TRANSPORTATION DEMAND MANAGEMENT BACKGROUND PAPER

FULL REPORT

Technical Paper 10 to support the ***Discussion Paper*** *for the Next Regional Transportation Plan*

steer davies gleave

METROLINX
An agency of the Government of Ontario

September 2015

steer davies gleave

Regional Transportation Plan Review: Transport Demand Management Background Paper

Report
September 2015

Metrolinx

Our ref: 22780003
Client ref:

steer davies gleave

Regional Transportation Plan Review:
Transport Demand Management Background Paper

Report
September 2015

Metrolinx

Our ref: 22780003
Client ref:

Prepared by:

Steer Davies Gleave
1500-330 Bay St
Toronto, ON, M5H 2S8
Canada

+1 (647) 260 4861
na.steerdaviesgleave.com

Prepared for:

Metrolinx
97 Front Street West,
Toronto, ON M5J 1E6

Steer Davies Gleave has prepared this material for Metrolinx. This material may only be used within the context and scope for which Steer Davies Gleave has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer Davies Gleave shall be deemed to confirm their agreement to indemnify Steer Davies Gleave for all loss or damage resulting therefrom. Steer Davies Gleave has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

Contents

Executive Summary i

Background i

What is TDM? i

Developing New TDM Strategies iii

Regional Programming iv

Municipal Programming iv

Local Programming iv

Challenges and Opportunities for Improved TDM v

A Broader Context on TDM vii

Next Steps vii

1 Managing Transportation Demand in the GTHA 8

Introduction 8

Transportation Demand Management – A Primer 9

Transportation in the Greater Toronto and Hamilton Area 13

2 TDM's Contribution to the Regional Transportation Plan 30

Overview 30

Implementing TDM within the Big Move 30

TDM and the 2015 Regional Transportation Plan Update: Goals and Objectives 33

Monitoring Progress Towards TDM Goals 37

Strategy and Scale of TDM Programming in the GTHA 43

3 State of Transportation Demand Management in the GTHA 45

Overview 45

Scales of TDM Programming 45

A Review of TDM Programming 45

Regional TDM Programming 46

Municipal TDM Programming 49

Local TDM 54

Challenges and Opportunities for TDM in the GTHA 57

4 Transportation Demand Management: A Broader Context 64

Practice Review Overview 64

London, UK 66

Portland Metropolitan Area: Regional Travel Options Program 73

San Diego Association of Governments, California– Regional TDM Program/iCommute . 81

United Kingdom Sustainable Travel Towns..... 88

Tokyo 94

Figures

Figure 1.1: TDM Measures and the interactions between them 10

Figure 1.2: Dual Pathway Model of Decision Making..... 11

Figure 1.3: Four Drivers Framework..... 13

Figure 1.4: GTHA TDM Context 14

Figure 1.5: Land Use Typology 15

Figure 1.6: GTHA Population and Employment Growth 17

Figure 1.7: Mode split for local trips (24-hr) 22

Figure 1.8: Mode split for trips to City of Toronto (24-hr)..... 22

Figure 1.9: Mode split for all trips in the GTHA (24-hr)..... 23

Figure 1.10: GTHA employment by industry sector and municipality..... 28

Figure 2.1: Six Strategic Mechanisms for TDM in the GTHA..... 44

Figure 3.1: TDM Programming Categorization in the GTHA..... 46

Tables

Table 1.1: Relevance of TDM for RTP OAPP Principles..... 12

Table 1.2: GTHA Land Use Patterns 16

Table 1.3: Land Use and Trip Making Behaviour 18

Table 1.4: Land Use Pattern TDM Strategies 19

Table 1.5: Transit Typology 20

Table 1.6: Mode Split in the GTHA (24-hr)..... 22

Table 1.7: Transport Network Service Type TDM Considerations 23

Table 1.8: Time Scales for TDM Programs 24

Table 1.9: Travel Types and TDM Considerations 25

Table 1.10: Governance Structure for GTHA Transportation 26

Table 1.11: Tiers of Governance and TDM 27

Table 2.1: Status of TDM in GTHA Official Plans 31

Table 2.2: Big Move TDM Analysis 32

Table 2.3: TDM and RTP Goals 33

Table 2.4: TDM Performance Measurement Categories 39

Table 2.5: Monitoring and Evaluation Overview 40

Table 2.6: Monitoring and Evaluation Data Collection 40

Table 2.7: Alignment of Big Move KPIs with TDM 41

Table 3.1: Regional TDM Review 48

Table 3.2: Innovative TDM Programming in the GTHA 49

Table 3.3: Regional and Municipal TDM Review 50

Table 3.4: Local TDM Program Review 54

Table 3.5: Regional TDM Programming Summary 62

Table 3.6: Overarching TDM Challenges and Opportunities 63

Table 4.1: Case Study Context 65

Table 4.2: London TDM program Review 71

Table 4.3: Additional London TDM Strategies ... 72

Table 4.4: Portland TDM Strategic Review 78

Table 4.5: Additional Portland TDM Strategies . 79

Table 4.6: San Diego TDM Program Review 87

Table 4.7: Sustainable Travel Towns TDM Program Summary 93

Table 4.8: Tokyo Government Structure 96

Table 4.9: Tokyo TDM Strategies 99

Table 4.10: Region of York Official Plan Alignment with Strategic Mechanisms 121

Table 4.11: East Gwilimbury Official Plan Alignment with Strategic Mechanisms 127

Appendices

A Metropolitan Programming

B Municipal Programming

Executive Summary

Background

The Greater Toronto and Hamilton Area (GTHA) is undergoing rapid growth and development. Population and employment are both increasing, with rapid growth forecasted from 2015-2041.In order to accommodate this growth, the region's transportation network must evolve. Metrolinx launched the 2015 regional transportation plan (RTP) review to ensure that the region's transport network is read to support the development of an economically and culturally vibrant region.

This paper is one of a series of working papers that discusses critical topics for reviewing the previous RTP, 2008's the Big Move, and developing a new plan. The focus of this paper is 'Transportation Demand Management' or TDM.

What is TDM?

Transport – or travel – demand management (TDM) seeks to apply behaviour change tools and incentives to align transport demand with supply. It can be defined as:

> The application of behavioural tools to optimize the transport network by changing demand for travel based on time, mode, service, and destination.

In essence, TDM seeks to support new infrastructure while reducing stresses on the transportation network. Key considerations for TDM include:

- Shifting demand for specific times of travel (e.g. peak period)
- Shifting demand from one mode to another (e.g. use of private automobile shifting to car pool or transit use)
- Shifting demands to specific services (e.g. encouraging use of underutilized transit)
- Shifting demand for travel to and from specific locations (e.g. encouraging alternatives to downtown travel, encouraging telecommuting)

Historically, it has been assumed that the transport network will be used based on available infrastructure and services. For example, interventions such as building new infrastructure or implementing a new service were thought to automatically attract new users. In most cases, the network itself will not manage demand. Users may not be aware of existing services, and they may not understand how to best use a new service. TDM is focused on shifting demand to ensure optimal use of the transport network.

TDM's Role in the Big Move

2008's 'the Big Move' set out TDM as a key focus for achieving regional transport goals. The Big Move outlined ten strategies that employ a variety of measures and approaches to reach the overarching goals of the plan. While TDM can play a role in delivering all ten strategies, Strategy #4 specifically called for the creation of a TDM Program.

STRATEGY #4: CREATE AN AMBITIOUS TRANSPORTATION DEMAND MANAGEMENT (TDM) PROGRAM

This strategy was defined by five priority actions (4.1-4.5) and one supporting policy (4.6), which were assessed to determine progress made to date. Progress against each policy and action was assessed:

Priority Action/Supporting Policy	Progress Made
4.1 Develop a Transportation Demand Management (TDM) policy and strategy for provincial ministries and agencies such as school boards, hospitals and universities that include actions, timelines and targets.	No overarching policy has been drafted. Smart Commute supports TDM programming in public institutions. Some school boards have developed a TDM policy.
4.2 Establish guidelines and model policies to help municipalities develop and implement TDM policies in their Official Plans and Transportation Master Plans.	Smart Commute established to provide regional support on TDM programming. A GTHA wide TDM coordinating committee has been set up. Majority of official plans include TDM objectives or policies.
4.3 Encourage private sector employers to implement TDM programs.	Smart Commute works directly with employers to support private sector TDM services. To date, over 300 employers representing over 700,000 employees are participating in Smart Commute.
4.4 Encourage employers who currently offer their employees free or subsidized parking a choice between the parking or a cash equivalent that can be used for other means of transportation.	Supported by Smart Commute. Extent of implementation varies across GTHA.
4.5 Incorporate objectives and goals related to TDM as part of any revenue or financial tools that are recommended as part of the Metrolinx Investment Strategy.	Metrolinx Investment Strategy included revenue tools in line with TDM principles: • Parking levies • High occupancy toll lanes • Mode specific feeds (gas tax)
4.6 Official Plans shall require a TDM strategy as part of planning applications for any major commercial, employment or institutional development.	Policies related to TDM Strategies in the planning process are included in most municipal and regional municipality official plans.

While no goal has been completely achieved, significant progress has been made in laying a foundation for TDM in the region, in particular due to the adoption of TDM within several municipalities as well as the continued growth of the Smart Commute program. All goals are recommended for further consideration within the RTP review, in particular:

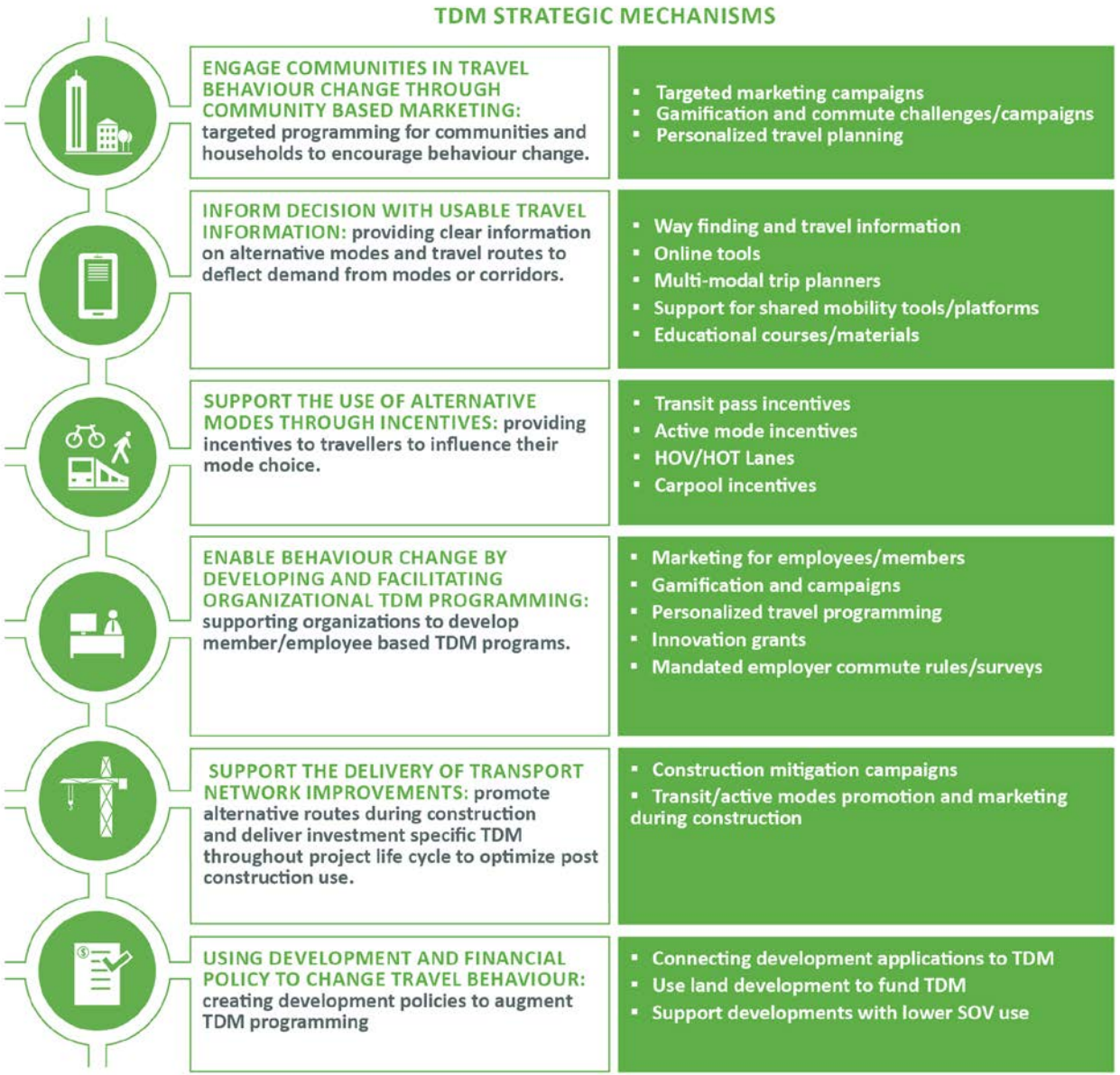
- 4.1 encourage further enrollment of government offices in Smart Commute programs and use these offices as candidates for piloting new programming
- 4.2 retain this priority and focus on the development of a TDM toolkit and clarified roles and responsibilities for different institutions in providing TDM programs
- 4.3 retain the priority with an emphasis on expanding Smart Commute
- 4.4 Include as part of 4.3 for an overall TDM employer engagement strategy
- 4.5 focus on using TDM as part of investment in new transit infrastructure and services in order to realize the full benefits of investment
- 4.6 retain the priority as part of 4.2

Developing New TDM Strategies

The RTP review process is exploring 21 revised objectives for regional transport. These objectives both provide direction for how TDM may be structured and may also be achieved by strong TDM programs. A review of these objectives has noted six overall strategies that should be considered when developing TDM.

These TDM strategies may be delivered at three scales: the community or institution level (within an employer or neighborhood, for example), at the municipal level (across an entire city, for example Toronto), or at the regional level (across the whole GTHA).

Each strategic mechanism may be applied differently at each scale to deliver different outcomes. Inasmuch, these six strategies were used to assess and review current TDM programs and policies across all three scales within the GTHA.



Regional Programming

The majority of regional programming in the GTHA is coordinated by Metrolinx's Smart Commute program. Key initiatives within Metrolinx's Smart Commute program include:

- Employer outreach – part-funding each of the 13 local Smart Commute offices
- Community outreach - strategy developed in 2014, early initiatives include broadening of campaigns to build awareness of transportation options, and broadening availability, quality and awareness of all transportation options to GO stations
- School outreach – initiated a comprehensive review and implementation plan with the Ontario MTO and regional and local partners

A review of Smart Commute noted that it has developed strong partnerships with local and municipal programs. Moving forward, Smart Commute has an ambitious mandate to deliver TDM policies, which may be constrained by existing funding and delivery responsibilities. There is further opportunity for Smart Commute to deliver its mandate by aligning programming with large regional investments, including new rapid transit and regional express rail.

Municipal Programming

A key recommendation in the Big Move was the inclusion of TDM strategies as part of key planning policies such as the Official Plan and Transportation Master Plans. A review of all regional and local municipalities in the GTHA has determined that TDM policy has been identified and included in many key policy documents across the GTHA.

TDM programing varies across municipalities; however 18 municipalities have included TDM in their official plans directly, while 6 municipalities have noted programs similar to TDM in their official plans.

At a municipal level, the review indicated that:

- Most of the larger municipal governments have a robust high level policy framework for TDM (OP & TMP)
- While several governments have a development planning TDM regulations, few have detailed processes for requirements, assessment and monitoring
- Most governments have few TDM programs or initiatives (education, encouragement, marketing, etc.) and are instead focused on providing infrastructure for transportation alternatives (e.g. sidewalks, bike network, transit, carpool lots/parking)
- In most cases, governments look to their upper-tier regional partners to provide non-infrastructure TDM programming

Local Programming

The local scale includes employers, schools, and other institutions. As there are numerous community organizations and hundreds of employers actively involved in TDM programming throughout the region, this paper focused on a high level review of the types of TDM strategies local program can support. In general, local TDM programs are able to support 5/6 mechanisms, as noted below.

Strategic Mechanism	Example Programs
(1) Engage communities in travel behaviour change through community based marketing	• Campaigns and events • Site assessments and surveys • Social media campaigns • Resource packs • Email blasts • School and workplace travel planning • Individualised marketing
(2) Inform decisions with usable travel information	• Portals for ride matching / van pooling / car pooling • Individualised marketing • School and workplace travel planning
(3) Support the use of alternative modes through incentives	• Award and designation programs e.g. Smart Commute, EcoSchools • Employer discount on transit passes • Making bikes/cars available through sharing e.g. Car2Go for trips during the work day • Emergency ride home • Availability of teleworking
(4) Enable behaviour change by developing and facilitating organizational TDM programming	• Smart Commute • School Boards
(5) Support the delivery of transport network improvements	• School Bike Rack programs • City of Hamilton Individualised marketing to support Queen Street Hill Road construction
(6) Using development and financial policy to change travel behaviour	• N/A

Challenges and Opportunities for Improved TDM

The program review explored challenges and opportunities from a regional, municipal, and local level. This review included engagement with Smart Commute and each upper and lower tier municipality as well as the thorough review of plans, policies, and strategies.

The program review and analysis noted several key challenges for TDM achieving RTP goals in the GTHA:

- TDM program funding and resourcing
- Coordination and partnerships
- Planning, Evaluation, and Implementation Challenges
- Provision of context specific TDM
-

Some of the key opportunities and challenges that regional and municipal staff provided include:

- Focus on context specific TDM
- Improved Collaboration
- Clarify and expand role of TDM with existing travel tools
- Adapt tools for context specific application
- Frame TDM as an alternative congestion management approach
- Explore the role of financial measures
- Develop project specific TDM for new rapid transit
- Leverage mandates in official plans
- Connect TDM to overarching environmental policies and issues
- Emphasize role of TDM in planning process

From the review of program specific challenges and opportunities, a set of overarching challenges and opportunities has been developed as presented below.

THEME	OVERVIEW	KEY CHALLENGE	KEY OPPORTUNITY
CLARIFICATION OF ROLES OF DIFFERENT AGENCIES/ACTORS	TDM programing throughout the GTHA involves a number of different actors at each scale of programing (metropolitan, regional/municipal, local). This allows for flexible service delivery, but also may contribute to ambiguity regarding the roles of actors.	Currently there is no overarching policy framework or strategy to align and integrate action. This hinders coordination and cohesive action by actors at all three scales (metropolitan, regional/municipal, local).	Develop a stronger delineation of the roles for each agency or actor in TDM at a policy level that builds on the current flexibility, but strengthens TDM through clarity.
STRENGTHENING OF GUIDANCE FOR TDM IMPLEMENTATION	The Big Move called for the inclusion of TDM in official plans. While there has been success towards this, including the development of TDM policy fit for geographic context, there is also an implementation gap for achieving targets and implementing robust TDM programing.	The potential of TDM has been emphasized in official plans, but tools and processes to achieve TDM goals at a regional/municipal level have not been established.	Develop support for TDM program implementation based on the varying contexts (land uses, accessibility to transit, trip types) that expands upon the tools already being created by Smart Commute as well as early leadership and success stories from regional/municipal actors.
INTEGRATION OF TDM INTO THE LIFECYCLE OF MAJOR TRANSPORT INVESTMENTS	The GTHA is undergoing rapid growth and has recently invested in numerous rapid transit and transportation network improvement and expansion projects. These projects can be more fully leveraged by pursuing network optimization across the whole project life cycle (planning, construction, service delivery, maintenance).	Across metropolitan, municipal, and local scales, various actors are implementing transport improvements. There is no overarching and consistent approach to using TDM to ensure projects allow for network optimization.	Develop a set of policies and tools to aid in the delivery of new infrastructure investment as well as the optimization of delivered projects.
EXPANDED TOOLBOX OF TDM MEASURES	Currently TDM programming relies on a select number of TDM approaches across each mechanism. While these measures are creating results, further measures including legislated TDM mechanisms, standardized TDM approaches, new funding models, and new financial instruments may further enhance TDM programming.	Currently, many of the strategic mechanisms to achieve RTP goals are not reaching their potential due to limited powers and TDM tools.	A scalable set of TDM measures that can be adapted across the GTHA's contexts can be created to enhance TDM . These approaches can be expanded by global best practice. Measures may include: • Legislated TDM rules (e.g. employers over 100 must comply with TDM programming) • Grants and performance based funding tools to strengthen role of all TDM actors • Financial tools to encourage mode shift.

A Broader Context on TDM

To support future development of TDM programming and policy 5 case studies were completed: London, Portland, San Diego, UK Sustainable Travel Towns, and Tokyo. A number of key programs and strategies were selected from each case study as being particularly relevant to the GTHA.

London employs a range of well-funded infrastructure and programs to ensure widespread awareness and use of sustainable travel options. London's high alternative mode share can be attributed to the combination of diverse and convenient public transport alternatives. The key TDM initiatives that have influenced travel behaviour in the last decade include:

- Investments in bicycle infrastructure and shared mobility
- TDM in the development approvals process
- Congestion charging in Central London

The majority of Metro's TDM programs are funded under the Regional Travel Options program, which works to improve awareness and use of sustainable travel options in the Portland metropolitan region. This is accomplished through strategic investment in a range of programs and services which promote non-drive alone modes including individualized marketing, employer commuter travel options, partnership grants and traveler information tools. Metro's key best practice initiatives which apply to the GTHA context include:

- Grant programs
- Individualized Marketing
- TMAs

SANDAG's TDM activities are largely guided by the Regional Transportation Plan, with implementation primarily led through the iCommute program. Key best practice initiatives emerging from SANDAG that apply to the context of the GTHA include:

- Their approach to employer outreach;
- The introduction of construction mitigation plans and programs
- Inter-departmental relationships

The Travel Towns program invested provided with several millions dollars of funding into three towns to implement a range of TDM measures. The intent was to saturate the cities with improved transportation services, information, education, and incentives. Across the three towns, there were several consistent approaches that defined the programs and have served as best practice for other initiatives in the UK, including:

- Brand identity for TDM
- Personal Travel Planning
- School Travel Planning

The Tokyo Metropolitan Government has benefited from TDM programming that aims to achieve a number of policy objectives, including environmental, health, equity, and transport network performance. The key TDM programs from Tokyo that were reviewed in this process that offer benefits to the GTHA are:

- Parking management and regulation
- Low Emission Zones
- Employer Transit Subsidies

Next Steps

This paper was developed as an information piece that will support broader strategic work with respect to TDM. A future companion paper will be developed that will propose policies and approaches to support the delivery of successful TDM based on the strategies, challenges, and opportunities identified in this paper.

1 Managing Transportation Demand in the GTHA

Introduction

Background

1.1 The Greater Toronto and Hamilton Area (GTHA) is an economic and cultural centre that is undergoing rapid growth. In order to manage this growth, a regional transportation plan (RTP), the Big Move, was developed in 2008. This ambitious plan outlined key strategies and points of investment for delivering the transport network required to accommodate the GTHA's growth and lay grounds for a prosperous future in the region.

1.2 In 2015, Metrolinx launched the RTP review in order to assess progress made on Big Move goals and objectives, and lay the foundations for an updated RTP. At the heart of this foundation work is the development background papers that discuss critical issues and opportunities in the GTHA based on different components of the transportation network.

1.3 Transportation Demand Management or Travel Demand Management (TDM) was selected as one of these working papers for the RTP review. TDM programming aims to shift demand for travel from automobile modes to transit and active travel. The GTHA is undergoing a period of heavy investment in rapid transit infrastructure, which situates TDM as an essential tool to ensuring investments are fully leveraged and regional sustainable travel goals are met.

Goals and Structure

1.4 This working paper has been set out to support and guide the RTP review process. To do so, it provides:

- A summary of TDM to inform strategic review of TDM programming
- An assessment of the GTHA context and how this influences TDM programming using a 'four drivers' framework
- A review of Big Move and 2015 RTP Review goals and objectives in the context of TDM
- A strategic framework for characterizing and assessing existing and planned TDM initiatives
- A review of existing TDM programs using the strategic framework
- A summary of challenges, opportunities, and management techniques
- A set of global best practices to be applied to the GTHA

1.5 This paper is intended to inform strategy and provide a single source understanding of TDM for future RTP review and development projects.

1.6 The remainder of this section provides an overview of fundamental TDM concepts and an analysis of how the GTHA context influences TDM programming. Section 2 provides a strategic review of TDM, including a review of *The Big Move* and 2015 RTP review goals/objectives. Section 3 reviews existing programing in the GTHA to set out challenges and opportunities for TDM. Section 5 provides a summary of global case studies that offer key insights into developing TDM in the GTHA.

Transportation Demand Management – A Primer

What is TDM?

1.7 Transport – or travel – demand management (TDM) seeks to integrate demand and supply planning to maximize use of the existing and future transport network. Stresses on the transportation network are created by imbalanced demand, including:

- Demand for specific times of travel (e.g. peak period)
- Demands for specific modes (e.g. use of private automobile)
- Demands for specific services (e.g. use of certain routes for public and private transit)
- Demands for specific locations (e.g. travel to the downtown core)

1.8 Often imbalanced demands occur based on time, mode, service, and location. For example, peak period congestion on the road network is largely driven by single-occupancy vehicle (SOV) travel, which in turn is based on the psychological belief that roads and parking have unlimited capacity. By focusing on demand for travel, TDM programming seeks to ensure that the use of transportation services and infrastructure is optimized.

1.9 TDM describes the application of strategies that alter travel demand, usually shifting demand from SOVs to other modes, and can include regulatory, policy, pricing, planning or persuasive initiatives. TDM is manifested in many forms, but its ultimate role is to:

- Shift demand between modes or corridors to achieve more optimal usage of existing infrastructure and reductions in emissions and transport impacts
- Encourage travellers to use a new transportation mode, infrastructure or service once it is implemented
- Incentivize alternative travel times or destinations
- Mitigate the impacts of disruptions such as construction or special events by shifting demand to other modes or corridors

1.10 To effectively manage the transportation network, agencies and operators must think of the network as a single integrated entity. However, thinking about the entire network in unity is incredibly complicated since interdependencies and influences between different infrastructure and services are sometimes difficult to clarify.

1.11 What is clear, is when a particular mode service or corridor has reached its capacity. In such cases, there are two options: 1) increase the supply of infrastructure or services, or 2) reduce demand for the existing infrastructure or services.

1.12 Due to the increasingly costly nature of increasing supply, managing demand within existing infrastructure or service levels is a cost-effective solution. TDM programming provides a tool to reduce demand on existing services and optimize the use of new services and infrastructure. TDM uses a variety of tools and mechanisms to influence trip and mode choice. Figure 1.1 provides an overview of the main tools and their key considerations.

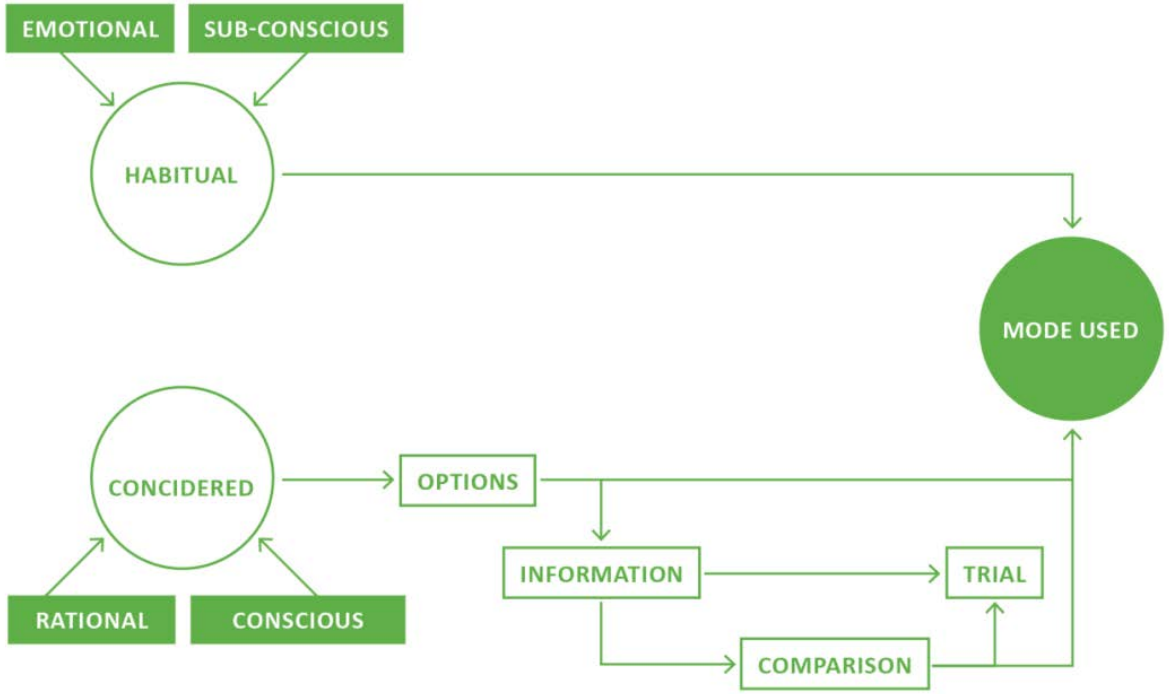
Figure 1.1: TDM Measures and the interactions between them

Effective TDM through Behaviour Change

1.13 Agencies and governments strive to balance the demand for transportation services and infrastructure appropriately but this requires a 'smart traveller': a traveller who is educated to know what modes to use for different trips and the most efficient way to get where they need to go and at a given time.

1.14 In terms of a theoretical background, evidence from the disciplines of Behavioural Economics and Neuroscience, with reference to Low Attention Processing Theory, can be used as a model for decision making, which can under-pin TDM activity. The Dual Pathway Model of Decision-making, provided in Figure 1.2 stresses the importance of Habitual behaviour which is strongly influenced by emotions and with choices largely occurring in our sub-conscious. To influence travel behaviour effectively, the habitual routine must be altered and travellers must be led towards a considered approach to decision-making.

Figure 1.2: Dual Pathway Model of Decision Making



1.15 As part of this model, there is a need to recognize that behavior change is not a rapid process; it is an iterative process of trial, reversion, and repeated use.

1.16 Once the individual has developed a greater awareness about what modes can be used for various trips and the confidence/understanding of how to use each mode, mobility planning and mode choice become simple, intuitive and normalized at the traveller level.

1.17 Behaviour change is a complex process. Historically, it has been assumed that single interventions such as building new infrastructure or implementing a new service will automatically attract new users. In most cases, this doesn't have a major influence. Users may not be aware of existing services, and they may not be used to the characteristics of the new service.

1.18 Information, education, and sometimes incentives are required to influence an individual's decision-making process.

TDM in the RTP Review

1.19 Metrolinx's Overarching Planning Paper (OAPP) provided three key trends in the region including expansion of the regional rail and rapid transit networks, increasing population growth with higher densities in regional centres, and increasing employment growth across the regional with new hubs of activity. These trends reinforce the need for effective planning that incorporates TDM and behaviour change measures in order to increase awareness and use of new transit network investment.

1.20 TDM efforts enable the creation of more smart travellers who are able to successfully live multi-modal lifestyles that provide convenient mobility between their home, work and leisure activities.

1.21 The OAPP pointed to behaviour change and TDM as an explicit opportunity where "[it] should be considered as an integral part of transportation and land use planning to ensure that the benefits of, and from, existing transportation assets are realized and maximized." Many of the other ten OAPP Ideas can also be supported by TDM interventions, including:

- *Thinking Integrated, Thinking Multi-Modal*: integrating infrastructure and services is one thing, but communicating that new network to travellers and enabling them to use it effectively requires information provision, marketing, incentives and tools.
- *A Balanced Multi-Modal Network of Roads, Transit, and Active Travel*: a multi-modal hierarchy can be supported by TDM measures to ultimately support use of prioritized interventions to meet both short and longer-term goals.
- *Prioritize Transit to Create a Complete Network*: prioritized transit requires information, marketing and education about the benefits such prioritization creates, including reliability, convenience, cost, travel time, stress reduction, and health in order to attract more users.
- *The Economic Need for Efficient Goods Movement*: demand management can also be applied to the goods movement network, including preferred routing, timing, and access.
- *Leverage Existing Infrastructure*: a key purpose of TDM is to support opportunities to shift demand from overused transportation infrastructure to places with available capacity in order to reduce stress on the overall network, maximise use of existing resources and reduce the need for new and expensive solutions.

1.22 TDM will be an important tool to support the OAPP Principles. Table 1.1 provides insight into how TDM may be relevant when developing the interventions, projects, strategies and policies that will serve to support the principles.

Table 1.1: Relevance of TDM for RTP OAPP Principles

RTP OAPP Principles	Relevance of TDM
Effective Infrastructure/Services	Marketing integrated fares Informing on the benefits of more convenient services Changing behaviour to be more flexible and adaptable to changing transportation infrastructure and services
Optimized Transport Benefits	Providing information and resources to create smart travelers Providing incentives to make more people choose to use different modes of transportation Shifting demand to increase the effectiveness of key corridors that drive economic development
Strategic Governance and Planning	Ensuring TDM is ingrained in transportation and land use planning policy Using TDM measures to support desired outcomes for transit prioritized corridors Delivering behaviour change in areas where high quality multi-modal transportation is provided
Integrated Regional Land Use and Transport Development	Connecting with people at home, work and in the community to influence travel choice Educating individuals about new mobility-enhanced communities

Transportation in the Greater Toronto and Hamilton Area

Overview

1.23 The GTHA is a growing region and economic and cultural centre. It is composed of multiple municipalities with unique demographics, economies, and therefore transportation needs. As a result, the regional transportation planning process requires analysis that focuses on both the regional picture, as well as the unique contexts of all the communities that compose the GTHA.

1.24 A 'four drivers' framework has been developed to clarify the context of the GTHA based on four factors that *drive* or *influence* transportation. This framework is outlined in Figure 1.3.

1.25 Each driver is a critical consideration for understanding the context of transportation in the GTHA. Each driver is first scoped to outline the GTHA context, and then the context's influence on TDM programming is specified in order to develop foundational concepts to aid in TDM analysis.

1.26 This framework has been applied to the GTHA and is summarized in Figure 1.4 and detailed in the following sections.

Figure 1.3: Four Drivers Framework

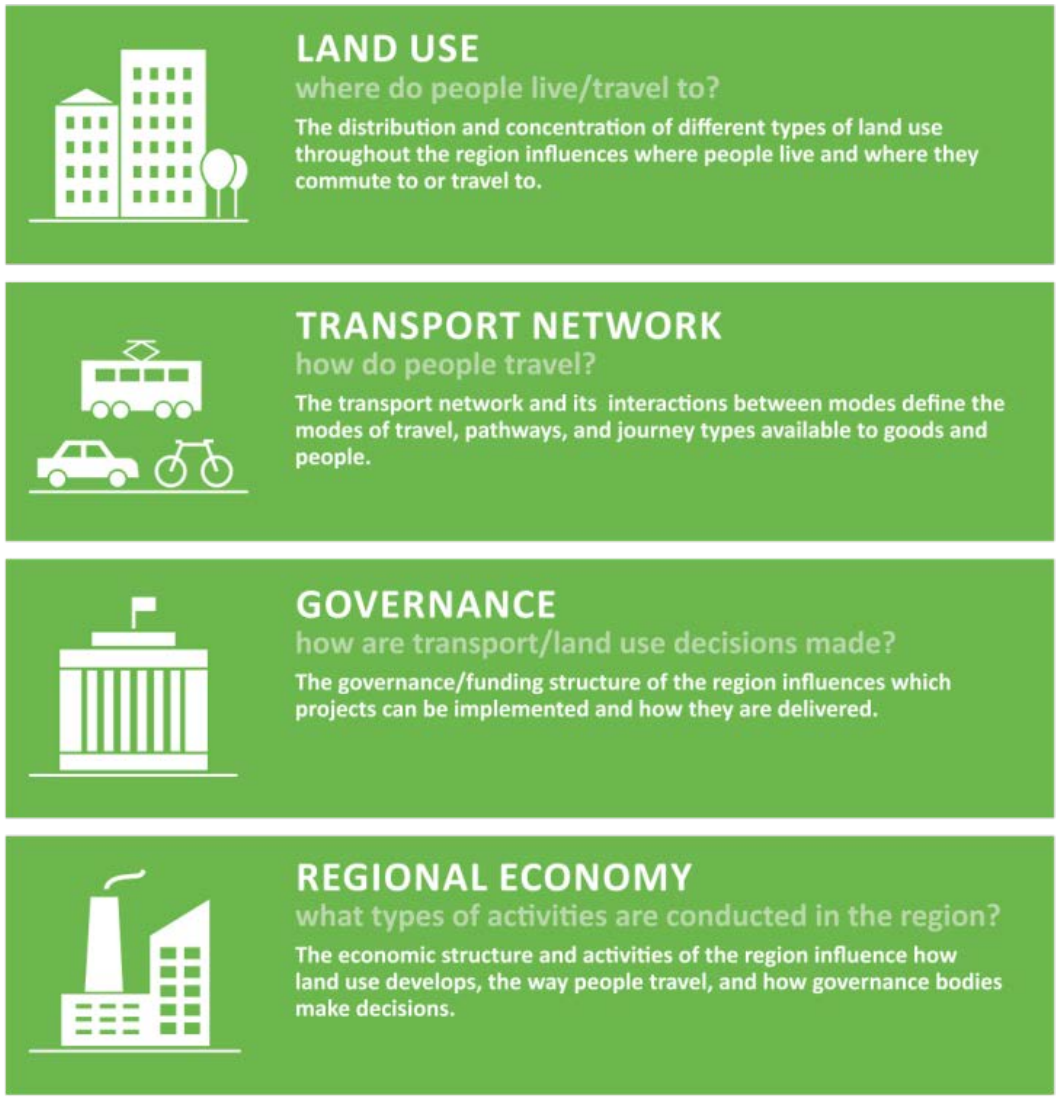
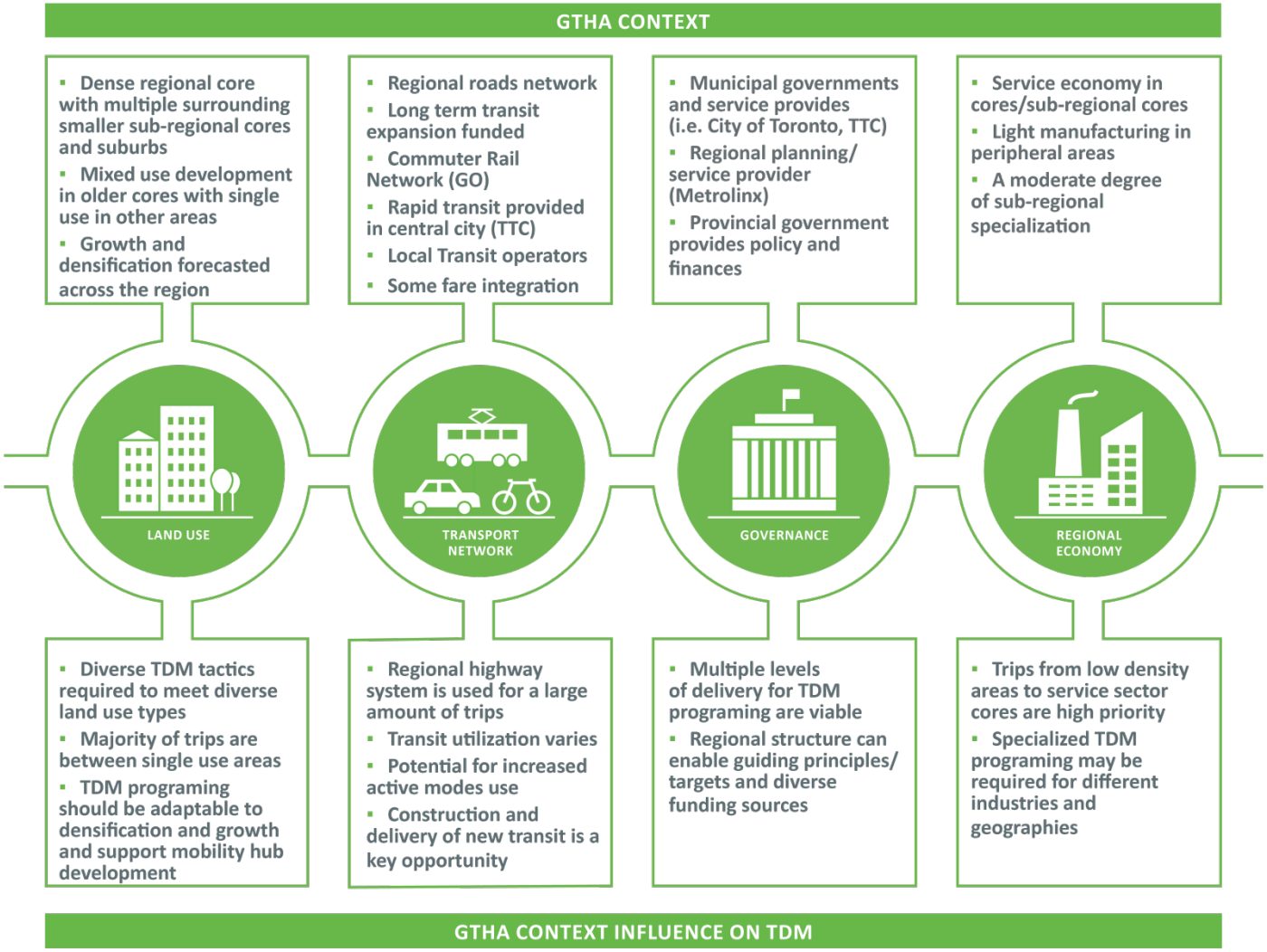


Figure 1.4: GTHA TDM Context



Land Use

Existing Conditions

1.27 The land use context outlines the types of developments in the GTHA. This analysis seeks to set out and discuss the context of urban development throughout the region. The GTHA is composed of two cities (Toronto and Hamilton) and five regional municipalities (Peel, Halton, Durham, and York). The latter are divided into multiple lower-tier municipalities. The lower-tier municipalities typically reflect one historic community. However some are amalgamations of multiple historic communities, as are the two cities.

1.28 The growth of the GTHA's urban area is (or will be) constrained by the Greenbelt. The boundaries of the Greenbelt are such that without significant urban development the municipalities are unlikely to see any significant increase in urbanised area. Most municipalities in the GTHA have significant urban areas, and these are likely to see additional development, both through Greenfield development and additional density in existing communities or infill development. The land use descriptions here focus on those municipalities. These areas generally include one or more of the land uses outlines in Figure 1.5.

Figure 1.5: Land Use Typology

Mixed Use/Urban

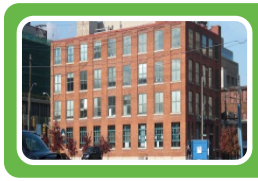
- Defined as areas where the majority of development has commercial and residential uses in close proximity
- Common in older districts throughout the region as well as certain new developments

Single Use - Commercial

- Defined as areas where the majority of development is commercial uses (offices, retail)
- Common in central districts in regional hubs and in the centre of Toronto

Single Use - Residential

- Defined as areas where the majority of development is residetial uses
- May be high or low density housing



Single Use - industrial

- Defined as areas where the majority of development serves industrial needs (manufacturing, logistics)

1.29 These land uses occur in distinct patterns throughout the GTHA, as noted in Table 1.2.

Table 1.2: GTHA Land Use Patterns

Regional core:	Downtown Toronto serves as the GTHA's primary core
	Dominated by high-density employment, with growing amount of high-density residential . High level: mixed use with single use segments.
	Home to many cultural facilities and institutions that serve the entire region
Secondary cores:	Many (existing and former) municipalities have downtown areas with concentrations of mixed-use or employment land uses.
	Typically oldest part of municipality (e.g. Hamilton, Oakville), but sometimes a more recent policy-driven creation (e.g. Scarborough, Mississauga)
	Some municipalities are seeing increasing employment and/or residential development in these cores, often coupled with increased mixed-use
Employment areas/corridors	Generally associated with 400-series highways, particularly Hwy 401, 407, 427
	Mix of office parks, regional-level retail, and industrial
Suburban areas	Majority of GTHA's urban area is single-use residential, organised around secondary cores or isolated commercial/employment uses
	Typically low-rise development (i.e. detached, duplex, or townhouse), with lot sizes that leave little scope for additional density/development without demolishing existing housing.

Future Conditions

1.30 Population and employment forecasts estimate continued growth in the City of Toronto, which will continue to play a role as a regional core. All other areas will also see major growth in employment and population. Due to green belt and growth management policies, much of this growth will be in existing areas.

1.31 The employment growth forecasts follow the trend for population growth, with total employment rising from 3.4 million jobs in 2011 to a 2041 total of 4.8 million- a 39% increase. Of the nearly 1.4 million jobs projected for the region, the majority will occur outside of the city of Toronto.

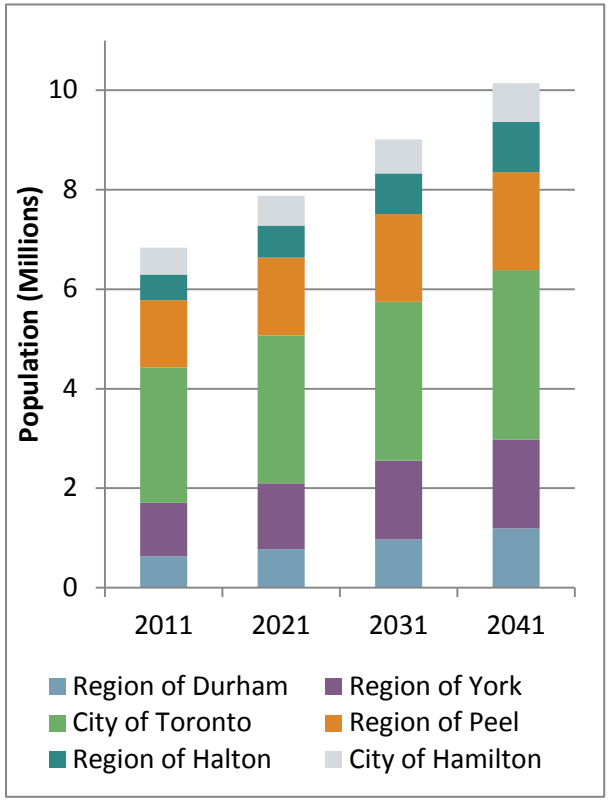
Population growth and employment growth forecasts are noted in Figure 1.6 (*Source: Ontario Growth Secretariat)*

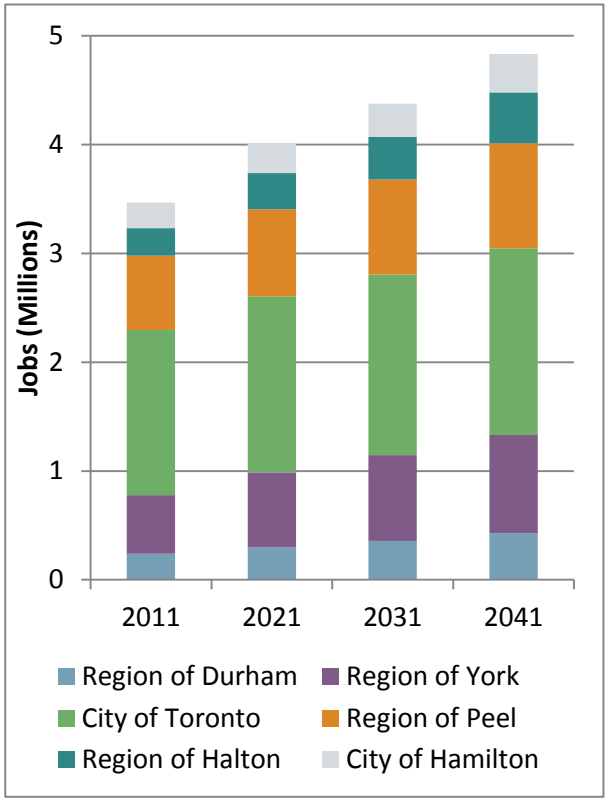
Impact on TDM

1.32 In the four drivers framework, land use shapes the distances and purposes of trips. Within the GTHA there are diverse land uses that require different approaches to TDM in order to achieve the greatest behaviour change benefits.

1.33 Presently, the majority of trips in the GTHA are between single land use areas in the form of commute trips.

Figure 1.6: GTHA Population and Employment Growth





Source: Ontario Growth Secretariat

1.34 Developing TDM strategies that are matched to an area's land use requires a consideration of both land use type as well as the overarching pattern of land use and the role it plays in the region.

1.35 Table 1.3 outlines key trip making behaviours by land use type, for consideration across the GTHA. These travel behaviours represent the expected time/type of trips that originate in each land use type, as well as the type of trips that use the land use types as travel destinations. Table 1.4 outlines the land use and TDM considerations for each land use pattern in the GTHA, as well as the types of TDM strategies that are appropriate for each respective pattern.

1.36 For TDM to be effective in the region, it must leverage existing and future land use conditions with an array of strategies and programs. TDM strategies should consider:

- The type and pattern of land use and develop diverse strategies that are aligned with origins/destinations present in each land use type
- How areas will change in terms of land use and density as they are developed. Programs should be able to 'pivot' from serving one type of land use to another as new types of land use are developed.

Table 1.3: Land Use and Trip Making Behaviour

Land Use Pattern	Land Use Considerations	TDM Considerations	Appropriate TDM Strategies
Regional Core: Toronto	• Presently the employment hub of the region, attracting a high portion of commute trips • Serves as an activity centre for the broader region	• Transit and auto network both experience congestion • Majority of access trips occur in AM peak • Exit trips in PM peak • All day trips must also be accommodated	• Target origin trips to use alternative travel through marketing, promotion and travel planning • Target employers to provide employer TDM programing • Develop events specific programing for cultural/recreational facilities
Secondary Regional Cores	• Serve as employment and activity centres for regional municipalities • Each regional municipality may have one or more of these cores that draw the majority of their trips from within the regional municipality	• During the AM peak, many trips exit secondary regional areas to access Toronto • May have limited rapid transit access, primarily automobile service • In the future, these cores will be higher density and have greater mixed use	• Target origin trips to use alternative travel through marketing, promotion and travel planning • Target employers to provide employer TDM programing • Develop events specific programing for cultural/recreational facilities
Employment Corridors	• Draw trips from adjacent regional municipalities primarily in AM peak	• May not be easily accessed by transit or active modes • May only be served by auto network	• Target employers to provide employer TDM programing • Incentivizing alternative modes or routes, if available
Suburban Areas	• Commute trips to regional core, sub regional core, or employment corridors • Some recreational trips	• Some transit service is available in most suburban areas • Land use is 'auto-oriented' • Majority of trips leave suburb in the am peak, return in the pm peak	• Household based programming, including personalized travel planning

Table 1.4: Land Use Pattern TDM Strategies

Land Use Type	Trip Making Behaviour
Mixed Use	• Is both a trip origin and destination • Destination for all day travel due to mix of uses/purpose
Commercial	• The majority of travel is commuter peak travel: am in bound, pm outbound • Fewer mid-day trips for some commuters and others accessing services in commercial centres
Residential	• Produces commute trips in the peaks: am out bound, pm inbound • Is not a major destination outside of pm peak • May be proportionally small set of origin/destination for midday trips
Industrial	• Majority of travel is commuter peak travel: am in bound, pm outbound • Midday trips include deliveries and outbound deliveries

Transportation Network

Current Conditions

1.37 The transportation network is composed of regional and local facilities/services across four movement types:

- **Transit:** transport services provided to facilitate movement of larger amounts of people for both commute and recreational trips.
- **Freight:** the movement of good to support a vibrant economy.
- **Private Travel/Automobiles:** privately owned vehicles that are used for commute and recreational trips.
- **Active Travel:** pedestrian/cycling for both commute and recreational trips.

1.38 The transportation network facilitates both regional (travel between hubs/municipalities) and local (travel within a municipality) trips across all four areas.

Transit

1.39 Transit trips are facilitated at the regional and local level through a number of operators and service providers. Three overall types of transit exist in the region to meet needs for travel, as outlined in Table 1.5.

1.40 The transit network will continue to expand into the future with a number of committed and funded projects under development. Of particular note is Regional Express Rail (RER), a project to provide two way all day services on GO Rail lines with improved frequencies. This will expand the traditional regional transit network to accommodate more longer distance trips, while also enabling a 'rapid transit' style service within core cities.

Freight

1.41 The GTHA's transport network supports the movement of freight across multiple modes. This includes:

- **Rail:** CN and CP, Canada's freight rail providers have staging and intermodal facilities in the GTHA.
- **Road:** freight is moved using the regional highway network as well as municipal arterials. These roads provide intraregional travel, as well as connections to the provincial and national highway network.
- **Air:** the majority of air freight transfers through Pearson International Airport.

Private Vehicles/Automobiles

1.42 Automobile travel is facilitated at the regional level via an extensive network of grade-separated highways (the "400-series" highways) that connect major municipalities to the core. This network is the responsibility of the Province.

Table 1.5: Transit Typology

Regional Transit

- The GO Rail and Bus network provides a hub and spoke style regional transit system for medium range (5-10km), long range(10-15km) and regional (>15km) trips
- Linkages between local operators (e.g. YRT Viva interchange with TTC Subway) can emulate regional service

Rapid Transit

- Provides medium(5-10km) to long range(10-15km) service within municipalities
- Connects to dense cores following a hub and spoke model
- Includes rail and bus based services: TTC Subways, YRT Viva

Local Service

- Provides short (>5 km) to medium (5-10km) service
- Connects communities to higherorders of transit or to a core area
- Allows for circulation and movmeent to and through lower density areas outside the core

1.43 In addition, some shorter grade-separated highways fall under municipal responsibility. These include the Don Valley Parkway (Toronto), the Erin Mills Expressway (Peel), and the Red Hill Valley Parkway (Hamilton).

1.44 The Province is also responsible for various long-distance roads, also termed “highways”, which are not grade-separated. These connect urban areas across the province, rather than connecting the various parts of the GTHA’s main urban area.

1.45 Where a two-tier jurisdiction exists, some major roads are managed by the regional municipality. All other roads are the responsibility of the lower-tier (or single-tier) municipality.

Active Modes

1.46 The promotion of walking and cycling is a municipal responsibility. In two-tier jurisdictions, the regional municipality generally seeks to encourage active transportation use, but its potential influence is less than that of the lower-tier municipality. Cycling facilities within the roadway fall under the responsibility of the municipality maintaining that road; all other active transportation infrastructure is the

responsibility of the lower-tier (or single-tier) municipality.

1.47 The large number of responsible parties and variation in land use typologies results in considerable variation in the provision of active transportation infrastructure. Sidewalks are generally common in residential and downtown employment areas, but are often lacking in suburban office parks or industrial areas. The number of cycling facilities (such as bikeways) and their type (e.g. on-road bike lanes vs. off-road multi-use trails) depends heavily on each municipality's historic approach.

Mode Split

1.48 Mode split data for each regional city and municipality is outlined in Table 1.5. Each area has been assessed based on local trips (trips within that municipality), trips to Toronto, and overall trips to the region.

1.49 The automobile mode is the dominant mode for local trips (core oriented trips to Toronto, and overall regional trips. The majority of trips within each origin region remain in the origin region, with most trips to Toronto and other regions occurring during commute periods (AM peak).

1.50 The mode share for each of the three groups is shown graphically in figure 1.7-1.9 respectively. The automobile mode is the dominant mode for all three groups.

Table 1.6: Mode Split in the GTHA (24-hr)

Origin	Local Trips				Trips to Toronto				Total Trips within GTHA			
	Total	Auto	Transit	Active	Total	Auto	Transit	Active	Total	Auto	Transit	Active
Toronto	4,555,000	62%	28%	10.1%	*N/A*	*N/A*	*N/A*	*N/A*	5,536,000	65%	27%	8%
Durham	1,002,000	88%	5.0%	5.9%	127,000	78%	22%	0.0%	1,184,000	88%	7%	5%
York	1,491,000	89%	5.0%	5.5%	453,000	82%	18%	0.3%	2,076,000	88%	8%	4%
Peel	2,000,000	86%	8.2%	6.2%	331,000	79%	21%	0.2%	2,564,000	86%	9%	5%
Halton	776,000	90%	4.5%	5.7%	60,000	64%	36%	0.0%	1,047,000	90%	6%	4%
Hamilton	877,000	82%	11.0%	6.7%	14,000	66%	34%	0.0%	987,000	83%	11%	6%
Total	**10,702,000**	**76%**	**15.8%**	**7.7%**	**985,000**	**79%**	**21%**	**0.2%**	**13,394,000**	**78%**	**16%**	**6%**

Figure 1.7: Mode split for local trips (24-hr)

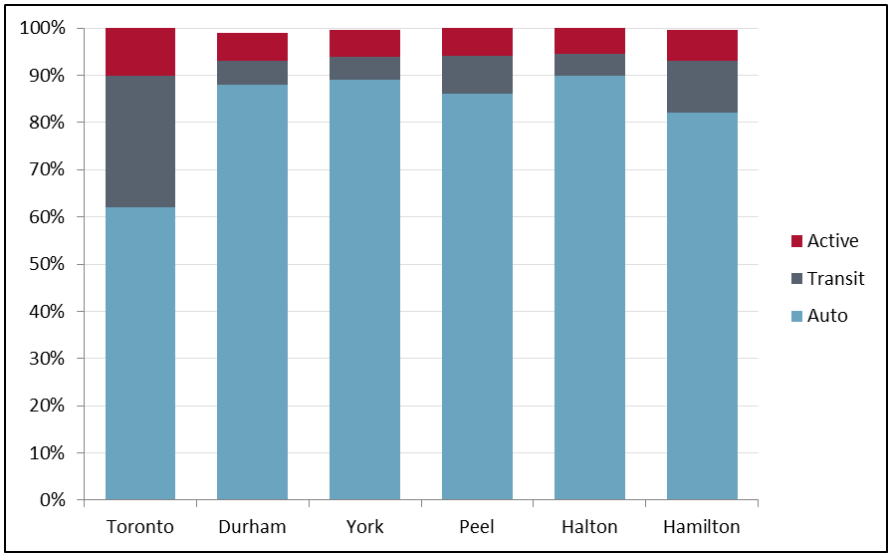


Figure 1.8: Mode split for trips to City of Toronto (24-hr)

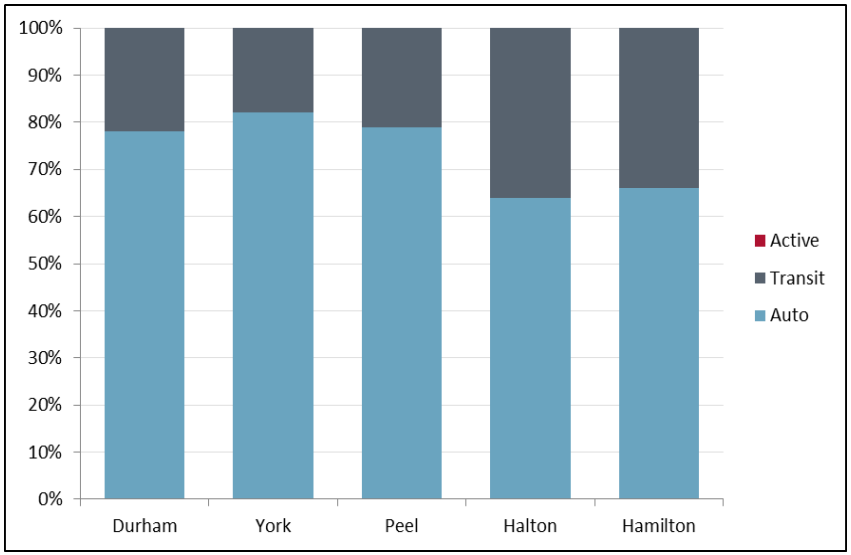
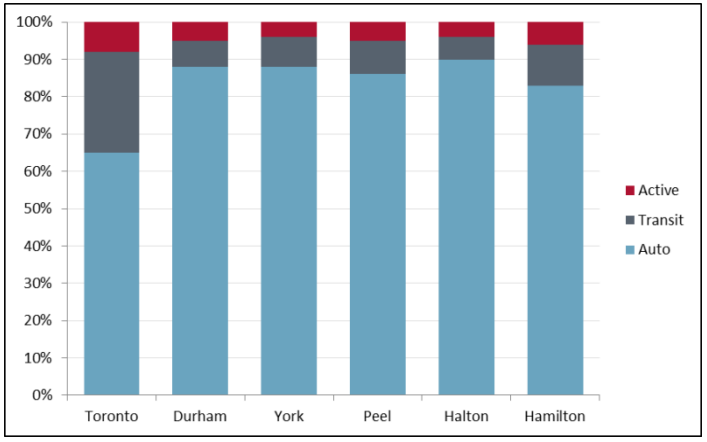


Figure 1.9: Mode split for all trips in the GTHA (24-hr)



Transportation Network Impact on TDM

1.51 The transportation network shapes the types of transport modes travellers have access to, as well as how viable these modes are for different trip types. TDM programing for the GTHA should consider the transit, freight, auto, and active mode networks in order to develop strategies that are tailored to each component. Key considerations for each service type are outlined in Table 1.7.

1.52 An ambitious investment program in new transit infrastructure has been set out for the GTHA. In the next ten years, a number of rapid transit, regional rail, and local transit projects will be delivered.

Table 1.7: Transport Network Service Type TDM Considerations

Service Type	Key GTHA TDM Considerations
Transit	• Transit utilization varies throughout the region and throughout the day depending on service type – each transit system will require unique TDM programming across all transit service types provided • Rapid transit and regional transit are the only realistic alternatives to long distance auto trips • Some services experience crowding (i.e. Line 1 subway) while other local services experience low demand • TDM should target congestion management on high priority rapid transit and regional modes while encouraging a shift from automobiles • TDM should support optimization of transit ridership by encouraging transit use on appropriate types of transit (e.g. short trips on local buses) • TDM programing may also be used to promote and market large investments, including Eglinton Crosstown, Regional Express Rail, Hurontario LRT, and Hamilton LRT in order to ensure travellers are aware of the utility of these investments before they open • TDM will be influenced by fare and service integration • Identify opportunities to shift demand from congested times of travel to less congested time with more spare capacity
Freight	• Freight movement is often impacted by congestion – this is typically a transport system management issue • TDM programing that decongests the auto network (shared facilities) will have positive benefits on freight
Auto network	• Dominant mode is single occupancy vehicle – requires a shift to carpool, vanpool, and transit for medium-long trips and active modes or transit for short-medium trips. • Identify opportunities to shift demand from congested times of travel to less congested time with more spare capacity
Active Modes	• Active modes are typically not used for longer trips between cities/cores • Potential for increased utilization of existing active modes facilities • Potential for TDM focused on bike share and other first/last mile connections

1.53 Additionally, the ability to mitigate travel should also be considered as a way to optimize the transit network. Mitigating travel includes supporting telework, which has particular utility in high tech and service industries.

Table 1.8: Time Scales for TDM Programs

Time Scale of Behaviour Change	Transport Network TDM Strategies	Considerations	Key Opportunities
Short Term	**Optimize capacity utilization on a corridor or network level by marketing and incentivizing new services.** • Shifting demand from one mode to an existing or viable alternative. Example – encouraging a shift from single occupancy vehicle travel to public transit. • Shifting demand from one time of travel to another (e.g. peak to off peak)	• Reliant on viable alternatives existing • Focused on marketing and incentivizing alternatives	• Underused public transit and active mode infrastructure • Congested transport that could benefit from shifting demand from peak to off peak
Medium	**Market and incentivize a new service or network element that are already under construction or will have a short to middle term (>1 year) construction/implementation period** • Focussed marketing to induce demand on network improvements that will be delivered in the short-medium term.	• TDM programing to support new assets (e.g. bike facilities) or services (e.g. new rapid bus) must be implemented with significant lead up time	• Expanded bike lanes • Local transit service changes • Streetcar improvements • Eglinton Crosstown • Toronto York Spadina Subway Extension
	Optimize corridor and network performance when the network is disrupted due to new construction. • Shifting demand from particular modes/corridors as new transport infrastructure is developed or implemented. This middle term shift allows network disruptions to be minimized, and also can shift behaviour permanently when the project is finished. Example – shifting travellers to bus services and active travel due to disruption of a road due to new road works or public transit	• Construction mitigation TDM programing can be used to alleviate stresses of construction while also encouraging optimal use of the new project when it is completed	• Eglinton Crosstown • Toronto York Spadina Subway Extension
Long	**Long term transport network optimization that optimizes use of major capital projects** • TDM integrated with long term regional investment strategy in order to ensure new network assets are well used when they are commissioned • Integrate TDM with land use development	• Allows investment in new transit and active mode infrastructure to be well leveraged from opening day • Involved significant marketing and TDM activities during long (1+ years) construction periods. • Supports the delivery of developments that are aligned with transport priorities	• Regional Express Rail • Finch LRT • Hamilton LRT • Hurontario LRT • New developments

Table 1.9: Travel Types and TDM Considerations

Travel Type	TDM Considerations
Local Travel (within one municipality/regional municipality)	• In Toronto, there is a high use of transit with potential to encourage mode shift to underutilized transit routes and active modes infrastructure • All other municipal trip patterns are largely auto oriented for local trips and. This indicates a greater potential to grow ridership and use of active modes. However, TDM programs must be matched to available capacity/facilities as well as planned improvements to transit and active modes. • Re-timing travel is another consideration for TDM. Shifting demand from congested times (peak) to less congested times (off peak) may improve network efficiency.
Travel To Toronto	• **From Durham:** 22% of trips utilize transit and 78% use automobiles. The transit trips utilize GO Rail for the majority of trips. • **From York:** 18% of trips are transit trips and 82% are automobile. Transit trips may use YRT to access the TTC system or use GO rail, depending on point of origin. The Toronto Spadina Yonge North Subway Extension and improvements to YRT and GO offer opportunities to encourage further transit use. • **From Peel:** 21% of trips use transit and 79% use automobiles. Transit relies on both GO rail and MiWay trips to TTC rapid transit to access Toronto. • **From Halton:** 36% of trips use transit and 64% use automobiles. GO network is used for the majority of transit trips. • **From Hamilton:** 34% of trips utilize transit and 66% utilize automobile. All transit trips use Lakeshore West to access Toronto. For each region the following actions should be considered: • TDM may improve ridership on underutilized routes and also promote improvements to transit such as RER or new rapid transit • Active modes are unlikely to play a dominant role for cross region trips, but local active modes should be supported for first/last mile connections • Carpool/vanpool modes may be supported through TDM for all regions • Peak vs. off peak travel – currently off peak travel is underutilized. If demand can be shifted to off peak times, greater network efficiency could be achieved (e.g. limiting road congestion, improving utilization of transit including RER as it is delivered)

Governance

Governance Structure

1.54 Planning and service delivery in the GTHA is influenced by multiple orders of government agencies. Table 1.10 provides a general overview of the governance structures in the region.

Governance Impacts on TDM

1.55 Traditionally, highly effective TDM programs rely on coherence between multiple levels of government for:

- Providing funding for agencies, businesses, and non-profits to run TDM programs
- Setting priorities and policy that enforce transport behaviour change
- Integrating TDM into land use and transport development

1.56 The GTHA's transportation network and land use are governed and funded by multiple tiers of government, which can create significant complexity in implementing and managing effective TDM programs.

Table 1.10: Governance Structure for GTHA Transportation

Level of Government	Description	Role	Key inputs to transport
Federal Government – Canadian Government	The federal government is responsible for national level policy. The federal government does not play a direct role in transportation policy at a regional and municipal level.	Provides direct funding to municipal/provincial programming through a number of mechanisms (economic stimulus, municipal infrastructure grants, P3 Canada). Can set taxes – including income tax benefits for use of travel modes.	• Finances • P3 coordination
Provincial – Government of Ontario	The provincial government is responsible for policy, planning, and service provision across the province of Ontario.	Provides policy direction, direct services, and funding for municipal projects. Oversees Metrolinx. Can set taxes to support transport policy, including tax benefits to support transport policy. Sets provincial policy statement and Greater Golden Horseshoe Growth Plan that guide official plans for municipalities.	• Policy direction at a regional level • Finances • "high level" planning
Regional - Metrolinx	Metrolinx is responsible for planning and coordinating transportation in the GTHA. It is an agency of the provincial government with regional jurisdiction in the GTHA.	Metrolinx is a planning and service delivery agency. Provides planning for the region's transportation network and delivers transport services. Advises the provincial government on investment and policy development.	• Planning, prioritization, and policy development for the GTHA's transport network • GO Transit, Smart Commute, UP express
Municipal/Local	Regional municipalities (Halton, Peel, York, Durham) have a two level structure; Toronto and Hamilton have a single-tier system.	Provides planning, policy, and service delivery. Funds and finances infrastructure projects In two-tier system, lower-tier responsible for most aspects of land use and transportation planning. Limited fiscal/tax instruments beyond property taxes.	• Detailed land use and local roads planning • Local transit and rapid transit • Finances

1.57 Because all tiers of government have played a role, or are actively playing a role in TDM, there is an opportunity to ensure TDM programs that are implemented in future RTP phases build consensus and coherence at a policy level to maximize value for investment across all tiers of government.

1.58 Key considerations for TDM given the GTHA's governance structure include:

- Ensuring each tier's TDM programming is in line with the role it plays within the region
- Implementing multiple levels of TDM programming, which are viable given the mobile tier governance structure
- Applying funding to TDM programs based on their role within the region to ensure good value for investment in behaviour change

1.59 Table 1.11 outlines the historic role of each tier of government in TDM programming as well as key considerations for each tier.

Table 1.11: Tiers of Governance and TDM

Level of Government	Historic/Present Role in TDM	TDM Considerations
Federal Government – Canadian Government	Transport Canada has historically developed research on TDM measures/programming and grant programs for TDM.	Tax incentives for citizens and organizations for adopting alternative modes: • Transit pass tax incentives • Active mode tax incentives • Reduced parking tax incentives
Provincial – Government of Ontario	Transport demand management included in MTO strategic Goal 4. Sections 3.2.2, 3.2.3 and 3.2.4 mandate promotion of alternative modes and TDM. 2009 – Initiated TDM grants program, awarding 34 projects with supportive funding.	Policies set by the MTO and other provincial ministries can shape TDM programming at a GTHA and municipal level. TDM can be integrated into the land use development process and official planning process. TDM programming can be included in major transport investments, as identified in Policy 1.6.7.2 of the 2014 Provincial Policy Statement. Wider government policies on emissions and transport can also be a key enabler for TDM programming, including incentives and regulations for: • Vanpools, private shuttles, carpools • Transit passes or active mode promotion • Provision of HOV/HOT lanes
Regional - Metrolinx	TDM integrated into 2008 RTP – the Big Move as a key strategic concern for the region. Operates 'Smart Commute' the GTHA TDM program that provides programming and support across the region.	Smart Commute has established a network of TDM programs across the GTHA, which is an effective foundation for delivering context specific programming throughout the GTHA.
Municipal/Local	Official plans are recommended to include a TDM component. Some cities and regional municipalities have completed Regional municipalities (Halton, Peel, York, Durham) have a two level structure; Toronto and Hamilton have a single-tier system.	The state of TDM planning varies across the region at a municipal level. Regional municipality TDM plans typically manage transport demand within the region, while municipal plans manage travel within existing municipal boundaries. Due to the existence of smart commute, municipalities may consider complementary TDM measures as the refine or develop TDM planning: • Integration of TDM into broader planning • Enhanced support and coordination with Smart Commute • Development based TDM programming • TDM integration with new services and infrastructure

Regional Economy

Overview

1.60 The GTHA's regional economy contains a wide range of industries and employment sectors, as shown in Figure 1.10.

1.61 As Canada's largest urban area, the outputs from the GTHA's economic activities serve a much broader area than the GTHA itself. These include goods destined for the rest of the Province and beyond, and services provided for people and industries based elsewhere (such as insurance). The size of the GTHA has resulted in specialization in some geographic areas specialising in certain economic activities. Examples of this specialisation include:

- Primary metal manufacturing: Hamilton
- Warehousing and storage: Mississauga
- Financial services: Toronto
- Truck transportation: Peel Region
- Motion picture and sound recording industries: Toronto

1.62 The size of the GTHA has resulted in some geographic areas specialising in certain economic activities. Examples of this specialisation include:

- Primary metal manufacturing: Hamilton
- Warehousing and storage: Mississauga
- Financial services: Toronto
- Truck transportation: Peel Region
- Motion picture and sound recording industries: Toronto
- Electricity generation: Durham
- Petroleum product wholesaler-distributors: Halton

1.63 This geographic specialisation in certain sectors allows for synergies between the various businesses operating in these sectors, providing lower interface costs than if they were uniformly distributed across the GTHA. Further, it allows employees skilled in these sectors to reside in an area and yet have access to a wide range of employment opportunities. These increases labour mobility, as it widens the labour pool for employers and the job pool for employees, and hence results in a more efficient labour market.

1.64 Some sectors have multiple clusters throughout the GTHA. These are typically associated with office-based jobs, which require little in the way of specialised infrastructure. Many municipalities have encouraged these job clusters, as they provide the highest employment density, facilitating wider goals relating to urban form. There are some areas of the GTHA that lack concentrations of any particular industry sector(s).

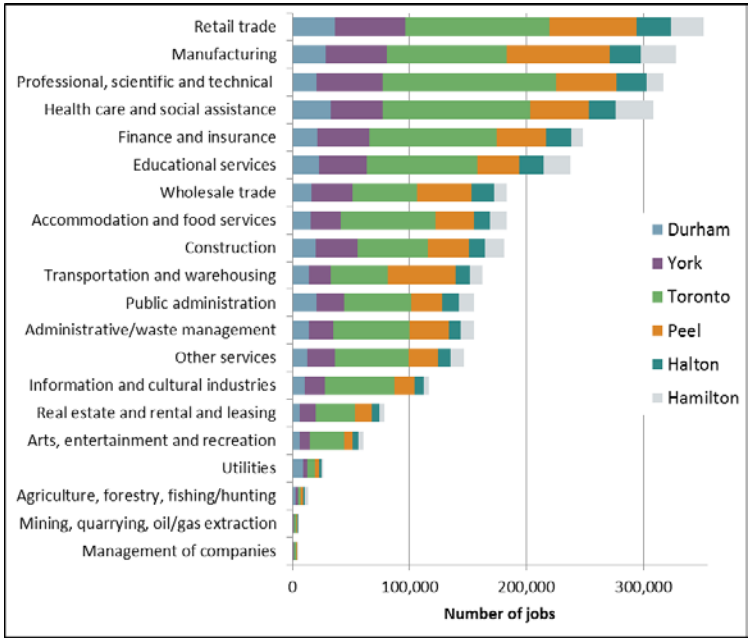


Figure 1.10: GTHA employment by industry sector and municipality

1.66 These areas are typically in municipalities with a high proportion of residential land use, and hence little land zoned for employment. This prevents any agglomeration of employment in a given sector. Other job sectors are found universally across the GTHA. These include retail, healthcare, construction, education, and recreation.

1.67 These job sectors are typically driven by the needs of the general population, and hence whether they are concentrated or dispersed depends on the residential density.

Impact on TDM

1.68 TDM programs should be developed with consideration for regional economic activities, including the types of industries present in regions. Industries shape the types of TDM programing that may be available or appropriate to trigger the greatest behaviour change.

1.69 Key considerations for the GTHA include:

- Toronto industries draw employment from within the city and across the region. In the near and middle term, Toronto industries are a high leverage point for TDM programming.
- Major industries in Toronto are service/professional sectors which have traditionally been successful for shifted work hours, alternative work hours, and promotion of transit.
- Research institutions and universities may also be a prime target for travel alternatives and shifted start times.
- Manufacturing and other productive industries require specific TDM programs compared to service industries due to less flexibility on start times and shift work
- Industries that are located along transit corridors or transit supportive areas should be prioritized for transit promotion
- Industries, such as high tech or professional/scientific/technical work are more amenable to adapting to telework or work from home policies.

2 TDM's Contribution to the Regional Transportation Plan

Overview

2.1 Section 2 provides an analysis of TDM's role in achieving RTP goals, strategic TDM actions that can achieve RTP goals, and an assessment of the current state of TDM programming in the GTHA. For the purpose of this analysis, TDM is defined as:

> The application of behavioural tools to optimize the transport network by changing demand for travel based on time, mode, service, and destination.

2.2 This definition is used to analyze the state of programming in the GTHA as well as opportunities and challenges to utilize TDM to achieve regional goals.

2.3 This section first provides a summary of TDM progress made in the GTHA towards goals outlined in 2008's *The Big Move*, as well as a summary of how TDM relates to the 2015 RTP review goals. This analysis was used to produce a set of six TDM strategic mechanisms that can be used to achieve the RTP goals that allow programs and policies to be characterized and assessed.

Implementing TDM within the Big Move

Strategic Goals

2.4 The Big Move identified the need for comprehensive application of TDM initiatives throughout the GTHA. The Big Move outlined ten strategies that employ a variety of measures and approaches to reach the overarching goals of the plan. While TDM can play a role in delivering all ten strategies, Strategy #4 specifically called for the creation of a TDM Program.

> STRATEGY #4: CREATE AN AMBITIOUS TRANSPORTATION DEMAND MANAGEMENT (TDM) PROGRAM

2.5 This strategy was defined by five priority actions (4.1-4.5) and one supporting policy (4.6):

- **4.1** Develop a Transportation Demand Management (TDM) policy and strategy for provincial ministries and agencies such as school boards, hospitals and universities that include actions, timelines and targets.
- **4.2** Establish guidelines and model policies to help municipalities develop and implement

TDM policies in their Official Plans and Transportation Master Plans.

- **4.3** Encourage private sector employers to implement TDM programs.
- **4.4** Encourage employers who currently offer their employees free or subsidized parking a choice between the parking or a cash equivalent that can be used for other means of transportation.
- **4.5** Incorporate objectives and goals related to TDM as part of any revenue or financial tools that are recommended as part of the Metrolinx Investment Strategy.
- **4.6** Official Plans shall require a TDM strategy as part of planning applications for any major commercial, employment or institutional development.

Goal Analysis

2.6 Since the launch of 2008's Big Move, reasonable progress has been made towards achieving all TDM related policies and priority actions throughout the GTHA. Regardless of jurisdiction, TDM programming can be difficult to implement and monitor over a short time frame.

2.7 A key recommendation in the Big Move was the inclusion of TDM strategies as part of key planning policies such as the Official Plan and Transportation Master Plans. A review of all regional and local municipalities in the GTHA has determined that TDM policy has been identified and included in many key policy documents across the GTHA.

2.8 Table 2.1 illustrates that there are two ways TDM has been incorporated at the regional and municipal level:

- Explicitly as a key transportation planning strategy, often with supporting specific policies, strategies or actions
- Broadly within the objective/strategy framework as part of 'promoting alternative transportation to reduce reliance on single-occupancy vehicles'

The summary of progress towards the priority actions and policies has been reviewed to track progress from the Big Move from 2008 to 2015 in Table 2.2.

Y = fully-formed policy or program

P = partially formed policy or program

Table 2.1: Status of TDM in GTHA Official Plans

Jurisdiction	Official Plan	TDM Policies
City of Hamilton	**Y**	**Y**
City of Toronto	**Y**	**Y**
Halton Region	**Y**	**Y**
City of Burlington	Y	Y
Town of Oakville	p	
Town of Milton	Y	
Town of Halton Hills	P	
Peel Region	**Y**	**Y**
City of Mississauga	Y	Y
City of Brampton	Y	
Town of Caledon	Y	
York Region	**Y**	**Y**
City of Vaughan	Y	Y
City of Markham	Y	Y
Town of Richmond Hill	P	Y
Town of Aurora	P	Y
Town of Newmarket	Y	
Town of Whitchurch-Stouffville		
Town of East Gwillimbury	Y	
Town of Georgina		
Township of King		P
Durham Region	**Y**	**Y**
City of Pickering	y	
City of Oshawa	P	
Town of Ajax	Y	
Town of Whitby	P	
Municipality of Clarington		
Township of Uxbridge		
Township of Brock		
Township of Scugog	Y	

Table 2.2: Big Move TDM Analysis

Priority Action/Supporting Policy	Progress Made	Challenges/Opportunities/Recommendations
4.1 Develop a Transportation Demand Management (TDM) policy and strategy for provincial ministries and agencies such as school boards, hospitals and universities that include actions, timelines and targets.	No overarching policy has been drafted. Smart Commute supports TDM programming in public institutions. Some school boards have developed a TDM policy.	**Challenges:** creating alignment within government agencies for employee based TDM programing **Opportunities:** to provide TDM leadership by delivering TDM programming at public institutions **Recommendation:** government based employer TDM programs offer a strong opportunity to role model best practices. Government offices may be strong candidates for prototyping new employer based TDM programs
4.2 Establish guidelines and model policies to help municipalities develop and implement TDM policies in their Official Plans and Transportation Master Plans.	Smart Commute established to provide regional support on TDM programming. A GTHA wide TDM coordinating committee has been set up. Majority of official plans include TDM objectives or policies.	**Challenges:** varied state of TDM in official plans and unclear responsibility for TDM outcomes **Opportunities:** stronger clarification of agency/government responsibility for TDM to improve effectiveness and efficiency; there are many current examples of TDM policy from regions and municipalities to draw from. **Recommendation:** retain priority and streamline the development of a TDM tool kit and clarified roles and responsibilities to support TDM roll out across the GTHA.
4.3 Encourage private sector employers to implement TDM programs.	Smart Commute works directly with employers to support private sector TDM services. To date, over 300 employers representing over 700,000 employees are participating in Smart Commute.	**Challenges:** continuing growth of TDM programming based on a variety of regional needs. **Opportunities:** process to determine highest potential employers for TDM success and continued refinement of TDM programming to provide support. **Recommendation:** retain priority action and build upon the current Smart Commute platform.
4.4 Encourage employers who currently offer their employees free or subsidized parking a choice between the parking or a cash equivalent that can be used for other means of transportation.	Supported by Smart Commute. Extent of implementation varies across GTHA.	**Challenges:** employer responsibility for financial management of benefits relies heavily on employer willingness to implement. **Opportunities:** the workforce, especially younger generations, is seeking more flexibility in their lifestyles and may see the benefit in 'cashing out' their parking space **Recommendation:** retain action, but include in 4.3 as a sub action for appropriate employers.
4.5 Incorporate objectives and goals related to TDM as part of any revenue or financial tools that are recommended as part of the Metrolinx Investment Strategy.	Metrolinx Investment Strategy included revenue tools in line with TDM principles: • Parking levies • High occupancy toll lanes • Mode specific feeds (gas tax)	**Challenges:** ensuring all parties are aligned with purpose and benefits of TDM initiatives **Opportunities:** streamlining TDM as a program component of future Metrolinx investments, including new transit infrastructure and services. **Recommendations:** retain as a high priority action and develop guidance on how to best implement TDM as part of any major rapid transit investment.
4.6 Official Plans shall require a TDM strategy as part of planning applications for any major commercial, employment or institutional development.	Policies related to TDM Strategies in the planning process are included in most municipal and regional municipality official plans.	**Challenges:** developing consistent TDM requirements in all municipalities; following through with requirements, assessing proposed TDM Strategies, and monitoring impacts **Opportunities:** develop stronger integrative policy to ensure TDM programs are supportive across all tiers of government **Recommendations:** retain action as part of 4.2.

TDM and the 2015 Regional Transportation Plan Update: Goals and Objectives

Regional Transportation Plan Goals and TDM

2.9 Six goals have been set out to guide the RTP's strategic planning and prioritization/implementation processes. Each goal has a set of objectives that are used to assess progress towards goals based on new programming, infrastructure, and policies.

2.10 A number of these objectives influence or guide the implementation of TDM, while TDM may be a tool to directly achieve other objectives. Table 2.3 indicates TDM's relationship to all goals for the RTP.

Goals that guide TDM are highlighted in blue
Goals that are heavily influenced by the state of TDM are highlighted in green

Table 2.3: TDM and RTP Goals

Goal A: Connectivity, Convenience and Integration	Goal B: Equity and Accessibility	Goal C: Health, Comfort and Safety
1. People have appropriate, realistic options to move easily and reliably from place to place. 2. People have the information they need to optimize their travel decisions. 3. Transit services and fares are seamlessly integrated. 4. All transportation modes are coordinated.	5. Transit offers affordable access to jobs, services and major destinations, and is competitive for most trips. 6. Transit fleets and transportation infrastructure, services and technology are accessible to users of all ages and abilities.	7. Walking and cycling are attractive and realistic choices for most trips. 8. Transit offers an attractive, high-quality user experience. 9. People feel safe and secure when travelling, with continuous progress toward eliminating injuries and deaths from transportation. 10. Goods are moved safely and securely.
Goal D: A Well-Planned Region	**Goal E: An Exemplary Environmental Footprint**	**Goal F: Prosperity and Competitiveness**
11. The transportation system supports compact and efficient development. 12. Integrated transportation and land use planning reduces the need for travel and encourages walking, cycling and taking transit. 13. Transit infrastructure and services have the capacity to meet demand.	14. The transportation system is adaptive and resilient to the stresses of a changing climate, uses resources efficiently, and fits within the ecosystem's capacity. 15. The transportation system contributes to the achievement of provincial targets for greenhouse gas emission reductions.	16. Travel times are predictable and reasonable. 17. The transportation system offers value to users and governments by providing economical, reliable and environmentally sustainable movement of people and goods. 18. Governments promote innovation in the transportation sector. 19. Sustainable, coordinated funding supports transportation operations, maintenance and expansion.

Understanding the impact of the RTP on TDM: objectives that shape TDM programming

2.11 Goals have been set out that influence how TDM programs should be structured. These goals, highlighted in Blue above, are considered as determinants of the types of TDM programming that should be developed.

Goal A: Connectivity, Convenience and Integration

Objective	Objective's Impact on TDM
(1) People have appropriate, realistic options to move easily and reliably from place to place.	**2008-2015:** since the Big Move, new transport infrastructure has been funded and implemented. Including: improvements to local transit and GO rail. New active infrastructure has been provided throughout the GTHA. **Beyond 2015:** major investments, such as RER, Eglinton Crosstown, Hurontario LRT, and Hamilton LRT will be implemented in the next 10 years. These projects will require TDM programming to maximize their benefits. This includes: • Promoting options/optimizing their utilization • Managing impacts of construction • Ensuring options are well integrated with broader TDM programs
(2) Transit services and fares are seamlessly integrated.	**2008-2015:** fare integration work has been conducted since 2008 to study and identify fare structures and potential options for integrated fares. **Beyond 2015:** current Metrolinx projects indicate integrated fares to be implemented post 2015. Integrated fares will enable transit usage and require demand management to ensure transit is well utilized with demand distributed across available services. If fare integration is implemented in the next 10 years, it will be a major focus of TDM programming.

Goal B: Increased Equity and Accessibility

Objective	Objective's Impact on TDM
(6) Transit fleets and transportation infrastructure, services and technology are accessible to all ages and abilities.	**2008-2015:** TDM programs implemented based on priorities/greatest opportunity for change. **Beyond 2015:** TDM programs can be adapted to meet this goal by ensuring diverse populations have access to TDM services and programming.

Goal C: A Well-Planned Region

Objective	Objective's Impact on TDM
(12) Integrated transportation and land use planning reduces the need for travel and encourages walking, cycling and taking transit.	**2008-2015:** TDM is considered in the development process in multiple municipalities, particularly in York Region. **Beyond 2015:** TDM programs should be adapted to support use of alternative modes as well as implementation of TDM programing in multi-modal projects/developments. This objective influences TDM programming to include support for growth plan targets as well as multimodal areas that have potential for transport network optimization. TDM should be considered as part of the development process throughout the GTHA.
(13) Transit infrastructure and services have the capacity to meet demand.	**2008-2015:** new rapid transit projects were planned along with changes to local bus service across the GTHA. **Beyond 2015:** with new rapid transit and local transit services, TDM should be considered to maximize the benefit of new investments but also to maximize existing services. This objective calls for TDM to be used as a tool for optimizing ridership on new and improved fast and frequent services.

Goal F: Prosperity and Competitiveness

Objective	Objective's Impact on TDM
(17) The transportation system offers value to users and governments by providing economical, reliable and environmentally sustainable movement of people and goods.	**2008-2015: N/A** **Beyond 2015:** opportunity to provide TDM programming for new and existing services that focuses on marketing services based on quality/value of money. New investment may be evaluated based on its ability to optimize the transport network.

Enabling RTP Progress: TDM's Contribution to Goals

2.12 A set of RTP goals that can be achieved in part through TDM measures were identified in green above. These goals and objectives are set out to be outcomes against which TDM should be evaluated in subsequent RTP reviews.

Goal A: Multi Modal Integration and Connectivity

Objective	TDM's Contribution to Objective
(2) People have the information they need to optimize their travel decisions.	Provision of new information is a key element of TDM programming. TDM programs can fulfill this objective by providing reliable information to travellers that aids in planning single or repeat trips. This includes: • Development of physical collateral/travel planning materials • Providing online trip planners and travel information tools that support an array of travel options (carpooling, real-time ridesharing, support for travel incentives)

Goal B: Increased Equity and Accessibility

Objective	TDM's Contribution to Objective
(5) Transit offers affordable access to jobs, services and major destinations, and is competitive for most trips.	TDM can be used to promote transit as a key access point for regional employment centres. As a result, TDM has a strong role to play in delivering this objective. TDM should be focussed on: • Developing employer based programs with employers who are well served by transit, but may not have high transit mode share • Creating general transit promotion incentives and marketing strategies for commuters • Incentivizing the use of under used transit that provides service to employment concentrations • Promoting new transit services that connect to employment concentrations as they are implemented In order for TDM programming to support this objective it can work with the following circumstances: • Employment centres served by high quality transit • Employment centres served by underutilized transit routes • Employment centres with new rapid or high quality transit under construction/implementation • Support for delivery of flexible modes: on demand mobility, shared mobility TDM contributes to this goal by providing services that incentivize and enhance opportunities for using transit and alternative modes, including low income communities. This includes: • Provision of targeted travel information and materials to low income communities that aid in the identification of effective modes and travel service • Development of incentives tailored to low income communities to encourage uptake of alternative modes

Goal C: Comfort, Convenience, and Safety

Objective	TDM's Contribution to Objective
(7) Walking and cycling are attractive and realistic choices for most trips. (8) Transit offers an attractive, high-quality user experience.	TDM, by definition, is focussed on optimizing the transport network to ensure a balanced use of modes and service – including walking, cycling, and transit. This objective is met by TDM by enhancing the attractiveness of alternative modes through incentives and other TDM tools. In particular, TDM should: • Enhance and complement improvements to services to ensure they have adequate demand • Provide new information and incentives so travellers can identify and use facilities, services and programs • Use user specific approaches for different target populations based on a variety of demographic considerations (e.g. age, gender, economic background)
(9) People feel safe and secure when travelling, with continuous progress toward eliminating injuries and deaths from transportation.	TDM can improve perceptions of safety through public engagement campaigns and other tools. TDM may achieve this objective by: • Providing online/physical information outlining safety improvements • Providing materials on alternative routes to avoid routes perceived as unsafe (e.g. heavy construction) These approaches must complement other programs to provide material improvements to safety.

Goal E: An Exemplary Environmental Footprint

Objective	TDM's Contribution to Objective
(14) The transportation system is adaptive and resilient to the stresses of a changing climate, uses resources efficiently, and fits within the ecosystem's capacity.	TDM, by definition, aims to optimize use of existing and planned infrastructure via behaviour change programming. Optimization of the transit network can be done to improve resilience and adaptively. To achieve this objective, TDM programing can be set up to: • Identify utilization gaps in existing infrastructure and incentivize mode shift to these gaps. • Target communities and employers to deliver programs that align travellers behaviour with available capacity on infrastructure • Mitigate the impacts of new infrastructure during construction and promote an optimal utilization prior to the new project being delivered • Develop financial and policy instruments to align travel behaviour with opportunities to alleviate congestion and promote mobility TDM measures should be aligned with opportunities identified in reviewing all major elements of the transport network during the RTP process (transit, active modes, freight, auto travel)
(15) The transportation system contributes to the achievement of provincial targets for greenhouse gas emissions.	TDM can be used as a tool to effectively shift demand from high emission modes to lower emission modes, or no emissions through teleworking. These options can be used to reduce GHG emissions.

Monitoring Progress Towards TDM Goals

Overview

2.13 This sub section summarizes current techniques that can be used to understand TDM's impacts with respect to Big Move KPIs.

2.14 This analysis provides an overview of how TDM can be measured as part of the key performance indicator (KPI) framework developed for the Big Move Baseline monitoring report, and also provides insight on how TDM is strategically aligned with KPIs.

Measuring Performance

2.15 The key goal of measuring performance is to provide useful information on program activities that can aid in improvements to existing programming as well as development of future programs.

2.16 While understanding the impacts of TDM programing is a complex process, practices and tools have been utilized in other jurisdictions to develop knowledge regarding programming impacts. These practices typically consider two components:

- Setting out key performance indicators
- Developing a rigorous and agile approach to monitoring and evaluation

Monitoring and Evaluation

Key Performance Indicators

2.17 Performance indicators provide a linkage between TDM programming and key outputs and outcomes that programming is trying to create. A robust set of performance measures reflects the extent to which a program is meeting its goals.

2.18 Performance measures for TDM programming can be sorted into a performance measurement typology, as outlined in Table 2.4.

Table 2.4: TDM Performance Measurement Categories

Impacts

- Behaviour change related to how, when, where and whether to travel that optimize the transport network.

Awareness

- Public exposure to and awareness of TDM programming, including knowledge about multi-modal travel options . Used to help determine what, where ,and who to provide different TDM programming to

Participation

- Participation in TDM programming to gauge interest in different types of programs provided;

Satisfaction

- Satisfaction with execution and delivery of TDM programming to understand which types of programming people enjoy participating in; and

Activities

- Quantification of TDM programming, marketing and outreach activities to help define the level of outreach and education necessary to increase awareness, participation, and satisfaction and generate impacts

Monitoring and Evaluation

2.19 Monitoring and evaluating efforts provide processes to collect data and information related to performance measures. Effective monitoring and evaluation programs are developed to provide legible linkages between overarching regional policy and optimization of the transport network through TDM measures.

2.20 Monitoring and evaluating TDM against these linkages allow the impact and efficiency of programs to be understood. Typically monitoring and evaluation is an integrated process composed of two distinct elements, outlined in Table 2.5.

2.21 Collecting data for monitoring and evaluation processes can involve a number of tools. Tools should be selected in order to align with specific performance measures. Three categories of data collection tools are outlined in Table 2.6

Big Move Key Performance Indicators

2.22 The key performance indicators identified for the Big Move have been assessed against TDM principles and monitoring/evaluation practice in Table 2.7.

2.23 This alignment process outlines how TDM activities can be connected to the same performance measurement standards used for overarching transport planning and policy with the GTHA.

2.24 Moving into the development of the RTP review, there is an opportunity to align RTP goals, key performance indicators, and TDM tools to create an overarching planning and evaluation framework for TDM, based on the outline provided in Table 2.7.

Table 2.5: Monitoring and Evaluation Overview

Monitoring

- **Overview:** Ongoing collection of data and evidence used to inform program implementation or changes to programs.
- **Purpose:** Aims to enable smart decision making for short-middle term performance changes
- **Timescale:** Continuous collection of data with set analysis times (i.e. monthly)

Evaluation

- **Overview:** Periodic strategic analysis of existing and potential programs based on data collection and modelling
- **Purpose:** Used to inform long term decision making on program implementation and prioritization.
- **Timescale:** at fixed intervals (e.g. every 3 years) or after major program events (funding change, implementation of new policies)

Table 2.6: Monitoring and Evaluation Data Collection

Reports

Staff and partner reports: generated by the implementer of specific programs. Focussed on indivudal program elements

Web reports: analytics from online TDM tools

Web feedback: user comments and requests received from web-based sources

Surveys

Employee surveys: carried out by employers to understand employee travel behaviour

School surveys: carried out by service providers or schools/school boards to understand student and staff travel behaviour

Project surveys: carried out during or after project activities to solicit feedback on project activities

Individualized marketing (IM) surveys: completed by participants at the end of IM projects to understand participant satisfaction and travel behaviour change

Mode Split and Travel Counts

Mode counts: conducted by program implementors, municipalities ,or regional agencies. The scale of the count depends on the scale of project.

Cordon Count Program: key dataset to assist in capturing auto occupancy rates across screen lines in a coordinated regional manner

TTS Analytics: applying data from the TTS to understand mode change at a regional or planning district level

Table 2.7: Alignment of Big Move KPIs with TDM

Category	Key Performance Indicator	Description	TDM's Role	Potential M&E Methods
How are we moving around the GTHA?	Mode of transportation	Transportation Mode Share for all trips in the GTHA 6-9am Transportation Mode Share for all trips in the GTHA outside Toronto 6-9am Transportation Mode Share for all trips in Toronto 6-9am	TDM by definition is intended to shift demand to optimize the use of transport facilities. TDM programs are typically measured by mode share.	Assess mode share based on areas prioritized for TDM.
	Transit Ridership	Annual transit passenger trips (million) in the GTHA & annual transit trips per capita in the GTHA	TDM can incentivize the use of transit modes.	Assess transit oriented TDM spending vs. increase in ridership within project areas.
Is there mode choice in how we travel?	Transit Service per Capita	Assessment of annual vehicles hours per capita.	TDM can be used to support use of new transit services (infrastructure and service hours)	Assess increase in ridership on new services as part of service review
	Length of Regional Rapid Transit	Cumulative length of rapid transit in the GTHA		
Do more people live and work close to fast and reliable transit?	Living Close to Rapid Transit	Percent of GTHA population living 2km from rapid transit	TDM can be used to encourage transit use by communities within 2km of rapid transit	Assess ridership changes based on program specific surveys and monitoring
	Working Close to Rapid Transit	Percent of GTHA working population working within 2km of regional rapid transit	TDM can be used to develop workplace specific programs for employers near rapid transit	Assessment of mode share based on employer surveys
Are we providing transportation alternatives for those who need them the most?	Transportation choice for low-income individuals	Transportation mode share for the commute to work of working individuals over 15 years of age residing in a low-income household	TDM can use market segmentation to target specific communities for transit and active mode use programs	Assessment of mode share based on post program surveys
	Accessibility of transit	Proportion of GTHA transit fleet vehicles that are accessible	TDM supports this measure through programming targeted at specific communities and groups	Assessment of mode share based on post program surveys
	Transportation choice for children	Transportation Mode share for all children aged 12-16 for the trip to school		
	Transportation choice for seniors	Transportation mode share for all seniors aged 65+		

Category	Key Performance Indicator		TDM's Role	Potential M&E Methods
Are we safer as we travel?	Road safety	Annual road-based accident fatalities in the GTHA & road-based accident injuries in the GTHA	TDM can reduce auto mode share	Assess vkm reductions and apply accident reduction rate
Are we reducing the impact of transportation on the environment?	Air Quality	Average number of smog advisory days issued across the GTHA (annual)		Assess vkm reductions and apply emission rate
	Emissions	Annual per capita emissions of CO2 (T) from personal transportation sources(i.e. automobiles) Total cumulative CO2 emissions from personal transportation since 1986		
Are we better connected across the GTHA?	Transit between urban centres	Number of urban centres reachable within 45 minutes by transit	TDM can support uptake of transit services for intercity travel	Post program survey for travellers moving between cities to determine mode share
	Highway travel	Average bi-directional vehicle speed on key highways in the GTHA in the morning peak period	TDM can reduce auto-mode share, reducing congestion	Post program survey for travellers using long distance trips to determine decongestion effects (mode split for carpool, vanpool, transit)
	Pearson airport access	Transportation mode share for air passengers arriving at Toronto Pearson International Airport	Pearson specific TDM programming to enable use of transit, UP Express, and non-drive alone modes.	Post program survey of parking utilization, UP ridership, and transit use
Is transit provision in the GTHA becoming more fiscally sustainable?	Transit Efficiency	Inflation-adjusted operating cost per passenger ($, adjusted using Consumer Price Index, 2002 base)	TDM can increase ridership, which impacts cost per rider	Assessment of transit use based on post program surveys

Strategy and Scale of TDM Programming in the GTHA

Strategic Mechanisms for TDM

2.26 The development and implementation of TDM strategy is shaped by the goals/objectives it seeks to achieve, as well as the context in which it is implemented. The GTHA's context (outlined in section 1) and goals/objectives for TDM have been assessed to identify a strategic framework for TDM in the GTHA.

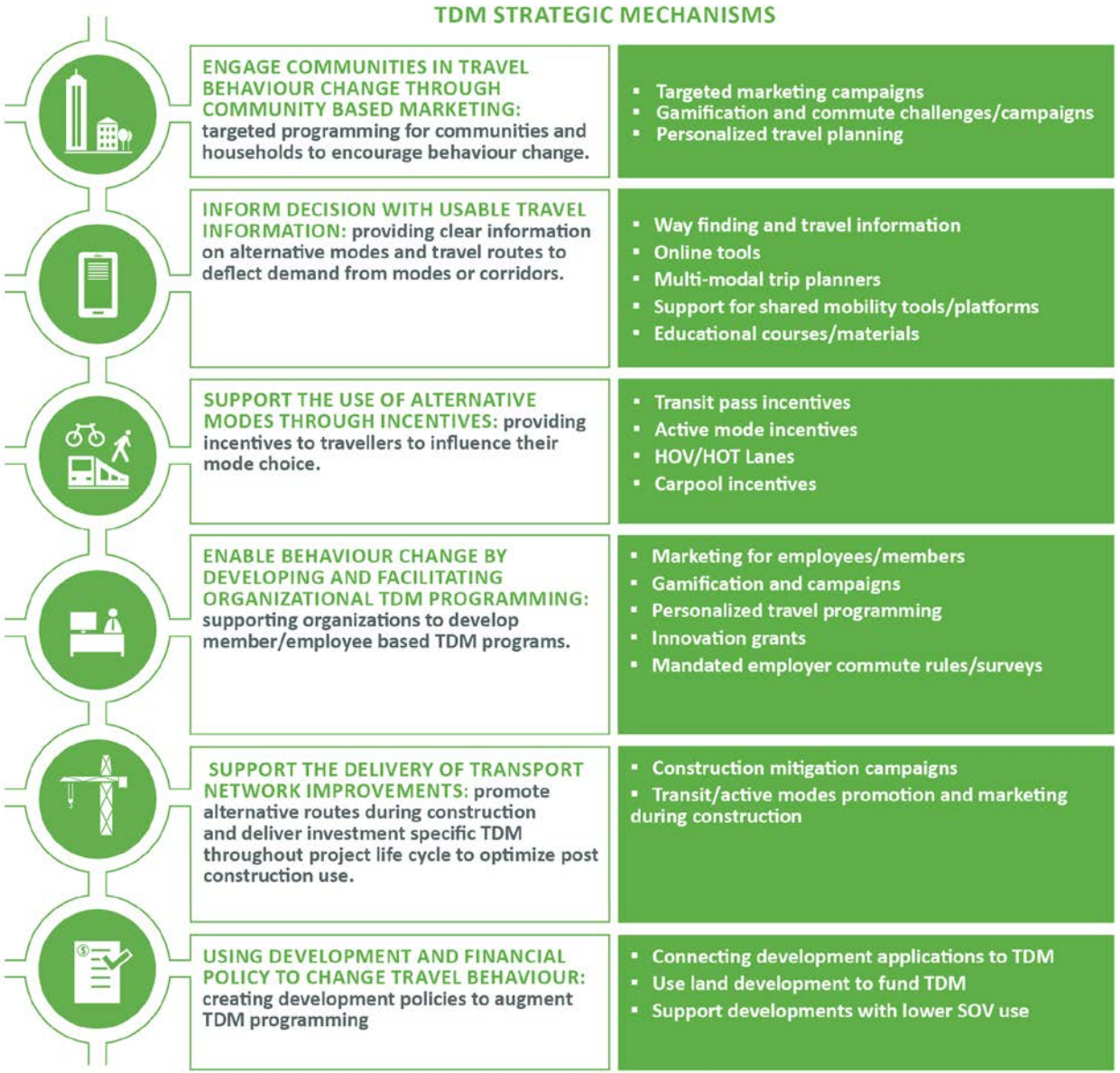
2.27 An assessment of the goals that shape or influence TDM set out high level considerations that inform what TDM programing should achieve. Based on this review, TDM programing in the GTHA should:

- Utilize a variety of tools support the maximization of transport network utilization with respect to broader regional goals and priorities, including sustainability/resilience goals
- Enable the development and operation of a truly multimodal network
- Engage diverse communities to enable access to transport services
- Integrate with planning and delivery of new transit and transport infrastructure, services, and programs (including online tools)

2.28 From these considerations, as well as the review of TDM and the overarching planning paper in section 1, six overarching strategic mechanisms (outlined in Figure 2.1) have been set out to describe how TDM can be used to achieve RTP goals.

2.29 This strategic framework presents a typology of TDM approaches or 'mechanisms' that is used to identify TDM programming that contributes, or may contribute, to the RTP goals.

Figure 2.1: Six Strategic Mechanisms for TDM in the GTHA



3 State of Transportation Demand Management in the GTHA

Overview

3.1 Section 3 provides a review of existing TDM programs, policies, and projects across the GTHA based on the six strategic mechanisms developed in section 2. This review provides a summary of the state of TDM in the GTHA and also outlines key challenges and opportunities for TDM programming in the context of the RTP goals.

Scales of TDM Programming

3.2 TDM programming in the GTHA has historically been delivered by a variety of agencies, organizations, and institutions. Over the last decade, programing has become more formalized with the creation of Smart Commute, as well as multiple municipal plans and programs. Each plan and program can be characterized by the TDM strategic mechanisms and its geographic scale.

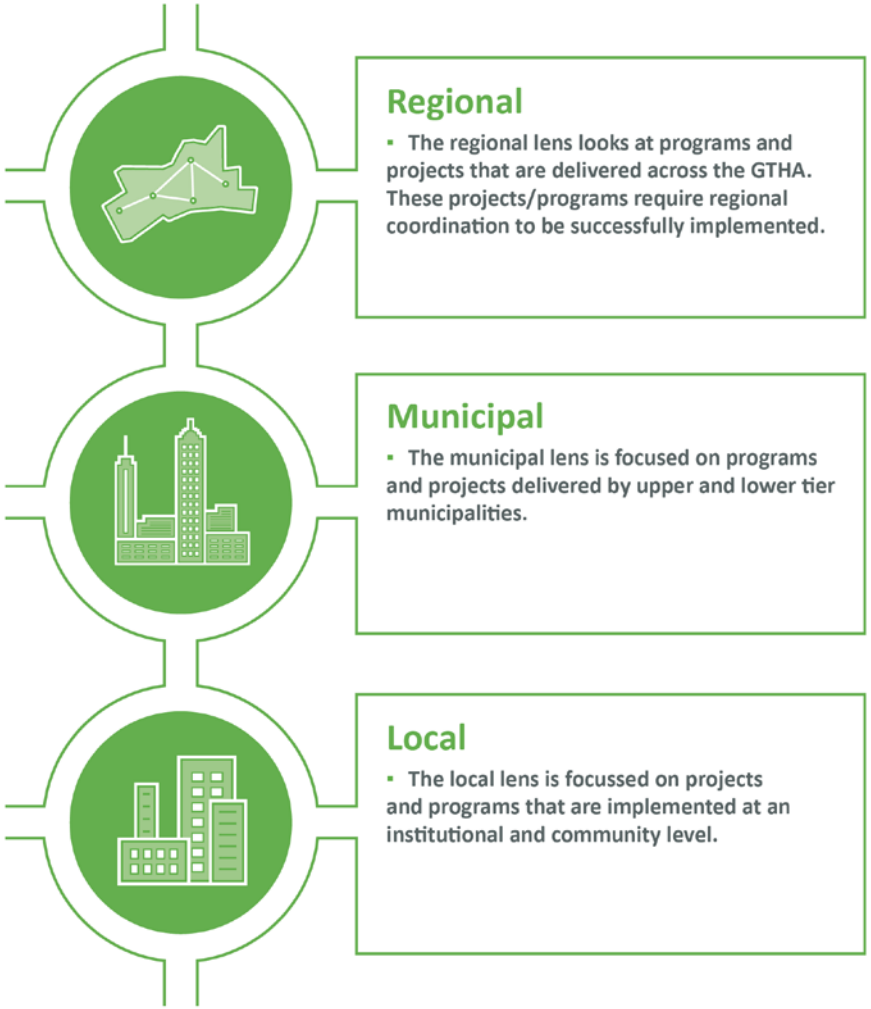
3.3 Current TDM programing is planned and delivered at three scales, as described in Figure 3.1.

A Review of TDM Programming

3.4 TDM programming has been reviewed within the context of the TDM strategic mechanisms and geographic scale to develop a legible outline of the existing programs in the GTHA, to understand progress towards goals, and to understand emerging challenges and opportunities.

3.5 Appendices A-C provide a detailed analysis of TDM policies, programs and initiatives present at the regional, municipal, and local levels across the GTHA. As part of this research, every agency was contacted and invited to provide references, information and insight into how TDM was being planned and implemented in their part of the region.

Figure 3.1: TDM Programming Categorization in the GTHA



Regional TDM Programming

Overview

3.6 TDM programs and policies that act across the entire GTHA are delivered by agencies and institutions with Regional-scale jurisdiction, including:

- **Metrolinx/Smart Commute:** Metrolinx is a provincial agency responsible for the coordination and integration of all modes of transportation in the GTHA. TDM is a critical component of delivering an integrated multimodal transportation system, and as a result Metrolinx operates 'Smart Commute'
- **Ontario Ministry of Transportation (MTO):** the MTO is responsible for people and goods movement in Ontario. This includes a number of programs that are either aligned with TDM, support TDM, or aid in the delivery of TDM programming

3.7 Key initiatives within Metrolinx's Smart Commute program include:

- Employer outreach – part-funding each of the 13 local Smart Commute offices
- Community outreach - strategy developed in 2014, early initiatives include broadening of campaigns to build awareness of transportation options, and broadening

availability, quality and awareness of all transportation options to GO stations
- School outreach – initiated a comprehensive review and implementation plan with the Ontario MTO and regional and local partners

3.8 The Ontario MTO has a high-level role within TDM in the GTHA which has included providing funding for alternative transportation infrastructure projects, operating grant funding programs, and acting as a partner or stakeholder for relevant regional-scale initiatives (such as the School Travel Planning initiative).

TDM Analysis

3.9 Table 3.1 outlines the key initiatives in the region that operated from 2008-present date for Metrolinx/Smart Commute and the MTO.

3.10 Appendix B provides further commentary on Regional TDM.

3.11 Regional programming was reviewed based on the Big Move Goals. This review indicated that overall, no regional or municipal agencies have TDM policies or programs targeted at mitigating construction congestion

3.12 Analysis of existing regional programming suggested that all regional agencies have a good relationship with their local municipal agencies (where applicable) and provide regional oversight and programming for TDM.

3.13 All regional agencies are involved in the management or funding of municipal/local Smart Commute offices (in partnership with Metrolinx), which has greatly expanded the quality and reach of TDM programming.

3.14 Smart Commute has an ambitious mandate to deliver TDM policies, which may be constrained by existing funding and delivery responsibilities. There is further opportunity for Smart Commute to deliver its mandate by aligning programming with large regional investments, including new rapid transit and regional express rail.

Table 3.1: Regional TDM Review

	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Development and fiscal Policy	Summary
Metrolinx Smart Commute	✓	✓	✓	✓	✓		TDM highlighted in the 2008 Big Move as a key strategic area. TDM referenced in Investment Strategy and other guiding policies and documents. Smart commute provides comprehensive TDM advice and programming for employers and employees, as well as community organizations, public institutions, and communities. Smart Commute is centrally administered with a series of satellite offices/programing centres throughout the GTHA.
Ontario Ministry of Transportation		✓	✓			✓	The Ontario MTO has historically supported TDM policies, guidelines, and programming at a high level, including: - Growth Plan sections 3.2.2, 3.2.3 and 3.2.4 - Sustainability in Sight Strategy - Event specific TDM programming (section 10, Let's GO! Pan AM Games Strategic Transport Plan) - Discontinued TDM grants program

-

Municipal TDM Programming

Overview

3.15 This scale includes all programs, policies, and strategies that are delivered by a regional municipality (e.g. York Region, Durham Region, Halton Region, Peel Region), the independent cities of Toronto and Hamilton, and lower-tier municipalities below the regional municipalities.

3.16 Each municipality's Official Plan and any accompanying transportation plans and strategic TDM plans have been reviewed to develop an understanding of:

- The extent to which TDM policies are included in important planning documents
- The extent to which TDM initiatives and programs have been proposed, recommended or confirmed
- How municipal TDM policy and programming contributes to RTP goals and relates to the six strategic mechanisms
- How TDM policy and programming varies from municipality to municipality

Analysis

3.17 At a municipal level, the review indicated that:

- Most of the larger municipal governments have a robust high level policy framework for TDM (OP & TMP)
- While several governments have a development planning TDM regulations, few have detailed processes for requirements, assessment and monitoring
- Most governments have few TDM programs or initiatives (education, encouragement, marketing, etc.) and are instead focused on providing infrastructure for transportation alternatives (e.g. sidewalks, bike network, transit, carpool lots/parking)
- In most cases, governments look to their upper-tier regional partners to provide non-infrastructure TDM programming

3.18 Some regional and municipal agencies have taken a particular interest in advancing the role of TDM within their communities. Key innovations are noted in Table 3.2.

Table 3.2: Innovative TDM Programming in the GTHA

Innovation	Description
Developer Funded Programs	**York Region** is currently implementing a community outreach program using funds collected from developers. With the new community built and occupied, the Region, in partnership with several municipalities in delivering customized outreach to 10,000 households. TDM was included within the 2012 Development Charges Background Study and has extended the program to all new residential development.
Implementation Groups	**York Region** and the **City of Mississauga** have created internal or stakeholder working groups to plan, manage and deliver TDM initiatives in an attempt to actively pursue TDM objectives, and improve coordination.
Freight TDM	**Peel Region** has conducted research and insight into how commercial mobility can be optimized and how local and regional stakeholders could support a more efficient freight network. **The City of Toronto** has also created an Urban Freight Working Group to improve commercial mobility
Social Marketing	**Peel Region** has completed a Social Marketing Plan and continues to successful work with its local municipalities to consistently implement community-based marketing projects with target goals and objectives; the **Town of Caledon** is also piloting an individualized marketing program in a new suburban/semi-rural development
TDM Requirements in New Development	**City of Hamilton, Halton Region York Region, and Peel Region** have recently developed, or are in the process of developing, more robust processes and guidelines for regulating and requiring TDM measures as part of the planning application process.

Table 3.3: Regional and Municipal TDM Review

	TDM Policy		TDM Implementation						TDM Policy/ Programs Self Assessment	Key Initiatives
	OP	Other	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Development and fiscal Policy		
City of Hamilton	Y	Y	Y	Y	Y	Y	Y	Policy	Some	Bikeshare implementation Individualized marketing for construction disruption TDM for Development Guidelines
City of Toronto	Y	Y		Policy		Y		Y	Some	Transit Passes in new development Complete Streets Guidelines Urban Freight Working Group
Halton Region	Y	Y			Policy	Y		Policy	Some*	TDM Developer Guideline Commuter Parking Lot Feasibility Study
City of Burlington	Y	Y	Policy		Policy			Policy	Few	TDM as Community Benefit under Section 37 Discussion Paper on TDM policy improvements
Town of Oakville	p				Policy			Policy	-	Limited TDM programming
Town of Milton	Y				Policy			Policy	Few	Limited TDM policy and programming
Town of Halton Hills	P								-	No TDM policy or programming

Y = fully-formed policy or program; P = partially formed policy or program; Policy = policies in place, but not implemented

	TDM Policy		TDM Implementation						TDM Policy/ Programs Self-	Key Initiatives
	OP	Other	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Development and fiscal Policy		
Peel Region	Y	Y	Y	Y	Y	Y		Policy	Many*	TDM Strategy (2014) Individualized Marketing programs Social Marketing Strategy Freight TDM
City of Mississauga	Y	Y	Y	Policy	Policy	Y		Policy	Few	Development of TDM Work Plan Business Park TDM Working Group
City of Brampton	Y		Policy	Policy		Y			-	Limited TDM programming
Town of Caledon	Y		Y	Y	Y	Y			Some	Individualized Marketing pilot program

Y = fully-formed policy or program; P = partially formed policy or program; Policy = policies in place, but not implemented

	TDM Policy		TDM Implementation						TDM Policy/ Programs Self-Assessment	Key Initiatives
	OP	Other	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Development and fiscal Policy		
York Region	Y	Y	Y	Y	Y	Y		Y	Some	Residential PTP Outreach to new developments TDM Implementation Group TDM Strategy (2013)
City of Vaughan	Y	Y	Y	Y	Y	Y		Policy	Some	Residential PTP Outreach to new developments (with York Region) OP TDM Policies strengthened
City of Markham	Y	Y	Y	Y	Y	Y		Policy	-	Residential PTP Outreach to new developments (with York Region)
Town of Richmond Hill	P	Y	Y	Y	Y	Y		Policy	Some	Residential PTP Outreach to new developments (with York Region) TDM Plan being developed
Town of Aurora	P	Y	Policy						Few	Limited TDM policy and programming
Town of Newmarket	Y					Y		Policy	Many	Recent Secondary Plan approval paves way for development TDM
Town of Whitchurch-Stouffville									-	No TDM policy or programming
Town of East Gwillimbury	Y		Policy					Policy	-	Limited TDM programming
Town of Georgina								Policy	-	Limited TDM policy and programming
Township of King		P							-	Official Plan update to include TDM

Y = fully-formed policy or program; P = partially formed policy or program; Policy = policies in place, but not implemented

	TDM Policy		TDM Implementation						TDM Policy/ Programs Self-Assessment	Key Initiatives
	OP	Other	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools		
Durham Region	Y	Y	Policy			Y			Many	TDM Study (2007)
City of Pickering	y		Policy							
City of Oshawa	P							Policy		No TDM policy or programming
Town of Ajax	Y					Policy		Policy		
Town of Whitby	P									
Municipality of Clarington										
Township of Uxbridge										No TDM policy or programming
Township of Brock										No TDM policy or programming
Township of Scugog	Y			Policy						

Y = fully-formed policy or program; P = partially formed policy or program; Policy = policies in place, but not implemented

Local TDM

Overview

3.19 The local level of analysis is focused on identifying key programs/initiatives and best practices that occur within an institution such as universities, hospitals, community groups schools, and private sector employers. As there are numerous community organizations and hundreds of employers actively involved in TDM programming throughout the region, this review is focused on highlighting some examples of local TDM programming and clarifying the types of outcomes that can be achieved through locally-based initiatives.

Local Program Analysis

3.20 A summary of local program examples by strategic mechanism is provided in Table 3.4. Following the summary table are four case studies including a work place, a community based program, a school agency program, and a university. These are included to identify and demonstrate the range of programs that can be delivered at a local level.

Table 3.4: Local TDM Program Review

Strategic Mechanism	Example Programs
(1) Engage communities in travel behaviour change through community based marketing	• Campaigns and events • Site assessments and surveys • Social media campaigns • Resource packs • Email blasts • School and workplace travel planning • Individualised marketing
(2) Inform decisions with usable travel information	• Portals for ride matching / van pooling / car pooling • Individualised marketing • School and workplace travel planning
(3) Support the use of alternative modes through incentives	• Award and designation programs e.g. Smart Commute, EcoSchools • Employer discount on transit passes • Making bikes/cars available through sharing e.g. Car2Go for trips during the work day • Emergency ride home • Availability of teleworking
(4) Enable behaviour change by developing and facilitating organizational TDM programming	• Smart Commute • School Boards
(5) Support the delivery of transport network improvements	• School Bike Rack programs • City of Hamilton Individualised marketing to support Queen Street Hill Road construction
(6)Using development and financial policy to change travel behaviour	• N/A

Example: L-3 WESCAM (workplace)[1]

Burlington – designs and manufactures imaging and sensor systems.

3.21 L-3 WESCAM was recognised as the Smart Commute Employer of the Year for the Halton Region for a number of initiatives they undertook throughout the year. These included a program of weekly email communications, bike facilities (parking, showers, lockers, maintenance lunch and learns) and provision of an inter-office shuttle bus with bike racks. A key factor in their selection as an employer of the year, was the work they undertook in partnership with Smart Commute Halton and Burlington Transit to plan and implement a peak hour bus link between the L-3 WESCAM office and Aldershot and Burlington GO stations.

3.22 Prior to implementation, a site-specific travel survey was undertaken to assess the potential demand for the service, which was then promoted as part of the weekly email communications strategy. It has been estimated that the measures introduced in 2014 by L-3 WESCAM helped to reduce single occupant vehicle trips to their offices by over 350, equating to nearly 30,000 vehicle kilometres saved, and a reduction of over 6,000 kilograms of greenhouse gas emissions. The success at L-3 WESCAM can be attributed in part to the multi-arching and sustained strategy that was employed.

3.23 Consistent and regular (in this case weekly) communications kept the issues current, and providing support in the form of lunch and learns helps promote a feeling of community around bike use within the company. They also have a company bike team who help promote cycling and run the lunch-and-learns. Developing a knowledge base about the commuting patterns of their employees allowed them to identify the need to implement a shuttle to the GO station and also provided them with the justification of potential ridership to Burlington Transit to make it happen.

Example: Active Switch Community Program for residents of the City of Mississauga (Community)

3.24 This program has been running since 2014 and has a goal of replacing 250,000 vehicle kilometres with active trips by 31st March 2016 - they are currently at 23% of their target. Active Switch is supported by the City of Mississauga and 'aims to help residents get from 'Point A to B' using active and healthy travel options.' There is an Active Switch website which allows people to sign up, log their trips, set goals, measure progress and be eligible for rewards and special prizes. The website also provides details of local events and wider community resources. In addition to reducing the environmental impacts of vehicle kilometres, it aims to promote physical activity and how the use of active transit to commute can help to fit that exercise into busy schedules.

3.25 The program also makes use of social media including Facebook and Twitter to publicise their programs, inform users about their incentives and wider community activities. It is still quite early in the program to determine how successful it is, or it will be, however there are currently around 450 users signed up to the community site.

Example: Toronto Catholic District School Board (TCDSB) (school/agency)

3.26 The TCDSB developed a School District TDM Plan which informs administrators, teachers, students and parents about the transportation choices and options and provides tools that allow them to make sustainable transportation choices. The following activities are included in the TCDSB:

- Carpool matching portal
- Discount transit passes

[1] http://smartcommute.ca/success-stories/awards

- Emergency ride home program
- Teleworking and flexible hours
- Parking strategies
- School Travel Plans

3.27 This is an excellent example of a multi-tiered agency developing a TDM framework for a larger network of connected entities, in this case member schools. With leadership from the District, individual schools are able to take advantage of district-wide tools and adapt individual schools initiatives for their own context.

Example: University of Toronto (university)

3.28 St. George Campus completed a master plan study in 2011. This exercise led to a secondary master plan, to be completed in 2015 which calls for a complete transportation plan. This transportation plan is in the Draft stage and will be added to the new Master Plan once it is completed.

3.29 TDM principles are to be included in the plan as part of each of the three U of T campuses in order to find ways to increase the ease with which people get to, from and around each campus.

Challenges and Opportunities for TDM in the GTHA

Overview

3.30 The review of TDM programming across 6 strategic mechanisms and 3 scales of delivery were further assessed to identify cross cutting challenges and opportunities for TDM in the region. This assessment considered:

- **Challenges:** issues and conditions that limit TDM programming from effectively contributing to RTP goals
- **Opportunities:** issues and conditions which enable TDM programming to contribute to RTP goals, or that may be enhanced to further contribute to goals

3.31 This assessment is intended to clarify key issues regarding the current state of TDM in the GTHA in order to:

- Clarify TDM's contributions to the RTP as part of the RTP Review
- Identify areas of consideration for future RTP development
- Identify issues that may be considered for ongoing TDM program delivery

Program Review

3.32 The program review explored challenges from a regional, municipal, and local level. This review included engagement with Smart Commute and each upper and lower tier municipality as well as the thorough review of plans, policies, and strategies.

3.33 From this review, it was determined that there is a range of interest, knowledge, resourcing, and expectations across the region with respect to TDM's role and level of programming that should be delivered. The upper tier municipalities have higher expectation for what they should be delivering, and many such as Peel and York are regional leaders in TDM policy and implementation.

3.34 Conversely, within the smaller lower tier municipalities, towns and townships there are fewer mobility alternatives beyond carpooling. This limits the tools that TDM programs can utilize, and is seen as an obstacle to robust programming. However, many of these smaller communities have developed TDM policy and programs that are achieving positive results that are in line with their transportation context. .

Challenges:

3.35 The program review and analysis noted several key challenges for TDM achieving RTP goals in the GTHA:

- **TDM program funding and resourcing**
- **Coordination and partnerships**
- **Planning, Evaluation, and Implementation Challenges**
- **Provision of context specific TDM**

TDM program funding and resourcing

3.36 The program review noted that many TDM agencies suggest lack of funding and resources is a major constraint on the growth and implementation of TDM programming. Dedicated TDM staff are a key enabler of successful TDM programs. Agencies noted that limited resources may hinder the depth and growth of TDM programs.

3.37 In particular, developing funding for soft TDM measures and programs at the local level, such as education, behaviour change activities, and long term engagement programs is seen as a challenge as these programs are not as well aligned with current funding tools, such as development charges.

3.38 Funding requests for new TDM programming may also prove to be challenging due to the time scales and difficulty of monitoring involved with TDM programming.

Coordination and partnerships

3.39 Because the transport network is provided, operated, and planned by multiple agencies, coordination for TDM programming is essential. Currently, there are many parties working in the TDM space, and while programs like Smart Commute provide a strong platform for collaboration, further work is needed to ensure TDM is delivered in a robust and consistent manner.

3.40 TDM policy requires common buy-in and the integration of multiple policy areas – including environmental policy, land use planning, transportation, and economic development. TDM policies and programs require partnerships with key stakeholders, such as the private sector, different levels of government, and the non-profit sector. Additionally as TDM can fit in many program areas (Zoning by-laws, development permitting, etc.) there is need to clarify the role of different parties to ensure that key challenges can be mitigated. Key challenges include:

- Currently, some stakeholders may not have the interest or resources for developing and implementing TDM policies and programs.
- Coordination between transit agencies for TDM oriented on trips rather than services
- Uncertain collaboration and responsibility breakdown for upper tier and lower tier municipalities and regional agencies

Planning, Evaluation, and Implementation

3.41 Planning and implementing TDM programming presents challenges due to the time scales and complexity of policy involved. Implementing successful TDM often relies on diverse tactics used in unison. However, in many contexts due to resource and programming constraints, multiple programs may not be available at once, which limits the impact of the individual program.

3.42 TDM programs typically deliver behaviour change outcomes over a longer term and may not deliver immediate outcomes, which may be an impediment to further planning.

3.43 A further challenge is the need for robust evaluation and monitoring to make the case for TDM measures and continued investment. Pilot studies and TDM programming have been implemented across the GTHA; however, clarity on their results and scale of impact is difficult to ascertain. This creates two challenges: planning new projects, and evaluating the impacts of previous work.

3.44 Monitoring or following up on TDM measures implemented by agencies or included in development planning both present unique challenges. With respect to direct engagement programs, success factors may be challenging to directly measure. For development programming, enforcing TDM measures over the long run requires further resources and programming.

Provision of context specific TDM

3.45 TDM programming faces a number of challenges related to context. In general, TDM programming should be adapted to match the context it is implemented in. Common challenges in the GTHA include:

- Some areas have a lack of transit options due to large geography and rural environment
- Existing neighborhoods are more challenging than new developments (e.g. distribution of materials or enforcing provision of PRESTO or other travel incentives)
- Not all areas have key connections between modes (transit, active modes)

- The ability of TDM programs to mitigate or manage the transportation impacts of new development and redevelopment, while supporting a high quality of life
- Alignment of new development with available and planned transport services and infrastructure

Opportunities

3.46 Some of the key opportunities and challenges that regional and municipal staff provided include:

- **Focus on context specific TDM**
- **Improved Collaboration**
- **Clarify and expand role of TDM with existing travel tools**
- **Adapt tools for context specific application**
- **Frame TDM as an alternative congestion management approach**
- **Explore the role of financial measures**
- **Develop project specific TDM for new rapid transit**
- **Leverage mandates in official plans**
- **Connect TDM to overarching environmental policies and issues**
- **Emphasize role of TDM in planning process**

Focus on context specific TDM

3.47 The communities in the GTHA represent a wide array of land use configurations and communities, each with unique travel behaviour and needs. Through Smart Commute and local/municipal TDM initiatives, an array of context specific TDM measures have been developed. There is an opportunity to further refine TDM programming to best capture the needs of local communities. These context specific TDM plans should directly consider:

- Available transportation options and the trip markets they serve
- Planned transport network improvements, with a focus on rapid transit expansion
- Existing and future land use considerations

3.48 To improve context sensitivity, TDM plans should be further developed based on the geographic scale they apply to. For example, plans may apply to an entire city, a downtown, mobility hubs, intensification areas, or a specific site. Funding and resources should be allocated and invested commensurate with the type of focus area as well as the scale of change that is expected.

3.49 Additionally, these programs should build upon existing programming and pilots, in particular, individualized marketing (implemented in Peel and Hamilton).

Improved Collaboration

3.50 Community based TDM programming is reliant on clear division of responsibility and collaboration between multiple government and non-government organizations. For example, the Hamilton and Toronto TDM programs both noted that stronger partnerships with school boards is an essential step to deliver school travel planning to a wider array of schools.

3.51 This opportunity requires clarity of the role different agencies will play in delivering successful community TDM programs, including:

- Provision of financial support
- Planning programs
- Delivering programs
- Evaluation programs

3.52 Additionally there is room for further collaboration between employer and community based programming to support the delivery of TDM programs based on commuter origin. Commuters who reside in one municipality but work in another may not be captured by an employer program may be an untapped market for further TDM programming.

3.53 Similar to community based TDM, collaboration between various parties is an essential component of delivering successful TDM programming to employees/employers. Currently, Smart Commute delivers effective employer based TDM programing throughout the GTHA. This approach blends centralized planning with a network of program delivery through associated offices and TMAs, allowing flexibility and context specific approaches.

3.54 There is an opportunity to clarify the role of each stakeholder/agency type involved in organizational TDM programming to strengthen and improve Smart Commute's work. This means:

- Defining the role of local, municipal, and regional parties and creating long term partnerships for program delivery
- Aligning municipal TDM actions with Smart Commute and TMA best practices to support commute programs
- Identifying legislative opportunities for commute based TDM program support from higher orders of government

Clarify and expand the role of TDM with respect existing travel tools

3.55 Since the Big Move, the GTHA has seen a number of transport innovations, including the PRESTO smart card and Triplinx trip planning tool. There is an opportunity to document how TDM initiatives can better leverage these tools to achieve their unique goals as well as broader TDM policy.

Adapt tools for context specific application

3.56 At the local and municipal level, templates for sharing information can be developed to improve the planning and delivery of TDM programming. These templates should be scaleable to different contexts, and can include:

- Campaign materials
- Commute choices/travel choices information
- Surveys

3.57 These resources should build upon existing TDM branding, such as Smart Commute, and existing tools (e.g. Triplinx) to provide an integrated approach to TDM information delivery.

Frame TDM as an alternative congestion management approach

3.58 TDM can be framed and further implemented as part of broader congestion mitigation efforts. In the jurisdictional review, municipalities indicated that potential infrastructure improvements to decrease auto congestion are limited within built up areas. For example, congested roads may no longer be physical widened. In such areas, there is an increased opportunity to use TDM to achieve congestion mitigation goals without the need for infrastructure expansion. In lower congestion areas, TDM programing can be developed to mitigate potential congestion before it occurs and decrease the need for capital spending on roads expansion.

3.59 TDM programing can be positioned as a multi-modal approach to limit congestion by identifying areas that suffer from the greatest congestion, but also have a high potential for behaviour change. An analysis of these areas using market segmentation can inform how to deliver TDM programming at an employer and community based level.

3.60 In both cases, integrating a wide array of travel choices (car share, carpool, vanpool, bike share, transit, etc.) and incentives (passes, discounted car and bike share memberships) into TDM programing to match the trip patterns and geography of the area can offer long term congestion relief.

Explore the role of financial measures

3.61 Currently, financial measures are not part of a robust GTHA wide tool kit. These measures

include peak pricing, expanded mode based taxes (i.e. parking or gas tax), or high occupancy toll lanes. These measures are direct disincentives, that encourage auto users to travel on an alternative mode. The role of these measures, within TDM in the GTHA, could be scoped and analyzed to identify where it would be appropriate to pilot financial measures.

Develop Project Specific TDM for New Rapid Transit

3.62 Currently the GTHA is undertaking a large expansion of its rapid transit network, including funded LRTs in Toronto, Hamilton, and Mississauga/Brampton. Ongoing expansion of bus rapid transit, such as YRT's Viva, is also providing new and improved journey opportunities. The regional transit network is also being upgraded through RER.

3.63 Each of these projects will offer large benefits to the GTHA's transit network, which may be amplified through the inclusion of TDM programming throughout all stages of project delivery. TDM for these projects may be delivered in collaboration between Smart Commute, local agencies, as well as transit operators. TDM should address:

- Impact of construction – including all surface modes
- Developing ridership ramp up
- Direct marketing to target market areas

Leverage mandates in official plans

3.64 Specific TDM plans provide greater focus for implementing actions (e.g. Richmond Hill, Toronto). Leveraging existing official plans and ensuring future planning processes can contribute to a stronger municipal role in TDM will support the delivery of TDM programming.

Connect TDM to overarching environmental policies and issues

3.65 Municipalities identified that climate change and other environmental issues can be a key driver for discussing TDM in terms of policy formulation and community engagement. TDM can be positioned as an intersectional issue that supports climate change/environmental policy along with goals for reduced congestion and an optimized transport network. The Region of Peel reported success integrating climate issues into travel demand management.

3.66 Additionally, the use of laws and overarching policies to mandate TDM programming as an element of environmental policy may offer opportunities to more strongly incentivize or mandate TDM policies, programs, and actions across all the regional, municipal, and local tiers of TDM programming.

Emphasize role of TDM in Planning Process

3.67 TDM has seen successes when implemented into planning, development, and permitting processes. There is an opportunity for TDM programming to be integrated into the remaining official plans which currently have no emphasis on TDM, while also expanding the role of TDM in land use planning and development. Programs such as York's development oriented TDM programming, provide a strong starting point to developing a regional model for how TDM can be integrated into the planning process to improve:

Summary of Challenges/Opportunities

3.68 From the review of program specific challenges, a set of overarching challenges and opportunities has been developed. These challenges and opportunities are broken into two categories: challenges and opportunities for each strategic mechanism (Table 3.5) and overarching TDM challenges/opportunities Table 3.6.

Table 3.5: Regional TDM Programming Summary

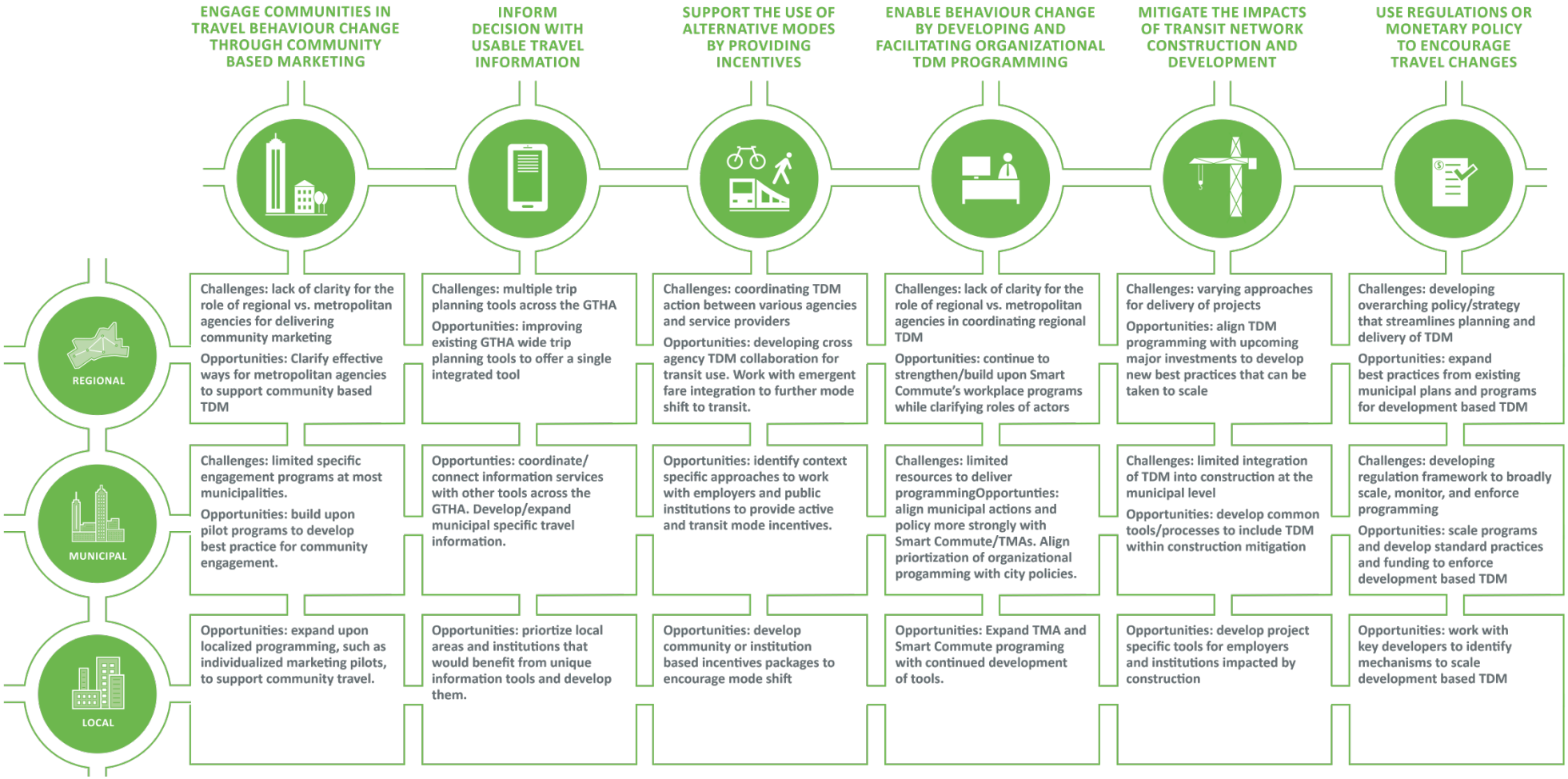


Table 3.6: Overarching TDM Challenges and Opportunities

THEME	OVERVIEW	KEY CHALLENGE	KEY OPPORTUNITY
CLARIFICATION OF ROLES OF DIFFERENT AGENCIES/ACTORS	TDM programing throughout the GTHA involves a number of different actors at each scale of programing (metropolitan, regional/municipal, local). This allows for flexible service delivery, but also may contribute to ambiguity regarding the roles of actors.	Currently there is no overarching policy framework or strategy to align and integrate action. This hinders coordination and cohesive action by actors at all three scales (metropolitan, regional/municipal, local).	Develop a stronger delineation of the roles for each agency or actor in TDM at a policy level that builds on the current flexibility, but strengthens TDM through clarity.
STRENGTHENING OF GUIDANCE FOR TDM IMPLEMENTATION	The Big Move called for the inclusion of TDM in official plans. While there has been success towards this, including the development of TDM policy fit for geographic context, there is also an implementation gap for achieving targets and implementing robust TDM programing.	The potential of TDM has been emphasized in official plans, but tools and processes to achieve TDM goals at a regional/municipal level have not been established.	Develop support for TDM program implementation based on the varying contexts (land uses, accessibility to transit, trip types) that expands upon the tools already being created by Smart Commute as well as early leadership and success stories from regional/municipal actors.
INTEGRATION OF TDM INTO THE LIFECYCLE OF MAJOR TRANSPORT INVESTMENTS	The GTHA is undergoing rapid growth and has recently invested in numerous rapid transit and transportation network improvement and expansion projects. These projects can be more fully leveraged by pursuing network optimization across the whole project life cycle (planning, construction, service delivery, maintenance).	Across metropolitan, municipal, and local scales, various actors are implementing transport improvements. There is no overarching and consistent approach to using TDM to ensure projects allow for network optimization.	Develop a set of policies and tools to aid in the delivery of new infrastructure investment as well as the optimization of delivered projects.
EXPANDED TOOLBOX OF TDM MEASURES	Currently TDM programming relies on a select number of TDM approaches across each mechanism. While these measures are creating results, further measures including legislated TDM mechanisms, standardized TDM approaches, new funding models, and new financial instruments may further enhance TDM programming.	Currently, many of the strategic mechanisms to achieve RTP goals are not reaching their potential due to limited powers and TDM tools.	A scalable set of TDM measures that can be adapted across the GTHA's contexts can be created to enhance TDM . These approaches can be expanded by global best practice. Measures may include: • Legislated TDM rules (e.g. employers over 100 must comply with TDM programming) • Grants and performance based funding tools to strengthen role of all TDM actors • Financial tools to encourage mode shift.

4 Transportation Demand Management: A Broader Context

Practice Review Overview

4.1 As the GTHA is formed by a variety of municipalities and communities, it will require diverse TDM programming to successfully meet TDM goals. Other regions have successfully used TDM as part of broader transportation and regional policies to achieve strategic goals. In order to harvest promising practices and critical lessons from successful TDM programs, a global best practice review was conducted.

4.2 Best practice cases studies were identified in five regions and were chosen based on governance similarities that would make insights reasonably applicable to the GTHA context. The regions included:

- London, UK: Transport for London is a regional agency responsible for a wide variety of transportation-related infrastructure and programming, including TDM initiatives such as congestion charging and community-based Personal Travel Planning;
- Portland, Oregon: Metro is a regional planning agency that funds TDM programs across Portland, including initiatives like individualized marketing, employer outreach and funded stakeholder programs.
- San Diego, California: iCommute is the regional TDM program delivering TDM outreach to schools, communities and employers, including a comprehensive approach to employer engagement;
- The Sustainable Travel Towns, UK: A government funded multi-faceted transportation and TDM program piloted in Darlington, and Peterborough, including transit, walking, and cycling promotion to all citizens in the cities;
- Tokyo: Integrated approach to demand management, including parking management, land use management, and regional government oversight.

4.3 This global best practice review utilized the four drivers framework to contextualize each case study and identify how its target region is similar/different to the GTHA or parts of the GTHA. Each case study is assessed based on the programs that are operated and their historical context. Each program is characterized using the 6 strategies identified in section 2 as well as the three geographic scales.

4.4 The context of each case study is provided in Table 4.1.

Table 4.1: Case Study Context

CASE STUDY	KEY PROGRAMS/ PROJECTS IN REGION	LAND USE	TRANSPORTATION	GOVERNANCE	ECONOMY
GTHA	Smart Commute, Municipal programming	Dense Regional Core with surrounding smaller sub-regional cores and suburbs. Mixed use development in older areas.	Commuter rail provided throughout the region, with local transit provided in municipalities. Regional highway system supports auto trips.	Municipal governments manage local transport services, with provincial government and regional agency (Metrolinx) managing regional transport issues and investment.	Service economy in regional and sub-regional cores. Light manufacturing in peripheral areas. Specialization varies across the region.
London	Congestion charge zone, Personalized Travel Planning (home/work/school)	Concentration of employment and activities in the regional core. Commuters drawn from large radius outside of metropolitan area.	Commute trips and transportation network focused in the city centre. Heavy use of rail/underground for commuting. Commute trips and transportation network focused in the city centre. Heavy use of rail/underground for	Regional transportation governance with local authority support.	Service based economy, high concentration of high-value industries in core (banking, insurance, management consulting).
Portland	SmartTrips, ECO employer program, grant-funded TDM programming	Diverse land uses, leading to a range of transportation options appropriate to density and urban form.	Recent investment in expanded light rail, streetcar, commuter rail, and bus network. Known for bicycle culture.	State ordinance (ECO)mandates reduction in SOV trips/emissions. Regional authority provides TDM grants to local governments.	Dispersed economic activity with a range of medium-sized retail operations.
San Diego	Comprehensive employer engagement, iCommute	Dispersed land use, with moderate density in downtown core. Suburban-style land uses, with isolated greenfield-style development in areas.	Light and commuter rail along key corridors. Bus services to outlying areas at low frequencies.	Regional transportation guidance with local government support.	Tourism and military-based economy. Some technology sector presence.
Sustainable Travel Towns	Travel Options awareness campaigns	Varied land uses: small scale urban town centres with suburban areas outside of the core.	Private bus services, with rail for longer journeys.	Local governments are responsible for implementing programming.	Local economies with key employers and local service sectors.
Tokyo	'Proof of parking' policy, TDM-supportive land uses	High density, with significant Transit-Oriented-Development around rail stations.	Extensive private rail network. Walking and cycling for local journeys.	Regional governance, with local cities supporting.	Service based economy, high concentration of high-value industries in core (finance, banking).

London, UK

Introduction

4.6 In recent years, the region of London has made significant investments in order to improve travel time reliability and quality of life in the inner city. Central to these investments has been TDM program development, including the introduction of a congestion charge in the city centre. Further, major disruption expected during the 2012 Olympic Games acted as a catalyst for infrastructure investment, as well as motivating a large-scale TDM effort during the event itself.

Understanding the Context: Four Drivers

Land Use

4.7 A population of over 9 million and an area covering 1,500 km^2. London had experienced some population loss in the inner-city post-WWII, but this has now been reversed through improvements in the local environment and housing availability.

4.8 Inner London is a diverse area, which encompasses areas of affluence alongside ethnic diversity and poverty. Future population growth is expected to be significant, which will tax the population's access to open space and social infrastructure. Inner London's proximity to the Central Activities Zone, where London's geographic, economic and administrative functions are centered, provides opportunities for residents and for the development of more attractions and employment zones to spread travel demand away from the city center.

4.9 Outer London encompasses a range of 'bedroom' suburbs, as well as industrial areas outside of the central city. The majority of Londoners (60%) live here, and the towns and neighborhoods are generally greener, with healthier and more prosperous populations. Almost 40% of London's employment is located in Outer London, though employment growth is not keeping pace with population increases. This places pressures on the transportation network, and is at odds with London's 'polycentric' growth strategy, which requires more fully developed town centres throughout London to maintain quality of life and economic growth.

4.10 The Regional Green Belt is a protected area of public open spaces and recreational areas around Greater London. First designated as a 7-10 mile wide buffer, it has expanded significantly since the 1950's and now covers portions of 68 local areas and is up to 35 miles wide in some locations. Covering an area almost three times larger than the region of London, the green belt is under increasing pressure due to expected population growth that will add 2 million residents to the area over the next 15 years.

Context	London, UK
Land Use	• Housing costs increases commute distances with increasing pressure on green belt as commuters travelling from beyond it • Coordinated approach to TDM in development planning to foster lower trip generation rates and reduced SOV access to new sites.
Transportation	• Congestion charge in Central London allows for population and employment growth in city center, maintaining travel times • Growth in active modes reduces pressure on transit • Major investment in radial rail network, cycling infrastructure, and smart card use increases convenience of alternatives
Governance	• Regional transportation agency provides centralized direction and vision for TDM • Single authority for multi-modal transportation support funding prioritization and provides coordinating role for municipalities
Economy	• Major focus on improving mobility within the city centre for all modes • Priority to connect employees to high-demand employment centres

4.11 Outside of the green belt is the 'London commuter belt' within which it is practical to commute to work in London. This boundary is dynamic, and expands outwards with the expansion of transportation options and housing availability, putting pressure on the Green Belt to be reallocated to meet demands for urban land uses.

Transportation

4.12 London's transportation system is extensive and well-developed, with varied public transportation options alongside a well-developed roads hierarchy, and active modes infrastructure. Mode shares for alternative modes are relatively high, with 44% of residents using transit, 34% private vehicle, with 21% and 2% walk and cycling respectively.

4.13 The historical Underground system is 415km in length with 11 lines, which, along with the Docklands Light Railway and the Tramlink system, provides the majority of transit journeys in the region. Seeing over 3 million passengers each day, the Underground carries nearly 50% of London commuters. Heavy rail is also commonly used for suburban, intercity, airport and international travel and there are 18 stations within London. These privately operated services provide almost 900,000 trips into the city for commuters each day.

4.14 Major routes in London include a series of three ring roads, encircling the city, with major radial routes directed outwards to key destinations. The M25 encircles most of the urban area at a 25km radius, with the western section past Heathrow airport carrying around 200,000 vehicles per day.

4.15 The majority of central London's roads pre-date the automobile, thus congestion is often significant. The introduction of a congestion charge in 2003, in combination with improvements in bus supply and quality have contributed to a 18% fall in traffic and 30% drop in delays, while generating £1.3 billion ($2.5 billion CAD) over 10 years to be spent on further transportation improvements.

4.16 Cycling infrastructure has been significantly improved in recent years, with a number of segregated facilities constructed since 2010. In 2013, "The Mayor's Vision for Cycling" in London was announced, which earmarks £1 billion ($2 billion CAD) for infrastructure improvements, including a fully segregated cross-town route, and a Central London 'bike grid' which would improve existing central city routes.

The Santander Cycles bike share program (formerly Barclays Cycle Hire) was launched in 2010, and has expanded steadily since. The service now has approximately 11,500 bikes and saw 10 million rentals made in 2014.

Governance

4.17 London is administered at two levels: at the regional level, the Greater London Authority carries out strategic planning, policing and emergency services, most aspects of transportation and economic development. The Mayor of London and the London Assembly cooperatively guide decision making and policy directions.

4.18 At the local level, 33 local authorities are responsible for services including planning, schools, social services, local roads and sanitation.

4.19 Funded by the Greater London Authority, Transport for London is controlled by a board and is organized in three units according to mode of transport: Surface Transport, Rail and Underground, and Crossrail. Surface Transport covers a range of areas including buses, cycling, streets, river services, Dial-a-Ride and taxi/private hire services. Of the organization's £10 billion budget ($20 billion CAD), approximately 60% is spent on running the network, while the other 40% is allocated to service improvements.

Economy

4.20 As a world city and major financial center, London is home to numerous banking and insurance headquarters, and is a leading global centre for management consulting, law and accounting firms. Further, media, technology and retail sectors all provide important economic contributions, with London seeing among the highest-retail sales of cities worldwide. With total employment reaching 5.2 million jobs, approximately 85% of the working population works in the service industries, with around 500,000 employees working in manufacturing and construction. Tourism also plays a significant role in London's economy, seeing over 18 million international visitors each year, who spend around £15 billion ($30 billion CAD).

Strategic Review and Application to GTHA

4.21 London employs a range of well-funded infrastructure and programs to ensure widespread awareness and use of sustainable travel options. London's high alternative mode share can be attributed to the combination of diverse and convenient public transport alternatives. A few of the key TDM initiatives that have influence travel behaviour in the last decade include:

- Investments in bicycle infrastructure and shared mobility
- TDM in the development approvals process
- Congestion charging in Central London

4.22 London's key TDM programs for the practice review are summarized in Table 4.2. Table 4.3 outlines additional TDM strategies in use in London.

Investing in cycling- hire infrastructure with awareness

4.23 2010 was a pivotal year for cycling investment in London with the launch of the Cycle Hire (bike share) program and the first two Cycle Superhighways. This was a strategically coordinated approach to make access to bicycles easier, but to also make cycling safer and quicker.

4.24 Another important strategic approach that was taken was to use the parallel programs to sharply increase awareness of cycling and quickly attract more cyclists to London's roads. Free bicycle training programs were offered to school aged children and additional advertising programs were created to inform about the new infrastructure.

4.25 The Cycle Hire program launched en masse with 6,600 bikes at 400 docking stations across nine municipalities, providing a highly

visible presence on city streets and around local destinations. The Cycle Superhighways are located along lengthy (7-15 km) corridors providing painted or segregated space for cyclists. The use of blue paint and route wayfinding has made these facilities also highly visible to all road users. Use of the bike share has increased by double-digits almost every year since the launch with customer satisfaction sitting at 80% in 2014, prompting continued expansion of the system which now has over 10,000 bikes at 700 docking stations. Both bike share and the Cycle Superhighways have contributed to increased levels of cycling with a 10% rise in use between 2013 and 2014.

4.26 With bike sharing and bicycle infrastructure progressing inconsistently across the GTHA, London has shown the effectiveness of committing to major investment in a highly visible manner to make cycling a convenient and realistic choice.

TDM in Development Planning

4.27 Between 2009 and 2012, a regional initiative was launched to develop an engagement strategy to communicate the benefits of 'travel planning' to all of the stakeholders in the planning process, including developers, industry professionals, municipal planners, and elected officials. Travel plans are effectively site-specific TDM Plans required as part of new development applications. While travel plans have been a part of local land use planning for over a decade, major challenges included consistency of application between municipalities, challenges from developers due to extended application periods, and uncertainty from both developers and municipal planners of the effectiveness of agreed-upon TDM measures.

4.28 As part of the process, two key tools were developed to support the objectives of consistent application and monitoring. The ATTrBuTE system is a web-based tool that provides a pre-application reference check, ensuring a suitable suite of TDM measures is being proposed that is likely to win approval from municipal planners.

4.29 This system subsequently improved the quality of travel plans; within a year of launching the tool, first submissions of travel plans increased were twice as likely to be approved with scores on the assessment tool increasing by 120%.

4.30 In addition, the iTRACE tool was employed to standardize monitoring of travel plans across London after developments were completed. With an increase in travel plans being inputted into the system over the years, the database now functions as an excellent reference point for the performance of TDM measures across various land uses, similar to the ITE trip generation manual.

4.31 The GTHA could gain valuable insight from this type of initiative as new construction for both residential and employment uses continues to follow consistent growth across the region. Regional coordination and the provision of standardized processes, tools and training to support municipal decision-making may serve as an appropriate role for a regional agency such as Metrolinx.

Congestion Charging

4.32 Launched in 2003, London's pricing scheme has generated a lot of attention for its success in reducing travel time through Central London, reducing emissions, and generating revenue to support other transportation investments. While the program reduced delays by about 30% within the first few years, travel time has returned to nearly pre-charging rates, though traffic volume have decreased by 10%, illustrating that a much worse scenario would be occurring should the program not be in place.

4.33 The most significant factor of the program's success has been the creation of a new

revenue stream for regional transportation planning. In the first 10 years of operation, net revenue of over CDN$2 billion has been invested in transportation, with the majority being spent on improving the bus network.

4.34 While there are certainly both political and practical considerations necessary when developing road pricing, the key lessons that the GTHA could learn from London are that congestion was so bad that opposition was hampered by a lack of alternative solutions, a robust scheme that was easily understood by the public (a simple cordon where you pay if you go in), and a commitment to returning a significant portion of the revenue back to improving alternative transportation options.

4.35 Their success has also proved that 'deterrent' TDM measures can be publicly acceptable with the right approach, commitment and political will.

Table 4.2: London TDM program Review

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Cycling Infrastructure and Bicycle Skills Training	Regional/Municipal/Local		✓	✓				Free bicycle skills training for all primary school students, their parents and caregivers. Significant investment in cycling facilities and bicycle sharing including on-street bikeways and secure parking at transit stations and schools.	• Build upon Can Bike programming to provide further bicycle skills and awareness training • Link TDM and awareness programs to all major investments in transport network, particularly those that provide access for an alternative mode that wasn't previously viable for communities. • Development of regional coordination for active modes/cycling training for youth.
TDM in the development approvals process	Regional/Municipal/Local						✓	A regionally-coordinated program provided training and tools for development industry and municipal planners to create a clearer, more robust and effective process for requiring and integrating TDM measures into new developments.	• Create a clear and legible process for TDM criteria in the development process • Build buy in with major developers for a regionally coordinated TDM/development permitting program • Considerable interest across the GTHA for better quantifying the impacts of TDM measures and creating a more effective process for requiring and monitoring TDM measures.
Congestion charge	Regional/Municipal						✓	A congestion charge zone, where a charge is made for entry weekdays from 7am-6:30pm. Has seen congestion inside the zone reduced by 22%, with 15% less vehicles than pre-congestion charge, and has generated $2.3 billion to fund transportation improvements.	• To be applicable, provincial policy must be developed that would enable congestion charging • Would require significant policy debate, but may allow for stronger TDM measures and dedicated transport funding

Table 4.3: Additional London TDM Strategies

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Car-sharing and car club promotion	Regional/Municipal	✓		✓				Promotion of car-sharing as a means to reduce overall driving and car ownership. Subsidies through marketing support and the provision of on-street parking spaces.	• Ride sharing services are already available in Toronto. • Ride sharing may be expanded by improving dynamic and peer to peer ridesharing
Transit Fare Incentives	Regional/Municipal			✓				Free travel for children under 11, heavily discounted for children up to age 16. Discounted 'freedom pass' for older and disabled adults.	• Transit concessions are determined by municipal agencies – agencies already use fare products to promote transit. • May adapt consistent fare discounts as part of ongoing fare integration work
London 2012 Olympic Games- major disruption mitigation	Regional/Municipal	✓	✓			✓		Intensive TDM campaign to promote the use of travel options, and delaying or deferring trips during periods of peak disruption. Key campaign results included weekday behaviour change of 35% and resulted in 15% less traffic on highways in central and inner London.	• Development of coordinated event based TDM for medium and large events, similar to PanAm TDM in 2015 • Though the 2012 Games were an event, this type of large-scale multi-pronged approach could also be applied to construction projects.

Portland Metropolitan Area: Regional Travel Options Program

Introduction

4.36 Encompassing the boundaries of Portland, Oregon and 24 other cities, Oregon Metro serves nearly 1.5 million people in Clackamas, Multnomah, and Washington counties. As a Metropolitan Planning Organization, Metro works with cities, counties and transportation agencies within its jurisdiction to allocate federal highway and public transit funds within its service area. Metro drafts and implements a long-range transportation plan, leads public transit system expansion efforts and helps make strategic use of a small subset of transportation funding that Congress allocates directly to MPOs.

Land Use

4.37 The Portland region's growth boundary, along with Metro's 2040 growth concept, and the work of the Portland Development Commission are all contributing factors to the region's less-dispersed, higher density land uses, compared to other US cities of the same size.

4.38 The urban growth boundary, adopted in 1979, separates urban areas, where high-density development is encouraged and focused, from traditional farm land where restrictions on non-agricultural development are very strict. This boundary is reviewed by Metro every six years to ensure that it can accommodate 20 years of population and employment growth.

4.39 The efforts of the Portland Development Commission, a semi-public agency created by voters to manage downtown renewal in the 1950's, plays a significant role in downtown development. The Commission serves as the city's urban renewal agency and provides housing and economic development programs within the city, as well as working 'behind the scenes' with developers to support large developments. This has led to the development of a large portion of downtown, a large number of mid- and high-rise developments, and an overall increase in housing and business density.

4.40 Metro's 2040 Growth Concept, is a long-range plan that provides a 50-year vision for growth in the region. Adopted by council in 1995, policies in the 2040 Growth Concept encourage: safe and stable neighborhoods, compact development, a healthy economy, environmental protection, a balanced transportation system to move people and goods, and housing for people of all incomes in every community. Metro works with local partners to implement this vision across the region by targeting investments in growth areas that spur economic development and accommodate growth, while preserving the character of each community.

Context	Portland
Land Use	• Coordination between land use and transportation planning to create more transit oriented development and targeted economic growth • Wide range of mobility needs between high and low density areas requires different TDM strategies throughout the region
Transportation	• Ongoing expansion of transit and bicycle networks providing higher levels of convenience, and more use of these modes • Suburban context still mostly auto-centric with a more limited set of options for TDM encouragement
Governance	• Only directly elected regional government in USA provides centralized vision for land use, transportation and growth • State laws enable TDM to be enforced through major employers
Economy	• Economy structured around natural resources and marine port activities with challenges in delivering TDM to some types of industries

4.41 With a focus on transit-oriented development, including mixed-use and high-density development around light rail stops and transit centers, Metro's master plan also includes multiple town centers, smaller versions of the city center, scattered throughout the metropolitan area.

4.42 Portland's varied land use patterns have an impact on the development of TDM programs. The dense regional core, the City of Portland, requires different TDM programming than other parts of the metropolitan region, which are typically lower density suburban style development. While there are efforts to build more mixed use and higher density developments in the outlying areas, current TDM program is tailored to provide context specific options.

Transportation

4.43 Most travel in the region takes place via private vehicle. Approximately 12% of commutes in the metropolitan area are via transit, while the bike mode share is around 8%. Both bus and light rail networks operated by TriMet serve the city center, with express and local bus routes operated by several local agencies serving more suburban areas. The LRT network, MAX, covers 84 km and has 87 stations across 4 lines. The MAX network connects multiple suburban areas to central Portland, along with the Portland International Airport.

4.44 The Westside Express Service (WES), commuter rail line offers service between Beaverton and Wilsonville. This 23.7 km line is intended to provide connecting services to areas not served by the rapid transit network.

4.45 The City of Portland also provides transit services via the Portland Streetcar which is a limited stop circuit through revitalization districts. Additionally, the city makes significant investments in cycling infrastructure, with a 319 mile bikeway network including 181 miles of bike lanes and 8 miles of bikeways physically separated from traffic. These capital projects are identified in the Portland Bicycle Plan for 2030, which sets out three tiers for implementation based on funding availability. A combination of City funds, along with regional, state and national grants, fund Portland's bicycle infrastructure. However, where funding sources are insufficient to fund the desired levels of investment, several strategies are employed including the use of Local Improvement Districts which charge property owners for a portion of the cost of infrastructure, and property tax allocation and utility fees.

4.46 Major highway infrastructure serving the region includes Interstates 5 and 84, which travel north-south, and several smaller east-west routes connecting the Oregon coast to the interior. Portland is well known for removing Harbor Drive, a highway in the City center in the 1970's and replacing it with a waterfront park. Further, highway expansion through the city was opposed in the same time period, with the Mount Hood

highway's cancellation allowing early investments to be made in light rail and other transit projects.

4.47 The Portland Metropolitan area's transport network provides multiple travel modes that connect the region to the City of Portland. Additionally, regional roads and components of the MAX LRT network provide connections between suburban areas with routes that pass through Portland. Given the high automobile mode share, there is an opportunity for TDM programming to support transit ridership development, especially along new LRT and high quality service bus lines. Recent expansion of the active travel network also presents opportunities for active modes use.

Governance

4.48 Oregon Metro is the only directly elected regional government and metropolitan planning organization in the United States. Metro is responsible for managing the Oregon portion of the Portland region's transportation, land-use, and regional growth alongside responsibilities for the solid waste system, managing a regional parks and natural areas system, and managing a range of special-use facilities.

4.49 Metro staff provide land use planning functions and are responsible for maintaining the legally binding Portland-area urban growth boundary. They also coordinate with the cities and counties in the area to ensure a 20-year supply of developable land in line with the 2040 Growth Concept. Metro is authorized by Congress and the State of Oregon to coordinate and plan investments in the transportation system for the entire three-county area. Metro uses this authority to expand transportation options, make the most of existing streets and improve public transit service.

4.50 Additionally, governance tools have been set up that greatly enable or augment TDM programing. A state ordinance for the Employer Commute Options (ECO) mandate creates legislated powers to enact TDM programming for employers. Additionally, federal and state wide air quality/emissions regulations grant further powers to Metro and other actors to implement TDM programing that encourages a reduction in emission intensive trips.

Economy

4.51 Portland's economy is based heavily on its role as a trade and distribution center, with over 18 percent of its metropolitan gross product arising from exports. As such, the metropolitan area is heavily dependent on industries which include computer equipment, wood products, metal products, tourism, publishing, wholesale distribution activities and gateway port activities.

4.52 These industries have been attracted there for proximity to distribution channels and depend on the movement of freight and the transportation network in general.

Strategic Review

4.53 The majority of Metro's TDM programs are funded under the Regional Travel Options program, which works to improve awareness and use of sustainable travel options in the Portland metropolitan region. This is accomplished through strategic investment in a range of programs and services which promote non-drive alone modes including individualized marketing, employer commuter travel options, partnership grants and traveler information tools. Metro's key best practice initiative which applies to the GTHA context include:

- Grant programs
- Individualized Marketing
- TMAs

4.54 These practices are summarized in Table 4.4, while Table 4.5 highlights additional Portland TDM programming.

Grant Programs

4.55 Metro has successfully created a regional TDM grant funding process that provides financial support to municipal, non-profit and other agencies to manage and deliver local TDM initiatives through a singular integrated process. Every two years municipalities, agencies, and non-profits have the opportunity to apply for 'travel options grants', which provide funding for TDM activities. As of 2015, the grant cycle includes $1.975 million USD.

4.56 Every two years an evaluation is conducted to support planning, learning, and program development. The last major evaluation process was conducted for the 2011-2013 grant cycle and included the development of a multiple-account evaluation process. The evaluation allows Metro to monitor the success of funded projects in order to help prioritize proven programs and provide feedback to applicants about which initiatives are more likely to be successful. The most recent evaluation explicitly linked TDM evaluation to broader regional priorities and policies (transport, development, sustainability, equity). This process also informed a new framework for investment decisions into new grants.

4.57 Funded programs include:

- Commuter services
- Individualized Marketing Programs
- Direct Marketing
- Individual projects
- TMAs

4.58 The most successful aspect of Metro's grant process is that the program has created a wide network of agencies able to deliver programming and who can provide context-specific outreach to their constituents. There is an expectation from partners that funding will be available because Metro has committed funds to TDM on an ongoing basis and there is a clear understanding of what TDM initiatives are acceptable and proven. The grant application process is also amenable to simplified requirements that enable a wide range of organizations to be involved.

4.59 In the GTHA, limited funding is available for TDM programs via regional agencies such as Metrolinx but in areas with sub-regional governance (with high and low tier municipalities), TDM funding has been consolidated and distributed at the higher tier municipalities. Metrolinx is working towards developing a more strategic approach to community outreach at the regional level and could consider a grant-based approach to funding distribution and a development of a delivery network made up of various public and non-profit agencies.

Individualized Marketing

4.60 The Portland region was one of the early adopters in North America of this European-based community outreach approach to market

transportation information and incentives directly to individual households. The City of Portland launch the first individualized marketing program in the region, now branded as SmartTrips, which uses a mail-based approach to encourage individuals to participate by signing up and requesting transportation resources and incentives. Other programs have been delivered in Wilsonville and Gresham.

4.61 The mail-based approach has, over the past 10 years, evolved to include marketing such as community events, local business sponsorship/involvement, and Spanish-language outreach. Programs such as Portland's SmartTrips have managed to deliver programs at a very low cost per participant (~$10/participant) by using standardized branding, collateral and outreach methods.

4.62 By funding programs regionally, but delivering them locally, the region has been able to take advantage of local stakeholders, knowledge and insight to tap into community networks and cost saving measures to keep this program affordable. The SmartTrips program has been going since 2004 and is now delivered to about 20,000 households every year in the City of Portland.

4.63 This high level of households delivered to, combined with annual delivery is successful at raising awareness and attracting higher levels of participation that other programs. SmartTrips notes about 30% of targeted households typically participate. Program operations have also been streamlined so that speed, efficiency and professional delivery have become central tenets of the program.

4.64 Agencies such as the Region of Peel, Region of York and City of Hamilton have delivered similar mail-based individualized marketing programs. Regionally, there is an opportunity to learn from the mass marketing approach taken in Portland and the commitment by both Metro (regional funding) and the City of Portland (local delivery and staff support) to consistently deliver the program annually to a significant area of the city while using consistent branding and materials.

Transportation Management Associations

4.65 Non-profit coalitions of local businesses and public agencies that improve commuting options for their employees and residents.

4.66 As of the 2011-2013 biannual evaluation, the RTO program supported 5 TMAs through direct investment. These TMAs ran a number of programs that focussed on raising awareness and encouraging the uptake of non-drive alone modes. TMAs support direct engagement of employees, workplace programs, and broader challenges that engage multiple workplaces.

4.67 TMAs all demonstrated positive results during the evaluation process, with a reduction in nearly 12 million vehicles miles travelled across almost 15,500 participants from 2011-2013. TMA success is supported via the ECO program, which legislates requirements for employer involvement in TDM. Larger employers must offer travel options support to their employees. Aligning TMA program delivery with legislative tools allows for increased impact from TDM funding.

Table 4.4: Portland TDM Strategic Review

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Travel Options Grants	Regional / Municipal / Local	✓	✓	✓	✓	✓	✓	Investment of nearly $2 million USD in government and non-profit TDM initiatives based on a legible policy framework that connects TDM programming to regional transportation and growth objectives.	• Investment driven process for local and municipal TDM initiatives • Legible evaluation/decision making framework that links TDM to broader regional transport and development policy • Investment in diverse programming to iterate and find most successful programming
SmartTrips Individualized Marketing Projects	Municipal/Local	✓	✓	✓				Metro funds a number of Individualized Marketing projects which use the SmartTrips methodology to raise awareness and understanding of travel options. A combination of mail-based and community event outreach are used to reduce drive alone auto trips and increase the number of walking, biking, transit and carpooling trips by providing information and incentives to participants.	• GTHA shows potential for increased use of active modes, and transit outside of downtown destinations. • IM projects could build upon existing IM programming and could target key suburban neighborhoods with strong alternative mode options, focusing on trips outside of the commute.
Transportation Management Associations (TMAs)	Municipal/Local	✓	✓	✓	✓			TMAs support the use of travel options in local communities through education and programming. Metro has supported TMAs in several areas, including the Swan Island TMA which focuses on freight transport. TMAs are strongly aligned with the ECO program that mandates employer involvement in travel options.	• Identify potential for legislated employer driven TDM programming • Create opportunities for best practice sharing and investment in TMAs through a centralized process

Table 4.5: Additional Portland TDM Strategies

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Ridematch/Rideshare Services	Regional	✓	✓	✓	✓			Supports various regional rideshare and ridematch programs including Drive.Less.Connect, and Drive Less. Save More. which encourage prompt experimentation and use of travel options. The programs' main goals are to register new program registrants and carpool formation. Other objectives include building relationships with local employers and increasing the visibility of service providers and resources. Dynamic ridesharing and other innovative approaches are under development in the Portland metropolitan area.	• Ride matching already in use in GTHA. • Explore application of dynamic ridesharing and new shared mobility tools as part of broader mode shift strategies
Metro Regional Vanpool Program	Regional	✓	✓	✓	✓			Metro's Vanpool Program coordinates vanpool services for commuters in the Portland metropolitan area. General program goals are focused on facilitating use of vanpools and reducing drive-alone vehicle miles travelled.	• Vanpool programming already supported by Smart Commute.
TriMet Employer Outreach Program	Regional	✓	✓	✓	✓			TriMet provides programming to encourage and support employer transportation programs including meeting with employers, business associations and TMA's, attending events, transportation fairs, public outreach, administering an Emergency Ride Home program, ECO survey processing and running a Vanpool Shuttle Program. The program works to increase the use of non-drive alone travel options for commute trips among employers and colleges by marketing multimodal travel options to employers, employees, commuters, plus college staff and students.	• Key elements of employer programming in Portland is driven by legislative tools that do not exist in Ontario. • Legislated tools increase the strength of programs and program compliance, which may offer benefits to GTHA programming

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
BikeThere! Map	Regional		✓					The Bike There! map provides information and resources to support walking and biking trips in Portland and Vancouver, WA. The regional bike map covers 1.1 million acres of the region and outlying areas, and includes inset maps to show urban centers in greater detail.	• Development of regional level cycling promotion tools could match the GTHA. • Given the much larger scale of the GTHA compared to Portland, this program may be best carried forward by municipal agencies with standards set at a regional level.
Walk There! Guidebook	Regional		✓					The Walk There! guidebook provides information and resources to support walking in Portland and Vancouver. The walking guidebook provides directions for 50 transit-accessible treks within the region and is supplemented with a free iPhone app which provides directions for 10 walks.	• Development of regional level walking promotion tools could match the GTHA. • Given the much larger scale of the GTHA compared to Portland, this program may be best carried forward by municipal agencies with standards set at a regional level.
Employee Commute Options (ECO)	Regional						✓	Administered by Oregon's Department of Environmental Quality, the ECO rules apply to employers with over 100 employees at a work site. Similar to Washington State's CTR laws, ECO is part of a federal mandate to improve air quality and reduce traffic congestion. ECO rules require employers to plan for a reduction target of 10% from an established baseline, provide incentives for use of alternative commute options, and complete monitoring surveys every two years.	• Key elements of employer programming in Portland is driven by legislative tools that do not exist in Ontario. • Legislated tools increase the strength of programs and program compliance, which may offer benefits to GTHA programming
¡Vámonos! Spanish-language outreach	Municipal	✓	✓	✓				The ¡Vámonos! project was developed to increase awareness of family-friendly walk and bike options in target cities. The development of culturally-relevant English and Spanish bilingual maps is intended to educate residents on safe routes to local destinations such as schools, parks and grocery stores is a key program component, complemented by Spanish and English web resources, and outreach at community events.	• Multiple information systems in the GTHA are already bilingual. • Further language support should be considered during project development or prioritization based on potential target audiences.

San Diego Association of Governments, California– Regional TDM Program/iCommute

Introduction

4.68 The San Diego Association of Governments (SANDAG) is governed by a Board of Directors made up of representatives from each of the region's 19 local governments. Policy Advisory Committees assist the Board of Directors in carrying out the agency's work program to improve and provide information pertinent to the region's quality of life. The Board of Directors is assisted by a professional staff of planners, engineers, and research specialists.

4.69 SANDAG was selected as a case study because its programming is delivered from a centralized organization, while retaining a tailored approach to serve multiple land use types/urban development patterns throughout the San Diego region.

Understanding the Context: Four Drivers

Land Use

4.70 The San Diego region is composed of 19 local municipalities, with the City of San Diego serving as the regional core. The most heavily developed communities have been built around the car, therefore adding additional transit and active transportation infrastructure is a challenge. However, the San Diego region has made great strides in recent years, supporting a shift from car-dependent dispersed land uses to increased integration of land use with transportation, focusing growth and development closer to jobs and services.

4.71 Regional General Plan updates include mobility, housing, and conservation/open space as key elements. The mobility elements provide the framework for new roads, bike routes, and trails that connect the community.

4.72 San Diego became the first region in California to develop a Regional Plan under the new climate action mandates and climate change legislation. As it relates to land use, the Sustainable Community Strategy (SCS) guides development. The SCS includes a land use pattern that accommodates the region's future employment and housing needs, and protects sensitive habitats and resource areas, as well as a transportation network of public transit, managed lanes and highways, local streets, and active transportation infrastructure.

Context	San Diego
Land Use	• Dispersed employment with many large business parks, major employer 'campuses', and light industrial manufacturing in auto-centric locations • Planning policy dictates more nodal development patterns around higher access transportation locations and mobility hubs
Transportation	• Dispersed population and employment and varied access to transit and cycling make carpooling most viable alternative to SOV • TDM program focused on employer outreach to target large number of major employers • Challenging terrain makes transportation infrastructure corridors limited
Governance	• Regional government oversees land use and transportation planning • Collects and manages regional sales tax for transportation called TransNet
Economy	• A major tourism hubs with many international destinations such as SeaWorld, LEGOLAND the San Diego Zoo • A hub for major corporate headquarters and large worksites • The largest Naval and Marines military operations in the USA

4.73 The sustainable communities strategy expects increased density in "mobility hubs" and plans to enhance them by:

- Developing alternative land use/transportation scenarios
- Developing a Regional Bike Plan early action program
- Preparing an active transportation implementation strategy
- Developing a transit oriented development strategy/policy
- Enhancing TDM-supportive modes
- Developing a regional complete streets policy.

2.3

4.74 SANDAG's Regional Growth Forecast, the "Regional Plan: San Diego Forward", is updated every four years, and currently projects that the region's population will expand by more than one million people by 2050, resulting in the need for more than 330,000 homes. The growth forecast also projects nearly 500,000 new jobs in the region. Based on these predictions, many of San Diego's local jurisdictions have updated their land use plans and zoning ordinances to reflect the region's vision of compact development near transit, and moving toward greater open space preservation. Focusing housing and job opportunities in existing urbanized areas is being prioritized, replacing previous assumptions of more dispersed development patterns. By the year 2050, approximately half of the region's land will be dedicated to open space and habitat preservation.

San Diego's land use is dispersed with moderate density in the region's core, and lower density suburban areas in the periphery. These development patterns directly impact TDM programming, as most outlying suburban areas are low density and single use. TDM efforts are therefore required to find new, efficient ways for commuting and travelling between areas.

Transportation

4.75 The San Diego region has multiple transit modes available for travelers. The interstate and state highway network provides access to various San Diego municipalities. Transit services are provided throughout the region across a number of modes. Rail services, including the COASTER and SPRINTER, provide commuter rail style service over longer distances. Rapid transit is provided within the City of San Diego by the San Diego Trolley, which is a light rail transit network operated by the Metropolitan Transit System (MTS). Local bus service is provided by two operators: MTS and North County Transit District (NCTD).

4.76 In San Diego, the average daily commuter trip is 30 minutes, and the average drive alone rate is approximately 75%. However, while almost three out of four workers drive to work alone, about 21 percent use an alternative mode such as carpooling (13%), transit (3%), or "other," including walking or cycling (5%).

4.77 Approximately five percent of employees work from home. While the overall percentage of commuters using transit is three percent, it should be noted that this includes workers in areas not served (or well-served) by transit. Transit use by commuters is much higher in areas where transit is more convenient.

4.78 Transportation in the San Diego Region is guided by SANDAG's 40-year Regional Transportation Plan (RTP), with a focus on improving and expanding transit provision. The plan mandates reduced greenhouse gas emissions and calls for development of TDM programs. Recent TDM initiatives have included:

- Development of new TDM policy study to help cities understand how TDM can be incorporated into urban design, site development, and parking strategies
- Development of an Employer Outreach Strategy and subsequent restructuring of the iCommute employer outreach program. The restructure also included a major revision to the employer recognition program which took a loyalty program-based approach.
- Development of a TDM plan to support significant infrastructure improvements in the I-5 corridor, including HOV/express lanes, commuter rail and bike/pedestrian access. This was followed by a construction mitigation outreach campaign called "Shift" that targets the specific needs of I-5 corridor employers, residents, schools, agencies, and institutions.
- The TeleworkSD program resulted from a study identifying potential employers and providing complimentary guidance on growing telework programs. Carshare and bikeshare programs have also been implemented in recent years and are expanding throughout the county.

Governance

4.79 SANDAG's mission is to improve the quality of life of San Diegans, executed through their legislative authority and public involvement plan. SANDAG has decision-making authority over several key regional considerations, including:

- Public transit (planning/funding, with operations managed by NCTD/MTS)
- Regional land use strategic planning through key documents including San Diego Forward (regional plan) and the Sustainable Community Strategy
- Maintaining major transportation infrastructure (in partnership with the California Department of Transportation)
- Collection and spending of regional sales tax for transportation via the TransNet program
- Allocation millions of dollars each year in local, state, and federal funds through several competitive grant programs

iCommute

4.80 SANDAG provides a framework connecting land use to transportation systems, managing population growth, preserving the environment, and sustaining economic growth. SANDAG works with the federal, state, and local stakeholders to implement the Federal Surface Transportation Authorization. This includes identifying appropriate funding levels, goods movement and border programs, transit reforms, environmental processes, and active transportation.

4.81 SANDAG's Public Participation Plan is designed to inform and involve the region's residents in the decision-making process on issues such as growth, transportation, environmental management, housing, open space, air quality, energy, fiscal management, economic development, and public safety. Members of the public are included in the weekly Board of Directors meeting, Transportation Committee, Regional Planning Committee, and Public Safety Committee, as well as many technical working groups.

Economy

4.82 San Diego is the home to many biotech, research and software development company headquarters, as well as a large base of manufacturing corporations. These industries form more than 1,000 large companies with over 200 employees. Additionally, there are nearly 100,000 active duty military personnel – San Diego hosts the largest naval fleet in the world. About 5 percent of all civilian jobs in San Diego are military related, as well as 15,000 businesses in the county that rely on Department of Defense Contracts.

4.83 Further, the tourism industry employs over 173,000 San Diegans. Visitors to the region spend nearly $9.2 billion annually and generate more than $450 million annually in state and local taxes. In order to support these industries, SANDAG evaluates, monitors, and reports on issues affecting the fiscal stability and economic prosperity of the region. In partnership with the Economic Development Council, SANDAG released the "Employment and Residential Lands Inventory", which contains a report on developable employment and residential land in the region. Additionally, SANDAG created Traded Industry Clusters and a Regional Economic Prosperity Strategy which sought to identify the region's most pressing challenges and provide strategic assessment.

4.84 With the impact of population growth on the economy, SANDAG identified parking impacts as a high priority issue. The Regional Parking Management Toolbox was created as a means to provide communities within San Diego a framework for evaluating, implementing, and managing parking management strategies that support their individual economic development as well as sustainability and mobility goals.

Strategic Review

4.85 SANDAG's TDM activities are largely guided by the Regional Transportation Plan, with implementation primarily led through the iCommute program. Key best practice initiatives emerging from SANDAG that apply to the context of the GTHA include:

- Their approach to employer outreach;
- The introduction of construction mitigation plans and programs
- Inter-departmental relationships

4.86 Table 4.6 outlines the key TDM strategies in San Diego and their applicability to the GTHA

Employer Outreach

4.87 Over the past 2 years, SANDAG's iCommute program developed a comprehensive strategy to engage with employers and implemented a renewed outreach approach to more successfully promote transportation alternatives to employees.

4.88 Key to the outreach approach was increasing the number of iCommute staff, proactively seeking employer participants, developing a clear 'offer' of what iCommute provides and what is expected of the employer, and training outreach staff on two behavioural engagement methodologies: Question-Based Selling and Motivational Interviewing. In parallel, iCommute's recognition program, the Diamond Awards, were overhauled from a nomination and award basis to a criteria-based system (similar to LEED).

4.89 Their experience was that many employers want support in the area of employee commuter benefits, marketing and information but have little time to invest in seeking support. The structured, proactive and behavioural approach has garnered significant success – within 18 months, iCommute has engaged almost 120 different employers, representing over 175,000 employees, which is more than had been engaged over the previous four years of the program. Of note is the influx of data as completed employer surveys have increased substantially, with almost half of those companies completing a survey within the first year and many which have or are currently completing follow up 'annual' surveys. A third of the employers have also achieved a Diamond Award (Bronze-to-Platinum).

4.90 It should be noted that there are no legal mandates in San Diego for employer-led TDM programs (unlike the Los Angeles and San Francisco regions) and all activities are strictly voluntary. iCommute has approached engagement by committing to provide 40 hours of support, along with various incentives such as a Try Transit program (free month of transit), vanpool subsidies ($400/month/vehicle), and prize draws for trip logging.

4.91 While the GTHA's Smart Commute program has achieved great success over the years and continues to expand, the experience from SANDAG may shed light on developing a regional/overarching strategic approach to employer and employee engagement in order to increase participation, data collection and ongoing trip reduction at major employment sites.

Construction Mitigation

4.92 A unique initiative launched by SANDAG in 2014 was the *Shift* construction mitigation campaign. The confluence of several major transportation construction projects including a freeway overpass, a new HOV lane and an LRT extension prompted SANDAG to consider linking the traditional construction notification communications and outreach with TDM messages to mitigate the congestion effects of road closures by encouraging drivers to seek alternative travel options.

4.93 A new campaign brand, Shift, was developed to act as the overarching communications tool for all of the construction projects as the single source for information and solutions around travelling with the 'Golden Triangle' subregion, where the construction is taking place. Though the campaign is currently ongoing, a few important opportunities have been realized.

4.94 The coordination between SANDAG's iCommute (TDM) and Communications (outreach and PR) has allowed them to consolidate the outreach into a single consultant contract, saving tens of thousands of dollars in what would alternatively been used for separate work streams. In addition, the single point of contact (the Shift program manager) has streamlined outreach to employers, stakeholders, and partner agencies to significantly reduce overlap in outreach, which previously had been a concern in terms of oversaturating interested parties with

multiple outreach from various departments within SANDAG.

4.95 While data on traffic impacts and use of alternatives is not yet available, there is anecdotal evidence that the effort has improved internal management and coordination, the campaign has attracted significant interest from area employers who are very keen to understand construction impacts on their employees (a local Shift forum attracted representatives from 50 employers within a 5 mile radius of the construction area), minimal negative media or public complaints have arising from weekly lane closures and constant delays, and the construction project is on track with no delays due to public or political pressure to reduce traffic impacts.

4.96 With significant funding for new transportation projects across the GTHA, there is a real opportunity to embrace a more integrated approach to project planning, construction management, and TDM communications and messaging. SANDAG has leveraged such financial efficiencies which may be attractive to public agencies in the GTHA as well as using construction mitigation TDM to draw additional attention to employer programs (similar to how the Pan Am games marketing and communications were delivered to employers).

Inter-departmental relationships

4.97 The governance structure within SANDAG for multi-modal transportation is a successful and well-managed process. iCommute is primarily responsible for behavioural research, awareness raising, and outreach-based TDM programming. iCommute works closely with colleagues in marketing (to develop collateral), communications (to coordinate outreach), active transportation (who fund and build infrastructure), transit planning (who fund and build transit projects and manage transit outreach), and intelligent transportation systems (who fund and manage toll roads and freeway management systems).

4.98 Like Metrolinx and many other agencies, there is a segregated governance structure for the planning and delivery of these complementary modes and functions but what makes coordination happen at SANDAG is a strong policy framework, strong political and senior management directives and therefore, departmental managers that are all on the same page and working towards the same goals.

4.99 With a high level of importance placed on providing a more forward-thinking regional plan, in terms of densification in key areas and convenient mobility options connecting them, a significant amount of funding and political support has been provided for TDM, which has enabled many of these more recent initiatives, pilot projects and strategic approaches to be developed and implemented.

4.100 The GTHA, through direction from the Provincial Government and leadership by Metrolinx also has an opportunity to align priorities for TDM within regional bodies, and use that unified message to support coordination across sub-regional and municipal agencies, as well as other regional stakeholders.

Table 4.6: San Diego TDM Program Review

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
iCommute Employer Outreach TDM Program	Regional Municipal Local	✓		✓				Comprehensive employer engagement program offering TDM advice and programs through iCommute. Programs include a vanpool subsidy, Corporate Challenge and Bike to Work Day events, a. Guaranteed Ride Home Program and Personalized Transportation Planning. iCommute also administers employer surveys and collects travel data through "trip logging" on their website.	• Smart Commute provides comprehensive employer programming – could develop a strategic regional approach similar to iCommute • Continue to develop strong regional coordination and branding
Shift Construction Mitigation/ Marketing	Local Municipal					✓		Developed the Shift San Diego web portal with construction updates and transportation alternatives for the Golden Triangle area. Mitigation efforts focused on employers.	• Exploring a specific TDM brand for construction and other disruption such as sporting events • Could provide a 'way in' to reach GTHA residents who may otherwise not question travel behaviour decision-making.
Inter-governmental relationships	Regional							iCommute leverages relationships with other agencies and transport planning bodies to align programs and strategic objectives to emphasize the role TDM plays in reaching growth and transportation development goals.	• Clarify TDM's alignment with growth plan and RTP goals • Develop cross agency collaboration for the delivery of TDM as a way to achieve or enhance diverse policy objectives

United Kingdom Sustainable Travel Towns

Introduction

4.101 In 2004, the UK Department for Transport selected three towns; Darlington, Peterborough and Worcester, to show the effectiveness of TDM measures applied in a sustained and intensive way.

4.102 Implemented over five years, the UK Department for Transport saw this demonstration project as an opportunity to collect high quality data about the effectiveness of these interventions and to share best practice with other authorities wishing to implement them.

Understanding the Context: four drivers

Land Use

4.103 Darlington's relatively compact urban area was modified by a trend of decentralized employment, with the development of large employment sites outside of the town center (a retail distribution centre and a large business park) in the period leading up to and during the Sustainable Travel Town initiative. With little population growth over the past decade, there has been relatively little new housing, with most residential developments being small infill projects and redevelopments.

4.104 Peterborough was designated by the national government as a destination for population growth in 1968, and has seen substantial residential development over the past forty years, concentrated in four master-planned 'townships'. During the course of the Sustainable Travel Towns program, Peterborough's urban population grew by more than 6%. Housing growth in Peterborough is expected to continue, as the city lies in one of the central government's Housing Growth Areas.

4.105 Worcester's estimated population was just under 100,000 at the start of the project, and grew only slightly over the following years. Worcester was originally proposed as a demonstration town for its 'generic' characteristics, which, it was argued, would make the project results widely transferable to other areas.

Context	Sustainable Travel Towns, UK
Land Use	• Regional connections not always strong, but smaller urbanized areas (relative to major cities) • Balanced residential and employment uses but regional dependence on larger nearby cities
Transportation	• Dispersed commute trips • Potential for active modes growth for local trips • Alternatives not always attractive for longer journeys
Governance	• Primarily local/municipal direction and vision for TDM • High profile project led by national government supports funding prioritization
Economy	• Significant potential for employer-based TDM • Worksite locations and nature of more commercial/industrial employment can require individualized programming

Transportation

4.106 As well as being designated as a Sustainable Travel Town, Darlington was selected as one of six Cycling Demonstration Towns. This resulted in an investment of an additional £500,000 per year ($1 million CAD) from 2005 onwards, largely targeted at cycling infrastructure improvements. Darlington was the only town of the three to have both Sustainable Travel Town and Cycling Demonstration Town status, which resulted in active travel modes investment and promotion being prioritized. Darlington also has good transit options, with bus service provided by two private operators serving major residential, business and shopping areas. Rail service along the East Coast Main Line connects the city to London, Leeds, Edinburgh, Manchester and Newcastle. The city has a network of ten marked bike routes, along with other cycling infrastructure, and has designated thirteen walking routes through public parks and rights of way. Route options and resources for all modes are well documented on a regional travel options website, **http://www.dothelocalmotion.co.uk/** .

4.107 Because Peterborough's traffic congestion levels in the city were low, access by car was seen as relatively easy and interventions that would have the effect of restraining traffic or reducing traffic capacity (such as bus lanes or pay parking) were seen as 'off-limits'. Framing improvements in the context of reducing carbon emissions, was an effective means of encouraging participation.

4.108 Peterborough also has a large network of off-road cycle paths. Car ownership levels reflect the average for England, with around 74% of households owning a car. The city is well served by public transport, with bus routes throughout the urban area. Community transport options are also available in both rural and urban areas for those unable to use the bus or who don't have access to transit. Peterborough has a designated 'Primary Cycle Network', with eleven key bike routes that provide connections between townships and employment areas in the city centre.

4.109 Prior to the program, Worcester had high levels of car use and car ownership, which resulted in congestion in the town centre. The traditional street layout made it problematic to reallocate road space towards more sustainable modes, and the 'voluntary' nature of smart measures led to them being seen as a politically acceptable way of tackling the town's congestion problems. The city also has above-average car ownership – with 77% of households owning one or more vehicles. Bus services are provided by several operators, with rail connections to local connections to nearby cities and London, however, other connections require a transfer. In the first program period, the city's first park-and-ride opened at Perdiswell, in the north of Worcester, with coincident major improvements to services, however, this and a second park-and-ride were closed in 2014 as part of a cost-savings measure, with cutbacks to bus services.

Governance

4.110 Darlington and Peterborough City Council both operate as unitary authorities, with the combined powers of a non-metropolitan county and district council. Darlington saw official skepticism grow into support over the life of the program. This was as a result of a number of positive factors including the quality evidence collected about the impacts of the program, indicating the importance of data collection and the need to have a budget for this purpose. Another key factor in building support was the partnership approach that underpinned the project, through a working group which was independent of the local authority itself, and included a broad range of stakeholders – among them, teachers and representatives from community organizations, as well as local council

members and officers. The high profile that followed designation as a national demonstration project helped in portraying the council as 'cutting edge', in line with their own aspirations.

4.111 In Worcester, the 'Choose how you move' initiative was led by Worcestershire County Council, in close cooperation with the City Council. The geographical area covered by the program was the City of Worcester, one of six local areas within the county. Although the city was the main focus for the program, some promotional activity was expanded into other areas, such as one of the local authorities, where many people traveled to Worcester for employment. As the program developed, government staff also felt that it resulted in increased political support for measures that might previously have been considered too difficult, such as bus priority measures, and it was also considered to have led to greater cooperation between the county and city councils in the implementation of a city parking strategy, suggesting that the program may have played a significant educational and awareness-raising role amongst decision-makers.

Economy

4.112 Between 2004 and 2008, employment in Darlington grew by 10%, though employment was primarily in the service sector. Part of the town's motivation for developing a TDM program was to ensure that additional employment did not compromise accessibility or worsen congestion.

4.113 About three-quarters of the working population have jobs based in Darlington, with relatively few commuting regionally. Traditionally a market town, Darlington has a weekly outdoor market alongside an indoor market and attracts visitors to a newly pedestrianized town centre. Major employers include EE Limited, a telecommunications company, and Student Finance England, who provide student loans. Growth is expected in the information technology sector.

4.114 Peterborough's economy has grown relatively faster than the country as a whole. With a focus on environmental goods and services, the working population is approximately 100,000, of which 35% commute from outside the City. Despite lower than average wages, Peterborough's unemployment levels are consistently low and recent employment growth has been noted with the relocation of several distribution centres. A destination for overseas migrants, this has resulted in population growth and demands for affordable housing.

Strategic Review

4.115 The three towns selected were provided with several millions dollars of funding to implement a range of TDM measures. The intent was to saturate the cities with improved transportation services, information, education, and incentives. Across the three towns, there were several consistent approaches that defined the programs and have served as best practice for other initiatives in the UK, including:

- Brand identity for TDM;
- Personal Travel Planning; and
- School Travel Planning.

4.116 As relatively small urban areas, each of the sustainable travel towns operates in a unique context, similar to the smaller regional centres and outer municipalities in the GTHA. In each of these towns, reductions in vehicle kilometres travelled by existing residents were used to absorb population and employment growth. Common to each city is the provision of high-quality travel information for all modes, including guides for walking and cycling, and trip planners, underscoring that available options can be 'repackaged' into key routes and leisure activities with minimal efforts in mapping and desktop publishing. Table 4.7 outlines strategies used as part of the program.

Brand Identity

4.117 In each town, a unique brand include name, logo, messaging and marketing collateral was developed to act as the key public-facing awareness raising and education tool to get citizens involved and trying new ways to travel. Each brand was purposely designed to accommodate all modes and types of travel, with two of the three towns opting to focus on 'choices' as the key message in the brand. This was a tactical decision as less than half of the trips in most cities are for commuting to and from work – the majority are leisure, entertainment and errand-based trips. In these smaller urban centres, there was a much higher potential for these non-work trips to be shorter lengths within individual neighbourhoods or local areas.

4.118 The essence of the brands were also about transportation, not TDM per se – they acted as the source for information about all modes of travel and spoke to the individual with little knowledge of their transportation alternatives.

4.119 The GTHA's primary TDM brand is Smart Commute, which in name is very specific to work-related trips. Smart Commute has been highly successful in reaching this target audience and developing a network of TMAs to deliver support to employers. As further community-based TDM is implemented across the GTHA, considering a more holistic approach to branding may be an effective way to raising awareness and influencing non-work trips.

Personal Travel Planning

4.120 One of the major behavioural and marketing components of the sustainable travel towns was the use of personal travel planning to engage with the public. As a more intensive approach to traditional individualized marketing, residents were contacted in person on their doorsteps and engaged in a conversation about their transportation challenges and potential opportunities.

4.121 This conversation was approached using a behavioural psychology technique called Motivational Interviewing which aims to take a non-confrontational approach to empower the individual to determine their own solutions to using sustainable travel options. With widespread implementation to 50-100% of the town's residential population, the word of mouth awareness raising became a highly successful byproduct, with citizens mentioning they were waiting for their visit from a 'Travel Advisor'.

4.122 Within the GTHA, areas such as Peel, York and Hamilton have tested individualized marketing to mixed levels of success. While a traditional mail based approach can seem cost-effective on a per-target household basis, they are often very expensive on a per-engaged household perspective and a per-trip reduced basis. This initiative in the UK proved to decision-makers that Personal Travel Planning was a successful approach to short and long term behaviour change and it could be applicable within the GTHA, especially where new or existing multi-modal infrastructure is present.

School Travel Planning

4.123 The success of the school engagement as part of this project was not engrained in any innovative or new approaches, but really by taking a holistic approach to school travel, implementing engagement at a mass scale, and integrating the programming with the array of other community-based TDM approaches within the overall initiative.

4.124 Referred to in North America as the five E's – Education, Encouragement, Engineering, Enforcement and Evaluation – this multi-faceted approach was rolled out to almost every school in each town (over 85% of schools). By engaging students and their parents at school, and also

connecting with many of these families through Personal Travel Planning and more general awareness raising via the program brand with the towns, a repetitive message was provided illustrating how travel choices can be different for the different types of trips being made. With almost full saturation of the education system, all school districts, teachers and parents received the same information and were delivering the same message across the wider community.

4.125 These key initiatives, combined with the other TDM measures resulted in an overall reduction of 9% in car driver trips and a reduction of 5% in car driver distance across the three towns. The reduction in car driver trips resulted in an increase in the use of other modes: transit use increased by 18%, walking by 13% and cycling by 49%. The projects were monitored in detail through household travel diaries undertaken in 2004 and again in 2008.

Table 4.7: Sustainable Travel Towns TDM Program Summary

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Strong brand identity	Municipal	✓						Each town developed a TDM brand which provided a link between program elements. 'Local Motion' was used in Darlington, 'Travelchoice' in Peterborough, and 'Choose how you move' in Worcester.	Development of integrated branding between regional, municipal, and local actors.
Personal travel planning	Municipal	✓						Large-scale door-to-door engagement campaigns using motivational interviewing techniques were employed to reach residents at 50-100% of households in each town.	Build upon IM pilots in the GTHA to deliver context specific IM programming to highest priority TDM areas.
School travel planning	Municipal				✓			School engagement covering 85-100% of primary and secondary schools. Initiatives including a school travel plan, walking and cycling routes infrastructure, and school activities.	• Strengthening school planning, in line with Big Move principles on public agencies having TDM policy, to improve school travel planning. • Support youth based TDM programming to deliver TDM initiatives to all citizens, not just commuters • Develop community of practice and resources to support school based TDM – common resources that are tailored for local context (e.g. Toronto resources will differ From Hamilton, Oshawa)

Tokyo

Introduction

4.126 The Tokyo Metropolis is Japan's capital city, with over 13 million urban residents living across nearly 2,200 km^2. The Tokyo Metropolis lies at the centre of the Greater Tokyo Area, which is home to over 35 million residents and is the largest metropolitan area in the world. The structure of the metropolis area includes 23 special wards, which make up what was formerly the "City of Tokyo" as well as a collection of cities and towns with commuter oriented development called "Western Tokyo". As a transit driven polycentric metropolitan area, policies and practices from Tokyo offer insights into how to develop and manage a network of transit oriented urban centres.

4.127 With a strong presence in the world economy, real-estate costs drive dense transit-oriented development centred around an expansive public and private rail network. With mode shares that have no comparison in North America, Tokyo provides an example of what efficient land use, transit-oriented development and parking controls can achieve over time.

4.128 Transport demand management or 'mobility management' measures have been developed in Tokyo to provide optimization to its expansive multi-modal transport network.

Understanding the Context: Four Drivers

Land Use

4.129 Tokyo has a transit-oriented regional structure, which focuses pedestrian-oriented high density mixed-use retail, commercial and office uses around rail stations. Transit-Oriented Development is characterised by private transit operators building high density suburbs along their transit lines to boost ridership, and commuters from each station can access most daily services on foot.

4.130 Tokyo has implemented a multi-centric planning strategy, which aims to concentrate development in new centres within the metropolitan area. These centres are designed to be served by fast rail links and have attracted new residents by providing cheap fares, with employers paying the full commuting costs of their employees which are deducted from their corporate income taxes. However, these new towns have not been as successful in attracting employment and so the commute travel distances and overall demand have increased over time.

4.131 The 23 special wards of Tokyo are marked by dense urban development that is mixed use. This are is often referred to as Central Tokyo and it plays the role of an expanded CBD. The cities and towns of Western Tokyo are often referred to as 'bed towns', or areas for employees who work in Central Tokyo.

Transportation

4.132 Tokyo is well served by a robust and multimodal transport network. This network includes a comprehensive public and private rail network, a highway network, air and sea links, and walking and cycling infrastructure.

4.133 Each day 2.5 million people commute into and out of Central Tokyo daily from Western Tokyo. Of these commuters, 82% use bus and rail services. For all trips, 51% of journeys are made by public transport, with 23% made via walking, 14% by cycling and 12% by private motor vehicle.

4.134 The rail network is extensive, with 102 passenger rail lines, both public and private, serving Central Tokyo directly. Throughout the Greater Tokyo Area there are over 37 million passenger rail trips daily. Mostly operated as private services, it is estimated that 20 million people in the metropolitan area use rail daily as their primary means of transport.

4.135 Major rail stations serve as anchors for development and also allow connectivity across the region. Shinjuku station, within the Shinjuku Ward, servers over 3.5 million people daily. Buses and trams play a secondary role, accounting for around 3% of trips, and providing feeder service to rail stations. The private sector plays a strong role in transportation, with numerous private rail operators co-existing with public rail.

4.136 Mostly used for longer-distance trips, a hierarchy of national highways and expressways cross the Tokyo metropolitan area. Tokyo has engineered a shortage of parking provision to restrict car ownership, which requires car-buyers to provide evidence of an off-street overnight space prior to purchasing a car. The city also has very low minimum parking requirements for developments and provides exemption for small buildings. However, these restrictions are changing to some extent, as the metropolitan government encourages more car park construction. The median parking rate in 2011 was approximately $740/month.

4.137 Walking is used by many as a convenient mode of transport, attributed in part to transit-oriented development centred around rail stations, with walk links to commercial, retail and entertainment centres. Bicycle use is central to transport in Tokyo, used mostly as a first-mile/last-mile option and for local trips. Specific cycling infrastructure is limited, but in suburban areas streets are often shared between cyclists, pedestrians and cars traveling at low speed and sidewalk riding is common in urban areas. Bicycle parking is an ongoing issue, with existing facilities unable to meet demand, and illegally parked bikes often impounded by authorities.

Governance

4.138 Japan uses a two tier structure for local governance: municipal and prefectural governments. Prefectures are designated geographic areas that include numerous municipalities. Unlike other two tier systems, both local government entities have equal statues and must cooperate in administrative matters. The Metropolis of Tokyo is an urban region, but also has prefectural status among all other prefectures in Japan.

4.139 The Metropolis of Tokyo is governed by a metropolitan government, which provides governance across the 23 specials Wards and 26 other cities, five towns, and eight villages. Over 13 million people live within the jurisdictional boundaries served by the metropolitan government. Wards, cities, towns, and villages largely function autonomously, with their own elected officials/councils. However, in order to ensure consistency of service across municipal boundaries the metropolitan government coordinates a number of public services.

4.140 Table 4.8 outlines the governance structure in Tokyo.

Table 4.8: Tokyo Government Structure

Government Body	Description	Key Responsibilities for Transportation
Tokyo Metropolitan Government	Directly elected council/governor from 42 districts. Responsible for public services and planning that has metropolis wide considerations (e.g. transport, fire services, sewerage).	Handles broader regional admiration and integration. Composed of multiple bureaus: • Transportation: operates Toei Subway, bus, and streetcar • Construction: road and road development administration • Urban Development: planning and construction of roads, railways, and other urban infrastructure The metropolitan government also jointly owns Tokyo Metro Co. with the national government.
Municipal Governments	Directly elected councils/mayors responsible for local services (education, health care)	Handle affairs related directly to residents. For transport, municipal governments are responsible for municipal roads.

TOKYO METROPOLITAN GOVERNMENT

Economy

4.141 Tokyo has the largest metropolitan economy in the world, with an economy largely driven by financial and professional services. Tokyo is an international finance centre, where 51 of the world's top 500 companies are headquartered. The international headquarters of a number of investment banks and insurance companies are based there, along with regional and local companies in transportation, publishing, electronics and broadcasting. Due to this economic configuration, the majority of commute trips are to downtown cores composed of large concentrations of mid to high rise commercial towers.

Strategic Review

4.142 Tokyo has a unique context, with high-quality transit options, subsidized transit for many commuters, and significant deterrents to car ownership. While it is a highly dense region, it is also a commuter driven region.

4.143 As a highly developed urban area, Tokyo is reliant on an effective transport network. Historically, investment in both infrastructure and broader mobility management or TDM programs has allowed the transport network to be used efficiently.

4.144 That being said, the high transit mode shares observed as a result of these measures provide indication that strategic investment in city-shaping can favourably shape travel behaviour. The availability of high quality transit through an extensive rail network is a key precondition for the high mode share for travellers in Tokyo. However, there are still key lessons that can be drawn from Tokyo for the GTHA as it develops into a denser urban region. Similarities in governance models, with regional governance supporting local authorities, provides insight into the potential for stronger regional oversight to successfully enable TDM-supportive policy.

4.145 The Tokyo Metropolitan Government, and other stakeholders, have developed TDM programming that aims to achieve a number of policy objectives, including environmental, health, equity, and transport network performance. The key TDM programs from Tokyo that were reviewed in this process are:

- Parking management and regulation
- Low Emission Zones
- Employer Transit Subsidies

4.146 These programs and policies are outlined in Table 4.9.

Parking Management and Regulation

4.147 Tokyo's approach to parking management is integrated between private sector development (parking for residential and commercial buildings) as well as regulating vehicle ownership. This approach limits the amount of parking available, effectively reducing incentives for using the single occupancy automobile. Development regulations have lower parking requirements than major other cities. For example, 0.3 parking spaces required for 100m^2 of office space, 0.4 in shopping centres. Development regulations are enforced by local governments, who may set 'special uses' (e.g. movie theatres) that have their own unique parking requirements. This allows for a flexible policy that supports developer commercial needs while also enforcing transport policy.

4.148 This is an example of a TDM measure embedded in land use development – as it limits the amount of automobiles that may be parked at residential or commercial buildings, and is particularly useful in high value areas where space used for parking detracts from the overall value that a developer can capture. Relaxing car parking requirements may have the effect of reducing the amount of parking available in higher value areas, which can reduce auto travel.

4.149 These polices are supported by additional legislation. Car registration requires a 'proof of parking' certificate that indicates the potential car owner has access to parking near their permanent residence. This law is a national law that has had implications on both travel behaviour and land development. Because car ownership requires parking and higher value/denser areas already have limited parking available, often potential car owners are unable to have a proof of parking, which has depressed auto ownership in many areas throughout Tokyo.

4.150 While these policies may not be immediately applicable in the GTHA, similar parking policies may be a key element of stronger incentive/disincentive TDM programming. With the growth plan goals to develop a denser region and RTP goals to have a more balanced mode split, relaxed parking requirements may offer a tool to support both policy goals. In particular, new developments near rapid transit or regional transit infrastructure could benefit from reduced auto parking. Automobile registration varies greatly between Japan and Ontario, limiting the applicability of 'proof of parking' or similar programs. Despite the inapplicability of the proof system, which heavily supports parking restrictions, a program of reduced parking requirements may be directly applicable in the GTHA. Such a program could be most effective by developing local, context specific, requirements that are flexible (similar to Tokyo's special use rules) to land value and use, and may also change over time.

Low Emission Zones

4.151 Low Emission zones are a partial or complete ban of single occupancy vehicles in order to enforce environmental and health policy. Low emission zones have been implemented in many jurisdictions across Europe and Asia, however the Tokyo context is particularly relevant to the GTHA as both regions are composed of multiple governments along with an overarching regional government. In Tokyo, low emission zones were implemented as part of broader public environmental health policy enacted by the federal government to limit NOx emissions in key urban centres as part of broader environmental health policy. While originally these policies limited vehicle usage based on emission standards, policy has evolved to also enforce vehicle volume or vehicle usage in key corridors. These policies are effective due to alignment of national and metropolitan regulations, demonstrating how effective alignment of multiple tiers of government can promote TDM outcomes. Within the GTHA, similar to proof of parking policy, direct application of emission reduction zones may not align with existing policy. Provincial and municipal legislation would be required to limit types of vehicles on the road and traffic within key areas. While much of Tokyo/Japan's emission zone legislation is focussed on emissions, it has the additional benefit of reducing traffic in key areas. Within the GTHA, a program to limit auto travel in either high congestion zones or zones where environmental health and safety concerns are present could be gradually developed based on air quality and TDM objectives.

Employer Transit Subsidies

4.152 As Tokyo is a commuter city, it relies upon employees being able to readily access their workplaces. Transit subsidies are common among many employers as a key benefit to employees as well as a way of ensuring employees have access to their job sites. Rail based transit alternatives are subsidized directly though employers by means of passes, reimbursements, or payroll benefits.

4.153 Within the GTHA, Smart Commute could play a coordination role with local transit agencies to develop mechanisms to support employer transit passes.

Table 4.9: Tokyo TDM Strategies

Strategy	Geographic Scale	Community-based marketing	Travel information	Incentives	Organizational TDM Programming	Mitigate the impacts of construction	Regulations or monetary tools	Details	Key practices for GTHA Consideration
Low Emission Zones	Regional						✓	Areas or roads where polluted vehicles are banned or charged for entering if the vehicle's emissions are over a set level. Requires collaboration of national and metropolitan government, including transport and environmental policies.	• While no legislation exists to allow for low emission zones, this legislation could be reviewed as part of TDM/transport network policy. • Additionally, a 'light' version of this policy could be set out to identify highest priority TDM areas and develop specialized tools to optimize transport networks within them.
Parking Management	Regional						✓	Reduced parking requirements for new types of development manages auto demand during the development process.	• May be aligned with existing development oriented policies (i.e. York Region) to limit parking, particularly around mixed use or intensive development transit stations or mobility hubs. • Limiting parking incentivizes transit use while limiting incentives for SOV use, especially in areas where alternative modes are available
Employer Transit Subsidies	Local			✓				Employers typically provide employer transit subsidies. Incentives stem from government programs (tax benefits to employers) as well as employment 'benefits', where providing a commute option through transit is seen as a strong benefit to working with a given employer.	• Employer transit subsidies were included in the Big Move (transit in lieu of parking) • This policy could be expanded through partnerships between agencies and employers, or between a TDM body (smart Commute) and transit providers to incentivise the uptake of employer pass programs.

steer davies gleave

Appendices

A Regional TDM Programming

Smart Commute

A.1 Smart Commute is a program of Metrolinx and the municipalities of the GTHA that has a mandate to promote efficient transportation choices that reduce congestion. Smart Commute acts using a variety of TDM approaches across the GTHA and is the only body directly implementing TDM programming at a regional level.

A.2 The focus of Smart Commute's programming is on delivering proven TDM techniques at a variety of levels including schools, workplaces, and communities.

4.154 The Smart Commute program includes an assortment of programs that enable behaviour change. A key service Smart Commute provides is the development of site assessments and staff travel behaviour surveys to support 2.4 TDM program development. Historically, Smart Commute has delivered programming across four elements:

- 1. Engage communities in travel behaviour change through community based marketing
- 2. Inform decision with usable travel information
- 3. Support the use of alternative modes by providing incentives
- 4. Enable behaviour change by developing and facilitating organizational TDM programming

A.3 Smart Commute implements these strategies by working with employers and municipalities to develop comprehensive TDM programming. Examples of programming includes:

- Carpooling and vanpooling
- Shuttle programs
- Emergency Ride home programs
- Employee work hours including telework, compressed work weeks and flex hours, workshops, lunch-and-learns and seminars

Ontario Ministry of Transportation (MTO)

The MTO provides overall strategic policy direction for the GTHA and provides funding for infrastructure projects such as transit, roads and strategic pathways. MTO does not have a specific role for TDM or within any of the TDM strategic mechanisms in the GTHA, but does act as a stakeholder for various TDM initiatives.

B Regional & Municipal TDM Programming

Durham Region

Regional Municipality of Durham

B.1 The Region is supported in its TDM efforts through its two main planning documents, the Durham Region Official Plan (ROP) and the Transportation Master Plan (TMP), the latter of which is currently being updated.

B.2 TDM in the region have predominantly involved Metrolinx directly through the Region's partnership with Smart Commute Durham (SCD). SCD has been the cornerstone of the Region's outward-facing TDM efforts since 2007. The program has successfully met its objectives and funding goals on a year over year basis since the program's inception.

B.3 The Region conducted several studies after the 2005 TMP, including:

- Setting the Stage for TDM in Durham (2006)
- Phase I - TDM Market Assessment (2007)
- Durham TDM Study Report (2007)
- Assessment of Analytical Tools and Techniques for Multi-Modal Transportation Planning (2007)

B.4 More recently, the Region has been improving infrastructure aspect of alternative transportation, such as carpool lots, bike racks on buses, bike parking, and bike share for employers.

B.5 Durham is currently updating its TDM policies through the TMP update and, at this early stage, has clearly identified TDM as a key directive:

DIRECTION #5: Promote sustainable travel choices

Durham Region will pursue a number of approaches to maximize the return on investment in facilities and services for walking, cycling, public transit and carpooling.

Transportation demand management (TDM) measures engage with travellers, and offer information, incentives and assistance to make choices that work best for individual needs and preferences.

B.6 The Region has recently experimented with involvement in TDM supportive measures related to school and community travel (Bike Month, Bike to School, etc.) and the recent launch of the Region's Cycling Communications Plan indicates that more efforts are being directed towards active transportation and TDM planning.

B.7 Key initiatives for Durham Region currently and in the future include:

- Broaden the reach of TDM and Smart Commute programming by reaching out to schools and community members
- In tandem with infrastructure investments, implement the Regional Cycling Communications Plan to create a cycling-friendly culture (community)
- Build on the TDM programming in place for the upcoming Pan Am and Parapan Am Games to increase businesses with TDM program implementation
- Provide assistance with Active and Sustainable School Travel activities
- Support local area TDM plans and activities, including providing input on area municipal Active Transportation Plans and/or updates

Durham Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	*TMP action 48*	*TMP: Conduct education and marketing as part of the recommended TDM Program to inform citizens about the adverse impacts of transportation-related air pollution and on measures to reduce auto travel.*
Travel Information	*TMP update: Direction #5 – TDM*	*TMPU: Transportation demand management (TDM) measures engage with travellers, and offer information, incentives and assistance to make choices that work best for individual needs and preferences.*
Incentives	*TMP update: Direction #5 – TDM*	*See above.*
Employer Programming		
Construction Mitigation		
Regulations and Tools	*TMP Intro & 3.2.1*	*TMP: TDM is a key strategy to 'providing more travel choices'; "The TMP recommends that the Region take an active role in implementing a TDM program…"* TMP: 2. Subject to budget approval, engage the services of a TDM Co-ordinator TMP: Prepare TDM-Supportive Land use Guidelines in consultation with the Local Municipalities

City of Pickering

B.8 Pickering's Official Plan includes specific focus on TDM programming, including core objectives within Chapter 4 – Transportation.

Objective: Balance the need to accommodate private automobiles with the need to accommodate pedestrians, cyclists, the disabled, public transit, taxis, and the movement of goods and services.

Pickering Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	OP 4.3Policy – transportation involvement and coordination	d) participate in or initiate programs that provide residents with information on alternative modes of transportation, and available transportation options.
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Tools	OP 4.5 Policy – Optimizing use of infrastructure OP 4.13 Policy – Parking Supply/demand	4.5 b) promoting ways to reduce traffic peaks and shift modes away from single occupancy vehicles, where appropriate through travel demand management initiatives including ride sharing, telecommuting, trip chaining, and bus priority or high occupancy vehicle lanes 4.13 – parking strategy Related: 4.6 Transit Policy

City of Oshawa

B.9 The City of Oshawa's Official Plan makes minor reference to TDM as an effective tool within the planning and development process to support developments to attract more sustainable trips. No other references to TDM are made at this highest policy level.

Oshawa Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Tools	OP 8.7.8 – TDM in Part II Plans	OP: Development proponents are encouraged to employ Transportation Demand Management strategies

Town of Ajax

B.10 The Ajax Official Plan formally recognizes TDM, with a focus on:

- Promote the increased use of public transit, cycling, and walking as energy efficient, affordable and accessible forms of travel
- Reduce auto dependency by supporting opportunities for multi-modal use such as carpooling, active transportation and increased transit use over single occupant vehicles
- Promote and implement Safe Routes to Schools plans
- Support *Transportation Demand Management* (TDM) initiatives that promote alternative modes of transportation and increase transit ridership, walking and cycling
- Ensure that all *development* applications for major commercial, employment or institutional *development* include a TDM strategy

Ajax Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming	OP 4.0 – Transportation	4.1.2 developers and employers to use TDM strategies, promote flextime to reduce travel demand
Construction Mitigation		
Regulations and Policy	OP 4.0 – Transportation	4.1.1 goals – development application TDM strategies 4.1.2 developers and employers to use TDM strategies

Town of Whitby

B.11 Under OP 8.0 – Transportation, Servicing and Utilities the official plan calls for enhancing the mobility of active modes and transit.

> A key consideration in the design of new development, shall be features which contribute to the enhancement of the ability of pedestrians and bicyclists and other active transportation modes.

B.12 This includes infrastructure oriented measures that relate to TDM, including new programs to increase convenience of transit. These programs may be included in a broader suite of TDM programing.

Whitby Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 8.1.3.1.6 – bus lanes/HOV Related: OP 8.1.3.7 – Pedestrian and non-motorized movement Related 8.1.3.8 Public Transit	Policy: reserved bus lanes and HOV lanes may be implemented to reduce travel times and increase convenience of transit

Municipality of Clarington

B.13 As part of the current Official Plan update (2015), Clarington has included new language in the Transportation chapter calling out TDM as "a means to promote a more efficient use of existing transportation infrastructure by reducing peak-hour single-occupancy vehicle trips and promoting increased transit use."

B.14 It also provides a vision for TDM in the community through three key actions:

- A travel demand management program for the Municipality of Clarington's Employees;
- Work with school boards, health units and residents to implement a program which encourages school aged children to walk to school; and
- Provide residents with information on transit, cycling and pedestrian options within the community.

B.15 The OP also creates a framework to require TDM Plans as part of the development application process.

Clarington Alignment with Strategic Mechanisms

TDM Strategic Mechanism	Plan Reference	TDM measure
Community-Based Marketing	OPU 19.6 - TDM	OPU: Provide residents with information on transit, cycling and pedestrian options within the community.
Travel Information		
Incentives		
Employer Programming	OPU 19.6 - TDM	OPU: A travel demand management program for the Municipality of Clarington's Employees;
Construction Mitigation		
Regulations and Policy	OPU 19.6 - TDM	OPU: The Municipality may require community-wide and area-specific TDM Plans for major employment, commercial and residential developments that are subject to a development application.

Township of Uxbridge

B.16 The Official Plan does not mention TDM or related policies; however, there are urban design standards that are supportive of TDM, which may be used as a foundation for TDM:

> *OP 2.4 Community design: A key consideration in the design of new development, shall be features which contribute to the* enhancement *of the ability of pedestrians and bicyclists and other active transportation modes*

Township of Brock

B.17 Within the Official Plan there is no explicit mention of TDM policy or programming; however, under OP 6.0 Servicing and Infrastructure there is reference to TDM style policies for supporting transit system use.

Brock Alignment with Strategic Mechanisms

TDM Strategic Mechanism	Plan Reference	TDM measure
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 6.0	Related: support transit system and transit supportive community design

Township of Scugog

B.18 Within Scugog's Official Plan, although there is no detailed policy for TDM, OP 8.0 Transportation and Infrastructure outlines strong support for shifting mode use to SOV alternatives:

Objective: Encourage the use of public transit, cycling and walking as sustainable, energy efficient, affordable and accessible forms of travel

B.19 This objective is reflected in terms of the provision of wayfinding/signage and identifying opportunities to promote transit use.

Scugog Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information	OP 8.4 – Ped/Cycle Routes and Facilities	8.4 e)iI) Ensure that high quality pedestrian infrastructure and wayfinding signage is established at key locations either as a condition of development approval or by the Township as part of its annual capital works program;
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 8.5 Transit	Related: encourage opportunities to promote transit

Halton Region

Regional Municipality of Halton

B.20 The Regional Municipality of Halton official plan includes supportive policies for TDM, as well as specific TDM policies. OP 172 – transportation includes two key objectives. First, 172(2), which supports TDM:

> To develop a balanced transportation system that:
>
> a) reduces dependency on automobile use;
> b) includes a safe, convenient, accessible, affordable and efficient public transit system that is competitive with the private automobile; and
> c) promotes active transportation.

B.21 TDM programming is explicitly called for under 172(4):

> To improve transportation network efficiency through both travel demand management and transportation supply management strategies.

B.22 These policies largely take shape under the incentives mechanism with a focus on triggering mode shift from SOV to alternative modes.

B.23 The Transportation Master Plan (TMP 3.1.6) also recognizes TDM, through employers delivered via the Smart Commute program and as an opportunity/approach to reducing automobile trips.

B.24 Halton Region is primarily focused on improving infrastructure for transportation alternatives to increase the convenience and attractiveness of modes such as transit, walking, cycling and carpooling. Future capital improvements include HOV lanes for carpools and higher-order transit services.

B.25 On a program level, the Region manages the Smart Commute Halton program.

B.26 In addition, the Region is currently undertaking TDM Developer Guideline and a Commuter Parking Lot Feasibility Study in consultation with our local municipalities.

B.27 The TDM Developer Guideline is directed at new developments along regional roads that will produce traffic impacts (100+ trips generated). The Guideline provides tools to decrease SOV use through a range of programs (e.g. joining Smart Commute) and infrastructure improvements (e.g.. bike parking).

B.28 The Commuter Parking Lot Feasibility Study has identified carpool parking opportunities within the Region by determining existing and future need as well as a methodology for a pilot project and an approach to monitoring.

Halton Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives	OP 173(12) – TDM initiatives Commuter Parking Lot Feasibility Study	Develop and implement, in conjunction with the Province, Metrolinx and the Local Municipalities, travel demand management initiatives to reduce travel by single-occupant vehicles and to reduce congestion on Halton's transportation network. Action: study to identify carpool parking opportunities within the Region
Employer Programming	TMP 3.1.6, 4.3.2, 5.4, 7.1, 8.2.2 – TDM SC Program	TMP 8.2.2 (recommendations): Continue to… promote TDM measures through Smart Commute; A Halton TMA working group be established to promote, educate and implement the Smart Commute program across the Region; Smart Commute Halton
Construction Mitigation		
Regulations and Policy	TMP TDM Developer Guideline	TMP 8.2.2 - Develop, with the Local Municipalities, TDM policies and strategies for major Development applications. Action: creating TDM Developer Guideline

City of Burlington

B.29 Burlington's Official Plan (3.2.2 e) states the City's intent for TDM

> The City will encourage opportunities for developing travel demand management (TDM) measures to reduce single occupancy automobile use, especially during peak travel periods, such as carpooling programs, transit passes, preferential parking for carpool members, telecommuting, flex hours, intranet carpooling and fare incentives.

B.30 Burlington has also taken the step to explicitly identify "improved access to public transit or implementation of a Travel Demand Management Plan" as a type of Community Benefit under Section 37 of the Planning Act.

B.31 The City, through a Dec 2014 Discussion Paper on TDM, recognizes that their existing TDM policies are generally oriented towards establishing an initial policy framework (e.g. promoting the *concept* of TDM) *rather than* requiring TDM strategies to be considered, planned for, and implemented.

B.32 The Discussion Paper presents new policies to more strongly entrench TDM within the Transportation Master Plan and recommends development of a TDM Strategy for the City.

Burlington Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	OP 3.9.2 c – Community-wide TDM	OP 3.9.2 - The City shall encourage Community-Wide and area-specific travel demand management programs.
Travel Information		
Incentives	OP 3.2.2 e) – TDM	OP 3.2.2 - The City will encourage opportunities for developing travel demand management (TDM) measures
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 3.9.2 a) – TDM, OP 3.4.3f, OP 5.5.14e	OP 3.9.2 - The proponent of a major employment development may be required, prior to the occupancy and use of land, to establish with the City a transportation demand management plan and implementation strategy for the development

Town of Oakville

B.33 Oakville's Official Plan references TDM in reference to the use of TDM Plans in new development as a means to reduce parking requirements.

Oakville Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives	OP 8.14 – TDM	Related: OP 8.15 – parking – reduced surface parking may be considered as part of a TDM plan.
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 8.14 – TDM	Policy: encourage TDM in development process; Town may permit reduced parking standards where TDM plans are included.

Halton Hills

B.34 The Halton Hills Official Plan highlights TDM supportive policy under OP-F6 through a general transportation objective:

> Promote public transit, cycling and walking as energy efficient, affordable and accessible forms of travel;

B.35 Specific TDM policies or strategies are not otherwise presented in the Official Plan.

Town of Milton

B.36 Milton's Official Plan calls out a few specific TDM policies, including:

> The Town shall encourage the use of special transportation management strategies which promote more efficient use of existing road facilities

B.37 They also provide an avenue for the Planning Department to require TDM Plans for large office or industrial developments through the development application process.

Milton Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives	OP 2.6.3.12 to 2.6.3.14 – TDM	Policy: The Town shall encourage the use of special transportation management strategies which promote more efficient use of existing road facilities including staggered work hours, car pooling and High Occupancy Vehicle (HOV) lanes. Policy: the
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 2.6.3.12 to 2.6.3.14 – TDM	Policy: The Town shall encourage the use of special transportation management strategies which promote more efficient use of existing road facilities including staggered work hours, car pooling and High Occupancy Vehicle (HOV) lanes. Policy: the Town may require a TDM plan for large office/industrial developments Policy: reduced parking standards for TDM plans for new development.

Peel Region

Regional Municipality of Peel

B.38 The 2014 Official Plan consolidation provides a detailed section on TDM, three key objectives and a series of TDM policies. The Region's TDM objectives include:

OP 5.9.9.1.1 To reduce auto dependency by promoting sustainable modes of transportation.

OP 5.9.9.1.2 To provide a range of transportation services to meet the diverse needs of the population.

OP 5.9.9.1.3 To maximize the capacity of the transportation system to move both people and goods.

B.39 Other Council-approved documents in addition to the OP also provide further commitment to TDM and the promotion of sustainable transportation, including

- Climate Change Strategy (2011)
- Long Range Transportation Plan (2012)
- Changing Course: Creating Supportive Environments for Healthy Living in Peel (2012)
- Transportation Demand Management (TDM) Plans (2008 and 2014)

B.40 Peel Region has been a pioneer in the GTHA for over 10 years, creating the first municipal TDM Plan/Strategy in 2004. They recently updated their regional TDM Plan in 2014 which provides key recommendations for programming over the next five years.

B.41 Peel has also been successful at implementing TDM initiatives and keeping at the forefront of trialing best practice approaches to marketing, community outreach, incentivization and employer outreach via Smart Commute. Key initiatives include:

- Individualized marketing: Peel has implemented, with the support of consultants, several IM programs over the past few years.
- TDM in development planning: Peel hosted a regional workshop in 2013 in partnership with ACT Canada on best practices for incorporating TDM plans into the development planning process.
- Smart Commute: Peel has Smart Commute offices covering all three cities within its region and has trialed innovative approaches to employee engagement such as employer individualized marketing
- Freight TDM: taking key demand management approaches from the passenger mobility realm, Peel has been investigating the potential for better managing the demand for freight activity on regional roads.

B.42 Peel works closely with its municipal partners to fund, manage or support local programs and initiatives.

Peel Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	OP 5.9.9.2.3 to 5.9.9.2.6 – TDM programs TMP 3.6 – Walk & Roll TMP 3.6 – PSARTS, Stepping it up, high school TDM - school travel planning Social marketing plan	Policy: Work with all levels of the public and private sectors to develop programs that place primary consideration on the reduction or elimination of trips and the increased use of sustainable modes of transportation and to develop programs for implementing these and other travel demand management strategies. Related: OP 5.9.10.2.8 – active transportation programs TMP 3.6 – walk and roll raises awareness of the benefits of walking and cycling TMP 3.6 school travel planning – increase number of kids walking and cycling to school
Travel Information	Programs	Several individualized marketing programs have been implemented across Peel to provide travel information and incentives to residents to try sustainable modes of transportation
Incentives		Several individualized marketing programs have been implemented across Peel to provide travel information and incentives to residents to try sustainable modes of transportation
Employer Programming	TMP 3.6 – Smart Commute TMP 3.6 – Employer IM Program Smart Commute	OP 5.9.9. – support for TMAs and employee sustainable travel TMP 3.6 - Three programs in Mississauga, Brampton-Caledon, and Pearson Airport Smart Commute offices in Mississauga and Brampton-Caledon support employer TDM programming
Construction Mitigation		
Regulations and Policy	OP 5.9.9 – TDM TMP 3.6 – TDM	OP 5.9.9 – various TDM policies Related: OP 5.9.10.2.6 – safe routes to school

City of Mississauga

B.43 General OP policy: 8.1.8 To better utilize existing infrastructure, Mississauga will encourage the application of transportation demand management (TDM) techniques, such as car-pooling, alternative work arrangements and shared parking.

B.44 Mississauga is clear in their understanding that they need stronger policies to support TDM, such as developing requirements through the development process. Key initiatives currently ongoing include:

- Conducting research into what other communities have been doing in order to establish a work plan for TDM in the city.
- Creating an internal working group whose mandate is to review conditions in Mississauga's Business Parks and determine areas for improvement in relation to TDM, including infrastructure improvements such as additional bus shelters, sidewalk infill, and cycling infrastructure improvements. The goal is to improve access for alternative mode to our major business areas.
- Improving the overall profile of TDM in Mississauga and incorporating TDM requirements into the development process through improved/stronger policies.

Mississauga Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	*OP 8.5.1 & 8.5.2 – TDM programs* Cycling MP 11.0 – promotion and education	*Policy: 8.5.1 Mississauga will encourage TDM strategies that promote transit use and active transportation, and reduce vehicle dependency, single occupant vehicle travel, trip distance and time and peak period congestion.* CMP 11.0 – recommendations for awareness raising, marketing, and education to promote and increase use of cycling.
Travel Information		
Incentives		
Employer Programming	*OP 8.5.3 – employer TDM*	*Policy: Mississauga will encourage employers to implement TDM programs.*
Construction Mitigation		
Regulations and Policy	*OP 8.5 – TDM* OP8.5.7 – development application TDM plans Cycling MP 11.0 – promotion and education Cycling MP 10.0 – cycle parking	*OP 8.5 – various policies for TDM* *Policy: TDM plan may be required* *Related: OP 8.4 Parking – links to TDM measures to support off-street parking in new developments; OP 8.5.6 – fees for parking where appropriate* CMP 11.0 – recommendations for awareness raising, marketing, and education to promote and increase use of cycling. Related – CMP – bike parking in the development process

City of Brampton

B.45 One of the key transportation objectives in Brampton's Official Plan states:

To encourage personal mobility and travel choices that reduce overall transportation resource demands through enhancement of the Brampton transit system, developing and adopting Transportation System and Transportation Demand Management measures and programs and Intelligent Transportation System strategies

Brampton Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	*OP 4.5.3.15 – marketing*	*Policy: The City will support an awareness and marketing campaign for major employers and residents to explain the options and benefits of using alternatives to the private car.*
Travel Information	*OP 4.5.4.17 – transit information*	*Policy: The City shall optimize transit passenger convenience and accessibility including accessibility for persons with disabilities by: (i) Creating an information program, which acquaints transit users with routes, schedules and services available;*
Incentives		
Employer Programming	*OP 4.5.3.14 & 4.5.3.15 – employer programs* TTMP 4.6 - TDM	*Policy: The City shall support the creation of travel demand management associations such as Smart Commute Brampton-Caledon and shall work with the Region of Peel, Metrolinx, MTO, Transport Canada and other jurisdictions to implement TDM programs.* Policy: see above. TTMP 4.6 – active role in Brampton-Caledon Smart Commute.
Construction Mitigation		
Regulations and Policy	*OP 4.5.3 – Transportation System and TDM measures* TTMP 1.3.2 SCDG 40 – promoting alternative transportation	*Various policies related to TDM.* OP 4.5.3.5 to 4.5.3.7 – supporting HOV facilities OP 4.5.3.13 – development of TDM Master Plan SG40. Support community health and improve air quality by promoting walking, cycling, and transit as the primary means of transportation thereby reducing dependency on the private automobile for daily activities. TTMP 1.3.2 – key principles for sustainable transportation planning: #5 TDM Related: OP 4.5.5. parking management

Town of Caledon

B.46 The Town of Caledon Official Plan, Transportation Section (5.9), contains policies relating to TSM/TDM which set out the tone for all TDM-related programs. The secondary plan studies also build and consider TSM/TDM policies in the transportation element.

B.47 As a small municipality with very limited transit service are doing some great work on TDM programs including actively participating in Brampton-Caledon Smart Commute, carpool zone, bike to work day, TDM programs at schools, promoting carpool lots, and working with the Region of Peel in their programs.

B.48 A new initiative to pilot Individualized Marketing in a newly developed community will help the Town understand the effectiveness of community-based outreach and marketing in a suburban and semi-rural setting.

Caledon Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	*OP 5.9.5.5.3 – marketing*	*Policy: The Town will support/work as appropriate with the Region, Metrolinx and other stakeholders to undertake an awareness and marketing initiative to encourage employers and residents to use sustainable modes which are viable alternatives to the private automobile.*
Travel Information		
Incentives		
Employer Programming	*OP 5.9.5.5.2 – Smart Commute*	*Policy: The Town shall strive to achieve a significant increase in vehicle occupancy rates on an overall basis by continuing to work with Brampton-Caledon Smart Commute Transport Management Association (TMA) to encourage employers/employees to choose sustainable modes of transportation for their daily commutes.*
Construction Mitigation		
Regulations and Policy	*OP 5.9.5.5 – TDM and TSM*	*General polices on TDM* Related: 5.9.5.9.4 – safe routes to school

York Region

Regional Municipality of York

B.49 The Regional Municipality of York has included extensive TDM programing within its Official Plan. Eighteen policies related to TDM are provided in the OP, that leverage five of the six strategic mechanisms and are focused on using TDM to optimize travel throughout the region.

OP 3.2.3 – climate change: To reduce vehicle emissions by ensuring that communities are designed to prioritize pedestrians and cyclists, reduce single occupancy automobile use, and support public transit and Transportation Demand Management initiatives.

OP 7.1 – Servicing our population/reducing the demand for services: TDM is key approach to trip reduction. "At the forefront of this approach is a comprehensive Transportation Demand Management program that promotes walking, cycling, transit use and a per capita reduction in trips taken."

B.50 Additional guiding policies are supplied in OP 7.2 (active transportation & transit), which sets ambitious mode split targets for the region.

OP 7.2.26 - To achieve an overall transit modal split of 30% during peak periods in the Urban Area and 50% in the Regional Centres and Corridors by 2031.

B.51 These objectives reflect a number of measures that are being implemented across York Region, including:

- Increased collaboration with developers to embed TDM into the development process
- Partnership with upper tiers of government, Metrolinx, private sector, public institutions, and NGOs to deliver TDM programming
- Coordinating TDM activities across municipalities in the region

B.52 The Transportation Master Plan (TMP 8.3) also recommends establishing a Pedestrian and Cycling & TDM Implementation Group to help support and deliver ongoing programs.

B.53 A TDM Strategy was developed by the Region in 2013 (though not endorsed by Council) and detailed recommendations were provided for:

- Communications & Branding
- Residential Community Outreach and Marketing
- School Travel Planning
- Parking Management
- TDM in New Developments
- Employer Outreach/Smart Commute
- Internal Governance

B.54 The Region has actively been pursuing TDM implementation, most recently through a Personal Travel Planning pilot project in new developments which is using funds collected by developers through the planning application process.

Table 4.10: Region of York Official Plan Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	*OP 7.1.8 – home buyer information* TMP P8 – TDM Marketing in communities and schools Development Planning – individualized marketing in new developments Programs – PTP Pilot	*Policy: To work with developers to provide all new-home buyers with information on available pedestrian, cycling and transit facilities and carpooling options within the community, including local transit routes and schedules.* TMP P8 - Work directly with area community and cultural centres to promote relevant sustainable transportation initiatives; Actively work with the school boards to implement Safe Routes to School programs, and continue to expand the YO! Program at York Region high schools. DP – new outreach program to new developments, personalized information and marketing DP - Since 2013, as part of the development review and approvals process, the Region collects development charges (DC's) to implement a number of different TDM related measures and incentives to reduce single occupant vehicle trips originating from the community. DP - The Region has just started a new pilot project – TDM in new residential communities in York Region (engaging 1000 households from 6 different communities) and will use the opportunity to further evaluate the effectiveness of the different TDM measures that can be applied to other communities in the Region. PTP - In 2011, the Region piloted TDM and social marketing and personal travel planning programs in the Cornell and Thornhill communities to understand potential impacts of the programs.
Travel Information	*OP 7.1.17 – real time info*	*Policy: To partner with Metrolinx, the private sector and non-governmental agencies to deliver real-time information on commuting options.*
Incentives	*OP 7.1.15 – retail incentives* OP 7.1.16 – U-Pass TMP P8 – Students and seniors	*Policy: To encourage retailers and community facilities to provide discounts and incentives to those using transit and active forms of transportation.* Policy: To develop a discounted university and college transit pass program in partnership with educational institutions. TMP P8 - Partner with major retail stores to develop incentive programs for high school and university students (or others) who use transit. TMP P8 - Partner with major retail stores to develop incentive programs for seniors who use transit.

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Employer Programming	*OP 7.1.2 & 7.1.14– Smart Commute TMAs* *OP 7.1.10 – Employer TDM strategies* OP 7.1.12 – bulk transit passes TMP 2.2.4 – TDM programs TMP Principle 7 – Consultation and engagement TMP Principle 8 – TDM initiatives PCMP 6.6 – Integrating ped/bike actions with Smart Commute	*Policy: To work with local municipalities, Metrolinx and other stakeholders to support local Smart Commute associations.* Policy: To promote, in partnership with Smart Commute, employer-based initiatives and policies that reduce the need for peak-period trips, including alternative work arrangements, transit incentives, and carpooling. Policy: To work with institutional, commercial and industrial employers to undertake Transportation Demand Management strategies to encourage preferential carpool parking, bicycle facilities, employee transit passes, and alternative work arrangements. Policy: To implement transit pass bulk-buying programs for employers and to encourage employers to provide transit passes in lieu of parking. TMP – implemented Smart Commute in Vaughan, Markham-Richmond Hill, and Newmarket-Aurora. TMP P7 - Work with local Smart Commute Associations to develop a TDM promotional plan in conjunction with municipalities and key stakeholders
Construction Mitigation		
Regulations and Policy	*OP 7.1.3-5 – parking management* OP 7.1.9 – Development TDM strategies OP 7.1.18 – funding TDM Vision 2051 – p7, p24, p28 TMP Principle 8 – TDM initiatives	*Policy: To work with local municipalities to develop a co-ordinated approach to parking and parking management, consistent with the parking policies in Chapter 5 of this Plan.* Policy: To require that new institutional, commercial and industrial development applications include a Transportation Demand Management strategy. Policy: To explore and leverage opportunities for funding from the Province and Federal government, as well as from other funding sources, for Transportation Demand Management measures and programs. Vision 2051 – recognizing TDM has an important role to play in increasing mobility and managing infrastructure services in the future. “In 2051, a seamless network for mobility provides accessibility to all destinations using diverse transportation options for people in all communities, promotes active healthy living and safely and efficiently moves people and goods. TMP P8 - Require TDM plans or strategies for major development applications. TMP P8 - Adopt Regional policies that promote the replacement of corporate fleets (Viva/YRT, public works, police) with hybrid or alternative-fuelled vehicles. Related - TMP P8 – parking management strategies

City of Vaughan

B.55 Vaughan's official plan and includes significant efforts to improve TDM in the municipality. OP 4.1 Transportation provides a key objective for TDM:

> To establish a comprehensive transportation network that allows a full range of mobility options, including walking, cycling and transit.

B.56 The City of Vaughan promotes efficient movement through its travel management strategies, ranging from specialized policies related to School Travel Planning to Smart Commute program. These measures include:

- School Travel Plans
- Charging for car parking
- Emergency ride home program for sustainable commuters
- Priority parking spaces for carpools
- Discounted transit passes
- Bike racks
- Changeroom and shower facilities for cyclists
- Telecommuting programs and flexible work hours

Vaughan Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	OP 4.3.3.1 – TDM programs OP 4.2.3.1-e) – active transportation	Policy: To encourage and support City-wide and local travel demand management programs that reduce single-occupant vehicle travel. Policy: working with the Region, Province, Metrolinx and other partners to develop innovative programs to enhance, expand and support active transportation such as complete walking and cycling networks, bike sharing programs and education and information
Travel Information	OP 4.2.3.1-e) – active transportation OP 4.3.3.5 – developer-provided information	OP 4.2.3.1 – see above Policy: work with developers to provide new homebuyer info
Incentives	OP	
Employer Programming	OP 4.3.3.2 & 4.3.3.3– Vaughan employees and Smart Commute	Policy: To initiate a travel demand management program for City of Vaughan employees. Policy: To work with York Region, Metrolinx and other stakeholders to support Smart Commute and other travel demand management organizations.
Construction Mitigation		
Regulations and Policy	OP 4.3.3. – travel demand management OP 4.3.3.8 – site plan approvals TDM	OP 4.3.3 – various TDM policies Policy: requirement for TDM plan on large residential and mixed use site approvals Related: OP 4.3.2 parking management, e.g. develop a pay-for-parking system for on-street parking in high parking demand locations throughout the City, including Intensification Areas; Related: OP 4.3.3.4 – school travel planning

City of Markham

B.57 The Markham Official Plan includes strong support of TDM measures, including a key statement in OP 7.0:

> To address these trends and shift travel behaviours from auto-oriented transportation to more environmentally sustainable travel choices, the Markham Transportation Strategic Plan provides for selective road capacity enhancements; increased and enhanced transit services; transit-supportive development; transportation demand management; and active transportation.

Markham Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing	OP 7.1.4.2 k) – support walking and cycling.	Policy: support ongoing promotional, safety and educational programs for pedestrians and cyclists
Travel Information		
Incentives		
Employer Programming	OP 7.1.2.6 – promote transit services OP 7.1.4.1 – TDM leadership	Work with TMA and businesses to introduce 'smart shuttles' Policy – support Smart Commute TMA; Markham employee TDM measures;
Construction Mitigation		
Regulations and Policy	OP 7.1.1.5 – TDM OP 7.1.4 – TDM and Active Transportation	Policy: promote TDM measures to support reduction of auto-dependency; reduction of peak period travel; develop a parking strategy; continue public outreach programs through Smart Commute TMAs, York Region and Metrolinx. Policy 7.1.4.1: development TDM plans, prioritizing ped/bike/transit, TDM pilot programs, school travel planning Related: OP 7.1.4.2 – support walking and cycling; 7.1.5 vehicle parking; 7.1.5.3 preferential parking for carpool/carshare/LEV

Town of Richmond Hill

B.58 The Official Plan for Richmond Hill highlights the use of TDM for both new developments as well the broader municipality. This includes strategies to encourage TDM plans for new developments, promotion of non SOV travel, and using TDM as a supportive measure for new parking requirements.

Richmond Hill Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	*OP 5.1-5n) TDM policies in Secondary Plans*	*OP 5.1-5n – secondary plans should respect TDM policies* *Related: OP 5.3-7c)& 5.26 – TDM strategy may be required for development applications* *Related: OP 3.5.4 TOD – TDM such as car-share operations and carpooling, shall be encouraged.* Related: 6-3) exceptions – TDM should be encouraged alongside parking requirements in Yonge Street corridor.

Town of Aurora

B.59 TDM is indirectly reflected in the Official Plan under OP 14.0 Sustainable Infrastructure, which contains a key objective focused on promoting alternative modes to reduce auto-dependence:

> Promote Active Transportation and the use of alternate transportation modes such as transit, walking and bicycling to reduce the dependence on the private motor vehicle.

B.60 No TDM-specific policies are otherwise included, however this objective is in line with high-level TDM strategies.

Town of Newmarket

B.61 The Newmarket official plan focuses on multiple mechanisms to implement TDM as part of broader planning and transportation policy. These measures include a focus on supporting the development of commute options in regional centres through transportation management associations (TMAs) and support of programs that incentivize transit.

Newmarket Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming	OP 4.3.2 – Yonge Street Regional Centre	OP 4.3.2 10) - Developing TDM measures, including the further establishment of TMAs
Construction Mitigation		
Regulations and Policy	OP 15.3 2) – public transit	Related: encourage increased public transit use Related: 15.8 Streetscaping shall encourage the use of alternative transportation modes.

Town of Whitchurch-Stouffville

B.62 The Town's Official Plan does not reference TDM and TDM plans are not recommended as part of the planning application process. Through the OP, the Town does seeks to plan the transportation network to support walking, cycling and transit.

> OP 5.2: Develop a transportation network which provides for the safe, economic and efficient movement of people and goods, while also providing for pedestrian and bicycle movement.

East Gwillimbury

B.63 TDM is reference in the Official Plan through a key objective aiming to promote the use of alternative modes (OP 7.2):

> Promote public transit, cycling and walking as energy efficient, affordable and accessible forms of travel.

B.64 This objective includes policies for promoting TDM programs, developing TDM Plan requirements for new developments, and using TDM measures to offset parking requirements.

Table 4.11: East Gwilimbury Official Plan Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 7.2.1 – TDM OP 8.1.1 – Application and pre-consultation/additional reports and studies	Policy – promote TDM programs and initiatives; require development TDM strategies reduced parking standards for TDM strategies; Process – developments may be subject to requirement for TIA/TDM report

Town of Georgina

B.65 No TDM-specific policies are included in Georgina's Official Plan. However supporting policy is included for including TDM in development planning.

Georgina Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	OP 6.3.2 – development review	Documents that may be required for development approvals - Transportation Demand Management Analysis

Township of King

B.66 The Township's current Official Plan is dated 1970 and it is currently under review. As part of the current OP Review, an introductory discussion paper suggests the "preparation of TDM policies to encourage reduction of single-occupant vehicle travel."

B.67 TDM is recognized in TMP 5.2.3 but is primarily focused on improving alternative transportation infrastructure such as sidewalks and the bicycle network.

King Alignment with Strategic Mechanisms

TDM Strategic Mechanism	*Plan Reference*	*TDM measure*
Community-Based Marketing		
Travel Information		
Incentives		
Employer Programming		
Construction Mitigation		
Regulations and Policy	TMP 5.2.3 – active transportation and TDM initiatives	TMP 5.2.3 - preparation of TDM policies to encourage reduction of single-occupant vehicle travel.

City of Hamilton

Official Plan

B.68 OP Chapter C: 4.0 - Broad discussion of transportation and land use and the introduction of TDM as "an essential part of an overall integrated transportation network."

TDM programing

B.69 TDM programming within the City of Hamilton. TDM programming covers Communications and Outreach, Events and Conferences, Workplace Program, Schools, Neighbourhoods and Households, Policy & Studies, Infrastructure, Facilities & Programs, and Special Projects/Events.

B.70 As of the 2104 annual report, progress has been made towards TDM programming. These efforts include:

- Significant efforts under Smart Commute, including work place support and awards, transit pass, ride share, and emergency ride home programs
- Development and promotion of cycling through a bike share program and bike valet initiatives
- Support of car share initiatives
- Development of school travel planning

B.71 Much of Hamilton's efforts are aligned with the Smart Commute program in order to engage work places and improve up take of alternative modes by commuters. However other supporting measures have begun to show results.

B.72 Support for car share, bike share, and other active modes promotional work was also a focus of previous activity.

B.73 Additionally, new area planning has included TDM programming to support improved operations and delivery of transportation improvements. Community based and individualized marketing was piloted through the North End individualized marketing project, which made significant strides to developing robust community based social marketing programming.

TDM for Development

B.74 In 2015, Hamilton developed its *TDM for Development* study, which determined key strategies and approaches for furthering TDM through the land use development process. The output of this study is a set of guidelines to support TDM being included in the development process.

B.75 These guidelines provide a framework that covers:

- TDM reporting requirements for different development types
- TDM measures that may be most useful for different land use types
- Evaluation procedures for TDM programming

TDM Strategic Mechanism	Plan Reference	TDM measure
Community-Based Marketing	2014 TDM Report	School based travel planning North End Individualized Marketing
Travel Information		
Incentives	2014 TDM Report	Bike Valet Program and bike to work day
Employer Programming	2014 TDM Report	Support of Smart Commute
Construction Mitigation	2014 TDM Report	IM applied to traffic operations developments/improvements
Regulations and Policy	OP Chapter C: 4.0 TDM for Development Guidelines	Policy 4.1.7 – facilitate more active transportation and TDM initiatives Policy 4.2.4 – TDM measures shall be evaluated in all transportation studies and plans Related:Policy 4.1.4, link to land use – plan urban areas to reduce car dependency Related – policies supporting improved transit and access to transit Include TDM in development process through new guidelines

City of Toronto

Official Plan

B.78 OP 2.4: broadly encompasses importance of integrating transportation and land use planning.

Key policy: TDM measures will be introduced to reduce car dependency and rush hour congestion.

B.79 Many other policies supporting TDM strategies and promotion of sustainable alternatives to the SOV.

Walking Strategy

B.80 This city of Toronto's walking strategy includes specific focus on promoting a culture of walking, including the following:

- City wide walking festivals
- Walking materials online

B.81 These efforts are considered to be aligned with strategic mechanisms 2 and 3.

TTC Discounted Metropass

B.82 The TTC operates a developer metropass program, which allows for bulk purchase of metropasses to developers over a one year period. This program is optional.

B.83 Research was conducted on the potential to mandate that TTC Metropasses be provided to purchasers of new condominium units in certain areas of the City during their first year of occupancy.

B.84 The report recommended that the requirement for each condominium unit to be supplied with a Metropass for a 12-month period be secured as condition of condominium approval, which would extend to all new condominium buildings with 20 or more units located in the targeted mixed use growth areas comprising the Downtown, the Central Waterfront, the Centres and the Avenues. This report was a proposed policy, which has yet to be implemented, but offers progress of strategy y 3 and 6.

City of Toronto Congestion Management Plan 2014 -2018

B.85 In response to population and travel demand increase, the City of Toronto has implemented a Congestion Management Plan for 2014 - 2018. The plan provides an objectives driven, performance-based approach to manage congestion and recommends the following activities for the next 5 years:

- Taking a more **proactive approach** to traffic management on **arterial roads**, complementing current traffic management activities on City expressways;
- **Applying evolving technology** to traffic and congestion management, from wireless communication to advanced sensors to social media;
- Providing a **"tool kit"** from which activities can be chosen and applied to the unique road contexts around Toronto; and
- **Strengthening partnerships and information sharing**, to improve efficiency and coordination of the City's transportation network.

Toronto Bike Plan

B.86 The Bike Plan establishes a vision for "cycling that includes an emphasis on cycling promotion, in line with strategic mechanisms 2 and 3.

TDM Strategic Mechanism	Plan Reference	TDM measure
Community-Based Marketing		
Travel Information	Congestion Management Plan	Apply new technology to enhance how users access information about the transport network
Incentives	Walking Strategy Toronto Bike Plan TTC Metropass	Use promotional events and marketing to create a 'walking culture' and support the uptake of cycling Discounted metropasses can be procured by developers to incentivize transit use
Employer Programming	OP 2.2.4 – Employment Districts	References workplace TDM and TMA formation Policy 3: encourage TDM measures with reference to encouraging transit Related: transit use encouraged through better service and better located employment, prioritize transit vehicle movements, encourage active travel by improving conditions Related: policy: provide employment that can be reached by means other than private auto
Construction Mitigation		
Regulations and Policy	OP 2.4 – Transportation Change	Policy 2/3: suggestion for development-related impact studies to be carried out with potential TDM recommendations Policy 4/5: parking management strategies in areas well served by transit Policy 7 – bicycle friendly environments Policy 8 – walking friendly environments Related: Policy 10 –creating convenient inter-modal connections Related: from "Toronto at the Crossroads: Shaping Our Future" – instituting equitable pricing and financing of transportation services

CONTROL INFORMATION

Prepared by	Prepared for
Steer Davies Gleave 1500-330 Bay St Toronto, ON, M5H 2S8 Canada +1 (647) 260 4861 na.steerdaviesgleave.com	Metrolinx 97 Front Street West, Toronto, ON M5J 1E6

SDG project/proposal number	Client contract/project number
22780003	

Author/originator	Reviewer/approver
Patrick Miller	Ashely Curtis

Other contributors	Distribution	
Geoff England, Justine Clift	*Client*:	*SDG*:

Version control/issue number	Date
2.0	Friday July 17/2015

013