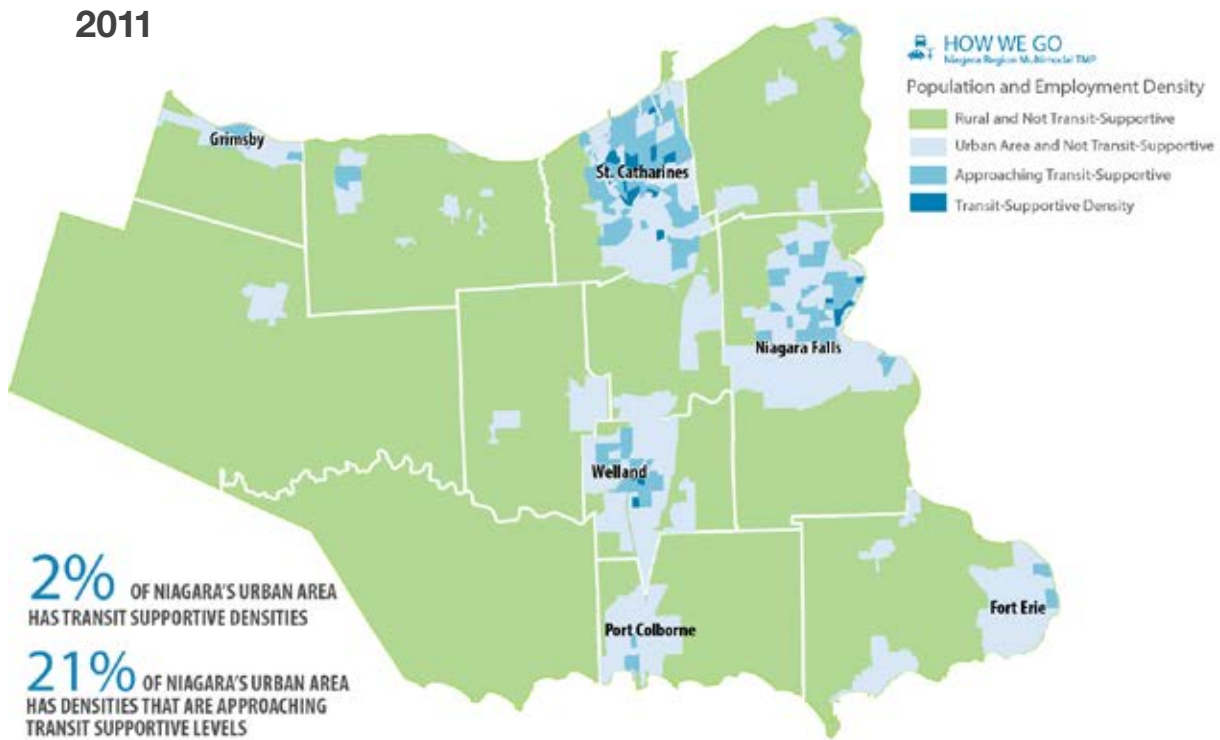
Land Use

Over the past several decades, communities, workplaces, and shopping and leisure areas have predominantly been built to accommodate car use. This pattern has largely come at the expense of other modes of travel, making transit, walking, and cycling less attractive, and in some cases, impossible choices.

As identified in the Growth Plan, both residential density and employment density will increase throughout the planning period. This will have the effect of more than doubling the number of people living in urban areas leading to a population density that is able to support basic transit services.

It is recognized that growth will still take place in new communities beyond existing built-up areas. The goal is to ensure such communities are developed in a sustainable manner, which includes both urban form and transportation choice. This means designing and building new communities with a more compact urban form and providing transportation networks that are more conducive to the other modes - public transit, walking, and cycling.

Exhibit 3.1: Density by Urban Area, 2011 and 2041



Patterns of land use distribution, density and form are vital to the effectiveness and efficiency of public transit. Lower densities mean fewer people live and work within walking distance of a bus stop, meaning longer and more circuitous routes are needed to serve residents. A density of at least 50 persons and jobs per hectare is recommended to support basic transit service; however, in 2011 only 2% of Niagara's urban area had densities that met this target (see Exhibit 3.1). By 2041, that number will almost triple to 5% while another 27% of the Region will have densities that approach the target for transit-supportiveness. Furthermore, the Region is planning for an urban structure with higher-density major transit station areas, centres and corridors, which also provide the trip densities to support higher levels of public transit service.

Providing efficient transit service to Niagara residents in lower-density areas, especially outside peak periods, will require alternatives to conventional scheduled services that leverage new technologies, as outlined in Section 6.2.



Travel by Residents and Visitors

Like most of Canada, Niagara Region is getting older. The median age has risen from 36 to 44 years of age. The over-50 population has grown by 35% while the under-50 population has shrunk by 6%. Over the next 25 years, Niagara's population of seniors will double. During the same period, recent decreases in Niagara's population of young adults are expected to reverse, and this cohort will grow 31% by 2041.

The increasing health and prosperity of seniors has led them to higher levels of auto ownership and use. Travel is increasing throughout the day as these seniors make trips outside of peak periods. At the same time, auto ownership has decreased among young adults, as driving has become less important to them. Such age-related issues and lifestyle preferences among seniors and young adults will tend to increase the market for transit and active travel modes.

The job market and labor force are changing. The loss of jobs in manufacturing has been offset by growth in other sectors such as sales and services. This shift in employment sectors will tend to reduce the share of residents who drive to work and will also increase the market for transit and active travel modes. More trips are being made during the off-peak periods as the nature of work changes.

Non-home based trips are rising. Residents are increasingly likely to make trips between local municipalities, rather than staying within them, as Niagara is “regionalizing”. Sustainable transportation modes are not gaining mode share - while reliance on the car remains strong – as this growth in travel demand will be poorly served by existing transit services.

Hamilton and the western GTHA will remain important travel markets, but demand is expected to grow at a slower rate than it has in the past. Cross-border tourism is a significant summer travel market, but is primarily driven by the exchange rate, the security climate and other external factors.

In order to meet its goals of becoming more sustainable, livable equitable, and prosperous, Niagara Region must develop a transportation Plan that responds to, and supports, this change in demand for transport.

Freight

Overall truck volumes in Niagara Region have remained steady. International trade is critical, but has been declining in recent years, although these through trips have limited local impact.

The GTHA is a growing influence on freight in Niagara Region and has offset the decline of international traffic. This traffic is expected to continue to grow significantly during the 25-year planning horizon. The QEW is the main link from Niagara Region to the GTHA, but is a significant constraint on trucking activities due to the level of congestion. Increasing demands on the QEW will lead many truck drivers to look for alternatives.

Air, rail and marine assets are playing a declining role in goods movement and now have spare capacity.

Forecasting Travel Demand

With the growth that is planned for Niagara Region as part of the Provincial Growth Plan, there will be a corresponding growth in the demand for travel. In order to determine how the demand for travel in Niagara Region will change between today and 2041, a travel demand forecasting model was developed. The model responds to changes in



population, employment and network conditions to predict how often people will travel, between which locations, and by what modes. The model also forecasts transit ridership and auto volumes on roadways. This allows for an analysis of changing congestion patterns and identification of the need for new infrastructure.

The model provides several important predictions that help to guide the TMP recommendations:

- **Total travel will increase:** The total number of trips made to, from, and within Niagara Region are forecast to increase by 47% between 2011 and 2041. This is equivalent to approximately 400,000 new person trips per day.
- **Travel between Niagara’s municipalities will grow disproportionately:** Travel demand will continue to become more dispersed in the future, with an increasing proportion of trips between municipalities being made by the Region’s residents. These inter-municipal trips are forecast to grow by 63% between 2011 and 2041.
- **The Greater Toronto and Hamilton Area will become an increasingly important travel market:** The connection between Niagara Region and the GTHA will grow stronger between today and 2041, and travel demand will increase as a result. The total amount of daily travel is forecast to grow by nearly 50,000 daily trips between 2011 and 2041.
- **The demand for public transit service will increase:** As land use and travel characteristics change, so will the demand for public transportation. By 2041, the total number of trips made by public transportation in the Region is forecast to be nearly 10,000 trips per day, an 80% increase over 2011 levels.
- **The QEW will remain the Region’s most congested transportation corridor:** As travel demand between Niagara and the GTHA increases, so will congestion on the QEW. In the absence of any improvements to transportation infrastructure, travel times and operating service levels between St. Catharines and Hamilton will continue to deteriorate.

3.5 How Will These Shape the TMP

The matters described in each of the previous sections will all have a substantive impact on the shape of the TMP.

The current policy and planning environment places a critical emphasis, even an obligation, on the integration of land use planning and transportation planning. Land use policy will be addressed in **How We GROW**, and the Region must develop a transportation policy response that seeks to support the changes being sought by that land use policy.

From the extensive public and stakeholder engagement programme, the key messages are clear and the Region needs to develop strategies to respond to these messages, including to provide Provincial Highway redundancy, safety and accessibility, to secure GO Rail service to Niagara Region, to improve inter-municipal transit, to expand the cycle network, and to address localized constraints and improve overall efficiency.

The analysis of the performance of the existing network identified a number of deficiencies, some of which are within the Region's jurisdiction. It should come as no surprise that some of the identified network deficiencies and the key engagement messages should overlap, as the analysis endorses the anecdotal evidence.

The demand for transportation will both grow and become more complex as Niagara Region evolves. In response, the Region will need to strengthen connectivity among its municipalities and to the GTHA, and to provide better options for non-car travel. Without significant action, car travel will remain the overwhelming choice of residents—a situation that could have detrimental impacts on Niagara Region's quality of life, social equity, economy and environment.

These themes are clear, and tend to reinforce themselves across the various driving forces. The vision and goals represent the Region's response to these forces. The strategic goals, and their supporting needs and opportunities, lend themselves to be summarized according to a number of themes that cut across the various driving forces. These are described in the next chapter.



4 NEEDS AND OPPORTUNITIES

As Niagara Region evolves, transportation demands are growing and becoming more complex as noted in the previous chapter and documented in further detail in the background document Needs and Opportunities Report (October 2016):

- The region's population and employment base will grow substantially by 2041, mostly in urban areas.
- Age-related issues and lifestyle preferences among seniors and young adults will boost demands for non-car travel options.
- A shift in employment from the manufacturing and trade sector to professional and sales/service sectors will increase the market for transit and active travel modes.
- Travel is increasing throughout the day, as seniors make trips outside of peak periods.
- Reliance on cars remains strong, and future growth in travel demand—especially those outside peak times and between local municipalities—would be poorly served by existing transit service.
- Residents are increasingly likely to make trips between local municipalities, rather than staying within them.
- Trips between Niagara Region and the GTHA, particularly by commercial vehicles, will continue to increase.

Four cross-cutting themes summarize the most important needs and opportunities to be addressed by Niagara Region's TMP:

4 *CROSS-CUTTING THEMES*

- 1** *Transportation as a Catalyst for Change*
- 2** *Connecting the Region*
- 3** *Meeting the Needs of Residents*
- 4** *Taking Advantage of New Technologies*

Meeting these needs and capturing these opportunities will be vital to achieving a range of higher-order outcomes identified including the Region's Strategic Priorities, the transportation vision and goals, and Niagara residents' priorities. These outcomes are fundamental to Niagara Region's long-term quality of life, economic competitiveness, and environmental health.

4.1 Transportation as a Catalyst for Change

Niagara Region's substantial growth over the next 25 years will be a major opportunity for constructive change. As new land uses develop, transportation can act as a catalyst to support a number of strategic objectives. Transportation systems will influence where people choose to live and work in the region, how business investors perceive it, and how people think about the prospect of moving there. Planning effectively for transportation can also support progress toward other major goals such as reducing greenhouse gas emissions, improving social equity and promoting healthier lifestyles.






For many decades, long-range transportation plans have tended to respond to growth by proposing expanded road networks that meet rising demands in the busiest hour, but remain underused the remaining 23 hours of the day. For many reasons, Canadian cities are abandoning this pattern and adopting a more strategic approach to transportation. Niagara Region has the opportunity to join them.

TMP modelling suggests that Niagara Region's road network can accommodate growth to 2041 without significantly adding or widening a lot of roads. While localized measures will be warranted to address capacity deficiencies, the Region has the opportunity to focus transportation investments to create a more multi-modal system that offers improved choice, reduces effort, maximizes connectivity, and makes Niagara more attractive to potential investors and residents.

OPPORTUNITY

*Transportation
as a catalyst
for change*



NEED	→ STRATEGIC GOALS ADDRESSED	DESIRED OUTCOMES
<p>Ability for people to live in urban areas without having to own a car, because quality travel options exist</p>		<p>Attract a talented workforce</p>
<p>A transit network that brings more residents within convenient reach of jobs</p>		<p>Maintain and attract new business investment</p>
<p>A street network that is safe and walkable for all ages, and that does not divide neighbourhoods</p>		<p>Create more healthy and liveable communities</p>
<p>Transportation infrastructure planning that accounts for long-term operating and maintenance costs</p>		<p>Improve financial sustainability</p>
<p>A selective approach to building new or wider roads, in combination with actions to improve transportation choice and manage demand</p>		<p>Establish leadership on climate change and environmental sustainability</p>



4.2 Connecting the Region

















Niagara Region’s location, unique geography and urban structure make it an attractive place to live, work and play—but they also create very real challenges for mobility. Niagara’s very high level of internal trip-making (with 90% of morning peak period trips staying inside Niagara) shows that the region’s economy is largely self-sustaining, but also that better connections to other regions could make it even more prosperous.

Niagara Region needs a greater degree of transportation connectivity locally (within its communities), regionally (between its communities) and externally (between it and other regions). These connections need to be multi-modal, giving maximum opportunity to all residents including the many who do not own or drive a car. Over time, the Region should aim to reduce the very high proportion of daily travel by car across Niagara (currently 90%, with a majority by single-occupant vehicles).

OPPORTUNITY

*Connecting
the Region*



NEED	→ STRATEGIC GOALS ADDRESSED	DESIRED OUTCOMES
Faster and more frequent transit services into/out of the region, including GO rail extensions	  	Increase economic interchange with the GTHA and other surrounding municipalities
More frequent transit services in key corridors, coupled with innovative transit services in less dense areas	   	Strengthen economic and social connections between area municipalities
More freeway capacity and selected roadworks that improve links to key corridors and facilities	 	Boost efficiency of goods movement from local manufacturers and producers to regional, national and international markets
More compact, mixed-use development featuring fine grid networks	  	Maximize use of walking and cycling for short trips
Better access to border crossings for trucks moving to/from or through the Region	 	Improve international trade
Steps to shift freight demand from road to rail, especially between GTHA and the United States	 	Increase effective freight capacity through region and reduce QEW congestion







4.3 Meeting the Needs of Residents

Like most parts of Canada, Niagara Region is aging, and by 2041 its current population of seniors will more than double. Older residents will require more age-friendly infrastructure and better alternatives to driving, especially for trips between municipalities and outside peak periods. The number of younger people in Niagara will also grow, and the region's population of young adults will represent a particularly important factor in terms of attracting business investments in the booming "new economy" knowledge and service industries. In the urban areas where they want to live and work, young adults are demanding more flexible and convenient alternatives to car ownership. Niagara residents of all ages are currently too dependent on car ownership, which is an increasingly expensive commitment. Maximizing transportation affordability for residents of all income levels will boost social equity and economic opportunity.

OPPORTUNITY

*Meeting the
Needs of
Residents*



NEED	→ STRATEGIC GOALS ADDRESSED	DESIRED OUTCOMES
<p>Better transit connections to employment and social hubs</p>		<p>Retain young adults after they complete high school and post-secondary education</p>
<p>Age-friendly transportation infrastructure and services, and better transit connections from neighbourhoods to activity centres</p>		<p>Ensure full participation of seniors</p>
<p>Safe and walkable neighbourhoods with complete streets and opportunities for recreational cycling</p>		<p>Promote Niagara Region as a place for families to thrive</p>
<p>Less need to own a car and greater access to jobs by transit</p>		<p>Improve equity for all</p>



4.4 Taking Advantage of New Technologies

The movement of passengers and goods in Niagara Region relies heavily on roads, and a “business-as-usual” scenario would imply much greater levels of motorized travel and associated social, economic and environmental impacts. However, technology represents a “disruptive force” that could - if managed properly - change how people travel and make auto travel, freight and public transit more efficient.













The rise of smartphones has opened the door to ubiquitous, real-time transportation information; new transportation options like Uber; sharing services for cars, bicycles and parking spaces; and emerging approaches like dynamic transit routing. By 2041, connected and autonomous vehicles will improve the safe and efficient operation of both cars and trucks, and could help resolve the challenge of “first and last mile” access in major transit corridors.

By proactively identifying, testing and adopting technologies that work for its particular needs and context, Niagara Region could enhance its competitiveness in attracting both residents and businesses.

OPPORTUNITY

*Taking
advantage
of new
technologies*



NEED	→ STRATEGIC GOALS ADDRESSED	DESIRED OUTCOMES
Supportive environments for shared mobility options	 	Reduced personal and business costs for transportation
Innovative transit options including dynamic transit to connect lower density areas	  	Extended coverage of transit system
Facilitate new technologies that contribute to reduced peak period travel or reduced reliance on private automobiles	   	Reduced need for road expansion
Proactive planning to ensure that benefits of autonomous vehicles and other new technologies outweigh potential negatives	  	Region seen as leader in innovative transportation solutions



4.5 Action Areas

Niagara Region's transportation system must become more responsive as travel demands become more complex, and as the connections between Niagara Region's municipalities grow stronger.

The Region has the opportunity to focus transportation investments to create a more multi-modal system that offers improved choice, reduces effort, maximizes connectivity, and makes Niagara more attractive to potential investors and residents. A **Complete Streets** approach (Section 5) can transform urban and community development and establish a new identity for Niagara Region.

Through improvements to **active transportation** (Section 6.1), **transit** (Section 6.2), and **roads** (Section 6.3), the Region can connect the communities in Niagara and meet residents' need for flexible, convenient and affordable ways to move around.

While the TMP considers expansions to road network capacity in strategic areas, it will also work to proactively boost demand for public transit and active transportation through **transportation demand management** (TDM) and emphasize approaches to make streets more efficient through **transportation system management** (TSM) measures (Section 6.4).

Improving **goods movement** (Section 7) is vital to supporting a prosperous Niagara Region that is attractive to potential investors and businesses.

As part of the overall change, emerging technologies will play a role in improving mobility and reducing its unwanted impacts.



5 A COMPLETE STREETS APPROACH

Complete Streets corridors support smart growth while serving both a place making and transportation function.

Complete Streets corridors are roads and adjacent lands planned with the future context in mind. The public right-of-way and adjacent lands are designed to equitably and efficiently support all mobility modes, including delivery of goods, and to assist people of all ages and abilities in travelling throughout Niagara Region. These corridors serve both a place making and transportation function and form the spine of healthy and economically viable communities.

“... Complete Streets policies [...] improve safety, lower transportation costs, provide transportation alternatives, encourage health through walking and biking, stimulate local economies, create a sense of place, improve social interaction, and generally improve adjacent property values...”

Victoria Transport Policy
Institute

5.1 Policy and Design

Background

The purpose of a street should be more than just a route for automobiles. Streets are the defining elements of Niagara's towns and cities and showcase the character of a place. Niagara Region's growing interest and movement towards safe, accessible and multi-modal streets is aligned with the movement towards "Complete Streets" that has been spreading across many progressive North American communities. The Complete Streets approach is consistent with the strategic goals of the TMP to integrate land use and transportation, promote sustainable options and healthy communities.

The integration of land use planning, transportation planning and urban design is critical for developing Complete Streets that support Smart Growth. The TMP lays the foundation for the Region to develop Complete Streets, identifying 10 Guiding Principles that integrate communities and inspire a high quality of urban design (refer to opposite page).

The background document *Complete Streets: Vision and Directions for a Changing Region Report* (September 2016) provides comprehensive direction on:

- How Regional roads are planned and designed;
- How Regional right-of-way's accommodate various users with an emphasis on the more vulnerable road users (children, older adults, people with disabilities);
- What physical elements form the cross-section of a Regional road;
- How road/street corridors can be designed according to their planned function and context;
- How transportation level of service can be measured and what is the design and decision making process; and
- Direction on jurisdictional responsibility for each corridor infrastructure component.

10

GUIDING PRINCIPLES

Complete Corridors

Roads and streets under the jurisdiction of Region of Niagara will be planned and designed using a “complete corridor” approach

Public Space Corridors

Niagara’s roads and streets will be recognised as providing an important public space opportunity

Integrating Corridors

Niagara’s roads and streets will serve as the land use spine for the communities they serve

Multi-Modal Corridors

Niagara’s Regional roads will move the largest numbers of people in the widest variety of modes along both short and long distances throughout Niagara

Universally Accessible Corridors

Niagara’s roads and streets will be inclusive and comfortable to users of all abilities

Safe and Comfortable Corridors

Niagara’s roads and streets will be and feel as safe, secure and comfortable as possible for all users with an emphasis on vulnerable road users (children, older adults and people with disabilities)

Servicing and Utility Corridors

Niagara’s roads and streets will provide space to accommodate the broad range of vital regional/municipal services and utilities.

Economic Engine Corridors

Niagara’s Regional roads will be engines of economic development that are multifaceted and can work as a catalyst for private sector investment on adjacent lands.

Green and Sustainable Corridors

Niagara’s roads and streets will be recognized as forming as much as 20 – 30% of the land in urban and suburban contexts and will be an opportunity to showcase sustainable design.

Cost Effective Corridors

Niagara’s roads and streets will be designed to manage the cost of construction, operation, maintenance and reconstruction.

Supporting these new policies, the *Complete Streets Design Guidelines* are intended to provide guidance to the Region and local municipalities in assessing and incorporating, where reasonable, Complete Streets design principles. As each Regional road corridor is comprised of several components, including lands adjacent to and within its right-of-way, and exist within a range of urban, transitioning and rural contexts, it was necessary to identify a “family” of Complete Streets to address varying mobility needs, land use contexts and natural heritage and built form conditions. Six Complete Street Typologies were developed to form this “family” and to provide a characterization system for roads within the Region for context sensitive planning and design direction. It is of note that the typologies have been created in response to:

- Existing policies and technical best practices;
- Site visits;
- Development of corridor analysis sheets; and
- The grouping of Regional roads based on existing and Official Plan planned rights-of-way, operational characteristics, land use, built form and urban design attributes.

The six typologies are as follows, with further detail provided in the Complete Streets Design Guidelines:

Main Street



Main Streets are traditional pedestrian oriented shopping streets often with a heritage character and street-oriented, mixed-use buildings at a human scale surrounded by stable residential neighbourhoods.

Urban General (Narrow)



Urban General (Narrow) are narrow roads located in the Region’s most urbanized, dense and mixed-use urban centres.

Urban General (Wide)



Urban General (Wide) roads are major urban arterials that support high density development, commercial and retail uses and accommodate all transportation modes.

Transitioning



Transitioning roads have wide rights-of-way and are generally located in commercial or residential areas that are transitioning to a more urbanized and mixed-use context.

Hamlet



Hamlets are portions of streets that pass through villages in rural areas serving local residents as well as through traffic.

Rural



Rural roads are located primarily within the Region's agricultural and natural areas.

Opportunities

The concept of Complete Streets is not always about accommodating all modes of transportation on a street to the highest level of service. Rather, the aim is to pursue incremental improvement to a street, making it as complete as possible, with a priority for the main function of the road and ensuring network connectivity.

Complete Streets is an approach to street design that balances the needs of all users. While design does not always provide equal accommodation, it is a context sensitive approach that considers both the transportation and placemaking function of the road. As such, Complete Streets improvements can be realized through a wide variety of roadway projects, from small operations to major roadway constructions.

The Region's investment in Complete Streets will dramatically change the way it conducts the business of urban and community development, will be a cornerstone of the Region's community development and will, as a transformative measure, help establish a new identity for Niagara Region as a leader in community design and mobility.

This new identity will enable Niagara to attract investment to local communities and build a stronger and more prosperous Region. Fully realized potential for roads and increased usability and relevance to land use will attract businesses and residents, both contributing to economic growth in the area.

The successful implementation of Complete Streets within Niagara Region will be dependent on leadership endorsement, shared jurisdictional values and approaches, awareness of a new set of choices, guidance on how to achieve and understanding of investment implications.

The investment in roads by Niagara Region is directly related to growth and prosperity.

The procedures to implement the Complete Streets approach has been identified in a newly drafted operating policy which will be used to inform the decision-making process for every future Regional road investment, regardless of the scale of improvement. This operating policy will apply to Regional

roads and to local municipal Downtown/BIA Main Streets within the Region of Niagara. This operating policy indicates the importance of considering the broad range of streets that make up the Region's roadways and that planning for these roadways requires flexibility and co-operation.

Recommended Strategy

It is recommended that the Region plan and design all Regional Road projects identified in the Road Capital Plan, including repaving, using a Complete Streets approach, designing roads to be universally accessible, safe and comfortable for all users.

Recommended Actions

- Adopt and implement the Niagara Region Complete Streets: Vision and Directions for a Changing Region document which provides decision-making tools to reflect an integrated consideration of land use and transportation issues.
- Implement Complete Streets design guidelines and standards as part of road rehabilitation and reconstruction projects

5.2 Accessibility

According to Statistics Canada, 15% of Ontario's population has some form of disability, rising to 37% for the over 65s.

Background

In keeping with the Accessibility Ontarians with a Disability Act (AODA), it is essential for all transportation infrastructure to adhere to accessibility standards in order to serve customers with mobility, cognitive, hearing and vision impairments, including the accommodation of mobility aids and service animals. These standards have been clearly defined and made available to all municipalities and agencies for new construction and builds, and the modification requirements to existing facilities and resources is well documented.

In addition to the AODA standards, the changing demographics in Niagara Region is one of the key trends identified in *How We GROW*, the Municipal Comprehensive Review. In Ontario as a whole, the seniors' population – those aged 65 years and older – is expected to more than double to 3.5 million over the 25 years that this study is looking at. Older residents will require more age-friendly infrastructure and better alternatives to driving, and this will have a direct impact on the transportation system in the area.

Universal Design (UD) is an approach that increases the potential for a better quality of life for a wide range of individuals. It is a design process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation

(Steinfeld and Maisel, 2012)

The concept of universal design, or inclusive and barrier-free design, refers to a broad-spectrum of ideas that lead to the production of buildings, products and environments that are inherently accessible to all people, including people with and without disabilities, aging populations and children. The trend is moving from design only in relation to those with mobility concerns, to using an overarching lens on the population as a whole and the impact of the environment in which communities need to live, work and play. Taking such principles into account for

transportation planning and system design for all modes will require conscious consideration.

Opportunities

The Public Health Agency of Canada in its *Age-Friendly Communities Evaluation Guide* provides communities with detail on how to use indicators to measure progress and evaluate their age-friendly initiatives. Age-friendly communities are those that are taking steps to help their older residents remain healthy, active and independent, and encourage them to continue contributing to their communities as they age.

For Niagara Region to move forward in an accessible, age-friendly and inclusive manner, the following indicators should be considered:

Transportation and Public Transit Options

- Availability of a range of affordable options for transportation (e.g., public/private partnerships, volunteer driving program, park and go, shuttles).

- Buses are accessible, clean, and with destination and number clearly displayed.
- Bus stops/shelters are safe and accessible (e.g., with seating, well lit, covered, snow removed, close to seniors' residences).
- People age 65+ have access to and use public transportation.
- Streets have clear and appropriate street signage and lane markers.
- Parking lots and spaces are kept clear of snow and ice.

Public Spaces and Walkability

- Appropriate rest places and distance between rest places.
- Accessible washrooms.
- Crosswalks are safe (e.g., with appropriate crossing times, mid-block crosswalks on long streets, median rest stops, good visibility).
- Sidewalks, trails and walkways exist and are in safe condition (e.g., have smooth surfaces, curb cuts, separate bike lanes, are wide, well lit, clear of ice and snow).

Recommended Actions

- Initiate an advisory committee, whose scope includes issues of accessibility and universal design, engaging and partnering with other departments or ministries, defining local targets and standards, working to support the matching of supply and demand for wheelchairs, accessibility scooters and other infrastructure.
- Demonstrate leadership in transportation projects by incorporating barrier-free and universal design principles.
- Retrofit existing infrastructure to remove barriers to access the transportation network as part of road reconstruction and rehabilitation program.



6 TRANSPORTATION CHOICE

Providing opportunities to access multiple modes of transportation to people of all ages and abilities will improve quality of life, economic vitality, and system efficiency.

Today, the predominant mode of travel is by private automobile, a trend that began in the 1960s as development patterns became more auto-oriented. Providing greater transportation choice will be the key to reducing Niagara Region's reliance on automobile travel and promoting equity for all road users. The Region has already moved toward increased choice by investing in Niagara Region Transit to provide inter-municipal transit connections, cycling facilities in support of its Bikeways Master Plan, and supporting pedestrian connectivity where appropriate.

Key goals in **How We GO** are to improve options for equitable transportation choice, sustainable modes, and to enhance multi-modal connectivity – a theme echoed in the public consultation. Providing transportation choice, and opportunities to access multiple modes of transportation to people of all ages and abilities will improve the quality of life, economic vitality, and system efficiency. The transportation network should promote healthy communities where all residents, regardless of age or ability, enjoy a high quality of life.

Residents will have a wide range of options available to them for getting around and meeting their daily needs including accessing goods, services, employment and recreation by alternate travel modes (i.e., walking, cycling, public transit and the automobile).

The following sections outline opportunities to enhance and improve travel choice.

6.1 Active Transportation

Background

Active Transportation (AT) can provide safe, affordable and efficient transportation opportunities for people while incorporating physical activity into their daily lives, supporting healthy communities. Alongside the personal benefits of active transportation are wider social, community and environmental benefits. Local Active Transportation Committees have had a vital and significant role in developing the cycling and pedestrian network to date. The driving forces shaping this TMP all point to the need for a comprehensive and wide-ranging active transportation network:

- Provincial and regional policies support the development and growth of active transportation.
- Local residents have an appetite for safer roads and cycle ways.
- The existing active transportation network is well used but has significant gaps.
- Higher densities in urban areas and increasing numbers of younger people suggests demand for active transportation will grow.

Active transportation also plays an important role in the tourist experience across Niagara Region, with popular cycling destinations including the Waterfront Trail, the Niagara River Recreational Trail, the Niagara Wine Route that links almost 60 wineries, and the Greater Niagara Circle Route. The Greater Niagara Circle Route is a major 140-km trail of primarily off-road facilities that traverses through Niagara-on-the-Lake, Niagara Falls, Fort Erie, Port Colborne, Welland, Thorold, and St. Catharines and connects to other municipalities such as Pelham and to a number of historic sites and attractions.

For the most part, the pedestrian network in Niagara Region is under the jurisdiction of the local area municipalities. With the adoption of a Complete Streets approach, the Region will consider sidewalks where appropriate in coordination with the local area municipality for on-going operation and maintenance.

Opportunities

A major focus area for this TMP was the creation of a safe, highly connected network of active transportation facilities that is attractive to both residents and visitors, regardless of age or ability. More walking and cycling can bring significant benefits to the community by boosting physical activity and social interaction, reducing congestion and air pollution, providing affordable and accessible travel for people of all ages and incomes, and attracting new residents, businesses and visitors. With the growth of mobile commuting – the ability to use technology in remote or mobile (non static) environments, based on the use of battery powered, portable, and wireless computing and communication devices, like smart mobile phones, wearable computers and personal digital assistants – a growing number of workers now have more flexibility in where and when they work, increasing opportunities for active transportation for all or part of a commute trip.

Including infrastructure for active modes of travel is crucial to making active transportation a competitive travel option within Niagara Region. The needs of network users can vary significantly. The active mode choice, as well as the age and ability of the users, and the primary purpose of the trip – for utilitarian or recreation, to get from point A to point B – can significantly change the needs of the network users.

Niagara Region has an extensive history of bikeways network planning. The most recent cycling network plan for Niagara Region, the Niagara Bikeways Master Plan study (NBMP), was approved by Council in 2005. This study identified a significant network of 1,200 km of on- and off-road facilities. Niagara Region has been implementing the NBMP network through the road capital program, that is, when roads are reconstructed or resurfaced active transportation facilities are added as part of the road project. The Region also contributes \$200,000 annually through the bicycles facilities grant to help local area municipalities implement pieces of the bikeways network that are in the local road rights-of-way.

This approach to building cycling facilities has slowly grown the network over time; however, it has not always resulted in a well-connected network of facilities. There are many gaps and underserved areas across Niagara Region. With the significant shift towards a Complete Streets approach, there is an opportunity to expand the scope of bikeway implementation and to target strategic infill corridors of the cycling network outside of the road capital and rehab programs.

A specific focus on active transportation network improvements is required to make a broader range of active transportation mode choices available, and to promote a region and a transportation network that is accessible to all.

Recommended Strategy

It is recommended that the Region invest in active transportation facilities and supporting infrastructure to promote active lifestyles and healthy communities. To advance the development of the Bikeways Master Plan network, it is recommended that the Region adopt a Strategic Cycling Network to address gaps and underserved areas by building a connected network, in areas where it will most likely be used, within a shorter-term horizon. To support the local area municipalities in implementing the municipal components of the Strategic Cycling Network, it is recommended that Niagara Region increase the bicycle facilities grant for Regional Bikeways Network facilities on local roads to \$1 million per year for the next 10 years.

Overarching

Active Transportation (AT) networks should be designed, developed and maintained to ensure they are safe and accessible for all users while balancing the needs of the different AT modes and trip types that share the network. Niagara Region should build on recent success and seek to further raise the profile of AT through the Active Transportation Sub-Committee. The work of this committee should include:

- Creating and maintaining an up-to-date database of AT networks and facilities, and developing a process to monitor their effectiveness.

- Working with regional partners to explore opportunities, create safe connections to the regional AT networks and to expand the network into other available corridors.
- Engaging with communities and expanding the range of AT information available. Promoting events and activities that support and encourage AT participation.
- Developing an AT strategy that encompasses all AT modes.

Bikeways Master Plan

As identified previously, the 2005 NBMP proposed a significant network including 1,200 km of cycling facilities of which more than 760 km of that network has been implemented to date, primarily through road capital projects. While it was not in the scope of the TMP to conduct a comprehensive review and update of the NBMP, through consultation with AT stakeholders, local area municipalities and Regional staff, a small number of additional bikeways were identified as critical from a Regional perspective.

The Bikeways Master Plan includes a number former rail corridors to be used as off-road trails to connect communities and for recreational use. Should rail corridors be abandoned, the Region should take advantage of the opportunity to protect those rights-of-ways for use as active transportation trails.

Strategic Cycling Network

To advance the implementation of the NBMP, the Region requires a strategy to systematically eliminate barriers and connect gaps in the network. The development of a Strategic Cycling Network (see Map 3 Strategic Cycling Network) that places short-term priority on building the connections that are most likely to be used, was based on several key inputs:

- *Existing network* – The existing region-wide cycling network forms the foundation of the strategic network. It is noted that through on-going capital work, many network links have been constructed since the NBMP was approved that are not part of the current regional network, but could feed and connect to the larger regional network. The strategic network explores opportunities to connect existing facilities even where they may lie outside of the current Regional network.

Refer to Map 3

- *Planned capital investment* – In keeping with on-going practice, the capital plan provides an opportunity to provide cycling facilities as roads are reconstructed. Capital plan projects are leveraged as part of the strategic network. This is a cost-effective method of implementing cycling facilities with savings realized through the larger road reconstruction projects. The incremental costs for the inclusion of cycling facilities in these capital projects have been costed as part of the roadway project.
- *Key infill corridors* – These infill links are the primary new components of the strategic network, identified to connect the missing links between capital investment, the existing network and key destinations. These links are intended to be implemented under retrofit conditions.

The background document, *Strategic Cycling Network Development Technical Paper* (May 2017), includes the evaluation rationale for identifying and prioritising those elements to be included in the short-term Strategic Cycling Network. The desktop review and evaluation of each infill link considered connectivity, land use density, potential demand, key destinations and barriers. The identified elements are intended to provide a base network that can evolve as new opportunities become available. It is not intended that this network be enshrined in policy, such as through inclusion in the OP, but rather that it feed directly into the review and implementation of the network through the municipal partnership program and Regional cycling network planning processes.

For each infill link, a potential facility type (i.e., shared lane, separated bike lane, multi-use path) was identified as one possible way of achieving the appropriate class of facility. The facility type identified through this process does not necessarily reflect the preferred ultimate facility type; however, it does reflect an appropriate facility for the street context.

To assist the area municipalities in building portions of the Strategic Cycling Network that are located on municipal rights-of-way, Niagara Region should increase the Bicycle Facilities Grant for Regional Bikeways Network Facilities on Local Roads from \$200,000 annually to \$1 million annually for the next 10 years.

Wayfinding and Signage

Wayfinding signs assist cyclists by leading them to the bikeways, navigating them along the bikeway and through the applicable parts of the network, and guiding them to facilities on and off the bikeway and points of interest that are relevant to cyclists. To fully utilize this infrastructure, cyclists must be able to locate and follow the bikeways. A wayfinding system can help users by identifying facilities for bicycle travel, pointing out routing options and helping cyclists learn about destinations accessible by bicycle. It can be a complement to the NBMP.

Cycling wayfinding in Niagara Region will be provided according to best practices that promote cross-jurisdictional uniformity in the design, application and operation of cycling wayfinding signage, through a grandfathered approach that recognizes pre-existing bikeway signage. The aim is to facilitate wayfinding by providing easily recognizable, clear and consistent tools for making bicycle journey navigation a positive user experience.

Niagara Region is a major tourism centre where cyclotouring is becoming an increasingly popular activity. The Region is also endeavouring to transform the way residents travel by encouraging more cycling. The regionally significant bikeways in Niagara support three main categories of cycling trips:

- Utilitarian or destination-oriented trips – are for the purpose of reaching a particular destination and are often repetitive. These include trips to places of employment (commuting), to school or to shops, plus trips that are necessary as part of an individual's daily activities.
- Recreational trips – are identified by a level of enjoyment, scenery and company of other cyclists. Fitness and sport cyclists ride for exercise and skill training.
- Touring trips – are often longer than utilitarian or recreational trips
- Touring cyclists prefer to ride on rural roads or major trails with ample scenery. Trips are generally between urban areas or to specific points of interest.

Wayfinding signage must address all of the above types of cycling trips, and should be implemented according to the final guidelines in the background document *Bikeway Identification and Destination Wayfinding Signage for Cyclists Guidelines* (February 2017).

Recommended Actions

- Implement the Strategic Cycling Network Concept, as part of the Council-approved Bikeways Master Plan, giving priority to projects with the greatest cycling impact, balance complexity of work to be undertaken, and taking advantage of opportunities to work jointly with local area municipalities.
- Work with Active Transportation Sub-Committee to develop and support cycling education and safety, cycle wayfinding implementation and improving the overall cycling experience for all users including tourists.
- Adopt and implement the Region's new Bikeway Identification and Destination Wayfinding Signage for Cyclists guidelines.
- Invest in cycling facilities and supporting infrastructure to promote active lifestyles and healthy communities.
- Encourage pedestrian- and cycling-supportive site design that provides safe pedestrian and cycling opportunities for all ages and abilities in all new developments.
- Promote safe walking, cycling and driving through education, engineering, engagement, evaluation and enforcement.
- Complete the Niagara Bikeways Master Plan network.

6.2 Public Transit

Public transit plays an important part in realizing the vision for Niagara, and recent technological advances present an opportunity to improve mobility in a more efficient and cost effective manner than was historically possible. However, challenges remain, and concerted effort and investment will be necessary to create a transit system that is able to support the public's mobility needs and provide an attractive alternative to the car.

Background

There are a number of driving forces behind the need to improve transit service in Niagara Region:

- Rates of transit service provision are among the lowest in Southern Ontario.
- Residents living without a car in Niagara Region are at an economic disadvantage.
- Improved transportation connections to the GTHA can open up Niagara Region to new employment markets and encourage economic development.
- Provincial and Regional policies seek greater transit mode share, and the integration of land use and transportation planning.
- Local residents consistently express a strong desire for better public transit in the form of connections to GTHA (GO service) and better integration of local and regional services.
- Existing transit services are not well used as many trips are uncompetitive, especially longer journeys between municipalities.
- Low density areas are poorly served. Increasing density will make transit more viable, with increasing demand expected from younger people.

There are also significant challenges presented by the local context. The dispersed communities throughout Niagara Region create a difficult environment to provide efficient transit services. The cost to provide fixed-route transit service to low-density and small urban centres is unsustainably high. The high number of public transit agencies in Niagara Region results in fare and service integration issues, resulting in a system that does not meet the needs of many residents.

Opportunities

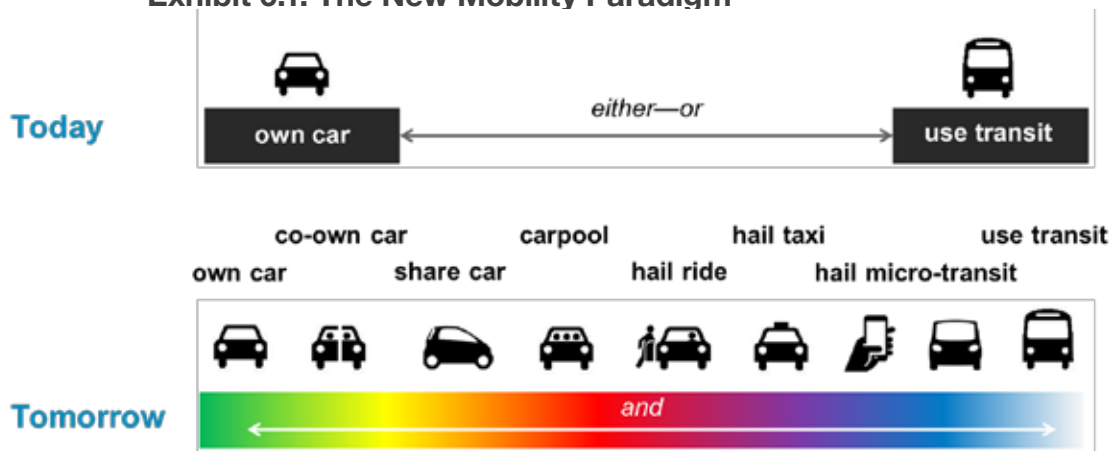
Evolving models of transportation

Traditionally, the majority of urban travellers have fallen into one of two categories: those who own a car and use it to make most of their trips; and those who do not own a car and use transit.

In the past several years, however, the line between these two groups has blurred. It is now not uncommon in many North American cities to get around using a wide variety of transportation modes, many of which leverage mobile computing and GPS technology. As shown in Exhibit 6.1, these options run the range from facilitated carpooling, to car-sharing, ride-hailing, and micro-transit. The common theme in this new array of transportation options is the treatment of mobility as a service. This means that mobility is offered through some sort of platform and sold, rather than relying on personally-owned modes of private transportation.

This paradigm shift is important for public transit because it provides a framework in which future transit services will likely operate. Rather than being thought of exclusively as a social service for those without a car, transit's role will shift to being one part of a multi-modal system. Within that system, its benefits (high capacity, reliability, low fare, etc.) can be used to its advantage to improve mobility for all users of the transportation system.

Exhibit 6.1: The New Mobility Paradigm



Leveraging Emerging Technologies

In areas with very low demand for public transportation, some transit agencies employ demand-responsive service as an alternative to fixed-route service. This typically consists of a small bus or contracted taxi company responding directly to a customer request for travel, with a ride being provided either from door-to-door or to the fixed-route network. These types of services are not new, and are currently operated in Welland, Pelham, St. Catharines, and Niagara Falls. They are, however, expensive to operate, and require substantial advanced booking from customers.

Existing and emerging technology may be able to substantially decrease the cost of providing demand-responsive transit service and increase convenience to travellers. Transportation network companies (e.g., ride-hailing and micro-transit service providers) have developed algorithms that can dispatch vehicles in real-time with very little overhead costs, dramatically improving convenience and reducing cost. The future deployment of connected and autonomous vehicles (CAVs) are likely to reduce this cost even further, and facilitate the provision of service to areas in which it was not previously economically feasible.

The Region can position itself as a leader by being an early adopter of policies that are supportive of mobility as a service, demand-responsive transit, and CAVs. These policies can not only improve transportation options for Niagara residents, but can act as a catalyst for broader municipal innovation.

Adding Fixed-Route Service Where It Is Warranted

Building transit ridership will require more than deploying new technology. In order to gain meaningful increases in transit riders, new investment in fixed-route service is required. However, the best return on this investment can be realized by focusing new service in areas that are most able to sustain it. In other words, the number of riders per new hour of service will be higher if those hours are concentrated in areas that are already highly attractive to transit.

Establishing a frequent network of core services is a recent service planning model that has gained traction in recent years. Under this paradigm, service hours are concentrated on high-performing routes,

resulting in “network within a network” of high-frequency services (typically 15 minutes or better) that offer reliable, convenient service on major arterial roads throughout the day. This technique builds the backbone of the transit system, and can significantly improve the convenience of service in areas that can generate new riders.

Renewed Transit Governance

Deploying a new model of transit governance in Niagara Region has the potential to remove barriers to fractured planning and inconsistent service. This could be achieved by consolidating the number of transit operators, allowing for less duplication of service, increased service coordination (e.g., scheduling), improved fare coordination, and a consistent brand. In March 2017, Niagara Region Council endorsed, in principle, the creation of a consolidated transit system. An integrated transit service feeding major transit stations and continuing to provide inter-municipal service will be a key component in maximizing the benefits of GO Transit rail service in Niagara Region.

Air and Marine

Niagara Region may be assuming a governance role over both publicly-operated airports, pending a phase 2 environmental assessment to be undertaken by the area municipalities. In the case where the governance of the airports be assumed, the Region should examine opportunities to enhance their role as commuter service options and tourism gateways. In particular, the Niagara District Airport (NDA) has long been considered an under-utilized asset in Niagara Region. It has the potential to support regular passenger services and goods movement.

While developing a marine passenger service is a role best left to the private sector, the Region should be prepared to work with area municipalities and others to support private initiatives and connectivity with roads and transit.

Recommended Strategy

It is recommended that the Region strengthen core transit services and provide transit connections to all of its local municipalities through a combination of fixed-route and demand-responsive transit, using existing and emerging technologies to improve efficiency and cost-effectiveness, to support growing demand for inter-municipal travel and inter-regional transit services.

Map 4 Conceptual Transit Network illustrates how local, inter-municipal and inter-regional services could be deployed in response to the strategy. The Conceptual Transit Network is not intended to be a definitive blueprint or route plan for new services. These tactical and operational decisions should be made by Niagara Region Transit staff as part of regular service planning studies.

Refer to Map 4

As the public transit system evolves and is built out with urban development growth and land use becomes more transit supportive, Niagara Region will move towards rapid transit as a longer-term strategy. The identification of higher-order transit corridors aligned with the Region's urban structure will be a first step to intensify and build ridership in strategic corridors and justify advanced planning (e.g. undertaking of environmental assessment studies, preliminary and detail design) and potential "quick start projects" (e.g. transit priority, express bus services, bus passing lanes) as precursor elements to full rapid transit.

Map 5 presents opportunities for future rapid transit that may be considered once urban densities and local transit services levels reach levels that can support it, and should be reviewed as part of the next update of the transportation master plan. The future opportunities include north-south and east-west inter-city express transit routes that build on highway and rail corridor infrastructure that is already in place, with running ways protected from traffic congestion.

Refer to Map 5

Recommended Actions

- Initiate and fund a transit demand-responsive model/pilot to investigate the financial and operational viability of providing demand-responsive transit service in low-density areas using ride-hailing technology to expand access to Niagara Region Transit service.
- Complete framework process to move towards a consolidated transit model for one transit entity in Niagara Region.
- Undertake a Business Case to review opportunities for extending the inter-municipal transit system beyond the current service areas of St. Catharines, Welland and Niagara Falls.
- Conduct study of potential transit priority measures along Regional roads.

- Continue to support the expansion of GO Transit passenger rail service to Niagara Region, and the development / redevelopment of rail stations to serve as major transit station areas, to support needs of communities along the corridor, and to commuters and tourists moving in both directions between Niagara Region and the GTHA.
- Continue to support the development of major transit station areas, and connections to active transportation and local transit, to stimulate investment in adjacent employment lands, commercial services, and residential development.
- Introduce regular, reliable and coordinated transit connections to GO stations and major transit stations.
- Introduce subsidized co-fares between Niagara Region Transit and GO Transit.
- Provide inter-municipal transit to all of Niagara's municipalities through a combination of fixed-route and demand-responsive transit.
- Develop a detailed policy on the usage of connected and autonomous vehicles for the purposes of public transportation, including demand-responsive and fixed-route service.
- Implement incremental service improvements to encourage transit travel between and within Niagara Region municipalities.

6.3 Road Network

Background

With forecast population and employment growth to 2041, travel by motorized vehicles is expected to grow by 55%, reaching more than 10 million vehicle-km daily in 2041. Despite this increase, the current road network, with the addition of targeted improvements at specific hotspots to address localized capacity and operational issues, will generally have the capacity to accommodate most of Niagara's projected growth. The exceptions to this are the major Provincial and Regional corridors that traverse the region and the crossings of major barriers.

These major corridors and crossings, in particular the QEW, crossings of Welland Canal and crossings of the Niagara Escarpment, already experience congestion and/or operational constraints, and have long been recognized as challenges to travel in Niagara Region. Section 3.3 identified the challenges in the existing transportation network.

Opportunities

Future growth and increasing demands to move people and goods within and through the Region will intensify the need for a safe, connected and sustainable road network. Within the Region's jurisdiction, opportunities lend themselves to two categories as follows:

- Infrastructure – the creation of additional capacity through the delivery of infrastructure projects. Within the current policy context, the aim is to keep new infrastructure to a minimum, and measures will be focused on congestion hot spots or restricted corridors. In some areas, there may be opportunities to optimize the use of Regional rights-of-way to better accommodate other modes of travel through a Complete Streets approach.
- Transportation System Management – strategies and initiatives must be implemented that will maximize the capacity of the existing network through better management of the network as a cohesive system, while also improving safety and efficiency. Measures include a wide scope of Intelligent Transportation System (ITS) applications, as well as improved real-time coordination between the various roadway authorities, transit providers, the police and other key stakeholders. This is discussed further in Section 6.4.

Recommended Strategy

It is recommended that the Region accommodate future growth in travel through strategic network capacity increases and address operational improvements at key constraints. It is recommended that the Region continue to advocate for highway capacity improvements to address inter-regional and international trade and tourism-related demands, including a new trade corridor connecting Niagara to Hamilton and the international border.

The recommended road network improvements are described below and illustrated in Map 6 2041 Road Network.

Refer to Map 6

Provincial Highways

The QEW is the only major Provincial highway that traverses Niagara Region and connects the GTHA to the international border in South Niagara. Hwy 405 and Hwy 420 branch from the QEW to the Queenston-Lewiston Bridge and to the Rainbow Bridge, respectively.

The QEW is the main link from Niagara Region to the GTHA, and is a significant constraint on tourist and trucking activities in Niagara. The vast majority of Niagara's truck traffic travels to or from the GTHA on the QEW. Trucks represent about 15% of weekday traffic volumes on the QEW, which is congested during weekday peak periods and off-peak tourist times. Increasing demands on the QEW will lead many truck drivers to look for alternatives.

The MTO is responsible for the Provincial highway network, including: QEW, Highway 405, Highway 406, Highway 420, Highway 58, Highway 3 and Highway 140, and has already identified a program of key projects in Niagara Region including:

- Widening and rehabilitation of the QEW from McLeod Road to Mountain Road (Southern Highways Program);
- Garden City Skyway bridge replacement (Southern Highways Program);
- Widening and introduction of managed lanes along the QEW from Fifty Road to Highway 406 (NGTA Corridor Planning and EA Study Phase 1);
- Extension of Highway 406 southerly from Welland (Hwy 140) to NGTA East Corridor (NGTA Corridor Planning and EA Study Phase 1); and
- NGTA East Corridor from Highway 406 Extension to QEW (NGTA Corridor Planning and EA Study Phase 1).

While Niagara Region cannot determine the future of these plans, it must continue to support and advocate for delivery of the MTO program. The MTO's Southern Highways Program 2016-2020 indicates the above QEW widening projects under "Planning for the Future" indicating that the project timings are beyond 2020. Additionally, the Garden City Skyway bridge replacement is also included under "Planning for the Future" and is currently planned for 2022/2023.

Niagara-Hamilton Trade Corridor

One project of particular importance is the Niagara to Greater Toronto Area (NGTA) Corridor, a key longer term requirement to provide essential capacity and redundancy to Niagara's strategic highway network over the Plan period. The three major municipalities adjacent to the NGTA Corridor – Niagara Region, City of Hamilton and City of Burlington – combined are expected to grow by 33% in population and 50% in employment between 2011 and 2041. The existing freeway infrastructure, specifically the QEW, currently experiences heavy recurring congestion and does not have available capacity to accommodate not only projected growth but the demands of an international trade corridor. The importance of this corridor for international goods movement is discussed in Section 7.

Over the past 15+ years, multiple studies have examined the existing highway network and possible outcomes for the proposed NGTA Corridor connecting Niagara Region to Hamilton, Burlington and other municipalities in the GTHA. Analysis shows that such a corridor will be required over the long term to provide necessary capacity and required operational redundancy.

MTO's NGTA Corridor Planning and Environmental Assessment Study Phase 1 identified the need for a southerly extension of Highway 406 and the NGTA East Corridor to connect Highway 406 to QEW in Fort Erie, but did not identify a need for the western part of the NGTA Corridor within the study's 2031 study horizon.

The need for a trade corridor as an alternate to the QEW is clear. A Niagara-Hamilton Trade Corridor that connects Niagara Region from the NGTA East Corridor at Highway 406 to the City of Hamilton in the vicinity of the Hamilton International Airport/Highway 403 would address the more immediate demands of moving goods in and through Niagara Region in the absence of the full NGTA Corridor. The Region should actively advocate for the Niagara-Hamilton Trade Corridor as an alternate route to the QEW that improves Niagara's connection to both Hamilton and the international border. A right-of-way should be designated as soon as possible and safeguarded for the future. Similarly, Highways 403 and 407 in the GTHA were designated and protected by the Parkway Belt regulations more than 25 years before the

highways themselves were built. Further details regarding the planning background for the NGTA Corridor is documented in the *Niagara-Hamilton Trade Corridor Technical Paper* (February 2017).

In the interim, while planning for the new Niagara-Hamilton Trade Corridor proceeds, Niagara Region should actively work with MTO to identify a shorter-term solution to provide network capacity and redundancy through an alternate provincial route. This includes a role and function study for the former Highway 20 corridor to assess its potential to accommodate longer-distance, inter-regional travel and goods movement in Niagara Region. Map 7 illustrates a potential “Phase 1” interim trade corridor:

Refer to Map 7

- Phase 1A - South Niagara East-West Arterial Road along with Niagara Escarpment Crossing and Hwy 406 Extension
- Phase 1B – Highway 58 / Regional Road 23 (Forks Road) / Regional Road 24 (Victoria Avenue) / Highway 20 / Smithville Bypass, connecting to Lincoln Alexander Parkway in Hamilton
- Phase 1B (Alternate) – Highway 58 / Regional Road 23 (Forks Road) / Regional Road 24 (Victoria Avenue) / Highway 20 / Regional Road 65, connecting to Highway 6 and Highway 403 in Hamilton

Interchange Improvements

Three interchange projects were identified:

- New Highway 405 interchange at Concession 6 Road provides an alternate access to/from the freeway system for employment lands north of the Glendale interchange area, and provides an alternate access to Highway 405 from the south.
- New Highway 406 Interchange at Third Avenue Louth provides improved access to/from the new Niagara Health System St. Catharines site, and relieves traffic demands along Fourth Avenue and at the Fourth Avenue interchange.
- QEW / Glendale interchange improvements provide operational and capacity benefits at the existing interchange.

Although not part of the TMP, the Region and MTO are addressing improvements to the interchange at Casablanca Boulevard and Victoria Avenue.

Regional Roads

The Region has a 10-year road capital improvement program, endorsed annually by Council that identifies on-going and planned projects for improving the existing road and infrastructure network, including network expansion where necessary. As a long-term planning document, the TMP has identified transportation needs for the 25-year horizon and its recommendations goes beyond what the Region may have identified previously.

Additionally separate Sub-Area Analyses were undertaken to assess capacity and operational needs in five specific areas in Niagara Region:

- Sub-area 1: QEW-Glendale-Highway 405
- Sub-area 2: West St. Catharines
- Sub-area 3: Port Robinson Road
- Sub-area 4: East Main Street/Division Street one-way couplet
- Sub-area 5: Highway 20 Smithville Bypass

The findings of the Sub-Area Analyses are documented in the *Sub-Area Analysis Technical Paper*.

The recommended road network improvements were identified through a combination of review of previous/on-going studies, travel demand forecast modelling, sub-area analysis, input from Regional and municipal staff, and input from stakeholders. The recommended improvements are intended to provide a connected road network that better accommodates economic demands, tourism demands and facilitates travel for Niagara residents.

Major road network expansion projects include:

- Projects already in Niagara Region's 10-year Capital Program (Planning and Construction)
 - Casablanca Blvd (RR 10), QEW to Livingston Avenue
 - East Main Street (RR 27), Highway 140 to Moyer Road
 - Merritt Road (RR 37), Rice Road to Highway 406
 - Martindale Road (RR 38), QEW to Fourth Avenue, including bridge over Highway 406
 - McLeod Road (RR 49), Pin Oak Drive to Stanley Avenue

- Rice Road (RR 54), Old Hwy 20 to Thorold Road
- Niagara Stone Road (RR 55), Concession 6 Road to Line 2 Road
- Niagara Stone Road (RR 55), Penner St (Line 1 Road) to East and West Line
- Collier Road (RR 56), Highway 58 to Beaverdams Road
- Thorold Stone Road (RR 57), Extension east of Stanley Avenue to Victoria Avenue
- Montrose Road (RR 98), Charnwood Avenue to McLeod Road
- Livingston Avenue (RR 512), Main Street to Casablanca Boulevard
- South Niagara East-West Arterial, Highway 406 Extension to QEW
- Canadian Motor Speedway infrastructure improvements
- Additional Capacity Expansion Projects
 - Bartlett Avenue (RR 14) extension (Niagara Escarpment Crossing), Muscat Drive Mud Street
 - Highway 20 (RR 20) Smithville Bypass
 - Highway 20 (RR 20), Kottmeier Road to Davis Road/Allanport Road
 - Schisler Road (RR 27), Moyer Road to Montrose Road
 - Lyons Creek Road (RR 47), Montrose Road to Sodom Road
 - Niagara Stone Road (RR 55), Airport Road to Concession 6
 - Glendale Avenue (RR 89), York Road to Queenston Road
 - Airport Road (RR 90), Niagara Stone Road to York Road
 - Montrose Road (RR 98), Chippawa Creek Road to Schisler Road
 - Stanley Avenue (RR 102), Ferry Street to Murray Street
 - Stanley Ave (RR 102), Marineland Parkway to Lyons Creek Road
 - Sodom Road (RR116), Lyons Creek Road to Netherby Road
 - Concession 6 Road-Mewburn Road, York Road to Mountain Road, including bridge over CN Rail
 - Queenston Road realignment to accommodate Garden City Skyway project
 - New road/rail grade separation in West St. Catharines at one of Louth Street, Vansickle Road or First Street Louth

- Corridor Protection
 - Carlton Street (RR 83), protect for new crossing of Twelve Mile Creek between Martindale Road to Ontario Street
 - Morrison Street, protect for new Crossing of QEW between Kent Avenue and Victor Drive
 - Future Road (west of Stanley Avenue), protect for new crossing of Welland River

Further details regarding the development of the recommended network is documented in the *Road Network Strategy Technical Paper*.

Operating Policies

The Region has a series of roads-related Public Works Operating Policies regarding the maintenance, administration, standards and guidelines, emergency response, signs and signage, and capital. A review of the Operating Policies was undertaken to determine if the policies needed updates or where gaps in the policies existed. Many of the policies are updated routinely and many are still current. The need for four new policies were identified:

- **Moving Towards Complete Streets** – this policy informs the decision-making process for every future Regional road investment, regardless of the scale of improvement. This policy indicates the importance of considering the broad range of streets that make up the Region’s roadways and that planning for these roadways requires flexibility and co-operation.

A Complete Streets approach can enable Niagara to realize a fuller potential for the Region’s roadways by way of increasing usability and relevance to land use while building a stronger and more prosperous Niagara. By investing in Complete Streets, the Region will play a leadership role in galvanizing public and private investment across the twelve municipalities, helping to attract residents and contributing to economic growth.

- **Roundabouts on Regional Roads** – this policy provides factors for consideration for the installation of a roundabout on a Regional Road as an alternative method of traffic control to traffic signals or stop or yield controlled signage, and the procedures for implementation.

- **Illumination on Regional Roads** – this policy addresses the objectives of a roadway lighting system design for areas of a Regional road that will be considered for illumination.
- **Access Management on Regional Roads** – this policy reflects the goal of the Region to maintain effective traffic flow on its roadways by providing safe access which is consistent with the function of operation of the road and access needs of the adjacent land uses.

Recommended Actions

- Advocate and work with MTO for capacity improvements to accommodate inter-regional and international travel demand for people and goods, including:
 - Widening of QEW and introduction of managed lanes – such as high-occupancy vehicle lanes – from Hamilton to Highway 406;
 - Widening and rehabilitation of QEW from McLeod Road to Mountain Road;
 - Implementing the NGTA East corridor and extension of Highway 406; and
 - Building a new Niagara-Hamilton Trade Corridor.
- Actively work with MTO to identify a short-term solution to provide network redundancy through an alternate Provincial route parallel to the QEW that can accommodate longer-distance, inter-regional travel and goods movement, including a Role and Function study of Highway 20/Regional Road 20 and a study to address the Smithville Bypass (Map 7).
- Undertake or complete Environmental Assessment studies for:
 - Niagara Escarpment Crossing (Bartlett Avenue extension) extending to Mud Street, and beyond to Regional Road 20; and
 - South Niagara East-West Arterial Road.
- Work with MTO to undertake Environmental Assessments / Detailed Design for interchange improvements including:
 - QEW / Glendale Avenue Interchange;
 - Hwy 405 interchange / Concession 6 / Mewburn Road interchange; and
 - Hwy 406 / Third Avenue Louth interchange.
- Work with City of St. Catharines, Metrolinx and CN Rail to undertake Environmental Assessment for the rail grade separation in West St. Catharines.

- Protect non-Regional transportation corridors that provide local benefits and network connectivity including:
 - Crossing of QEW – Morrison Street in Niagara Falls;
 - Crossing of Twelve Mile Creek – Carlton Street in St. Catharines;
and
 - Crossing of Welland River – future road in Niagara Falls.
- Complete implementation of the 2041 Road Network as shown in Map 6.

6.4 Transportation Demand and Systems Management

TDM Background

Transportation Demand Management (TDM) is a set of policies, programs, services, and initiatives that aim to increase efficiency in the transportation network by changing how, how much, when, where, and why people travel. TDM is an effective tool to defer the need for significant capital investments in new infrastructure by maximizing the use of existing transportation facilities and services. TDM is also an excellent way to reduce Greenhouse Gas Emissions and encourage active lifestyles by promoting sustainable transportation modes. TDM must focus on all modes in the transportation network, but is largely directed at reducing the number and type of trips made using single-occupancy vehicles.

TDM aims to influence travel by:

- Providing more travel choices and options;
- Providing incentives to take transit, cycle, walk, or carpool for school and work travel;
- Providing disincentives to discourage single-occupant car trips, especially during peak commuting hours;
- Providing published information to educate commuters on their travel options (e.g., wayfinding, maps, real time information);
- Providing regulations aimed at limiting single-occupant car trips (e.g., parking regulations, land use policies, congestion pricing);

- Eliminating the need to make some trips (e.g., Internet access, telecommuting, virtual meetings, etc.); and
- Providing active or transit-based alternatives to single-occupant car trips.

Increasingly, internet access and online services are reducing a portion of travel demand. Telecommuting, virtual meetings, and the electronic transfer of documents is replacing work-related travel and the movement of physical information such as plans, drawings, documents, and contracts. The ability to shop, gather information, obtain government services, and stream entertainment content is replacing a proportion of discretionary trips made for these purposes.

However, Internet services in Niagara Region vary considerably between communities, and between urban versus rural areas. While more densely-populated areas have access to high-speed connections, some rural areas continue to “make-do” with the limitations of dial-up access or must assume the considerable expense of satellite-based connections.

Efforts are underway to improve internet access across southwestern Ontario. The South Western Integrated Fibre Technology (SWIFT) initiative is a project to build an ultra-high-speed fibre optic Internet network for southwestern Ontario. The project is being led by a partnership of 16 regional and local municipalities in Southern Ontario, including Niagara Region. The project’s aim is to provide access to fibre optic high-speed Internet for 3.5 million Ontarians living in rural areas by 2040. The SWIFT project will allow the creation of an extensive, cost-effective high-speed Internet network that will serve all of Niagara. Following the completion of the feasibility study in 2016, a first request for pre-qualifications is expected to be released to vendors in May 2017 while the final proposed project design is to be released through a request for proposal in late 2017. The initial projects under the SWIFT initiative are anticipated to begin in 2018.

TSM Background

Transportation systems management (TSM) is a strategy to maximize the efficiency, reliability, capacity, and safety of the transportation network economically and environmentally using technologies. These technologies typically include Intelligent Transportation Systems (ITS) which have been evolving over the course of the past two decades (e.g., Advanced Traveller Information System to obtain real time congestion level on major roadways and to provide routing guidance, CCTV Cameras to monitor and verify traffic operation conditions, and Advanced Traffic Signal Control Systems to optimize and coordinate traffic signal timing). These technologies can be part of the TDM measures to assist travellers in understanding the traffic condition in advance and change their travel behaviour. In addition, TSM can be applied to different modes of transportation throughout the network, improving operations of existing infrastructure while enhancing future planned infrastructure.

TSM can improve the transportation network by adding and improving technology by:

- Providing platforms for better communication and data sharing among stakeholders (e.g., public/private owner/operator, government regulators, service providers, institution/research, and special interest);
- Improving the capacity and reliability of the existing and future road network;
- Enhancing the ridership experience, resource allocation, maintenance, and reliability of existing and future transit systems;
- Providing more data from the transportation network to help transportation engineers and planners make better informed decisions for the existing and future transportation system; and
- Improving traveller information dissemination which provides:
 - Enhanced existing and future TDM efforts;
 - Improved roadway information to make informed driving route choices; and
 - Incident and event management.

TDM Opportunities

There are many opportunities in the Region to effectively use TDM measures to reduce single-occupancy vehicle trips. These include:

- Active transportation network expansion as part of the TMP;
- Transit network expansion as part of the TMP; and
- Potential land use intensification policies developed as part of Niagara Region's Municipal Comprehensive Review (How We GROW) that will concentrate population growth in denser urban centres enabling shorter trips and more active transportation use.

TSM Opportunities

Recognizing the importance of TSM and ITS, Niagara Region is currently developing an ITS Strategic Plan to determine the ITS actions that can improve the transportation network. As part of the ITS Strategic Plan, an operations and implementation strategy will be developed that defines where and when the ITS measures will be implemented. The ITS Strategic Plan is being developed through stakeholder consultation, and in accordance to ITS Architecture for Canada standards. This architecture requires input from stakeholders to identify a list of high priority user services, which can be delivered by a variety of identified ITS projects.

The ongoing ITS Strategic Plan has determined that a variety of opportunities exist for the Region to improve the efficiency, reliability, capacity, and safety of the transportation network. Through the initial ITS Strategic Plan findings, the opportunities for the Region include:

- Improving coordination and project management between the Region and municipalities within and surrounding Niagara Region;
- Improving traveller information for all modes of transportation and providing traveller information at critical network points (i.e., rail and canal crossings);
- Improving traffic control throughout the Regional road network, including technologies to enhance active transportation modes;
- Improving corridor management which includes incident management, event management, and disaster management;
- Improving desirability and reliability of the public transit network;
- Supporting goods movement within and across the region;

- Improving international border transportation management;
- Implementing a program for data collection, data warehousing, and data sharing;
- Gathering business intelligence to improve operator and planning decisions; and
- Coordinating roadway maintenance and construction operations.

“New mobility” technologies like connected and autonomous vehicles (CAV), and services like ride hailing applications (e.g., Uber), represent major shifts in the delivery of transportation services. Some experts predict that door-to-door, on-demand ride hailing provided by fully autonomous vehicles will be an everyday travel option in major urban areas by 2025. The broad adoption of CAVs in conjunction with new private-sector business models would represent a transformation in how cities move, and would disrupt established practices in multiple industries. New mobility will likely have a tremendous influence on where we live and work, and how we interact.

Given Niagara Region’s demographic and geographic context, it could benefit from the potential of new mobility options to:

- Help meet the lifestyle needs of an aging population with low-cost mobility services in low-density, off-peak situations.
- Support a multi-modal lifestyle, free of car ownership, which is becoming more preferred by young, creative professionals.
- Expand affordable transit options through automated, on-demand transportation services in areas that are not conventionally transit-supportive.
- Reduce death, injury and property damage due to collisions as a result of driver error.
- Improve the efficiency of goods movement.

Recommended Strategy

For Niagara Region to improve sustainability, efficiency and safety for the transportation system, it is recommended that the Region fund and staff programs to adopt and lead TDM and TSM initiatives, and embrace new mobility services and the use of technology to monitor and maximize capacity.

The Region's on-going ITS Strategic Plan will identify measures to maximize efficiency, capacity and safety of the transportation network to support the regional economy and improve user experience. The ITS Strategic Plan, once completed and Council approved, will also provide recommendations for funding and staff resources to support implementation of the plan.

Recommended Actions

- Develop Business Case for transfer of Niagara Ride Share Program from Bridges Community Health Centre and Town of Fort Erie to Niagara Region.
- Initiate a Travel Demand Management Study to address the following:
 - Engaging with workplaces to develop programs (i.e., Smart Commute) aimed at decreasing congestion at peak hours and increasing employee use of active transportation, public transit, carpooling and teleworking.
 - Implementing new technologies that have potential to change travel behaviour, improve transportation options, or increase awareness of TDM programs.
 - Collaborating with local area municipalities to apply guidelines that maximize the TDM supportiveness of new developments across Niagara Region, including parking strategies.
 - Expanding carpool program and park and ride facilities in Niagara Region
- Adopt and lead TDM initiatives through a TDM program that is funded and staffed in collaboration with local municipalities.
- Develop and implement policies to support the goals of the TDM program.
- Complete and implement ITS Strategic Plan Study (initiated in 2015) to identify TSM program and supporting initiatives, including recommendations for funding and staff resources.
- Coordinate policy development related to emerging technologies with local municipalities and neighbouring jurisdictions.
- Advocate for advancement of SWIFT as opportunities arise.



7 *GOODS MOVEMENT*

Improving the movement of goods through and within the Region is vital to Niagara's economic development.

Background

Niagara Region is located on a critical international trade corridor – every day, thousands of commercial vehicles pass through Niagara's international border crossings. Overall truck volumes in Niagara Region have remained steady, despite a decrease in Canadian-US cross-border truck traffic in recent years. This is largely due to economic growth in the GTHA, which is a key destination for Niagara Region's manufactured goods and a growing volume of aggregates. The QEW is the main link from Niagara Region to the GTHA, and is a significant constraint on trucking activities in Niagara. The need for a new trade corridor as an alternate to the QEW is clear. A Niagara-Hamilton Trade Corridor that connects Niagara Region from the proposed NGTA East Corridor at Highway 406 to the City of Hamilton in the vicinity of the Hamilton International Airport/ Highway 403 would address the more immediate demands of moving goods in and through Niagara Region in the absence of the full NGTA Corridor.

The Region should actively advocate for the Niagara-Hamilton Trade Corridor as an alternate route to the QEW that improves Niagara's connection to both Hamilton and the international border.

Goods movement by marine, rail and air also have significant roles in Niagara Region. While QEW truck volumes have increased and face significant congestion, most other freight modes have shown a decline in recent years and now have spare capacity.

The Welland Canal, as part of the St. Lawrence Seaway and Great Lakes System, with 10 lock chambers, bridges and multiple key docking areas between Lake Ontario and Lake Erie is an international, national and regional marine trade corridor that supports both transportation and economic benefits to the Canadian, US and the Niagara regional economy.

With respect to rail, loaded rail containers crossing the border between Buffalo and Niagara Falls declined from 2000 to 2009, although they have been stable since then. At Niagara Region's two publicly-owned airports (the St. Catharines/Niagara District Airport in Niagara-on-the-Lake, and the Welland/Niagara Central Airport in Pelham) total aircraft movements have been fairly stable and air cargo movements are assumed to have followed suit.

There is a strong correlation between the level of production occurring within a region, and the corresponding need for transportation and logistical infrastructure. At present, despite the gaps in both capabilities and integration with the existing logistical infrastructure, the level of production occurring within Niagara Region appears to be adequately supported as – the majority of goods pass straight through the Niagara Region with no requirement to change modes within the boundaries.

In 2016, Niagara Region was designated as a Foreign Trade Zone (FTZ) point and Manufacturing and Transportation Logistics were identified as two of the top four key economic growth opportunities for Niagara Region. It is important that Niagara Region's transportation infrastructure continue to support these strategic initiatives and provide the capacity for continued economic development to attract manufacturing and logistics firms to relocate in Niagara Region.

Several studies have been conducted to support these strategic initiatives, including the *Niagara Escarpment Crossing Transportation Study (2016)*, which identifies key improvements to the road network to better accommodate truck traffic crossing the Niagara Escarpment. The NGTA Corridor, and thus the Niagara-Hamilton Trade Corridor, is also recognized as a top priority for Regional Council to support the future growth in trade, providing network redundancy and connectivity.

Opportunities

Road

The number of truck trips in Niagara Region will grow in conjunction with population and economic growth in the region. Truck volumes in Niagara Region are expected to grow by 57% from 2011 to 2041, from 35,000 to 55,000 daily trips. A majority of those trips will continue to be through trips or trips between Niagara and the GTHA. Minimizing impedance from commuter and tourist traffic improves the efficiency of goods movement which reduces business costs and increases the value of operating a business in Niagara Region. Potential road improvements that would benefit local business include the Niagara-Hamilton Trade Corridor, better escarpment crossings, and improved connections to the QEW.

Marine, Rail, and Air

Niagara has considerable marine, rail, and air infrastructure to support the movement of goods, and opportunities to relieve highway road demand by making better use of these infrastructures should be fully considered.

Regionally, the Welland Canal provides port access to Niagara Region at numerous ports along the canal itself, which have wharves allowing for loading/offloading of cargo. Road, and in some cases, rail access is available at these locations. In terms of goods transported through the Welland Canal, only a small fraction is either loaded or off-loaded within Niagara Region. The existing ports have the capacity and capability to take delivery of bulk supplies (e.g., road salt, gypsum) for industrial uses, and load locally-sourced aggregates in bulk for shipment to other destinations.

The St. Lawrence Seaway Management Corporation, which manages the Welland Canal, regularly develops long range assets life planning direction, as part of its Assets Renewal Plan, that will include opportunities to maximize the economic and transportation benefits and use of the Welland Canal trade corridor and, among other priorities, will look at improving operations and enhancing security. Key considerations of the long range planning direction include: re-energize the use of existing ports; expand opportunities for improved integration of transportation modes/services at ports and economic development opportunities of Crown Lands adjacent to the corridor.

The St. Lawrence Seaway Management Corporation has an extensive and effective Assets maintenance program to ensure that the Welland Canal operations meet the federally mandated operation reliability of vessel movements through the canal and Seaway system. The maintenance program provides coordination with Ministry of Transportation and Region of Niagara transportation services regarding communication of bridge closures, maintenance or Emergency Services procedures.

The various railways within Niagara Region allow for local shipping of freight into and out of the region. The national railways (CNR and CPR) also provide access into the US and into other parts of Ontario and Canada. These railways operate numerous sidings and yards where goods may be transferred between rolling stock and trucks, but none of these locations are equipped to handle any significant volumes of intermodal containers or bulk materials. All rail lines in Niagara operate significantly lower than their peak capacity.

In July 2016, Niagara Region's Transportation Steering Committee recommended to the Public Works Committee to support adopting responsibility for operations and governance of the two public airports pending the completion of a Phase 2 Environmental Assessment to be undertaken by the area municipalities currently operating the airports. If Niagara Region were to assume the governance of the airport, this would allow the Region to have greater influence on these low-volume public airports which could play a greater role in goods movement if similar airports in the GTHA were to close.

Although recent trends have shown a decrease in goods movement by marine, rail and air, Niagara Region has well-established multi-modal infrastructure with available excess capacity. The Region should protect these infrastructure for future growth opportunities that could have the added benefit of off-loading a congested, highway trade corridor and supporting economic development in Niagara Region.

Leveraging Emerging Technologies

There are several emerging technologies that will play both a supportive and disruptive role in the goods movement and manufacturing sectors. These technologies present opportunities to improve the efficiency of goods movement and potentially reduce the demand for transporting goods on the Region's road network. This section identifies these technologies and provides a brief assessment of their potential to be leveraged to improve goods movement.

Autonomous and Connected Trucking

The automobile industry is developing technologies that connect vehicles to other vehicles, vehicles to infrastructure and vehicles to mobile devices (vehicle-to-traveller) in order to improve road safety, reduce congestion and emissions, increase the capacity of existing roads by enabling closer car following, and improve transportation services. Groups of connected vehicles that operate using vehicle-to-vehicle technology can accelerate and brake as a single unit to maximize space, safety, and fuel efficiency. These groups of connected vehicles are commonly referred to as a platoon.

The US Department of Transportation estimates that vehicle-to-vehicle connectivity could affect or eliminate up to 76% of multi-vehicle crashes involving light-duty vehicles. However, much work is needed before such applications can be commercialized.

The freight and logistics industry is poised to be one of the early adopters of this technology. Driverless truck technology is advancing rapidly, and could provide substantial benefits to freight companies and efficiencies for the road network. They include:

- Driverless and connected trucking will significantly eliminate human error and drastically improve road vehicle safety and reduce delays caused by accidents.

- Driverless trucks have the potential to allow for overnight driving and faster long haul delivery times as driver rest periods will not be required.
- Driverless and connected trucks would improve fuel efficiency and increase vehicle throughput by decreasing following distances and increasing traffic density.

Although the technology is moving rapidly, regulations and policy have not yet caught up. In 2016, the Province of Ontario became the first province in Canada to allow the testing of autonomous vehicles on Ontario roads. The Region has the opportunity to lay the groundwork for allowing these vehicles to effectively operate in Niagara Region through strategic initiatives and policy. This includes fostering the testing of these vehicles and maintaining the Region's infrastructure, such as pavement markings and signage, at a level that ensures the effective operation of these vehicles.

Commercial Drone Delivery

The rapid advancement of drone technology has generated excitement on its wide ranging applications. One of the most commonly discussed applications is the use of drones for the delivery of small packages, a service that is currently provided by traditional delivery trucks.

Although the technology is advanced, regulation in many cases has prohibited drone use for commercial purposes. Testing of commercial drone delivery as a replacement for traditional deliveries has begun in various jurisdictions, including Australia, Switzerland, Germany, and Singapore. In January 2017, Drone Delivery Canada was approved by Transport Canada to expand its drone delivery test program in Waterloo Region to include Alberta . In March 2017, Transport Canada further approved the expansion of the test program in Southern Ontario.

Drone delivery has the potential to alleviate demand on the road network and potentially reduce the number of delivery trucks on the road. As seen in other regions in Canada, Niagara Region can prepare itself to be a testbed for these technologies to take advantage of the opportunities that this technology can provide.

3D Printing

Three-dimensional (3D) printing, also called additive manufacturing, is a process of making a 3D solid object from a digital file or a scanned object. Small 3D printers can make small objects such as home appliance parts, phone accessories, toys, machinery parts, and a variety of other objects. Large printers can construct structures, even homes.

This technology is expected to significantly disrupt traditional business operations in the manufacturing industry and has the potential to localize manufacturing which will impact freight transportation by reducing the demand for cross-regional freight movement.

Recommended Strategy

It is recommended that the Region advocate the provincial and federal governments to advance the Niagara-Hamilton Trade Corridor and NGTA East Corridor, providing an efficient trade route connecting Niagara Region to the GTHA and USA. In the shorter-term, it is recommended that Region actively work with MTO for continuing improvements to the QEW and undertake a role and function study for Highway 20/Regional Road 20 as an alternate provincial route that can accommodate longer-distance and inter-regional goods movement.

Further study is required to refine the strategy and develop a strategic goods movement network that addresses the movement of goods by road, rail, air, and water. The goods movement study will further address the following:

- Efficient goods movement routes that connect Niagara Region to the GTHA, USA and beyond;
- Infrastructure initiatives that provide efficient connections to the Provincial highway system, international border crossings, major employment areas, and across the Niagara Escarpment;

- Infrastructure initiatives that support and optimize the benefits of the Foreign Trade Zone Point designation;
- Consideration for the needs of goods movement in road planning, design and construction;
- Accommodation of aggregate trucks and mobile farm equipment;
- Policies that embrace opportunities for innovative goods movement through emerging technologies such as autonomous and connected vehicle technology and drone deliveries;
- Industrial compatible land uses around marine ports and rail facilities;
- Potential for a modest intermodal facility within Niagara Region that encompasses road, rail, and marine modes within the Niagara Gateway Economic Zone;
- Potential of establishing a Port Authority to assume the intermodal development mandate and explore partnership opportunities; and
- Consultation with the freight industry for mutual benefit including opportunities to partner on pilot studies.

Recommended Actions

- Initiate a Niagara Trade Corridor Sub-Committee made up of Regional Councillors, Municipal Councillors, and Senior Public Works and Planning Staff to advocate for major infrastructure needs, including the Niagara-Hamilton Trade Corridor, NGTA East Corridor, and a shorter-term solution to provide network redundancy through an alternate Provincial route parallel to the QEW that can accommodate longer-distance, inter-regional travel and goods movement.
- Work with MTO to advance the Niagara-Hamilton Trade Corridor, Highway 406 Extension and NGTA East Corridor to provide an efficient trade route connecting Niagara Region to both the GTHA and USA.
- Actively work with MTO to identify a short-term solution to provide network redundancy through an alternate Provincial route parallel to the QEW that can accommodate longer-distance, inter-regional travel and goods movement.

- Initiate Goods Movement Study to address trade corridors, truck routes, maritime routes, changing delivery methods and emerging technology, and addressing localized goods movement issues. The study should identify strategies to ensure goods movement by air, rail, and marine continue to be vital components of goods movement in Niagara Region, including opportunities for integrated rail services and port activities.
- Protect Niagara Region's marine, rail and air infrastructure for future growth opportunities that could have the added benefit of off-loading a congested, highway trade corridor and supporting economic development in Niagara Region.



8 **IMPLEMENTATION**

It is essential to have a comprehensive implementation, funding, and plan monitoring framework as part of the Transportation Master Plan to provide guidance for the actions to be taken by Niagara Region and key stakeholders/agencies in the short, medium, and longer term. Most importantly, it provides the framework necessary to evaluate and monitor the progress of the plan.

8.1 Action Plan

The following section outlines the strategy to implement the goals of the Transportation Master Plan. It reflects the vision of the TMP and addresses opportunities to support constructive change, connecting all parts of the region, meeting the needs of the residents today and tomorrow, and taking advantage of new technologies.

The action plan outlines the specific actions to implement the recommendations of this TMP. It reflects the vision and goals and addresses opportunities to support constructive change, connecting all parts of Niagara Region, meeting the needs of the residents today and tomorrow, and taking advantage of new technologies. Connections to the key Strategic Goals (Section 2.6) and to the Opportunities (Chapter 3) are indicated in the action plan presented in Exhibit 8.1.

The recommended timeframe for actions to be undertaken have been prioritized into three timeframes: short term (2017 to 2021); medium term (2022 to 2031); and long term (2032 to 2041). The recommended TMP capital projects by phase are shown in Map 8 Road Network Phasing.

Refer to Map 8

Early Action Items








Demonstrating action early in the implementation of the TMP will be important to assure its long term success. The implementation plan identifies several “Early Actions” that may have a major impact on the transportation network. They would also build public and political support and momentum for the overall TMP. These “Early Actions” are described in more detail below.








2017

Staffing and Programs

- Niagara Region to develop a Business Case for the transfer of the Niagara Ride Share Program from Bridges Community Health Centre and the Town of Fort Erie to staff and manage the Niagara Ride Share Program starting October 2017.
- Region to consider dedicated staff member to coordinate AT, TDM and TSM programs.
- Region to initiate Travel Demand Management (TDM) Study to recommend required TDM program, staff requirements and operating costs for implementation in late 2018.

EXHIBIT 8.1: ACTION PLAN

Action Plan	Timeframe			Supports Strategic Goals						Addresses Opportunities				
	Short	Med	Long	 Integrate transportation and land use	 Support economic development	 Enhance multi-modal connectivity	 Improve options for sustainable modes of transportation	 Maintain and improve the efficiency of the goods movement network	 Promote the development of healthy communities	 Develop a realistic yet innovative blueprint for implementation	Transportation as a Catalyst for Change	Connecting the Region	Meeting the Needs of Residents	Taking Advantage of New Technologies
A Complete Streets Approach														
1	Adopt and implement the Niagara Region Complete Streets Policy document which provides decision-making tools to reflect an integrated consideration of land use and transportation issues.	✓			✓		✓	✓		✓	✓	✓		
2	Implement Complete Streets design guidelines and standards as part of road rehabilitation and reconstruction projects.	✓			✓		✓	✓		✓	✓	✓		
Accessibility														
3	Initiate an accessibility and universal design advisory committee.	✓			✓		✓	✓		✓	✓	✓		
4	Demonstrate leadership in transportation projects by incorporating barrier-free and universal design principles.	✓	✓	✓	✓		✓	✓		✓	✓	✓		
5	Retrofit existing infrastructure to remove barriers to access in the transportation network as part of road reconstruction and rehabilitation program.	✓	✓	✓	✓		✓	✓		✓	✓	✓		
Active Transportation														
6	Implement the Strategic Cycling Network Concept, as part of the Council Approved Bikeways Master Plan, giving priority to projects with the greatest cycling impact, balance complexity of work to be undertaken, and taking advantage of opportunities to work jointly with local area municipalities.	✓	✓		✓		✓	✓		✓	✓	✓		
7	Work with Active Transportation Committee to develop and support cycling education and safety, cycle wayfinding implementation and improving the overall cycling experience for all users including tourists.	✓				✓	✓	✓		✓	✓	✓		
8	Adopt and implement the <i>Bikeway Identification and Destination Wayfinding Signage for Cyclists</i> guidelines.	✓					✓	✓		✓	✓	✓		
9	Invest in cycling facilities and supporting infrastructure to promote active lifestyles and healthy communities.	✓	✓	✓	✓		✓	✓		✓	✓	✓		
10	Encourage pedestrian- and cycling-supportive site design that provide safe pedestrian and cycling opportunities for all ages and abilities, in all new developments.	✓	✓	✓	✓		✓	✓		✓	✓	✓		
11	Promote safe walking, cycling and driving through education, engineering, evaluation and enforcement.	✓	✓	✓			✓	✓		✓	✓	✓		
12	Complete the Niagara Bikeways Master Plan network.			✓		✓	✓	✓		✓	✓	✓		
Public Transit														
13	Develop transit demand-responsive model/pilot to extend access to Niagara Region Transit service.	✓					✓	✓		✓	✓	✓	✓	✓
14	Complete framework process to move towards a consolidated transit model for one transit entity in Niagara Region.	✓				✓	✓	✓		✓	✓	✓		
15	Undertake a Business Case to review opportunities for extending the inter-municipal transit system beyond the current service areas of St. Catharines, Welland and Niagara Falls.	✓					✓	✓		✓	✓	✓	✓	✓
16	Conduct study of potential transit priority measures along Regional roads and review opportunities for higher-order transit corridors as part of TMP update.	✓					✓	✓		✓	✓	✓	✓	✓
17	Support the expansion of GO Transit passenger rail service to Niagara Region, and the development / redevelopment of rail stations to serve as major transit station areas.	✓	✓		✓	✓	✓	✓		✓	✓	✓		
18	Support the development of major transit station areas, and connections to active transportation and local transit, to stimulate investment in adjacent employment lands, commercial services, and residential development	✓	✓		✓	✓	✓	✓		✓	✓	✓		
19	Introduce regular, reliable and coordinated transit connections to GO stations and major transit stations.		✓			✓	✓	✓		✓	✓	✓		
20	Introduce subsidized co-fares between Niagara Region Transit and GO Transit.		✓			✓	✓	✓		✓	✓	✓		
21	Provide inter-municipal transit to all of Niagara's municipalities through a combination of fixed-route and demand-responsive transit.		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
22	Develop a detailed policy on the usage of connected and autonomous vehicles for the purposes of public transportation.		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
23	Implement incremental service improvements to further encourage transit travel between and within Niagara Region municipalities.			✓		✓	✓	✓		✓	✓	✓	✓	✓

Action Plan	Timeframe			Supports Strategic Goals							Addresses Opportunities			
	Short	Med	Long	 Integrate transportation and land use	 Support economic development	 Enhance multi-modal connectivity	 Improve options for sustainable modes of transportation	 Maintain and improve the efficiency of the goods movement network	 Promote the development of healthy communities	 Develop a realistic yet innovative blueprint for implementation	Transportation as a Catalyst for Change	Connecting the Region	Meeting the Needs of Residents	Taking Advantage of New Technologies
Road Network														
24	Implement the 2017 Capital Road Infrastructure Program.	✓			✓	✓		✓		✓		✓	✓	
25	Work with MTO to identify a short-term solution to provide network redundancy through an alternate Provincial route parallel to the QEW that can accommodate longer-distance, inter-regional travel and goods movement, including a Role and Function study of Hwy 20/Regional Road 20 and a study to address the Smithville Bypass.	✓	✓			✓	✓		✓		✓	✓	✓	
26	Advocate and work with MTO for capacity improvements to accommodate inter-regional and international travel demand, including: widening of QEW, implementing the NGTA East corridor and extension of Highway 406; and building a new Niagara-Hamilton trade corridor.	✓	✓			✓	✓		✓		✓	✓	✓	
27	Undertake and/or complete EA for Niagara Escarpment Crossing and South Niagara East-West Arterial Road,	✓				✓	✓		✓		✓	✓	✓	
28	Work with MTO to undertake Environmental Assessments / Detailed Design for interchange improvements including: - QEW / Glendale Avenue - Highway 405 / Concession 6 / Mewburn Road Interchange - Highway 406 / Third Avenue Louth Interchange	✓	✓			✓	✓		✓		✓	✓	✓	
29	Work with City of City Catharines, Metrolinx and CN Rail to undertake Environmental Assessment for the rail grade separation in West St. Catharines.	✓				✓			✓		✓	✓	✓	
30	Work with MTO to progress the widening and introduction of managed lanes on QEW from Hamilton to Hwy 406.		✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
31	Work with MTO on progress the widening and rehabilitation of QEW from McLeod Road to Mountain Road.		✓	✓		✓			✓		✓	✓	✓	
32	Work with MTO to progress the NGTA Corridor, NGTA East Corridor and Hwy 406 extension to provide for the efficient movement of people and goods connecting Niagara Region to the GTHA and USA.		✓	✓		✓			✓		✓	✓	✓	
33	Protect non-Regional transportation corridors that provide local benefits and network connectivity including: crossing of QEW (Morrison Street), crossing of Twelve Mile Creek (Carlton Street), and crossing of Welland River (future road).	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	
34	Complete implementation of the 2041 Road Network.			✓		✓	✓	✓	✓		✓	✓	✓	
Transportation Demand and System Management														
35	Develop Business Case for transfer of Niagara Ride Share Program to Niagara Region and manage program starting October 2017.	✓				✓	✓		✓		✓	✓	✓	✓
36	Initiate a Travel Demand Management (TDM) study.	✓			✓		✓	✓	✓		✓	✓	✓	✓
37	Adopt and lead TDM initiatives through a TDM program that is funded and staffed in collaboration with local municipalities.	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
38	Develop and implement policies to support the goals of the TDM program.	✓			✓		✓	✓	✓		✓	✓	✓	✓
39	Complete and implement ITS Strategic Plan Study to identify TSM program and supporting initiatives, including recommendations for funding and staff resources.	✓				✓	✓	✓	✓		✓	✓	✓	✓
40	Coordinate policy development related to emerging technologies with local municipalities and neighbouring jurisdictions.	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
41	Advocate for advancement of SWIFT as opportunities arise.	✓	✓			✓		✓			✓	✓	✓	✓
Goods Movement														
42	Initiate a Niagara Trade Corridor Sub-committee made up of Regional Councillors, Municipal Councillors, and Senior Public Works and Planning Staff to advocate for major infrastructure needs.	✓				✓			✓		✓	✓	✓	✓
43	Work with MTO to advance the Niagara-Hamilton Trade Corridor and NGTA East Corridor to provide an efficient trade route connecting Niagara Region to both the GTHA and USA.	✓	✓	✓		✓			✓		✓	✓	✓	
44	Actively work with MTO to identify a short-term solution to provide network redundancy through an alternate Provincial route parallel to the QEW that can accommodate longer-distance, inter-regional travel and goods movement.	✓				✓			✓		✓	✓	✓	
45	Initiate Goods Movement Study to address trade corridors, truck routes, changing delivery methods and technology and addressing localized goods movement issues.	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓
46	Protect Niagara Region's marine, rail and air infrastructure for future growth opportunities that could have the added benefit of off-loading a congested, highway trade corridor and supporting economic development in Niagara Region.	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	

2017

- Region to initiate Goods Movement Study to address trade corridors, truck routes, changing delivery methods and technology and addressing localized goods movement issues related to aggregate truck movements and large agricultural equipment.
- Region to complete ITS study (initiated in 2015) which recommends a program of traffic system management initiatives and resource needs.

Roads

- Implement 2017 Capital Road Infrastructure Program
 - McLeod Road, Phase 1 Pin Oak Drive To Hydro Canal, widening to 5 lanes with cycling facilities
 - Montrose Road, Charnwood Avenue to McLeod Road, capacity improvements with cycling facilities
 - Merritt Road, Highway 406 to Rice Road, undertake EA for capacity improvements and new road connection
 - Niagara Stone Road, East-West Line to Concession 6, undertake EA for capacity improvements
 - Rice Road, Old Hwy 20 to Merritt Road, corridor improvements

Inter-Municipal Transit

- Public Works Transportation Section to assist Regional Transit with developing transit demand-responsive model/pilot to extend access to Niagara Region Transit service.
- Complete framework process to move towards a consolidated transit model for one transit entity in Niagara Region.

2018-2019 Active Transportation

- Initiate implementation of the infill projects in the Strategic Cycling Network as part of the Council approved Bikeways Master Plan giving priority to projects that provide greatest cycling impact, balance

- 2018-2019**
- the complexity of projects to be undertaken, with consideration of opportunities to work jointly with local area municipalities and budget envelopes.
 - Approve the increase to the Bicycle Facilities Grant for Regional Bikeways Network Facilities on Local Roads to \$1 million annually for 10 years to assist the area municipalities in implementing the portions of the Strategic Cycling Network that are located on municipal rights-of-way.
 - Work with Active Transportation Committee to develop and support pedestrian and cycling education and safety, wayfinding implementation and improving the overall pedestrian and cycling experience for all users including tourists.

Roads

- Niagara Escarpment Crossing EA (Regional Council approved funding for the Phases 3 and 4 study in 2016)
 - Prepare Terms of Reference and retain a consultant to continue with Phases 3 and 4 of the Environmental Assessment study.
- South Niagara East-West Arterial Road EA
 - Develop a Business Case to identify this corridor as an essential trade corridor and develop a strategy for proponent and shared responsibility with Federal Government, Provincial Government (MTO), Region of Niagara, Town of Fort Erie and Town of Port Colborne
 - Prepare Terms of Reference and retain a consultant to complete Phases 1 through 4 of the Environmental Assessment Process.
- Regional Road 20 / Highway 20 Role and Function Study
 - Niagara Region in conjunction with Ministry of Transportation and City of Hamilton to undertake

2018-2019

- a Role and Function Study that defines future role and corridor (trade corridor, international / inter-regional travel corridor), opportunities (road improvements including Smithville Bypass) and implementation strategies (jurisdiction, costs, timing).
- Implement Complete Streets Infrastructure Design Process
 - Incorporate Complete Street design guidelines as part of road rehabilitation / reconstruction projects which includes assessing the opportunities for improved community living (pedestrian, cycling, urban design treatments, and accessibility)
- Niagara Trade Corridor Sub-Committee (Regional / Provincial / Federal)
 - This sub-committee would be responsible to the Niagara Transportation Steering Committee and be comprised of Regional Councillors, Municipal Councillors, Senior Public Works and Planning Staff to ensure that the long term transportation infrastructure requirements such as the Niagara-Hamilton Trade Corridor, widening of QEW to 8 lanes from Hamilton to St. Catharines, Niagara Escarpment Crossing, twinning of Garden City Skyway, etc. are strongly advocated for at both the political and technical levels for approval, funding, and implementation.
- Glendale Avenue / QEW Interchange Detailed Design
 - Niagara Region to work with the Ministry of Transportation and development industry to finalize the detailed design and develop an implementation plan for construction prior to the beginning of the 2021 Canada Summer Games, taking into consideration the influence of the proposed Concession 6/Hwy 405/Mewburn Road interchange.

2018-2019 Inter-Municipal Transit

- Public Works Transportation Section to undertake a Business Case to review opportunities for extending the inter-municipal transit system beyond the current service areas of St. Catharines, Welland and Niagara Falls.

2020-2021 Active Transportation

- Continue implementation of the infill projects in the Strategic Cycling Network as part of the Council approved Bikeways Master Plan giving priority to projects that provide greatest cycling impact, balance the complexity of projects to be undertaken, with consideration of opportunities to work jointly with local area municipalities and budget envelopes.
- Continue to focus on underserved / hard to reach populations related to transportation options.

Roads

- Concession 6 / Highway 405 Interchange / Mewburn Road EA
 - Niagara Region, working closely with the Ministry of Transportation, the City of Niagara Falls and the Town of Niagara-on-the-Lake, to prepare Terms of Reference and retain a consultant to undertake required Environmental Assessment study need, opportunity, functional design, implementation and costs.
- Highway 406 / Third Avenue Interchange EA
 - Niagara Region, working closely with the Ministry of Transportation and the City of St. Catharines, prepare Terms of Reference and retain a consultant to undertake required Environmental Assessment study need, opportunity, functional design, implementation and costs.
- St. Catharines CN Railway Grade Separation EA

- 2020-2021**
- Niagara Region, working closely with the City of St. Catharines, Metrolinx and CN Rail undertake an Environmental Assessment Study to identify need, opportunity, functional design, implementation and costs associated with a CN grade separation at one of three possible locations (Third Street Louth, Vansickle Road, or Louth Street).

Inter-municipal Transit

- Conduct study of potential transit priority measures along Regional roads to give buses priority.

Staffing / Programs

- Preparation for update/review of Transportation Master Plan in 2022.

8.2 Costs

Niagara Region's 2017 road capital budget is \$67.2 M, which accounts for approximately one third of the Region's capital budget and is the Region's single largest investment. The road program includes \$16.6 M for road capacity improvements, \$5.5 M for intersection improvements, \$31.75 for road resurfacing and rehabilitation, and \$6.5 M on structural (bridges and culverts) rehabilitation on Regional roads.

Capital Investment

The estimated capital investment for the recommended network capacity improvements to 2041 is \$494.4 million for road capacity improvements and \$25.8 million for active transportation infill projects, including the bicycle facilities grant. The road capacity improvements reflect an annual spend of \$20.8 M, which is an increase over the current investment on capacity improvements of \$16.6 M in the 2017 capital budget. In addition, the Region will need to fund road and structure rehabilitation projects to maintain the transportation network.

The above cost estimates includes an allowance for the potential additional cost of constructing a road to Complete Streets standards. These additional costs are in the range of 5-15% depending on the

typology, with the Rural typology at approximately 5% and the Main Street at approximately 15%. Within the Region's *Moving Towards Complete Streets* operating policy, primary responsibility for Complete Streets on Regional roads will lie with the Region. The Region will be responsible for the design and construction of all Complete Streets on its road network. The planning of any Complete Streets projects will commence with a planning workshop which will be held with the local municipality and other stakeholders to determine which typologies apply and which elements of those typologies should be included in the project. In the case of the main street typology, special jurisdictional considerations will apply such that the Region will pay for enhanced sidewalks, decorative street lights and planting on the condition of a Maintenance Agreement with the local area municipality for on-going operation and maintenance.

To fund capital investments, Niagara Region relies on property taxes, development charges, and grants and transfers from other levels of government. Development charges are fees that are charged to new developments based on the forecasted costs of capital expenditures required to provide municipal services to those developments. The applicability and calculation methodology for development charges across Ontario are governed by the Development Charges Act, 1997. The Province of Ontario distributes to municipalities a portion of its gas tax revenues to support public transit investments. The Federal government administers a similar gas tax, which is used to fund environmentally sustainable infrastructure projects.

While the internal sources of funding remain relatively constant (namely property taxes and development charges), there is growing awareness that alternative sources of funding for transportation infrastructure are needed. The Provincial and Federal governments collect billions of dollars in gas taxes, vehicle licensing, and vehicle registration fees, but these revenue sources are not available to the municipalities for funding transportation infrastructure. Funding support from higher levels of government to implement the recommended transportation network is needed. In this regard, the Region needs to investigate possible funding from Federal Government Programs including:

- Community Improvement/Growth Plan for asset management; and
- Effective and efficient trade corridors.

Other possible mechanisms for generating adequate, stable and predictable funding for capital and operating needs of the transportation system could be investigated to identify potential new sources of funding and new methods of service delivery. Alternative funding options that are being considered by other jurisdictions to fill the funding gap for building and maintaining the transportation system include:

- land transfer taxes;
- road pricing or user fees; and
- parking-related charges.

Phasing

All road capital infrastructure are prioritized on an on-going basis through Niagara Region's Capital Budget and 10-year forecasting process. This process, conducted annually by Region staff, accounts for existing and projected transportation needs, development-driven needs, on-going asset management, and financial envelopes. Looking beyond the current Capital Budget, this TMP provides a longer-term outlook of the road capital program, planning to the 2041 horizon. A prioritization process to balance the needs of travel demand, providing access to new development lands and supporting areas of employment growth was undertaken. Consideration for timing on adjacent or upstream corridors and the status of projects in the environmental assessment process were also factors in the project phasing.

In the short term, by 2021, the Region will focus on implementing policies that will transform the Region's approach to transportation, address existing constraints in the road system by implementing a number of projects already in the Capital Program, adopt TDM and TSM measures to support the road network, fill in gaps in the cycling network, and take the next steps to plan for the major network needs of the future.

In the medium term, by 2031, Niagara Region will begin to implement major Regional road projects and improve connections to the freeway network, both of which will support goods movement in Niagara Region. The Strategic Cycling Network will be completed and incremental improvements to the cycling network will continue through the roads capital program. Transit service will continue to expand and inter-municipal service will connect all the local municipalities.

In the long term, by 2041, the Niagara-Hamilton Trade Corridor will support economic growth in Niagara Region and provide a significant benefit to the movement of goods in and through Niagara. Inter-municipal connections by road and transit, and crossings of major barriers, will continue to be implemented.

Refer to Map 8

The recommended projects by phase are shown in Map 8 Road Network Phasing. The estimated capital investment for road capacity improvements by phase is summarized in Exhibit 8.2. The capital costs for the AT Infill projects include the recommended increase in the bicycle facilities grant to \$1 million annually for ten years.

The timing for these investments will be refined through on-going monitoring of transportation system performance, land development and the annual capital budget process.

Exhibit 8.2: Estimated Capital Costs by Phase

Phase	Estimated Capital Costs	
	Road Expansion Projects	AT Infill Projects
Short term 2017-2021	\$120.4 M	\$12.9 M
Medium Term 2022-2031	\$267.7 M	\$12.9 M
Long term 2032-2041	\$106.3 M	-
Total	\$494.4 M	\$25.8 M

8.3 Plan Monitoring and Updates

The Transportation Master Plan is a living document. It must be regularly reviewed to ensure it meets the transportation needs of Niagara Region. Changing community expectations, growth patterns, and development pressures can necessitate a re-investigation of the Plan, as would changes in the expected timing of major infrastructure. The on-going review process will involve:

- Regular updates through the capital forecast and budgeting process.
- Preparation of an annual report to Council on local transportation conditions, behaviours, needs and trends with joint input from other departments. In addition to the performance measurement indicators presented below, this annual report will include:
 - Summaries of public feedback on transportation issues and projects implemented;
 - Status of provincial initiatives, policies and funding programs; and
 - Any need to review, amend or update components of the TMP.

Plan Monitoring

Performance measurement is necessary to gauge the effectiveness of the policies, programs and infrastructure improvements in achieving the Plan's strategic goals and enabling strategies. The performance measurement program provides a framework for the Region to track changes in land use patterns, demographic characteristics, and system performance over time. This information will allow the Region to assess the success of actions taken and provide guidance in further implementation of the TMP.

A wide range of potential performance indicators are presented in Exhibit 8.3, organized according to the seven strategic goals of the TMP. Data for these indicators will be required from a number of sources, including internal resources in Transportation Services and NRT, and external sources such as Statistics Canada, Ministry of Transportation, Ministry of Tourism, Culture and Sport, and the Transportation Tomorrow Survey. It is recognized that it will not be feasible to collect data for all of these indicators, given current data and staffing resources. Instead the Region should focus on one or two indicators per goal.

Monitoring of some indicators may be done annually or as localized projects are completed; however, a more comprehensive review of performance indicators should be done in conjunction with the five-year TMP review and update. Some indicators may be monitored more frequently given the nature of the data and their collection methods. Moreover, corridor and area-specific monitoring may be warranted to monitor localized changes from key strategic projects or subareas.

To assist in monitoring road projects, the Region will develop a Capital Road Project Tracking Information System that will document and track changes to the TMP recommended projects. The following information will be tracked on an annual basis as projects are reviewed in the capital forecast and budget planning process:

- Project name / identification number
- Description of project
- Implementation timing and estimated costs
- Status of Environmental Assessment study
- Status of Detailed Design
- Construction award – duration, estimated cost
- Project Completion – construction duration, final costs, highlights

Plan Updates

Regular reviews and updates of this Plan will allow for the on-going assessment of its effectiveness and relevance. Establishing a regular transportation planning cycle ensures the Plan strategies remain flexible to respond to new developments and changes in the planning environment. The Municipal Class EA recommends that master plans be reviewed every five years to determine the need for a detailed formal review and/or update.

Additionally, the Planning Act requires the Region to assess the need for an update to its Official Plan up to 10 years from when a new official plan comes into effect and every five years thereafter unless it is replaced by a new Official Plan. This Official Plan review process also provides a timely opportunity to revisit the assumptions of the TMP and consider the need for a formal review and/or update.

Exhibit 8.3: Performance Indicators

Key Strategic Goal	Indicators
<p>Integrate transportation and land use: Transportation and land use planning will be coordinated and reflect the unique needs of the Region's communities.</p>	<ul style="list-style-type: none"> • Average Home-Work Trip Distance • Employment Self-containment (% of Employed Labour Force working in Niagara Region) • Employed Labour Force to Jobs Ratio • Number of schemes delivered using "Complete Streets" principles
<p>Support economic development: The transportation network will support the efficient movement of goods, provide adequate connections to support the tourism industry, and provide high-quality access to employment for all residents.</p>	<ul style="list-style-type: none"> • Number of new jobs created in Niagara Region. • Tracking of visitor / tourism data • Lane-km of Provincial highway network added • Lane-km of Provincial highway network rehabilitated • % of Regional road network built to current Regional standards
<p>Enhance multi-modal connectivity: Modes of travel will be fully integrated across the Region, allowing seamless connections and more travel choices.</p>	<ul style="list-style-type: none"> • Number of workplaces / employees that are participating in TDM initiatives • Designated carpool parking spaces • Utilization of carpool parking spaces • NRT customer satisfaction surveys • Co-fare ridership on NRT/GO Transit • Percent of transit stops that are accessible • Public transit mode share
<p>Improve options for sustainable modes: A balance between modes will be achieved, minimizing the need for new infrastructure and reducing greenhouse gas emissions.</p>	<ul style="list-style-type: none"> • Number of workplaces / employees that are participating in TDM initiatives • Active transportation mode share for commute trips • Active transportation mode share for trips to school (elementary, secondary and post-secondary) • Public transit mode share for commute trips • Designated carpool parking spaces • Utilization of carpool parking spaces • Percent of Strategic Cycling Network completed • Percent of Bikeways Master Plan network completed • Pedestrian Volumes on Arterials and Collector Roads • Bicycle Volumes on Arterial and Collector Roads • Percent of short trips (5 km or less) made by active transportation • Sidewalk provision (percent Regional roadways with sidewalks, km of missing sidewalks installed)

Key Strategic Goal	Indicators
<p>Maintain and improve the efficiency of the goods movement network:</p> <p>The transportation network will optimize the efficiency of the freight transportation sector.</p>	<ul style="list-style-type: none"> • Average truck travel times based on MTO travel time surveys • Percent of Strategic Goods Movement Network that is capable of year-round full-loads for trucks • Percent of Regional road network built to current Regional standards • Percent of lane-km rated as Good to Very Good • Freight Industry satisfaction survey • Mode split of goods movement • Use of spare capacity in non-truck modes
<p>Promote the development of healthy communities:</p> <p>The TMP will support and promote active transportation options for all network users.</p>	<ul style="list-style-type: none"> • Increase in mode share of active modes • Percent of Strategic Cycling Network completed • Percent of Bikeways Master Plan network completed • Automobile ownership (automobiles per capita) • Vehicle kilometers travelled/capita • Annual collisions per capita • Collisions by type of vehicle/pedestrians • Injuries and fatalities per capita • Injuries and fatalities by type of vehicle/pedestrians
<p>Develop a realistic yet innovative blueprint for implementation:</p> <p>The TMP will provide the blueprint for decision-making that will be transparent, inclusive and accountable, and that will provide better value to households, businesses and governments.</p>	<ul style="list-style-type: none"> • Capital investments in Regional transportation (\$/capita) <ul style="list-style-type: none"> — Regional roads — Cycling facilities on Regional roads • Operating investment Regional transportation (\$/capita) <ul style="list-style-type: none"> — Regional roads — Planning and staffing (updates to policies, TDM) — Operating costs for Regional roads per lane-km — Operating Costs for winter control maintenance of Regional roads per lane-km



9 *PUBLIC REVIEW*

The Niagara Region Transportation Master Plan, approved by Regional Council on July 20, 2017, was conducted in accordance with the Master Plan process following requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment process.

A Notice of Completion (Appendix B) was posted on the Region's Website and advertised in Niagara This Week newspaper on July 27, 2017 and August 3, 2017. The Notice of Completion indicated that the Niagara Transportation Master Plan was placed on public record for a 45-day public review period, requesting that written comments to Niagara Region be provided by Monday, September 11, 2017.

Copies of the Niagara Transportation Master Plan were placed at the Clerk's Department, of the following municipalities, for public review:

- Niagara Region Office, 1815 Sir Isaac Brock Way, Thorold
- City of St. Catharines, 50 Church Street
- City of Niagara Falls, 4310 Queen Street
- Town of Grimsby, 160 Livingston Avenue
- Town of Pelham, 20 Pelham Town Square, Fonthill
- City of Port Colborne, 66 Charlotte Street

During the 45-day review period, the Region received eight written submissions from members of the public and government agencies providing a range of comments. These submissions are presented in Appendix C with a summary of the comments presented in Table 9.1.

Table 9.1 – Summary of Submitted Comments

Submission	Key Comment Message
Resident (Town of Lincoln)	Safety concerns of using painted sharrows on roadways within Hamlets.
Resident (Town of NOTL)	Supportive of the TMP directions on inter-municipal transit and strategic cycling network improvements.
Resident (City of Thorold)	Supportive of mode shift to non-auto modes and use of existing former rail corridors for recreational use.
Resident and Student (Brock University)	Existing rail infrastructure should be considered when determining inter-municipal transit connectivity and long range rapid transit planning.
Resident (City of Thorold)	Supportive of Complete Streets and the need for the inclusive planning of all modes.
Resident (City of Welland)	Suggested that the proposed GO Stations are in the wrong locations.
Ministry of Transportation	Acknowledged that TMP referenced MTO's Southern Highways Program and NGTA and noted that proposed interchanges identified on Highway 405 and Highway 406 are currently not part of MTO's capital plan.
Town of Pelham	<p>Cost sharing associated with implementation of Complete Streets should have been resolved prior to planning policy.</p> <p>RR20/Hwy 20 Role and Function Study needs to address trucking issues impacting the Town of Pelham.</p> <p>Concern that TMP did not recognize Town's local transit service or active transportation initiatives.</p>

The written comments have been recorded as part of the TMP Public Consultation record and have been reviewed by the TMP staff and consultant team which have addressed the comments, where warranted, in this final Niagara Transportation Master Plan Report.

It is also noted that final Niagara Transportation Master Plan Report addresses the comments and recommendations provided at the July 11, 2017 Public Works Committee including:

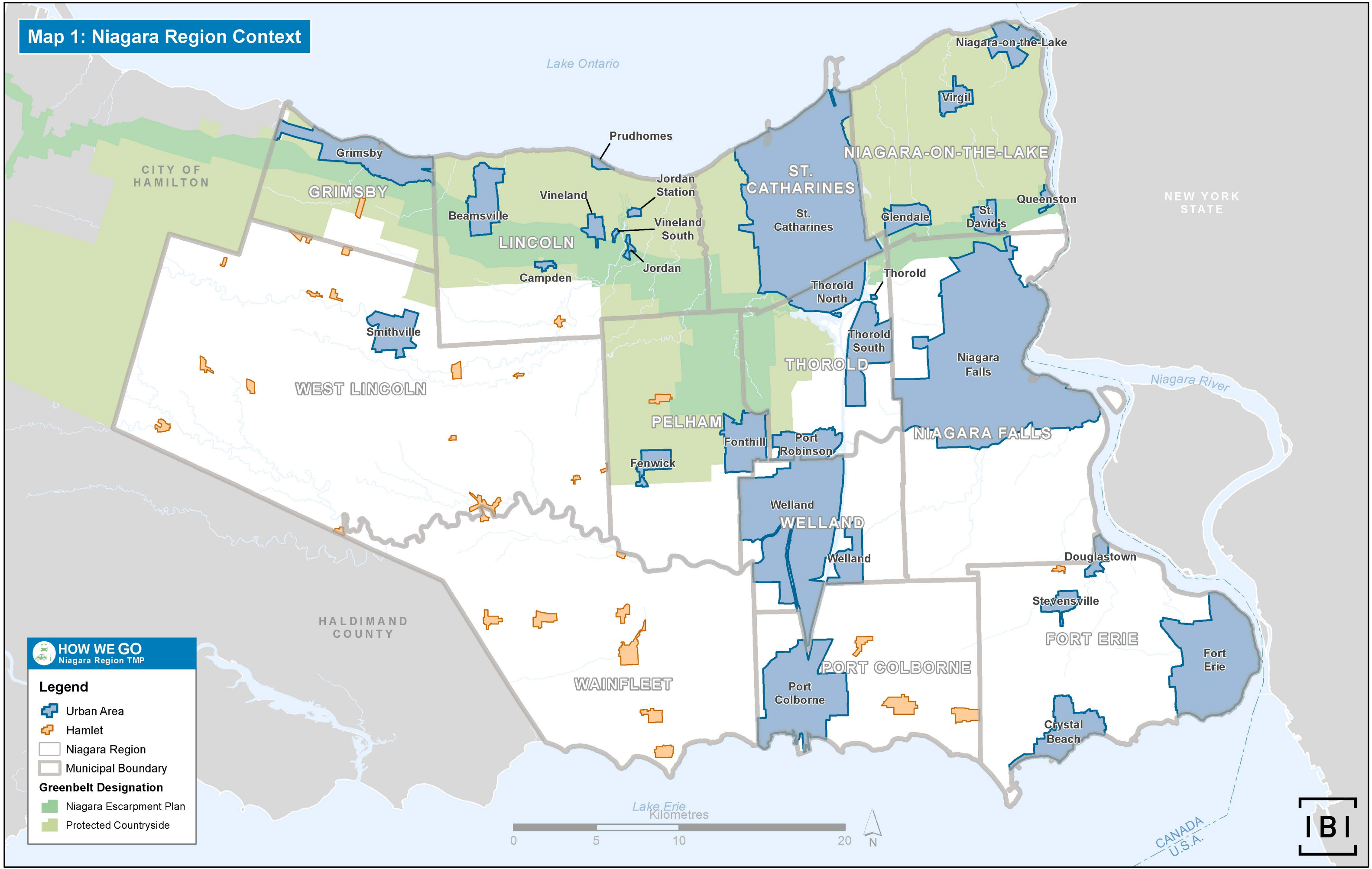
- Recommended Goods Movement Study to include marine goods movement strategies and opportunities for integrated rail services and port activities in Port Colborne;
- Provide a discussion on the Regional Road 20 / Highway 20 Role and Function Study purpose and a description of alternative corridors being considered as well as providing a new Map 7 showing the alternative interim trade corridors;
- Provide a discussion on how comprehensive Transportation Master Plans have shaped the development of Regional municipalities comprised of several municipalities as well as lessons learned that can be applied to Niagara Region;
- Provide a discussion on “moving towards rapid transit” that represents a long-term transit strategy to address proposed 2041 land use density and travel patterns in the form of a possible north-south high order transit corridor connecting Port Colborne and St. Catharines. Include a new TMP Map 5 that presents a conceptual High Order Transit Network with north-south corridor between Port Colborne and St. Catharines and the east-west GO Transit Extension corridor;
- Livingston Avenue Extension between Casablanca Boulevard and Main Street will be subject to the Environmental Assessment process including need and justification, alternatives to the undertaking and extensive public consultation;
- Expand the TMP Plan Monitoring and Update section with a discussion on a Capital Road Project Tracking Information System.

GLOSSARY







AT	Active Transportation
CAV	Connected and Autonomous Vehicles
EA	Environmental Assessment
GTHA	Greater Toronto and Hamilton Area
MCR	Municipal Comprehensive Review
MSP	Water and Wastewater Municipal Servicing Plan
MTO	Ministry of Transportation
NBMP	Niagara Bikeways Master Plan
NEC	Niagara Escarpment Crossing
NGTA Corridor	Niagara to GTA (Greater Toronto Area) Transportation Corridor
NH Trade Corridor	Niagara-Hamilton Trade Corridor
NRT	Niagara Region Transit
OP	Official Plan
PIC	Public Information Centre
PPS	Provincial Policy Statement
ROP	Regional Official Plan
ROW	Right-of-way
SAG	Stakeholder Advisory Group
TMP	Transportation Master Plan

MAPS

Map 1: Niagara Region Context



HOW WE GO Niagara Region TMP

- Legend**
-  Urban Area
 -  Hamlet
 -  Niagara Region
 -  Municipal Boundary
- Greenbelt Designation**
-  Niagara Escarpment Plan
 -  Protected Countryside



Map 2: Transportation Infrastructure

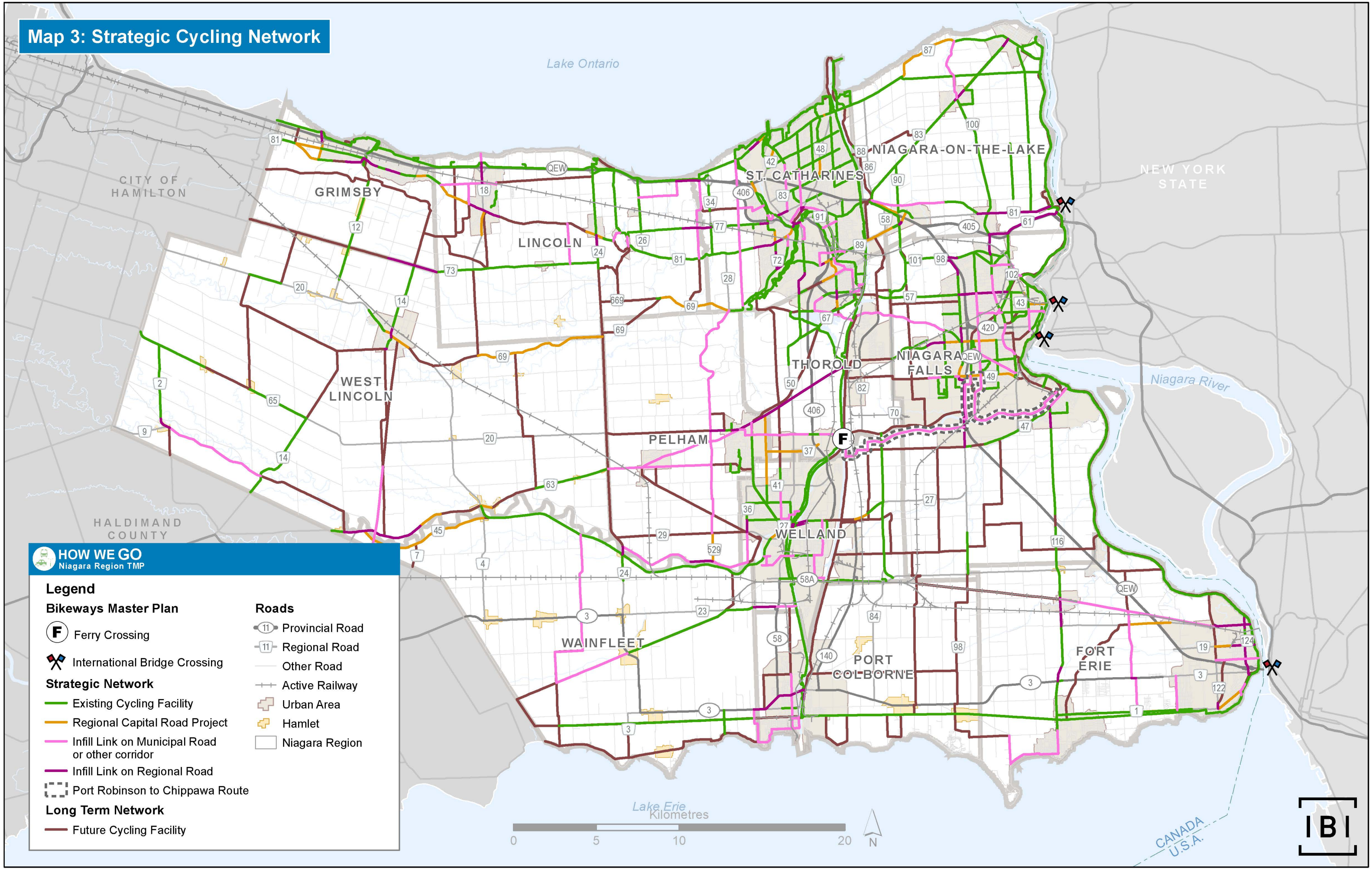


HOW WE GO Niagara Region TMP

- Legend**
- Airport
 - Port
 - International Bridges/Crossing
- Roads**
- Provincial Road
 - Regional Road
 - Other Road
- Railways**
- Active
 - Abandoned
 - Welland Canal
 - Urban Area
 - Hamlet
 - Niagara Region
 - Municipal Boundary



Map 3: Strategic Cycling Network



HOW WE GO
Niagara Region TMP

Legend

Bikeways Master Plan

- F** Ferry Crossing
- International Bridge Crossing

Strategic Network

- Existing Cycling Facility
- Regional Capital Road Project
- Infill Link on Municipal Road or other corridor
- Infill Link on Regional Road
- Port Robinson to Chippawa Route

Long Term Network

- Future Cycling Facility

Roads

- Provincial Road
- Regional Road
- Other Road
- Active Railway
- Urban Area
- Hamlet
- Niagara Region



Map 4: Conceptual Transit Network

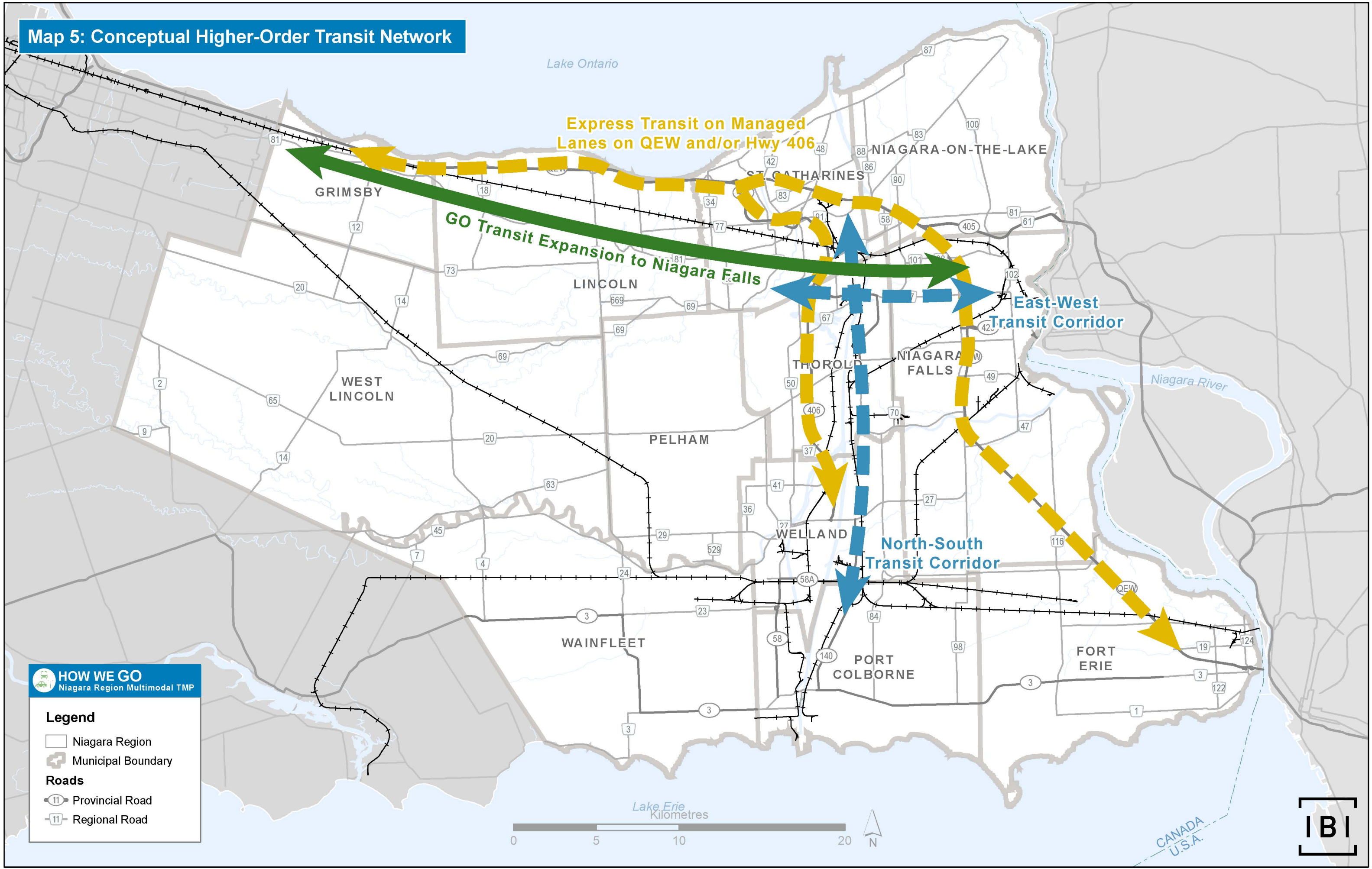


HOW WE GO Niagara Region TMP

Legend

- | | | | |
|--------------|--------------------|------------------------|--|
| Roads | | Transit Concept | |
| | Provincial Road | | Existing Areas Served by Local Transit |
| | Regional Road | | Improve Fixed-route Transit |
| | Other Road | | Improve Transit Connection |
| | Active Railway | | Introduce Demand Responsive Transit |
| | Urban Area | | Introduce Fixed-route Inter-municipal Transit |
| | Hamlet | | Improve Inter-regional Transit Service to and from the GTHA (GO) |
| | Niagara Region | | |
| | Municipal Boundary | | |

Map 5: Conceptual Higher-Order Transit Network



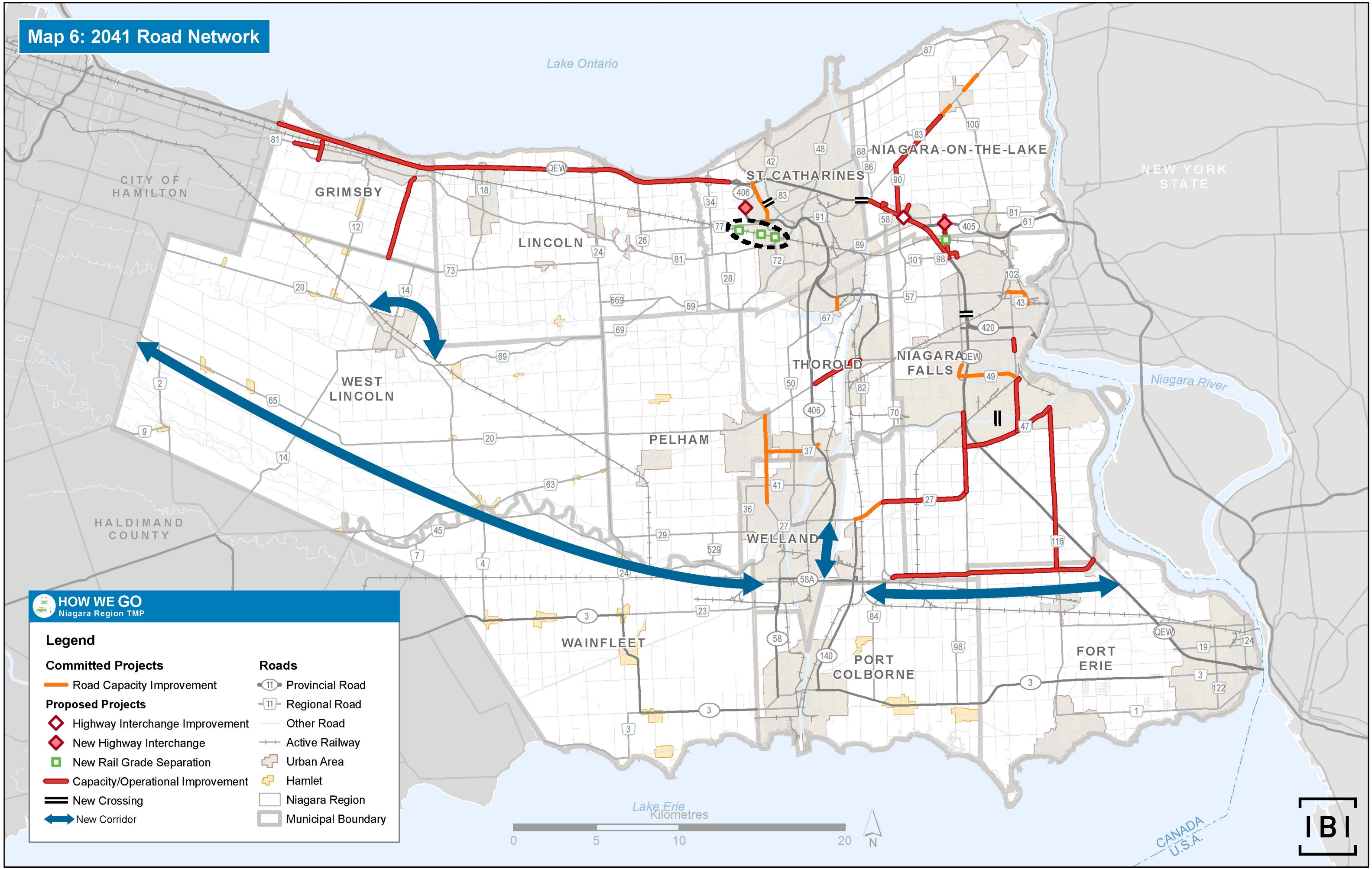
HOW WE GO
Niagara Region Multimodal TMP

Legend

- Niagara Region
- Municipal Boundary
- Roads**
- Provincial Road
- Regional Road



Map 6: 2041 Road Network



HOW WE GO
Niagara Region TMP

Legend

Committed Projects

— Road Capacity Improvement

Proposed Projects

◆ Highway Interchange Improvement

◆ New Highway Interchange

■ New Rail Grade Separation

— Capacity/Operational Improvement

— New Crossing

↔ New Corridor

Roads

Ⓜ Provincial Road

Ⓜ Regional Road

— Other Road

— Active Railway

■ Urban Area

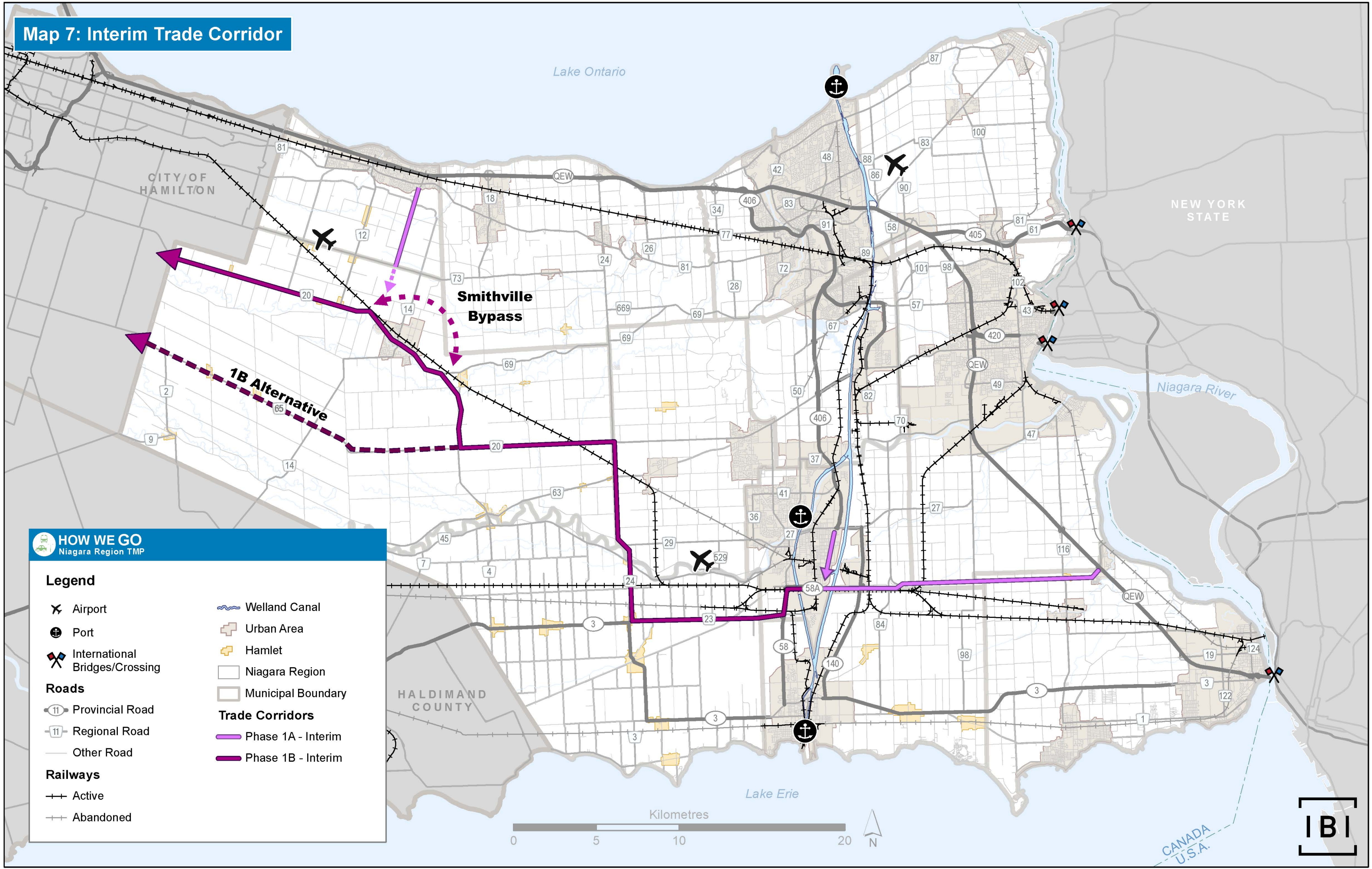
■ Hamlet

□ Niagara Region

□ Municipal Boundary



Map 7: Interim Trade Corridor



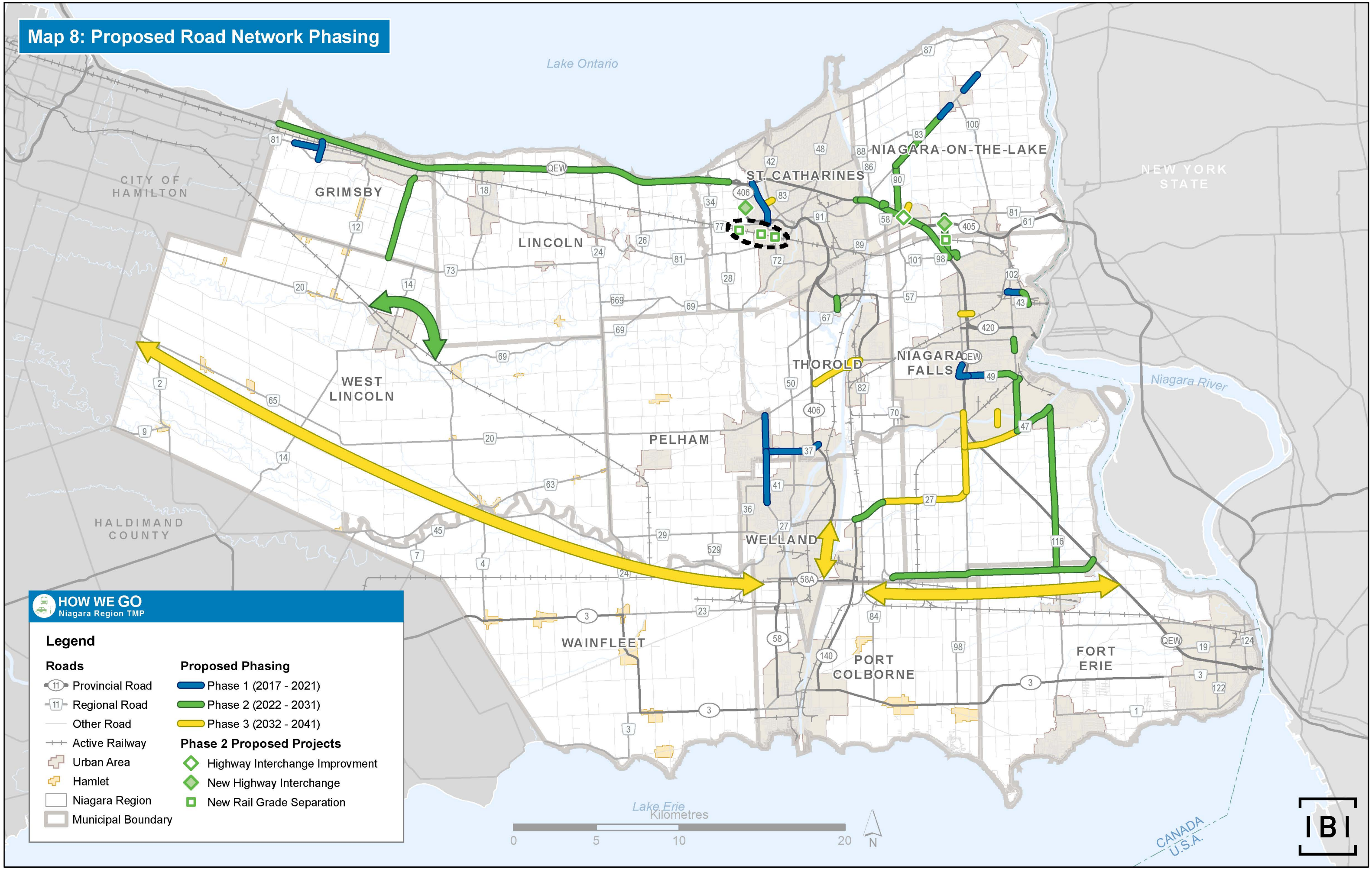
HOW WE GO Niagara Region TMP

Legend

- Airport
- Port
- International Bridges/Crossing
- Roads**
- Provincial Road
- Regional Road
- Other Road
- Railways**
- Active
- Abandoned
- Welland Canal
- Urban Area
- Hamlet
- Niagara Region
- Municipal Boundary
- Trade Corridors**
- Phase 1A - Interim
- Phase 1B - Interim



Map 8: Proposed Road Network Phasing



HOW WE GO
Niagara Region TMP

Legend

- | | | | |
|--------------|--------------------|----------------------------------|---------------------------------|
| Roads | | Proposed Phasing | |
| | Provincial Road | | Phase 1 (2017 - 2021) |
| | Regional Road | | Phase 2 (2022 - 2031) |
| | Other Road | | Phase 3 (2032 - 2041) |
| | Active Railway | Phase 2 Proposed Projects | |
| | Urban Area | | Highway Interchange Improvement |
| | Hamlet | | New Highway Interchange |
| | Niagara Region | | New Rail Grade Separation |
| | Municipal Boundary | | |





APPENDIX A: RECOMMENDED ROAD CAPITAL INVESTMENTS TO 2041

Projects in Capital Budget					
Proj #	Corridor	Section	Improvement Type	Phasing	Capital Cost Estimate
10.1	Casablanca Blvd	QEW to Livingston Ave	Capacity	2017-2021	\$ 7,448,000
27.2	East Main St	Hwy 140 to Moyer Rd	Capacity	2022-2031	\$ 2,970,000
37.1	Merritt Rd	Rice Rd to Niagara St	New Road	2017-2021	\$ 8,610,000
37.2	Merritt Rd	Niagara St to Hwy 406	Capacity	2017-2021	
38.1	Martindale Rd	QEW to Vansickle Rd	Capacity	2017-2021	\$ 31,461,000
38.2	Martindale Rd	Vansickle Rd to Fourth Ave	Capacity	2017-2021	
38.3	Martindale Rd	Bridge widening at Hwy 406	Capacity	2017-2021	
49.1	McLeod Rd	Phase 1 - Montrose Rd, Pin Oak Dr. to Hydro Canal	Capacity	2017-2021	\$ 14,392,000
49.2	McLeod Rd	Phase 2 - Hydro Canal to Wilson Cr	Capacity	2017-2021	\$ 4,312,000
49.3	McLeod Rd	Phase 3 - Wilson Cr to Stanley Ave	Capacity	2022-2031	\$ 3,640,000
54.1	Rice Rd	Old Hwy 20 to Merritt Rd	Capacity	2017-2021	\$ 9,828,000
54.2	Rice Rd	Merritt Rd to Quaker Rd	Capacity	2017-2021	\$ 16,200,000
54.3	Rice Rd	Quaker Rd to Thorold Rd	Capacity	2017-2021	
55.2	Niagara Stone Rd	Concession 6 Rd to Line 2	Capacity	2017-2021	\$ 12,528,000
55.3	Niagara Stone Rd	Penner St (Line 1 Rd) to East and West Line	Capacity	2017-2021	
56.1	Collier Rd	Hwy 58 to Beaverdams Rd	Capacity	2022-2031	\$ 5,616,000
57.2	Thorold Stone Rd	East of Stanley Ave	New Road	2017-2021	\$ 11,088,000
57.3	Thorold Stone Rd	Gale Centre to Victoria Ave	New Road	2022-2031	\$ 11,200,000
89.4	Glendale Ave	Interchange at QEW (1/3 contribution)	Capacity	2022-2031	\$ 3,333,000
98.x	Montrose Road	Charnwood to McLeod	Capacity	2017-2021	\$ 1,904,000
406.1	Hwy 406 Interchange	At Third Ave Louth (1/3 contribution)	Highway Improvement	2022-2031	\$ 13,333,000
512.1	Livingston Ave	Main St to Casablanca Blvd	New Road	2017-2021	\$ 8,456,000
803.1	South Niagara East-West Arterial	South Niagara East-West Arterial (1/3 contribution)	New Road	2022-2031	\$ 16,275,000
x.x	Canadian Motor Speedway Infrastructure Improvements			2017-2021	\$ 2,625,000
Subtotal - Projects in Capital Budget					\$ 185,219,000

Additional Projects Identified in TMP					
Proj #	Corridor	Section	Improvement Type	Phasing	Capital Cost Estimate
14.1	Bartlett Avenue extension	Muscat Dr. to Park Rd.	New Road (1/3 Contribution)	2022-2031	\$ 38,733,000
14.2	Escarpment Crossing Improvement	Bartlett St Extension to Mud St	Capacity (1/3 Contribution)	2022-2031	
20.1	Highway 20 Smithville Bypass	Smithville	New Road (1/3 Contribution)	2022-2031	\$ 9,834,000
20.2	Hwy 20	Kottmeier Rd to Davis Rd/Allanport Rd	Capacity (1/3 Contribution)	2032-2041	\$ 25,019,000
27.3	Schisler Rd	Moyer Rd to Montrose Rd	Capacity	2032-2041	\$ 23,179,000
47.1	Lyons Creek Rd	Montrose Rd to Stanley Ave	Capacity	2032-2041	\$ 17,337,000
47.2	Lyons Creek Rd	Stanley Ave to Sodom Rd	Capacity	2022-2031	\$ 25,251,000
55.1	Niagara Stone Rd	Airport Road to Conc. 6	Capacity	2022-2031	\$ 7,180,000
89.6	Glendale Ave	York Rd to Queenston Rd	New Road	2032-2041	\$ 13,732,000
90.1	Airport Road	Niagara Stone Rd to York Rd	Capacity	2022-2031	\$ 9,871,000
98.1	Montrose Rd	Lyons Creek Rd to Schisler Rd	Capacity	2032-2041	\$ 8,917,000
98.2	Montrose Rd	Chippawa Creek Rd to Lyons Creek Rd	Capacity	2032-2041	\$ 18,113,000
102.2	Stanley Ave	Ferry St to Murray St	Capacity	2022-2031	\$ 5,897,000
102.3	Stanley Ave	Marineland Pkwy to Lyons Creek Rd	Capacity	2022-2031	\$ 41,871,000
116.1	Sodom Rd	Lyons Creek Rd to Netherby Rd	Capacity	2022-2031	\$ 27,879,000
405.1	Hwy 405 interchange	Concession 6 Rd	Highway (1/3 contribution)	2022-2031	\$ 3,333,000
406.2	Hwy 406 Extension	E Main St to NGTA corridor	Highway	2032-2041	\$ -
451.2	Garden City Skyway	Bunting Road to York Rd	Highway	2022-2031	\$ -
451.3	QEW	York Rd to Hwy 405	Highway	2022-2031	\$ -
451.4	QEW	Hwy 405 to Mountain Rd	Highway	2022-2031	\$ -
451.7	QEW	Hamilton to Hwy 406	Highway	2022-2031	\$ -
461.1	NGTA corridor	Hwy 403 to Hwy 406 Ext.	Highway	2032-2041	\$ -
461.2	NGTA East Corridor	Hwy 406 extension to QEW	Highway	2032-2041	\$ -
601.1	Concession 6 Rd	York Rd to Warner Rd	Capacity	2022-2031	\$ 4,991,000
601.2	Mewburn Rd	Warner Rd to Mountain Rd	Capacity	2022-2031	\$ 1,885,000
601.3	Mewburn Rd bridge	Bridge over CN Rail	New structure	2022-2031	\$ 1,625,000
607.1	Queenston Road realignment	Queenston Rd to York Rd	New Road	2022-2031	\$ 4,045,000
901.1	West St. Catharines Grade Separation	Louth St / Vansickle Rd / First St Louth	Capacity	2022-2031	\$ 20,500,000
	AT Strategic Network Grant Program	Strategic Network		2017-2026	\$ 10,000,000
	AT Infill Projects	Strategic Network		2017-2021	\$ 7,900,000
	AT Infill Projects	Strategic Network		2022-2031	\$ 7,900,000
	Subtotal - Additional Projects Identified in TMP				\$ 334,992,000
	Subtotal - Capacity Improvement, New Roads and Active Transit Infill Projects				\$ 520,211,000

Intersection Improvement Program					
Proj #	Intersection	Intersection Side Street	Improvement Type	Phasing	Capital Cost Estimate
	Thorold Stone Rd	@ Cardinal Drive	Left turning lane	2017-2021	\$ 1,500,000
	Geneva St	@ St. Paul	Two way traffic reversion - Cost Sharing	2017-2021	\$ 7,000,000
	Niagara Stone Rd	@ Airport Road and Concession 4	Traffic signal and turning lane	2017-2021	\$ 3,000,000
	McLeod Road	@ Drummond	Possible joint contract with NF	2017-2021	\$ 2,000,000
	Four Mile Creek Rd	@ York Rd	New Signal and modifications	2017-2021	\$ 1,400,000
	Falls Ave / Bender Intersection Improvements		Turning lanes and signal mod	2017-2021	\$ 900,000
	Victoria Avenue	@ RR63 Canboro Rd	New signal and turning lane	2017-2021	\$ 1,650,000
	Int. Improve. - Regional Road 20 between Townline Road & South Grimsby Rd 6		Roundabouts EA & Design & Improve for new school	2017-2021	\$ 1,100,000
	Regional Road 20	Phase 1 - South Grimsby Rd 6 to Griffin	Roundabout and urbanization	2017-2021	\$ 4,250,000
	Regional Road 20	Phase 2 - Industrial Pard Rd to Townline Road	Roundabout and urbanization	2017-2021	\$ 3,800,000
	King Street	@ Main Street and Nineteenth Street	Cost Sharing for intersection improvement	2017-2021	\$ 2,400,000
	Fourth Ave	@ First	Modifications and NB right Turn Lane	2017-2021	\$ 600,000
	Intersection Improvement Program - 2027-2041			2027-2041	\$ 33,825,000
	Subtotal - Intersection Improvement Program				\$ 63,425,000

Road Rehabilitation Program					
Proj #	Corridor	Section / Location	Improvement Type	Phasing	Capital Cost Estimate
	Canoboro Rd	@ Warner	Embankment stabilization	2017-2021	\$ 5,090,000
	Main Street	Cabernet to Baker Rd & Nelles to Orchard	Reconstruction - Urban	2022-2031	\$ 7,560,000
	York Road	Reg Rd 55 to Airport	Rehabilitation	2017-2021	\$ 1,890,000
	Old Hwy. 8	Vinehaven Trail to 23rd Street	Reconstruction/ streetscaping	2017-2021	\$ 5,270,000
	Ontario Street	Lakeshore Road to Linwell Road	Reconstruction - Urban - 2 Lane	2017-2021	\$ 8,532,000
	St. Paul Street West	Burgoyne Bridge to CNR Tracks	Reconstruction and intersection Imprv	2022-2031	\$ 9,180,000
	Louth Street	Between RR 81 (St. Paul W) & Crestcomb	Reconstruction - urban- 2 lane / GS	2017-2021	\$ 6,156,000
	Lakeshore Rd	Townline Rd to Four Mile Creek Rd	Rehabilitation c/w bike lanes	2017-2021	\$ 8,500,000
	Main Street West	Prince Charles Drive to Niagara Street	Rd Reconstruction / City WM	2017-2021	\$ 4,104,000
	McLeod Road Storm P.S	@ Stanley Ave and CNR	Upgrades to Storm Pumping Station	2017-2021	\$ 1,250,000
	Glendale Ave	Tremont Drive to Burleigh Hill	Road Reconstruct & Widening	2017-2021	\$ 9,396,000
	Riverside Drive	Prince Charles Drive to Lincoln Street	Road Reconstruct / Download	2017-2021	\$ 5,778,000
	Lakeshore Rd Phase 3	Lake St to Geneva & Bradmon Dr to O'Mara	Reconstruction - urban-2 lane	2017-2021	\$ 8,046,000
	Bridge Street	Victoria Ave to Erie	Cost Share with City	2017-2021	\$ 575,000
	Lakeshore Rd West	Third Street to Seventh Street	Reconstruction	2017-2021	\$ 5,778,000
	Canborough Road	Baldwin Road to Coffey Bridge	Embankment stab & Road Recon	2017-2021	\$ 3,277,800
	Pelham Road Phase 2	Effingham Rd to Wessel Drive	Reconstruction	2017-2021	\$ 9,828,000
	Pelham Road Phase 3	Wessell Drive to Centre	Reconstruction	2017-2021	\$ 4,320,000
	Pelham Road Phase 4	Centre to 8th	Reconstruction	2017-2021	\$ 3,240,000
	Niagara St	Carlton to Scott	Reconstruction - Urban - 2 Lane	2017-2021	\$ 7,344,000
	St. David's Road	Hwy 406 to Collier Road	Reconstruction - Urban - 2 Lane	2017-2021	\$ 5,290,000
	Dominion Road	Helena to Lakeshore Rd	Reconstruction - Urban - 2 Lane	2017-2021	\$ 7,587,000
	King Street	Durham Rd to Lincoln Avenue	Reconstruction rural - 2 Lane / Town WM	2017-2021	\$ 6,669,000
	Dick's Creek crossing	@ Glendale Ave	Culvert replacement	2017-2021	\$ 750,000
	Regional Road 20	Griffin St South to Industrial Park Road	Road Rehabilitation	2017-2021	\$ 2,268,000
	Creek Road	RR 4 (Wellandport Rd) to RR 63 Canborough	EA Study, Bridge Replace & Rd Rehab	2017-2021	\$ 405,000
	Creek Road	RR 4 to RR7 & RR7 to RR63	Road Rehab - 2 Bridge Replacement	2017-2021	\$ 15,552,000
	Dominion Road	Burleigh Road to Buffalo Road	Road Rehabilitation	2017-2021	\$ 10,179,000
	Main Street	Locke Street to Ann Street	Road Rehabilitation	2017-2021	\$ 4,158,000

Road Rehabilitation Program (cont.)					
Proj #	Corridor	Section / Location	Improvement Type	Phasing	Capital Cost Estimate
	Glendale Ave	Welland Canal to Homer Road	Road Rehabilitation	2017-2021	\$ 3,780,000
	Townline Road	McLeod Road to Lundy's Lane	Reconstruction rural 2 lane	2022-2031	\$ 6,480,000
	Stewart Road	Lakeshore Road to Carlton Street	Reconstruction rural 2 lane	2022-2031	\$ 7,560,000
	Effingham Street	Webber Rd to River Rod	Reconstruction rural 2 lane	2017-2021	\$ 4,914,000
	Canborough Road	RR27 Wellandport Rd to Community Centre	Reconstruction and Drainage Imp.	2017-2021	\$ 3,996,000
	Lundy's Lane	Highland Ave to Montrose Road	Cost Sharing with City CIP and W/M	2017-2021	\$ 3,450,000
	Burliegh Hill	Glendale Ave to St. David's	Cost Sharing with City Storm Sewer	2017-2021	\$ 2,000,000
	Main Street Old Hwy 8	Oakes Road North to Casablanca Blvd	Reconstruction - Urban - 2 Lane	2017-2021	\$ 5,670,000
	Twenty Mile Road	RR24 Victoria Ave to Mountain Rd	Reconstruction - Rural - 2lane	2017-2021	\$ 8,856,000
	St. David's Road	@ Hwy 406 Interchange	Cost Sharing on MTO project	2017-2021	\$ 2,000,000
	Townline Road	Stanley Ave to Four Mile Creek Road	Reconstruction	2017-2021	\$ 2,052,000
	Sodom Road	Lyons Creek Road to Willick Road	Reconstruction	2017-2021	\$ 2,484,000
	Stanley Avenue	Hwy 420 to Ferry Street	Road Recon. and City CIP / Watermain	2022-2031	\$ 2,160,000
	Stevensville Rd	Eagle Street to Bowen Road	Road Reconstruct Urban	2017-2021	\$ 2,700,000
	Bowen Road	QEW to Thompson Road	Road Reconstruct	2022-2031	\$ 3,780,000
	Roads Reconstruction Program - 2017-2021		Road Reconstruction	2017-2021	\$ 22,680,000
	Roads Reconstruction Program - 2022-2026		Road Reconstruction	2022-2026	\$ 58,320,000
	Roads Reconstruction Program - 2027-2041		Road Reconstruction	2027-2041	\$ 273,026,700
Subtotal - Road Rehabilitation Program					\$583,881,500

Annual Transportation Programs			
Proj #	Annual Transportation Programs	Phasing	Capital Cost Estimate
	Traffic Signal Annual Program	2017-2041	\$ 51,290,000
	Illumination Annual Program	2017-2041	\$ 12,350,000
	Transportation Studies	2017-2041	\$ 9,925,000
	Road Facility Program / Yards	2017-2041	\$ 14,000,000
	Provision for Additional Vehicles	2017-2041	\$ 6,440,000
Subtotal – Annual Programs			\$ 94,005,000
Total Road Capital Program		2017-2041	\$1,261,522,500



APPENDIX B: NOTICE OF COMPLETION





Niagara's Future: Notice of Completion

The Study

The Government of Ontario legislative growth plan, Places to Grow Act 2005, identified substantial population and employment growth for Niagara Region to the year 2041. To meet the growing demands and needs of its communities, **Niagara 2041** has been introduced to balance the needs of growth with the

protection and preservation of natural, environmental and heritage resources. Under Niagara 2041, Niagara Region has prepared for expected growth within the next 25 years with the completion of the **Transportation Master Plan (How We GO)**.



HOW WE GO:

The Transportation Master Plan (TMP) sets a strategic vision for transportation and its implications in the Region over the next twenty-five years and illustrates how effective transportation can enhance quality of life and support economic prosperity. It will ensure that future transportation needs are addressed through pedestrian and cycling facilities, demand-responsive and conventional transit and an integrated network of roads and highways to support the movement of people and goods. A key outcome of the study is a list of key recommendations and supporting key actions to meet the long-term transportation vision.

The Process

The Transportation Master Plan was conducted in accordance with the master planning process following the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment process (October 2000, as amended in 2007, 2011 and 2015), which is an approved process under the Ontario Environmental Assessment Act. The TMP addresses need and justification at a broad level and recommended infrastructure projects will require further detailed studies as per the Municipal Class Environmental Assessment process.

The Completion

The TMP has been prepared to document the planning and decision-making process undertaken for this study.

By this notice, the report is being placed on public record, with comments to be received until **Monday, September 11, 2017** in accordance with the requirements of the Municipal Class EA.

Copies of the TMP document are available for your information at the following locations:

Niagara Region

Clerk's Department
1815 Sir Isaac Brock Way
Thorold, ON
L2V 4T7

City of St. Catharines

Clerk's Department
50 Church Street
St. Catharines, ON
L2R 7C2

City of Niagara Falls

Clerk's Department
4310 Queen Street
Niagara Falls, ON
L2E 6X5

Town of Grimsby

Clerk's Department
160 Livingston Avenue
Grimsby, ON
L3M 4G3

Town of Pelham

Clerk's Department
20 Pelham Town Square
Fonthill, ON
L0S 1E0

City of Port Colborne

Clerk's Department
66 Charlotte Street
Port Colborne, ON
L3K 3C8

This document has also been placed onto Niagara Region's website and can be found at niagararegion.ca/2041.

Further information requests or comments can be directed to:

Mr. Ron Tripp, P.Eng.,
Commissioner of Public Works
1815 Sir Isaac Brock Way, P.O. Box 1042,
Thorold, ON L2V 4T7
Phone: 905-980-6000 Fax: 905-687-8056
Email: ron.tripp@niagararegion.ca

The TMP is providing a 45-day review period starting on July 27, 2017. Please provide all written comments to Niagara Region by **Monday, September 11, 2017** (within 45 days of this Notice). With the exception of personal information, all comments will become part of the public record of the study.

This Notice of Completion is issued on July 27 and August 3, 2017.



APPENDIX C: 45-DAY REVIEW COMMENTS

FW: Online Form - Enquiry from Region website

Tripp, Ron

Wed 9/13/2017 3:52 PM

To:Thompson, Jack <Jack.Thompson@niagararegion.ca>;

From: Niagara Region Website [mailto:webmaster@niagararegion.ca]

Sent: Tuesday, August 22, 2017 8:03 AM

To: Tripp, Ron

Subject: Online Form - Enquiry from Region website

To reply, copy the email address from below and put into 'To'. (if resident entered their email address)

name:	[REDACTED]
phone:	
email:	[REDACTED]
municipality:	Lincoln
other mun:	
subject:	Re: "Sharrows" in Hamlets
comments:	<p>Hi Ron, In general I am supportive of the TMP, but I do have one minor concern. When it comes to the hierarchy or active transportation/cycling infrastructure, I am concerned with the inclusion of sharrows as meaningful infrastructure in hamlet areas. There have recently been several studies completed that have shown sharrows actually tend to increase vehicle-cyclist accidents rather than reduce them, as they create a false sense of security amongst cyclists, and mean nothing to most motorists. See link regarding one of these studies: https://www.citylab.com/solutions/2016/02/sharrow-safety-bike-infrastructure-lane-chicago/460095/ I believe that the sharrows suggestion should be either replaced with simple paved shoulders or marked separate bike lanes, or completely removed. Thanks for your time! [REDACTED]</p>
reply:	no

File: TMP Review / comments Date: August 31, 2017

- Telephone Conversation with _____
- Counter Discussion with _____
- Meeting with _____
- Information Acquired with _____

✓ Mailed Note

NOTES:

Re: Regional TMP comments

just a note

Hello Jack -
 I am just about finished reading the TMP reports - very well done - lots of cycling! and optimism re public transit in future.

I enclosed the presentation I gave to Regional and Town councils. You might find it interesting and still relevant.

I plan to call you with my thoughts on the reports!

Cheers, _____

Mr. _____
 Phoned to discuss TMP review notes as well as an article of his presentation to Regional Council February 2010



Online Form - Enquiry from Region website

 DELETE  REPLY  REPLY ALL  FORWARD ...



Webmaster

Sat 9/9/2017 11:10 PM

[Mark as unread](#)

To: Tripp, Ron;

To reply, copy the email address from below and put into 'To'. (if resident entered their email address)

name:	[REDACTED]
phone:	[REDACTED]
email:	[REDACTED]
municipality:	Thorold
other mun:	
subject:	Comment to Transportation Master Plan Final Draft
comments:	As a member of Thorold Active Transportation Advisory Committee I attended the PICs and some meetings in drafting the plan. I comment you for the idea of shifting focus to other modes of travel (e.g. biking, walking) and not just using cars. It is also very important to consider sidewalks and where appropriate bike lanes for planned road repairs and new residential developments and. I also strongly support the use of existing former rail corridors for recreational use. With the ever changing demographics here in Niagara we need to make choices that give the younger generation opportunities to make a living here without the need of owning a car. Well done. Sincerely, [REDACTED]
reply:	no

FW: TMP Feedback: Rail Transportation Considerations

Tripp, Ron

Wed 9/13/2017 3:46 PM

To:Thompson, Jack <Jack.Thompson@niagararegion.ca>;

📎 1 attachment

PWC letter final2.pdf;

From: [REDACTED]
Sent: Monday, September 11, 2017 10:17 PM
To: Tripp, Ron
Cc: Quirk, Tony
Subject: FW: TMP Feedback: Rail Transportation Considerations

Hi Mr. Tripp,

I noticed a few minor errors in my first submission, please accept this revised copy.

Regards,
[REDACTED]

From: [REDACTED]
Sent: September 11, 2017 6:11 PM
To: Tripp, Ron (Ron.Tripp@niagararegion.ca) <Ron.Tripp@niagararegion.ca>
Cc: 'Quirk, Tony' <Tony.Quirk@niagararegion.ca>
Subject: TMP Feedback: Rail Transportation Considerations

Dear Mr. Tripp,

As per the 2017-09-11 deadline for public feedback regarding the TMP, I have attached a memo outlining my insights regarding transit opportunities along the Port Colborne Harbor Railway. I trust this memo to be made available to members of the PWC.

Thank you for your time.

Kind Regards,
[REDACTED]

To: Niagara Region Public Works Committee

From: [REDACTED]

Subject: Niagara Rail Corridor

Date: 2017-09-11

Existing rail infrastructure should be considered when determining Inter-municipal transit connectivity. The Transportation Master Plan will benefit from comprehensively exploring and incorporating the *Port Colborne Harbour Railway*, a network of in-place railway infrastructure that runs adjacent to, and through Niagara's crucial urban areas, arterial corridors, and near future areas of growth. The Region of Niagara can circumvent the very expensive, time consuming process of building new infrastructure in the future if it instead works with and upgrades existing rail lines to deploy rail-based transit infrastructure. This network could better serve Niagara industry and spur economic development along the corridor.

Shaping the future by including a rail corridor will take the region in an innovative new direction. Niagara can achieve the model of the future city never thought possible. We can create a single livable central Niagara by linking the urban areas together, developing and revitalizing previously under-appreciated parts of our community into beautiful places to live, work and play. We can put Niagara in walking distance, with new life, vitality and energy in key neighbourhoods of our cities and the region overall.

The Niagara rail transit opportunity cannot follow the path of traditional and fast-becoming outdated transit planning models. It would be a mistake to blindly expand transit networks around current population density projections, when a design driven approach could have the potential to redefine the future landscape and growth. This will take transportation leadership. Rail transportation can facilitate the creation of density, rather than transit following density. It is the old and carefully layered adage, "if you build it, development will come."

Rail infrastructure is already here, it would take only a small effort to reinvent the corridor for passenger use and institute suitable zoning revisions. Offices, communities and industry within proximity to new rail stations could incorporate walkable design, and grow into desirable locations for high foot-traffic and offer thriving community engagement. This rail corridor could spur private investment in a way that bus service will never achieve.

Rail transit is a system people want to use. There are no highway commutes or traffic jams, and there is total freedom to enjoy a book, engage in conversation, do office work or just enjoy the stunning views of rural Niagara passing by. A new generation of young people are increasingly giving up driving all together, and it's because unlike generations of the past, we see driving as the hassle it is: expensive, restricting and an ever-increasing wait in traffic.

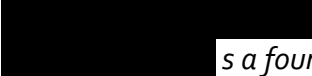
Tomorrow's infrastructure is going to need to consider these realizations and rail offers a permanent solution.

Success has been proven. The city of Ottawa's "O-train" started as a modest \$ 27 million pilot project to rejuvenate and repurpose a sparsely used CP rail corridor for passenger regional rail transit use. It has exceeded all expectations as a transit service, and has since displaced the bus-passenger equivalent of over 30 articulating buses. In western Canada, Calgary's "C-train" provides quick and fast access to a world-class downtown, all the while avoiding the needless expansion of thruways into the city centre. In everyday use, Calgarians choose the C-train over driving downtown, because it's safer, faster, and fun. The C-train line remains among the highest in passenger satisfaction in North America.

Cities have the tools to intensify density around key rail corridor locations, encourage infill development and open the door towards smart city growth. This is reinventing what we already have, and making Niagara an even better place to live. This is Niagara thinking.

We need intrepid leadership to see Niagara's existing rail infrastructure for its potential, what it can be, and redraw the lines of planning around what will be a remarkable urban journey. I trust you see the potential.

See appendix 1 for a map approximating the scope of the service proposed.

 is a fourth-year student of history at Brock University with a background in electrical engineering and a passion for Niagara's railway history. His interests lie in the study of spatial systems and the urban environment, relating to the study of history. He is from the village of Queenston, Niagara-on-the-Lake, and a life-long resident of Niagara.

Appendix 1: Niagara Regional Rail Spline, St. Catharines to Port Colborne



FW: Online Form - Enquiry from Region website

Tripp, Ron

Wed 9/13/2017 3:45 PM

To:Thompson, Jack <Jack.Thompson@niagararegion.ca>;

From: Niagara Region Website [mailto:webmaster@niagararegion.ca]

Sent: Monday, September 11, 2017 3:33 PM

To: Tripp, Ron

Subject: Online Form - Enquiry from Region website

To reply, copy the email address from below and put into 'To'. (if resident entered their email address)

name:	██████████
phone:	
email:	██████████
municipality:	Thorold
other mun:	
subject:	Comments re Niagara Transportation Master Plan
comments:	<p>Dear Ron, As a member of the Thorold Active Transportation Advisory Committee, I am thrilled to see such a major positive emphasis on active transportation in the new Niagara Region Transportation Master Plan. I applaud the commitment to Complete Streets and the emphasis on creating safe, walkable neighborhoods. That should be highly beneficial for pedestrians, cyclists, people with disabilities, etc. as well as motorists. Some comments: -the plan forecasts a significant increase in drivers as well as improvements to infrastructure for walking and cycling; it will be important to also provide lots of outreach and education - especially for motorists - so everyone using our streets knows their rights and is conscious of safety practices and laws. -the plan commits to improvements for active transportation and for vulnerable populations - both of which are great. I just wanted to note that I hope the idea of inclusive design will take precedence, so that the needs of all users can be considered as a whole during the planning of local streets and roads. I think we sometimes tend to think of user groups in isolation and e.g. develop a plan for cyclists, a plan for seniors, a plan for pedestrians, etc. Ideally moving forward we can take an inclusive approach. -I also wanted to comment on the expansion project</p>

slated for Collier Road: hopefully the needs of all users and active transportation goals will be considered. Currently the stretch between Hwy 58 and Beaverdams is not safe for anyone but motorists. Thanks for the opportunity to comment. [REDACTED]

reply:

no

FW: Transportation Master Plan Input

Tripp, Ron

Wed 9/13/2017 3:46 PM

To:Thompson, Jack <Jack.Thompson@niagararegion.ca>;

From: Peter Inman [mailto:peterinman2468@gmail.com]

Sent: Monday, September 11, 2017 5:23 PM

To: Tripp, Ron; Robinson, Matt

Cc: [REDACTED]

Subject: Transportation Master Plan Input

It is disappointing that the Transportation Master Plan does not adequately address GO Transit issues, especially those relating to the proposed location of the GO Transit Stations, and Intermunicipal Transit. The proposed GO Transit stations at the existing VIA Rail sites have a proven record of failure due to their out of the way location for daily commuters. It is essential that residents from all municipalities in the Region, not just those municipalities where GO Train Stations are to be located be consulted. I am disappointed that the information I provided at the Pubic Consultation meetings, and followed up with several email submissions was not acknowledged. I am sure that it was an oversight. However the issues raised are important for the future transportation needs of the Region, and have been reprinted below for your consideration.

I look forward to continuing to participate in, and assist in the development of a rapid transit plan that will benefit all residents of Niagara.

Respectfully submitted.

[REDACTED]
[REDACTED]
March 31, 2017

This memo provides input for the Niagara GO Hub and Transit Stations Study, and for the Niagara Transportation Master Plan. To be successful, GO Train stations must be transportation hubs that efficiently collect and distribute daily commuters from highway, Intermunicipal transit and local collection points.

The **2011 Niagara GO Transit Rail Service Expansion Report by Burnside Associates revealed that** there are about 20,000 daily person trips, mostly by car, between Hamilton and Niagara Region. However, the same report projected that **only 960 commuters per day (about 4% of the total) will use GO Rail Service using the existing VIA Rail stations.** (Please see the attachment that summarizes data from this report.) **This volume is not sufficient to support GO Train service.** The fact that VIA Rail commuter service was discontinued due to low ridership supports the report's prediction. The reason for the low commuter uptake is that the existing VIA Rail Stations at St Catharines and Niagara Falls are remote from major highways and will not attract most daily commuters.

The current St Catharines VIA station is in an out-of-the way part of the city, not well served with access roads, and is more than 2 km away from the nearest Hwy 406 interchanges at Westchester or

Fourth Avenue. The Burgoyne Bridge on St Paul Street is single lane each way and cannot be widened to accommodate increased traffic flow. These urban roads are already heavily congested and additional traffic will exacerbate local traffic conditions and discourage potential GO Transit riders from connecting in St Catharines.

It is essential that a new St Catharines GO Transit Station be constructed close to the Highway 406/Glendale Avenue exit – perhaps one block East of Highway 406, North of Glendale Avenue. This location is readily accessible to existing major highways, travel routes, and cycle trails and will enable Niagara residents and post secondary students to utilize GO Transit services.

It is further recommended that this site (St Catharines-Glendale/406 GO Station) be established as a transportation node for Intermunicipal Transit Service with schedules synchronized to GO Bus/Train schedules. This will enable Intermunicipal Transit to collect and distribute commuters from GO Transit to routes going to/from St Catharines, Welland, Pelham, Niagara Falls and Port Colborne, as well as students from Brock University and Niagara College campuses. This approach will enable seamless integration for daily commuters travelling across Niagara Region and to Hamilton/GTA. It is also recommended that a commuter parking lot be constructed at the St Catharines-Glendale GO Train Station site - initially as a Park & Ride lot, then as a parking lot for the future GO Transit station when constructed.

It is further recommended to establish GO Bus service from this St Catharines GO Station to Burlington until such time as GO Train Service arrives in Niagara. This service would connect to, or run parallel to the Route 12 GO Bus service currently in operation. This will provide GO Transit service at an earlier time than waiting for rail and increased ridership will build a strong business case for GO Train expansion within 5 years.

The Niagara Falls VIA station is located remote from the commuters driving daily on the QEW from Fort Erie and Niagara Falls. From a strategic perspective, there is some merit to building a new Niagara Falls GO Train Station near where the CN Rail line crosses the QEW, perhaps at the QEW / Mountain Road East exit. This would intercept QEW commuters from Niagara Falls, Fort Erie, East St Catharines and NOTL. The existing Niagara Falls VIA station would remain as a final stop.

The proposed GO Station at Beamsville is located in the heart of Niagara's productive farmland and micro-climate that produces grapes and tender fruit that supply Niagara's world class wineries. Constructing a GO Train station at this location would put undue pressure for urban sprawl that would destroy this productive farmland and cause economic harm to the winery and associated hospitality industries that continue to grow in importance in the Region. This area should remain protected by the Green Belt and supported by Niagara Region Planning policies.

Thank you for the opportunity to comment. Feel free to contact me at: [REDACTED] should you wish further input or clarification.

I would appreciate being kept informed as the process unfolds.

Sincerely

[REDACTED]
[REDACTED]

Ministry of Transportation

Planning and Design Section
Hamilton/Niagara
Central Region - Engineering

4th Floor
159 Sir William Hearst Avenue
Toronto, ON M3M 0B7
Tel: (416) 235-5271
Fax: (416) 235-3576

Ministère des Transports

Section de planification et de conception
Hamilton/Niagara
Région du Centre – Ingénierie

4e étage
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Télééc: (416) 235-3576



September 13, 2017

Delivered By Email

Niagara Region
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7

Attention: Ron Tripp, P.Eng.
Commissioner of Public Works

RE: Niagara Region Transportation Master Plan

Dear Mr. Tripp:

Further to the notification of the Niagara Region Transportation Master Plan (TMP) completion, we trust that previous comments provided by the ministry have been addressed in the final draft.

In addition to the references included in the Region's TMP for MTO's Southern Highways Program (SHP) and Niagara to GTA (NGTA) Study, the Region's TMP included other work on provincial facilities such as new interchanges on Hwy 405 and Hwy 406. This work, for which the Region would be the proponent, is currently not on the Ministry's program. These improvements, proposed by the Niagara Region, require further consultation and justification which is subject to approvals, engineering studies and funding discussion.

The recent SHP includes numerous projects in the Niagara Region to improve the transportation network and provide safer traffic operations. Ministry staff is continually working with the Region to address needs and exploring cost sharing opportunities by including Region's work in SHP projects.

We are currently focusing our resources to ensuring the provincial highways and bridges remain safe and in a good state of repair. Please be advised that each year the ministry reviews transportation infrastructure needs across the province and adds new projects in the provincial five-year road/bridge construction program accordingly.

The ministry looks forward to working together with the Niagara Region on future assignments in order to best address the Region's needs.

Sincerely,

Moin Khan, P.Eng.
Area Manager Hamilton/Niagara

c.c. Teepu Khawja, Jason White, Bob Stephenson

August 23, 2017

Jack Thompson
Niagara Region Transportation Lead
1815 Sir Isaac Brock Way
Thorold, ON L2V 4T7

Dear Mr. Thompson,


Niagara 2041 Fostering an Environment for Economic Prosperity

At their regular meeting of August 21st, 2017, the Council of the Town of Pelham received your correspondence and endorsed the following resolution:

BE IT RESOLVED that Council receive correspondence from the Niagara Region, dated July 21, 2017, regarding the Niagara Region Transportation Master Plan (TMP), for information.

On behalf of Council, thank you for your correspondence.

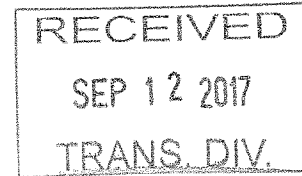
Yours very truly,


(Mrs.) Nancy J. Bozzato, *Dipl.M.M., AMCT*
Town Clerk

/js

From the Clerk's Department

 **Administrative
Services**



September 7, 2017

Attention: Regional Transportation Steering Committee
Niagara Region
1815 Sir Isaac Brock Way
PO Box 1042
Thorold ON L2V 4T7

Dear Members:

Regional Transportation Master Plan

At their regular meeting of September 5th, 2017, Council of the Town of Pelham endorsed the following:

BE IT RESOLVED THAT Council receive, endorse and support all comments put forward in the Public Works Report 'Regional Transportation Master Plan'; and

THAT Staff be directed to forward a copy of the report, including the comments from the Town relating to the 'Regional Transportation Master Plan', to Regional Councillor Baty and to the Regional Transportation Steering Committee.

On behalf of Council, thank you for your attention to this matter.

Yours very truly,



(Mrs.) Nancy J. Bozzato, *Dipl.M.M., AMCT*
Town Clerk

/js
encl:
Cc: Andrea Clemencio, Director of Public Works

From the Clerk's Department

 **Administrative
Services**

Concept: How Might We Ensure Pelham is Thoroughly Considered in the Regional Transportation Master Plan?

Background:

The Notice of Completion, the Transportation Master Plan (TMP) report and key supporting documents were posted and made available for review on the Niagara Region website beginning Monday, July 24.

<http://niagararegion.ca/2041/transportation-master-plan>

The documents will be available for review until Monday, September 11, 2017, at which time the TMP documents will be finalized.

The Director of Community Planning & Development, the Director of Recreation Culture and Wellness and the Director of Public Works & Utilities have reviewed the posted master plan and provide the following comments, highlighted in bold/italic print:

A. Transit

Current Pelham Transit services already being provided are not being fully recognized in the report.

Specifically, the following services we currently provide are not mentioned:

- Local Transit fixed routes (conventional service in Pelham)
- Demand- response service (“Dial-a –ride” service in Pelham)
- Map 4 conceptual Transit Network (map attached) should include North Pelham, Fenwick, Ridgeville and Fonthill as Existing Areas already served by Local Transit
- Demand Response service (“Dial-a-ride”) is already offered in the rural areas of the municipality (see attached schedule)

To reiterate a summary of Pelham Transit for the Region, Pelham Transit currently offers:

- Local Transit – accessible conventional service (in a fixed route), operating 10 hours daily, 6 days a week.
- Local connections North Pelham, Fenwick, Ridgeville, Fonthill
- Regional connections at Seaway Mall, Welland and at Niagara College, Welland Campus.
- Constant 7 trips are scheduled daily
- Specialized Transit: operating 6 days a week, from 9:30am – 1:30pm



- Dial A Ride (demand response) : operating 6 days a week, from 7pm – 10pm

The TMP should reflect the current transit services that Pelham offers and the mapping contained in the report should be updated to reflect these current service levels.

B. Complete Streets – Guiding Principles

Guiding principles include “Niagara’s roads and streets will be planned and designed using a “complete corridor” approach”, and refers to the Niagara Region’s Complete Streets: Vision and Direction for a Changing Region report, which includes the Region’s Family of Complete Street Corridor types. The report suggests a shift in approach to how capital and maintenance costs for these complete streets will be shared between the Region and the local municipalities in the future, but this could pose a significant burden on local municipalities. *Establishing complete corridors as a guiding principle in the master plan, without establishing an agreed-upon cost sharing structure for these streets could be problematic.*

C. Accessibility and Age-Friendly

The seven goals for TMP do not specifically refer to or mention accessibility or age-friendly statements.

Also, in the Complete Streets Approach Section 5, there is no recommended strategy related to accessibility.

D. Driving Forces – Active Transportation

Pelham’s vigorous Active Transportation initiatives are not acknowledged. Under ‘Driving Forces’, Pelham is also part of the Greater Niagara Circle Route, but is not mentioned in the list of municipalities that are encompassed in the route (also not mentioned under Section 6 – Transportation Choice).

The well-established active transportation committees of the local area municipalities are not mentioned in the report, including those, like Pelham, with an Active Transportation Master Plan.

E. Role and Functional Study for Regional Road 20/Highway 20

Section 6 details additional capacity expansion projects for regional roads, however Highway 20 through Fonthill does not appear to be considered. Heavy local commercial traffic, such as local quarry operations, serve the Region for goods movement (section 7), and require frequent, heavy use of regional roads through single lane, commercial areas.

There is reference to the Region undertaking a Role and Functional Study for Highway 20, however the report does not specify if this study is in relation to the entire Regional Road 20/Highway 20 route or only a portion or portions of this roadway. As indicated above, Highway 20 through Pelham carries heavy commercial and truck traffic through the core area of Pelham and accordingly any future Role and Functional Study should include the Town of Pelham in the study area and should take into consideration the impact commercial truck traffic has on the urban area of Fonthill, including downtown and needs to also consider active transportation, pedestrian movements, land use impacts, traffic calming and place making considerations as part of the that Study. This Study should also be undertaken in the short term time frame.

The Challenge:

How might we ensure the Town of Pelham is thoroughly considered in the Regional Transportation Master Plan?

Our Recommended Solution:

THAT Council receive the Public Works Report ‘Regional Transportation Master Plan’ for information, and

THAT the Staff be directed to forward a copy of the report, including the comments from the Town relating to the ‘Regional Transportation Master Plan’ to the Region before the comment deadline.

Rationale:

The Town of Pelham’s 2017 Strategic Plan states many objectives that relate to the importance of transit and transportation, and ensuring the Regional Master Plan include these important aspects about Pelham. These objectives include:

- ‘Aging in Place’
- ‘Supporting Smart Growth’
- ‘Obtaining the Resources We Need for Excellent Public Services’



- 'Providing Personalized Service'
- 'Investing in Infrastructure that Creates Prosperity'
- 'Creating the Environment so Our Businesses can Thrive', and
- 'Ensuring the Whole Community Understands the Town's Programs'.

According to the Regional protocol, all recorded comments, requests and feedback will be incorporated into the Public Consultation records, and will be reviewed by the TMP implementation team to determine the appropriateness for inclusion into the final TMP policies or actions.

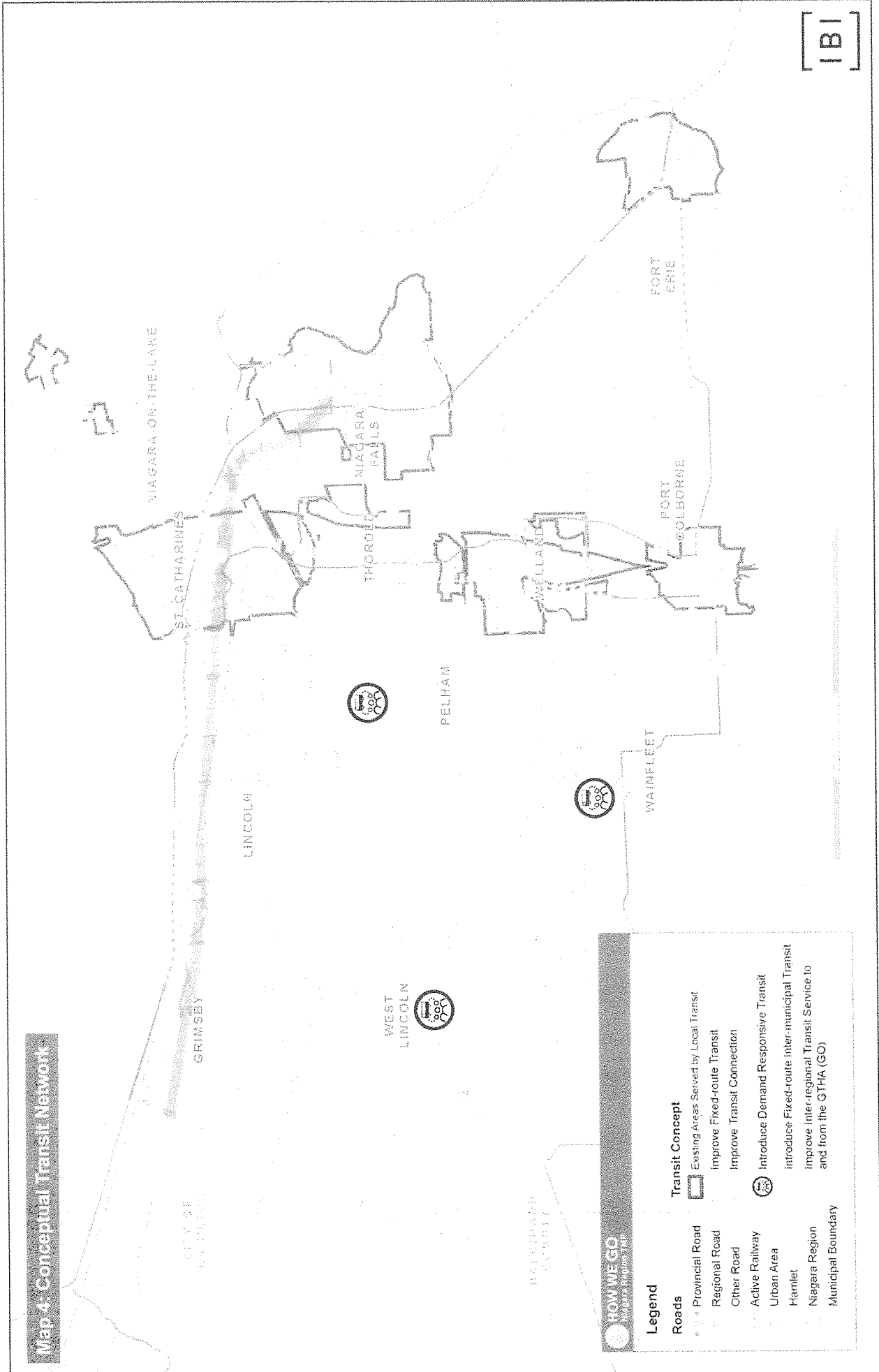
Measure of Success:

Inclusion of Pelham's needs and concerns in all relevant aspects of the TMP.

Milestones:

Submission and confirmed receipt of resolutions from Council to the Region.

Map 4: Conceptual Transit Network



TOU WE GO
Niagara Region TMR

Legend

	Roads		Transit Concept
	Provincial Road		Existing Areas Served by Local Transit
	Regional Road		Improve Fixed-route Transit
	Other Road		Improve Transit Connection
	Active Railway		Introduce Demand Responsive Transit
	Urban Area		Introduce Fixed-route Inter-municipal Transit
	Hamlet		Improve Inter-regional Transit Service to and from the GTA (GO)
	Niagara Region		
	Municipal Boundary		