TDM Strategy and Implementation Plan Appendices

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Appendix A: Policy Review

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Planning Policy Review in Relation to Transportation Demand Management

Developing the Transportation Demand Management (TDM) Plan requires an understanding of the policy documents that provide a framework for the plan's content and an analysis of other plans and programs from throughout North America and beyond. Understanding how the background information can affect the City and the implementation of TDM is an important aspect of the plan. This chapter will provide a summary of all the background research undertaken, analyze how it will impact the City, and what should be undertaken to enhance TDM policies and programs within the City.

Transportation Demand Management (TDM) in Mississauga is supported by a wide range of policies at the federal, provincial and regional level. This framework provides the policy direction for the vision, goals and objectives for Mississauga's TDM Plan. In this section, the most relevant policies at each level of government are reviewed and analyzed with regard for their relevance to the TDM plan.

The following outlines the policies that exist in Canada which support sustainable development, land use and transportation planning.

Federal and Provincial Policies

There are a number of provincial and federal policies that complement the implementation of TDM measures and programs at the local level. The following is a summary of these policies and how they may impact the implementation of the TDM Plan in Mississauga.

Federal Sustainable Development Act

Policy Description

The Federal Sustainable Development Act (FSDA) requires the Government of Canada to develop a sustainable development strategy, providing a framework through which to conduct sustainable planning and reporting within the federal public service. Its guiding principles focus on clean air and water, natural protection, and shrinking the environmental footprint of government. The strategy aims to produce:

- An integrated view of federal actions and results to achieve environmental sustainability.
- Effective measurement and monitoring of sustainability progress to Canadians.
- Equal footing of environmental with economic and social considerations in federal decision-making.

Relevance to Mississauga TDM

While not binding on any other level of government, the FDSA sets a policy precedent at the federal level. It asks provincial and municipal governments to incorporate sustainability into policy development and action plans. The FDSA's guiding principles

for upholding environmental integrity and considering the environmental costs of proposed actions will be strongly considered and reflected within Mississauga's TDM Strategy.

Provincial Policy Statement (2014)

Policy Description

The Provincial Policy Statement (PPS) lays the foundation for the regulation of land use and development within the province of Ontario. It provides policy support for appropriate and context-sensitive urban and rural development, environmental and resource protection, and social equity in planning matters. An overarching vision for Ontario's land use planning system is articulated in the PPS, stating that the "long-term prosperity and social well-being of Ontarians depends on maintaining strong communities, a clean, healthy environment, and a strong economy."

Relevance to Mississauga TDM

The PPS promotes land use patterns that support "a mix of … transportation choices that increase the use of active transportation and transit before other modes of travel". Specifically, the PPS requires the following:

- Design of "healthy, active" communities that support active transportation and existing, planned, or future transit services (1.1.3.2; 1.5.1), and reduce lengths and numbers of vehicle trips (1.6.7.4).
- Provision of facilities for people and goods that meet projected needs (1.6.7.1).
- Use of transportation-demand management strategies to make efficient use of existing and planned infrastructure (1.6.7.2).
- Connectivity within and among systems and modes (1.6.7.3).
- Integration of transportation and land use considerations at all stages in the planning process (1.6.7.5)
- Long-term corridor planning, and mitigation of their negative impacts (e.g. pollution, noise) (1.6.8).

The PPS provides direction for the development of policies that reflect provincial objectives. In Mississauga, the integration of land use and transportation planning is already part of existing City policy.

Ministry of Transportation Cycling Strategy (2013)

Policy Description

In September 2013, the Ontario Ministry of Transportation (MTO) published #CycleON, Ontario's Cycling Strategy. The strategy acknowledges the importance of developing cycling facilities to help reduce greenhouse gas (GHG) emissions, ease gridlock, benefit the economy, increase tourism, and increase the health and quality of life for all Ontarians. Key elements of the Province's vision include: the development of a safe cycling network that connects the entire province; the continued reduction of collision and injury rates; and the empowerment of everyone from the occasional cyclist to the daily commuter to feel safe when cycling in Ontario. This strategy is intended as a guide to make sure this vision is achieved.

Relevance to Mississauga TDM

The Cycling Strategy outlines a 20-year vision for cycling in the province, with proposed cycling infrastructure, educational components, and legislation. This strategy, in conjunction with other provincial documents, aims to promote and strategically develop sustainable transportation infrastructure province-wide.

The key directions of the policy promote active and healthy communities, improving cycling infrastructure and road safety and promoting cycling awareness. These key strategic directions inform the active transportation actions and measures that will be incorporated into the TDM Strategy.

Accessibility for Ontarians with Disabilities Act (2005)

Policy Description

The Accessibility for Ontarians with Disabilities Act (AODA) was passed on June 13, 2005, and is a provincially legislated policy that calls on the business community, public sector, not-for-profit sector and people with disabilities or their representatives to develop, implement and enforce mandatory standards. This policy is a first of its kind in Canada to apply to both the private and public sectors. These accessibility standards are the rules that local governments, agencies and businesses in Ontario follow to identify, remove and prevent barriers to accessibility.

Relevance to Mississauga TDM

The TDM Plan recommendations will be consistent with the AODA requirements for both TDM-supportive infrastructure and program measures, ensuring full access to all residents.

The “Built Environment” component is relevant towards the planning, design and construction of facilities and infrastructure that support TDM. The “Transportation Standards” section requirement is incorporated through the planning and delivery of transportation services.

Soft TDM measures such as outreach or consultation require actions to meet AODA policies. Due diligence is required to ensure outreach, communication and participation is accessible to all of the public

Ministry of Transportation Transit - Supportive Guidelines (2012)

Policy Description

The Ministry of Transportation’s Transit Supportive Guidelines encourage transit-friendly planning and design throughout the province. More specifically, the Guidelines provide direction on land-use planning, urban design and operational procedures that enhance connectivity to transit based on current best practices. The document is intended to be a guide for planners, developers, and others involved in developing more sustainable and transit-supportive communities in Ontario.

Relevance to Mississauga TDM

These Guidelines provide direction on how to integrate all modes of transportation when designing for transit to create more complete streets. The document provides

guidelines for the improvement of transit facilities including design recommendations. The guidelines complement the TDM Plan's intention to support connection to transit within Mississauga.

Growth Plan for the Greater Golden Horseshoe – Places to Grow (2013 Update)

Policy Description

The Growth Plan promotes dense, mixed-use communities that support public transit, walking and cycling as viable transportation options throughout Ontario's Greater Golden Horseshoe.

The development of mixed-use communities with a traditional downtown built form that serves a range of residential, commercial and business functions are encouraged in the plan. The aim is to better utilize land and infrastructure. This involves reducing transportation demand and enticing more people to choose public or active transportation to reach their destinations.

Relevance to Mississauga TDM

Policies from the Growth Plan relevant to the development can be found throughout Section 2 ("Where and How to Grow").

- 2.2.2: Managing Growth
- 2.2.3: General Intensification
- 2.2.5: Major Transit Station Areas and Intensification Corridors
- 2.2.6: Employment Lands
- 2.2.7: Designated Greenfield Areas
- 3.2.3: Moving People

Policies in these sections provide direction to municipalities for accommodating intensification which include: establishing specific intensification targets, requirements for greenfield density targets; developing mixed-use, transit-supportive, pedestrian-friendly urban environments; and encouraging the development of complete communities. Additionally, there are requirements that municipalities integrate pedestrian and cycling networks into transportation planning.

The Growth Plan also directs future growth to traditional downtown communities where the potential for intensification is highest. Intensification in the urban growth centers of Mississauga will warrant TDM-supportive infrastructure, and complimenting multi-modal transportation that permits access from Mississauga and the broader region.

The Big Move: Metrolinx Regional Transportation Plan (2013 Update)

Policy Description

The Big Move is the third piece in a tripartite provincial approach (along with the Greenbelt Plan and Growth Plan for the Greater Golden Horseshoe) to guide growth and sustainability planning in the Greater Toronto and Hamilton Area (GTHA) and

builds upon the two previously mentioned documents. Together, these initiatives aim to develop more compact and complete communities that make walking, cycling and transit part of everyday life. The goal of the Big Move is to create a long-term strategic plan for an integrated, multi-modal, regional transportation system. It serves as a blueprint for a more sustainable transportation future for the entire region over its 25-year planning horizon.

Relevance to Mississauga TDM

The Big Move calls for comfortable and convenient mobility. This will be accomplished through multi-modal transportation integration that connects all areas of the GTHA. Through the interim transportation strategy, Moving Mississauga, the City incorporated many of the goals and strategic actions outlined in the Big Move, including:

- Enhancement and expansion of active transportation;
- Improving the efficiency of the road and highway network;
- Creating an ambitious TDM program;
- Creating a customer-first transportation system;
- Building communities that are pedestrian, cycling and transit-supportive; and
- Improving goods movement within the GTHA and with adjacent regions.

In particular the strategic action to "Create an Ambitious Transportation Demand Management Program" within The Big Move highlights the role of TDM programs as a major component towards increasing the use of sustainable travel modes and shifting travel behaviour. Mississauga has incorporated some of the goals from the Big Move regarding TDM into City policy and planning. These include:

- Incorporating recommendation into the Official Plan to require a TDM Strategy as part of development proposals;
- Establishing programs for both public and private sector employers to implement and encourage the use of TDM programs; and
- Consideration for working towards updating the Planning Act, which currently does not provide sufficient support to allow Mississauga or other municipalities to fully incorporate TDM programs into the development process and follow through on the monitoring of each plan provided by private sector applicants.

Region of Peel Policy

Region of Peel Official Plan (2014)

Policy Description

The Regional Official Plan is a long-term plan used to assist the region in managing growth and development and provide each local municipality with the framework within which to develop their own Official Plans.

The plan provides the Regional Council with a long-term regional strategic policy framework for guiding growth and development in Peel. The plan recognizes the

need for effective environmental protection and management measures to ensure environmental sustainability.

Relevance to Mississauga TDM

The over-arching theme of the Official Plan is sustainability. The aim of the plan is to promote sustainable development resulting in a strong, vibrant and resilient society. TDM will provide Mississauga with the framework to manage current traffic demands, and create a stronger, more flexible city. The following are policies from the Regional Official Plan that are relevant to the development of the Mississauga TDM Plan.

5.3 *The Urban System:* These policies will support the use of sustainable travel options within Mississauga.

- Achieve an urban structure, form and densities which are pedestrian-friendly and transit supportive
- Plan to use existing services and infrastructure more effectively to encourage compact urban development
- Develop urban growth centres to incorporate a range of multi-use space and accommodate multi-modal transportation

5.5 *Growth Management:* These policies encourage the use of sustainable travel modes.

- Optimize use of existing land supply in the Region by directing growth within built-up areas to be intensified
- Achieve diverse and compatible mix of land uses including residential and employment

5.9 *Transportation System:* These policies provide direction to the residents to use sustainable travel modes.

- Consider all modes of travel and promote the efficient movement of people and goods
- Increase travel choices to meet diverse needs
- Minimize environment and health impacts of transportation
- Promote the integration of transportation planning and land use planning
- Increased use of transit to maximize use of existing and future transportation asset

5.9.9 *TDM:* TDM is important within a range of solutions to meet the forecasted travel demand

- Demand side solutions to improve efficiency of the transportation system and to reduce or modify demand

Region of Peel Long Range Transportation Plan (2011)

Policy Description

The Long Range Transportation Plan (LRTP) addresses major transportation challenges and opportunities in the Region of Peel. To address these, the vision for the LRTP is to ensure there is a safe and convenient transportation system for everyone to use.

Relevance to Mississauga TDM

The LRTP promotes sustainable modes of transportation such as public transit, carpooling, walking and cycling. Changing the mindset of decision makers and users is essential for a sustainable transportation system, and is indicated through the section highlighted below:

3.6 *Transportation Demand Management*

- The goal is to grow and expand TDM initiative and programs to further manage congestion and influence travel behavior among residents.

3.8 *Goods Movement:* Manage heavy concentration of industrial businesses reliant on the transportation of goods.

- Peel acknowledges the importance of intermodal facilities, airports, rail corridors and terminals and encourage the transport of goods using a defined network of roads.

Region of Peel Sustainable Transportation Strategy (On-Going)

Policy Description

The Sustainable Transportation Strategy is part of the Long Range Transportation Plan Update. It is an action plan to help build a transportation system that is safe, sustainable, efficient, and healthy for all users

Relevance to Mississauga TDM

Once the plan is developed and released, it will complement Mississauga's TDM programs by encouraging sustainable modes of transportation throughout the region and provide direction on encouraging behaviour change.

Region of Peel Active Transportation Plan (2011)

Policy Description

The Active Transportation (AT) Plan provides a framework for the Region to increase the share of trips by walking and cycling, enhance modal integration, and create a pedestrian and cycling friendly environment. It sets policies towards active transportation improvements and strategies and programs to shift travel behaviour.

Relevance to Mississauga TDM

The AT Plan includes a regional network for AT and policies to support its implementation. The most relevant policies for the development of the TDM plan are:

- Implement programming incorporating communications and social marketing strategy
- Use long-term behavioural shift programs by using community-based social marketing in neighbourhoods and areas with access to active transportation infrastructure
- Active transportation should be accommodated in corridors with supporting land uses and destinations and integrate with existing and planned transit modes
- Implementation to replace deteriorating infrastructure and to fill gaps and critical links in paths and trails

Region of Peel Freight Transport Demand Management (2012)

Policy Description

Peel Region has a significant amount of industrial and warehouse uses. As a result, a study was commissioned to explore TDM measures to control goods movement within the Region. The study examined strategies that blend demand management and sustainable transportation practices with improvements to goods movement in the Region of Peel.

Relevance to Mississauga TDM

Mississauga's economy includes a large goods movement sector due to the number of warehouses, employers and the presence of the Pearson International Airport.

The TDM plan for freight will help Mississauga to:

- Reduce emissions produced by freight carriers
- Reduce kilometers traveled by freight carriers
- Shifting freight to modes with less environmental and community impact
- Optimize system optimization through Intelligent Transportation Systems and provide assistance to goods movement businesses through partnerships

The application of TDM to freight movement can provide the City with another level of managing travel demand. As stated above, the City has a number of businesses that rely on goods movement via surface routes. Therefore the City should work with the Region of Peel to integrate their policies within the TMP and the TDM Plan to create opportunities to increase the efficiency of goods movement and reduce impact on the environment and the community.

Region of Peel TDM Study Report (2004)

Policy Description

A TDM Study report was commenced in 2004 to support the Long Range Transportation Planning exercise. The TDM report set a vision to create policies and programs to enable a balanced, multi-modal transportation system that promotes choices for travelers and influence demand for limited transportation systems.

Relevance to Mississauga TDM

Relevant strategies for the TDM Plan include:

- Improvement to environment and health of communities
- Choosing land use and community design that have impact on mode choice
- Transportation options that are coordinated with public and private sector to promote safe and sustainable transportation system that provides travellers with a variety of mobility choices

Action Plan:

- Coordinate with TMAs and surrounding regions to create a holistic long range TDM program
- Establish monitoring programs for quantitative and qualitative data to assess effectiveness of TDM Measures

City of Mississauga

The Mississauga Official Plan (2014)

Policy Description

Mississauga's Official Plan establishes goals, objectives and policies to manage changes on social, economic and environmental conditions. It sets the long term land use policy framework for initiatives to develop Mississauga.

Relevance to Mississauga TDM

The policies set in place through the Official plan outline goals to intensify urban areas, and to create transportation systems that connect to living and employment areas; reducing reliance on the single occupant vehicle (SOV) trip. The following are relevant to the development of the TDM Plan:

- *Transportation Demand Management*: These policies will provide the framework for using the transportation system more efficiently, reducing congestion and pollution, and utilizing scarce municipal transportation resources more effectively.
- *7.1.3 Complete Communities*: The city will design streets to facilitate alternative modes of transportation such as public transit, cycling, and walking.
- 7.*3.1 Community Infrastructure*: There will be consideration for infrastructure to be placed along main corridors and roads, and to be connected though trails and cycling facilities where possible.
- *8.1 Multi-Modal System*: The City will encourage and enable transportation choices as a shift in lifestyle towards active transportation. They will encourage TDM measures such as car-pooling, alternative work arrangements, and shared parking.
- *8.2.2 Roads*: The policy provides for active transportation facilities on major collectors in neighbourhoods and minimize vehicle- active transportation conflicts.
- 8.*2.3 Public Transit:* Policies are proposed that increase capacity and attractiveness of transit services through an expanding network that covers from where people live to where people work.

- *8.2.4 Active Transportation:* There will be investment to expand both cycling trails and facilities to accommodate commuters.
- *8.3.3 Cycling:* These policies will focus on enhancing pedestrian safety within the right-of-way and will incorporate new cycling infrastructure into new roads and existing roadways.
- *8.4.7 Parking:* The policies related to parking will implement control on parking in intensification areas and coordinate with TDM programs to link both transit and auto use accordingly.
- 8.5 *Transportation Demand Management*: These policies form the basis for the development of a TDM Plan and will encourage active transportation, controlled auto use, expansion of transit network through both physical infrastructure and programs.

The policies within the Official Plan (OP) provide a relatively substantial basis for the development of the TDM Plan, upon which stronger policies and recommendations can be developed which will lead to increased use of sustainable travel options over the long term. The policies within the OP will need to be changed to be in line with the policies within the TMP and the TDM Plan when it is updated in the future. However, it should be noted that changes to the implementation of TDM in the City will require changes to the legislation at the provincial level to allow municipalities to require TDM programs from applicants developing within Mississauga. Until such time, the policies and recommendations that are in the Official Plan will provide the outline for negotiations with the development community and opportunities to educate the public on the benefits of TDM programs and measures.

City of Mississauga Strategic Plan (2009)

Policy Description

The Strategic Plan for Mississauga prioritizes the Official Plan's policies for the short term. These policies will be prioritized through both programs and capital investment.

Relevance to Mississauga TDM

The Mississauga TDM Plan will be consistent with the City's Strategic Plan. The strategic plan sets out the vision, mission and the values of the City of which the following can be applied to development, delivery and monitoring of the TDM Plan. Values that can be applied to the TDM Plan include:

Developing a transit-oriented city

Goals: There is an emphasis on building and expanding the transit system in order to be more environmentally sustainable, to be more convenient to the automobile user, to connect the city through public and active transportation, and to direct growth to specific areas while being affordable and accommodating for an aging population.

Ensuring youth, older adults and new immigrants thrive

Goals: Policies to ensure a range of affordable and accessible transit options and services.

Completing our Neighbourhoods

Goals: Priority on policies that will develop compact walkable communicates that will put the pedestrian first, linking urban areas to neighbourhoods. Providing different modes of active transportation that are desirable and to deliver and maintain that infrastructure.

Cultivating creative and innovative businesses

Goals: Use policies to create a strong network that will attract business opportunities to the area.

Living Green

Goals: Emphasis on changing behaviours to support a more sustainable approach to the environment through minimizing impacts on resources, reducing emissions, and reducing contribution to climate change.

The strategic plan includes goals and objectives that highlight the City's desire to create a more sustainable community that supports walking, cycling and transit. It is important to incorporate this overall direction into the TDM Plan.

Mississauga Cycling Master Plan (2010 / On-going)

Policy Description

The City of Mississauga Cycling Master Plan outlines strategic initiatives and guidelines that recommend appropriate standards for the design, construction, and operation of the cycling network to the year 2030. The plan is supported by provincial and regional policies and is intended to be used by the City as a tool to promote healthy communities and active and sustainable modes of transportation.

Relevance to Mississauga TDM

Three strategic goals were created with respect to cycling within Mississauga.

Goal 1: To foster a culture of everyday cycling

To achieve this goal the plan outlines an increase in the transportation modal split for cycling to 10% of all weekday trips through promoting cycling to schools, increasing awareness of cycling network and facilities, and developing partnerships to implement the education and awareness programs.

Goal 2: To integrate an on-road and off-road network as part of a multi-modal transportation system

To achieve this goal the plan discusses adding approximately 30 kilometres of bicycle lanes and multi-use trail per year over 20 years by seeking partnership opportunities and prioritizing the connection of network links; and

Goal 3: To adopt a "Safety First" approach for cycling in this process

To achieve this, the plan discusses continually reducing cycling incident rates by developing an asset management plan for all cycling facilities and an educational plan for motorists and cyclists

S.11 outlines seven programs in order to promote and support cycling to the public. It includes promoting in schools, raising awareness of trials and facilities, fostering community events and campaigns, and creating bike parking.

Many of the measures presented in the Cycling Plan can be applied to the TDM Plan and support the overall goal of long term and sustained travel behaviour change amongst the residents of Mississauga. The TDM Plan will support the use, implementation and education for and about cycling in the City. The City is also looking at updating its pedestrian policies which will also be supported in the TDM Plan. While the TDM Plan will not develop a network, it will be designed in such a way that the programs, policies, and measures will encourage a greater use of walking as a mode of travel.

City of Mississauga Transportation Master Plan (On-going)

Policy Description

The TMP identifies opportunities in Mississauga's transportation system and identify alternatives to address issues or to grow the transportation network. The plan is the guiding strategy for all decisions made regarding transportation planning.

Relevance to Mississauga TDM

The TMP is in progress and is not currently available to the public. However, it is important to note that there will be consistency between the TDM Plan and the TMP.

Moving Mississauga (Interim Transportation Strategy 2011)

Policy Description

The Moving Mississauga Strategy was developed for the purpose of creating a safe and connected multi-modal transportation system that supports enhancing the environment, the economy, and connectivity within the city. The strategy is based on the policy framework from the City's strategic plan, Official Plan, Cycling Master Plan, Downtown 21 Master Plan, Hurontario Main Street Study, the Regional of Peel Official Plan, and the Places to Grow Act and The Big Move.

Relevance to Mississauga TDM

The goals set in place for the Moving Mississauga Strategy outlines how the system will need to improve to accommodate increasing congestion in the area and a change in demand for transportation infrastructure.

Goals:

- To advance the development of a multi-modal system through network design which includes transit, cycling, and pedestrian facilities that can combat congestion issues through capacity.

- Support land use the Official Plan's land use planning objectives though the integration of design and transportation.
- Advance the transit network giving priority to implementation measures and developing a five year Transit Service Development Plan

This plan provides a framework which will guide the overall development of transportation infrastructure and policies. It supports the shift to more sustainable travel options and integration with an urban structure which is designed to encourage the greater utilization of walking, cycling and transit for utilitarian purposes.

City of Mississauga Downtown 21 Master Plan

Policy Description

The Downtown 21 Master Plan sets out the policies to create a downtown in the City. It provides the framework for a mixed-use, multi-modal community where people will live, work and play. With a centralized downtown area, there will be a number of travel options making it easier to get into and out of the community via cycling and transit. The area will be pedestrian-oriented as well and will include identification of streets that support all modes of travel.

Relevance to Mississauga TDM

The policies developed within Downtown 21 outline the City's goals to revitalize the urban core of Mississauga and build a road pattern and block structure that will create a more livable and compact area. The following policies are relevant to the development of the TDM plan and will support the use of sustainable transportation options:

2.1 Street Network: Policies for creating smaller block sizes which will create safe, walkable areas for pedestrians and cyclists while maximizing access to transit.

3.2 Transit: Policies that will integrate transit into the street network to create multi-modal street designs that will lead to more walkable areas.

4.1 Trails and Cycling: The policies in this section ensure that sidewalks, trails and bike lanes are protected where necessary to allow for safe active transportation in the core area.

5.2 Main Street District: These policies have been developed to create a main street district that will connect the residential areas to Square One to create a more pedestrian-friendly area in the shopping centre area

6.2 Land use: These policies create distinct districts that prioritize transit and active transportation integration at different levels.

The Downtown 21 Plan outlines a number of goals and objectives for the area which will support the use of sustainable travel options and an urban form that will encourage their use. However, there is little outlining the promotion and long-term support to encourage sustained travel behaviour change and reductions to the use of single occupant vehicle trips. Therefore, when developing the TDM Plan, the tool kit will include TDM programs and measures for the downtown area.

Summary of Relevance to TDM in Mississauga

As a result of Mississauga's current and future growth, there will be more demand for homes and employment. This growth will increase stress on the City's transportation infrastructure. Policies from the federal to local level provide Mississauga with the tools and resources to assist in the management of sustainable growth and demand for transportation services.

Provincial policies set a large scale regional framework for economic and transportation development. The Provincial Policy Statement sets an emphasis on land use planning to integrate transportation and create healthy and active communities. The Provincial Policy Statement recognizes the need to implement demand management strategies to make efficient use of existing and planned infrastructure. Mississauga's TDM program will be one of the measures towards improving communities and leveraging transportation assets more effectively.

The Province of Ontario has created several policies and guidelines such as the Cycling Strategy, Transit–Supportive Guidelines, Place to Grow and the Big Move. These policies build on the Provincial Policy Statement by providing actionable recommendations. The Cycling Strategy and Transit–Supportive Guidelines are policies pertaining to the land use and facilities that will aid Mississauga in the development of a healthy urban environment. The Greater Golden Horseshoe Growth Plan calls for intensification and development of transit-supportive neighbourhoods. These policies act as a guide to intensify and develop complete neighbourhoods. Finally, The Big Move sets large transportation projects and initiatives to develop accessible multi-modal transportation. These actionable policies will help Mississauga implement TDM, as the provincial government is committed to implement infrastructure and initiatives to improve transportation performance and accessibility.

The Region of Peel, has several policies that can be taken as best practices. Peel was an early adopter of TDM. They provide recommendations to coordinate with TMAs and surrounding regions to offer a cohesive TDM program, and to implement monitoring to understand the effectiveness of TDM. The Region of Peel recognizes the importance of goods movement for the economy and the performance and safety of the transportation system. Goods movement and freight is an important part of Mississauga's economy. Strategies to optimize freight movement and partnerships with businesses can mitigate environmental and health impact of industrial traffic.

TDM strategies should be an essential component of the Transportation and Official Plans of Mississauga. The urban growth goals will require complete communities and infrastructure that is supported by multi-modal transportation. TDM is the vital bridge that links transportation behaviours to the effective use of community amenities and transportation infrastructure. As Mississauga grows and intensifies, the Official Plan and corresponding Cycling and Transportation Plans provide the framework to implement infrastructure and land use to support sustainable transportation. TDM will enable residents to maximize the benefit and reduce the impact of transportation in the City of Mississauga.

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Appendix B: Best Practices

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Case Studies

The following are a summary of municipalities, regions and other jurisdictions that have introduced TDM programs and evaluated the success of the program. The plans and policies chosen were selected based upon a number of factors.

A number of TDM Programs have been reviewed to examine how goals and objectives were set and their potential application in Mississauga.

- Ajax, Ontario
- Halifax, Nova Scotia
- Newcastle, Australia

Structure of TDM Programs

Halifax, NS,

(2011 population – 403,000)

The Halifax *Transportation Demand Management Functional Plan* (2010) "*establish[es] an efficient, sustainable transportation network through the development of policy, programs, and services which intend to reduce single occupant vehicles (SOVs) and the negative impacts associated with automobile use*." As a Functional Plan, it is structured in a way that "*set[s] out to create specific, action-oriented recommendations and strategies for Halifax Regional Municipality's specialized needs.*"

The Plan consists of 12 recommended strategies ranging from promotion of alternative modes, infrastructure changes to support more energy efficient road based transportation such as HOV lanes, a commuter trip reduction program as well as tax reform, marketing and outreach programs.

Ajax, ON

(2011 population – 109,600)

The Town of Ajax's Transportation Demand Management Plan (2016) is defined as "*a series of community based initiatives designed to encourage residents and people who work in the Town to use sustainable modes of transportation more often*'. It is comprised of '*policies, programs and infrastructure investments required to realize a transportation system that relies less on the automobile*."

The TDM plan consists of:

- Vision and 10 associated Goals
- A 'TDM Toolkit' for all desired modes: Transit, Walking, Cycling, Carpooling + Staff Shuttles
- An Action Plan of Short Term (0-3 Year) and Medium Term (3-5 Year) Actions

The TDM Toolkit is intended to encourage Ajax residents to consider using one or all five "tools" for their daily transportation needs. The Action Plan contains recommended measures, a program timeline, and funding sources and opportunities. The majority of actions are concerned with council operating and capital expenditure. A medium term goal is to "*harmonize Development Planning Policy… to be supportive of TDM*."

An Appendix to the plan contains Development Guidelines with a list of potential TDM measures for site development, however these are not legislative requirements at present. Instead, reform is contemplated as part of the Town's Comprehensive Zoning By-law Review and "*Developers are encouraged to discuss these measures with Town Planning Staff to determine what is feasible and appropriate for their site.*"

Newcastle, Australia

(2011 population – 308,308)

The Newcastle Transport Strategy (2014) is a plan that outlines a vision for transportation in Australia's seventh largest city. The City is currently embarking on converting heavy rail to light rail in the City centre. The plan is heavily centred on transport modes and themes, covering land use, public transport, walking and cycling, parking, roads and freight and travel demand management (TDM). The sections contain endorsed policy positions as they relate to each theme. To this end, there are four TDM-specific policy commitments and five actions designed to improve TDM in Newcastle. The policy goals for TDM are weighted heavily in favour of modal split goals that revolve around peak periods.

Council-adopted policy commitments:

- Council supports for the State Government target of 20% mode share to public transport for commuter trips to and from the Newcastle city centre in the peak periods by 2016.
- Council supports the New South Wales (NSW) State Government's mode share target to walking of 25% of local and district trips.
- Council supports a mode share target of 5% to cycling for trips less than 10km, and doubling of the mode share to cycling for the journey to work, from 2006 to 2016.
- The use of motorbikes is supported as an alternative to single occupant cars, but not as an alternative to more sustainable modes such as walking, cycling and public transport.

The actions to support these goals include:

- facilitation of more car sharing schemes
- A 'lead by example' travel plan for municipal employees
- Facilitation of car pooling
- Further investigation of park and ride
- Provision of greater household travel information

Relevance to Mississauga

The plans outlined above demonstrate that TDM Plans differ significantly in their scope and application: the Halifax plan is heavily based around 'functional' measures; the Ajax plan is focussed on promotion of more sustainable modes through identified targeted municipal investments; and the Newcastle Plan contains ambitious council-endorsed modal split plans. However, it should be noted that there is little detail or analysis concerning the identifiable measures that have the greatest potential to actually achieve the desired goals.

None of the plans reviewed adopt some of the tougher 'push strategies' (end user pricing based) TDM elements seen in European parking management plans or road pricing regimes that can be found in US cities such as the I-35 Express Lanes in Minneapolis or the I-95 Express Lanes in Florida.

To this point, the Urban Land Institute (ULI) argued in a 2014 position paper on the ULI Infrastructure Initiative *When Road Pricing Is Right* that:

1. Potential for tolling and other new transportation revenue mechanisms to influence land use is real, but the magnitude of the impacts is likely to be modest.
2. The most dramatic opportunities are likely to be located in the corridors surrounding tolled roads or highways with the option for congestion free travel
3. The impacts on land use will vary greatly by metropolitan region and will be influenced by the transportation network—including mass transit services—land use patterns, local land use policies, and economic trends.
4. Tolling and other transportation revenue mechanisms have the potential to interact with land use in ways that support growing market preferences for development in compact, mixed-use, walkable nodes, but achieving this objective will require careful coordination with land use policies and other transportation services, include transit service.

Review of Existing TDM Program Elements

There are three types of TDM programs that were reviewed:

1. Programs that contain significant site based elements
2. Programs that influence travel behaviour
3. Programs that directly target transportation systems efficiencies and performances.

A review of the site based elements of most programs shows that these are typically initiated employer-based or triggered as part of development application processes. The following sections reviews those TDM programs with significant site-based elements.

TDM programs with significant site based elements

Contra Costa County, CA, USA

The Contra Costa County TDM Ordinance requires developers to provide a TDM Plan as part of a development application as outlined in the ordinance.

The TDM ordinance has been in place since 2003. According to staff, the ordinance will be updated soon to make it stronger and more robust. Over the next three years, the TDM program will likely change and include a stronger monitoring component. The changes are being driven by the Regional level in the San Francisco Bay area (Metro Planning) to address the issues with of attracting business to suburban areas, lack of transit services and the need to be creative in providing incentives for businesses to come, of which TDM has been seen as a significant incentive to attracting businesses and workers.

The County noted that once a building has been commissioned and the land use has commenced, they have very little control to maintain the standards set out and often lose track of who the building owner is over time. This appears to be in contrast to the initiative as set out in ordinance that requires the owners to pass on the need for a TDM plan to future purchasers.

The Contra Costa County ordinance is one of the first jurisdictions of its kind to attempt to ensure both provision of infrastructure at the time of development as well as an ongoing monitoring component to ensure long term travel behaviour change. It is important to note that the Ordinance provisions that are not currently within the legal constraints of Ontario's Planning Act.

It is therefore recommended that the City continue to explore the feasibility of a TDM By-law and have Council request that the Province consider amending the Planning Act (RSO 1990) to enable municipalities to have the ability to enforce the requirements of development-based TDM plans.

Cambridge Parking and Transportation Demand Management (PTDM) Ordinance, MA, USA

The City of Cambridge considers its PTDM Ordinance as '*a national model for improving mobility and access, reducing congestion and air pollution, and increasing safety by promoting walking, bicycling, public transit, and other sustainable modes*'.

The ordinance was adopted in 1998 and made permanent in 2006, and includes the following benefits which are championed by the City:

- Cost effectiveness: *'Cost-benefit analyses often show that implementing TDM strategies is less expensive than expanding roads and parking facilities.'*
- Environmental quality and livability: *'TDM strategies reduce the negative impacts from driving including congestion, noise, local air pollutants and greenhouse gas emissions.'*

- Flexibility: *'TDM strategies can be put in place quickly and tailored to particular groups.'*
- Equity: *'Physically or socially disadvantaged people stand to benefit the most from TDM measures that fairly allocate resources to different groups, especially non-drivers'*.
- Economic transparency**:** *'Many TDM strategies correct market distortions by revealing the true cost of people's travel options.'*
- Sustainable transportation: *'TDM strategies encourage efficient land use, which supports walking, biking, and riding transit.'*

Mandatory participation is triggered when an owner of non-residential property proposes to add parking above the registered number. The types of plans are determined by the following:

A Small Project PTDM Plan would be requested if total parking = 5 to 19 spaces. This plan would require:

- Set of three TDM measures
- Small Project Form

A Large Project PTDM Plan would be requested if total parking = 20 or more spaces. This plan would require:

- Single Occupancy Vehicle mode-share commitment (Generally set at 10% below 1990 Census Data, our environmental baseline for PTDM projects)
- Comprehensive set of transportation demand management (TDM) measures
- Annual monitoring and reporting
- Employee and/or patron survey, including SOV rate
- Biennial counts of car and bike parking occupancy and driveway ins/outs

Status of TDM measures

Each project subject to the Parking and Transportation Demand Management Ordinance is required to commit to a specific, numeric reduction in the percentage of trips made to the site by single-occupant vehicle (SOV). The employee mode split commitment is based on the 1990 Journey to Work data from the U.S. Census Bureau for your Census tract number—a 10% reduction from the 1990 mode split:

Results:

In 2011, approximately two thirds of the monitored projects (twenty-three) met their PTOM mode split commitments. Projects meeting their mode-split commitments all showed SOV driving rates of less than those projected. Compliant mode splits ranged from a low of 0% SOV to a high of 59%.

Almost 80%, of the projects that failed to meet their mode split commitment were located more than 1/4 mile from rapid transit. Almost all of the ratios of employment to parking spaces at the sites, with current employment levels, are not conducive to

meeting the mode split commitments set in the approved PTOM plans. Three of these sites have space that is either unleased or under-occupied due to reductions in staffing or slower than anticipated hiring, leading to an imbalance in the employee-to-parking space ratios.

The City noted that its experience managing and monitoring the program appear to confirm national research **that over-supply of parking** contributes to higher SOV rates. No further results have been made publically available since 2011.

The PTDM is notable for the amount of data it collects and the ability to generate insights on parking and traveler responses to parking management as part of a TDM program. It is notable however that the requirement for organizations to participate in the program and generate travel plans, as required by the City's ordinance, does not consistently lead to mode shift, particularly where workplaces are. There is also an identifiable 'time lag' between assessment and implementation of TDM measures and developments in employment (changes to the labour force and growth and contraction in business activity).

The findings of the program reinforces the idea of introducing TDM measures based on the suitability of prevailing urban typologies and, in particular, taking into account the availability of parking and the municipality's desire to see parking and road space used more efficiently.

Employer Based Programs

Cornell University – Ithaca, NY

Cornell University has been providing commuter benefits by offering free public transportation, discounted ride share programs and an emergency ride home program for over 20 years. Benefits are provided with anyone with an appropriate ID.

Over the past 20 years of program operation, one-third of staff use single occupancy vehicle as their primary mode. This number has not changed significantly since the program started.

Cornell estimates that its commuter benefits program has reduced employee-parking requirements by approximately 2,200 parking spaces, and estimates that employees drive about 10 million miles less per year. The university estimates that these programs have saved more than $40 million in net costs.

Texas Instruments – Dallas, TX

Texas Instruments (TI) implemented an alternative commuter program in the 1970's. This program evolved into a partnership with the Dallas Area Rapid Transit System to provide passes for employees in the Dallas area. The passes provide unlimited local and express transit services. The transportation benefits are managed by the TI's Commute Solutions team, who plan incentives and educational activities to promote trip reduction.

More than 930 employees used subsidized passes to commute by mass transit in 2011. Another 500+ employees participated in subsidized vanpools. Nearly 400 more carpooled. An average of 600 North Texas employees used the shuttle. The concierge service served 3,100 employees fulfilling 9,200 requests allowing employees to save trips during working hours.

In 2008, the transit program is estimated to have averted 58,000 travel miles per day in the Dallas Area. TI provides a concierge service to handle errands like event ticket pickup and flex-time work schedules that allow for telecommute.

Microsoft Corporation – Transportation Benefits and Connector Program, Redmond WA

In 2007, the company initiated the connector program, which now has 38 buses transporting over 3,000 riders each day. Microsoft offers free ORCA cards (purchased by Microsoft) which provide employees access to unlimited travel on seven regional transit agencies.

In 2008, 38% of employees used alternative modes of travel to commute to work; 2% bike; and the Connector Program alone has reduced SOV commuter traffic by over 500,000 trips and more than 8 million miles. The program plays a pivotal role in retaining and attracting employees.

Nike – Travel Responsibly, Accept the Challenge (TRAC) – Beaverton, OR

The company offers prizes and incentives to workers who choose to commute by non-gasoline or diesel-powered vehicles. They have a full-time Coordinator who administers the program.

Nike has reduced the average drive alone rates for their staff from 98% to 84% and in 2007, approximately 594,591 vehicle miles traveled were saved due to the use of sustainable modes.

Georgia Power – Atlanta, GA

The SmartRide program has been in operation since 1994. The program offers a transportation benefit where employees incur no out-of-pocket expenses. The program incorporates a web-based program to log participation and a guaranteed ride home program. There is a daily shuttle that runs between the office and the downtown facilities.

In 2012, 46% of employees, out of 5,500 total, participate in the Smart Ride program.

Four hundred (400) employees use the vanpool program. SmartRide estimates that the program eliminates 1.3 million single occupancy vehicles per month, of that total, 0.5 million trip reductions are attributed to vanpool.

Humana, Inc. – Louisville, KY

Humana launched a program aimed at easing parking shortages by partnering with the local Transit Authority. The program allows employees to take transit without

incurring out of pocket costs. Humana pays an upfront premium to the transit agency for employees to ride for free.

In 2012, about 600 out of 9,000 associates within 5 blocks participate in the program. During the first 7 months of program operation, it was estimated that 150,000 trips were taken on public transit opposed to single occupancy drivers

Relevance to Mississauga

Mississauga is home to many of Canada's largest employers. There is potentially a role for the City to 'broker' or provide assistance in establishing employer based TDM programs to reduce congestion on the road network, particularly during peak periods as well as reduce the amount of land dedicated to parking in employment centres. This could also take the form of employer based periodical transit tickets, purchased from MiWay, often referred to as 'commuter clubs'. The findings of the program reinforces the idea of introducing TDM measures based on the suitability of each measures based on prevailing urban typologies and in particular, taking into account the availability of parking and the municipality's desire to see parking and road space used more efficiently.

Influencing travel behaviour and decisions

German Bikeshare systems

(Nuremberg, Ruhr Urban Agglomeration, Stuttgart and Island of Usedom in 2011)

The use of bikeshare in four German cities was evaluated in 2011 to establish before and after trends for their use and applicability in a number of different contexts as well as ascertain the potential of bikeshare to reduce car travel in favour of more sustainable modes. The study did this by collecting data on users and building a profile of their bike share use over time. The results are summarized below.

Use	Nuremberg	Ruhr Urban Agglomeration	Stuttgart	Island of Usedom
Population	518,000	8.5 million	609,219	31,500
Number of bikes	750	655	450	530
Number of stations	63	150	45	60
Start Date	5/2011	6/2010	6/2007	4/2011
Total usage per month	4,228	1,049	6,956	931
Usage per bike per month	5.6	1.6	15.5	1.8
Percentage of hires where start docking station was the same as return docking station	26	46	7	88
Percentage of users that lived with 5km of a docking station	50	65	80	90 (including those with a vacation residence)
Percentage of non-users with periodical transit tickets	30	25	37	Not evaluated

Use	Nuremberg	Ruhr Urban Agglomeration	Stuttgart	Island of Usedom
Percentage of users with periodical transit tickets	57	66	54	Not evaluated
Percentage of mode shift from car travel (both driver and driver+passenger) to bike share for those persons subscribed to the scheme	9	13	4	26
Percentage of bikes that had been redistributed prior to their use at the station from which they were hired	16	19	14	11

Recent research into bike share systems has demonstrated that their application and success is heavily dependent on a number of factors, such as: proximity to bikeshare; availability of bikes at bike docking stations; existing travel patterns; distance travelled; and access to legible bike network. The 2011 show that there is significant potential for bike share in a variety of contexts, however it has also been demonstrated in this and other studies that many bike share users were already predisposed towards transit and that the mode shifts away from vehicles is heavily dependent on travel distances and patterns.

In order to establish the viability for bikeshare for Mississauga, more information and data analysis would be required to establish typical travel distances and patterns, especially for journeys to and from major nodes and Downtown, as bikeshare is generally considered to be best suited for journeys of 5km or less. This kind of information would also be of high relevance for the Mississauga Bike Plan, currently underway.

Other City-based TDM Programs

The Massachusetts Transit-Oriented Development (TOD) Bond Program in 2006 awarded $2 million for a mixed-use affordable housing development called Dudley Village on Dudley, East Cottage and Leyland Streets in **Dorchester**. The development will have unbundled parking and just 0.7 parking spaces per unit. (MA Office of Commonwealth Development 2006)

The **City of San Francisco** is considering a proposal to limit parking in some downtown neighborhoods to 0.75 spaces per unit in an effort to force developers to unbundle parking from housing costs. Developers would not be able to simply provide a space included with each unit; in order to build more parking, they would have to obtain a conditional use permit, the conditions of which would stipulate that parking costs must be unbundled from housing costs. (Millard-Ball 2002)

A condo project called "moda" in downtown **Seattle** includes 83 of 251 units that are lower priced and come without parking. The project sold out within a week. (Multifamily Executive 2007)

A new condominium development in **St. Louis** a block from the MetroLink public transit system that offered parking spaces for purchase separate from the units experienced rapid sales and found that 20-25% of buyers opted out of purchasing a parking space. The proximity to transit was instrumental in convincing the lender that the project could succeed without at least one parking space per unit.

Ottawa will soon be opening up the LRT services (mid-2018) and to ensure that the development surrounding the stations would encourage the use of the services, TOD guidelines were developed that considered parking in proximity to LRT.

Provisions include:

- Providing only the amount of parking required by the bylaw
- Encouraging shared parking amongst uses with different peak demands (by time of day)
- Locating parking at rear of buildings
- Development of pedestrian corridors through parking areas

Providing preferential priority parking for carpools, carshare and ridesharing vehicles.

Transportation System Efficiency and Performance and Monitoring

An important component of Transportation Demand Management is performance monitoring and evaluation. TDM can make use of both conventional transportation system measures (such as level of service, congestion delay and traffic speeds) and comprehensive indicators (such as access to goods, services and people as well as mode share, transit service quality, land use density and mix) (Litman 2017). These can be selected and modified as needed to reflect the values, needs and conditions of a particular planning situation.

Individual Marketing Campaigns, USA

A 2010 Study examined the longer term impacts of individualized, household based individual marketing campaigns in targeted neighbourhoods in Portland, Oregon.

One neighbourhood the decrease of drive alone trips was reported as being significant while walking and cycling increased.

Location	Date	Results
Portland, OR—Hillsdale	2003	9% reduction in drive-alone trips
Portland, OR—Interstate	2004	9% reduction in drive-alone trips
Portland, OR—East	2005	8.6% reduction in drive-alone trips
Portland, OR—Northeast	2006	12.8% reduction in drive-alone trips

Location	Date	Results
Portland, OR—Southeast	2007	9.4% reduction in drive-alone trips
Cleveland, OH	2005	4% reduction in drive-alone trips
Durham, NC	2005	7% reduction in drive-alone trips
Sacramento, CA	2005	2% reduction in drive-alone trips
Bellingham, WA	2004	8% reduction in drive-alone trips

Existing programs in Mississauga are well established. The targeting of neighbourhoods based on known travel patterns (as was the case in Portland) and the collection of additional data, as has been foreshadowed in the Region of Peel's forthcoming TDMSI Plan, has the potential to yield tangible results that can be used to demonstrate the effectiveness of these programs and their continued funding.

Other Municipal TDM Strategies

Below are other case studies that were reviewed. The table below provides an overview of the areas that should be included in the TDM Plan for Mississauga. As shown, each plan has different attributes which are likely indicative of the approach each municipality has undertaken for the implementation of TDM. What can be taken from this is that when considering the type of TDM Plan that should be developed, it is very specific to the municipality and numerous attributes are considered.

These attributes include:

- The urban form of the municipality;
- The population distribution;
- The transportation options available;
- Support for implementation; and
- Existing policy framework.
-

While this table does not fully analyze the components of each TDM Plan, it does indicate the emphasis that has been placed on the importance of each component. The results of the analysis include the following:

- An action plan is necessary for the plan to be fully implemented;
- An emphasis has been placed on delivering programs to schools and workplaces, with little work being included for working with households;
- Policy needs seem to be a minor focus; and
- Marketing and communications are not prioritized.

– Not addressed (no significant focus) ▪ Addressed at a basic level (minor focus) ■ Addressed thoroughly (major focus)

Document	Policy needs	Vision / Goals / Objectives	Lead by example	Workplaces	Schools	Households	Development Approval	Travel Information / Services	Marketing / Communications	Action Plan: Timing / Staff / Funds	Performance Measurement
City of Calgary TDM Master Plan	–	■	■	■	▪	▪	–	▪	■	■	■
City of Thunder Bay TDM Strategy	–	■	■	■	■	▪	–	▪	■	■	■
Region of Waterloo TravelWise strategies (2009)	–	–	–	▪	–	–	■	–		–	–
City of Kitchener TDM Plan (2010)	▪	–	▪	▪	–	▪	▪	▪	▪	■	–
City of Brampton TDM Report (2015)	▪	–	▪	▪	–	–	▪	▪	–	▪	▪
Region of York TDM Implementation Strategy (2013)	▪	–	■	▪	■	■	■	▪	▪	■	–
Region of Durham TDM Study (2007)	–	–	–	■ (**svc delivery analysis)	–	–	–	▪	–	▪	–
City of Kingston TDM Strategy (2011)	▪	▪	–	■	–	–	▪	–	–	▪	▪
City of Ottawa TDM Strategy (2012)	–	▪	▪	▪	▪	▪	▪	▪	▪	■	▪

Summary of Case Study Relevant Issues for TDM in Mississauga

In 2016, the Institute of Transportation Engineers reviewed a range of contemporary definitions and applications of TDM and identified the following prerequisites for a successful TDM program:

1. Adopt a clear definition of TDM that adopts both the promotion of travel and trip choice as key elements
2. Embrace a TDM strategy with clear goals, objectives and performance measures and ensures political

3. Integrate TDM strategy into other City processes and policies, such as development approvals and budgetary considerations
4. Invest resources into communicating TDM goals and objectives to residents and maximize its strategic effectiveness
5. Allocate sufficient resources to monitor implementation and a feedback loop that periodically review performance against adopted goals and objectives

Given the size and population of Mississauga and nature of existing transportation challenges, the long term success of the TDMSI Plan will be heavily dependent on the City's ability to reform its own existing policy and by-law arrangements, lobby the Province for more legislative powers to enact change as well as form strong partnerships with industry and residents to tackle transportation problems that require municipal input if they are to be tackled successfully.

Based on the reviews undertaken and the team's level of understanding of TDM programs, Mississauga can develop a plan that incorporates many of the components of other plans with the necessary policies and implementation tools to be successful in shifting travel behaviours to attain long-term changes in the modal shares towards more sustainable options.

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Appendix C: New Developments

AUGUST 2017

MISSISSAUGA

Integrating TDM into Development Approvals in the City of Mississauga

Introduction

Integrating Transportation Demand Management (TDM) into the development approval process can play an important role in the shaping of the City, the use of sustainable transportation, and the reduction in the overall impact of vehicle trips on travel and quality of life within Mississauga. Therefore it is important to develop an approach as to how TDM can be integrated into the approval process that will ensure long-term travel behaviour change while at the same time exploring what will be needed to fully integrate sustainable travel into planning approvals.

Key Outcomes

As noted in the Official Plan, the City of Mississauga is transitioning from a suburban community to a more urban one. Integrating transportation and expanding developments will therefore be important to the development of the community:

> Creating a multi-modal transportation system that supports transit and active transportation options goes hand-in-hand with creating compact, complete communities... Transportation planning will complement environmental planning, land use planning and urban design. (OP 2015, Ch. 8)

The use of the term TDM is often misleading when reviewing development applications. It often is used to refer to bicycle parking, shower and locker rooms, pathways, on-road bicycle infrastructure, multi-use trails and connections between buildings and transit. These are all considered to be TDM-supportive measures. However, true TDM programs and activities encourage the use of the sustainable infrastructure and end-of-trip facilities through support, educations, promotion and incentives. Policies, vision statements and objectives also are important to supporting the use of TDM programs and activities.

While policies and a vision are important to the overall long-term support for the business case for integrating TDM and TDM-supportive measures into new developments, more will need to be accomplished. This appendix provides direction as to how the City of Mississauga can incorporate TDM into the land use planning and development approvals process through building upon existing Official Plan policies, developing draft conditions for inclusion in development agreements, investigation into changes to zoning bylaws to require TDM programs for new developments and

inclusion of TDM-supportive infrastructure and TDM programs in Transportation Impact Studies (TIS) reports.

Key Approaches

There are two key approaches to developing the framework for incorporating TDM into the development approvals process. Below is a brief outline of the intent of each.

Development design and infrastructure

This includes how the site is laid out, the infrastructure that is available on site and in close proximity, the mix of uses on site and in close proximity, transit service availability, distance to transit service, bicycle parking, bicycle lanes, pathways, multi-use trails and parking.

Post-occupancy TDM programs

This will include the types of programs that will be available to tenants, visitors, owners, etc. upon occupancy of the site and who will provide them. While we know these programs are important, it is more difficult to require them as part of the development approvals process.

Key levers

Below is a list of the key tools that municipal staff have to ensure that developments are meeting the goals and objectives of the municipality.

- Planning policy (OP, Local Area Plans)
- Zoning by-law
- Design guidelines
- Transportation impact analyses
- Development agreements

Guidelines for Integrating TDM into development approvals

No two developments are created equal. Each one can uniquely impact the surrounding community for a number of reasons, including size, mix of uses, proximity to transit and support for active modes of travel.

Development design and infrastructure

The design of a site to include TDM-supportive infrastructure is an important part of the overall success in promoting the use of sustainable modes for individual developments. Modal shares are often set based on the transportation services and infrastructure currently available and what could be proposed. Modals shares for sustainable travel can be attributed to:

- Assessing need and opportunity (benefits, risks, context, nature, operations)
- Requirements (from zoning, etc. – things that are mandatory)
- Toolbox of measures (definitions, suitability, limitations, etc.)

Item	What (description)	Why (Reasons for inclusion)	How (Implementation)	Limitations (if any)	City Initiatives
Bicycle Racks/ Lockers /Storage Rooms	Parking facilities for bicycles that are secure and located in areas near entrances and convenient locations	This should be included to support the use of cycling and eliminate the issues that many encounter about safe, convenient and secure bicycle parking	These can be required through a number methods including **zoning by-laws and site plan** through sections 34 and 41 of the Planning Act.	Ensuring that the correct type of parking is selected, that proper installation occurs to ensure access and the appropriate number of spaces.	The City has included bicycle lock-up areas at MiWay stations Pilot programs have been implemented in the past by the City that could be expanded to support on-street bicycle parking in specific areas.
Cycling Facilities	Infrastructure to accommodate the use of cycling	Bicycle paths can be used to encourage the use of cycling for a number of purposes. Connections to the pathways and costing to assist with building will lead to increased use of cycling	Through city policy, Development Charges, AT policies, OP policies and urban design guidelines and /or part of the TIS assessment for TDM and sustainable mobility	At the present time there is no requirement in the zoning bylaw	The city is planning to develop bicycle parking and related end-of-trip facilities.
Parking as Bundled with or without ownership interest in condominium projects	Unbundled parking means that there is not a requirements for parking to be automatically considered as part of the agreement of purchase and sale for condominium units.	This process can reduce the need for excessive parking above the minimum required. Unbundling parking allows for developers to be more responsive to future tenants' needs.	This could be implemented through the condominium development application process. It is possible under s. 9 Condominium Act (which expressly invokes s. 51 Planning Act)	Parking is very much a trigger point for some financers, nearby communities and others who assume that more is better.	The City is undertaking a comprehensive parking strategy which will provide further guidance on the policies associated with changes in parking numbers.
Pedestrian Connection	Pedestrians connections are infrastructure that accommodates walking, running and use of mobility devices	Pedestrian Connections can be used to encourage walking, running and the use of mobility devices for a number of purposes. Connections to the pathways, sidewalks and transit will support the goals of increasing the use of sustainable modes.	These could be implemented through DCs and other charges and through the use of development agreement conditions		City has requirements for sidewalks and bicycle lanes which will need to be connected to by the developers
Transit Information	Real-time information about transit schedules and connections that can be provided through a number of media and in a number of locations such as lobbies, elevators, common areas, etc.	Providing real-time transit information can encourage the use of transit since information will be up-to-date and users will know when they can go to their stop. It also increases safety, security and convenience.	This could be a requirement within the site plan approval process and/or part of the TIA assessment for TDM and sustainable mobility. However, this is **not something that can be supported at this time through the Planning Act**	Appropriate technology will need to be selected.	N/A
Transit access	Access to transit can include a number of things such as pathways to transit, wayfinding singage, transit stops and stations	When access to transit is convenient and safe, it has been proven that more people will use it. The ability to access transit services will need to be incorporated in the site plan and connect to facilities provided by the City such as sidewalks, bicycle lanes and other active transportation facilities.	Site plan approval process, OP policies	Coordination between the city facilities and those within private developments should occur to provide integrated and direct access to transit where feasible.	N/A

Amenities	Amenities are anything that will provide sustainable transportation users with places to rest, seek shelter or for convenience. These include benches, transit shelters, trash bins, signage, bike racks, planters, restrooms, etc.	Such amenities whether in an urban area or along a trail will increase use of the facilities where these amenities are located.	Urban design guidelines, site plan requirements, subdivision agreements, official plan and council policies In public spaces, these amenities should be automatically incorporated into the work being carried out by the City.	There should be few limitations for the inclusion of amenities on a site.	
EV Charging Stations	The introduction of electric vehicles has led to a need for electrical charging stations particularly in areas where cars may be parked for longer periods.	The provision of EV charging stations at malls, in residential parking garages and at office buildings will increase the use of these more environmentally friendly vehicles.	Parking bylaws and site plan agreements can be used to encourage the location of the charging stations and the number that should be provided	The inclusion of EV charging stations may be something that is voluntary until a policy is developed to support their introduction	
Bikeshare Stations	Bike share allows for the use of a bike for a specific and short period of time.	Locating bike share stations at specific locations within the community such as major transit hubs, shopping hubs, multi-unit residential developments, employment areas and tourist attractions will encourage the use of cycling over the single occupant vehicle and lead to more active populations	Bike share stations could be supported through DCs, included as conditions of site plan approval and be part of city policy. The City should work with one of the bikeshare providers to develop a program to implement a system of bikeshare facilities within the City.	Bikeshare stations need to be located in areas that will generate use such as in mixed-use areas or areas where there are a number of multi-unit residential buildings	

Post-occupancy TDM programs

The provision of sustainable transportation infrastructure (such as bicycle lanes) and site amenities is part of the overall objective to encouraging a shift in travel behaviour away from single occupant vehicles. A plan is needed for the provision of TDM programs that can be delivered to individual sites, neighbourhoods or the city as a whole. As indicated above there is little legislative support for municipalities to require TDM programs as part of the development approvals process. However, as part of the approvals process, including the development of the Traffic Impact Study, the municipality can work with applicants to include TDM programs such as those discussed below to mitigate traffic impacts of the development upon the existing community and work within the existing road configurations, including existing rights-of-way and number of motor vehicle travel lanes. The intent would be to decrease overall traffic congestion, reduce infrastructure costs and create more liveable communities.

When working with developers, the City can assist with creation of a plan that is appropriate for the size and type of development. Smaller developments may only require TDM-supportive infrastructure which can be determined in consultation between City staff and the applicant while other applications that could have a greater impact on traffic levels and the surrounding community may require detailed plans that will lead to long-term behaviour change and reduce the traffic impacts of development. Given the legislative limitations for the provision of TDM programs, the City will need to be the proponent for the development of programs and work with the developers to deliver them at worksites, retail developments, tourist destinations and within residential areas. The current lack of legislative support should not deter the City from developing a framework for inclusion of TDM programs within the development approvals process. Below is a list of the types of programs that can be encouraged by the City and provide the information necessary to encourage developers to create their own programs. However, it is important that the following be incorporated into the discussions and be considered as no two developments are exactly the same:

- Assessing need and opportunity (benefits, risks, context, nature, operations)
- Toolbox of measures (definitions, suitability, limitations, etc.)
- Implementation considerations (agreements, enforcement, monitoring, etc.)
- Types of programs based on development type and size.

The table below outlines a list of possible TDM programs that can be included in discussions with developers during the development approvals process.

Item	What (description)	Why (Reasons for inclusion)	How (Implementation)	Limitations (if any)
Bicycle safety training	Training programs that can be offered to children, youth and adults to teach them how to ride a bicycle provide education on the rules of the road or increase confidence.	To help residents and workers improve their cycling skills or be introduced to cycling	Partnerships with others such as City Parks and Recreation, Smart Commute	This would likely need to be City run
Contests and incentives	Anything that acts as an inducement or makes an activity fun would fall within the contests and incentives category to lead to behaviour change	People like to win things or get free stuff. Through contests and giveaways, awareness (and changes in travel behaviour) of sustainable transportation can be achieved	As part of the TDM Plan to encourage the use of more sustainable modes of travel. However, it may not be possible to require a TDM plan to be developed, so the work will need to be carried out by both the City and the developer or property manager to encourage the introduction of contests.	Not possible to monitor and many businesses may not be interested in these types of activities
Discounts and reward points for shoppers using sustainable modes	Any type of incentive that would encourage the use of sustainable modes by shoppers	Since it can often be more difficult to encourage the use of sustainable modes to shopping centres, particularly big box format stores, offering incentives such as discounts and reward points have been known to encourage shoppers to use sustainable modes	Through customer support programs that the developer and tenants want to develop to meet TDM modal share targets Businesses will need to be shown that these types of programs do have benefit to the bottom line	This would also be difficult to administer and would likely need the City to reach out to businesses and spearhead this program Will also be difficult to track and many businesses may not be interested in these types of activities
Discounted parking for carpools	In locations where there is a charge for parking, a registered carpool will be able to receive a discounted pass	Rewards for increasing car occupancy such as discounted parking rates from the regular rates can increase use of carpools, decrease parking requirements, The program would provide incentive for workers to carpool and it can also reduce the amount of overall parking required to be built.	This would only be implemented by those employers who provide parking at a cost to employees.	Only applies to parking areas where a fee is charged to workers
Discounted rates for carshare programs	When a carshare program is available and parking provided on site, those working and living in these areas should be able to have a discount on the annual fee of the program for at least the first year.	There is a growing trend towards less car ownership and more sharing of cars and other items. To accommodate this growing trend and the demographics that are most inclined to use car share, providing discounted rates can attract tenants, residents, workplaces to a site. As well, this could be an incentive for employees to not drive to work as there would be an option for work day travel.	Work with carshare providers to increase the number of cars in the City and have workplaces commit to corporate use. The City could provide information to businesses as incentive to encourage the use of carshare for workday travel.	Only applies to locations where there is a carshare service. At the present time there is no ability on the part of the City to require workplaces to commit to carshare memberships. This is most successful in denser, mixed use neighbourhoods
Education programs / information centres and Transportation Fairs	Disseminating information to workers, residents and visitors can take on many forms. These include pamphlets, brochures and handbooks that can provide educational opportunities on safety, new infrastructure and general “how-to-do-it information”; training programs (such as CAN Bike); transportation fairs where numerous groups and transportation providers can guide,	Providing information to all members of the public whether they are workers, residents, visitors will assist in the overall increase in the modal shares for sustainable travel modes.	Support from the City, Smart commute, developers, retailers and the selection of transportation champions will be needed to make this work and coordinate transportation service providers	There is no legislative requirements for this nor is there any ability by the City to enforce.

Item	What (description)	Why (Reasons for inclusion)	How (Implementation)	Limitations (if any)
	educate and support the use of sustainable transportation			
Technology – social media; apps, websites	Any on-line activity that can be used to support and educate and can include any new types of technology as they become available	The use of technology is everywhere and through smart phone apps, social media and websites can be used to provide information and therefore encourage the use of sustainable travel options	There are plenty of opportunities to deliver such technology, including through company and retail websites and apps. However there is no ability to require them and they will need to be developed by those outside of the TDM world (though App developers).	The City will need to coordinate and there is no mandate for the City of require this from developers.
Onsite TDM Coordinator and Travel Ambassadors	The TDM Coordinator and travel ambassadors will be the people who will deliver the programs, provide support, work with residents, workers and visitors and carry out a number of activities to support the use of sustainable travel options	Having a TDM Coordinator and Travel Ambassadors provides ownership for the program. If these responsibilities fall to a specific person to maintain then they are more likely to succeed	Though development approval process to ensure that the TDM program is implemented. This is well suited for larger sites.	There is no legislative requirements for this nor is there any ability by the City to enforce
Residential Individual Travel Planning	Individual travel planning programs are designed to work directly with individuals to provide information on travel options, encourage the use of sustainable options, provide incentives, learn about reasons for choice, etc. This version of the program is directed toward households and encouraging travel based on the location of the household (an origin-based program)	It has been shown that providing direct contact and individualized plans to residents can increase the use of sustainable options. This is because information is provided that residents may not have had previously.	This would be implemented through community ambassadors who would act on behalf of the developer (or the City) through programs such as the pilot in York Region (MyTrip).	Desire and need to participate among residents. Typically 5 to 10% participate. As well, there is no legislative support for such programs at this time within the City. It should be a recommendation of the TDM Plan.
Ridematching services for carpools	This is a program that provides opportunities to match drivers and passengers to increase vehicle occupancy. These services are designed to match people who live and work near each other	To make finding a carpool partner easier	Online tools and resources	Establishing large enough pool of participants that people can find someone with a similar trip to them. It is better to have this type of program delivered by large corporations but more appropriate for municipal or regional governments.
School-based programs and travel planning services	School travel is an important contributor to traffic volumes due to more children being driven to school. School based programs encourage the use of sustainable modes and discourage parents from driving children to the front door of the school	Change in mindset of the younger generation Reduce traffic throughout the City but specifically around schools	Working with partners who are already running and facilitating these programs (Peel Region, Traffic Safety Council, School Boards)	More school and municipal based so it will be difficult to require developers to deliver
Transit buddies	There are many people who have not had the opportunity to use transit services and may not be sure of how the services work. To assist people with learning how to navigate the transit service, people who are regular transit users (buddies) can be introduced and paired with new users as a means to encourage the use of transit and introduce it to new users	People who have not used transit or are in a new community are often not comfortable with the transit system. The use of transit buddies will help to increase confidence and therefore ridership levels while reducing reliance upon the single occupant vehicle trip.	This can be implemented through work-based programs and connections with colleagues, through residential community associations and other community groups. Online options are also available but there are risks involved. As well, the program could be introduced by MiWay to encourage an increase in transit ridership.	Risk/liability associated with matching strangers

Item	What (description)	Why (Reasons for inclusion)	How (Implementation)	Limitations (if any)
Transit Pass programs/ Pre-loaded Presto Cards	Transit pass programs involve the delivery of reduced-rate passes that may encourage increased use of transit by workers and residents. In particular the issuance of Presto cards to new residents in multi-unit buildings	Encourage people to use transit and create a change in travel behaviour leading to new commuting habits	This can be done through community-based programs in residential areas (multi-unit buildings) and through employers who may provide incentives to their workers. Bonus zoning, if a nexus can be established between the proposed community benefit and the nature of the development, based on reasonable planning grounds (through –s. 37 Planning Act). The City would have to develop a Bonus Zoning Corporate Policy as well. It could also be funded through DCs as has been undertaken in York Region.	Presto system makes it challenging to offer discounts beyond the standard rates -s. 19.8 Mississauga Official Plan
Walking and Cycling buddies	There are many people who may be looking for a partner or support to use active modes of transportation to travel for work, shopping, school. These people may also be unsure of cycling on the road or walking along on a trail. To assist people with learning how to navigate on-road cycling or to increase their confidence, people who are regular cyclists or pedestrians (buddies) can be introduced and paired with new users as a means to encourage the use of active modes and introduce it to new users	People who have not cycled in a number of years or are in a new community are often not comfortable with cycling. The use of cycling buddies will help to increase confidence and therefore cycling levels while reducing reliance upon the single occupant vehicle trip. Walking groups can also be created for the same reasons. It can also increase use of active modes since there will be safety in numbers.	This can be implemented through work-based programs and connections with colleagues, through residential community associations and other community groups. Online options are also available but there are risks involved. It can also be a program that Smart Commute Mississauga and Pearson Airport Area can provide.	Risk/liability of matching strangers and liability for those “teaching” others
Workplace Individual Travel Planning	Individual travel planning programs are designed to work directly with individuals to provide information on travel options, encourage the use of sustainable options, provide incentives, learn about reasons for choice, etc. This version of the program is delivered at workplaces to encourage workers to commute via more sustainable modes to their employment location (destination based program)	Easy to work with people at their destination	Using the Smart Commute program if this becomes part of the work carried out by the two Smart Commute TMAs in Mississauga. Otherwise it should be a program offered by the City in partnership with the Region of Peel	There needs to be interest from the workplaces.

The table above outlines a number of initiatives that are known to have success in reducing single occupant vehicle travel. However, the current legislative environment within the Province of Ontario limits the ability of municipalities to request and monitor TDM programs. This is particularly important as we need to be able to determine if they are being undertaken and if modal share targets are being met. In short, we need to know what works and what does not have an impact on travel options.

Recommendations

The following are recommended directions for successfully incorporating TDM-supportive infrastructure and TDM measures into new developments.

Stakeholder engagement and education

To be successful with any program, stakeholders and the public need to be engaged and provided with information, education and incentives to undertake changes in travel behaviour. The development of a strong engagement and education program within the City's TDM Plan will help to increase stakeholder and public awareness. This should be extended to developers and workplaces.

Planning policy

Currently, there is nothing in the Planning Act to support the implementation and monitoring of TDM programs. Unlike some American jurisdictions, Ontario legislation is directed at the use of land, not the development of programs to support the infrastructure and services for sustainable transportation options.

The City has incorporated TDM policies into the Official Plan. The policies can be strengthened to provide the framework to include TDM programs within the site development process.

Zoning By-law

The Zoning By-law currently does not have much to support the development of TDM programs. However, the inclusion of bicycle parking and end-of-trip facilities in the future will improve the uptake in TDM programs. Other parking-related TDM supportive regulations will also increase the effectiveness of TDM programs.

Design guidelines

The City has built form standards for a number of communities throughout the city. For example, the Downtown Core Built Form Standards includes the fostering of compact, mixed use areas that are pedestrian and transit oriented and high standards for the public realm. These should be used to further support the use of sustainable modes of travel and be expanded beyond the current neighbourhoods. Streetscaping guidelines should also be created that support the use of sustainable modes and the development and implementation of TDM programs.

Transportation impact studies

Inclusion of TDM-related infrastructure requirements needs to be incorporated into the guidelines. As well, a tool kit of TDM program options should also be included in the guidelines to assist developers in understanding how TDM can influence individual's travel behaviours and impact upon the overall traffic congestion in a community.

Development agreements

Development agreements such as site plan agreements and plans of subdivision / condominium can provide the City with the ability to have TDM programs as part of the conditions of approval. As indicated in Table 3, a

request from City Council to the province to **give municipalities** the ability to **request and monitor TDM programs** is needed.

Monitoring and enforcement

The development of a monitoring and enforcement program will be something that will come with changes to the Planning Act and the abilities of municipalities to undertake monitoring and enforcement of TDM programs. It is needed to ensure that the programs meet the targets established within transportation impact studies.

Funding

Funding opportunities will be created through changes to development charges, provincial policy and federal funding programs.

Below is a table outlining potential ideas on how the above could be executed by the City and limitations to implementation.

Item	Probable	Possible	Maybe – Long-term (Provincial changes)
TDM By-law (similar to US ordinances)			Will require request to change Planning Act as there currently is no provision for such a program
TDM Site Plan conditions similar to the site plan for the Nortel site in Nepean (early 2000s)	.		Requesting TDM programs and activities can be possible but follow up will be difficult. Conditions could include requiring TDM supportive infrastructure (such as bike racks, locker and storage rooms and shower facilities); require membership in local Smart Commute associations; information on the sustainable transportation options; incentives such as transit passes, etc

Item	Probable	Possible	Maybe – Long-term (Provincial changes)
Site design guidelines for connectivity between buildings and sustainable travel options such as bicycle facilities, transit stops/stations	While this is generally part of the site approvals process, it should be incorporated into city policy that requires integration between site design and transportation to reduce reliance upon the private vehicle		
Transportation Impact Studies	Requirements to develop TDM Plans as part of an overall TIS exist in a number of municipalities. Recommendations for incorporating TDM Plans into the TIS process should be incorporated into the TDM Plan and TMP with the type and scale of the plans based on the size and type of development for which an application has been made and to assist in the mitigation of the traffic impacts of new developments	Follow through on the implementation and monitoring of the traffic impacts will need to be part of this – need to determine best way to proceed – this is currently a grey area	
Development Charges		Add to DC By-law – however, since the Act is silent on this will need to discuss with Legal. As well, there is provision for studies – a funded pilot program might possibly be considered a study (planning study)	
Other funding opportunities for TDM programs –		We need to look into this further – will required approval by	

Item	Probable	Possible	Maybe – Long-term (Provincial changes)
such as parking fees being used to fund TDM programs		Council but will paid on-street parking need to include public consultation, depending on location.	

As part of the evaluation of the policy and the overall TDM Plan, the development of implementation, evaluation and monitoring guidelines will evolve. However, for there to be "teeth" to any policy, changes to the Planning Act will need to take place which is beyond the scope of this project and will require requests from City Council to the Province of Ontario.

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Appendix D: Bike Parking

AUGUST 2017

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Bike Parking Related Policy:

The Climate Change Action Plan 2016-2020

The Climate Change Action Plan 2016-2020 is the Provincial Government`s most recent plan of specific legislation actions and programs designed to address climate change at a provincial level. It discusses the need for more publically accessible bike parking at transit stations to support a multi-modal system that includes cycling and walking.

The City of Mississauga`s Cycling Master Plan

The City of Mississauga`s Cycling Master Plan supports vibrant, safe and connected communities. The vision for the plan was to have Mississauga be a place where people cycle for recreational, fitness and as a means of transportation, which contributes to the overall quality of health and life in the City. The 2010 Plan is currently in the process of being updated internally by the City's Active Transportation Office. This plan will look at the needs and opportunities for bicycle parking improvements in the public realm.

Waterfront Parks Strategy

Mississauga City Council approved a Waterfront Parks Strategy (WPS) in March 2008 that includes a comprehensive long term plan for the future development of the City's waterfront parks. It aims to reduce vehicle parking and encourage the use other modes such as transit, walking and cycling. It supports the implementation of bike parking near park facilities and activities.

Mississauga Official Plan

Mississauga's OP defines Major Transit Areas as the area where an existing or planned higher order transit station is located. They will be developed in order to provide connections to various modes of transportations including components such as bicycle parking and commuter pick up/drop-off areas.

OP Parking Policies are generally characterized by an intention to move towards facilitating high quality urban outcomes by implementing more deliberate parking management. It supports bicycle parking and destination amenity consideration as part of site development and requires bike parking in corporate areas.

Metrolinx Go Rail Station Access Plan

The Metrolinx Go Rail Station access Plan discusses the need for more active transportation facilities around stations, in particular ensure that secure bike parking and bike-share programs are integrated with existing information and payment platforms (e.g. PRESTO).

Design Guidelines

City of Toronto Design Guidelines for Bicycle Parking Facilities

The guidelines discuss the importance of sustainable growth and development of a healthy and vibrant community. Focusing on bike facilities within Toronto the document covers different types of facilities different land uses and time periods. Bicycle parking both on private property and within the ROW is discussed and how it can be implemented from policies through to construction.

Bicycle parking can be separated in two different categories, long-term and short-term. Long-term parking includes bicycle racks in enclosed, secure areas with controlled access. Short term parking is generally classified as visitor parking and includes bike racks in an easily accessible locations that are available to the public and likely do not protect bicycles from vandalism.

In the same manner as vehicle parking, bike parking needs to be accessible, safe and secure, and convenient to use. These three aspects ensure that the parking will allow everyone to use the facilities and give maximum security to bicycles stored there. The more important factor to consider is the location of parking, whether indoor or outdoor. In order to be accessible, bike parking should be close to building entrances, accessible from ground level and have no obstacles like stairs. In order to create safe, secure facilities, racks should be firmly secured to the ground and monitored by security personnel. Short-term bike parking should be located in a public areas to increase informal security and provide easier access to users. To ensure bike parking is convenient to use, racks and storage should be located in a central area, easy to use, and close to bike routes.

There are many different design aspects for the City to consider when creating bike parking.

- Material and shape: Should be durable and be able to withstand weather conditions.
- Security: It is suggested to create racks that allow for two points of contact for extra security. Covered bike shelters can add an extra layer of protection for bikes, allowing a space where they are protected from weather and accidental damage.
- Efficiency: Racks should be designed to be efficient and allow for a maximum amount of bikes to be parked there.
- Accessible: Along with being in an accessible area without steps or steep slopes racks should also be detectable for the visually impaired.

The design considerations of long-term bike parking facilities differ from short term facilities. These facilities must be designed to hold bikes for multiple hours or overnight, and therefore need more security. For these purposes the most effective long-term bike parking facilities are bike lockers, cages, bike rooms, or indoor bike

parking garages. Indoor options for long-term bicycle parking provide better security and can keep bikes in better condition for longer periods of time.

The best options for long term bike parking infrastructure are bike lockers, bike cages, or bike rooms. These can provide a high level of security to bicyclists and protect bikes from weather and accidental damage if located underground of in vehicle parking garages. Limiting access to these areas to only those who use it increases the likely that bikes are safe and secure for the entirety that they are parked.

City of Vancouver Bicycle Parking Design

Engineering Services of the City of Vancouver has created supplemental guidelines and parking laws for bicycle parking within the city. Specifying the amount, location, and design for bicycle parking, the guidelines include specifications for enclosures, racks, security, and clothing lockers. The guidelines lay out specifics that buildings must incorporate to meet the Bicycle Room Requirement.

The guidelines outline that there are four acceptable forms of providing long-term, bike storage, of which are described below.

1. Bicycle room
2. Individual garage
3. Bicycle compound
4. Bicycle lockers

Bicycle Room Guidelines:

- It is suggests that motion activated light and tamper proof hinges be used for maximum security within bike storage areas. This can decrease the opportunity for bikes to be stolen and increase the opportunity for bystanders to notice if they are.
- It is suggested for Bike storage areas to be located above ground level for convenient access or at the lowest the first level of a parking garage unless there is an elevator that can provide the bicycle parking direct access to the outside.
- It is required that bicycle racks be either CSA approved or by similar agency with respect to city streets. They must be secure and have theft-resistant anchoring preferably receded bolt heads or grouted-in anchoring. Bicycles should be supported above their centre of gravity to avoid being knocked over.

Bike Parking Infrastructure by Land-use

Multi-unit residential buildings

Multi-unit residential buildings require both short and long-term bicycle parking. Short-term parking should be easily accessible to the public in the area while long-term should be easily accessible to residents. Single family homes are less likely to require bicycle parking due to having yards, but townhomes and other multi-unit buildings will require long-term parking access. The easier it is to access secure parking the more likely it will be used in residential areas as a convenient mode of transportation.

High-density residential land uses

Bicycle parking for high-density residential land uses is best offered as a commonly owned feature maintained by the development. Accessible through underground parking, high standards for management and maintenance can be maintained for the residents. As well, short term parking should be supplied outside for visitors to the condo and surrounding areas.

Commercial, Industrial, & Institutional Uses

In comparison to residential land uses, commercial developments require a higher percentage of short term bicycle parking for customers and clients. These areas also require secure, long-term parking for employees and shower and change facilities within the development to encourage commuting by bike. Covered, outdoor parking close to building entrances can offer both long and short term parking while protecting bicycles from weather. Creating more bicycle parking will be able to accommodate for scarce surface parking and traffic congestion within these areas.

Uses with High Bike Parking Demand

Destination locations will have a higher parking demand then residential and commercial uses. These are often community centres or other local areas frequented by those who cannot drive. Schools, hospitals, places of assembly such as community centre or sports centres, and places of worship often have higher demand for bike parking. Ideally, these locations should be designed with bike parking accommodating a target percentage for the desired mode share.

Case Study

Vancouver

Vancouver has increased their bicycle ridership in the past years and thus has had to increase bike parking in the downtown and throughout the residential areas. The city uses traditional bike racks, and U-shaped bike racks to provide short term parking for one or two bikes per location, and bike corrals for areas of higher short-term parking demand. To provide long-term parking the city supports TransLink in supplying rental bike lockers and stacked bike parkades at transit stations.

Halifax is currently work on a pilot parking program that is providing bike corals in the downtown core of the city.

Bicycle Parking Standards

Bicycle parking standards vary across Canada and from residential to urban areas. The bicycle parking standards that are shown in the table below provide a cross-section of those that are available as well as ones that apply to entire municipalities or specific areas. The following is a summary of bicycle parking requirements for select municipalities in the GTHA, Halifax and Vancouver.

Bicycle Parking Requirements – Select Uses

Land Use	Oakville (Zoning By-law 2014-014)	Halifax	Vaughan – Metropolitan Centre	Toronto (Zone 1 only)	Vancouver (Parking by-law 6059)	
					Class A (lockers)	Class B (racks)
Residential - apartment	1 space /dwelling*	0.5 spaces/unit (80% class A; 20% class B)	0.1 per unit or 6 spaces (whatever is greater – short term; .5 per unit with over 10 units – long term	A minimum of 1.0 bicycle parking spaces for each dwelling unit, allocated as 0.9 "long-term" bicycle parking space per dwelling unit and 0.1 "short-term" bicycle parking space per dwelling unit	0.75 to 2.25/ unit varies by type of unit	Generally – minimum of 6
Retail	Greater of 2 or 1/1000m² (NFA)*	1/300 m2 GFA – 20% Class A; 80% Class B	0.15 per 100m² or 6 (whatever is greater) – short term; 0.1 – long term	Short term: 3 + 0.3 per 100 m² of interior floor space; Long term 0.2 per 100 m² of interior floor space	Min 1/500 m² GFA	Min of 6 spaces (min of 1000m²)
Business office	Greater of 2 or 1/1000m² (NFA)*	1 / 500 m2 GFA – 50% Class A; 50% Class B	0.1 per 100m² or 6 – whatever is greater – short term; 0.13 long term	Short term: 3+0.2 per 100 m² of interior floor space; 0.2 per 100m² of interior floor space Long term: 0.2 for each 100 m² of interior floor area used for an office, other than a medical office;	1/500 m² GFA	Min of 6 spaces (min of 2000m²)

Medical office	Greater of 2 or 1/1000m² (NFA)*		0.1 per 100m² or 6 – whatever is greater – short term; 0.1 per 100m² long term. 1 male and 1 female shower facility required for every 30 long term bicycle parking spaces required	Short term: 3 +0.15 per 100 m² of interior floor space; Long term: 0.15/ per 100 m² of interior floor space	Section 6.1.3 (Uses not Listed *'The number of bicycle spaces shall be calculated on the basis of a similar use as determined by the Director of Planning.'*	Section 6.1.3 (Uses not Listed *'The number of bicycle spaces shall be calculated on the basis of a similar use as determined by the Director of Planning.'*
Employment uses	2 + 0.25 per 1000m² (NFA)*	1 /1000 m² GFA. 80% Class A; 20% Class B (Min of 2 Class B to a max of 20)	Commercial Uses: Short term 0.15 spaces per 100m² GFA or 6 bicycle spaces whichever is greater for buildings with GFA >1000m² Long term 0.1 spaces per 100m² GFA	Same as business office	1/1000m² or 1/17 employees (whatever is greater)	N/A
School, post-secondary	Greater of 3 or 2.0 per 100 m² (NFA)*	1 space for every 250 m² GFA. 20% Class A; 80% Class B	Institutional uses: Short-term: 0.4 oer 100m² for buildings with GFA of >1000m² Long term: 0.05 for buildings with GFA of >2000m²	Short term: 3 +0.3 per 100 m² of interior floor space; Long-term: 1/100 m² of interior floor space	0.4 for every 10 students	0.6 for every 10 students

* Section 5.4.1b) states that *'in no circumstance shall the number of minimum bicycle parking spaces required on a lot be greater than 30.'*

End of trip facilities, such as showers and locker/change rooms are sometimes included with bicycle parking standards as they can be linked to the number of spaces provided or is based on the gross or net floor area applied to the number of bicycle parking spaces required.

Bicycle parking requirements in Mississauga were recommended in the previous Mississauga Cycling Master Plan (2010). Mandating bicycle parking and provision of end of trip facilities are considered significant prerequisites for cycling to work as a TDM measure. Consequently, they have been included in this Plan.

For the sake of simplicity, cost effectiveness, public health and to foster a culture of cycling, short and long term bicycle parking requirements are recommended to be set at a simple ratio of 1 per 15 students for class A and 1 per 10 students for class B at elementary and secondary schools and 1 per 15 students for post-secondary schools.

End-of-trip Facilities

There are two strong examples of end of trip facilities that support the provision of bicycle parking: Toronto and Vancouver. The rates for facilities are listed below. In some cases the number of showers and change/locker rooms applies separately to male and female facilities.

City of Vancouver By-Law 7481

Minimum Number for Each Set of:			
Required Number of Class A Bicycle Spaces	Toilets	Sinks	Showers
0-3	0	0	0
4-29	1	1	1
30-64	2	1	2
65-94	3	2	3
130-159	5	3	5
160-194	6	6	6
Over 194	6 plus 1 for each additional 30 bicycle spaces or part thereof	3 plus 1 for each additional 30 bicycle spaces or part thereof	6 plus 1 for each additional 30 bicycle spaces or part thereof

City of Toronto By-law 569-2013

	Minimum Number for Each Set of:
Required Number of Class A Bicycle Spaces	Shower Facilities
0-5	0
5-60	1
61-120	2
121-180	3
Over 181	4

Appendix E: Tool Kit

AUGUST 2017

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Tool Kit

The creation of a plan to administer TDM initiatives can be a complicated endeavour due to the number of measures, two distinct types of measures and interconnectivity between the initiatives, the delivery method and potential partners. The lead organization for each measure can change depending upon the target audience and whether the initiative is a 'hard' (TDM-supportive infrastructure) or 'soft' (programs and measures to support behaviour change) programs. Therefore creating a toolkit that outlines the initiative and explains what it is and how it will be delivered is an important start. The tool kit requires knowing where it will be delivered, why it is needed, and the benefits each measure will bring.

The measures for the tool kit are outlined below, with each one under a specific heading. The intent is to delineate the different types of programs that are available and indicate how they can be integrated to meet the needs of a specific audience or service provider. The implementation of the measures in the body of the TDM Implementation and Action Plan.

Column Headings

Heading	What it Means
"What is it?"	This heading defines the tool and what is does.
"How will it be delivered – how implemented by key providers?"	This heading discusses who the tool will be implemented within the city, whether it needs government approval, if new policies will be involved or if the individual workplace will be responsible
"Who will deliver it?"	This heading discusses who will implement the tool, whether it be a level of government or a private company
"Priority areas for implementation"	This headings discusses which areas within the city the tool will be Prioritized for implementation as per the major land use designations in the OP, whether it be in residential, commercial, or in major node areas
"Why is it needed?"	This heading discusses what problems can be addressed with the tool and how it can be used as a solution
"Benefits/intent"	This heading discusses the benefits of having the tool implemented within the city and how the community will be improved, as well as what the actual intent of the tool is

Changes to Travel Times – (when and where people work)

The table below outlines three TDM measures (these are soft measures) that support changes in when people work. Flexible work hours, condensed work weeks and telework all lead to less strain on the transportation system and increased satisfaction with a work-life balance. As shown below the three measures can be used throughout Mississauga to reduce peak period travel, parking supply and increase productivity and employee recruitment and retention. The level to which these are applied will vary by employer and employee and could be different depending upon time of year as well.

TDM Measure	What is it?	How will it be delivered – how implemented by key providers	Who will deliver	Where will it be delivered (priority areas)	Why is it needed	Benefits /Intent
Flexible Work Hours	Providing workers with the ability to shift the start and end times to fit their daily schedules and to be able to travel during non-peak travel times	Through policies established by human resources departments and support from others who have undertaken successful flexible work hour programs. Networking will help to increase support for the use of program which spread out the workday.	Public and Private Sector Employers	• Downtown • Major Nodes • Corporate Center • Employment Areas	Peak loads on public roadways, transit vehicles and transportation networks frequently exceed existing capacity. Flexible Work Hours helps to spread peak congestion. When implemented well, they can reduce or defer the need for additional investment in capacity.	**Primary Intent**: Reduce demand for travel, lessen parking impact on land use and peak transportation network load **Benefits** include supporting employee needs and lifestyles which can lead to increased retention and recruitment.
Telework	Telework allows employees to work remotely whether from home or a satellite location closer to their place of residence through improvements to technology.	Through policies established by human resources departments and support from others who have undertaken successful telework programs and have seen the benefits. A pilot could be undertaken in a workplace to determine if it is appropriate for the business.	Public and Private Sector Employers	• Downtown • Major Nodes • Corporate Center • Employment Areas	Peak loads on public roadways, transit vehicles and transportation networks frequently exceed existing capacity. Telework is a technological solution that avoids the need to travel altogether by allowing staff to work from home.	**Primary Intent**: Reduce demand for travel, lessen parking impact on land use and peak transportation network load **Benefits** include supporting employee needs and lifestyles which can lead to increased retention and recruitment.
Compressed Work Week	This can take on two forms. One is extending work hours to reduce the number of days that an employee works. The employee still works the same amount of time but over 4 days. The other option is allowing employees to work 80 or 90 percent of a full work	Through policies established by human resources departments and support from others who have undertaken successful compressed work week programs. Networking will help to increase support for the use of program which	Public and Private Sector Employers	• Downtown • Major Nodes • Corporate Center • Employment Areas	Peak loads on public roadways, transit vehicles and transportation networks frequently exceed existing capacity. Compressed work weeks have the complementary effect of reducing peak loads as well as avoiding need to travel on non-work days.	**Primary Intent**: Reduce demand for travel, lessen parking impact on land use and peak transportation network load **Benefits** include supporting employee needs and lifestyles which can lead to increased retention and recruitment.

	week, enabling them to have a day off every week or other week.	spread out the workday and reduces travel.				

Workplace Measures

These programs have been in place for a number of years and began as vanpool and carpool programs when there were fuel shortages (as far back as World War 2) and governments and employers were concerned about how people would travel to and from work. The workplace programs have evolved and include a considerable number of options, including the three discussed above in section 5.2. Delivering workplace programs in the GTHA has been undertaken by thirteen Smart Commute associations (also known as Transportation Management Associations) through Metrolinx and provide a number of programs ranging from ridematching services, events, a guaranteed ride home program and direct services delivered to member workplaces by Smart Commute staff. In Mississauga, there are two associations, Smart Commute Mississauga and Smart Commute Pearson Airport Area.

Workplaces can also provide other incentives to shift travel behaviours which are complementary to those delivered by Smart Commute. These include parking supply and costing, location for priority parking, discounted transit passes, end of trip facilities such as bicycle parking, showers and change rooms. Through the education and support from Smart Commute and the provision of infrastructure to support the use of sustainable travel options, changes in commuting patterns and mode choice can occur.

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
Ridematching	This program allows commuters to find carpool partners which will allow them to share the cost and burden of driving to and from work. This program is usually available on-line which allows for greater opportunity to match people who live and work near each other. Other options include matching people with “buddies” to help them navigate the transit system, provide assistance with cycling routes and pedestrian connections.	This is primarily an online tool that allows a participant to create a profile to find suitable matches. It can be promoted through workplaces, websites and other means by employers, Smart Commute and the City.	Public and Private Sector Employers through Smart Commute and local TMAs - Mississauga and Pearson Airport Area	• Downtown • Major Nodes • Corporate Center • Employment Areas	Vehicle occupancy is generally measured as being around <1.1 persons per vehicle. This is considered a waste of valuable road space. Ridematching can increase network efficiency, reduce environmental impact and household vehicle ownership	**Primary Intent**: lessen peak transportation network load, environmental impact **Benefits**: reduce number of requires parking spaces which can reduce costs to employers, reduce travel stress, As well, reduce costs associated with commuting.
Guaranteed Ride Home	This is an insurance policy that provides commuters who use sustainable modes of travel to have a way home in the case of an emergency, which includes unscheduled overtime, family emergencies.	This program will be delivered as part of an overall workplace commuter program such as those provided by Smart commute Mississauga and Pearson Airport Area. Information and sign-up forms will be delivered to those interested and used	Public and Private Sector Employers through Smart Commute and local TMAs - Mississauga and Pearson Airport Area	• Downtown • Major Nodes • Corporate Center • Employment Areas	A major barrier to transit, active modes and ridesharing is due to people being unsure if they can get home in the case of an emergency (either their own or that of their driver). GRH is an 'insurance policy' that allows people to reduce	**Primary Intent**: lessen peak transportation network load, environmental impact **Benefits**: increasing use of sustainable modes; elimination of needing car in case of emergency; increase safety for those

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
		as a means to get more people using sustainable modes more often			automobile dependence without worrying about any unforeseen circumstances	working late (when unplanned)
Transit Passes	When referring to transit passes within a TDM program, it involves the reduced cost to the commuter to obtain a pass, usually on a yearly basis, to encourage more people to commute by transit	The delivery of transit passes has in some places been required as a condition of approval for a development. This may not be possible in the near future, therefore through a collaborative approach they can be delivery by the employer with assistance from Smart commute and MiWay.	MiWay, Transportation and Infrastructure Planning Department They can also be provided by employers who wish to subsidize passes for workers	• Downtown • Major Nodes • Community Nodes • Corporate Center • Employment Areas	The economic cost of driving is not reflected in the costs that drivers face. Driving often includes many hidden subsidies. Transit passes allow people to weigh up costs of travel and lower barriers to using transit. Furthermore, the sunk cost of periodical tickets means holders are inclined to take more trips by transit than for single use tickets.	**Primary intent:** mode shift where reasonable alternatives already exist **Benefits:** increased transit use and ridership, reduce costs associated with commuting.
Fleet Motor Vehicles and Bicycles	These are pooled motorized and non-motorized vehicles that are available to workers for workday travel. They can be owned by the workplace or contracted out to a third party such as a local carshare company or bike share provider	The availability of fleet vehicles should be determined based on the number of people traveling for work purposes during the day. It can then be tried out as a pilot through the creation of a booking system (if more than one building location, key ones can be chosen), travel logs and key distribution. The workplace will make a determination as to the type of program there will be as it may be easier to have a third party deliver the program	Property Managers, Tenants, City Development Department; car and bike share companies, businesses	• Downtown • Major Nodes • Corporate Center • Employment Areas	Vehicle fleets are typically underutilised. Parking lots commonly host cars for long periods. Incentivising fleet use is an easy way to cover incidental trips and reduce parking demand.	**Primary intent:** increase fleet utilisation and reduce SOV trips **Benefits**: Reductions in the number of SOV trips which people take because they need to use their cars for workday travel. Reduce travel costs and stress.
Bicycle Parking	Parking facilities that are available for bicycle commuters and visitors. Parking can be supplied on a short-term basis (usually bicycle racks) or a long-term basis for employees	When required through the zoning bylaw it will be provided by the developer and located according to the requirements of the bylaw.	Planning (for zoning and development approvals) and Transportation Planning	• Downtown • Major Nodes • Community Nodes • Neighbourhoods • Corporate Center • Employment Areas	Bicycle parking is a space saving, cost-efficient and environmentally friendly alternative to car parking.	**Primary intent:** mode shift where reasonable alternatives already exist **Benefits:** Provide safe and secure parking for commuter, visitors and residents so that cycling

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
	(such as bicycle lockers, storage rooms, etc.)					can be used as a viable mode of travel for an assortment of trips
Showers and Change Rooms	Shower and change rooms are end of trip facilities that support the use of active modes of travel by workers	As required by zoning bylaw	Property Owners	• Downtown • Major Nodes • Community Nodes • Corporate Center • Employment Areas	TDM supportive infrastructure that supports more mode shift to cycling at relatively low cost.	**Primary intent:** mode shift where reasonable alternatives already exist **Benefits:** Increases use by ensuring that commuters who use active modes are able to change and clean up before work
Pricing Parking	Pricing the use of parking, particularly at workplaces at rates that are higher than transit monthly passes	Parking policy that is developed by service providers to set rates for parking in off-street lots and structures	Property Owners, Private parking providers, City Finance Department, City Works, Operations and Maintenance	• Downtown • Major Nodes • Community Nodes • Corporate Center • Employment Areas	Parking is typically highly subsidised, leading to overuse and oversupply. This affects urban efficiency/limits density, land values and environmental impacts. Pricing parking helps to reflect the true economic and financial costs of providing parking and creates more rational travel choices.	**Primary intent:** mode shift, reduce parking demand Pricing can shift people to use more sustainable modes, particularly when pricing is coupled with incentives to use other modes **Benefits:** reduced costs to builders and employers for parking
Priority Parking	Parking that is made available near entrances for sustainable modes such as carpools, bicycles, electric vehicles and carshare company vehicles	This can be requested through the site plan process and incorporated into the zoning bylaw and parking policy.	Property Owners, Private parking providers, City Finance Department, City Works, Operations and Maintenance	• Community Nodes	Carpool: Helps to increase spatial efficiency of parking facilities (can have more people parked per m2) and reduce demand for parking EV: Helps to reduce environmental impact or motor vehicle use (not necessarily a TDM measure however)	**Primary intent**: will depend on whether its environmentally driven or about vehicle occupancy **Benefits**: encourages the use of sustainable modes by encouraging and profiling the use of carpools, EVs and carshare

TDM-Supportive Infrastructure and Policy

As has been stated, TDM measures cannot be successful in isolation. Not only are complementary measures initiated together, so too are the infrastructure and policies that are needed to achieve modal share targets, increase the health of a community, reduce congestion and improve overall quality of life. In fact the integration of supportive polices and infrastructure with TDM programs is one of the most important activates of TDM implementation. For example, if an employer supports their staff in using transit to commute to and from work, the corresponding services and infrastructure are needed at both the origin and the destination. If an employee is unable to access transit services at

either end of their trip, then providing a subsidized pass will not increase the use of transit. The same is true for other services such as carpooling. Providing incentives to carpool work best when here is a complementary ridematching program available to employees. .

It is important that the partnerships between agencies, employers and other groups develop and grow so that the integration of the various services, infrastructure and programs all come together so that more people can and want to use sustainable travel options more frequently.

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
Park and Ride Facilities at Transit Stations	Providing parking options for commuters to access transit services for the journey to work	As part of the MiWay and GO transit service plans as expansion to the system occurs	MiWay, Go Transit	• Corporate Centres	Intended as a feeder to transit to encourage multi-modal travel. Research has shown it is consistently popular but requires a high capital cost per additional rider generated. The provision of parking near transit facilities, also has impacts on TOD land use and potential ridership.	Primary intent: mode shift
Carpool priority parking at transit stations	Locating parking for registered carpool programs immediately next to entrances to stations to encourage the use of carpools by more commuters	As part of the MiWay and GO transit service plans as expansion to the system occurs	MiWay/ GO Transit at GO Stations and Park and Ride Facilities		Helps to increase spatial efficiency of parking facilities (can have more people parked per m2) and reduce demand for parking	**Primary intent**: mode shift and it reduces the number of parking spaces, helps alleviate congestion during peak times in a and around stations due to higher vehicle occupancy levels
Pedestrian connections and amenities	Any connection or amenity that encourages the use of sustainable modes. These are usually associated with active modes and transit use to encourage people to use these modes more often. These include direct connections to building from transit stops, benches, reducing barriers.	Policies created by the City that request direct, convenient and accessible connections between building and a number of destinations including transit. These will be part of the site plan	City of Mississauga, Developers	• Downtown • Major Nodes • Community Nodes • Neighbourhoods • Corporate Centres • Employment Areas • Special Purpose Areas	Making facilities such as sidewalks, pathways and walkways accessible to all members of the community increases independence, health, social & employment opportunities, and community safety and so on. As well, this will ensure that AODA compliance is met.	**Primary intent**: mode shift **Benefits**: Having direct and well-thought out connections to destinations, to transit, and other areas will increase the use of sustainable modes.
On-road active transportation infrastructure	These are facilities within the road right-of-way and provided by a municipal government and include sidewalks, bicycle lanes, multi-use trails, crosswalks and crossrides, etc.	The City will provide the locations and types of facilities to be developed to serve the needs of the public.	City Transportation and Infrastructure Planning Department	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas	Considered a prerequisite for creating safe alternatives to driving especially when considering from the perspective of cyclist user groups ('experienced and	**Primary intent**: mode shift **Benefits**: Having direct and well-thought out connections to destinations, to transit, and other areas will increase the use of sustainable

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
					confident', 'interested but concerned')	modes. The provision of cycling facilities in particular will increase safety and comfort leading to more users of these facilities.
Parking supply changes	Changing parking supply is a policy provided by local governments to utilize land more efficiently by allowing shared parking for uses that have different peak periods. Also includes the reduction in parking for TDM measures	The changes in how parking is provided will be part of the review of parking in the City and will be incorporated into city policy and bylaws where appropriate	City Planning Department	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas • Special Purpose Areas	Reduce amount of land needed for parking and mitigate traffic from developments. Allowing more on-street parking can enhance safety for pedestrians but may be a negative for cyclists, depending upon the road cross section.	**Primary intent:** reduce parking supply and increase mode shift to sustainable options **Benefits**: Reduce cost of parking provision
Parking restrictions (on-street)	For this project, parking restrictions will focus more on time versus not allowing parking (except where there are bicycle lanes) to discourage commuters parking on-street and encourage turnover	Where on-street parking exists, enforcement and policy updated by the City will be required to ensure that turnover occurs.	City Transportation Department, City Works, Operations and Maintenance	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas • Special Purpose Areas	This can increase turnover, allow for fairer rationing of space and less opportunity for parking 'winners and losers'	**Primary intent**: reduce number of commuters using on street parking **Benefits:** increase the amount of short term parking which will benefit businesses and make easier for customers, patients and guests to access the destinations that are going to
Transit priority lanes	These are lanes that are dedicated only to transit vehicles and will help to improve travel times and service	The planning and construction of transit priority lanes will be carried out by the City and be part of an overall plan to improve transit service	City Transportation and Infrastructure Planning Department	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas • Special Purpose Areas	Provide faster service for customers through dedicated transit lanes and signals	**Primary intent:** to increase travel times and make transit use more competitive with the other modes **Benefits:** increased ridership and customer satisfaction
Bicycle parking regulations and standards	Provides the types of bicycle parking, the number of spaces for bicycles, dimensions of spaces, and location on a site	The update to the parking policy will include bicycle parking regulations and standards that will be incorporated by the City into the zoning bylaw	City Planning Department	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas	Same as On-road Active transportation infrastructure (see above)	**Primary intent**: modal shift from SOV trips to cycling **Benefits**: improved health, reduction in amount of motor vehicle parking

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
Development approvals and TDM	This is the integration of TDM measures and supportive infrastructure and polices into the overall development approvals process to ensure that there is support for TDM and sustainable travel options from the planning stages of a development	The integration of TDM into the development approvals process will take place through negotiations with the developers to provide them with the benefits of using TDM to reduce traffic congestion, reduce costs, increase corporations roles as community supporters, attract potential tenants, workers and customers.	City Planning Department; Transportation and Infrastructure Planning	• Downtown • Major Nodes • Community Nodes • Neighbourhoods • Corporate Centres • Employment Areas Special Purpose Areas	Development applications are a unique opportunity to influence land use outcomes. Provision of TDM supportive infrastructure helps create alternative travel patterns and generate mode shift towards more sustainable modes. When integrated with TDM programs this can be an effective way to shift travel behaviours over the long term.	**Primary intent**: incentivise and regulate provision of viable travel alternatives leading to mode shift **Benefits**: Encourage the use of sustainable modes, create a culture of the use of sustainable modes, reduce development costs, particularly with regards to parking

Municipally-Delivered Programs

Municipal governments should take a lead role in the delivery of TDM programs. In many cases, the programs are best delivered by municipalities. In Ontario, there is no legislative support for developers to provide any type of TDM program and if they do, municipalities have little ability to follow up and monitor the effectiveness of the program. Therefore, in order to understand how programs impact travel behaviour and if the behaviour continues for the long-term, the City of Mississauga should undertake some programs, and where appropriate find partners to assist in the delivery and follow-up. Some programs are also most effective when they are included in the implementation of a new transit service, the opening of an active transportation facility or the introduction of a carshare service. Programs that promote these initiatives are often not provided by private sector employers or property owners, leaving it to the public sector.

The measures identified below are best provided by the City. For example, the use of community-based social marketing and individualized travel planning requires that there be services and infrastructure available for people to change their travel behaviours. When a travel planning program is introduced, the appropriate modes needs to be promoted. For example, a community that lacks or has limited transit service should be encouraged to use a ridematching system as an alternative to travelling by single occupant vehicles. A second example of a municipal-led program is the promotion of a new bicycle lane, that when it is built, should be promoted to local residents and provided with any and all information available about the new facility.

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
Community-based social marketing and Travel Planning Programs	Programs where individuals are provided with information and other incentives / motivators to change their behaviours and use more sustainable travel options that will fit into their lifestyles and meet their daily needs.	These programs will be provided by the City and other partners directly to residents in particular through individualised campaigns that provide direct information, support and encouragement to use sustainable modes. These programs can be delivered door-to-door, at neighbourhood events where people can talk to someone directly or via electronic modes and platforms.	City of Mississauga in partnership with the Region of Peel	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas	Engagement and education about sustainable transportation options at the household level can lead to a higher probability of long term success.	**Primary intent**: increase individualized information of travel alternatives to change travel mode **Benefits**: provides options to households and individuals for daily travel and supports lifestyles and individual needs.

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
Transportation Options Fairs	An event set up to bring together transportation service and program providers in one place for residents, workers and others to learn about various modes and to increase the use of sustainable travel options	Transportation fairs are typically provided at workplaces to provide employees with all the options available to them and the ability to talk to service and program providers one-on-one.	City of Mississauga in partnership with Smart Commute where possible	• Downtown • Major Nodes • Community Nodes • Corporate Centres • Employment Areas	When a number of transportation options are located in one area, increased awareness of travel options can be provided to a large group of people directly and allow them to ask questions to gain a greater understanding of sustainable travel options. Providing such education opportunities can encourage people to use sustainable modes and reduce information barriers to TDM	**Primary intent**: increase information of travel alternatives, mode shift **Benefits**: provides information in one place which saves time and money for providers and allows individuals to see options
Community Events	Any event that is held for the community as a whole where it is possible to meet up with a number of residents in a setting where the service and program providers "go to the people"	Staff from the City can set up a booth or kiosk to provide information about sustainable travel modes and TDM programs at events held within the community so that staff is going out to the public in places where they are already gathering.	City Marketing and Economic Development Dept; delivery by TDM Coordinator	• Downtown • Major Nodes • Community Nodes • Neighbourhoods	Community events bring TDM to the people and create awareness of travel options, educate people and reduce information barriers to TDM	**Primary intent**: increase information of travel alternatives, mode shift **Benefits**: provides information in one place which saves time and money for providers and allows individuals to see options
Community App for transportation support	A smart phone or tablet application that will provide information about one mode, several modes, real time information in a format that is used by the community	The apps can be made available through developers who are asked to developed apps for the use of sustainable travel such as transit schedules, carpooling, and others.	City Marketing Department / App developer to work with City IT Dept.	• Downtown • Major Nodes • Community Nodes	Apps create easily accessible 'in your pocket' information on travel options. Option to combine with live information such as parking availability	**Primary intent**: Uses a medium that many have access to but will not take away from other options **Benefits**: can provide information in a platform that is easily accessible
Education programs	Bicycle Rodeos; CAN Bike; Bike Rack Demonstrations; Technology;	Education about active and sustainable modes can be delivered through a number of means such as printed materials (activity books, brochures), hands-on activities such as training courses and bicycle rodeos, online	TDM Coordinator / Transportation and Infrastructure Planning; partnerships with community groups and other levels of government	• Downtown • Major Nodes • Community Nodes • Neighbourhoods • Corporate Centres • Employment Areas	Similar to other information programs, these create awareness of travel options, educate people and reduce information barriers to TDM	**Primary intent**: increase information of travel alternatives, mode shift **Benefits**: Education and training can increase confidence and access to sustainable modes and result in overall increases in usage

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered	Why is it needed	Benefits / Intent
		through interactive websites.				
Promotional and Awareness Programs Related to Tools and Sustainable Transportation Infrastructure	Programs that provide that are developed to encourage the use of sustainable modes and provide support and on-going activities	Programs and materials can be provided through a number of means including many that have been identified such as transportation fairs, online services (ridematching for example)	City website and through direct contact developed by TDM Coordinator and Corporate Communications; partnerships with other groups	• Downtown • Major Nodes • Community Nodes • Neighbourhoods • Corporate Centres • Employment Areas	Similar to other information programs, these create awareness of travel options, educate people and reduce information barriers to TDM	**Primary intent**: increase information and awareness of travel alternatives, mode shift
Land-use Policy	It is important to have policies that are complementary to TDM measures to ensure that they will be incorporated into the development of communities and the overall goals and objectives of the City.	Amendments and updates to planning policy documents and master plans to reflect the integration of land use and sustainable transportation planning	Planning Department	• Downtown • Major Nodes • Corporate Centres • Employment Areas	The model that has been used for several decades can no longer be supported and with Mississauga reaching build out, it is necessary to look at other built environment planning options to make the use of land more efficient and to ensure that our transportation systems are sustainable and effective. Therefore in order to support the use of sustainable modes, changes are needed that no longer cater only to the automobile.	**Primary intent:** to have policies that integrate transportation and land use planning and support the use of sustainable options through built form, mix of uses and densities. **Benefits**: communities that are not reliant upon the car and are more focused on people and mobility. Innovative policies can place Mississauga in a leadership role.

Other Measures

There are a number of measures that fall outside of the categories listed above. School-based programs are provided by a number of agencies of which the City would normally have a supporting role. The City would provide assistance with the development of the school travel plans and develop safety initiatives. The support of the city in the delivery of school-based travel planning programs will help reduce the overall number of trips by motor vehicle and increase the number of sustainable and active trips to and from school. The use of sustainable modes can lead to a number of benefits including improving the health of children and the community through increased physical activity and reduction in air pollutants; reducing traffic around schools and increase safety so that more children can use active modes.

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered (priority areas)	Why is it needed	Benefits /Intent
School travel Planning and support	This is a program that has been developed by Green Communities Canada with assistance from Metrolinx to deliver in the GTHA. It provides tools, programs and promotional activities to encourage the use of more sustainable modes of travel by children, caregivers and families when traveling to school to reduce congestion around schools and encourage children to be more active	The school travel plan are implemented on a school by school basis using the format established through Metrolinx and Green Communities Canada. The support for the plans is provided by other groups such as school boards, city staff and regional staff. A working committee in the GTHA is working on improving school travel planning across the GTHA	School Boards, City and Regional TDM Coordinators; Metrolinx	• Neighbourhoods	Schools have peak trip generation (AM and PM peak). Engagement at school level helps to reduce demand for car trips and allows safe alternatives such as the walking school bus to be developed. The effectiveness of this TDM measure is predicated on an effective coordination mechanism	**Primary intent**: shift travel modes for students to more sustainable and active modes and increase safety around schools **Benefits**: less pollution, increased physical activity, increased levels of safety
School safety programs	Any program that will increase the safe travel to and from school and at schools which includes education of students and parents, teacher training, activities, contests	These programs can be delivered by a number of partners and through various means. For example, CAA has developed a number of safety programs one of which is for students to be involved in traveling safely to school. Other programs can be developed to support these through schools, boards, the City and the Region	School Boards, City and Regional TDM Coordinators, Traffic Operations, NGOs	• Neighbourhoods	Early education helps instill better travel behaviours from a young age.	**Primary intent**: shift travel modes for students to more sustainable and active modes and increase safety around schools **Benefits**: increased physical activity, increased levels of safety and fewer vehicles
Bicycle rack donation programs	This program is designed to provide bicycle racks at schools that are up-to-date and located in areas that are convenient for children to use and removed from motorized vehicle traffic areas. The ideas of donating bicycle racks is to encourage the use of cycling and off-set the costs for individual schools	Donating bicycle racks should be carried out in circumstances where schools or other community facilities are in need of a rack or a new one. It could be done through an application to the City to supply the rack. Criteria would be developed to determine how a school or facility would qualify	School Board and City / Regional Transportation Planning	• Downtown • Major Nodes • Community Nodes • Neighbourhoods	For sites that may not have the means to provide bicycle parking, racks can be donated to encourage the use of cycling for travel (not be delivered to private businesses)	**Primary intent**: shift travel modes for students to more sustainable and active modes **Benefits**: Safe and secure bicycle parking and increased physical activity

TDM Measure	What is it?	How will it be delivered	Who will deliver	Where will it be delivered (priority areas)	Why is it needed	Benefits /Intent
Transit, cycling and walking buddy programs	This program enables those who may not have used transit or feel uncomfortable riding or walking to specific destinations with assistance from those who have been suing one of these modes for longer periods of time. They are designed to boot confidence which will lead to increased use of these modes.	It would be best if the buddy programs were delivered through community groups where people know each other for safety and security reasons. They can also be delivered through workplaces, schools and other such venues.	MiWay, Transportation and Infrastructure Planning, Smart Commute, Region of Peel	• Neighbourhoods	This type of program when delivered by community groups or the City can provide people who may not feel comfortable taking transit, walking or cycling by themselves to gain the confidence needed to use these modes	**Primary intent:** shift modes **Benefits**: increase confidence and use of these modes by those who want to try but are not sure

Recommendations and Conclusions

The following TDM 'push'-measures have not been reviewed in detail, but should be reserved for future implementation.

Variable work hours and locations can be combined with other measures to further increase sustainable mobility use. Using measures in combination will be more efficient than using them alone. For example a carpooling program will be more successful if a company provides flexible hours, guaranteed rides home, and priority parking for carpools along with their rideshare program. In this manor most forms of travel have multiple tools that can provide incentives to use it. To achieve the maximum effect with these programs they should be used conjunction with others.

Changes to travel times (when and where people work), workplace measures, TDM supportive infrastructure or policy, municipally delivered programs, and other initiatives have been shown here to have significant demand management potential.

Futur	Tolls and Congestion/Area Pricing
	Variable Parking Rates
	Fuel Tax Surcharges
	Parking Facility Taxes
	Road Tax (Europe)

Appendix F: Current Programs

AUGUST 2017

MISSISSAUGA

Introduction

This chapter will outline the current programs and activities that are available to residents, workers and visitors to Mississauga. Highlights of activities such as the City's involvement with Smart Commute, awards for sustainable travel initiatives, workplace programs and others will be presented in this section. This overview of current programming is the basis upon which future TDM work can be undertaken through expansion and the development of new initiatives.

Current TDM Programs and Activities in Mississauga

There are a number of programs that exist within the City of Mississauga which fall under the umbrella of TDM programs, as they are designed to encourage a shift in travel behaviour to more sustainable modes of travel. These programs range from awards that recognize the City's promotion of sustainable travel to infrastructure that can make using sustainable modes simpler to how travel can be managed during large construction projects.

Newsworthy Events in Sustainable Transportation for Mississauga

The City has received a number of awards for its promotion of workplace travel and MiWay. Highlighting achievements such as these can help encourage the use of the services and programs. Summaries of some of the more recent acknowledgements are available below:

Mississauga received Smart Commute Gold Workplace Designation for 2016 from Metrolinx

The City of Mississauga was awarded the Smart Commute Workplace Designation for 2016. The designation is awarded to companies who demonstrate innovation, focus on measuring success, achieving positive outcomes, and achieving an overall lower mode share of single-occupancy drivers.

The workplace designation awards efforts of new implementation strategies and the continued encouragement to commuters at the workplace. The Smart Commute Workplace program recognizes efforts in providing commuter options for employees.

MiWay Marketing Team Wins National Award for Discover Your Station Campaign

MiWay's Discover Your Station campaign received a national award from the Canadian Urban Transit Association in 2015 for the outreach event aimed to introduce the community to new stations and the newly constructed Transitway. The program attracted 4000 people to the open house which included free bus tours to new stations and educated the community about the transitway. In the first week of service the transitway routes increased from 5% to 19% in passenger ridership.

The director of Transit Mississauga stated "I am proud of our MiWay marketing team for the work they did to promote the first phase of the Mississauga Transitway and for

continuing to move forward our City's goal to develop a transit-oriented City", after recognizing MiWay for this achievement.

City of Mississauga Recognized as One of Canada's Greenest Employers

The City of Mississauga was selected as one of Canada's Greenest Employers for 2014 by the editors of Canada's Top 100 Employers. The country wide competition recognizes employers that lead the nation in creating a culture of environmental awareness in their organizations. Janice Baker, the City manager and CAO stated, "The best way to promote a green culture is to demonstrate it though our actions. It's ingrate in the way think, operate, and conduct business". It is the first time that Mississauga has been awarded this particular recognition.

Excellence in Planning Award

The City of Mississauga along with the regional municipalities of York, Halton, Durham and Peel and the cities of Toronto and Hamilton, received special recognition awards from the Ontario Professional Planners Institute (OPPI) for the Smart Commute initiative in 2008. The Excellence in Planning Award recognizes innovation, creativity, professionalism, problem-solving and communications. The Healthy Communities Award was created to recognize excellence in creating healthy communities. Smart Commute exemplifies the importance of active transportation in the growth of healthy communities.

Mississauga is Canada's sixth largest city with a population of more than 700,000. With well-established infrastructure and state-of-the-art facilities, the City is considered to be an employer of choice, delivering quality municipal programs and services to its citizens. Mississauga is a dynamic, diverse and progressive municipality, known for its economic strength and for being Canada's safest city

Smart Commute is a partnership between Metrolinx and the cities and regions of the GTHA to combat traffic congestion, improve air quality and reduce greenhouse gas emissions. Smart Commute Mississauga works with employers in the City to improve commuter options including carpooling, transit, cycling, walking and telecommuting.

TDM-related Programs in Mississauga

A number of TDM-related programs and materials are available in Mississauga that can increase the use of sustainable travel options. These programs are outlined below:

Can-Bike Training and Safety Education for Cyclists

Can-Bike is Cycling Canada's education program that has been designed for cyclists of all skill-levels. Can-Bike teaches individuals how to ride safely and effectively in different settings and weather conditions with the end goal of safety and enjoyment for all.

Mississauga Cycling Handbook (available in several languages)

Mississauga's Cycling handbook is a guide to the rules and regulations of cycling in Mississauga. It also acts as a user's guide and

discusses the parts of a bike, maintenance, road safety, rules of the road and how to bike in Mississauga.

MiWay Outreach

MiWay has had many outreach programs (over 150 annually) to involve the community in its transit future. The outreach team organizes MiWay info sessions to educate and review proposed service changes to MiWay with the goal to increase ridership. They also provide updates on current and past projects.

Downtown Mississauga Website

The downtown Mississauga Website has a tab specifically for "getting around". The website promotes the use of public transit and provides maps for walking trails and transit, along with a user's guide for places to visit within the core area.

Carshare Pilot Program (2012)

A carshare pilot program was launched in 2012 in the City and was provided to municipal employees and the general public through AutoShare (now Enterprise). As a result of positive support from the general public during the pilot, it was recommended to continue and expand to provide travel options to those who need to drive but choose to not own a car.

TDM For Large Infrastructure Projects

Large-scale infrastructure projects can have a major impact on the ability of people to travel throughout the affected communities. There can be impacts upon all modes of travel, including changes to transit services, closure of bicycle lanes and sidewalks and reduction in vehicle travel lanes which can impact businesses and emergency services. Maintaining the same level of service during the construction period is not possible and therefore strategies need to be in place prior to the commencement of the construction work. The City of Mississauga has developed a strategy that will help to mitigate the impacts of the construction of a major transportation project and that can be adapted to be used during other large-scale infrastructure projects.

The construction of the Hurontario LRT project will have a considerable impact on the commuters, residents and visitors to the City. The five year project will result in increased traffic congestion which has the potential to cause major disruptions to surrounding communities. The TDM strategy will mitigate the impacts of the LRT construction and provide residents and workers with information and support to change their travel behaviour during this time and increase the use of sustainable transportation options well beyond the end of construction.

The purpose of the strategy is to incorporate TDM measures and programs into the LRT project from the initial stages through the Traffic Management and Communications Plans. The primary focus of the strategy will be to provide information and assistance to residents and employees about their travel options to help alleviate the impacts of the construction, while at the same increasing vehicle

occupancy and reducing the overall number of trips, particularly during peak travel times.

While the development of such a strategy can be seen as a benefit for the short term, long term changes in travel behaviour should also be included as a goal of the plan. For example, when the LRT service starts, it is anticipated that the TDM plan will provide incentive for residents and commuters to use it rather than drive.

For any TDM strategy to be successful it cannot operate in isolation and therefore should be a collaborative process involving a number of departments within the City of Mississauga, the Region of Peel, Metrolinx, and others. This will allow for each partner to take specified roles which are overseen by the City's TDM Coordinator.

The plan will be implemented in three phases from pre-construction through to post-construction. Each phase includes specific messages, tactics and how and who it will be implemented. As this is the first TDM Plan in Mississauga for such a large scale project, the success of using TDM measures will be monitored and a full evaluation of the successes and lessons learned will need to be undertaken.

It is important to note that this initial strategy can be modified and used for other projects throughout Mississauga. As TDM is context-sensitive, any strategy will need to take into account the surrounding communities, length of construction, available modes of travel and land uses.

TDM Programs in Region of Peel

Peel Region is known for its innovative and progressive approach to encouraging its residents, workers and visitors to consider using more sustainable modes of travel for their commuting and day-to-day activities. As a result, there are a number of programs that have been undertaken by the Region to encourage long-term travel behaviour change. These programs can provide Mississauga with inspiration for partnerships with the Region and other organizations to increase the delivery of TDM programs and reduce reliance upon single occupant vehicle trips for residents, workers and visitors. A review of the programs undertaken by the Region and their partners can be found below.

Employer Individualized Marketing Campaign

The Employer Individualized Marketing (EIM) Campaign was developed to provide a more tailored approach to the delivery of workplace TDM programs in Peel Region and to increase the number of trips taken by sustainable modes during peak travel periods.

The employer individualized marketing program is the first large-scale program of its kind in Peel and included sites in Mississauga. Utilizing community-based social marketing techniques to change travel behaviour at the workplace, the program's goal was to reduce single-occupancy vehicle travel within the Region of Peel. Whether

car-pooling, taking transit or using active transportation, the program's aim was to find the right solution for each individual commuter.

The program initially focused on three large employers for the first phase: Hatch (a consulting firm), the Greater Toronto Airport Authority (Pearson Airport) and the Region of Peel. The firms were members of Smart Commute, with mature TDM programs supporting workplace travel options. The second phase included small/mid-size employers which were focused primarily within Brampton and Caledon. Each workplace selected was at a different stage in the delivery of TDM programs, which provided greater insight into the effectiveness of an EIM program.

The following conclusions were made based on the program results:

- High familiarity with TDM programs at worksites reinvigorated existing workplace travel programs;
- Commuter profiles and individual travel plans were harder to implement when provided at large outreach events with the larger employers;
- Providing exciting outreach events with the EIM program provided on-site opportunities for employees to take part in the individualized travel planning and commuter assistance programs; and
- EIM was seen to be most effective at worksites where the TDM programs were in the conception stage of implementation (presentation to ACT Canada Sustainable Mobility Summit, November 2012)

The program first assessed an individual's willingness to participate, by segmenting the population into those who are likely to change their behaviour and those who are not (unwilling). There are three stages of the program: (a) the initial survey and participant segmentation; (b) the motivation and information stage, where participants are educated on other options of transportation and given incentives to use these; and (c) the final stage of evaluation where participants are given the original survey to see who their results have changed.

Overall, the program had success and the City should consider working with Smart Commute Mississauga and Pearson Airport Area and the Region to bring EIM to more workplaces.

School Travel Planning

There currently are several school travel planning programs available throughout Ontario. However, there are a few which are more relevant to the City as they are directly supported by the Region of Peel, though changes may occur in the future. Three programs have been selected and are described below.

Stepping It Up

The past 25 years has seen an increasing trend of driving children to school instead of walking, which has led to growing congestion and safety concerns around schools. To address this issue, Metrolinx developed a **pilot project** "Stepping It Up" in partnership

with the Region of Peel and others. Stepping It Up was developed to promote sustainable modes of transportation to school while discussing the importance of active transportation for children through working directly with schools.

The pilot brought to the forefront the need to encourage sustainable travel to and from schools. At the broader level, Metrolinx consultations demonstrated that everyone has an important part to play from provincial ministries and school board to parents and children. The program has continued in various forms with the goal to increase active and sustainable student travel. This type of program is an important component of a larger TDM strategy.

High School Transportation Demand Management (TDM) Pilot Program

The purpose of the High School TDM pilot is to lower the number of vehicles to and from Peel high schools to provide safer streets for students who walk to school, keep students active, and improve air quality. There are four schools across Mississauga that have chosen to participate in the pilot. The program offers education on the importance of active transportation but also gives students the opportunity to provide opinions and comments on the planning process, learn about government processes and have their say in a decision-making process. This results in a more successful program as it is designed for students by students.

Peel Safe and Active Routes to School

The Peel Safe and Active Routes to School is led by Transportation Planning and Health Department (PSARTS) and works to encourage more children to walk to school. The program promotes safe, walkable school routes which has had an impact in the region as the number of students walking to school has increased. Walking will keep children healthier and more active while reducing harm to the environment.

Current School Programs	
Peel School Travel Planning Project (STP)	This program addresses school traffic related issues and promotes walking and cycling to school through walking with the community to develop school travel plans.
School Bicycling Parking Program	A program to provide safe and secure bike racks at schools
Bike to School Week	A week dedicated to bike safety and promotion
Peel Children's Safety Village	A program to educate elementary children on road safety rules to prevent traffic accidents to children aged 1-9. The program offers pedestrian and school safety workshops
Up Coming Events	Mississauga Community Ride PWEYA Amazing Green Race Bike to Work Day Bike to School Week

School travel planning continues to be an important program to the Region and beyond. The City should continue to be involved in this process as changes take place and the delivery of the initiatives evolve.

Smart Commute – Pearson Airport Area and Mississauga

Smart Commute is a program of Metrolinx which offers sustainable travel planning and programs through thirteen individual transportation management associations (TMA) across the Greater Toronto and Hamilton area. There are two Smart Commute associations that serve the City of Mississauga – Smart Commute Pearson Airport Area (SCPPA) and Smart Commute Mississauga (SCM).

Smart Commute Pearson Airport focuses on the employees that work either at or near the airport. Due to the location of the airport there are less active transportation options for commuting, which puts a focus on transit and car-pooling. Smart Commute Mississauga focuses on local businesses within the City of Mississauga, including City of Mississauga staff.

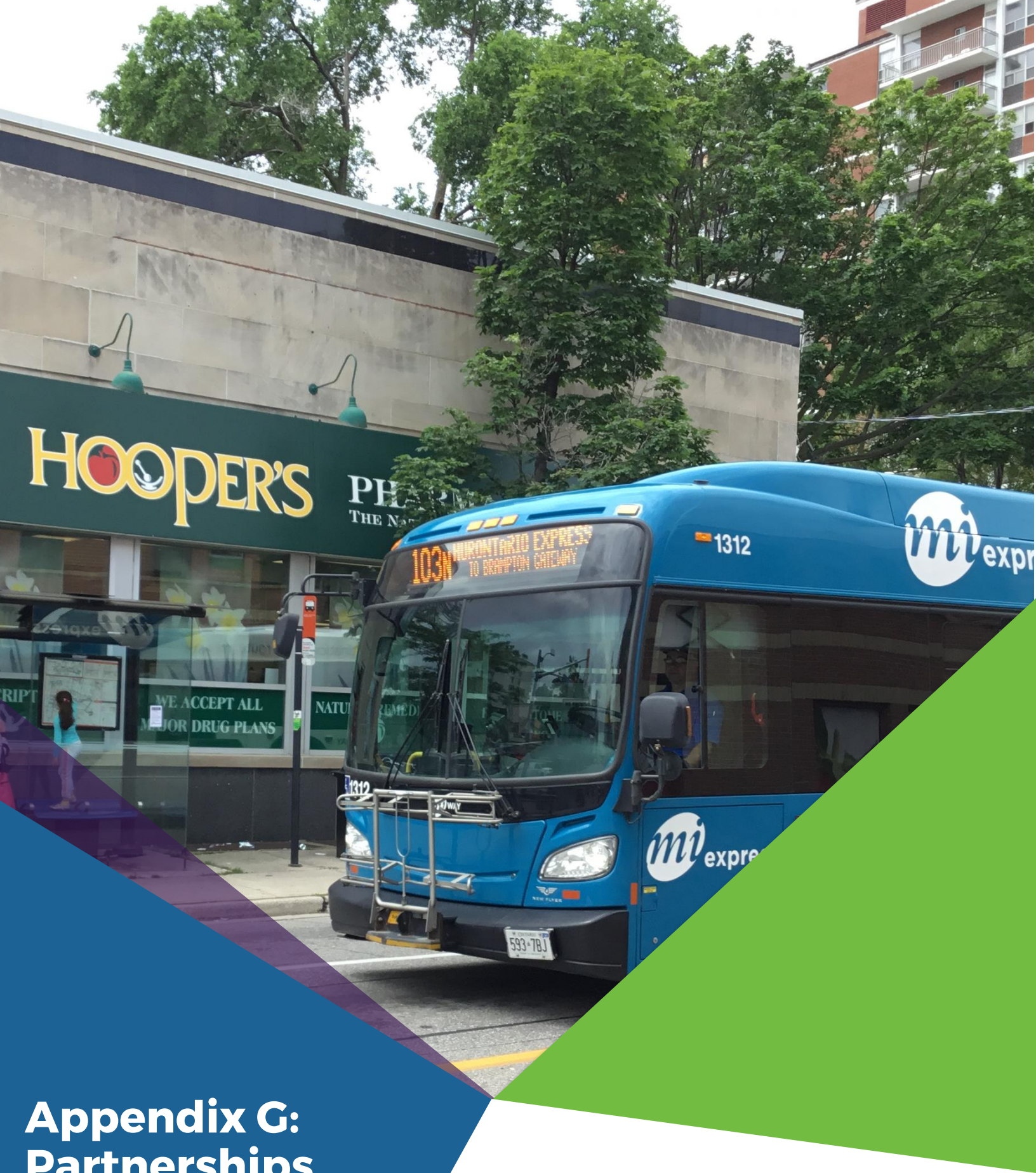
Smart Commute focuses on decreasing the commuters' carbon footprint by encouraging a range of modes of transportation other the single-occupancy vehicles. By creating an action plan for a company Smart Commute provides workshops, seminars etc. and advocates for improved transit services for employees. Different events held may be carpool week, bike to work day, active switch workplace challenges, smart commute week, and smart commute awards.

Development Process

The application of TDM measures through the development approvals process has not yet been implemented in Mississauga, however Peel Region has developed a plan which outlines its approach to including TDM in the development process. For Mississauga, integrating TDM with land use planning policies and regulations along with a collaborative approach to working with developers, will lead to TDM being a routine component of how planning and development occur in the City.

Conclusions

Overall, there is a relatively strong foundation for the development of a strong and implementable TDM Plan in Mississauga. The City has been involved in a number of projects at the Regional and Provincial levels which has given them the opportunity to participate in the development and delivery of programs primarily focused on workplaces and schools. This plan will allow the City to expand their focus to include visitors and residential communities. The remainder of the strategy will focus on the programs, delivery options, timelines and monitoring of TDM in the City.



Appendix G: Partnerships & Programs

AUGUST 2017

MISSISSAUGA

Opportunities for Implementing TDM in Mississauga

The City of Mississauga has ambition which is indicated in the policies outlined in Moving Mississauga, the City's interim transportation plan. The principles listed in the Moving Mississauga plan provide the outline for the opportunities discussed in this section.

To date, there has been limited implementation of TDM measures. The City has been a partner with Smart Commute since its inception and has recently looked at how to incorporate TDM into major infrastructure projects, but little else is available. Therefore the following will provide an outline of the areas that programs have been initiated and then will follow up with the opportunities for the City on how they can move forward.

The chapter provides a review of the workplace, household and school programs that are currently available and how further opportunities can be leveraged.

The Role of City Staff and Partners in TDM Delivery

The following table summarizes the current roles of various City groups and external organizations in delivering TDM programs in Mississauga. As it shows, the City has been involved in some programs, but the overall implementation of TDM program delivery has been limited, with major roles in the delivery of some programs left to external organizations such as the Region of Peel, Smart Commute and school boards.

Stakeholder	Current Role in TDM Delivery ● Major • Minor — None/negligible		
	Workplace programs	Household programs	School programs
City of Mississauga			
Transportation and Infrastructure Planning	•	•	•
Active Transportation	•	•	•
Development and Design	•	—	—
Traffic Operations	—	—	•
Traffic Safety Council	—	—	•
MiWay	•	•	•
External organizations			
Region of Peel - Planning	•	•	●
Region of Peel – Public Health	•	•	•
Local Smart Commutes	●	•	—
Metrolinx/GO Transit	•	—	•
Employers/Property Managers	●	—	—
Schools/School Boards	—	—	●

There is potential for the City of take a leadership role in some of the programs and a more active role in others. The City has been proactive in developing a plan for traffic control and communications during the construction of the Hurontario Light Rapid Transit (LRT) line and has included a TDM strategy to assist in the mitigation of the impacts that the construction will have on travel in the area and along Hurontario.

The strategy sets out a program to incorporate TDM measures into the LRT project through informing residents and employees about the options available to them during the construction period. It is anticipated that the plan will help to alleviate the impacts of the construction through encouraging the reduction in the number of trips taken along the corridor and ensure that consistent communications about the project and the opportunities to shift travel modes, times and routes are provided to the public throughout the project. This is a prime opportunity for the City to take on a leadership role and provide assistance to the public and aim to shift travel choices for the duration of the construction and beyond.

City staff also have the opportunity to increase their level of collaboration with the Region of Peel, Metrolinx, school boards and the local Smart Commute associations and become more active in the promotion and delivery of programs that will benefit the core user groups these partners represent and work with. The City can provide support to the further development of school programs through collaboration with working groups and individual schools. This will allow for schools to receive support on how to shift school travel to active and sustainable modes and reduce the traffic volumes around schools during the morning and afternoon peak school traffic times.

Another area where the City could be a leader is the delivery of TDM programs to households through the use of community-based social marketing individual travel planning programs. The Region of Peel could be partners with the City to deliver a comprehensive pilot program similar to the MyTrip program in York Region to new and existing communities in Mississauga. For example, an individualized travel planning program could be developed and implemented to coincide with the opening of the Hurontario LRT.

Workplace Programs

Smart Commute

Smart Commute organizations are the lead actors in engaging employers in Mississauga and supporting their development of TDM programs. Those organizations are guided, in large part, by Metrolinx and their related service agreements with Smart Commute. With this in mind, the City of Mississauga is a secondary player in workplace TDM programs, and lacks the resources to conduct intensive employer outreach—its efforts are likely best-placed in helping the Smart Commute organizations to do their job more effectively.

For these reasons, the key questions to identify future opportunities are:

- *Scale of workplace programs* — How can Mississauga help Smart Commute organizations attract more member employers, and larger member employers (i.e. to increase the number of commuters impacted)?
- *Effectiveness of workplace programs* — How can Mississauga expand the range and quality of services provided by Smart Commute organizations to their members (i.e. to make those services more effective)?
- *Mississauga as a leader* – How can Mississauga use the role to become a leader in the delivery of workplace programs (i.e. to use their workplace program as an example for other employers)?

Scale of workplace programs

City staff, senior managers and Councillors could promote Smart Commute membership as a key part of doing business in Mississauga, and as an effective part of corporate endeavours related to sustainability, social responsibility, health and safety, employee attraction and retention, and productivity and competitiveness. Possible internal organizational partners include the Economic Development Office, Planning and Building, Environment Division, and MiWay. Their representatives should be "Smart Commute ambassadors" familiar with Smart Commute services, and be able to raise awareness of and interest in Smart Commute when speaking with local employers.

Effectiveness of workplace programs

Many key Smart Commute services (e.g. online trip planning, ridematching, Emergency Ride Home, surveys) are centrally planned and delivered, leaving little opportunity for Mississauga to support improvements. However, there are other opportunities to boost the impact of Smart Commute services in Mississauga:

- *Transit* — MiWay could increase its presence at Smart Commute events, customize informational materials to promote transit use at specific workplaces, and consider ways to provide financial incentives for commuters wishing to try MiWay services. MiWay has created programs such as Discover your Station, where free rides were given to customers to new stations and through new routes to show users where they can now go to.
- *Active transportation* — The City could increase its presence at workplace events to promote walking and cycling, and could provide guidance or financial assistance for employers seeking to improve end-of-trip facilities (e.g. bicycle parking).
- *Carpooling* — The City could provide priority carpool signs for employers to install at workplace parking facilities, many employers have already implemented this at their place of work.
- *Telework* — City staff could monitor the Region of Peel's pending telework development project, and support the dissemination and use of any tools the result.

Mississauga as a Leader

Leading the delivery of a workplace program can position the City in a mentorship role for which they can not only show the programs that they offer outside of the Smart Commute program but also indicate their success taking part in Smart Commute. This can provide the city with legitimacy when working with the staff at both Smart Commute associations to encourage more employers to take part in the work place programs.

It is recommended that City staff discuss these or other opportunities with Smart Commute representatives, to investigate their actual need and likely benefits.

Employer Individualized Marketing Campaigns

In 2010 and 2011, the Region of Peel undertook a pilot test of employer individualized marketing (EIM) campaigns in Mississauga, Brampton and Caledon. Phase 1 involved three large employers (Greater Toronto Authority, Hatch and Region of Peel; each had more than 1,000 workers and mature TDM programs), while Phase 2 involved three small/medium employers (Mars, Nestle and Caledon). The project involved survey, segmentation, motivation, information and evaluation stages.

The project found that EIM was an effective program in shifting individual travel behaviours away from SOV commuting, but that its impacts were greater at small/medium workplaces and at workplaces in the earlier stages of TDM program development. The project leaders recommended that EIM could be used by Smart Commutes as a fee-for-service program (most effectively in the early stages of engagement with an employer), and that EIM could also be used in areas or at workplaces where Smart Commute services are not available (i.e. as a stand-alone campaign, or as part of an employer's internally-led TDM initiative).

Smart Commute organizations remain the appropriate service agencies to deliver EIM in Mississauga, to the extent they are willing and able to play that role. Therefore, future opportunities for the City of Mississauga (through a partnership with Peel) could include:

- At Smart Commute member employers, supporting the delivery of EIM campaigns by Smart Commutes by providing financial support (i.e. subsidy of the fee charged by Smart Commute for the service).
- At non-member employers, partnering directly with workplaces to plan and deliver EIM projects (with or without financial support).

Household Programs

Individualized Marketing for Households

The goal of individualized marketing (IM) for households is to help residents understand and try new ways of getting around. York Region's recent MyTrip program targeted residents of newly built (greenfield) neighbourhoods. In Mississauga, the absence of greenfield developments means that a similar program would have to focus on large infill/redevelopment projects and/or existing neighbourhoods. A

number of North American household TDM programs have concentrated on existing neighbourhoods close to new transit or active transportation infrastructure, to build awareness of those improved travel options and to encourage residents to give them a try; using IM techniques around infrastructure such as the Hurontario LRT (scheduled to open in 2022) would be a good opportunity to test their effectiveness and build capacity and include in the TDM strategy that has already been developed. Another opportunity would be to test IM tools in large condominium or rental developments in transit-friendly areas (e.g. downtown).

Incentives

Incentives for the household program are used in the same manor as the Employee Program. Incentives are used to encourage those participating to fill out the original survey, and are used throughout the program to encourager participants to attend events and activities. The original kit bag is considered an incentive to get the participant involved in the program. They often hold maps of trails, transit routes and stations, places to bikes and the best places for maintenance. Other incentives can that can be used throughout the program are:

- Gift cards
- Pedometers
- Program branded items
- Reusable bags
- “Weekly” draw

It is important to ensure that the incentives to complete the last survey are still significant enough to actually get the participant to complete it. Often a participant will complete original survey and complete program, but may not fill in the ending survey, which results in skewed data.

Outreach

Community outreach is very important in marketing of the program along with encouraging and those who have already joined to continue participating. Outreach programs can include promoting new or improved trails or recreational destinations, transit oriented programs such as MiWays’s Discover your station, which introduced passengers to new stations after construction.

Outreach in the community can also be school oriented. This may include having outreach programs at schools to educate and encourage students to use more sustainable modes of transportation. This can encourage parents to allow their children to walk or bike to school. Education children on road safety and providing them with the right information can not only decrease trips near schools, but these children are more likely to keep these habits after graduating.

Simple outreach programs such as Bike to Work Day and Bike to School day can encourage those who have the ability to but usually choose not to, try out the mode for the day. These programs can introduce new users to others who have been using alternative modes of transportation and can show how easy and efficient biking is as a mode of transportation.

Outreach programs are vital to the success of a TDM delivery as they are what encourage the behavioral change within neighborhoods. Without a change in behaviour, when provided with the knowledge and infrastructure it is likely that people will still choose to use single-occupancy vehicles over more sustainable modes of transportation.

School Programs

Programs designed to promote active transportation for school travel are led by the Region of Peel (see http://www.walkandrollpeel.ca/projects/schools.htm). They include:

- Peel School Travel Planning (STP) Project, led by Peel Public Health
- School Bicycle Parking Program
- Bike to School Week
- Peel Children's Safety Village
- Peel Safe and Active Routes to School (SARTS) Committee, on which the City of Mississauga is represented

Various tools and resources are also available to schools, including handbooks, videos and toolkits.

Due to the established nature of school programs, the key questions to identify future opportunities for the City of Mississauga are:

- *Scale of school programs*—How can Mississauga help increase the number of schools implementing TDM programs, in order to increase the number of students and families impacted?
- *Effectiveness of school programs*—How can Mississauga help expand the range and quality of tools and services provided to schools, to make them more effective?

Scale of school programs

The SARTS Committee plays a large part in the regional coordination of school scale programs, however the City still plays a role in encouraging the use of TDM in schools. The City organizes crossing guards for safer road crossings near schools and implements the school safety patroller program, where Foot Patrollers prevent students from stepping on to the road when unsafe and educating them on road safety. The City also supports National Walk to School Day as an important part to encouraging more children to choose to walk to school instead of being driven.

Effectiveness of school programs

Opportunities for the City of Mississauga to boost the impact of school TDM services could include:

- *Crossing guards* — The City's Crossing Guard Program provides about 200 guards at 150 locations in Mississauga, serving children from kindergarten through Grade 5 at both public and Catholic schools. Decisions about where

guards are provided are made by the City's Traffic Safety Council, based on established warrants. The City could boost the resources available to this program, in order to expand the number of guarded crossings and encourage children to walk to school.

- *Bike safety and training* – The city could increase bike awareness programs in elementary schools. This includes teaching the rules of the road to children, how to safely cross the road as well as general biking skills and how to take care of their bike.
- *Other traffic safety* — The City's Traffic Safety Council is also the venue for discussions related to traffic operations around schools (e.g. enforcement, creation of Kiss & Ride zones) as well as promotional campaigns and events.
- *Transit* — At secondary schools, MiWay could provide free or discounted rates to students. This would allow them to travel to school by themselves and reduce the amount of parents driving their children to school. It could also get older students used to using the transit system and transition them easier into it once they graduate.

TDM and New Development

Background

Integrating transportation demand management into new developments is vital to changing the habits of those who live there. People are most likely to establish new behaviors during significant life events such as moving to a new location. Thus, this is one of the greatest opportunities a city has to implement new measures.

It is important to develop an approach that integrates TDM into the approval process of new developments. This can ensure that long-term travel behavior change is being addressed while exploring the use of tools needed to fully integrate more sustainable travel options into development applications.

The City of Mississauga is transitioning into an urban built community from a suburban one, which in turn demands that more types of transportation be available within the city. A multi-modal transportation system that will allow for new communities to grow into the mixed-use, walkable community we see in the future will only be achievable with the implementation of more TDM measures.

Requesting TDM measures in development applications can often lead to misconceptions as the same TDM infrastructure will work in some places but not in others. Many cities use the method of a TDM checklist when approving buildings however, it is suggested that Mississauga look into other methods of enforcing these measures. Infrastructure can only be a part of what is considered effective for TDM. Programs and activities that encourage the use of sustainable transportation is just as important to the success of the program as the physical infrastructure. Education, promotion, and incentives are often just as important to increasing the use of TDM measures as having infrastructure available.

Currently, there are existing policies in place for development at all levels of government, however, the current legislation does not give municipalities the power

to incorporate TDM into the development process. There is a need to expand existing legation to cover that of the development approval process for TDM polices. Therefore until such time as the legislation changes, the City will need to rely upon negotiations with the development community to incorporate TDM programs into new developments.

TDM Measures

There are many TDM measures that can be incorporated into the development approvals process. TDM measures can loosely be categorized into two sets of strategies, hard measures (TDM-supportive infrastructure) and soft measures (programs and activities). TDM-supportive infrastructure includes the physical elements of a site that are necessary for sustainable modes of transportation such as end-of route facilities, distance to transit services and multi-use trails and parking to be used.

TDM programs and activities are those which address the behavioral change that is required to implement successful TDM. These measures are usually available to tenants, visitors and employees of the property. There is often an issue with who is responsible for these programs as they occur post-occupancy, and have to be continually monitored after initial construction to determine if implementation is continuing, unlike physical TDM measures. TDM programs are vital to the success of TDM implementation for new developments but they are difficult to require (due to lack of legislative support) and enforce. Soft measures ensure that people understand what programs and infrastructure are available to them and how they can get support and information. This can in turn be used to utilize travel behavioural change.

There are some tools available for municipal staff to request some missing TDM-related infrastructure in new developments. Planning policy, zoning by-laws, subdivision and condominium agreements, design guidelines, site plan agreements, monitoring and enforcing, and funding can provide the opportunity to negotiate the inclusion of TDM measures in developments throughout the City.

To assist in the integration of TDM measures within new developments, the City has developed a set of guidelines to assist both staff and development applicants with navigating the process through negotiations and understanding of the positive impacts TDM can have on these projects.

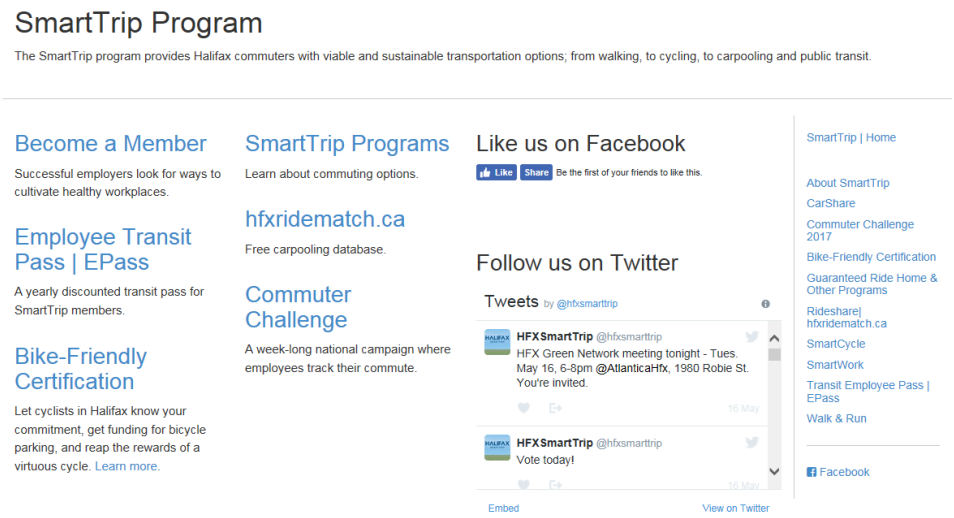
Innovative Programs and Technology

Technology and innovation are impacting every aspect of our lives, including how we find information about travel options. The City of Mississauga needs to be proactive in the delivery of TDM programs which are innovative and technologically relevant. This section outlines some opportunities for the City to consider in the delivery of their TDM programs and desire to encourage long-term travel behaviour change.

Interactive website

The City should create an interactive website with a brand to ensure that the public, businesses and commuters can find information on sustainable travel services, programs and supporting infrastructure through a one-stop portal. This is an opportunity that will enable up-to-date information to be made available to the public on such things as the TDM program for the Hurontario LRT construction, where to register for cycling education programs, how to use a PRESTO card and so on. The portal can also link to other programs and services (such as MiWay and Smart Commute). Halifax Regional Municipality has branded their TDM program as SmartTrip and developed a one-stop portal for information on sustainable transportation options. Below is a snapshot of part of the main webpage showing the links and information available.

To be inclusive and incorporate the needs of workers, residents and school-aged children, the site needs to include information for all. It should be inviting, have links to social media and be updated on a regular basis so not get stale. Most municipal sites that promote sustainable transportation are static while the ones that promote employee engagement programs are dynamic, colourful and have a distinct identity. For the City of Mississauga to have a successful TDM program, a TDM website should contain relevant information in a dynamic and attractive setting.



Mobility as a Service (MaaS)

Mobility as a Service is the idea of moving mobility away from personally owned modes of transportation and moving towards mobility solutions as a service. It is a similar concept to that of Netflix, where paying a flat rate will give you access to all movies on the site. Paying a subscription to a Mobility app will allow you to travel from one area to another using any type of transportation available. The hope is that providing transportation as a service will take away the need to own a personal

vehicle, or at least lower the use as it is more convenient and economically efficient to use a service instead.

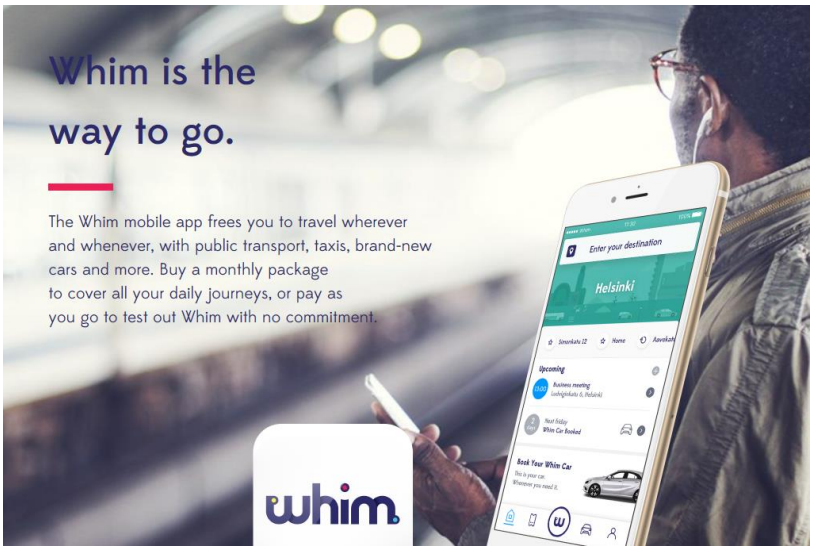
Mobility as a service is becoming more common as less people are using personal vehicles. There are many different technologies that can provide mobility service, the most popular of them being mobile apps. These can provide service in the means of direction your travel, such as Transit Now (TTC) or Uber, which charges for a ride in another's personal vehicle. The invention of mobility as a service has revolutionized the transportation market, allowing more companies to take advantage of the new economy.

While individual apps are continuing to emerge into todays' travel trends, there are some that have been able to combine multiple modes of transportation into the same application. TravelWise, Hamilton's travel app (launched in December 2013) is able to combine all methods of transportation into one easy mobile app. TravelWise covers walking, cycling, carpool, transit, car share, bike share, and taxis trips. The ability for the City to have developed the app instead of allowing a third party to own it allows for the City to have a larger part in TDM through technology. When third parties are involved there are often looking for the highest profit. While the city owns and promotes TravelWise, the goal for the technology is to create easier, more efficient travel within the City, instead of creating a profit in a growing market.

Hamilton

TRAVELwise

Another area that has taken advantage of the increase area of technology in transportation is Southern Finland. The City of Helsinki developed the mobile app, Whim, and launched it in 2015. The app includes all modes of transportation within the city and with a monthly subscription you can use them all at the same cost. Walking, biking, transit, taxis, and carpools are all available through the app which can be purchase though zone and period of time (bi-monthly) or through flex leasing where you pay per use. The goal of Whim is to have a city without personally owned cars by 2025. This is an aggressive approach to reducing the use of single-occupant vehicles but with the increased availability of technology applications like these may become the norm in our society.



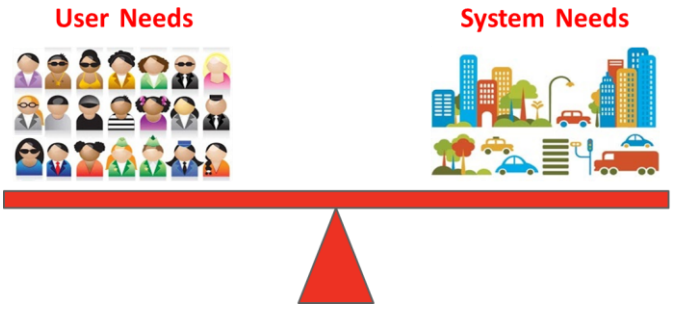
Mississauga could look towards developing a one-stop app to provide its residents with the ability to choose their mode of travel either by providing information or moving toward being a provider of all mobility options through one app. This would need to be considered as part of a medium to long term product as the TDM program will need to be in place before an app could be created.

Mobility Management

Mobility Management is the harnessing of technology and partnerships to create innovative, user-friendly products and services. It is the ability to use these tools to influence user demand and to encourage behaviour change. As transportation issues continue to arise across the globe, our approach to these issues needs to change. A focus on the user, more efficient infrastructure and assets, and the ability to influence behaviours needs to be addressed in order to manage increasing demand.

Mobility management strives to balance the travel needs between the user's needs and the system's needs. It is about balancing and bringing modes together to be able to provide the options that the public are looking for. Encouraging individuals to make economically rational and personally optimal mobility decisions is the focus while helping people select the right mode for their trips. Using service design and personalizing the method for the user a more optimal approach can be created.

Mobility Management is important to demand management as there needs to be less focus on how to accommodate more vehicles physically and more focus on how to change the behaviour of drivers. The focus needs to change to what the user needs and how to achieve that. To do this, the where when and why users drive needs to be considered.



There is a need to work directly with individuals to understand their needs and tailor solutions that will work in each situation. To encourage multi-modal trips, it is important to understand potential barriers to using different types of transportation. Promotional programs can then be created to address specific barriers such as a lack of knowledge of different modes or trails in the area. Other programs could provide incentives for an individual or household to use sustainable modes of transportation. By focusing on the user a balance can be found between the individual and the system, thus creating a more functional system overall.

As technology increase there are more options available to travelers. The hyper-connectivity of cities can allow users to choose other modes of transportation as they see fit, whether it be using apps to see how full parking is and choosing transit instead or using GPS to choose alternative routes to avoid traffic, there is plenty of opportunity for a well-managed system.

Adapting the product delivery model to transportation has a number of benefits. Successful products have been tested, re-invented and monitored for success. It is not assumed that the product will meet all needs, but it does need to meet the needs of the target market. Therefore the manufacturer's need to understand what people want, why they use a product and what needs to be done differently. The same should be true of the delivery of transportation services. Using a service design approach to deliver TDM programs will increase the understanding of the users' needs and enable for improved services and programs which will lead to an increase in the use of sustainable travel modes. As in the product delivery model, pilot programs or focus group sessions are needed to determine if a program will work and changes made to it if there are concerns and shortcoming. Understanding the user and their needs will go a long way to improving the outcomes of transportation initiatives, especially those provided by TDM practitioners.

Using techniques such as:

- Creating personas to help determine travel needs,
- Engaging people in journey mapping to understand what their journey is like and how they would change it;
- Discussing with commuters why they use their current travel mode, and
- "Walking in someone's shoes" as a mystery travel consumer.

Peel Region Transportation Demand Management Social Marketing Program

The Region of Peel is initiating a program in 2017 to deliver a TDM Social Marketing pilot project within one or more selected communities. The intent of the program will be to establish a Mobility Management Tool (MMT) to track trips and mode of travel. This will be complemented by a targeted Social Marketing program that incentivizes and enables behavioural change. Together, these two elements will provide an innovative TDM program which will evolve from a pilot project to a permanent component that will make a quantifiable and demonstrable contribution to the objectives of the existing TDM Plan.

The City of Mississauga should monitor the delivery and evaluation of this program over the next 22 months and if successful, consider including it within the repertoire of programs available to residents, workers and others.

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Appendix H: Action Plan

AUGUST 2017

MISSISSAUGA

Action Plan

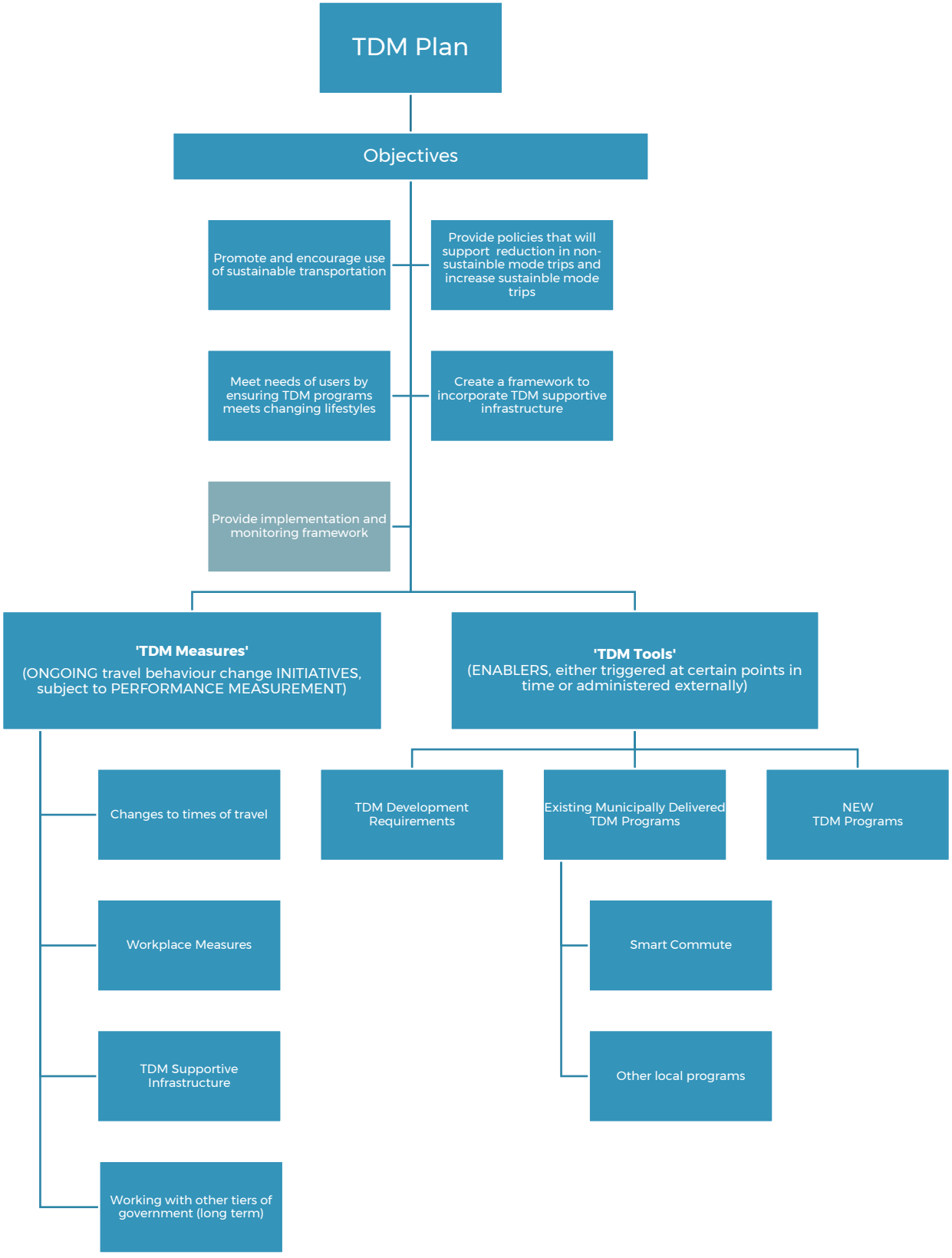
This Action Plan is designed to fulfill one of the key goals of the TDM Plan: '***an implementation and monitoring framework to ensure that changes in travel choice are occurring***'. It fulfills this goal by outlining the steps required to implement the TDM Plan over its life and linking the four objectives of the plan to each of the TDM tools and measures that are recommended for implementation.

A key consideration for the Action Plan is the formation of TDM partnerships that assists with implementation and monitoring. This idea is based on successful examples currently in existence across North America. As number of TDM measures involve third parties (employers, school boards, other tiers of government), there will be a need for the City of Mississauga to forge form strong partnerships across all sectors of the community to ensure the plan's long-term success.

In essence, this Action Plan has four components:

1. ***When*** each of the TDM measures will be implemented (*phasing*)
2. ***Who*** the relevant stakeholders are (*partnerships*)
3. ***What*** the likely necessary resources required to give effect to the measures will be (*financial and budgetary considerations*).
4. ***How*** resources will be evaluated (*performance measurement*)

The following sections outline how these components form part of the Action Plan. The relationship between each of the components and the TDM Plan is illustrated on the next page.


TDM Plan
Objectives
Promote and encourage use of sustainable transportation
Provide policies that will support reduction in non-sustainble mode trips and increase sustainble mode trips
Meet needs of users by ensuring TDM programs meets changing lifestyles
Create a framework to incorporate TDM supportive infrastructure
Provide implementation and monitoring framework
'TDM Measures'
(ONGOING travel behaviour change INITIATIVES, subject to PERFORMANCE MEASUREMENT)
'TDM Tools'
(ENABLERS, either triggered at certain points in time or administered externally)
Changes to times of travel
Workplace Measures
TDM Supportive Infrastructure
Working with other tiers of government (long term)
TDM Development Requirements
Existing Municipally Delivered TDM Programs
NEW TDM Programs
Smart Commute
Other local programs

Definitions

TDM measures are ongoing initiatives that will be subject to regular performance evaluation. Performance evaluation will require the collection of meaningful and representative data to assess their performance over time. They are intended to do the 'heavy lifting' as far as driving long term travel behaviour change is concerned.

TDM tools are supporting actions that are designed to complement and enable the TDM measures identified in the TDM Framework. Tools are designed as standalone activities that are not necessarily time-specific or dependent on the implementation of other TDM measures.

In contrast to the TDM measures that have been designed to target specific travel behaviour change outcomes, TDM tools are instead intended to promote and encourage the overall goals of the plan. TDM tools will be important catalysts for travel behaviour change over time by providing information and resources to assist with travel choices and long-term modal shift, rather than day to day determinants of travel choices.

It will be up to the City to decide whether these tools should be implemented either on a once-off or a reoccurring basis. This Action Plan includes specific recommendations on how to develop a plan to determine their effectiveness separate to the TDM measures.

Currently the City's main promotional vehicle for TDM is SmartCommute, which is in turn administered by SustainMobility. SustainMobility is charged with planning and executing the programs for which it has been given responsibility. There are also a number of other complementary programs that are run and carried out by a range of different organisations, including the TMAs.

This Action Plan has also been designed to assist with the integration of existing TDM programs with the new TDM initiatives proposed here. Currently the City experiences some difficulties in monitoring, benchmarking and enforcing existing TDM programs. The Action Plan is designed to address this by establishing a clear program to assist with tracking and measuring actual travel behaviour change results over time so that the City can evaluate performance and give the community confidence that the TDM Plan is delivering real and tangible results for the community.

Phasing of the tools

The Action Plan includes the phasing of both the measures and tools over a period of seven years (2018-2025).

	Pre-implementation 2017/2018	Short Term/Program Initiation 2018-19	Medium Term 2019-24	Long Term 2025+
TDM Tools	▶ Scope TDM Coordinator future role ▶ Develop a detailed budget request for all TDM initiatives (estimate the ask) ▶ Establish relationships with SmartCommute /TMA and employers	▶ Develop outreach and marketing materials ▶ Establish monitoring measures ▶ Pilot certain low hanging programs ▶ TDM development approvals kit	▶ Lobby province and region for Municipal Act reform ▶ Codify TDM development approvals in City by-laws	
TDM Measures	▶ Establish ongoing employer-based TDM Workplace Initiative with monitoring program	▶ Ridematching ▶ Flexible Work Hours ▶ Telework ▶ Compressed Work Weeks ▶ Emergency Ride Home ▶ Bicycle Parking requirements and design standards* ▶ Pricing Parking	▶ Transit Pass Subsidies ▶ Fleet Motor Vehicles ▶ Showers and Change Rooms ▶ Priority Parking, including carpool priority ▶ Pedestrian Connections and Amenities ▶ On-road active transportation infrastructure ▶ Parking Supply Changes ▶ Parking Restrictions	▶ Road pricing reform ▶ Park and Ride at Transit Stations

Market Segmentation and Stakeholder Analysis and Partnership Development

As noted in the Introduction, the successful implementation of a number of TDM initiative outlined in the introduction is heavily reliant on the idea of strong and well-functioning partnerships. These include a variety of partnerships such as:

1. TDM market segmentation and stakeholder analysis
2. working with organisations already involved in TDM to improve existing programs (development and formalisation of partnerships)
3. improving social marketing to drive behaviour change at a community level by jointly targeting marketing strategies that are designed to reach a range of audiences; and
4. ensuring strong take up of those TDM measures where the ability to drive behaviour change resides with a third party organisation

Fundamentally, the partnerships approach is based on the notion that '*the sum of the whole is greater than its parts*'.

Workplace TDM Programs for employer based initiatives

The Arlington County Commuter Services Bureau (ACCS) (Arlington, VA) funds Arlington Transportation Partners (ATP), which provides '*transit benefit assistance to employers […] tax-free transit, help throughout the implementation process, including program creation as well as policies and open enrollment for employees.*'

ATP administered incentives include:

1. **ATP Champions**: recognition and reward for businesses, residential communities, commercial properties and schools for implementing transportation programs and strategies
2. **Employee Transportation Survey** to establish commuting patterns, modal splits and program recommendations
3. **Customised Services**: newsletters, commuter planners, company-specific resources
4. **Transportation Events for employees, employees and tenants:** seminars, brown-bag lunches and workshops to provide information to employees about commuting options and benefit information.
5. **Transportation Brochures**: an easy online brochure service about all sustainable travel options

The fiscal year 2018 budget for ATP was $2.05 million USD. ACCS total funding was $11.5 million. Funding sources for ACCS includes federal and state short-term grant funding as well as local matches, contributions from Arlington County General Fund, contributions from developers through TDM for Site Plan Development Program, office space reimbursements and fare media sales commissions.

Source: ACCS Transportation Demand Management Plan Fiscal Years 2018-2023

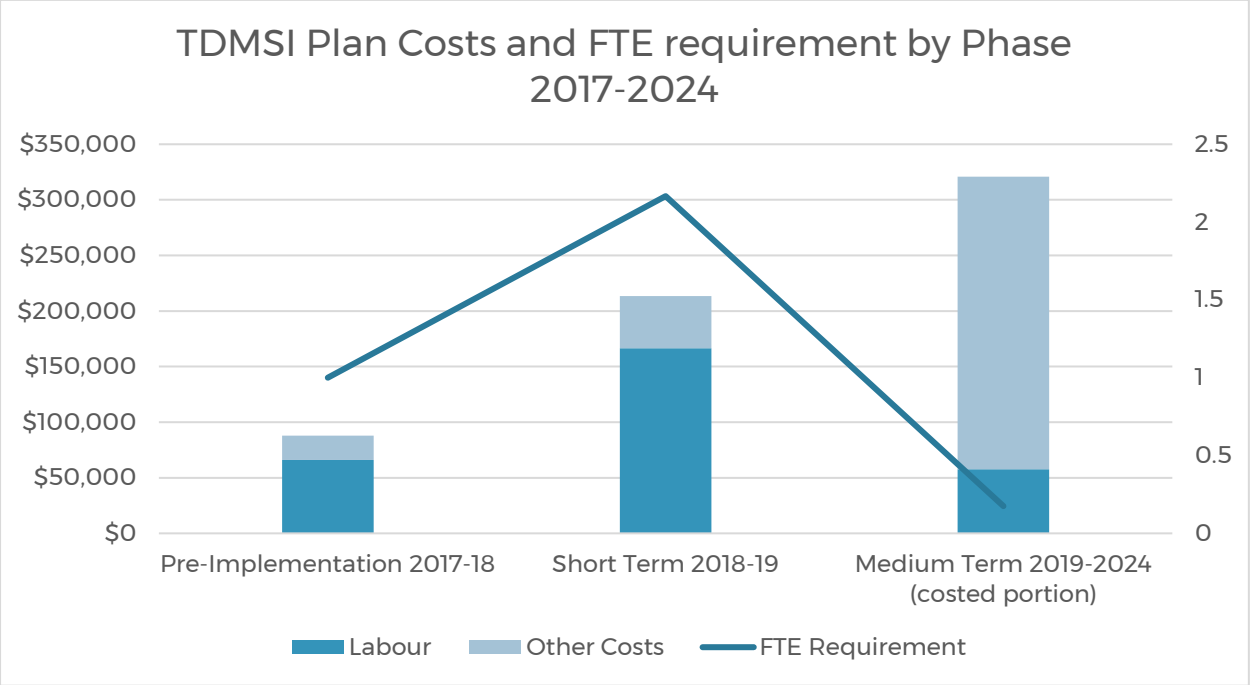
Resourcing: Financial and budgetary implications

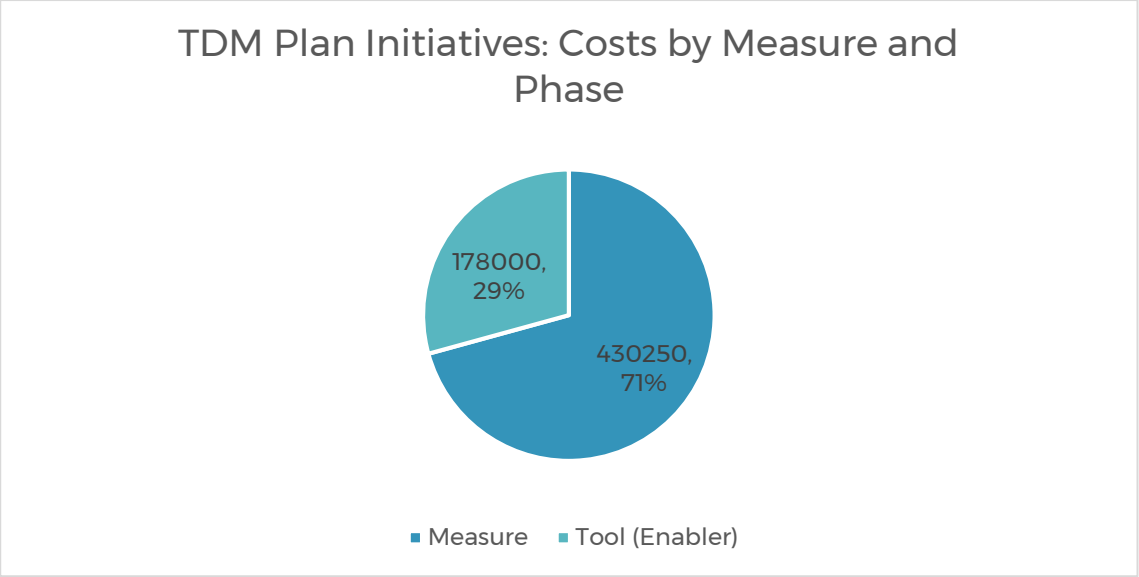
The short, medium and long term financial and budgetary implications of the TDM Plan have been estimated. These have been split into following categories:

- Project Phases
  - Pre-implementation
  - Short term (2018-19)
  - Medium Term (2019-2024), for the portion of the plan that can be costed
- TDM initiatives
  - TDM Tools (enablers)
  - TDM Measures (Subject to Performance Evaluation)
- Costs
  - Labour
  - non-labour costs

Cost estimates are based on a FTE cost of $66,000 (gross labour cost to City, not including benefits), split into FTE time in months.

The costing has been prepared on a July-June year basis.





Pre-implementation costs (2017-18)

Task	Type of TDM Initiative	Cost Inputs	FTE Time in months	Labour ($)	Other costs ($)	Total ($)	NOTES
Scope TDM Coordinator future role and resourcing requirements	Tool (Enabler)	FTE 1 month	1	5,500		5,500	
Develop a detailed budget request for all TDM initiatives (estimate the ask)	Tool (Enabler)	FTE 2 month	2	11,000		11,000	
Establish relationships with SmartCommute /TMA and employers	Tool (Enabler)	FTE 2 month	3	16,500	2,000	18,500	
Establish employer-based TDM Workplace Initiative with monitoring program	Tool (Enabler)	FTE 4 months	6	33,000	20,000	53,000	Includes survey design and monitoring program setup costs
		Sub-total	**12**	**66,000**	**22,000**	**88,000**	
FTE Equivalent Position over 12 months			1.0				

Short term costs (2018-19)

Task	Type of TDM Initiative	Cost Inputs	FTE Time in months	Labour ($)	Other costs ($)	Total ($)	NOTES
Develop outreach and marketing materials	Tool (Enabler)	Marketing materials		-	8,000	8,000	Social marketing and print materials
Establish monitoring measures		FTE 3 months, accompanying surveys and database	3	10,000	4,000	14,000	
Pilot certain low hanging programs	Tool (Enabler)	FTE 4 months, monitoring costs	4	22,000	4,000	26,000	Run pilots in first half of 2018 to establish teething issues and iron out technical problems
TDM development approvals kit	Measure	FTE 3 months, materials	3	16,500	4,000	20,500	
Ridematching	Measure	Assume bulk of costs carried by Region of Peel		-	2,000	2,000	
Flexible Work Hours	Measure	FTE 3 months, materials	3	16,500	2,000	18,500	
Telework	Measure	FTE 2 months, evaluation	2	11,000	2,000	13,000	
Compressed Work Weeks	Measure	FTE 2 months, evaluation	2	11,000	2,000	13,000	
Emergency Ride Home	Tool (Enabler)	FTE 1 month, methodology for incorporate costing into wider program	1	5,500	2,000	7,500	
Bicycle Parking requirements and design standards*	Measure	FTE 3 months, design guidelines	3	16,500	5,000	21,500	
Pricing Parking	Measure	Assume recommendations from Parking Strategy, Administrative Costs for any changes,	1	5,500		5,500	

Task	Type of TDM Initiative	Cost Inputs	FTE Time in months	Labour ($)	Other costs ($)	Total ($)	NOTES
		assume revenue positive					
Parking restrictions	Measure	Assume implementation of recommend-ations from Parking Strategy, Administrat-ive Costs for any changes and posting of any new restrictions	1	5,500	10,000	15,500	
Lobby province and region for Municipal Act reform	Tool (Enabler)	Lobbying fund		30,000		30,000	
Codify TDM development approvals in City by-laws	Tool (Enabler)	FTE 3 months	3	16,500	2,000	18,500	
		Sub-total	26	166,500	47,000	213,500	
FTE Equivalent Position over 12 months			2.17				

Medium term costs, costed portion (2019-24)

Task	Type of TDM Initiative	Cost Inputs	FTE Time in months	Labour ($)	Other costs ($)	Total ($)
Transit Pass Subsidies	Measure	$10 for 4000 Presto cards, FTE 0.5 months liaison with Metrolinx	0.5	2,750	40,000	42,750
Fleet Motor Vehicles	Measure	Fleet management software licence (4 years) and integration, FTE 1 month	1	5,500	20,000	25,500
Showers and Change Rooms	Measure	10 City buildings @ $20,000 each, change development code	6	33,000	200,000	233,000
Priority Parking, including carpool priority	Measure	Identification of City-managed locations, work with private organisations to establish private trials	3	16,500	3,000	19,500
		Sub-total	10.5	57750	263,000	320,750
		FTE Equivalent Position over 5 years	0.18			

Monitoring and Evaluation of TDM Measures

Definition and Purpose

Monitoring of TDM measures is one of the biggest challenges in implementing TDM policies. Monitoring is the overall process of tracking and enforcing the progress TDM programs within a given area, and ensuring that participating organisations and other partners are following through with their commitments. The purpose of monitoring is to readily identify any changes in transportation behaviour and measure progress against set targets over time. Monitoring is therefore a continuous process that requires dedicated resources.

A prerequisite for monitoring is the examination of *ex-post* (historical) travel behaviour. From this point an assessment of performance can be made. Well-resourced programs will go one step further to make careful assessments of *ex-ante* (likely future) performance and take corrective action to adjust TDM programs should performance not be in line with expectations.

Data Collection

Data collection is an essential part of the monitoring process. Data is collected for **Indicators**, which can show a numeric value as to how the program is performing. Data collected may be traffic counts, active transportation (walking and cycling)

counts, parking occupancy on and off street, and transit usage. Original data can be compared to that of a previous time period to show how the program has changed behaviours and managed traffic and other transportation activity in an area over time. An increase in transit usage can often be attributed to an increase in routes and busses running more frequently. A decrease in parking can often be attributed to improvements in alternative modes or change in the parking supply (cost, availability).

Monitoring can help to mitigate anticipated transportation issues in a TDM plan. Data that can be used to show improvements or failures adaptive management plans can be created to develop new policies that may work better in the area. The applicant can propose additional TDM actions that are more likely to achieve the expected results. These can be implemented if mode share results are not meeting targets. The expectation with the development of an in depth monitoring plan is that there will be a level of transparency in while the program is followed through. Yearly updates can show residents the improvement in their neighbourhoods and help back other TDM policies.

Components

To properly establish a monitoring program there are several steps to consider:

- Human Resources
- Data requirements
- Reporting standards and frequency

Employing a TDM coordinator up to six months in advance is a vital step to allow for the development to properly implement TDM before residents more in. The planning of transportation services, such as an area for information an education, whether this be a community info center or online website is vital to allow those in new developments or part of community programs access to information needed. The implementation of TDM infrastructure is also part of this step.

The TDM coordinator should be in charge of monitoring the construction of infrastructure for the site such as bike parking, and changing rooms to ensure that the facilities are ready for residents when the program is set to start. Other steps in creating a monitoring plan are: create timeline for data collection, implementation and goals, create corrective measures for parking management, and consider future physical interventions for the program if targets are not met on time.

Key Performance Indicators

In the TDM context, Key Performance Indicators (KPIs) are defined as quantifiable 'snapshots' of known transportation behaviours and outcomes over time. As its name suggests, performance measurement is a key focus in KPIs and is intended to illustrate 'at a glance' how well the TDM measures are performing against the strategic goals and objectives of the program.

KPIs allow for ready comparisons of data before, during and after programs are implemented. A strong performance framework is vital to the success of a well-functioning evaluation and monitoring program. This allows the City to form a balanced assessment as to whether the TDM program is functioning as intended or if corrective actions need to be made to either to the intended target or to the way performance is being measured. Well calibrated KPIs and targets usually require less revisions than poorly planned KPIs.

A thorough understanding of how TDM is impacting behaviour and how existing programs are performing has been difficult to measure up until now in the absence of well-defined indicators. Both local and external transportation resource pressures and other factors are to likely mean that quantification will become increasingly important: not only give a clearer indication of the sustainability of the existing transportation system, but also to assist with gaining government approvals and access to funding from other non-municipal sources for future investments.

The performance management framework for the Mississauga TDM plan consists of eight steps as follows:

Framework	Application to Mississauga
Define goals of program	Encourage use of sustainable modes Provide support encouragement, education, information necessary to achieve sustained behavioural change Reduce reliance on single occupant vehicle trips
Identify likely target groups	Stakeholder analysis and Market Segmentation targeting: Trips by mode Trips by purpose (work, non-work, other) Trips by location (distance) Trips by time of day Trips by age (specifically for school aged population)
Identify relevant and applicable TDM initiatives (tools and measures)	Refer TDM Framework in TDM Plan for relevant initiatives
Define KPIs	See KPI table below
Determine baseline	
Implement monitoring process	
Collect data	
Evaluate program	

The following tables represent KPIs that have been developed to be consistent with the performance management framework:

	TDM Plan Goals					Target land uses			
Key Performance Indicator	Measurement Frequency	Measurement mechanism	Encourage use of sustainable modes	Provide support, encouragement, education, information	Reduce reliance on single occupant vehicle trips	**Downtown**	**Major Nodes and Community Nodes**	**Corporate Centres and Employment Areas**	**Neighbourhoods**
Increase modal share of peak hour sustainable modes and driver passenger trips to Intensification Areas by 10% by 2026 based on 2011 levels	Biannual	TTS Data Employer surveys	✓		✓	✓	✓		
Reduce number of peak hour auto driver trips ending in Mississauga by 5% by 2026 based on 2011 levels	Biannual	TTS Data Employer surveys	✓		✓	✓	✓	✓	✓
Increase supply of bicycle parking at designated locations*	Annual	City data tracking	✓	✓	✓	✓	✓	✓	
Ensure participation of 100 employers to take part in employer- based TDM initiatives and with incentives based on percentage of participating workforce by 2019	Biannual	Employer based program administered by the City	✓	✓	✓	✓	✓	✓	
Increase participation in school-based travel planning and support programs**	Annual	Regional School Board and Schools monitoring	✓	✓			✓		✓

* Target supply to be determined in Bicycle Master Plan

** Performance Benchmark to be determined in consultation with Regional School Board

Recommendations

The following Action Plan recommendations will assist in the implementation and long-term success for the TDM program. A table is provided at the end which indicates policy recommendations that should be included in future updates to the Official Plan and the Transportation and Transit Master Plans.

1. The City of Mississauga shall hire a staff member whose role will be to lead the TDM program for the City of Mississauga and work with Smart Commute Mississauga and Pearson, and other stakeholders.
2. The City of Mississauga shall work with the Region of Peel TDM staff to provide assistance in the development of engagement techniques, develop partnerships and coordinate TDM programs and policies.
3. The City of Mississauga shall continue to work with Smart Commute Mississauga Pearson to promote TDM internally and be a partner in the development of other TDM programs such as marketing for ridematching services and the emergency ride home program.
4. The City shall, as part of the development process, ensure that information is provided to communities where sustainable transportation services and infrastructure are being implemented.
5. The City should partner with Smart Commute Mississauga to undertake residential travel planning programs and develop a funding source.
6. Work with post-secondary institutions to develop campus-based TDM programs.
7. Develop a partnership with Peel Public Health to further explore the health development index and further integrate transportation and public health policies and programs.
8. A more detailed ACTION Plan will need to be developed to ensure that there is sufficient support and funding for the duration of the TDM Strategy. The key component to the ACTION plan will be the hiring of a TDM Coordinator and situating the position within the Transportation Planning team. Champions from senior staff will also be needed to provide continuity of support and be a voice for the program.
9. That TDM policies related to the development and implementation of TDM be incorporated into the Transportation Master Plan, the Official Plan and all Secondary Plans. The policies should include developing a comprehensive TDM Plan and TDM Action Plan; creating TDM-based development guidelines for development applications including site plans and checklists and guidelines for traffic impact assessment reports.
10. The City shall revise parking requirements that support TDM programs. This will require a detailed parking requirements study to be developed.
11. As this program matures, Mississauga should further expand both parking management and TDM programs that target workplace and residential parking demand. Both will need to be adaptable to new initiatives and population and employment growth