Review of Vaughan's 2012 Transportation Master Plan

Vaughan Transportation Plan Update

City of Vaughan

Ontario

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Contents

1 Introduction

The purpose of this report is to document the progress made toward achieving the objectives of the Vaughan 2012 Transportation Master Plan (TMP) and assist in the development of Needs and Opportunities for the TMP update. The report is structured in the following sections:

- **Section 2** provides a short overview of the most relevant changes that occurred in the planning and policy context in Vaughan, York Region and the province since 2012.
- **Section 3** documents achievements since 2012 relative to the 2012 TMP Action Plan.
- **Section 4** identifies initiatives still in progress relative to the 2012 TMP Action Plan.
- **Section 5** discusses remaining actions not yet initiated relative to the 2012 TMP Action Plan.
- **Section 6** provides an overview of the 2012 TMP monitoring and implementation plan.
- **Section 7** highlights some lessons learned through this review and proposes changes to the monitoring program and data collection efforts
- **Section 8** concludes with next steps that should be further investigated as part of the Vaughan Transportation Plan (VTP) Update.

It is noted that Section 3, 4 and 5 split up the Action Plan with respect to status. For reference, the complete 2012 TMP Action Plan with colour coded status is provided in **Appendix A.**

2 Planning Context: What Has Changed?

The City of Vaughan (the "City" or "Vaughan") is one of Ontario's fastest growing cities and home to approximately 300,000 residents and employs over 170,000 people. The City has made progress to accommodate growth through transportation initiatives and infrastructure improvements on a multi-modal level and strives to continue to improve the transportation network and connectivity to and from the City. Much of the actions, policies and plans that took place in Vaughan are directed by the provincial and regional context. The following section discusses some of the most relevant plans, policies and initiatives that directly or indirectly affect Vaughan.

2.1 Provincial Planning Context

2.1.1 Greater Golden Horseshoe Transportation Plan

Ontario's Ministry of Transportation (MTO) is currently undertaking the Greater Golden Horseshoe (GGH) Transportation Plan. The GGH Transportation Plan is an ongoing long-term planning initiative that will include a new 2051 Transportation System Plan and supporting policies, as well as a long term transportation vision for the year 2071. The GGH Transportation Plan will consider a range of transportation options including trucks, cars, transit, railways, cycling, and walking by utilizing a system plan. A system plan can help to identify how the various transportation system components can be integrated so that they work in conjunction to provide improved mobility and transportation choices for people and goods within the GGH. The GGH Transportation Plan is also considering emerging mobility models and technologies, such as automated vehicles, connected vehicles, and mobility-as-a-service. The plan will identify how these technologies will change the way people and goods move around the region. The plan recommendations are expected in 2020 and will inform and influence the policy direction across GGH, including the City of Vaughan.

2.1.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019)

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (the "Growth Plan") identifies the Vaughan Metropolitan Centre (VMC) as an Urban Growth Centre that will be planned "to accommodate and support the transit network at the regional scale and provide connection points for inter- and intra-regional transit". The Growth Plan also identifies priority transit corridors that connect the VMC to other regional Urban Growth Centres.

Relevant policies of the Growth Plan include:

1. The priority transit corridors shown in Schedule 5 of the Growth Plan will be identified in official plans. Planning will be prioritized for major transit station areas on priority transit corridors, including zoning in a manner that implements the policies of the Growth Plan.
2. For major transit station areas on priority transit corridors or subway lines, upper- and single-tier municipalities, in consultation with lower-tier municipalities, will delineate the boundaries of major transit station areas in a transit-supportive manner that maximizes the size of the area and the number of potential transit users that are within walking distance of the station.

3. Within major transit station areas on priority transit corridors or subway lines, land uses and built form that would adversely affect the achievement of the minimum density targets in the Growth Plan will be prohibited.
4. All major transit station areas will be planned and designed to be transit supportive and to achieve multimodal access to stations and connections to nearby major trip generators by providing, where appropriate:
    a. connections to local and regional transit services to support transit service integration;
    b. infrastructure to support active transportation, including sidewalks, bicycle lanes, and secure bicycle parking; and
    c. commuter pick-up/drop-off areas.
5. Lands adjacent to or near to existing and planned frequent transit should be planned to be transit-supportive and supportive of active transportation and a range and mix of uses and activities.
6. In planning lands adjacent to or near higher order transit corridors and facilities, municipalities will identify and protect lands that may be needed for future enhancement or expansion of transit infrastructure, in consultation with Metrolinx, as appropriate.

Provincial direction to focus population and employment growth around Major Transit Station Areas has major implications on where and how Vaughan will grow and directly impacts the City's transportation infrastructure needs. The Growth Plan also requires York Region to update its policies through an Official Plan Review process called a Municipal Comprehensive Review which is underway as of 2019.

2.2 Regional Planning Context

2.2.1 York Region Official Plan 2016 Office Consolidation (2016)

The York Region Official Plan (YROP) emphasizes the Region's commitment to implementing a comprehensive, active transportation network. The Region's approach to transportation planning is focused on trip reduction, providing transportation choices and a shift to more sustainable modes of transportation such as walking, cycling, and public transit.

The YROP identifies a Regional Cycling Network (Map 10) and a Regional Transit Priority Network (Map 11). The York Region Pedestrian and Cycling Master Plan's Planning and Design Guidelines will be applied in the implementation of the Regional pedestrian and cycling network. Preferential treatment for transit vehicles will be provided on Regional streets designated as Regional Transit Priority Network, including the construction of *high-occupancy vehicle lanes,* dedicated transit lanes, transit signal priority and other transit priority measures within the right-of-way.

The Region also states its commitment to work with local municipalities to co-ordinate infrastructure along Regional Streets for operating and capital components, including street lighting, sidewalks, multi-use paths, and cycling facilities; and to ensure that sidewalks and street lighting are provided on both sides of all streets within the Urban Area, and Towns and

Villages that are serviced by transit. Policy also requires local municipalities to design street systems to accommodate pedestrian, cycling and transit facilities.

YROP policy also recognizes that Regional roads are generally corridors for goods movement, and that those which are not suited may subject to truck and load restrictions. Policy supports promoting an urban structure and street network in Regional Centres and Corridors that allows for the efficient movement of goods.

As noted above, York Region is currently undertaking a Municipal Comprehensive Review to account for the most recent policies set forth by the provincial Growth Plan. This work is expected to be completed by mid-2020, leading to a draft Official Plan towards the end of 2020. Regional Council adoption for an updated Official Plan is anticipated by 2021.

2.2.2 York Region Transportation Master Plan (2016)

York Region's Transportation Master Plan (YRTMP) addresses the Region's mobility needs to 2041. It provides a 25 year outlook to "create an advanced interconnected system of mobility in the GTHA in order to give York Region residents and businesses a competitive advantage, making York Region the best place to live, work and play in the GTHA".

The YRTMP has five objectives:

1. Create a world class transit system
2. Develop a road network fit for the future
3. Integrate active transportation in Urban Areas
4. Maximize the potential of employment areas
5. Make the last mile work

The YRTMP commits to:

- Undertaking a Road Classification Study that, among other outcomes, will assign a context sensitive street type to each Regional road segment
- Reviewing and updating Regional street design guidelines, standards and processes to better integrate the context sensitive solutions toolbox and better serve community needs

2.2.2.1 SUPPORTING TRANSIT AND ACTIVE TRANSPORTATION

The YRTMP recommends implementing the Rapid Transit network as illustrated on Map 7, and shown on **Exhibit 2-1**. It also recommends delivering a program of transit priority measures including, but not limited to, reserved bus or high-occupancy vehicle (HOV) lanes that maximize the speed and reliability of Frequent Transit Network (FTN) routes that operate on shared rights-of-way. In this vein, the YRTMP recommends continuing to require that when widening a road from four-lanes to six-lanes the additional lanes must be designated for Transit/HOV use, and to develop a policy to permit conversion of general purpose traffic lanes to Transit/HOV lanes or reserved bus lanes once established thresholds are met.

The implementation of mobility plans required for new community areas will be supported to ensure connected, accessible, multimodal transportation networks that prioritize access and circulation for walking, cycling and transit users.

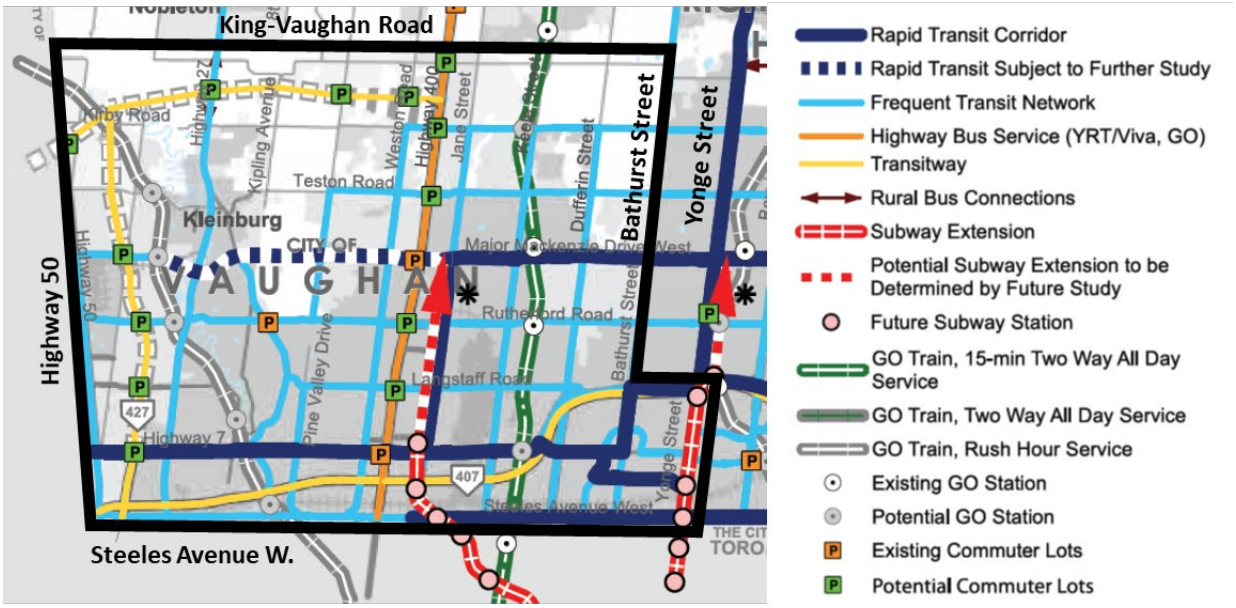


Exhibit 2-1: York Region TMP - Proposed 2041 Transit Network (Map 7)

2.2.2.2 SUPPORTING A FINER GRID NETWORK

The Region recognizes that efficient operation of its road network is critical to economic health and quality of life. One of the recommendations is to create a finer grid network within communities by providing numerous access points to collector road systems. Development of a finer grid network will allow the Region to improve the efficiency and attractiveness of transit routes, improve walkability, and reduce congestion.

2.2.2.3 PARKING

Relevant by-laws will be updated to prohibit parking on Regional roads unless explicitly permitted by signs. Consideration will be given to ensure a balance between the available right-of-way, the safety and mobility needs of all road users and the nature of adjacent land uses.

2.2.2.4 GOODS MOVEMENT

A Regional Strategic Goods Movement Network on Regional Roads will be identified, especially near intermodal facilities where feasible.

2.2.2.5 REGIONAL – LOCAL COORDINATION

The Region will assume responsibility for planning, design, construction, operation, and ownership of boulevard elements within Regional rights-of-way, including sidewalks, cycling facilities, illumination, and streetscape design.

2.2.2.6 HIGHER-ORDER TRANSIT IMPROVEMENTS

The Toronto-York Spadina Subway extension was opened to the public in December 2017 and represented the first extension of the Toronto Transit Commission subway services beyond the borders of the City of Toronto into York Region and the City of Vaughan. York Region Rapid Transit Corporation is also implementing vivaNext bus rapid transit (BRT) along Highway 7 in

the City of Vaughan from Bruce Street in the west to Yonge Street in the east, to be completed by the end of 2019. Additional rapid transit improvements are planned, such as curbside bus rapid transit service, in the longer term future for Highway 7 west to Highway 50, Jane Street, Steeles Avenue, and Major Mackenzie Drive.

3 Action Plan: Achievements Since 2012

3.1 Overarching Achievements

Key achievements since the 2012 TMP and not directly tied to the 2012 TMP Action Plan are summarized in the following sections, including the Vaughan Official Plan, Green Directions Vaughan, and new Secondary Plan studies.

3.1.1 Vaughan Official Plan (June 2019 Office Consolidation)

Vaughan's Official Plan (VOP), adopted by Vaughan City Council in September 2010 and with a June 2019 Office Consolidation partially approved by the Ontario Municipal Board, outlines numerous policies that affect the future growth of the City and its transportation system. Critically, one of the VOP's eight goals is to support moving around without a vehicle. As such, the VOP includes planning and design policies to make walking, cycling and transit use realistic options for moving around, and recognizes the integrated roles of land use, urban design, and transportation decisions. It emphasizes that the primary consideration for enhancements to the street network are to support transit and rapid transit, cycling, walking and that new streets and the redesign of existing streets should have a balanced right-of-way that supports all needs. Infrastructure should be designed to be sustainable and resilient. The draft update also includes reduced parking requirements in targeted areas in the City.

3.1.2 Green Directions Vaughan (2019)

Green Directions Vaughan was first approved by Council in 2009 and is the City's Community Sustainability Plan. A new 2019 plan was adopted by Council in December 2019. This plan describes the City's environmental and sustainable priorities and outlines a new set of sustainability actions that will guide the City of Vaughan to help achieve a healthy natural environment, vibrant communities and a strong economy. It influences all aspects of the City's operational and regulatory activities including the growth management strategy. The plan contains a number of actions informed by six goals. Key actions relevant to transportation and the VTP are summarized in **Table 3-1**.

Table 3-1: Key Actions from Green Directions Vaughan 2019 Draft Plan

Goal	Objective	Sustainability Action (Transportation and Mobility)
1: To significantly reduce waste and the use of our natural resources	1.1: To reduce greenhouse gas emissions and move towards carbon neutrality for the City of Vaughan's facilities and infrastructure	1.1.4: Implement an electric vehicle (EV) charging policy for City facilities and encourage infrastructure throughout the City to support EVs, alternative fuel vehicles and low-carbon mobility.
	1.2 To promote the reduction of community greenhouse gas emissions in the City of Vaughan.	1.2.2 Examine the feasibility of requiring Community Energy Plans for all major developments and redevelopment projects, including Secondary Plans, Block Plans and applications for significant development (as defined in the VOP 2010).

Goal	Objective	Sustainability Action (Transportation and Mobility)
2: To ensure sustainable development and redevelopment	2.3 To create a city with sustainable built form that is compact, resilient and designed to promote citizen health.	2.3.1 Implement the Sustainability Metrics as a component of the development review process to measure incremental sustainability improvements with each development application.
3: To ensure that the City is easy to get around with a low environmental impact	3.1 To develop and sustain a network of sidewalks, paths and trails that supports all modes of non-vehicular transportation.	3.1.2 Plan and implement a complete streets framework and guidelines to create a safe and attractive environment for all modes of transportation.
		3.1.3 Maintain non-vehicular networks, such as pedestrian and cycling pathways to support active transportation and enhance safety, accessibility and adaptability.
		3.1.4 Plan and implement a recreational trail network in proximity to residential communities that is accessible, desirable, safe, and which promotes outdoor active lifestyles for current and future populations.
	3.2 To develop and sustain a network of roads that supports efficient and accessible public and private transit.	3.2.1 Develop a framework for first-mile, last-mile initiatives to promote transit use.
		3.2.2 Implement a fine grain network of streets and block lengths to allow pedestrians, cyclists, transit vehicles, automobiles and goods and services vehicles to move efficiently, in accordance with City Official Plan and Master Plans.
	3.3 Reduce single occupant vehicle (SOV) trips by supporting active transportation, carpooling and public transit.	3.3.2 Collaborate with York Region and seek community partners to implement transportation demand management initiatives to reduce traffic congestion and promote transit and active transportation.

3.1.3 Areas Subject to Secondary Plans

Since the completion of the 2012 TMP the City of Vaughan has initiated and completed a number of area-specific planning studies in intensification areas which coordinate development growth with transportation. Many of these Secondary Plans are focused on infill transit-supportive development, aiming to align land use planning and more sustainable travel behaviour, in alignment with 2012 TMP objectives. These area specific studies are critical to the future growth of the City in a manner which supports transit and active transportation and reduces reliance on the personal automobile.

3.2 Action Plan Achievements

The 2012 TMP identified initiatives and actions that had to be completed in the short-term (by 2016) and in the medium-term (by 2021). The actions were grouped under four categories of improvements: active transportation, transit supportive elements, travel demand, parking, and strategic road initiatives. All these were deemed necessary in order to achieve the sustainable vision of the 2012 TMP. **Table 3-2** summarizes the short- and medium-term actions that have

been recognized and have resulted in key initiatives and infrastructure improvements within the City as of December 2019.

Table 3-2: Short and medium-term actions achieved since 2012 TMP

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
A	**Active Transportation (Cycling and Walking)**				
2	Update Pedestrian and Bicycle Master Plan (PBMP)	Analyze pedestrian and cycling access issues/needs as they relate to York Region Pedestrian and Cycling Master Plan and planned YRT/VIVA projects Update Pedestrian and Bicycle Master Plan if required	PBMP is complete. Approved by Council in December 2019.	Based on monitoring results and additional improvements identified, assess need to update PBMP	PBMP is complete. Approved by Council in December 2019.
5	Implement Access Improvements at VIVA Rapid Transit Stations and new GO Rail Stations	N/A		Analyze pedestrian and cycling issues/needs as they relate to VIVA projects	VIVA projects include improvements to pedestrian and cycling facilities but are limited to the immediate station areas.
B	**Transit Supportive Elements**				
7	Support Early Extension of Spadina Subway	Work with York Region and TTC to expedite design and ensure early implementation of the Spadina subway extension to Highway 7	Opened December 17, 2017	N/A	
10	Support New Development and Redevelopment in Centres and Transit Corridors	Ensure that new development in Centres and Corridors is transit oriented	Secondary Plans such as VMC, Vaughan Mills Centre, Concord GO are centered around transit	Ensure that new development in Centres and Corridors is transit oriented	Secondary Plans such as VMC, Vaughan Mills Centre, Concord GO are centered around transit
C	**Travel Demand Management**				
20	Require TDM Plans and related building facilities as a Condition of Development Approvals	Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments	April 2018 TIS Guidelines outline requirements for required TDM plans	Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments	April 2018 TIS Guidelines outline requirements for required TDM plans

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
D	**Parking**				
E	**Strategic Road Initiatives**				
31	Conduct Joint VMC and Surrounding Area Transportation Study with York Region	Partner with Region to complete the study in early 2012	Completed in 2013		
		Report to Council with Study recommendations	Incorporated into VMC Secondary Plan in December 2012 approval.		
33	Complete and implement Class EA for North Maple Community Bridge (Block 33)	Work with consultants and Council to address outstanding issues	Notice of Study Completion issued Dec 12, 2013	Following EA approval, secure funding for implementation	2/3rds of estimated funding included in 2018 DC Study
34	Initiate Class EA Studies (Phases 3 & 4) for Priority Road Improvements a) Portage Parkway Extension & Widening b) Huntington Widening and Urbanization	Develop Terms of Reference	Notices of Study Completion for Portage Parkway issued July 15 and September 8, 2016. Notice of Study Completion for Huntington Road issued November 9, 2017	Following EA approval for Huntington Road widening and Portage Parkway extension, secure funding for implementation	Funding included in 2018 DC Study
		Retain consultants to conduct the studies	See above		
35	Implement New Collector Roads through the Development Approvals Process	Work with developers to complete EA studies, if required, and implement collectors needed to support new development	Ongoing	Continue to work with developers to secure necessary approvals and phased implementation, in conjunction with new development	Ongoing

3.3 Pedestrian and Bicycle Master Plan Update (2020)

One of the key action items identified in the 2012 TMP was to update the Pedestrian and Bicycle Master Plan (PBMP). As discussed in **Section 3.2**, the PBMP Update (2020) was completed and approved by Council in December 2019. The key outcomes and recommendations of the PBMP are highlighted in this section due to its close relation with the TMP Update.

Exhibit 3-1 shows the priority cycling network identified in the PBMP. In addition to regional and local routes, it also includes a multi-use recreational trail network including the 100km Vaughan Super Trail, which forms a continuous circular loop around the City of Vaughan. The study also prioritizes localized mini-networks in the Maple, Thornhill, and Woodbridge neighbourhoods, as well as at Intensification Centres.

In addition to the priority network, the study also identified policy recommendations in four groups: Awareness and Culture, Safety, Infrastructure, and Connectivity. Key policy recommendations related to the TMP include:

- Provide active transportation infrastructure that is suitable for all ages and abilities;
- Identify and leverage larger capital projects and development to improve active transportation infrastructure;
- Update the City-wide Engineering Design Criteria and Standard Drawings to consolidate all existing standards and guidelines and reflect current best practices in design of pedestrian, cycling and multi-use recreational trail design;
- All new arterial and collector roads shall include protected intersections, separated linear active transportation facilities on both sides of the roadway and consider crossings that will service the multi-use recreational trails system in order to provide the most direct and comfortable route for pedestrians and cyclists; and
- Continue to research new and emerging trends and technologies such as bike share, e-bikes and e-scooters.

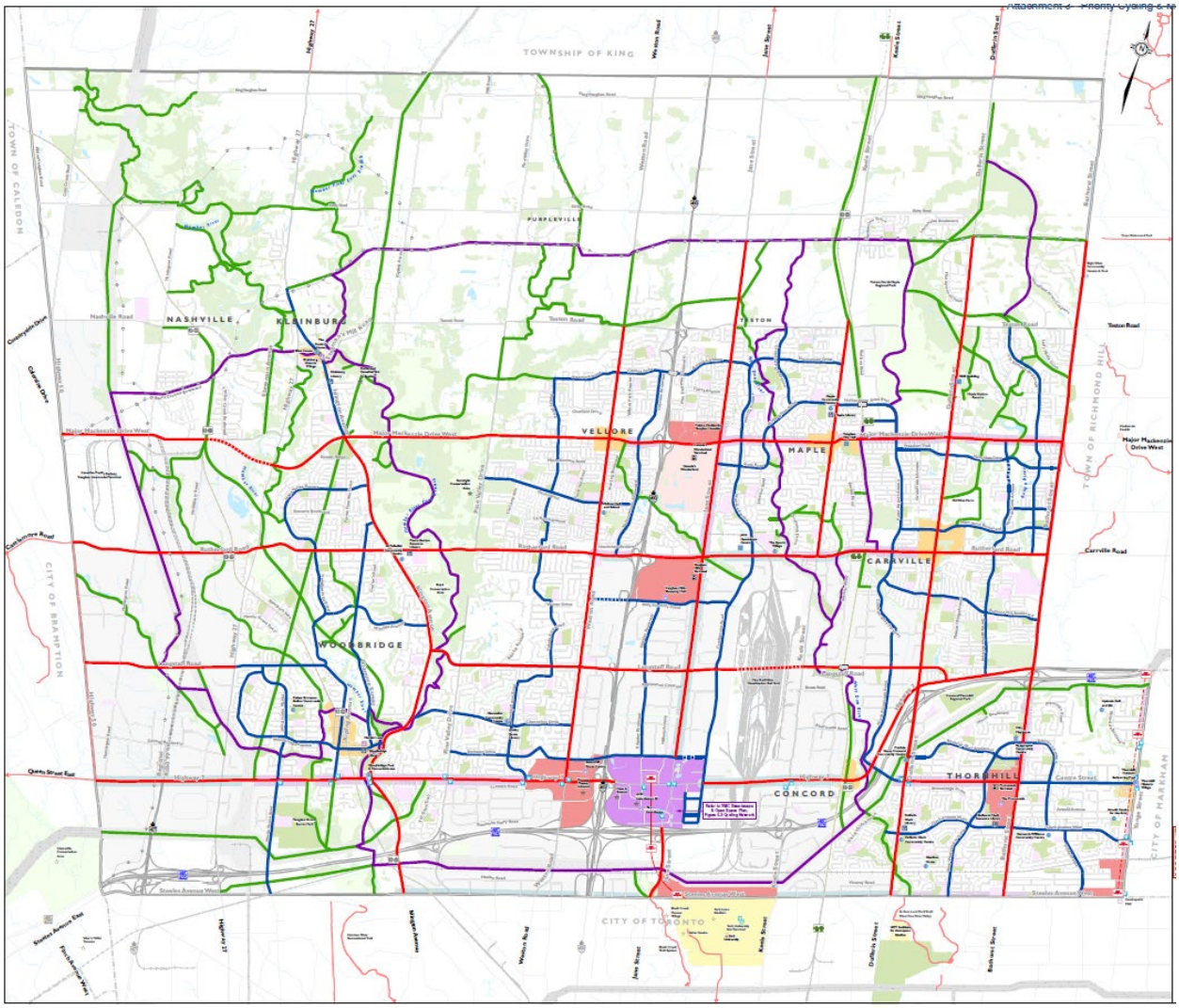


Exhibit 3-1: Priority Cycling and Multi-Use Recreational Trail Network

4 Action Plan: Initiatives Still in Progress

Although the City of Vaughan has made strides to improve its transportation network, there are a number of initiatives and proposed projects from the Vaughan 2012 TMP that are currently underway or are incomplete as of October 2019, but have additional measures that can be taken to be completed. **Table 4-1** highlights the initiatives that are in progress**.**

Table 4-1: Short and medium-term actions from the 2012 TMP still in progress

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
A	**Active Transportation (Cycling and Walking)**				
1	Update city sidewalk policy	Update in context of new OP, TMP and PBMP policies and directions	Draft update complete in 2013, but need for update should be reviewed.	Review sidewalk policy and revise if necessary	Updated policy was prepared in 2014 but was not taken to Council at that time. 2019 PBMP recommends review and revision of policy. In practice, TMP / OP sidewalk policy recommendations are being implemented through development.
3	Accelerate implementation of PBMP network	Increase annual capital budgets	Annual AT budget was introduced in 2018. 2018 DC By-law update included costs for AT infrastructure City-wide.	Implement next phases of the PBMP	See Short Term Action Status
		Synchronize PBMP phasing with TMP phasing, and identify projects that can be advanced	Informally, since 2016 AT facilities have been routinely accommodated in development and capital projects (design phases). 2019 PBMP speaks to formally establishing routine accommodation policy for all new roads projects.		
		Implement initial phase improvements	See above. Progress between 2012 and 2016 was limited due to lack of staff resources.		
5	Implement Access Improvements at VIVA Rapid Transit Stations and new GO Rail Stations	N/A		Incorporate project and funding needs into City budgets	Potential access improvements to GO stations currently being discussed with Metrolinx
				Implement in logical and coordinated manner	see above
B	**Transit Supportive Elements**				

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
9	Support Improved GO Rail Service to Barrie	Work with Metrolinx and York Region to expedite improved service and to support new stations at Highway 7 and Kirby Road	Service levels on Barrie line currently all-day, two-way, with one-way service during peak periods due to track limitations. Kirby GO Station to be delivered using Metrolinx's Market Driven approach. Hwy 7 / Concord GO no longer under consideration for current phase Barrie line improvements. City and Region continuing to advocate for Hwy 7 / Concord GO station.	N/A	
10	Support New Development and Redevelopment in Centres and Transit Corridors	Expedite new secondary plan for Weston/Highway 7 Primary Centre	Phase 1 work received by Committee of the Whole on June 5, 2019. Final SP scheduled for completion in 2021.		
12	Advocate Early Implementation of Transit Service to New Development Areas	Work with York Region, Metrolinx and YRT to provide new/improved transit service to all recently occupied subdivisions and employment areas	Most areas served by YRT, with the exception of the neighbourhoods: -bounded by Huntington, Nashville, Hwy 27, and Major Mac -to the southeast of Dufferin and Kirby -north of Nashville to the east of Hwy 27	Continue to work with York Region, Metrolinx and YRT	Most areas served by YRT, with the exception of the neighbourhoods: -bounded by Huntington, Nashville, Hwy 27, and Major Mac -to the southeast of Dufferin and Kirby -north of Nashville to the east of Hwy 27
13	Advocate and Support Yonge Subway Extension and New BRT Lines	Work with York Region to articulate the benefits and promote transit supportive development in the Yonge corridor	Advocacy on-going, and transit supportive development occurring at Richmond Hill Centre.	Work with York Region, TTC and Metrolinx to secure funding commitments from Federal and Provincial Governments for early implementation and design for Yonge Subway Extension and New BRT Lines	Preliminary planning, design and engineering (PDE) is expected to be completed within the year. To complete the PDE, the Government of Canada committed $36 million and the Province, through Metrolinx, committed $55 million. In April 2019, the Province announced $11.2 billion to support construction for four rapid transit projects, including the YSE.

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
14	Advocate for Fare Integration and Service Coordination	Work with York Region and various transit operators to promote the seamless integration of transit services across Regional boundaries	PRESTO is be accepted on TTC bus routes in York Region. GTA weekly pass available for trips involving 2 or more transit systems (excl. GO). Metrolinx developing an integrated regional fare structure, but timelines unclear.	N/A	
C	**Travel Demand Management**				
15	Confirm City Role in TDM, Support TMAs and Monitor TDM Benefits			Based on the demand in concentrated employment areas, and the benefits of cross-pollination among employers, assess the need for additional area specific TMAs with Metrolinx and York Region	PointA (formerly Smart Commute North Toronto, Vaughan) is operational. Opportunity for greater partnerships exist with the change in funding for TMAs throughout the GTHA.
19	Develop and Implement Pilot School TDM Program	Provide staff assistance in promoting, planning and implementing a pilot school TDM program, and begin roll-out across Vaughan Elementary and High Schools	City works with schools to develop programs to encourage more children to walk and cycle to schoo l.		

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
20	Require TDM Plans and related building facilities as a Condition of Development Approvals	Secure TDM related facilities (e.g., showers, secure bike parking) in new developments	A brief review of SPs shows that these measures are not consistently required. Actual implementation unclear. VMC SP policy "requires" secure bike parking for offices and apartment buildings, and "encourages" showers and change rooms for office developments. Yonge-Steeles Corridor SP does not include mention. Vaughan Mills Centre SP "encourages" bicycle parking and showers	Secure TDM related facilities (e.g., showers, secure bike parking) in new developments	A brief review of SPs shows that these measures are not consistently required. Actual implementation unclear. VMC SP policy "requires" secure bike parking for offices and apartment buildings, and "encourages" showers and change rooms for office developments. Yonge-Steeles Corridor SP does not include mention. Vaughan Mills Centre SP "encourages" bicycle parking and showers
21	Support Integration of Bicycle and Public Transit Travel, including improved cycling access and bicycle storage at transit stops, bike racks on buses and allowing bikes on subway trains	Work with the Region, TTC and Metrolinx to ensure integration related to Spadina subway extension and Highway 7 BRT line	All stations include bike parking, but not secure storage facilities. Bikes are allowed on the subway during non-peak hours and on weekends Bike racks are provided on most TTC and all YRT buses Bike parking is provided at many, but not all, Hwy 7 Viva stops	Work with the Region, TTC and Metrolinx to ensure integration related to Yonge subway extension and westerly extension of Highway 7 BRT line	All SSE stations include bike parking, but not secure storage facilities. Bikes are allowed on the subway during non-peak hours and on weekends Bike racks are provided on most TTC and all YRT buses Bike parking is provided at many, but not all, Hwy 7 viva stops
D	**Parking**				
22	Finalize 2010 Draft Parking Report and Prepare a Revised Parking Zoning By-law	Finalize 2010 parking report for Council adoption	Draft Report completed in March 2010 but has not been approved by Council	N/A	
		Prepare revised zoning by-law that supports the report	Draft comprehensive zoning by-law presented to Council June 2019. Completion anticipated in 2021.		

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
25	Implement a Park-and-Ride Lot North of the Vaughan Metropolitan Centre (VMC)	Work with the Region and YRT to identify and assess alternative sites for commuter parking oriented to the Spadina subway	Temporary commercial paid parking lot in operation. Status of the parking strategy unclear, but noted as in progress on VMC website. VMC SP notes that the VMC station will not include a public commuter parking lot associated with transit facilities.	N/A	
		Report to Council with results and recommendations	See above		
28	Implement Paid On-Street Parking in the VMC	N/A		Confirm street segments, assess fee collection options and implement	Status of the parking strategy unclear, but noted as in progress on VMC website
E	**Strategic Road Initiatives**				
33	Complete and implement Class EA for North Maple Community Bridge (Block 33)			Following EA approval, secure funding for implementation	Design underway by Infrastructure Delivery
36	Develop a Program for Evaluation and Implementation of Railway Grade Separations	Based on the recommended TMP road network, develop a program for evaluation and implementation of 5 railway grade separations with Vaughan roads	Identified in 2018 DC study but not prioritized	N/A	
37	Implement Railway Grade Separations	As warrants are met, initiate Class EA studies for high priority Vaughan projects	RFP issued for Kirby Road Widening EA and Barrie GO rail grade separation between Jane and Dufferin Street. Bid closed June 6, 2019. Barrie GO / Rutherford Rd grade separation included in Rutherford / Carrville EA completed in March 2016. Barrie GO / McNaughton grade separation EA to be completed as part of	Design and construct high priority railway grade separations	Construction underway for Barrie GO / Rutherford grade separation. Barrie GO / McNaughton grade separation in EA stages, construction not anticipated until at least after 2022 (completion of Maple GO improvements).

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
			Metrolinx Barrie corridor improvements TPAP, commencing in 2019.		
38	Initiate Class EA Studies (Phases 3 and 4) for Jog Eliminations	Concurrent with the travel needs of new development, initiate EA studies for jog eliminations along Pine Valley Drive at Teston Road and Kirby Road.	Pine Valley / Teston EA jog elimination included in Teston Rd EA by York Region. Notice of Completion issued November 24, 2016. Pine Valley / Kirby jog elimination EA not started.	Following EA approval, secure funding for implementation	Detailed design underway for Pine Valley / Teston Rd.
39	Support York Region Goal to Eliminate Jog at Jane Street and Kirby Road	Work with Region to expedite the jog elimination at Jane Street and Kirby Road	Jane / Kirby jog elimination to be addressed in Kirby Road Widening EA, commenced Sept 2019. Anticipated completion in 2021.	N/A	
40	Connect New Collector Road to Bass Pro Mills Drive Crossing of (and Interchange with) Highway 400	Concurrent with new development on the west side of Highway 400, extend collector road to the existing Bass Pro Mills Drive overpass	Bass Pro Mills EA in development, to be commenced in 2019.	N/A	
41	Support Completion of Stage 1 of the GTA West Corridor EA Study and Advocate Initiation for Stage 2 of the EA Study for New Corridor	Following completion of Stage 1 of the GTA West Corridor EA Study, work York Region and MTO to expedite the determination of the routing for the GTA West Corridor.	The Stage 1 Transportation Development Strategy was completed in November 2012. Stage 2 resumed in June 2019 (suspended in Dec 2015). A Technically Preferred Route will be presented in Fall 2019. The route will be confirmed in the following months.	N/A	
		Work With MTO and York Region through Stage 2 of the EA Study to secure OPA 637 interchange connection(s) with Highway 400 together with a Regional arterial connection	Stage 2 ongoing, all proposed options consider a connection to Highway 400 but not all options propose a connection to a Regional arterial in the vicinity of Highway 400.		

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
44	Initiate Class EA (Phases 3 and 4) Studies for Kirby Road Extension and Widening	N/A		Initiate class EA for Kirby Road	RFP issued for Kirby Road Widening and Barrie GO rail grade separation between Jane and Dufferin Street. Project commencing Sept 2019. The City authorized Rizmi Holdings to undertake the EA study for the extension of Kirby Rd between Dufferin and Bathurst. The study is underway (Notice of study commencement issued May 11, 2017). The Notice of Study Completion was filed on September 19, 2019 with the public review period ending on October 18, 2019. Awaiting final approval from MECP.

5 Action Plan: Actions Not Achieved To-Date

There are a number of actions identified in the Vaughan 2012 TMP that have not been addressed or initiated to-date, in many instances due to resource limitations. **Table 5-1** provides an overview of the actions that are not achieved to date.

Table 5-1: Short and medium-term actions from the 2012 TMP not achieved to date

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
A	**Active Transportation (Cycling and Walking)**				
4	Accelerate Construction of Missing Sidewalk Links on Regional Roads and other Key Pedestrian Community Linkages (with focus on access to YRT Bus Stops)	Increase annual operating budgets for 2012-2016	Informal process based on citizen inquiries and staff knowledge for filling missing links or key linkages. No plan to formalize this process.	N/A	
		Identify projects that can be advanced	See above		
		Implement	See above		
B	**Transit Supportive Elements**				
8	Advocate New GO Rail Service to Bolton	Work with Metrolinx and York Region to pursue additional local (smaller scale) stations in Woodbridge Core and Nashville, and advocate for early service implementation	Identified as a "beyond 2041" project in the 2018 Metrolinx RTP	Work with York Region and Metrolinx to secure funding commitments from Provincial Government for early implementation	Identified as a "beyond 2041" project in the 2018 Metrolinx RTP
11	Develop New Traffic Level of Service Standard for Centres	In co-operation with York Region, establish appropriate level of traffic service standard to support new development in Centres and Corridors	Not implemented		
C	**Travel Demand Management**				
15	Confirm City Role in TDM, Support TMAs and Monitor TDM Benefits	Meet with Metrolinx and York Region to agree on respective roles and responsibilities within a strengthened 3-way partnership	Meeting not held due to resource limitations. Some opportunity exists to re-engage York Region and PointA as a result of changes to TMA funding formula.		
16	Develop City-wide TDM Plan	Develop a comprehensive TDM Plan to look at areas such as promotion, the community, schools, institutions and workplaces	Not started due to resources, capital budget identified	Update City-wide TDM Plan if necessary	Not started due to resources
		Prepare plan and submit to Council	See above		

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
17	Develop TDM Program for City Employees	Conduct an internal review of existing programs/services	Not started due to resources	Update TDM Program if necessary	Not started due to resources
		Survey staff	See above		
		Review programs from other municipalities	See above		
		Develop state-of-the-art program for consideration by Council	See above		
18	Support New and Existing Vaughan Employers in Initiating TDM Programs	Create guidelines document including a menu of employer based programs/services	Not started due to resources	Provide staff assistance in promoting, planning and implementing employer specific plans	Not started due to resources
		Promote menu with new and existing large City employers, in co-operation with Vaughan Chamber of Commerce	Not started due to resources		
19				Develop and implement TDM programs for Elementary and High Schools and provide staff assistance in promoting, planning and implementing school specific plans	Not started due to resources
D	**Parking**				
23	Develop City Mandate for Parking Management	Prepare report to Council recommending elements of a parking management mandate and associated staff responsibilities	Not started	N/A	
24	Develop Network of Carpool Lots for Vaughan	Work with the Region and the Province to define general locations for carpool lots in the City	Not started	N/A	
		Amend the Regional and City TMPs accordingly	Not started		
26	Establish a Vaughan Parking Authority	N/A		Assess experience elsewhere and relate to Vaughan situation	Not started
				Prepare a report to Council on costs/benefits and mandate/role of a parking authority (or separate unit of	Not started

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
				the City administration)	
27	Plan for and Implement a Municipal Parking Facility in the Vaughan Metropolitan Centre	N/A		Assess demand, identify and evaluate alternative sites, prepare cost estimate, and report to Council	Not started
29	Assist York Region and MTO in Implementing Carpool and Park-n-Ride Lots	N/A		Assist the senior levels of government in selecting and acquiring (possibly through the development approvals process) suitable sites	Not started
E	**Strategic Road Initiatives**				
32	Develop Comprehensive VMC Truck Strategy and Implementation Plan	Develop Terms of Reference jointly with York Region and retain consultant	Not started	Work with York Region and MTO to implement various components of the Plan	Not started
		Report to Council with Study recommendations	Not endorsed by Council in 2013		
34	Initiate Class EA Studies (Phases 3 & 4) for Priority Road Improvements a) Portage Parkway Extension & Widening b) Huntington Widening and Urbanization	a) In May 2015, the City of Vaughan initiated a Class EA study for Portage Parkway Widening and Extension to Creditstone Road, as was identified in the Vaughan TMP (2012) b) In November 2014, the City of Vaughan initiated a Class EA study for road improvements to Huntington Road between Langstaff Road and Nashville Road.	a) The Portage Parkway EA study was completed in September 2016. b) The Huntington Road EA study was completed in November 2017.	Implement EA for Huntington Road widening and Portage Parkway extension, secure funding for implementation	Funding for the Portage Parkway and Huntington Road projects is being collected as part of the City of Vaughan Development Charges Background Study (2018).
36	Develop a Program for Evaluation and Implementation of Railway Grade Separations	Work with York Region to expedite the completion of 6 railway grade separations with Regional Roads	In December 2017, Vaughan Council endorsed the outcome of the Railway Safety Assessment Study jointly completed with York Region and other regional municipalities. The joint study identified five at-grade crossings requiring immediate treatment		The five crossings require trimming or clearing vegetation at four crossings (Kirby Road, Doney Crescent, Rivermede Road and King Vaughan Road) and one sign relocations at McNaughton Road. The eight crossings require signage and road resurfacing and are

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
			and eight at-grade crossings requiring improvements to be completed by November 2021.		Huntington Road north of Nashville Road, Kirby Road east of Cold Creek Road, Cold Creek Road, Albion Vaughan Road, Huntington Road north of McGillvray Road, Creditstone Road, Doney Crescent, King Vaughan Road.
37	Implement Railway Grade Separations			Secure funding commitments from Federal and Provincial Governments for high priority railway grade separations	Not started
				As warrants are met, initiate Class EA studies for medium priority Vaughan projects	Not started
38	Initiate Class EA Studies (Phases 3 and 4) for Jog Eliminations			Implementation	Not started
42	Initiate Class EA (Phases 3 and 4) Studies a) Creditstone Widening b) Colossus Road Extension across Highway 400 and Improvements easterly to Creditstone Road	N/A		Develop Terms of Reference	Creditstone: EA not started. Planned in 2022. Colossus: 2015 VMC SP Corridor Protection: Colossus Drive Overpass Area Study documented and advanced the implementation for the near term need for a corridor protection policy for the Extension across Hwy 400. The study is only intended to inform but not predetermine the findings and outcome of a future EA. Similar corridor protection work to be completed for west side of corridor in Weston/7 SP TMP. A preferred alignment was identified in the 2013 VMC and surrounding areas Transportation Study. EA not started
				Retain consultants to	Not started

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
				conduct the studies	
				Following EA approval, secure funding for implementation	Not started
				Implement	Not started
43	Reassess Need for and, if confirmed, Initiate Class EA (Phases 3 and 4) Studies for King-Vaughan Road Widening	N/A	This was a strategic road improvement needed to provide added capacity to the network in support of the Highway 400 North employment area. In the 2012 TMP, the corridor deficiency analysis identified the need for the widening between Keele Street and Bathurst by 2021, while the segment between Highway 400 and Keele Street should be completed by 2031. However, since the 2012 TMP the land use assumptions have changed. The blocks between Kirby and King-Vaughan are no longer within the urban boundary. This change was accounted for in the the North Vaughan Communities TMP and there was no longer need to widen the road. However this recommendation is highly dependable on the progression of the GTAW corridor and the York Region municipal comprehensive review.	Develop Terms of Reference	Not started
				Retain consultants to conduct the studies	Not started
				Following EA approval, secure funding for implementation	Not started
44	Initiate Class EA (Phases 3 and 4) Studies for Kirby Road Extension and Widening	N/A		Following EA approval, secure funding for implementation	EA underway, road widening costs included in 2018 DC update
				Implement Kirby Road extension and widening	Not started

6 Monitoring Progress

The 2012 TMP identified the new path forward for Vaughan, and recommended actions, infrastructure improvements and policy direction. To ensure that progress is made the TMP recommended a monitoring program. The monitoring program identified key performance indicators ("KPIs" or "measures") to quantitatively track progress towards achieving the seven objectives. The monitoring table is shown in **Table 6-1**, and the colour-coding in the table categorizes objectives as follows:

- GREEN: improvement
- YELLOW: unchanged
- GREY: performance varies across locations
- RED: deteriorated
- WHITE: yet to be evaluated due to lack of data availability

Select KPIs were calculated, where available, to identify changes since the 2012 TMP using various sources, including Transportation Tomorrow Survey data, Travel Time data collected by the MTO for regional arterials and provincial highways, as well as various City of Vaughan and York Region databases. Although data was not available for all indicators, review of the indicators for which data is available helps to illustrate whether the trends are shifting in the right direction.

Following **Table 6-1**, further supporting analysis is provided as it relates to the 2012 TMP objectives to:

1. Increase Mobility
2. Improve Safety
3. Improve Reliability
4. Increase Accessibility
5. Meet TDM/TSM Objectives
6. Achieve Sustainable Built Environment/Land Use
7. Reduce Environmental Impacts

Based on the available KPI and the progress achieved to date, each objective received a score to reflect an improved, unchanged or regressed performance according to the following scale:

At the end of the analysis under each objective alternative measures for consideration are offered. The "final" recommendations (for this stage) are provided in **Section 7.1.**

Finally, additional tables of the analysis based on the Transportation Tomorrow Survey data can be found in **Appendix B**.

Table 6-1: 2012 TMP Monitoring Plan

Objective Number	Objective	Indicator	Measure
1	Increase Mobility	Road Network Congestion	Daily and peak VC on major screenlines
			Travel Time Index for 400 series and Regional Arterial roads
			Average delay per signal along arterial roads
			Percentage of intersections at or above capacity
		Freight Transportation Efficiency	Peak period average freight transport speed
2	Improve Safety	Traffic collisions and fatalities	Annual number of collisions per capita (total and severe)
			Annual number of collisions at rail/road grade crossings
			Annual number of pedestrian/bicyclist collisions
3	Improve Reliability	Variation in average speed and travel times for typical auto trips	Buffer time index for 400 series highways and regional roads
		Adherence to transit route schedule	Average speed for buses, compared to schedules speed on busy transit routes
4	Increase accessibility	Changes in commuting behaviour and travel patterns	Transit coverage over the urbanized portion of the City
			Average lag time for transit service to be provided to new residential areas
		Access to Centres	Proportion of transit and cycling trips to / from Regional and Primary Centres
5	Meet TDM/TSM Objectives	Modal Shift to transit	Daily and peak period modal share of transit overall and per purpose (work, school, discretionary, non-home bound)
			Peak period proportion of transit usage crossing the city borders and other screenlines
			Daily transit trips per person
			Transit weekday boarding per capita along busy routes (VIVA, Hwy7, Rutherford, Bathurst) within the City limits
			Transit weekday boarding per revenue vehicle hour (total # of paying passengers, plus transfers, divided by total number of revenue vehicle hours in service(along VIVA routes within city limits)
			Proportion of full time student population over 16 years of age with transit passes (VIVA, YRT, GO , TTC, combination)
			Bus travel time on HOV lanes to auto travel time on adjacent GPL for major arterial roads with the City with HOV lanes accommodating transit vehicles
		Modal shift to non-motorized modes	Km of municipal roads with sidewalks/cycling route (must be used in combination with other measures)
			Daily and peak period modal share of walking and cycling trips
			Cycling counts along key cycling routes and across screenlines
			Proportion of internal trips with the regional and primary centres with walking as the primary mode of travel
			Percentage of population who live and work within 800m (median walk trip length) in the GTA based on 2006 TTS) of transit stops

Objective Number	Objective	Indicator	Measure
		Modal shift to carpooling	Travel time on HOV lanes to travel time on adjacent GPL
			Daily and peak period average auto occupancy crossing the city borders and other screenlines
			Daily and peak period modal share of auto passenger trips
		Reduction in cost for road improvements	Annual cost of road improvements within the City of Vaughan (must be in combination with other measures)
		Increase in teleworking	Proportion of residents of the city working from home
		Charge for parking in centres and corridors well served by transit	Proportion of HM-Work trips destined to the City of Vaughan along with the Regional and Primary Centres with free parking available at person's usual place of work
		Reduction in auto dependency	Vehicle availability per household or per adult (>=16) for residents of the City
			Proportion of adults (>=16) without driver's license
			Daily and peak period non-auto modal share of trips by purpose for City residents
			Daily and peak period auto trips per person total and per purpose for the residents of the City
			Daily and peak period non-auto modal share of inbound trips towards the City
6	Achieve sustainable Built environment/land use	Population and employment densities	Number of residents and jobs per unit of land area within regional primary centres and overall urbanized proportion of City
		Mixed land use	Self-containment (portion of trips that start and end within the City) place of work employment to resident labor force ratio
			Place of work employment to resident labor force ratio
			Employment minus employed labour force
			Median trip length per purpose for the residents of the City
			Jobs within walking distance (1km: median walk trip length) of places of residents
			Daily and peak period median trip lengths (straight line distance) per mode per purpose (HB work, HM school, HM Discretionary, Non HB) for residents of the City
		Road network Design	Proportion of local streets within 500 m of transit stops with sidewalks on both sides
7	Reduce environmental impacts	Transport related GHG emissions	Transport related GHG per capita
			Annual transport related GHG emissions
			Auto vkt on the road network within the City
		Energy efficiency	Fuel consumption per capita (VKT or PKT and per mode)

Vaughan is one of the fastest growing cities in the Greater Toronto Area. In 2016 Vaughan generated more than half a million trips (585,043 daily trips) during a typical day, a 20% increase in 10 years (477,222 daily trips in 2006).

6.1 Increase Mobility ☹

The first objective of the 2012 TMP aimed to increase mobility by ensuring that people and goods move efficiently on the road network. ***Travel delay, congestion and average vehicle speeds*** *on arterial roads are good indicators that showcase how fast and efficient the system is moving.*

Mobility provides individuals the ability to move from one location to another in an efficient manner. One way to measure mobility is through indicators such as road congestion, which can be assessed through identifying the change in travel times along arterial roads.

Using travel time survey data (TomTom data) collected through MTO's Travel Time Survey, a comparison of AM peak travel times for regional arterial roads was completed. The analysis revealed increased travel times for all corridors where data was available between 2014 and 2016. The average travel speed has seen a reduction ranging between 8% and 32%, with the most significant change being observed along Dufferin Street. With cars the primary mode of travel in Vaughan, it will be of utmost importance to re-evaluate strategies to increase capacity and throughput for all modes, or decrease auto demand, in order to increase mobility and prevent constraints in the future transportation network.

Another measure of the monitoring plan considered the volume to capacity ratio across city boundaries. This approach compares all roads that cross an imaginary line, i.e. a screenline (e.g. a rail corridor, a river etc.), and compares the traffic volume to the available road capacity. Based on cordon count data that was available for historical years, it appears that most screenlines have remained consistent. An increase of traffic has been observed at the border of York Region with Toronto with the inbound (into York) direction noticing an increase from 1.02 to 1.19. All screenlines are shown in **Figure 6-7.**

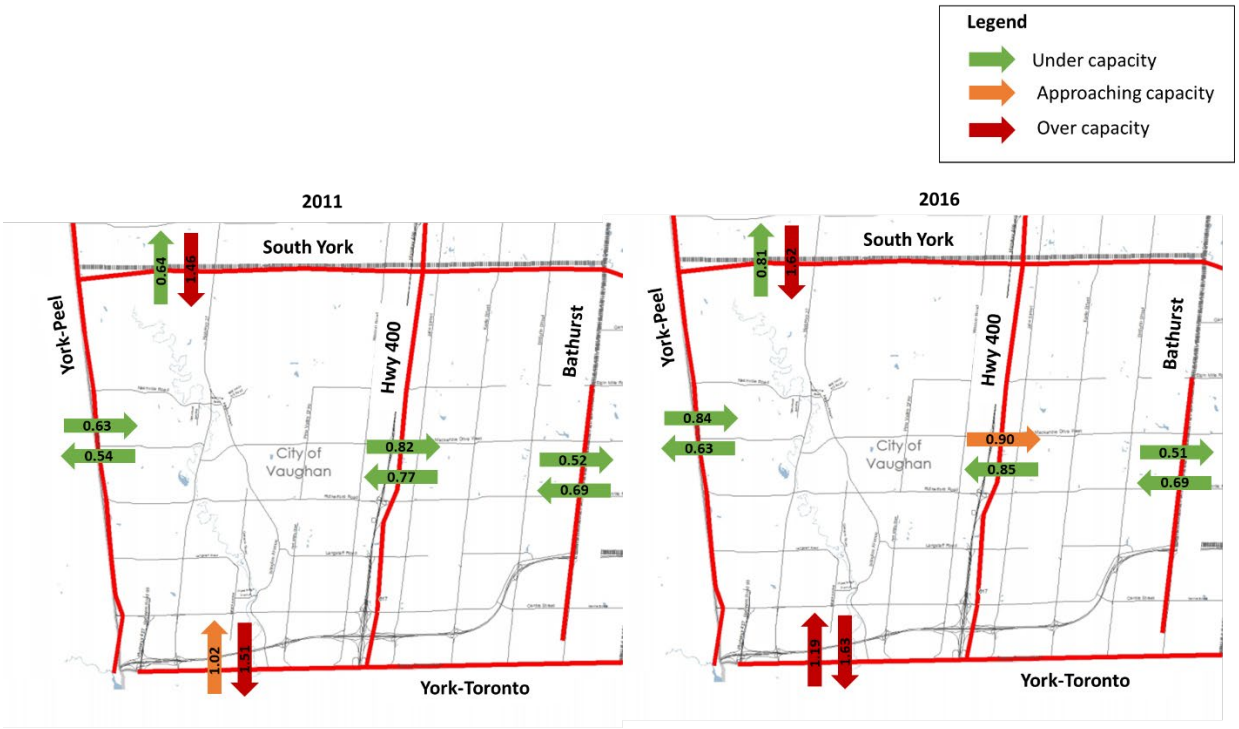


Figure 6-1: Volume to Capacity (VC) ratio at screenlines in 2011 and 2016 (Source: Cordon Count Data)

Other measures of mobility: Mobility is also described as the access that people have to travel options and more importantly how fast these travel options get them to their desired destination. This is especially important as new travel modes become available and the mobility-as-a service concept will facilitate more multi-modal trips.

6.2 Improve Safety 😐

Safety is a crucial objective of a transportation plan, aiming to make streets and intersections safer places for vulnerable users- pedestrians and cyclists, as well as for vehicle users. The monitoring plan recommended monitoring ***traffic collision and fatalities*** *on the road, at rail crossings as well as collisions with pedestrian/cyclists.*

The City of Vaughan as well as York Region document collision occurrences on their roads. With many cities around the world adopting Vision Zero[1] principles, collision analysis is a very important tool that can help cities understand recurring issues, improve infrastructure and modify design standards to protect all users. The following analysis is based on data collected on Regional roads between 2014 and 2018.

The years following 2015 saw a great drop in fatal and overall collision rates, with 1 fatality per 100,000 population on regional roads. However, in 2018, while the number of collisions

[1] Vision Zero is a multi-national road traffic safety project that aims to achieve a highway system with no fatalities or serious injuries involving road traffic.

continued dropping, the number of fatally injured persons on regional roads nearly doubled with 2 fatalities per 10,000 population.

Table 6-2. Comparison of Collision Rates within Vaughan and York Region on Regional roads

	Within Vaughan on Regional roads					Within York Region on Regional roads				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Fatal Collisions Rate Per 100,000 Population	1.4	2.1	1.0	1.0	1.9	1.7	1.1	1.3	-	-
Collision Rate Per 100,000 Population	1098	1100	985	948	908	728	712	661	-	-

A heat map of all collisions within the City of Vaughan is shown in **Figure 6-2** with colour schemes that highlight where collisions are most frequent. A high number of collisions are observed along Highway 7, Rutherford Road, and Major Mackenzie Drive, and more noticeably adjacent to Highway 400 along those corridors. The intersections with the highest number of collisions are listed as follows:

- Highway 7 and Weston Road: 222 collisions
- Weston Road and Rutherford Road: 195 collisions
- Keele Street and Highway 7: 188 collisions
- Highway 7 and Jane Street: 184 collisions
- Highway 7 and Pine Valley Drive: 163 collisions
- Major Mackenzie Drive West and Jane Street: 156 collisions
- Islington Avenue and Rutherford Road: 156 collisions
- Jane and Rutherford Road: 132 collisions
- Highway 7 and Islington Avenue: 120 collisions
- Major Mackenzie Drive West and Bathurst Road: 118 collisions

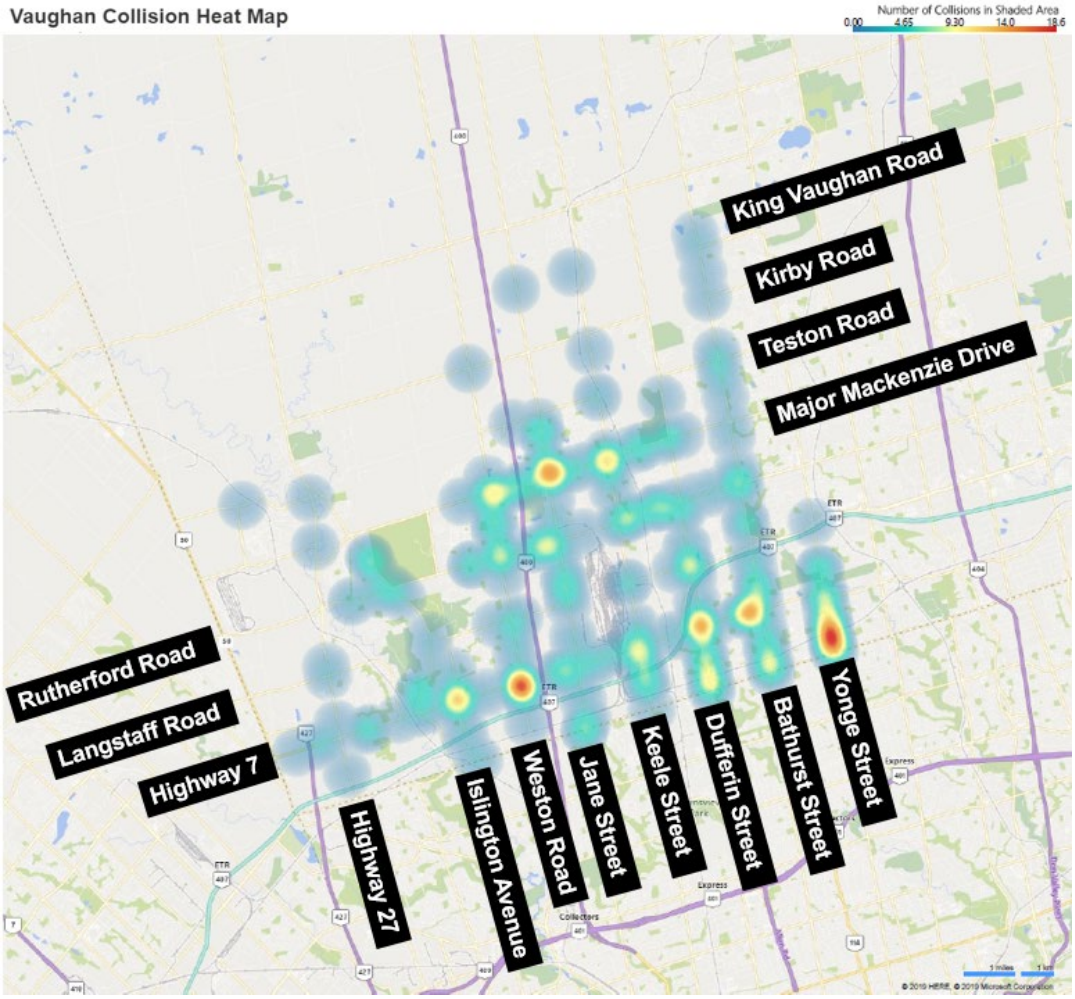


Figure 6-2. Collision Heat Map on Regional Roads within the City of Vaughan 2014-2018

A review of the heat map shows that all 10 intersections with the highest number of collisions were located in urban areas of Vaughan, on and south of Major Mackenzie Drive. This can be attributed to higher volumes compared to the rural areas. To better capture potential safety problems throughout all of Vaughan, five intersections with the highest number of collisions north of Major Mackenzie Drive were also identified. The five intersections north of Major Mackenzie Drive with the highest number of collisions include the following:

- Bathurst Street and Elgin Mills Road/Teston Road: 88 collisions
- Teston Road and Jane Street: 56 collisions
- Teston Road and Dufferin Street: 46 collisions
- Weston Road and Kirby Road: 38 collision
- Keele Street and Kirby Street: 37 collisions

Figure 6-3 provides the locations of all 15 intersections identified with a high number of collisions within Vaughan.

Figure 6-3. Top Collision Intersections in Vaughan

Collision statistics for all of Vaughan have been summarized in **Figure 6-4**.There have been approximately 3,000 collisions yearly since 2014, with peak collisions being observed during the PM peak. Less than 3% of all collisions are those towards vulnerable road users (pedestrians and cyclists). External factors such as road surface, lighting, and environment conditions capture a small portion of all collision causes, and as it is shown in **Figure 6-4** most collisions (>70%) occur in normal conditions. While the data does not provide further information about the collisions that occurred in normal conditions, there are a few typical reasons for frequent incident occurrences, including:

- Situational factors: road design, mobile phone use. alcohol/drugs, fatigue
- Driver factors: age, driving experience, behaviour
- Social factors: passengers, social groups and peers

In order to dive deeper into some of these factors additional information needs to be documented in collision databases. Some additional recommendations are provided in “other measures of safety”.

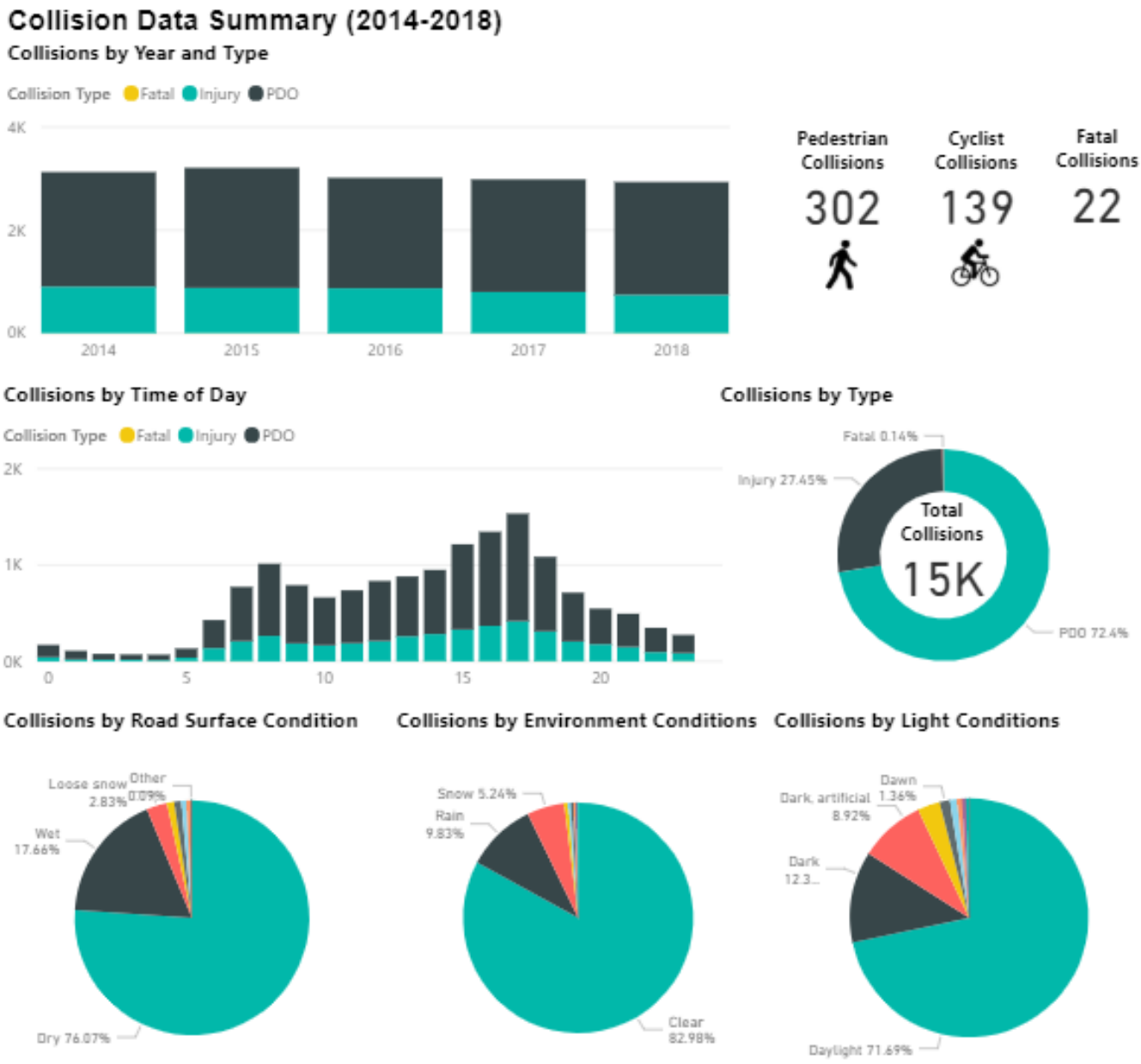


Figure 6-4. Key Collision Statistics in Vaughan

Collisions resulting in fatalities were also further investigated to identify potential trends, with a heat map shown in **Figure 6-5**. No significant trends are observed, apart from the series of collisions in proximity of one another along Rutherford Road and Major Mackenzie Drive west of Islington Avenue. Fatalities will be kept in high consideration with future analysis and recommendations.

Figure 6-5. Location of Fatal Collisions in Vaughan

Figure 6-6 shows collision statistics regarding pedestrian and cyclists. Pedestrians and cyclists are very vulnerable in collisions, as 90% of these collisions involve either an injury or fatality, compared to 25% observed from other modes. In addition, **Figure 6-7** Figure 6-6shows the absolute number of collisions (including fatalities) per year for pedestrians and cyclists, with no observable trend between 2014 and 2018. However, consideration of population growth in Vaughan indicates that there has been a slight decrease in the overall collision rates for pedestrians and cyclists apart from the year 2016, as shown in **Table 6-3**. A further look into the accident location for pedestrians and cyclists reveal that nearly 80% of these accidents occurring at or related to an intersection. Thus, to continue to encourage active travel modes, it will be imperative to improve the safety conditions and pursue a Vision Zero policy. Measures to be considered at intersections may include dedicated cycling lanes and enhanced cross walks.

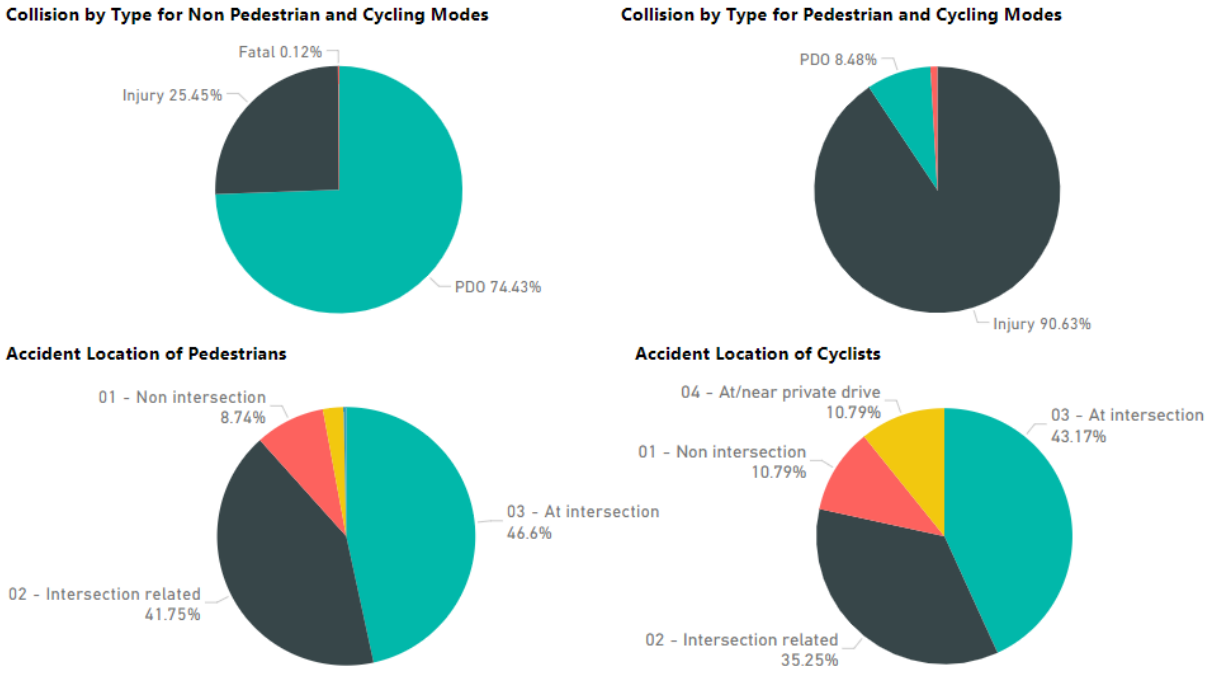


Figure 6-6. Collision Statistics for Pedestrian and Cyclists

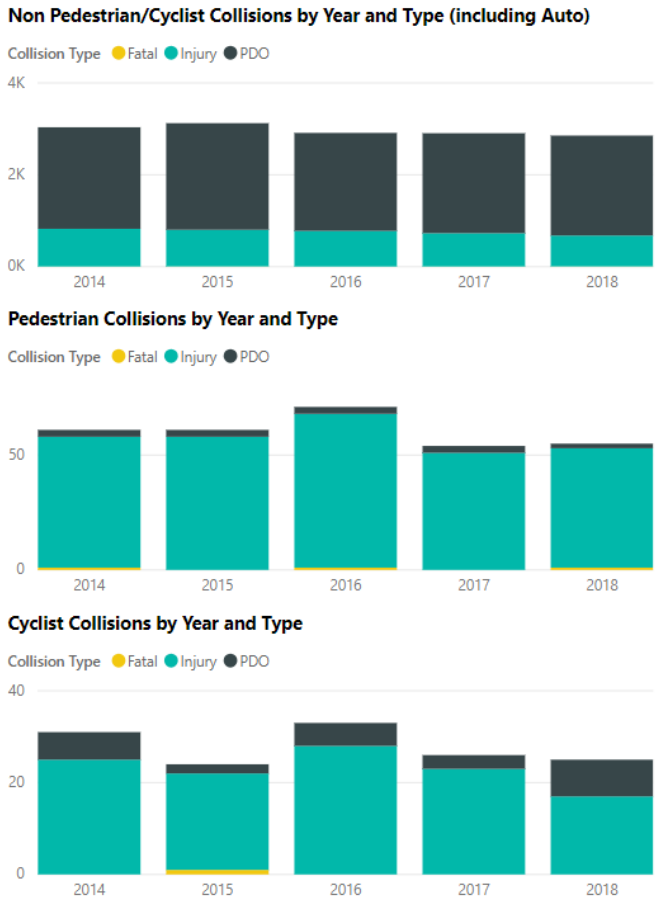


Figure 6-7. Fatality and Collisions of Pedestrian and Cyclists per Year

Table 6-3. Vaughan Pedestrian and Cycling Collision Rates between 2014 and 2018

	2014	2015	2016	2017	2018
Pedestrian Collisions Rate per 100,000 Population	21.41	20.90	23.18	17.15	17.02
Cyclist Collisions rate per 100,000 Population	10.88	8.22	10.78	8.26	7.73

Other measures of safety: The preceding analysis conducted provides an overview of historic collisions in the City based on location and collision type, relative to growth in population. Additional considerations or measures can be considered through further study or data collection as follows:

Collision rates relative to traffic volumes: A more detailed assessment of intersection collision rates per million vehicles entered should be considered to understand the traffic safety performance as a function of traffic volumes. This metric is a common measure used to statistically identify whether a specific intersection may have factors which result in a higher than expected number of collisions which may be remedied.

Proactive "near-miss" analysis: Unfortunately, analysis of collision information is a retroactive process to measure safety and requires incidents to occur over long periods of time. Recent advancements in technology provide proactive methods to continuously monitor safety conditions on city streets. This requires the installation of "smart" monitoring systems at to capture near misses and improve safety before any collisions or accidents occur. Many cities and transportation authorities are using this type of analysis including the City of Toronto and the City of Surrey in British Columbia. It is noted that these monitoring systems may also perform as permanent traffic counting devices, parking management and curbside activity management tools to address other potential city initiatives.

Encourage sustainable travel: As noted above, there is a direct correlation between vehicular travel and collisions. Research shows that the best way to improve safety is to decrease the use of personal vehicles. As such, reducing vehicles kilometres travelled (VKT) and encouraging the uptake of other modes of travel can also lead to a reduction in collisions. . Thus, in the evaluation of alternative policy and infrastructure improvements this benefit should be strongly considered.

6.3 Improve Reliability ☹

Improving reliability of travel times impacts people's behaviour and in particular relates to transit usage. The monitoring plan recommended ***tracking variation in travel speeds and adherence to transit route schedules.***

As discussed in Section 6.1, the majority of regional arterial roads experienced higher levels of congestion and therefore increasing variation in travel times and lower average speeds.

Other measures of reliability: In addition to variation in travel speeds which would capture delays to personal and freight vehicles, as well as buses in mixed traffic, other metrics that could be looked at consider the supply side of the infrastructure that is provided. The proposed measures includes the number of transit routes within Vaughan with frequent transit network

(FTN) service a) during peak times - every 15 minutes and b) all day, from 6am to 10pm. While many of the supply-side measures are not always preferred it allows the tracking of progress over time in providing more frequent services, in particular as it relates to transit.

6.4 Increased Accessibility 😐

This objective aimed to increase accessibility by providing more travel options to access centres and urban areas, and create ***a shift in travel behaviour****, in particular among commuters.*

In 2016, Vaughan residents completed approximately 160,000 trips during the AM peak (between 6 and 9am) and more than 200,000 trips in the PM peak (from 3 to 7 pm). The majority of these trips were auto trips, with only about 10% trips being completed by transit in the AM and PM. These results are very similar to travel patterns in 2011 and 2006. Examining trips to and from Centres within Vaughan throughout the day showed a cycling mode share that marginally increased between the 2006 and 2011 data horizons from 0.09% to 0.22%. This proportion remained relatively steady in 2016. Transit and walking mode shares have remained consistent at 6% and 3% since 2006.

These results are expected given that the update to the 2007 PBMP was only recently approved in late 2019. In addition, many VIVA projects have only recently been completed, and land use changes such as the development of primary centres is still in the early stages. A more complete transit and cycling network within Vaughan is likely to provide more opportunities for commuters and increase sustainable (active and transit) mode share in the future.

The 2012 TMP identified the need to monitor transit coverage, as the places of residence, employment, study etc. within the 800m of bus stops. According to 2016 data, there are approximately 280 thousand residents (92%) within 800 m of bus stops compared to 225 thousand (94% of population) in 2006.

Other measures of accessibility:

Transit Coverage: While the transit coverage measure above appears high, it does not align with current best practices of acceptable walking distance to transit which is 400m. Acceptable walking distance to higher order transit (such as subway and GO Rail) is 800m.

Accessibility metrics should place emphasis on “what a person can access”. Having a stop close-by does not necessarily translate to frequent transit service, or a wide catchment area. Proposed metrics that can capture all of the above include the number of jobs /services that a person can access by transit within 45 or 60 minutes. This can be developed for the general population and for specific interest groups, including seniors, low income households and new immigrants.

Transit competitiveness: Furthermore, the travel options should be compared in terms of their competitiveness to confirm whether certain options are viable. A good metric to capture this is the ratio of transit travel to auto travel time based on the origin or the destination of the trip. In this way it becomes evident, that in many cases transit service is present but the frequency or route structure does not create an attractive and viable option compared to auto.

Finally, accessibility should be linked to the design standards that the City is following as it relates to the Accessibility for Ontarians with Disabilities Act (AODA). Sidewalks and intersections should be designed with these principles in mind and the City should track whether the new sidewalks, or any retrofits are providing space for people, wheelchairs and strollers beyond the minimum. Additional consideration on this topic should be provided through the Complete Streets guidelines (when completed by the City).

6.5 Meet Transportation Demand Management (TDM)/Transportation System Management (TSM) Objective 😐

The TDM/TSM objectives aim to monitor public behavior change and achieve shift to modes other than Single Occupancy Vehicles. ***Transit, walking and biking, as well as carpooling*** *are ways of using infrastructure more efficiently and the following section identifies progress made over the last decade.* ***Urban form*** *(population and employment density), incentive programs by employers and other agencies, as well as changes in the* ***availability and pricing of parking*** *can help achieve some of these objectives.*

Following the introduction of Viva Bus Rapid Transit in 2005, transit improvements have been minor and as such transit mode share continues to be low. While the number of daily transit trips has increased from 36,450 in 2006 to 47,252 in 2016, this can be attributed largely to population growth. Transit mode share has remained stable since 2006 with only 8% of daily trips and 10% of AM trips made by transit. However, consistent and substantial growth has been observed from the population of full-time students over 16 years of age with transit passes, which grew from 24% in 2006 to 46% in 2016.

The 2012 TMP proposed monitoring the proportion of transit usage crossing the City borders during peak period. A review of the cordon count data from 2011, 2014, and 2016 revealed that the overall proportion of transit trips across City boundaries has remained relatively low and noticed a marginal drop from 5.8% to 4.7% of total AM trips (from over 25 thousand trips in 2011 to less than 30 thousand in 2016). At the York-Peel boundary, the westbound direction noted an increase from 2.39% in 2011 to 6.00% in 2016. Most locations noted a small drop in transit share, primarily due to the increase of auto trips (from 385 thousand trips in 2011 to 434 thousand trips in 2016), with the exception of the screenline between York and Toronto that noted a significant drop in the northbound direction from 8.38% in 2011 to 4.90% in 2016 and the South York border between King City and Vaughan, which observed a noticeable drop from 9.60% to 4.36%. The proportion of transit trips across those boundaries in 2011 and 2016 are shown in **Figure 6-8.**

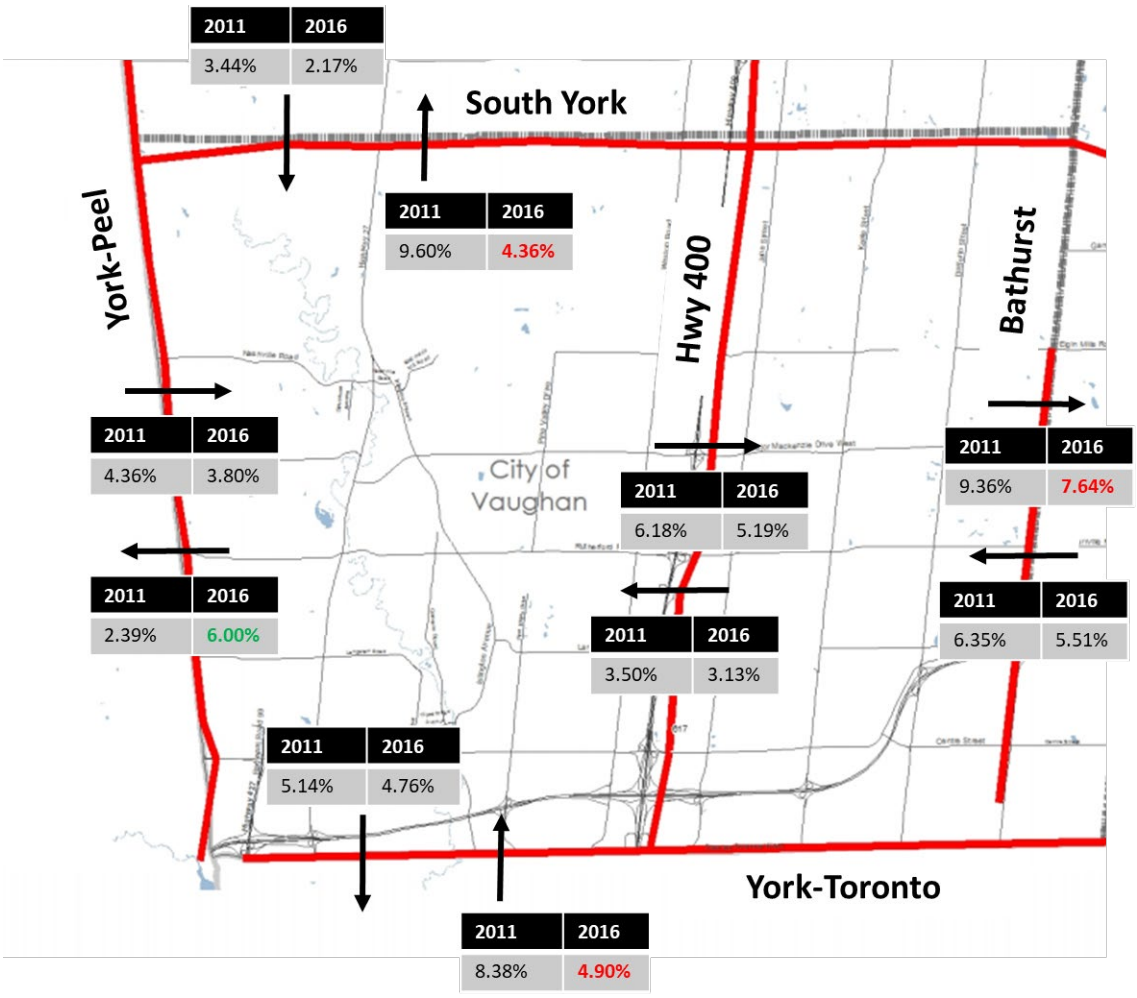


Figure 6-8: Proportion of transit trips across screenlines in 2011 and 2016

It should be noted, however, that completion of transit improvements, including the Spadina Subway extension in 2017, the upcoming completion of the Viva bus rapid transitway between Richmond Hill Centre to Wigwoss Drive/Helen Street, and establishment of some fare integration (such as YRT's Ride to GO) and service coordination initiatives may have resulted in increases in the transit mode share that was not captured in the 2016 data set.

While walking and cycling trips in Vaughan have seen a minor increase between 2006 and 2016, they still make up less than 7% of trips both during the AM and during all day. Walking trips make up the majority of those with 4.4% during the AM and 5.9% throughout the day. Interestingly, cycling trips only take up 0.38% of the approximately half a million trips that take place during a day.

However, there is tremendous potential for more trips to shift to walking and in particular cycling. **Figure 6-9** below shows the share of trips made by mode during a day for trips of different lengths. While approximately 40% of very short trips (under 1km) are made on foot or by bike, this share drops to less than 20% for trips that are 1-2 km in length and continues to drop to almost 0 for trips of 4km or more. Recognizing that in 2016 nearly 190,000 trips originating in

Vaughan were 4km or less, there is potential to have more short-distance trips in Vaughan completed by cycling rather than driving. This would provide additional person capacity in the Vaughan transportation network.

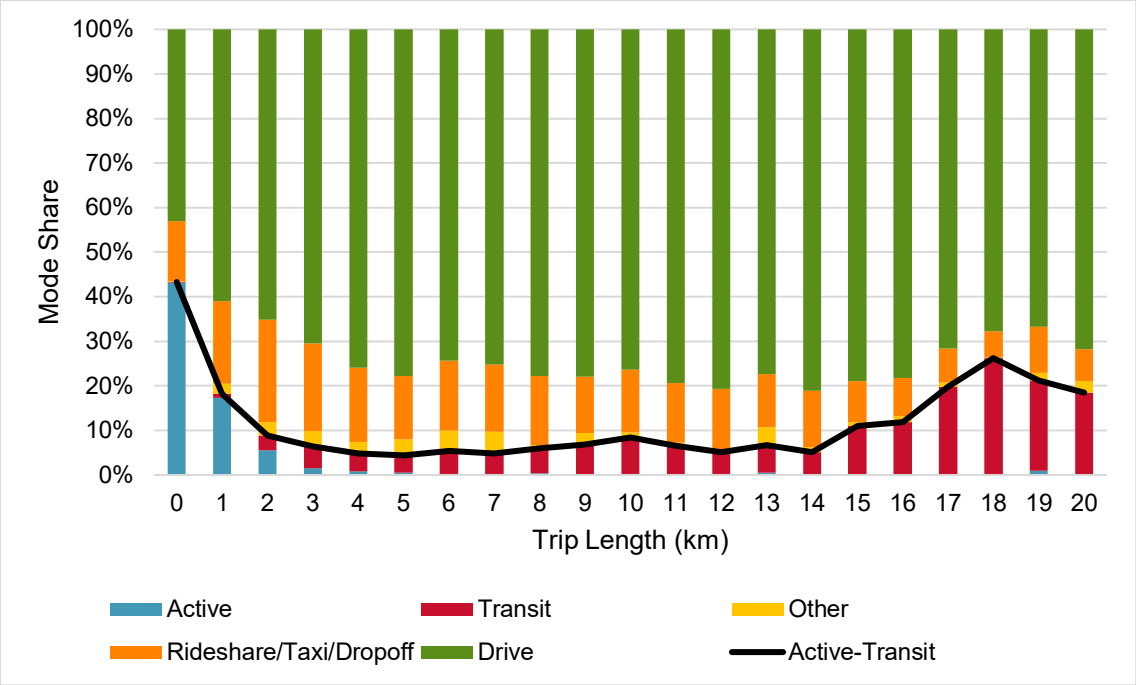


Figure 6-9: Mode share by trip length of trips made starting in Vaughan in 2016 (TTS)

When looking at the available pedestrian infrastructure to promote walking and increase pedestrians' safety the 2012 TMP had recommended identifying the percentage of local streets within 500 m of transit that have sidewalks on both sides. The information was only available for the most recent year (recorded in City of Vaughan database) and identified that approximately 40% of local roads within 500 m of transit stops have sidewalks on both sides.

In order to explore the type of opportunities that are located in close proximity to stops the previous TMP proposed identifying the percentage of people and jobs that are located within 800m of transit stops. The investigation of historical data revealed that in 2016 89% of all people and jobs were located within 800m of stops compared to 86% in 2011.

There have also been behavioral changes in job access, particularly within Primary Centres. Between 2011 and 2016, there has been an increase in the number of internal walking trips within Centres. As densities increase and with a greater mix of land uses, opportunities for sustainable travel also increase. However, in most Centres there has been little change to the amount of free parking that is provided with the only exception being along the Yonge Street traffic zones which saw a decrease of 7% in free parking, a change observed between the 2006 and 2016 TTS data. In order to harness the opportunities that these growing densities present, the City should review parking requirements especially in areas of intensification.

Reducing the need to travel, especially for work, can benefit the City and the region overall with less pressure being placed on the transportation network during the peak periods. Teleworking rates increased with 14% of residents working from home in 2016 compared to 7% in 2011.

Despite the aforementioned shifts in travel behavior, auto dependency continues to be very high, as 99% of households have at least one vehicle and 17% of households have 3 vehicles, proportions that have remained consistent between 2006 and 2016. The proportion of adults without a driver's license has only marginally decreased since 2006 from 15.8% to 14.4%. Both these KPIs indicate that non-auto travel options continue to be perceived as inadequate, and additional effort and education are needed to encourage alternative travel options.

Most auto trips within the City of Vaughan only carry one person, as the average occupancy across city boundaries is 1.1 during peak period (6:00 to 9:00 am) and has remained essentially unchanged between 2011 and 2016, according to cordon count information. This means that more than 90% of all auto trips are single-occupancy vehicles.

When looking at travel patterns for different trips purposes, auto mode share is consistently very high for discretionary trips (97%) and non-home-based trips (93%) since 2006. This reinforces the strong auto dependency observed among Vaughan households, suggesting that alternative transportation options are needed beyond the peak periods and that new methods of thinking and new mobility solutions may be needed to achieve some change. School and work trips present lower auto mode-shares at approximately 39% and 86%, stable since 2006. Continuing and expanding TDM efforts for school groups and Transportation Management Associations (i.e. pointA Smart Commute North Toronto, Vaughan) are some ways to further step away from auto dependence.

Trips coming into Vaughan are primarily auto-trips, which has remained consistent since 2006. During the AM peak the non-auto mode share for inbound trips is 10% and during PM peak the share is 13%. Since 2006, 120,000 more trips have taken place during the day in Vaughan totaling 600,000, a substantial increase induced mainly by population growth. However, as Vaughan continues to grow as a regional employment hub, reducing auto dependency for these trips will become imperative.

Other TDM/TSM measures: Many of the TDM/TSM measures discussed above (such as non-single occupancy vehicle share) are useful and should continue to be documented. Some of the metrics that require accurate and timely monitoring of infrastructure (such as location of new sidewalks) can be difficult to maintain for multiple horizon years and could be removed from the monitoring plan. A metric that is worth considering is the distribution of trips around peak period, which would allow for a more efficient use of the network throughout the day.

6.6 Achieve Sustainable Built Environment and Land Use 😐

Mixed land use design *creates opportunities for shorter trips, as work, housing, services and recreation is contained in one location. Achieving this form of sustainability can help improve accessibility and perception of convenience of walking and cycling trips, encouraging the reduction of auto mode share.*

Some growth has been observed in population and employment densities for certain centres, as illustrated in **Figure 6-10**, as well as a 16% increase in jobs (to 8,900 jobs) within a 1 km walking distance since 2006. Opportunity exists to promote walking and cycling for trips accessing these job centres.

Although Vaughan covers an extensive area, it is overall relatively self-contained, with nearly 50% of its trips having destinations with Vaughan. The remaining trips are primarily going to Toronto (28%), followed by smaller shares going to Richmond Hill, Brampton and other nearby municipalities. These travel patterns have broadly remained unchanged since 2006. Although marginally, the median trip length for home-based work trips continues to increase.

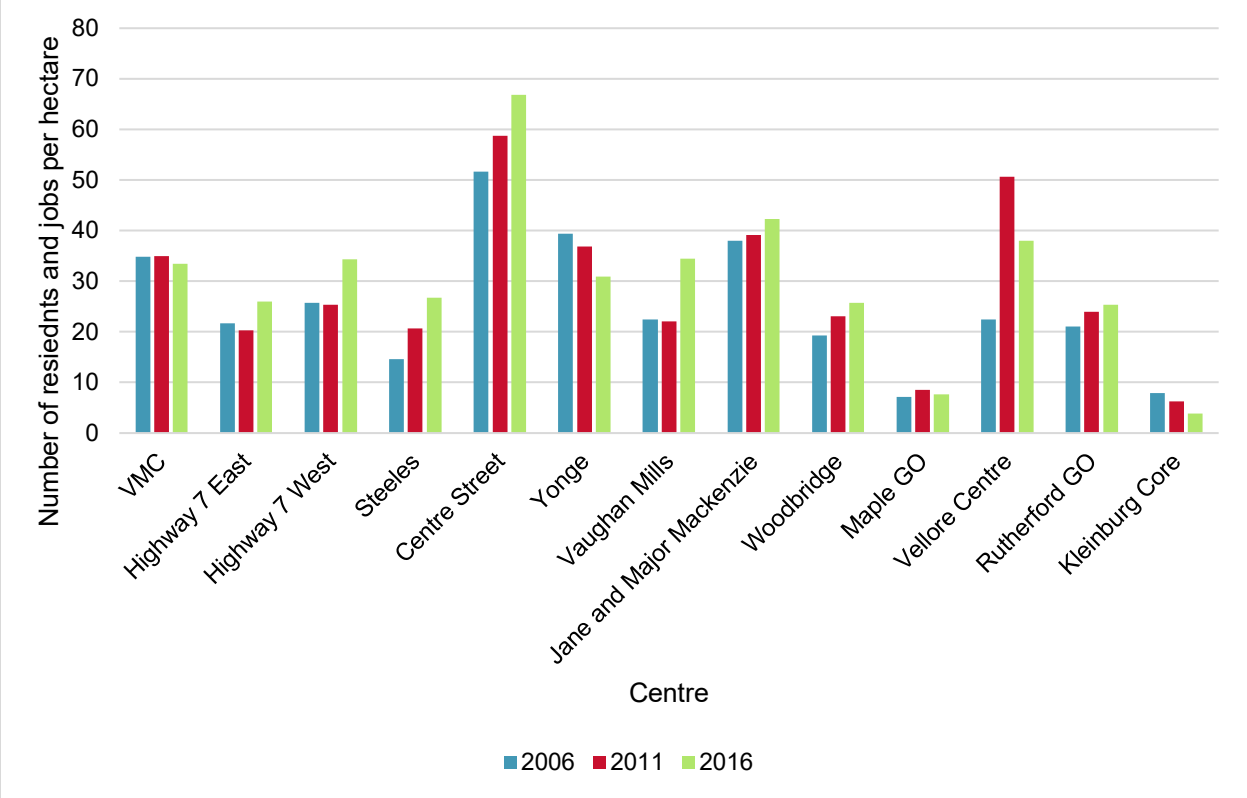


Figure 6-10: Residents and Jobs per Hectare at Centres in Vaughan (TTS)[2]

As discussed, mixed densities, characterized by the number of people and jobs per hectare, are the best approach to achieving sustainable neighbourhoods. **Table 6-4** and **Figure 6-11** below illustrate the number of people and jobs per hectare for the regional primary centres. Most centres are gradually noting growth in densities with Centre Street having the highest densities and highest absolute growth since 2006.

[2] Population estimation methodology changed in 2016 TTS data collection

Table 6-4: Number of people and jobs per hectare at regional intensification areas

	People/Hectare		
	2006	2011	2016
VMC	34.9	31.2	28.1
Highway 7 East	21.7	20.3	26
Highway 7 West	25.8	25.4	34.4
Steeles	14.6	20.7	26.7
Centre Street	51.7	58.7	66.8
Yonge	39.4	36.9	30.9
Vaughan Mills	22.5	22.1	34.5
Jane and Major Mackenzie	38	39.2	42.3
Woodbridge	19.3	23.1	25.7
Maple GO	7.1	8.6	7.7
Vellore Centre	22.5	50.6	38
Rutherford GO	21	24	25.4
Kleinburg Core	7.9	6.3	3.8

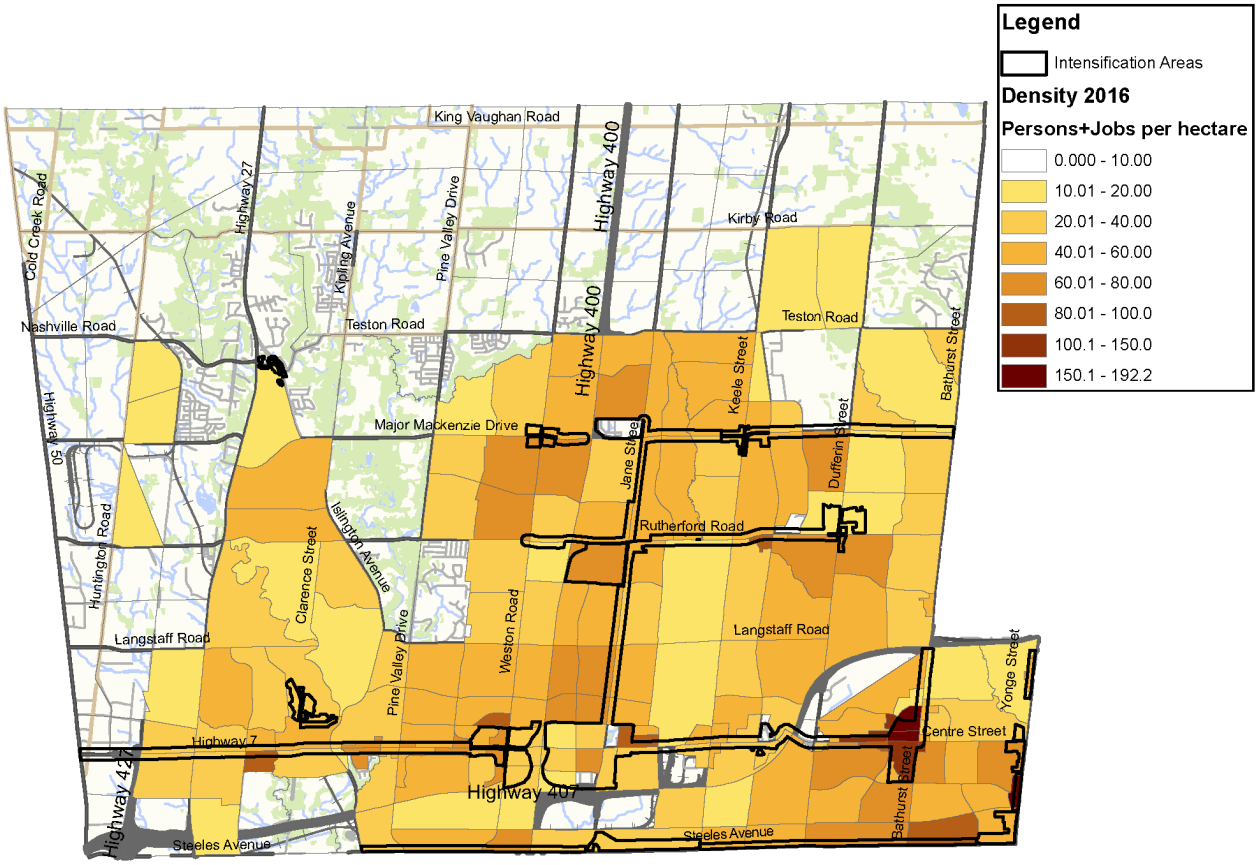


Figure 6-11 Population and Employment Density in Intensification Areas (2016)[3]

Other sustainability measures: For communities to be sustainable, they need to become complete. This translates to numerous opportunities to live, work and play in a close proximity. As a result people wouldn't need to travel far and spend time in order to access jobs, services, recreation, spiritual and cultural places. Good metrics to capture this are average trip length, Person Hours Travelled (PHT) per capita for motorized modes, as well as Vehicle Kilometres Travelled (VKT) by motorized modes. Active mode share (walking and cycling), connectivity and a multi-modal approach to measuring level of service for active transportation are also a good indication of sustainability. Some of these metrics are covered under objectives and are not necessarily enhancing our understanding of progress. An alternative measure for this objective is the area dedicated to surface parking. Over time, surface parking especially in primary centres and intensification corridors should be removed and replaced by built environment that is conducive to walking and is inviting, with numerous opportunities for stops and areas to sit.

6.7 Reduce Environmental Impacts ☹

This objective sought to minimize impacts of transportation improvements on the natural environment in order to preserve and enhance the City's environmental resources for generations to come.

[3] Image will be updated with updated boundaries for primary centres and intensification corridors

The 2012 Vaughan TMP established metrics to measure environmental impacts through transport-related greenhouse gas (GHG) emissions and fuel consumption levels. Since then, the City has been acting on environmental sustainability through action plans, including Green Directions Vaughan, the Corporate Energy Management Plan and the Municipal Energy Plan, to set a foundation for the reduction of GHGs and deepen its commitment to environmental stewardship.

The review of several City-initiated reports indicated that GHG emissions have been on the rise and that this trend has shown little, if any, signs of reversal as the City continues to grow and develop. Data from the 2014 Community Action Plan and from the 2016 Municipal Energy Plan revealed that GHG emissions from the transportation sector have grown approximately 15% between 2006 and 2013, as shown in **Figure 6-2**.

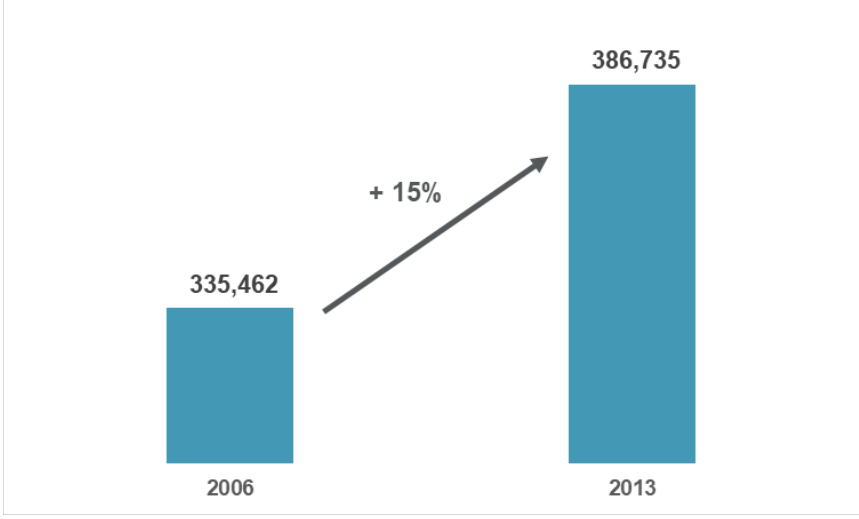


Figure 6-12: Changes in transportation-related GHG emissions (tonnes eCO2) in the City of Vaughan
Sources: City of Vaughan Municipal Energy Plan (2016) and City of Vaughan Community Action Plan (2014)

Moreover, according to the 2016 Municipal Energy Plan, the share of GHG emissions associated with the transportation sector has grown from 19.8% of total GHG emissions in 2006 to 25% in 2013. The report explains this increase as being the result of Vaughan's population growth - which has grown 31% within that same period - but also points out other culprits for this share increase; namely, the effective GHG emission reduction strategies in other industries such as Ontario's coal phase-out in the industrial sector. Though more recent GHG emissions were unavailable to monitor progress into 2019, the report's modelling projections into 2031 indicated that transportation-related GHG emissions were anticipated to continue increasing at relatively similar rates if no significant changes are made to deter driving.

In June 2019, City Council declared a climate emergency in the City of Vaughan, reaffirming the City's commitment to climate action and establishing urgent need for transformative steps to reduce carbon emissions by 2031. Next steps on a variety of related projects and initiatives to ensure ongoing tracking of progress and impact of the City's declaration.

Other measures: Quantifying the by-products of driving by analyzing GHG emissions represents a more direct method of capturing environmental effects. Yet, this task requires additional data and sources which are not as readily available to transportation agencies as transportation data (as evidenced above). This is a limitation that must be addressed on a municipal level, with more frequent, consistent environmental research and documentation of GHGs over the years.

Nevertheless, in the absence of required information, there are alternative, indirect ways to measure environmental performance. This can be done through proxies that have known, proven effects in improving air quality, reducing greenhouse gas emissions and protecting the natural environment. The City of Vaughan can track its progress with respect to environmentally responsible approaches by evaluating its performance in shifting travel behaviour toward sustainable modes, reduce dependence on the automobile and supporting compact mixed-use development, conducive for active transportation and transit. Examples include metrics such as the carpool rate over time, the single occupancy vehicle trip rate, active mode share, EV ownership and vehicle-kilometers-travelled for EVs.

6.8 Summary

The City of Vaughan set into motion a number of initiatives following the completion of the 2012 TMP. While considerable efforts are underway towards achieving the seven objectives of increasing mobility, improving safety, improving reliability, increasing accessibility, meeting TDM/TSM objectives, achieving sustainable built environment and reducing environmental impacts, there are certain transportation network and policy elements that need to be further investigated and enhanced through the VTP Update.

The primary findings of the review indicate that a majority of the objectives discussed in Section 6 were not satisfied, or need more work. Amidst rapid growth, the City of Vaughan has experienced an increase in overall number of trips, more congestion and higher travel times along the city's road network. Rising congestion has become more pronounced in recent years; its effects on reliability and travel speeds may be attributed to both population growth and a continued reliance on the automobile as the primary mode of travel. In terms of road safety, no major trends were observed, though the high concentration of collisions along Rutherford Road and Major Mackenzie Drive west of Islington Avenue may require further investigation. Nevertheless, the City of Vaughan has some serious work to do to reduce its collision rate, as it has exhibited, for reasons unclear, collision rates approximately 50% higher than those reported by York Region, year after year.

Other areas of particular concern relate to the mode shares for transit, walking and cycling having remained relatively stagnant since 2006. This offers the opportunity for the current TMP to focus on active transportation initiatives to encourage walking and cycling, especially for shorter trips. In the context of Vaughan's densification, changes in its built-form and move toward mixed land uses, the provision of high quality cycling and walking facilities and networks should be paramount.

It must be noted that this review may have potentially underestimated the City's performance relative to the 2012 TMP objectives due to certain limitations. For one, this review may not have captured the impact of transportation improvements completed after 2016, the year the TTS data was collected. Examples of such ventures include major projects such as the Spadina Subway extension in 2017 and the upcoming completion of the VIVA bus rapid transitway between Richmond Hill Centre to Wigwoss Drive/Helen Street but also other initiatives such as fare integration and service coordination and modifications. In addition, many VIVA projects are still in progress and land use changes such as the development of primary centres is still in the early stages. These improvements may have a considerable impact on travel patterns, behaviours and mode shares. Second, the City of Vaughan is in a period of transition and prevailing travel behaviours and patterns require time to adjust to evolving landscapes, new infrastructure and changing realities. This time lag reinforces the importance of continuing to steer growth towards the goals set. Improved mobility, reliability, safety, accessibility and sustainability can only be achieved through combination of planning and execution.

7 Proposed Changes to Monitoring Program and Data Collection Efforts

The following section identifies proposed modifications to the 2012 TMP Monitoring Plan, as well as proposed new metrics for consideration and new data collection efforts that are deemed essential:

7.1 Proposed Changes of Monitoring Program & Proposed New Metrics

The 2012 TMP recommended a comprehensive monitoring and implementation plan with 45 measures that attempt to assess progress achieved towards a TMP objective and related principles. As these measures were developed for the first time as part of this TMP review, a number of issues and limitations were discovered and are listed in the following:

- Many of the datasets are not readily available and/or are not available for more than one horizon year. As such a "snapshot" review can be done for a specific point in time, for which the data is available but no time series can be developed in order to access progress. As an example, the "*Proportion of local streets with 500 meters of transit stops (as proposed in the City's Official Plan) with sidewalks on both sides"* are available in City of Vaughan's most recently updated database but no historic data was available. Same applied to many of the metrics.
- Many of the measures require external (non-City of Vaughan) data that do not cover the entire extent of the City, rather they focus on select facilities that in most cases are outside of Vaughan's purview. As an example, York Region maintains a geo-referenced database with traffic collisions and fatalities on regional roads, and while the City of Vaughan collects incident reports, they are not collected and summarized in the same manner, making it time- consuming and difficult to analyze and provide insightful trends. In a similar manner, most surveys conducted by the MTO, such as the Travel Time Survey, only apply to provincial highways and regional arterial roads, thus not enhancing our understanding for local context. These measures are important and insightful for these particular locations, but it needs to be recognized that without collection of this metric for roads under the jurisdiction of Vaughan, potential impacts the City can have on this metric are limited.
- Many of the measures rely on manipulation of Transportation Tomorrow Survey (TTS) data which is collected every 5 years. The analysis of 2006, 2011 and 2016 data revealed little progress/change made. While this may be the case and conditions may have remained broadly unchanged, it needs to be recognized that TTS data has limitations, particularly with respect to recreational trips and walking and cycling trips which are known to be under-represented in the survey.

These discoveries triggered the following recommendation of simplifying the monitoring plan to a) focus on select key measures from the 2012 TMP for which reliable data is accessible and for

which a meaningful conclusion can be drawn, and b) enhance the monitoring plan with some additional data collections efforts especially in areas where the existing sources are poor.

Following the analysis of each objective in Chapter 6, alternative measures were discussed. While the complete list of proposed metrics for the monitoring program will be finalized with the update of the Vaughan Transportation Plan, there are a few metrics that already emerged as useful additions/replacements. :

- **Mobility:**
  - Travel time by mode for representative Origin-Destination pairs: Through this TMP update the team will identify representative "personas" and representative trips within the City of Vaughan. For each of these representative trips monitor travel time by all travel options available (can be done using google maps) to compare mobility choice availability. This would allow to showcase progress when/if new mobility options are available (e.g. bike share, e-scooters etc.)
- **Safety:**
  - Collision rates relative to traffic volumes.
  - Proactive "near-miss" analysis using "smart" monitoring systems at to capture near misses and improve safety before any collisions or accidents occur.
- **Reliability:**
  - Number of transit routes within Vaughan with frequent transit network (FTN) service a) during peak times - every 15 minutes and b) all day 6am to 10pm (with reference to York TMP)
  - Travel Time Index and Buffer Time Index on at least Regional roads and Highways. Collecting these metrics for Vaughan roads should be prioritized.
- **Accessibility:**
  - Percent of jobs or services (usually percent or number of people is used as a proxy for services) that residents can access within 45 or 60 minutes. This metric can be calculated for different modes (e.g. auto, transit) to compare the mobility of different travel options.
- **TDM/TSM**:
  - Peak spreading using 24 hour counts at consistent locations.
- **Achieve sustainable built environment/land use**
  - Area dedicated to surface parking in primary centres
- **Reduce environmental impacts:**
  - Active travel mode share

Below, in **Table 7-1**, is the proposed simplified monitoring program.

Table 7-1: Proposed Monitoring Program

Objective	Indicator	Measure	Preliminary Recommended Action
Increase Mobility	Road Network Congestion	Daily and peak VC on major screenlines	Keep only peak VC for major screenlines. Currently volumes are available for different horizon years from the Cordon Count data but historical capacity is not readily available.
		Travel Time Index for 400 series and Regional Arterial roads	The travel time index information was not available. Instead speeds at regional arterials was used from TomTom data collected through the MTO Travel Time Survey. If the City/Region has more accurate Bluetooth data that can be shared, it can also be incorporated. Instead congested network vehicle kilometres travelled can be used.
	Freight Transportation Efficiency	Peak period average freight transport speed	Keep, assuming that data is available. If not available congested network vehicle kilometres travelled by freight vehicles can be used.
	NEW: Mobility Choice	Travel time by mode for representative Origin-Destination pairs	Identify a few representative Origin Destinations pairs based on the TMP findings and measure travel time by various transportation options (to be recommended as part of the TMP update) to showcase mobility choice availability.
Improve Safety	Traffic collisions and fatalities	Annual number of collisions per capita (total and severe)	Keep, assuming that the analysis will be done relative to traffic volumes
		Annual number of collisions at rail/road grade crossings	Keep
		Annual number of pedestrian/bicyclist collisions	Keep, assuming that the City will develop database similar to YR and enhance with near misses
	NEW: Near Misses	Annual number of near misses in intensification areas	Invest in near miss technology in intensification areas and monitor recurring near miss incidents to proactive reduce collisions and accidents and strive towards vision zero.
Improve Reliability	NEW: Reliability of transit to be the first choice for longer distance travel	Number of transit routes within Vaughan with frequent transit network (FTN) service a) during peak times - every 15 minutes and b) all day 6am to 10pm (with reference to York TMP)	
Increase accessibility	Changes in commuting behaviour and travel patterns	Transit coverage over the urbanized portion of the City	Replace with percent of population 400m of transit stop as per best practices (instead of 800m)
	Access to Centres	Proportion of transit and cycling trips to / from Regional and Primary Centres	Keep
	NEW: Access to Jobs	Percent of jobs that can accessed by transit in under 45 minutes (door to door)	While having transit stop close by is the first step to improving accessibility, it does not necessarily translate to providing access to desired locations. This measure identifies what a person can reach within a designated time window.
Meet TDM/TSM Objectives	Shift to non-Single Occupancy Vehicles modes	NEW: Percent of non-SOV trips for commuting trips and for all other (non-commuting) trips	
		Cycling counts along key cycling routes and across screenlines	Keep assuming that special screenlines are developed for cycling facilities in primary centres/intensification areas
		Proportion of internal trips within the regional and primary centres with walking as the primary mode of travel	Keep
	Reduction in auto dependency	Vehicle availability per household or per adult (>=16) for residents of the City	Keep
	NEW: Peak spreading	24-hour counts at consistent locations / counting stations	Spreading the peak over time will signify that the network is used more efficiently throughout the day
Achieve sustainable Built environment/land use	Population and employment densities	Number of residents and jobs per unit of land area within regional primary centres and overall urbanized proportion of City	Keep
	Mixed land use	Self-containment (portion of trips that start and end within the City) place of work employment to resident labor force ratio	Modify to percent of trips that start and end in the City of Vaughan during AM peak.
		Median trip length per purpose for the residents of the City	Keep but track by mode and not by purpose.

Objective	Indicator	Measure	Preliminary Recommended Action
	NEW: Surface parking	Area dedicated to surface parking in primary centres	To be discussed to ensure that data can be made available fairly easily
Reduce environmental impacts	Transport related GHG emissions	Annual transport related GHG emissions	Keep as function of VKT
	New: Active mode share	Percent of walking and biking trips (and any other non-motorized modes including e-scooters, skateboards etc. as they become available)	

7.2 Recommended Data Collection Program

Further to the sources that were used to develop the metrics of the 2012 TMP Monitoring Plan, the following section identifies additional data collection efforts that are recommended or are recommended to be considered (as underlined) in order to address existing data gaps:

- **Travel Time Data:** The MTO Travel Time Survey, conducted every two years, collects travel times using TomTom data. Currently the available data only covers regional roads and provincial highways. Travel Time information on City roads should also be collected. In addition, the 2012 TMP recommended that GPL and HOV travel times should be collected separately. This may be more difficult to do given current collection methods utilizing Bluetooth sensors, and should be reconsidered in this context. The 2014 and 2016 data that were provided didn't distinguish between the two.
- **Collision Data:** Collision data summaries are currently available for regional roads (developed by York Region). For City roads, individual collision reports are available, but their analysis would require considerable time and resources. The City should develop a geo-referenced database similar to the one that York Region develops, which would provide collision information for City roads.
- **Near-miss collision data:** Further to collision data, as discussed in **Section 6.2** the City should consider implementing/piloting smart cameras and automated traffic conflict analytics (near-miss data) at major intersections and high-risk areas with vulnerable users (such as intensification areas or near schools) to proactively identify and address safety issues before collisions occur.
- **Smart camera technology:** Further to the near-miss collision data, the City should consider permanent installations of smart camera technology can also provide an ongoing source for multimodal count data, parking utilization, curbside activity, manage and inventory shared mobility assets and potentially support future connected and automated vehicle infrastructure.
- **Cycling and walking data:** The City should begin to actively monitor the number of pedestrians and cyclists in areas and along routes with high activity. Having access to this data is particularly beneficial where pilot programs are potentially implemented in order to measure the benefits with pre- and post- implementation data. In the future, and if the City implements bike sharing or e-scooter initiatives, the patterns and usage should be monitored. The technology to monitor pedestrian and cyclist volumes will depend on the ultimate purpose of the active transportation data. Typically, one either wants to capture temporal variability (how active transportation volumes change over time) or spatial variability (how much walking and cycling occurs where). Based on the objective, one can select from the following non-motorized count equipment. Better suited for long-term counts are:
    - Inductance Loops
    - Magnetometer
    - Pressure / Radar Sensors
- Better suited for spatial variability include:

- Video Imaging
- Pneumatic Tubes
- Active or Passive Infrared Sensor
- Manual Observers

Finally, as discussed above smart camera technology can be used for multimodal count data, parking utilization and other purposes.

Parking supply and usage: Parking management and policies will be a critical part of the success for the centres and primary corridors. The City should monitor parking supply, usage and pricing as these centres grow and intensify. This can be done with smart streetlight and other smart infrastructure components and it can be used for occupancy reporting and for real time information to create a more adaptive, demand-responsive approach to parking. Cities around the world, including Helsinki have started exploring efficiencies that can be achieved using smart infrastructure.
The City of Vaughan has already taken the first step in reviewing parking supply by developing in June 2019 the first draft of a new City-wide Zoning By-law (in conformance with the 2010 Vaughan Official Plan). The proposed parking requirements were revised using a geographical, built form approach. Included are measures that seek to reduce parking requirements in targeted areas and the establishment of a new shared parking formulas during off-peak parking on weekdays. The draft recommendations have the potential to reduce the overall amount of land dedicated to parking through the promotion of shared parking spaces, allowing for a gradual reduction in oversupply, and helping to activate 'dead space'. In addition to such policy reviews, the City could begin monitoring parking usage and pricing in certain areas. This can be done through the installation of electronic, pay-per-space meters that allow "demand-responsive" pricing. The City can then track demand and adjust rates to achieve certain vacancy rates so spaces are usually available on each block. Parking pricing and usage monitoring is most effective and beneficial when implemented as part of an integrated parking management program that includes support strategies such as increased parking options, improved user information, and better enforcement.
Develop an evaluation plan: The 2012 TMP monitoring program identified numerous metrics that quantitatively track the progress that is made towards the objectives. A similar approach should be developed to evaluate policy and infrastructure recommendations as part of the VTP. These metrics need to be linked to the VTP's objectives and should be easily obtained from data sources or generated by outputs from the travel demand forecasting model.

8 Next Steps

People and cities cannot change overnight. Progress towards a more sustainable Vaughan as set out in the 2012 has been slow and many of the measures that were identified as Key Performance Indicators in the Monitoring Plan showed discouraging results. While travel behaviour and patterns take time to change, there are certain areas that emerged as "gaps". Based on the policy review that was completed and based on the above analysis of the 2012 TMP action plan and monitoring plan, the following concepts will need to be investigated through the VTP Update:

- **Take a multimodal approach:** Over the last decade Vaughan has been steadily growing and will continue to do so. As the City grows, the available open space will become sparser and the transportation infrastructure will be constrained. The effects of this trend are already apparent with most roads experiencing high levels of congestion. In order to tackle that, roads need to be approached as multi-modal corridors and different users need to be prioritized based on the function of the corridor. Shorter trips should shift over time to active travel options, and transit should emerge as an option competitive to the car.
- **Solve the first/last mile issue**: Vaughan's urban form will continue to evolve as new development occurs across the City. Given the current and planned road and transit improvements, the City needs to identify innovative solutions and opportunities to improve first mile and last mile gap between the current built form and these significant investments.
- **Understand the role of parking:** The success of sustainable modes, other than Single Occupancy Vehicles, will depend not only on the carrot, i.e. the service offerings that are provided but also on the stick, i.e. the dis-incentives that will deter people from using their own vehicles. A more comprehensive review of the role and function of parking needs to be completed for the City of Vaughan.
- **Create the required support system for rapid transit improvements:** The last few years have brought brand new and exciting rapid transit services in Vaughan, with the Spadina Subway Extension being the most significant. Building the network one step at a time, the City will need to find the best ways to support rapid transit, including the subway and the VIVA rapidways, such as developing land uses and design practices that are compatible and conducive to sustainable travel.
- **Create a transportation network that works for all users:** Vaughan has traditionally been a car-oriented environment, but the recent and anticipated growth indicates that the path forward needs to change. Currently street design encourages auto travel and creates hurdles for pedestrian and cyclists: large corner radii, long crossing distances, infrequent crossing locations, not adequately separated cycling facilities are only some of the issues that Vaughan needs to resolve to encourage modal shifts. Many of these considerations are discussed in the Complete Streets Review and will be a central focus of the VTP.
- **Engage and educate:** The City of Vaughan and the various agencies that operate in the jurisdiction are working hard to create a shift. It is now time to focus on engaging

residents and businesses to better understand their obstacles and challenges and educate them about their available options and how we can build the new path forward. This VTP will reach out to the public and stakeholders through various channels to ensure that the plan is transparent and well-communicated.

The recommendations above build on the 2012 Vaughan TMP and aim to fill gaps that have been identified through this review.

Appendices

Appendix A

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
A	**Active Transportation (Cycling and Walking)**				
1	Update city sidewalk policy	Update in context of new OP, TMP and PBMP policies and directions	2-Draft update complete in 2013, but need for update should be reviewed.	Review sidewalk policy and revise if necessary	2- Updated policy was prepared in 2014 but was not taken to Council at that time.
		Prepare report and submit to Council	3 - Has not been submitted or approved by council		2 - 2019 PBMP will recommend review and revision of policy. In practice we have been implementing TMP / OP sidewalk policy recommendations, but have not been formally adopted by Council.
2	Update Pedestrian and Bicycle Master Plan (PBMP)	Analyze pedestrian and cycling access issues/needs as they relate to York Region Pedestrian and Cycling Master Plan and planned YRT/VIVA projects	1 - PBMP is complete. Approved by Council in December 2019.	Based on monitoring results and additional improvements identified, assess need to update PBMP	1 - PBMP is complete. Approved by Council in December 2019.
		Update Pedestrian and Bicycle Master Plan if required			
3	Accelerate implementation of PBMP network	Increase annual capital budgets for 2012-2016	2 - Annual AT budget was introduced in 2018. 2018 DC By-law update included costs for AT infrastructure City-wide.	Implement next phases of the PBMP	2- See Short Term Action Status
		Synchronize PBMP phasing with TMP phasing, and identify projects that can be advanced	2- Informally, since 2016 AT facilities have been routinely accommodated in development and capital projects (design phases). 2019 PBMP speaks to formally establishing routine accommodation policy for all new roads projects. Implementation is just starting to occur through construction.		
		Implement initial phase improvements	See above. Progress between 2012 and 2016 was limited due to lack of staff resources.		
4	Accelerate Construction of Missing Sidewalk Links on Regional Roads and other Key Pedestrian Community Linkages (with focus on access to YRT Bus Stops)	Increase annual operating budgets for 2012-2016	3 - Informal process based on citizen inquiries and staff knowledge for filling missing links or key linkages. No plan to formalize this process.	N/A	
		Identify projects that can be advanced	3 - see above		
		Implement	3 - see above		
5	Implement Access Improvements at VIVA Rapid Transit Stations and new GO Rail Stations	N/A		Incorporate project and funding needs into City budgets	2 - potential access improvements to GO stations currently being discussed with Metrolinx
				Implement in logical and coordinated manner	2 - see above
				Analyze pedestrian and cycling issues/needs as they relate to VIVA projects	1 - VIVA projects include improvements to pedestrian and cycling facilities
6	Assess Need for Access Improvements to Stations along New BRT Routes	N/A		N/A	
B	**Transit Supportive Elements**				
7	Support Early Extension of Spadina Subway	Work with York Region and TTC to expedite design and ensure early implementation of the Spadina subway extension to Highway 7	1 - Opened December 17, 2017	N/A	

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
8	Advocate New GO Rail Service to Bolton	Work with Metrolinx and York Region to pursue additional local (smaller scale) stations in Woodbridge Core and Nashville, and advocate for early service implementation	3 - Identified as a "beyond 2041" project in the 2018 Metrolinx RTP	Work with York Region and Metrolinx to secure funding commitments from Provincial Government for early implementation	3 - Identified as a "beyond 2041" project in the 2018 Metrolinx RTP
9	Support Improved GO Rail Service to Barrie	Work with Metrolinx and York Region to expedite improved service and to support new stations at Highway 7 and Kirby Road	2 - Greatly improved service in delivery. Kirby GO Station under review. Hwy 7 / Concord GO no longer under consideration for current phase of construction. City and Region continuing to advocate for Hwy 7 / Concord GO station.	N/A	
10	Support New Development and Redevelopment in Centres and Transit Corridors	Expedite new secondary plan for Weston/Highway 7 Primary Centre	2 - Phase 1 work received by Committee of the Whole on June 5, 2019. Final SP scheduled for completion in 2021.	Ensure that new development in Centres and Corridors is transit oriented	1 - Secondary Plans such as VMC, Vaughan Mills Centre, Concord GO are centred around transit
		Ensure that new development in Centres and Corridors is transit oriented	1 - Secondary Plans such as VMC, Vaughan Mills Centre, Concord GO are centred around transit		
11	Develop New Traffic Level of Service Standard for Centres	In co-operation with York Region, establish appropriate level of traffic service standard to support new development in Centres and Corridors	3 - not implemented	N/A	
12	Advocate Early Implementation of Transit Service to New Development Areas	Work with York Region, Metrolinx and YRT to provide new/improved transit service to all recently occupied subdivisions and employment areas	2 - Most areas served by YRT, with the exception of the neighbourhoods: -bounded by Huntington, Nashville, Hwy 27, and Major Mac -to the southeast of Dufferin and Kirby -north of Nashville to the east of Hwy 27	Continue to work with York Region, Metrolinx and YRT	2 - Most areas served by YRT, with the exception of the neighbourhoods: -bounded by Huntington, Nashville, Hwy 27, and Major Mac -to the southeast of Dufferin and Kirby -north of Nashville to the east of Hwy 27
13	Advocate and Support Yonge Subway Extension and New BRT Lines	Work with York Region to articulate the benefits and promote transit supportive development in the Yonge corridor	2 - Advocacy underway, and transit supportive development occurring at RHC and through Vaughan.	Work with York Region, TTC and Metrolinx to secure funding commitments from Federal and Provincial Governments for early implementation and design for Yonge Subway Extension and New BRT Lines	2 - Preliminary planning, design and engineering (PDE) is expected to be completed within the year. To complete the PDE, the Government of Canada committed $36 million and the Province, through Metrolinx, committed $55 million. In April 2019, the Province announced $11.2 billion to support construction for four rapid transit projects, including the YSE.
14	Advocate for Fare Integration and Service Coordination	Work with York Region and various transit operators to promote the seamless integration of transit services across Regional boundaries	2 - Starting August 26, PRESTO will be accepted on TTC bus routes in York Region. GTA weekly pass available for trips involving 2 or more transit systems (excl. GO). Metrolinx developing an integrated regional fare structure, but timelines unclear.	N/A	
C	**Travel Demand Management**				
15	Confirm City Role in TDM, Support TMAs and Monitor TDM Benefits	Meet with Metrolinx and York Region to agree on respective roles and responsibilities within a strengthened 3-way partnership	3 - meeting not held due to resource limitations	Based on the demand in concentrated employment areas, and the benefits of cross-pollination among employers, assess the need for additional area	2 - Smart Commute North Toronto, Vaughan is operational

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
				specific TMAs with Metrolinx and York Region	
16	Develop City-wide TDM Plan	Develop a comprehensive TDM Plan to look at areas such as promotion, the community, schools, institutions and workplaces	3 - not started due to resources, capital budget identified	Update City-wide TDM Plan if necessary	3 - not started due to resources
		Prepare plan and submit to Council	3 - see above		
17	Develop TDM Program for City Employees	Conduct an internal review of existing programs/services	3 - not started due to resources	Update TDM Program if necessary	3 - not started due to resources
		Survey staff	3 - see above		
		Review programs from other municipalities	3 - see above		
		Develop state-of-the-art program for consideration by Council	3 - see above		
18	Support New and Existing Vaughan Employers in Initiating TDM Programs	Create guidelines document including a menu of employer based programs/services	3 - not started due to resources	Provide staff assistance in promoting, planning and implementing employer specific plans	3 - not started due to resources
		Promote menu with new and existing large City employers, in co-operation with Vaughan Chamber of Commerce	3 - not started due to resources		
19	Develop and Implement Pilot School TDM Program	Provide staff assistance in promoting, planning and implementing a pilot school TDM program, and begin roll-out across Vaughan Elementary and High Schools	2 - City works with schools to develop programs to encourage more children to walk and cycle to school.	Develop and implement TDM programs for Elementary and High Schools and provide staff assistance in promoting, planning and implementing school specific plans	3 - not started due to resources
20	Require TDM Plans and related building facilities as a Condition of Development Approvals	Secure TDM related facilities (e.g., showers, secure bike parking) in new developments	2 - A brief review of SPs shows that these measures are not consistently required. Actual implementation unclear. VMC SP policy "requires" secure bike parking for offices and apartment buildings, and "encourages" showers and change rooms for office developments. Yonge-Steeles Corridor SP does not include mention. Vaughan Mills Centre SP "encourages" bicycle parking and showers	Secure TDM related facilities (e.g., showers, secure bike parking) in new developments	2 - A brief review of SPs shows that these measures are not consistently required. Actual implementation unclear. VMC SP policy "requires" secure bike parking for offices and apartment buildings, and "encourages" showers and change rooms for office developments. Yonge-Steeles Corridor SP does not include mention. Vaughan Mills Centre SP "encourages" bicycle parking and showers
		Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments	1 - April 2018 TIS Guidelines outline requirements for required TDM plans	Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments	1 - April 2018 TIS Guidelines outline requirements for required TDM plans

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
21	Support Integration of Bicycle and Public Transit Travel, including improved cycling access and bicycle storage at transit stops, bike racks on buses and allowing bikes on subway trains	Work with the Region, TTC and Metrolinx to ensure integration related to Spadina subway extension and Highway 7 BRT line	2 - All SSE stations include bike parking, but not secure storage facilities. Bikes are allowed on the subway during non-peak hours and on weekends Bike racks are provided on most TTC and all YRT buses Bike parking is provided at many, but not all, Hwy 7 viva stops	Work with the Region, TTC and Metrolinx to ensure integration related to Yonge subway extension and westerly extension of Highway 7 BRT line	2 - All SSE stations include bike parking, but not secure storage facilities. Bikes are allowed on the subway during non-peak hours and on weekends Bike racks are provided on most TTC and all YRT buses Bike parking is provided at many, but not all, Hwy 7 viva stops
D	**Parking**				
22	Finalize 2010 Draft Parking Report and Prepare a Revised Parking Zoning By-law	Finalize 2010 parking report for Council adoption	2 - Draft Report completed in March 2010 but has not been approved by Council	N/A	
		Prepare revised zoning by-law that supports the report	2 - Draft comprehensive zoning by-law presented to Council June 2019. Completion anticipated in 2021.		
23	Develop City Mandate for Parking Management	Prepare report to Council recommending elements of a parking management mandate and associated staff responsibilities	3 - not started	N/A	
24	Develop Network of Carpool Lots for Vaughan	Work with the Region and the Province to define general locations for carpool lots in the City	3 - not started	N/A	
		Amend the Regional and City TMPs accordingly	3 - not started		
25	Implement a Park-and-Ride Lot North of the Vaughan Metropolitan Centre (VMC)	Work with the Region and YRT to identify and assess alternative sites for commuter parking oriented to the Spadina subway	2 - Temporary commercial paid parking lot in operation. Status of the parking strategy unclear, but noted as in progress on VMC website. VMC SP notes that public commuter parking lot will not be included.	N/A	
		Report to Council with results and recommendations	See above		
26	Establish a Vaughan Parking Authority	N/A		Assess experience elsewhere and relate to Vaughan situation	3 - not started
				Prepare a report to Council on costs/benefits and mandate/role of a parking authority (or separate unit of the City administration)	3 - not started
27	Plan for and Implement a Municipal Parking Facility in the Vaughan Metropolitan Centre	N/A		Assess demand, identify and evaluate alternative sites, prepare cost estimate, and report to Council	
28	Implement Paid On-Street Parking in the VMC	N/A		Confirm street segments, assess fee collection options and implement	2- Status of the parking strategy unclear, but noted as in progress on VMC website
29	Assist York Region and MTO in Implementing Carpool and Park-n-Ride Lots	N/A		Assist the senior levels of government in selecting and acquiring (possibly through the development approvals process) suitable sites	3 - not started
30	Implement New Municipal Parking	N/A		N/A	

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
	Facilities in Vaughan Centres				
E	**Strategic Road Initiatives**				
31	Conduct Joint VMC and Surrounding Area Transportation Study with York Region	Partner with Region to complete the study in early 2012	1 - Completed in 2013	N/A	
		Report to Council with Study recommendations	1 - Incorporated into VMC Secondary Plan in December 2012 approval.		
32	Develop Comprehensive VMC Truck Strategy and Implementation Plan	Develop Terms of Reference jointly with York Region and retain consultant	3 - Not started	Work with York Region and MTO to implement various components of the Plan	3 - Not started
33	Complete and implement Class EA for North Maple Community Bridge (Block 33)	Work with consultants and Council to address outstanding issues	1 - Notice of Study Completion issued Dec 12, 2013	Following EA approval, secure funding for implementation	1 - 2/3rds of estimated funding included in 2018 DC Study
		Report to Council with Study recommendations	3 - Not endorsed by Council in 2013	Implement	2 - Design underway by Infrastructure Delivery
34	Initiate Class EA Studies (Phases 3 & 4) for Priority Road Improvements a) Portage Parkway Extension & Widening b) Huntington Widening and Urbanization	Develop Terms of Reference	1 - Notices of Study Completion for Portage Parkway issued July 15 and September 8, 2016. Notice of Study Completion for Huntington Road issued November 9, 2017	Following EA approval for Huntington Road widening and Portage Parkway extension, secure funding for implementation	1 - Funding included in 2018 DC Study
		Retain consultants to conduct the studies	1 - See above	Implement	3 - Not started
35	Implement New Collector Roads through the Development Approvals Process	Work with developers to complete EA studies, if required, and implement collectors needed to support new development	1 - ongoing	Continue to work with developers to secure necessary approvals and phased implementation, in conjunction with new development	1 - ongoing
36	Develop a Program for Evaluation and Implementation of Railway Grade Separations	Based on the recommended TMP road network, develop a program for evaluation and implementation of 5 railway grade separations with Vaughan roads	2 - identified in 2018 DC study but not prioritized	N/A	
		Work with York Region to expedite the completion of 6 railway grade separations with Regional roads	3 - Not started		
37	Implement Railway Grade Separations	As warrants are met, initiate Class EA studies for high priority Vaughan projects	2 - RFP issued for Kirby Road Widening and Barrie GO rail grade separation between Jane and Dufferin Street. Bid closed June 6, 2019. Barrie GO / Rutherford Rd grade separation included in Rutherford / Carrville EA completed in March 2016	Secure funding commitments from Federal and Provincial Governments for high priority railway grade separations	3 - Not started
				Design and construct high priority railway grade separations	2 - Construction underway for Barrie GO / Rutherford grade separation Barrie GO / McNaughton grade separation in EA stages, construction not anticipated until after 2022 (completion of Maple GO improvements)
				As warrants are met, initiate Class EA studies for medium priority Vaughan projects	3 - Not started
38	Initiate Class EA Studies (Phases 3 and 4) for Jog Eliminations	Concurrent with the travel needs of new development, initiate EA studies for jog eliminations along Pine Valley Drive at Teston Road and Kirby Road.	2 - Pine Valley / Teston EA jog elimination included in Teston Rd EA by York Region. Notice of Completion issued November 24,	Following EA approval, secure funding for implementation	2 - Detailed design underway for Pine Valley / Teston Rd

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
			2016. Pine Valley / Kirby jog elimination EA not started	Implement	3 - Not started
39	Support York Region Goal to Eliminate Jog at Jane Street and Kirby Road	Work with Region to expedite the jog elimination at Jane Street and Kirby Road	2 - Jane / Kirby jog elimination to be addressed in Kirby Road Widening EA, commenced Sept 2019. Anticipated completion in 2021.	N/A	
40	Connect New Collector Road to Bass Pro Mills Drive Crossing of (and Interchange with) Highway 400	Concurrent with new development on the west side of Highway 400, extend collector road to the existing Bass Pro Mills Drive overpass	2 - Bass Pro Mills EA in development, to be commenced in 2019	N/A	
41	Support Completion of Stage 1 of the GTA West Corridor EA Study and Advocate Initiation for Stage 2 of the EA Study for New Corridor	Following completion of Stage 1 of the GTA West Corridor EA Study, work York Region and MTO to expedite the determination of the routing for the GTA West Corridor.	2 - The Stage 1 Transportation Development Strategy was completed in November 2012. Stage 2 resumed in June 2019 (suspended in Dec 2015). A Technically Preferred Route will be presented in Fall 2019. The route will be confirmed in the following months.	N/A	
		Work With MTO and York Region through Stage 2 of the EA Study to secure OPA 637 interchange connection(s) with Highway 400 together with a Regional arterial connection	2 - Stage 2 ongoing, but does include a connection to Hwy 400		
42	Initiate Class EA (Phases 3 and 4) Studies a) Creditstone Widening b) Colossus Road Extension across Highway 400 and Improvements easterly to Creditstone Road	N/A		Develop Terms of Reference	3 - Creditstone: EA not started. Planned in 2022. Colossus: 2015 VMC SP Corridor Protection: Colossus Drive Overpass Area Study documented and advanced the implementation for the near term need for a corridor protection policy for the Extension across Hwy 400. The study is only intended to inform but not predetermine the findings and outcome of a future EA. Similar corridor protection work to be completed for west side of corridor in Weston/7 SP TMP. A preferred alignment was identified in the 2013 VMC and surrounding areas Transportation Study. EA not started
				Retain consultants to conduct the studies	3 - Not started
				Following EA approval, secure funding for implementation	3 - Not started
				Implement	3 - Not started
43	Reassess Need for and, if confirmed, Initiate Class EA (Phases 3 and 4) Studies for King-Vaughan Road Widening	N/A		Develop Terms of Reference	3 - Not started
				Retain consultants to conduct the studies	3 - Not started
				Following EA approval, secure funding for implementation	3 - Not started

	Plan Element	Short Term (2011-2016) Action Plan	Status	Medium Term (2016-2021) Action Plan	Status
44	Initiate Class EA (Phases 3 and 4) Studies for Kirby Road Extension and Widening	N/A		Initiate class EA for Kirby Road	2 - RFP issued for Kirby Road Widening and Barrie GO rail grade separation between Jane and Dufferin Street. Project commencing Sept 2019. 2 - The City authorized Rizmi Holdings to undertake the EA study for the extension of Kirby Rd between Dufferin and Bathurst. The study is underway (Notice of study commencement issued May 11, 2017). On June 12, 2019, Council adopted recommendations related reimbursing RHL for costs of the EA. The agenda item noted that the final edits to the ESR are underway and it will be filed for public review in the next couple of months.
				Following EA approval, secure funding for implementation	3 - Not started
				Implement Kirby Road extension and widening	3 - Not started
45	Reassess Need for and, if Confirmed, Initiate Class EA (Phase 3 and 4) Studies for Snidercroft Road Extension	N/A		N/A	

Appendix B

TTS Data Discoveries

Number of Trips by Year

	2006	**2011**	**2016**
Number of Trips from Vaughan	477222	599907	585043

Number of Trips per Person by Year

	2006	**2011**	**2016**
Number of Trips per Person by Year	3.91	3.9	3.62

Objective 4 – Increased Accessibility

Origin (Destination)	2006	2011	2016
Average transit mode share	5% (5%)	0.10% (0.09%)	2% (3%)
Average cycling mode share	6% (6%)	0.22% (0.22%)	2% (2%)
Average walking mode share	6% (6%)	0.17% (0.21%)	2% (3%)

Objective 5 – Meet TDM/TSM Objective

- **Daily and peak period modal share of transit overall and per purpose**

	2006	2011	2016
Overall Transit Mode Share	7.6%	8.7%	8.08%
Peak Period Transit Mode Share	9.29%	11.38%	10.21%

- **Daily transit trips per person**

	2006	2011	2016
Daily Transit Trips	36450	51996	47252

- **Proportion of full time student population over 16 years of age with transit passes**

	2006	2011	2016
% of students with transit passes	24%	34%	46%

- **Daily and peak period modal share of walking and cycling trips**

	2006	2011	2016
Daily Modal Share			
Cycling	0.19%	0.25%	0.38%
Walking	4%	3.5%	4.4%
Driving	69.2%	69.4%	70.2%
Peak Period Modal Share			
Cycling	0.15%	0.24%	0.39%
Walking	5.63%	5.12%	5.9%
Driving	65.94%	65.34%	66.58%

- **Proportion of internal trips with the regional and primary centres with walking as the primary mode of travel**

	2006	2011	2016
% of internal walking trips within Centres	16%	13%	20%

- D**aily and peak period modal share of auto passenger trips**

	2006	2011	2016
Daily Auto Modal Share	85.4%	85.7%	84.7%
Peak (AM/PM) Auto Modal Share	80%/76%	79.7%/84%	79.6%/83%

- **Proportion of residents of the city working from home**

	2006	2011	2016
% of residents working from home	7%	11%	14%

- **Proportion of HM-Work trips destined to the City of Vaughan along with the Regional and Primary Centres with free parking available at person's usual place of work**

•	2006	2011	2016

% of home to work trips destined to Vaughan with free parking available	90%	89%	89%

	2006	2011	2016
VMC	96%	95%	94%
Highway 7 East	98%	97%	100%
Highway 7 West	93%	92%	96%
Steeles	88%	89%	95%
Centres St	90%	78%	88%
Yonge	84%	80%	77%
Jane and MM	87%	85%	85%
Woodbridge	90%	93%	92%
Maple GO	95%	94%	91%
Vellore	81%	90%	87%
Rutherford GO	97%	96%	98%

- **Vehicle availability per household or per adult**

	2006	2011	2016
% of households with a vehicle	99.23%	99.27%	99.44%

- **Proportion of adults without drivers license**

	2006	2011	2016
% of adults without a driver's license	15.8%	14.6%	14.4%

- **Daily and peak period non-auto modal share of trips by purpose for City residents**

	2006	2011	2016
Home-based Work			
Auto	88%	86%	86%
Transit, cycling, walking	12%	14%	13%
Other	0%	0%	0%
Home-based School			
Auto	37%	39%	39%
Transit, cycling, walking	44%	47%	44%
Other	19%	14%	14%
Home-based Discretionary			
Auto	97%	97%	96%

Transit, cycling, walking	3%	3%	4%
Other	0%	0%	0%
Non Home-based			
Auto	93%	93%	92%
Transit, cycling, walking	6%	6%	7%
Other	1%	1%	1%
Percentages may not total 100% due to rounding			

Peak AM (PM)	2006	2011	2016
Home-based Work			
Auto	88% (87%)	85% (84%)	85% (80%)
Transit, cycling, walking	12% (13%)	15% (16%)	15% (15%)
Other	0% (0%)	0% (0%)	0% (5%)
Home-based School			
Auto	40% (31%)	42% (35%)	45% (33%)
Transit, cycling, walking	38% (50%)	42% (50%)	37% (51%)
Other	22% (19%)	17% (15%)	19% (16%)
Home-based Discretionary			
Auto	98% (97%)	98% (97%)	94% (95.9%)
Transit, cycling, walking	2% (3%)	2% (3%)	6% (3.9%)
Other	0% (0%)	0% (0%)	0% (0.2%)
Non Home-based			
Auto	92% (91%)	90% (91%)	91% (90%)
Transit, cycling, walking	6% (8%)	8% (8%)	8% (9%)
Other	1% (1%)	2% (1%)	1% (1%)
Percentages may not total 100% due to rounding			

- **Daily and peak period auto trips per person total and per purpose for the residents of the City**

Daily	2006	2011	2016
1	1799	1622	2179
2	184780	227827	256284
3	48537	66045	64302
4+	242106	304413	262276
Total Trips	**477222**	**599907**	**585041**

AM (PM)	2006	2011	2016
1	382 (501)	168 (587)	450 (440)
2	60479 (66022)	72778 (79249)	83809 (91310)
3	13779 (16447)	17560 (22146)	17689 (20071)

4+	50572 (78983)	65755 (91310)	55236 (88368)
Total Trips	**125212 (161953)**	**156261 (204097)**	**157184 (200189)**

Daily	2006	2011	2016
Home-Based Work			
1	499	404	634
2	102809	125146	152536
3	11764	14903	15480
4+	44626	49520	43985
Total	**159698**	**189973**	**212635**
Home-Based School			
1	60	26	83
2	48087	55857	57861
3	2547	3212	2703
4+	14309	14861	13070
Total	**65003**	**73956**	**73717**
Home-Based Discretionary			
1	1240	1175	1463
2	33548	46039	44486
3	18423	26422	25184
4+	125953	164168	143169
Total	**179164**	**237804**	**214302**
Non Home-Based			
1	-	18	-
2	336	785	1401
3	15803	21508	20934
4+	57221	75864	61338
Total	**73360**	**98175**	**83673**

Peak AM (PM)	2006	2011	2016
Home-Based Work			
1	219 (60)	125 (103)	257 (111)
2	38029 (40208)	45694 (48987)	54623 (59969)
3	5598 (3656)	6265 (4374)	5858 (4878)
4+	16056 (16664)	17583 (18382)	14733 (15938)
Total	**59902 (60588)**	**69667 (71846)**	**75471 (80896)**
Home-Based School			
1	- (40)	- (19108)	31 (20466)
2	20207 (17995)	23542 (723)	24196 (321)
3	1489 (443)	1520 (3775)	1414 (3437)
4+	5886 (4481)	6183 (994)	5490 (474)
Total	**27582 (22959)**	**31245 (24600)**	**31131 (24698)**
Home-Based Discretionary			
1	164 (401)	43 (484)	163 (329)
2	2140 (7626)	3347 (10814)	4637 (10491)
3	3614 (5722)	5309 (8053)	5724 (7235)
4+	18502 (37911)	26744 (53036)	24521 (47574)

Total	**24420 (51660)**	**35443 (72387)**	**35045 (65629)**
Non Home-Based			
1	104 (192)	194 (340)	362 (383)
2	3079 (6625)	4466 (8997)	4693 (7638)
3	3448 (6431)	5657 (9098)	4248 (6934)
4+	6682 (12629)	15246 (16645)	6142 (13555)
Total	**13313 (25877)**	**25563 (35080)**	**15435 (28510)**

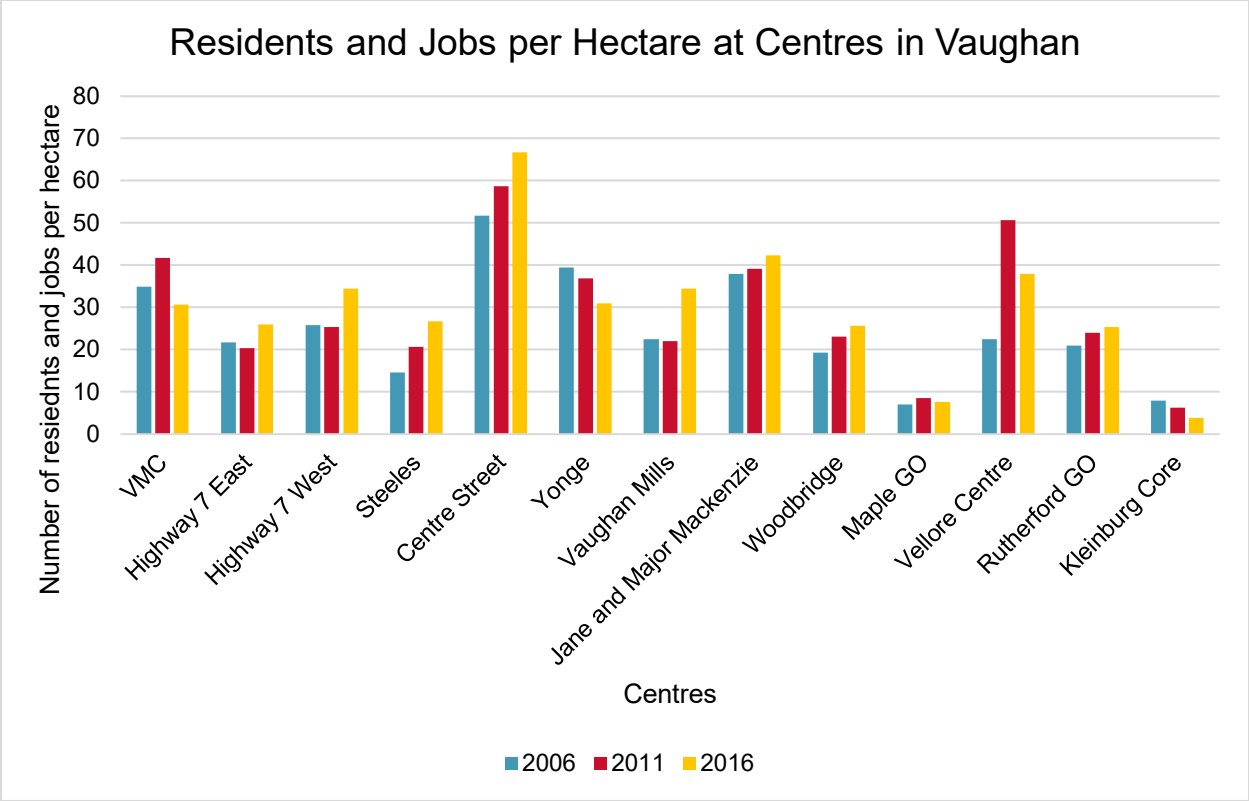
- **Daily and peak period non auto modal share of inbound trips towards the City**

	2006	2011	2016
Daily non-auto modal share inbound trips	9.5%	9.6%	10.1%
Peak non-auto modal share inbound trips (AM/PM)	9.8% (13%)	9.7% (13.2%)	9.7% (13.8%)

Objective 6 – Achieve Sustainability

- **Number of residents and jobs per unit of land area within regional primary centres and overall urbanized proportion of City**

	People/Hectare		
	2006	2011	2016
VMC	34.9	41.7	30.6
Highway 7 East	21.7	20.3	26
Highway 7 West	25.8	25.4	34.4
Steeles	14.6	20.7	26.7
Centre Street	51.7	58.7	66.8
Yonge	39.4	36.9	30.9
Vaughan Mills	22.5	22.1	34.5
Jane and Major Mackenzie	38	39.2	42.3
Woodbridge	19.3	23.1	25.7
Maple GO	7.1	8.6	7.7
Vellore Centre	22.5	50.6	38
Rutherford GO	21	24	25.4
Kleinburg Core	7.9	6.3	3.8



- **Self containment (portion of trips that start and end within the City)**

	2006	2011	2016
Self containment	47%	51%	48%

- **Place of work employment to resident labour force ratio**

	2006	2011	2016
Place of work employment to resident labor force raito	35.7%	36.5%	35.1%

- **Employment minus employed labour force**

	2006	2011	2016
Labour Force Participation Rate	70%	69%	71%

- **Median trip length (km) per purpose for the residents of the City**

	2006	2011	2016
Home-Based Work	13.37	14.02	14.11

Home-based School	6.17	7	7.56
Home-Based Discretionary	7.94	7.03	12.10
Non home-based	9.98	10.07	9.45

- **Jobs within walking distance (1km: median walk trip length) of places of residents**

	2006	2011	2016
Jobs within 1 km walking distance	7673	7435	8919

- **Daily median trip lengths (straight line distance) per mode per purpose(HB work, HM school, HM Discretionary, Non HB) for residents of the City**

	2006	2011	2016
Home Based Work			
Transit excluding GO	15.87	16.89	16.72
Cycling	2.21	4.94	4.84
Auto driver	13.48	13.7	14
GO Rail only	24.31	24.39	24.53
Joint GO and local	21.98	23.51	23.99
Motorcycle	-	9	17.73
Other	-	7	-
Auto passenger	9.74	11.04	9.3
School bus	8	-	22.53
Taxi passenger	4.38	7.4	11.33
Walk	1.33	0.8	1.45
Paid rideshare	-	-	6.64
Home Based School			
Transit excluding GO	11.26	12.38	13.31
Cycling	2.83	3.41	4
Auto driver	12.36	13.03	12.48
GO Rail only	24.41	24.5	25.56
Joint GO and local	20.64	23.5	28.61
Motorcycle	4	-	3
Other	2	6.58	-
Auto passenger	5.27	5.27	5.44
School bus	5.19	6.59	7.29
Taxi passenger	7.58	5.21	5.68
Walk	0.72	0.67	2.78
Paid rideshare	-	-	22.65
Home Based Discretionary			
Transit excluding GO	12.65	14.97	13.42
Cycling	1.75	1.86	1.54
Auto driver	6.80	6.48	7.1
GO Rail only	-	-	25.09
Joint GO and local	195.47	31.85	23.8
Motorcycle	61	1	30.59

Other	7.81	60.06	6.90
Auto passenger	11.26	8.1	9.65
School bus	-	1	16.2
Taxi passenger	14.19	13.63	9.04
Walk	0.64	0.7	0.56
Paid rideshare	-	13.42	14.81
Non Home Based			
Transit excluding GO	15	14.83	10.10
Cycling	1.6	2	11.02
Auto driver	9.99	9.81	9.65
GO Rail only	22.48	24.17	24.04
Joint GO and local	22.39	22.62	24.51
Motorcycle	41	1	-
Other	68.73	327	27.47
Auto passenger	8.20	9.27	7.26
School bus	11.13	15.11	27.95
Taxi passenger	5.47	4.85	2.58
Walk	0.92	0.75	1.54
Paid rideshare	-	-	8.1