

# TDM Guidelines for Development in Metro Vancouver

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- A TDM Decision-Making Checklist**
- B Detailed Case Study**
- C Glossary of Terms**

# 1 Introduction

## Purpose and Scope of these Guidelines

### Purpose of the Guidelines

- 1.1 The purpose of these TDM Guidelines is to provide local jurisdictions and the development community in Metro Vancouver with insight and opportunities to improve the processes, strategic development, and implementation of transportation demand management (TDM) across the region. As a result, these guidelines help to set a more unified tone for how TDM can be conceptualized throughout the region, enabling local jurisdictions and developers to execute TDM more effectively in both a general yet context-sensitive fashion.

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**Purpose.** To provide local jurisdictions and the development community in Metro Vancouver with insight and opportunities to improve the processes, strategic development, and implementation of transportation demand management (TDM) across the region.

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- 1.2 The content within these guidelines is informed by several sources that collectively provide an informed, yet localized path to improved TDM planning across Metro Vancouver. Key sources of information include:
- International TDM best practice and case study research
  - Existing TransLink TDM-related documents and guidelines, such as the Transit-Oriented Communities Design Guidelines, and the TransLink Travel Smart Development TDM Plans 2019 Report
  - Local TDM-related policies, bylaws, and template documents (where available), as well as governance structures such as the Metro Vancouver Regional Growth Strategy and Local Government Act
  - Presentation and workshop with over 20 local jurisdictions
  - Interviews with five representatives of the local development community
  - Engagement with mobility service providers

### Intended Audience and Roles

- 1.3 Planning and implementing TDM effectively will require the involvement and commitment of a range of stakeholders in the region. These guidelines have been developed primarily for local jurisdictions, developers and property managers but may support decision-making for other organizations.

	Audience	Role
	Local Jurisdictions	Conduct clear and predictable processes for TDM requirements and provide supportive infrastructure for multimodal transportation
	Developers and Property Managers	Develop, implement and monitor effective TDM strategies that meet local transportation goals and targets
	Regional Agencies	Facilitate collaboration and knowledge-sharing of best practice strategies, tools and process that enable a more robust and effective delivery of TDM across the region
	Planning and Engineering Professionals	Plan, analyze and implement TDM strategies using best practices and sound analysis techniques
	Community Organizations and Transportation Service Providers	Support implementation of TDM strategies

Elements in this document which are of particular relevance to developers and property managers are indicated with the following icon.



### Focus for TDM Guidelines

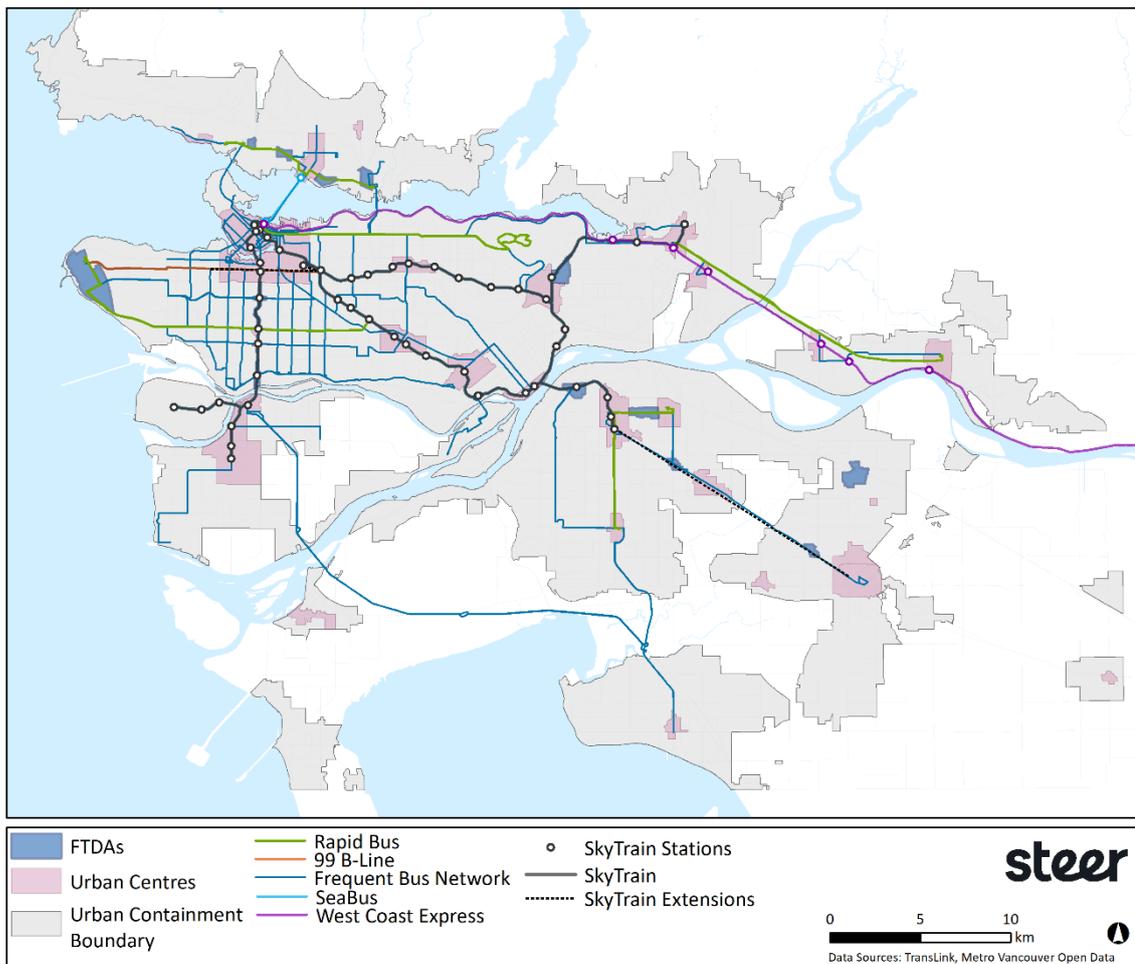
- 1.4 These guidelines have been designed for the local context of the Metro Vancouver region, which includes 21 municipalities, one Electoral Area and one Treaty First Nation.
- 1.5 Throughout Metro Vancouver, there are various urban, suburban, and rural geographic contexts containing varied regional land use designations. Key land use designations include the Metropolitan core (downtown and surrounding Vancouver), regional city centres, and municipal town centres. Cross-cutting the entire region are also frequent transit development areas (FTDAs) - designated areas that follow the current and potential future path of frequent transit service offerings across Metro Vancouver (e.g. SkyTrain station areas).
- 1.6 As a result of geographic context (e.g. urban, suburban), land use designations (e.g. regional city centres, municipal town centres) and extent of development and proximity to the frequent transit network, how local jurisdictions are, and will be able to effectively execute TDM within their jurisdiction will vary, acknowledging that some TDM strategies are better suited to certain contexts than others. For these reasons, among others (e.g. political climate, jurisdictional planning goals/priorities) some jurisdictions may have more potential for robust TDM processes and requirements (or are likely to in the near future).

### Transit-Oriented Communities Design Guidelines

TransLink developed this set of guidelines which supports regional stakeholders in best practice design of local communities to support transit access and use. The “6Ds” framework used in the guidelines includes *D6: Demand Management* and provides a key link to how TDM aligns with broader community-building and transit-supportive goals.

[https://www.translink.ca/-/media/translink/documents/plans-and-projects/managing-the-transit-network/transit\\_oriented\\_communities\\_design\\_guidelines.pdf](https://www.translink.ca/-/media/translink/documents/plans-and-projects/managing-the-transit-network/transit_oriented_communities_design_guidelines.pdf)

**Figure 1.1: Overview of Metro Vancouver Transit Network and Development Areas**



## Why Transportation Demand Management?

- 1.7 Effective and strategic management of the demands placed on transportation infrastructure is essential to enable the sustainable growth and development of the Metro Vancouver region. **The collective package of strategies aimed at encouraging sustainable travel choices and supporting alternative options over the convention of frequently driving alone is collectively known as TDM.**
- 1.8 As described in TransLink’s Transit Oriented Communities Design Guidelines, these strategies provide incentives for travelers to make the most effective use of all of transportation networks, thereby shifting travel by mode and time of day to take advantage of available capacity and reducing crowding and congestion.
- 1.9 Such strategies have the potential to deliver numerous benefits (described below) for those who live, work and play in Metro Vancouver, while inadequate responses to travel demand can lead to negative impacts such as inequality, constrained economic growth, and negative effects on the environment.

**What is TDM?**

1.10 TDM is the application of focused, evidence led strategies, initiatives and incentives which seek to influence people’s travel behaviour by redistributing journeys to other modes, times, routes or removing the journey altogether. It is most effectively applied when there is an impetus, need or catalyst for change. Examples of demonstrated approaches to TDM include:

- Encouraging and enabling travel behaviour change to walking, cycling, taking transit, or carpooling instead of driving alone;
- Reducing the number and length of trips people must make to access destinations, services, and activities; and
- Enabling more efficient travel, for example making trips outside of peak hours possible and viable and reducing traffic and parking issues.

1.11 The effects of successfully implementing TDM are significant – by expanding personal travel options within Metro Vancouver, such as through walking, cycling, public transit, carpooling and other strategies, **more efficient use can be made of existing infrastructure.**

**Why is TDM important?**

1.12 TDM strategies can be implemented at a regional, local, or site-specific level. Coordinated implementation of TDM strategies can prevent:

- A patchwork nature of strategies being taken across different locations and at different scales, which leads to a “winners and losers” approach;
- An excessive amount of parking supply being created in locations where more productive and efficient uses of land could be made; and
- A dependence on cars which leads to more congestion on the road network.

1.13 TDM is central to policy efforts to reduce greenhouse gas emissions from urban transportation and can help improve urban air quality, reduce the number of road injuries and fatalities, and increase physical activity and wellbeing. It also increases the efficiency of infrastructure such as parking garages, decreases development costs and therefore increases affordability and improves equality of access by making more transportation options viable and convenient.

1.14 Years of supply focused planning have created precedents and practices which are difficult to change. This has resulted in varying levels of success making TDM a consideration in the planning process for new developments. A standardized approach for TDM can help support efforts to encourage more sustainable planning and development approaches across the region.

**Metro Vancouver  
Apartment Parking  
Study**

An update to the 2012 Regional Parking Study, the 2018 Study notes that for both rental and strata buildings parking supply is exceeding demand by 35% or more, and that there is a correlation between proximity / use of frequent transit and lower parking utilization. As a result, developers and local jurisdictions can be more prudent and strategic with how they estimate the need for parking infrastructure such as with the number and type of spaces.

<http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RegionalParkingStudies-StaffReport.pdf>

### What are the benefits of TDM for local jurisdictions?

1.15 Coordinated TDM planning can lead to a range of benefits as summarised in Table 1.1.

**Table 1.1: Value of implementing TDM initiatives to local jurisdictions**

Improving transportation networks	Supporting a more sustainable and livable environment	Improving community health, wellbeing, and safety	Achieving equity
<ul style="list-style-type: none"> <li>• More efficient movement of people and goods</li> <li>• Improving commute times</li> <li>• Reducing the environmental impact of transportation (i.e. idling, emissions)</li> <li>• Solving parking problems and reducing spillover rates onto streets</li> <li>• Promoting emerging mobility technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Encouraging more sustainable active transportation choices</li> <li>• Reducing the emissions generated by cars, leading to cleaner air and less congested places</li> <li>• Creating more community-oriented modes of transportation</li> <li>• Enhancing the livability of cities and urban areas</li> </ul>	<ul style="list-style-type: none"> <li>• Encouraging more active transportation, leading to more physical exercise</li> <li>• Enhancing the safety of the road network and reducing injuries and deaths from motor accidents</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing dependency on single occupancy vehicles and “pricing out” those who cannot afford to drive</li> <li>• Ensuring the interests of all community members are considered in equal measure</li> <li>• Connecting people to jobs and socio-economic opportunities</li> </ul>

### What are the benefits of TDM for the development community?

1.16 There are a range of benefits to local developers considering the implementation of TDM initiatives within developments as summarised in Table 1.2.

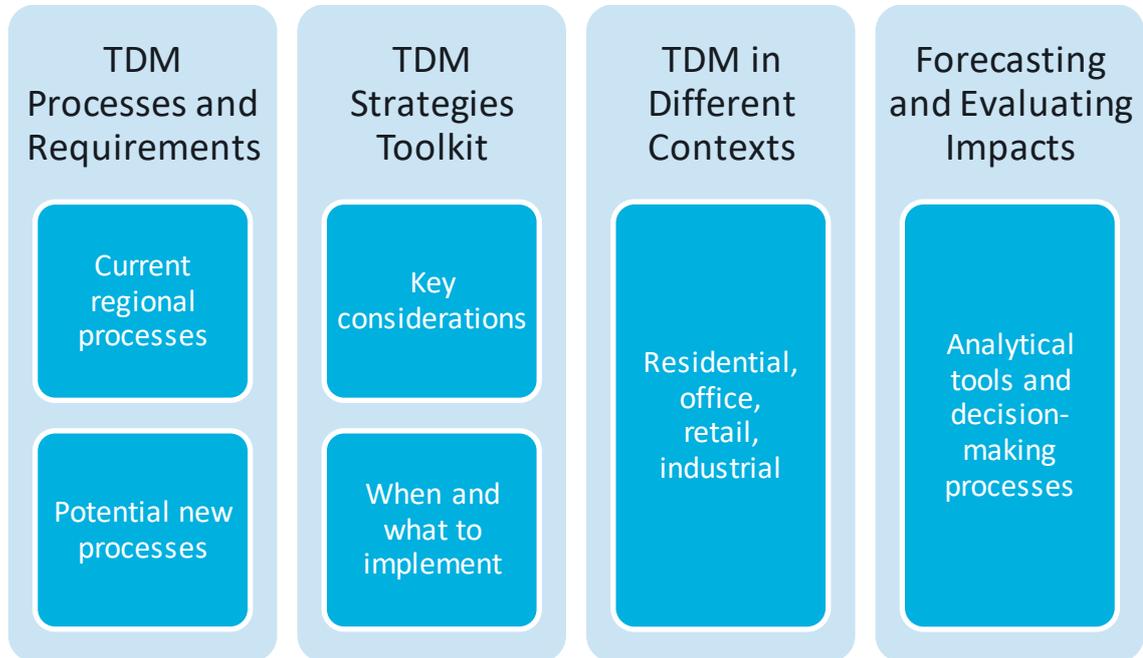
**Table 1.2: Value of implementing TDM initiatives to local developers**

Site development	Efficiency	Sustainability	Cost Reductions
<ul style="list-style-type: none"> <li>• Lower potential development costs</li> <li>• Potential to reduce parking space requirements</li> <li>• Enhancing the attractiveness and marketability of sites</li> <li>• Mitigating adverse traffic impacts of new developments</li> </ul>	<ul style="list-style-type: none"> <li>• Improving the walkability and bikeability of sites</li> <li>• Repurposing onsite car parking space for other uses</li> <li>• Reducing local area traffic congestions and mitigate adverse traffic impacts of developments</li> <li>• Optimizing site connections to existing transportation network and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Contributing towards sustainable/green building ratings</li> <li>• Improving developer image, including environmental, corporate, and social responsibility</li> <li>• Reducing the impacts of neighbourhood traffic such as air and noise quality</li> <li>• Improving community perception of development</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing the costs of onsite parking implementation, administration, and maintenance</li> </ul>



### Structure of the Guidelines

- 1.17 These guidelines are structured around four themes that cover the spectrum of process, strategies, context and evaluation that represents the needs of TDM planning in development.



## 2 TDM Process and Requirements

### Introduction

- 2.1 Whether, how, and to what extent TDM is pursued and executed often depends on the process and requirements set forth by the local jurisdiction. As a result, the process and requirements across jurisdictions can vary greatly, particularly when there is no overarching/guiding policies or legislation (e.g. provincial, regional), nor a designated body responsible for coordinating TDM such as a Transportation Demand Management Organization or Associations (TMO/As). To the latter, TMO/As have been widely used in Ontario, Quebec, and the United States over the past 20-30 years to accelerate and manage TDM programs.
- 2.2 TMO/As can greatly assist in the effective implementation, coordination, and monitoring of TDM as they are typically tasked with overseeing TDM initiatives within a certain geographic area, such as within a city, neighbourhood, or specific development site. In some cases, a TMO/A is a non-profit led by a board of directors with regional and municipal partners (a TMA), and in other cases it is a program or campaign led by a local jurisdiction (a TMO).

#### Examples of TMO/As



**Smart Commute** is a program in the Greater Toronto and Hamilton Region that has several independent TMA and TMO organizations, all of which represent different jurisdictions and/or geographic areas. Together, the TMO/As work to help employers and employees use carpooling, cycling, transit and other sustainable ways to get to and from work. They also work to adapt initiatives to best meet the needs of their local partners and stakeholders, raise funds for local transportation improvements, and share information with local governments.



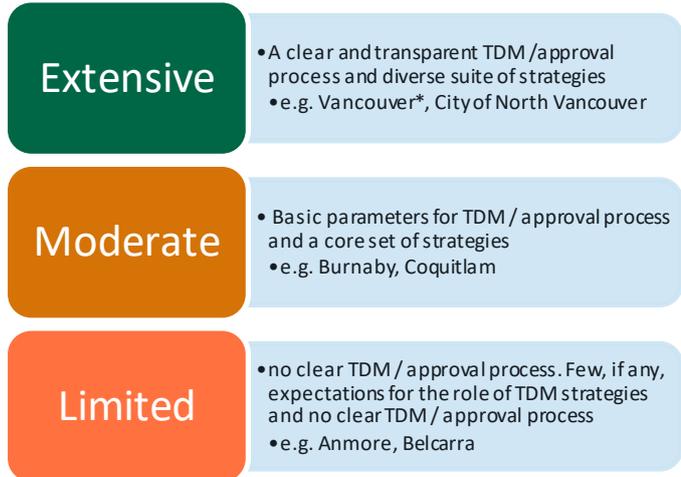
The **GoSaMo TMO** in Santa Monica, California is a program of the City of Santa Monica and works to help reduce traffic, improve air quality, and promote sustainable travel by helping employers and property managers comply with local transportation regulations and assist commuters, residents, and visitors in finding alternative mobility options that best suit their needs. The TMO also works closely with transportation service providers, the city and regional transit agencies, and local business, tourism, and environmental stakeholders to promote alternative to drive alone travel.

- 2.3 This section aims to present key opportunities for potential future TDM processes and requirements tailored to Metro Vancouver. Insight was generated from best practice research and local interviews with development and real-estate companies, as well as a workshop with local jurisdictions and regional agencies.

## Current Processes and Requirements

Figure 2.1: TDM Typologies and Current Practice in Metro Vancouver

2.4 Local jurisdictions within Metro Vancouver can currently be categorized into the following typologies (relative to one another) based on a review of publicly available information on existing TDM strategies in place: jurisdictions with extensive, moderate, or limited TDM process and strategies.



2.5 Existing TDM strategies used to categorize local jurisdictions include the following:

- Parking requirements
- Bicycle requirements
- Electric vehicles
- Carshare
- Other TDM
- System-level TDM (process)

\* The creation of a more comprehensive TDM approval process paired with a diverse suite of strategies emerged largely as a result of removing parking minimums in certain parts of the city.

2.6 Moving forward, the hope is that local jurisdictions who categorize themselves in the limited or moderate typologies can, through the use of emerging resources such as these guidelines, [re]focus their efforts to start moving towards a more extensive TDM process that is paired with strategies and requirements that are tailored to their local context. Presented below are a selection of best practice case studies that offer insight into what more extensive TDM can look like, highlighting successes related to developer support, regulations, and objectives / targets / monitoring.

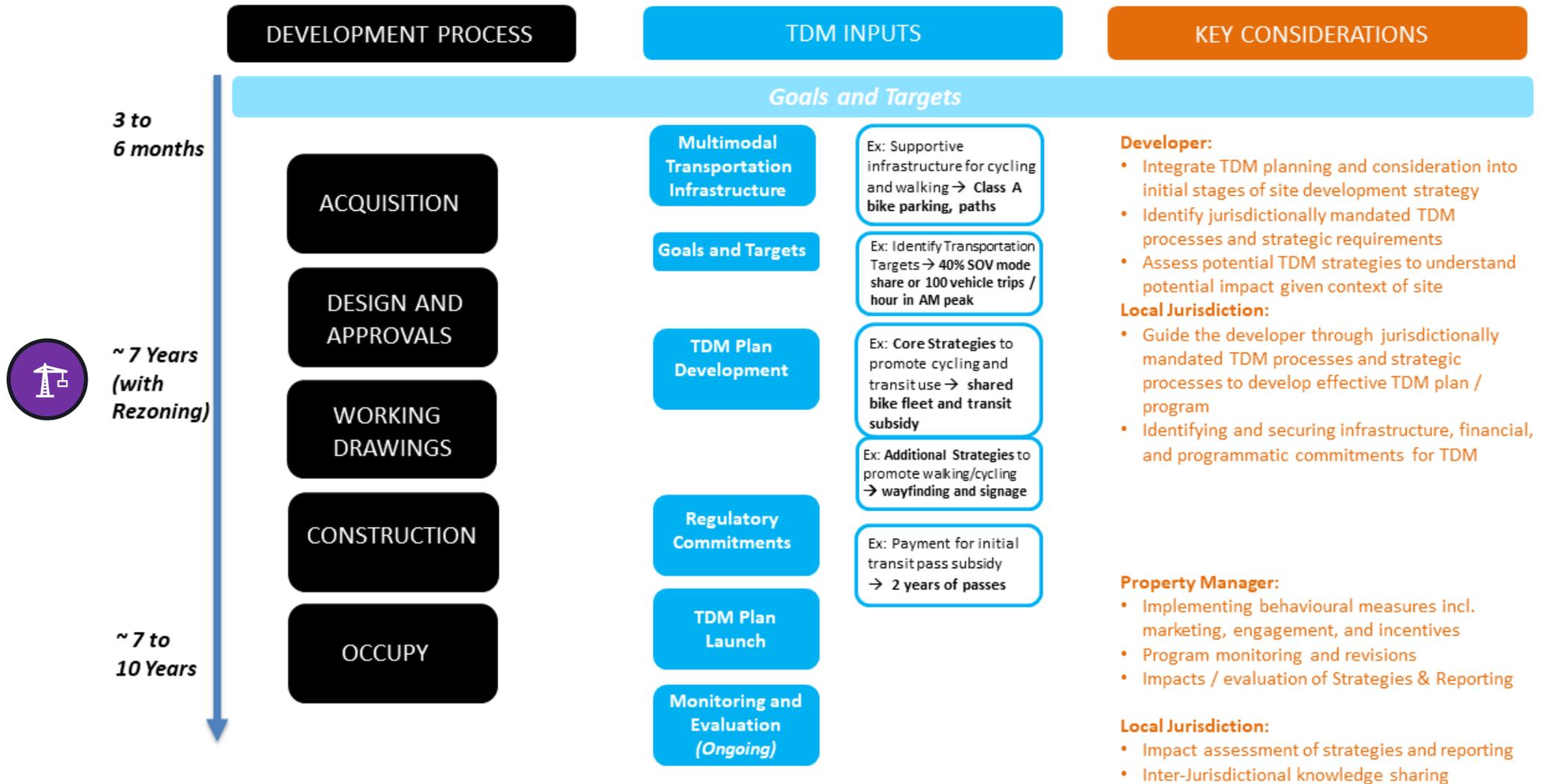
Table 2.1: TDM Best Practice Case Studies

Location	Successes			Resource(s)
	Supporting Developers	Improving Regulation	Objectives, Targets, Monitoring	
<b>Santa Monica, California</b>	Creation of TMO (GoSaMo) to manage/provide TDM <b>guidance</b> to developers and employers	Compliance with TDM ordinance linked to business licence provides <b>‘teeth’</b> for enforcement.	Link Average Vehicle Ridership (AVR) targets to proximity to transit, helping to ensure targets are <b>achievable</b>	<ul style="list-style-type: none"> <li>• <a href="#">TDM Program for Employers website</a></li> <li>• City of Santa Monica: <a href="#">City Ordinance</a></li> <li>• GoSaMo TMO: <a href="#">TMO Website</a></li> </ul>
<b>Carlsbad, California</b>	<p><b>Online menu</b> of options to assist developers picking/choosing TDM across several categories</p> <p>Encourages participation in voluntary city-wide programme through <b>recognition</b></p>	Obligation tied to the site / property - all <b>existing and future owners/occupants subject to TDM requirements.</b>		<ul style="list-style-type: none"> <li>• <a href="#">TDM Page</a></li> <li>• <a href="#">TDM Menu of Options</a></li> <li>• <a href="#">TDM Handbook</a></li> <li>• <a href="#">TDM Plan Template</a></li> </ul>
<b>San Francisco, California</b>	Developers can <b>choose from a menu of TDM options</b> to meet their target number of points.	<p>Parking reforms, including incentives like reduced parking minimums, are <b>closely tied to the ordinance.</b></p> <p>The <b>City charges an administrative fee</b> (one-time \$6,000) at the time of TDM Plan Application</p>	<b>Data</b> used to highlight relevance of strategies and consider <b>longevity.</b>	<ul style="list-style-type: none"> <li>• <a href="#">SF TDM Planning Website</a></li> <li>• <a href="#">TDM Program Standards</a></li> <li>• <a href="#">TDM Measures</a></li> <li>• <a href="#">TDM Program First-Year Monitoring Report</a></li> </ul>
<b>York Region, Ontario</b>	<p>TDM Checklist is required for developments meeting this threshold and includes an extensive TDM list <b>some of which are mandatory strategies</b> for residential and non-residential developments.</p> <p><b>Integrated/standardized guidance</b> for all municipalities within the Regional Municipality.</p>	<b>Clear minimum thresholds</b> are provided which “trigger” the need for a TDM Plan.		<ul style="list-style-type: none"> <li>• <a href="#">Transportation Mobility Plan Guidelines for Development Applications 2016</a></li> <li>• <a href="#">TDM webpage</a></li> </ul>

## Potential Future TDM Process and Requirements

- 2.7 The timing, decisions and key considerations that should be made by developers and local jurisdictions that will support more effective and impactful TDM programs have been identified through best practice research and local insight.
- 2.8 Figure 2.2 illustrates a potential future TDM process paralleling the development process with TDM / jurisdictional inputs. Appendix A provides a supporting TDM Decision-Making Checklist that prompts the timing, decisions and considerations that should be made by developers and local jurisdictions that will support more effective and impactful TDM programs.

Figure 2.2: TDM Process Template



## 3 TDM Strategies and Toolkit

### Introduction

- 3.1 When considering a package of TDM strategies for any new development, the following are key considerations:
- Context of the local area
  - Development type
  - Core and supportive TDM strategies
  - Cost: benefit
  - When to implement
- 3.2 These elements are closely linked to each other and should therefore be considered together rather than in isolation. Table 3.1: TDM Toolkit presents a TDM Toolkit that lists TDM strategies, and the relevance / effectiveness of each strategy based on the key considerations. The Toolkit also identifies whether strategies are considered core strategies which could be introduced as stand alone initiatives, or supportive strategies which further enhance TDM impacts by supporting the core strategies.
- 3.3 For the purposes of this Toolkit, the TDM strategies are focused on infrastructure and services within the site. Depending on the size and location of the site, it may be appropriate to improve multimodal infrastructure connecting to the site, such as pedestrian paths, bike lanes, or transit stop/station facilities. This infrastructure is usually negotiated with the local jurisdiction independently of the TDM strategies but will, of course, support the TDM strategies and therefore should be planned in coordination.

### *Goals and Targets*

- 3.4 Before developing a suite of TDM strategies, it is important to identify transportation or mode share targets. Such targets usually consist of either mode share targets, such as the percent of trips made by SOV versus other shared and active modes, or trip targets, such as the total number of vehicle trips accessing the site during a peak period or peak hour.
- 3.5 Goals and targets may be set by a local jurisdiction to ensure nearby road infrastructure can accommodate a new development (often identified through the Transportation Impact Assessment process) or be identified by a developer as a means to achieve parking construction objectives they themselves are trying to meet (e.g. not having to build additional levels of underground parking).
- 3.6 Identifying the goals and targets early will help frame the scale of need for TDM strategies. For example, a large site which is one kilometre from the nearest transit station but hopes to achieve a 50% SOV mode share may need to invest a lot in TDM strategies, whereas a small, transit-oriented site may only need to provide a basic level of incentives and education to achieve the same mode share. Once the targets are known, the TDM strategies can be developed and scaled accordingly to achieve the required or desired level of impact.

*TDM Coordinator/Employee Transportation Coordinator (ETC)*

- 3.7 While the Toolkit is effective in illustrating the potential relevance and effectiveness of TDM strategies, an important component of ensuring TDM strategies *remain* effective is through the appointment of a person (e.g. coordinator) or organization (e.g. TMO) responsible for TDM coordination. By appointing a designated person or organization to implement, monitor, and evaluate TDM strategies past the project completion stage (e.g. once a development is occupied), there is a greater chance such strategies will result in desired outcomes, and if not, the changes or improvements that could be made to do so.
- 3.8 TDM Coordinator(s) can be established within an internal department of local jurisdictions and/or appointed directly to a particular development project. They can be funded through development contributions. Responsibilities of coordinators can include the following:
- Securing start-up and annual operational funding for the TDM program elements.
  - Establishing a line of communication between development(s) and local jurisdiction
  - Coordinate with city-wide or regional TDM programs, travel service providers, and related transportation agencies (City authorities, TransLink, Coast Mountain Bus, etc.).
  - Responding to transportation/parking problems and complaints identified by residents, employees, other businesses within development.
  - Overseeing all aspects of planning, program implementation, operations, and management.
  - Evaluation of effectiveness and ongoing monitoring and reporting.
- 3.9 Additional information regarding the monitoring, evaluation, and coordination of TDM is presented in Section 5.

*Other regulatory measures for enforcing TDM requirements*

- 3.10 A range of other regulatory measures exist for enforcing TDM requirements. These include:
- Linking TDM ordinance to business licences (as done in Santa Monica, California);
  - Tying obligations to the property so that all existing and future owners/occupants are subject to TDM requirements (as done in Carlsbad, California);
  - Charges where target SOV levels are not achieved. Violations may warrant a shut-down of the parking facility (as done in Cambridge, Massachusetts); and
  - Charge by the city of an administrative fee at the time of TDM Plan Application (as done in San Francisco, California).
- 3.11 Jurisdictions have the opportunity to consider similar mechanisms to support enforcement of TDM.
- 3.12 Other mechanisms which will enable more effective enforcement of TDM requirements include:
- Having a person managing the relationship between the jurisdiction and the developer, even if just from a tracking perspective;
  - Use of Customer Relationship Management (CRM) database to support the tracking process so that jurisdictions know what developments are subject to TDM requirements and who the site contact is. This enables follow-up during the development life-cycle into implementation;
  - Requiring a TDM Coordinator contact for all applications (both pre-development and post-development) and linking to occupancy permits; and

- Development of a TMO, to manage this liaison and communications.

## Key Considerations

### Context of Local Area

3.13 The geographic context in which a development is situated is important to consider when identifying which TDM strategies will be most impactful. The Toolkit considers three spatial contexts in Metro Vancouver within which development occurs:

- Transit-Oriented Development (TOD)/Frequent Transit Development Area (FTDA);
- Metro, regional, and municipal centres; and
- Suburban areas.

3.14 Most TDM strategies can be tailored to be appropriate across the full range of contexts; however, there are some strategies which are unsuitable, particularly in less dense suburban settings.

### Development Type

3.15 The four main development types and their key characteristics in the context of TDM include:

- **Commercial Retail** – trips generated primarily include employee commutes and customer visits, with the latter accounting for the majority of trips. Hours of operation may vary from early morning to late evening and therefore commutes may happen at all hours of the day. Most retail customer visits will be sourced from the local neighbourhood and are therefore shorter.
- **Commercial Office** – the majority of trips are commute trips which occur during the morning and afternoon peak period and are therefore more predictable. Commute trips destined for office uses may originate from across the region and are typically longer.
- **Residential** – trips from residential uses span the full range including commute, leisure, and visitor trips with all manner of trip length, purpose and destination. This is the most complex use for trip type and purpose.
- **Industrial** – most trips are commute and delivery/servicing/goods movement and due to the on-site activities, industrial uses are typically not located in accessible, walkable, urban areas. Working patterns, such as staff working nights, can also be more challenging to cater for from traditional transport options.

3.16 **Comprehensive mixed-use developments** may include several of these development types and TDM strategies should be considered in a more ‘comprehensive’ manner, factoring in the various uses and the TDM strategies that may support many types, or focus specifically on a single type. Other unique uses such as **institutional** may also have a complex mix of different trip patterns, uses, and TDM needs and should be planned for using a wide range of TDM strategies.

### Core and Supportive TDM Strategies

3.17 When developing a TDM program, it is important to identify both core and supportive strategies:

- **Core** – stand alone initiatives that serve a specific purpose and will have a direct impact (e.g. transit or bikeshare subsidy or a service such as carshare and on-demand shuttle). Core strategies should be identified that enable and encourage modes that align with those with highest potential (e.g. a transit subsidy for a residential TOD site).

- **Supportive** – initiatives that require a relevant core strategy to be effective (e.g. bike education classes to support bike parking or bikeshare use). Supportive strategies should be paired with the core strategies identified for the site (e.g. marketing and education for transit to support a transit subsidy).

**Cost: Benefit**

3.18 Identification of which strategies provide the greatest return on investment helps to decide which mix of TDM interventions are appropriate. In developing this guidance, an extensive review of impacts from the suite of available TDM strategies has been undertaken to identify which would be expected to have relatively high impact in relation to their cost. While cost is a key factor, it will be influenced by the size of the site and the number of planned users of the site when fully built. Some measures may look different for a small site vs large and it’s important to analyze the potential success of measures based on their ability to influence the target population (see more in Section 4).

Cost benefit assessment		
<p><b>Costs</b> Assumptions are indicative estimates only and based on average cost per year based on case study evidence:</p> <p>\$ – \$10k or less                      \$\$ - \$10 - \$100k                      \$\$\$ – Greater than \$100k</p>	<p><b>Benefit</b> Assumptions are indicative estimates only and based on impact for VKT and SOV mode share reduction, based on case study evidence:</p> <p>◆ - Less than 2% VKT reduction                      ◆◆ - 2% - 10% VKT reduction                      ◆◆◆ - 10% or greater VKT reduction</p>	<p><b>Cost: Benefit</b> Indicative Cost: Benefit calculated by multiplying Cost and Benefit values.</p> <p>★ - Low                      ★★ - Medium                      ★★★ - High</p>

**When to Implement**

- 3.22 New development presents an excellent opportunity to influence travel behaviour towards more sustainable modes. Ensuring that TDM interventions are available at the earliest opportunity, to support new residents at this influential time, is important.
- 3.23 However, the timing of TDM strategy implementation can have an impact in terms of how successful they will be. Where a certain level of demand is required to make an intervention efficient (such as dedicated bike share and car share programs) it may be more appropriate to introduce these once a desired level occupation has been achieved.

Table 3.1: TDM Toolkit

Core Strategy	Supportive Strategy	Quick Win	Possible interventions [*indicates cost: benefit estimated based on approximate annualized cost of supporting 500 individuals]	Mode	Geographic context	Applicable Development Type				Indicative Cost: Benefit Assessment <sup>1</sup>	Infrastructure Or Service
						Retail	Office	Residential	Industrial		
◎		∞	Free public transit passes (e.g. 3-zone annual pass)*		All	■	■	■	■	★★	Service
◎			Demand responsive shuttle		All	■	■	■	■	★★	Service
◎			Showers/Changing rooms		All	■	■		■	★★	Infrastructure
			Improve short term bike parking - Class B		All	■	■			★★	Infrastructure
◎		∞	Improve long term bike parking – bike		All	■	■	■	■	★★	Infrastructure
◎			Shared bicycle fleet (public)*	2+	Not Suburban		■	■		★	Service
◎			Shared bike fleet (private)*	2+	Not Suburban		■			★	Service
◎		∞	Carpool/Vanpool service	2+	All	■	■		■	★★	Service
◎			Car share vehicles & spaces	2+	All	■	■	■		★★★	Service
◎			Parking pricing/daily parking	+P	All	■	■		■	★★★	Service
◎			Unbundle parking	+P	All	■	■	■	■	★★	Service
◎			Parking cash out (incentive to give up parking space)	+P	All	■	■	■	■	★★	Service

<sup>1</sup> Indicative cost benefit informed by Translink research, and TDM guidance for City of Vancouver, San Francisco and Carlsbad.

Core Strategy	Supportive Strategy	Quick Win	Possible interventions [*Indicates cost: benefit estimated based on approximate annualized cost of supporting 500 individuals]	Mode	Geographic context	Applicable Development Type				Indicative Cost: Benefit Assessment <sup>1</sup>	Infrastructure Or Service
						Retail	Office	Residential	Industrial		
☉			On-site childcare		All	■	■	■	■	★★	Service
			Rewards, prizes, and benefits for employees*		All	■	■		■	★★★	Service
			Recognition program		All	■	■	■	■	★★★	Service
			Low cost incentives (e.g. swag/prize draws) for those travelling using non-SOV modes*		All	■	■	■	■	★	Service
			Marketing and education*		All	■	■	■	■	★★★	Service
			Personalized trip planning assistance*		All	■	■	■	■	★★	Service
			On-site transit ticket sales		All	■	■	■	■	★★★	Service
			Real time information		All	■	■	■	■	★★	Service
			Wayfinding and signage improvements		All	■	■	■	■	★	Infrastructure
			Bike maintenance facilities		All	■	■	■	■	★★	Infrastructure
			Public Bikeshare space	2+	Not Suburban	■	■	■		★★	Infrastructure
			Preferential or discounted parking for HOV	2+	All	■	■		■	★★★	Service
			Carshare subsidized membership*	2+	All		■	■		★★	Service
			Additional pick-up drop off spaces		All	■	■	■		★★	Infrastructure
			Shared parking		All	■	■	■	■	★★	Service

Core Strategy	Supportive Strategy	Quick Win	Possible interventions <i>[*Indicates cost: benefit estimated based on approximate annualized cost of supporting 500 individuals]</i>	Mode	Geographic context	Applicable Development Type				Indicative Cost: Benefit Assessment <sup>1</sup>	Infrastructure Or Service
						Retail	Office	Residential	Industrial		
			Parking management/efficiency technology		All	■	■		■	★	Service
			Guaranteed ride home*		All	■	■		■	★★★	Service
			Delivery supportive amenities (e.g. <a href="#">TransLink Smart [parcel] Lockers operated by PigeonBox</a> )		All	■	■		■	★★	Service
			Provide delivery services (e.g. bike courier)		Not Suburban	■				★★	Service
			Retail in Underserved Area		All		■	■	■	★★	Service

## 4 TDM In Different Contexts

4.1 In the previous section, Table 3.1 identified the strategies contained in the TDM Toolkit and how they differ in their level of applicability depending on development type and geographic context. The following examples provide an illustration of possible TDM packages for a range of contexts, as well as key considerations for an effective intervention. These examples are illustrative and aim to emphasise the need to consider the subtle differences of each development site which can have an impact on the selection of most appropriate strategies.

### North Harbour Waterfront Development, Concert Properties

4-phased Mixed-Use Development | Condo, Purpose Built Rental, Commercial, Seniors Living  
City of North Vancouver

Informed by the Harbourside Waterfront Rezoning Transportation Assessment (Bunt & Associates, 2013), and an updated transportation assessment report (Bunt & Associates, 2020) a TDM strategy has been developed in consultation with TransLink’s Strategic Planning and Travel Smart representatives. The 2013 Report provided the basis for a TDM strategy, of which has been amended and confirmed as Concert has



progressed through Design / Development Phase 1, with the Phase 1 development permit now granted.

Through the TDM strategy, Concert has committed to the following measures that form part of the community amenity contributions:

	Concert to provide a cash conversion in support of transit. The City of North Vancouver will use these funds to support increased transit service within the Harbourside area / North Harbour development and be implemented as part of the Phase 3 Mayor’s Council and TransLink’s 10-Year vision.
2+ 	Concert to provide 2 shared vehicles (and associated stalls in parkade) in Phase 1 and at least 1 shared vehicle for every 180 residential dwelling units as part of the 2 <sup>nd</sup> , 3 <sup>rd</sup> , and 4 <sup>th</sup> phases of development prior to occupancy.  Ridesharing introduced with the occupation of the first building in Phase 1.
 +P	Work with the City to develop strategies to lower demand and prioritize street parking for short-term / visitor use, starting with the completion of the first building. Transport consultant to work with developer and by extension, the City, to provide baseline conditions report and monitoring to provide reasonable / commercially available changes.

In addition to these strategies, a **TDM coordinator** will be introduced just prior to obtaining the occupancy permit for the first building in Phase 1. Concert will retain the coordinator until the earlier of either: the second anniversary of the occupancy permit granted for the Phase 4 development, or when City Engineer says the coordinator is no longer needed. The TDM coordinator will be responsible for overseeing all aspects of the TDM program, including, but not limited to the preparation, revision, and distribution of a Transportation Access Guide and Annual TDM Reports.

Key TDM package considerations - Residential	
	<p><b>Type:</b> Residential   <b>Location:</b> TOD   <b>Local infrastructure:</b> SkyTrain, bus</p>
	<p><b>Core strategy ideas:</b></p> <ul style="list-style-type: none"> <li>■ 🕒 Public transit pass subsidy to encourage SkyTrain and bus use</li> <li>■ 🕒 Improved long-term bike parking (Class A) to support local trips by bike.</li> <li>■ 🕒 Wayfinding and signage improvements for the TOD.</li> <li>■ 🕒 Car share vehicle &amp; spaces to support lower levels of car ownership</li> <li>■ 🕒 Parking cash out or unbundling of parking to encourage low levels of car ownership and greater use of alternatives</li> </ul>
	<p><b>Supporting strategy ideas:</b></p> <ul style="list-style-type: none"> <li>■ 🕒 Marketing and Education – Info for new residents on options available</li> <li>■ 🕒 Incentives for those traveling using non-SOV modes such as such a monthly draw for prizes like gift cards, car share memberships, or bike education classes</li> <li>■ 🕒 Personalized trip planning assistance</li> </ul> <p><b>Additional considerations:</b></p> <ul style="list-style-type: none"> <li>! Effective delivery of strategies will require a TDM Coordinator to implement and monitor activities</li> <li>! Is there potential to join network of shared public bicycle fleet?</li> <li>! What is your expected resident demographic e.g. is there likely to be high demand for on-site childcare?</li> </ul>

Key TDM package considerations - Office	
	<p><b>Type:</b> Office   <b>Location:</b> Regional Centre   <b>Local infrastructure:</b> bus, bikeway</p> <p><b>Core strategy ideas:</b></p> <ul style="list-style-type: none"> <li>■ Public transit subsidy to encourage bus use</li> <li>■ Improved long term bike parking – Class A</li> <li>■ Car/vanpool service</li> <li>■ Showers/Changing rooms to support use of biking to work</li> <li>■ Parking cash out / unbundling of parking and parking pricing</li> <li>■ Daily parking to make alternatives more financially appealing.</li> </ul> <p><b>Additional supportive strategy ideas:</b></p> <ul style="list-style-type: none"> <li>■ Marketing and Education – Info for new employees on options available</li> <li>■ Rewards, prizes, and benefits for those using alternatives to SOV</li> <li>■ Guaranteed ride home scheme for regular transit users.</li> </ul> <p><b>Additional considerations:</b></p> <ul style="list-style-type: none"> <li>! Effective delivery of strategies will require a TDM Coordinator to implement and monitor activities</li> <li>! Is there potential to participate in a recognition programme run by TransLink or your jurisdiction?</li> <li>! Will occupiers have requirement for frequent local business travel – consider potential for car share vehicles &amp; spaces.</li> </ul>

Key TDM package considerations - Retail



**Type:** Retail | **Location:** Suburban | **Local infrastructure:** Limited



**Core strategy ideas:**

- 🕒 Demand responsive shuttle to link to nearest transit interchange for employees
- 🅅 Daily parking to make alternatives more financially appealing.



**Additional supportive strategy ideas:**

- 🕒 Marketing and Education – Info for employees and customers on options that are available
- 🕒 Rewards, prizes, and benefits for those using alternatives to SOV
- 🕒 Guaranteed ride home scheme for regular transit users.



**Additional considerations:**

- ! Effective delivery of strategies will require a TDM Coordinator to implement and monitor activities
- ! Is there potential to participate in a recognition programme run by TransLink or your jurisdiction?
- ! Is the customer base likely to be local? Are there opportunities to undertake deliveries by bike?

Key TDM package considerations - Industrial	
	<p><b>Type:</b> Industrial   <b>Location:</b> Suburban   <b>Local infrastructure:</b> Limited</p> <div style="margin-top: 10px;"> <p> <b>Core strategy ideas:</b></p> <ul style="list-style-type: none"> <li><span style="color: #FFC000;">■</span> 🕒 Demand responsive shuttle to link to nearest transit interchange for employees</li> <li><span style="color: #666;">■</span> 🕒 Preferred or discounted parking for HOV</li> <li><span style="color: #666;">■</span> 🕒 Car/vanpool service</li> <li><span style="color: #666;">■</span> 🕒 Daily parking to make alternatives more financially appealing.</li> </ul> </div> <div style="margin-top: 10px;"> <p> <b>Additional supportive strategy ideas:</b></p> <ul style="list-style-type: none"> <li><span style="color: #FF8C00;">■</span> 🕒 Marketing and Education – Info for employees on options that are available</li> <li><span style="color: #FF8C00;">■</span> 🕒 Rewards, prizes, and benefits for those using alternatives to SOV</li> <li><span style="color: #FF8C00;">■</span> 🕒 Guaranteed ride home scheme for regular transit users.</li> </ul> </div> <div style="margin-top: 10px;"> <p><span style="color: red; font-size: 1.5em;">!</span> <b>Additional considerations:</b></p> <ul style="list-style-type: none"> <li><span style="color: red;">!</span> Effective delivery of strategies will require a TDM Coordinator to implement and monitor activities</li> <li><span style="color: red;">!</span> Is there potential to participate in a recognition programme run by TransLink or your jurisdiction?</li> <li><span style="color: red;">!</span> What role could biking play in supporting access for shift workers to your site outside of the normal 9-5 working day?</li> </ul> </div>

**Table 4.1: Residential TDM Toolkit**

Theme	Strategy	Cost Benefit Assessment (indicative) <sup>2</sup>			When to implement	Geographic Context
		Cost	Impact	Cost: Benefit		
Transit Improvements	Free Public Transit Pass*	\$\$\$	◆◆◆	★★	Initial occupation	All
	Demand responsive shuttle	\$\$\$	◆◆◆	★★	Full occupation	All
	Real time information	\$	◆	★★	Initial occupation	All
Supportive Infrastructure for Shared Bikes	Public bikeshare space	\$	◆◆	★★	Initial occupation	Not suburban
	Shared bicycle fleet (public)	\$\$	◆	★	Initial occupation	Not suburban
Supportive Infrastructure for Biking & Walking	Improve long term bike parking - Class A	\$\$\$	◆◆	★★	Initial occupation	All
	Bike maintenance facilities	\$	◆	★★	Initial occupation	All
	Wayfinding and signage improvements	\$	◆	★	Initial occupation	All
Car Pooling and HOV interventions	Carshare vehicles & spaces	\$\$\$	◆◆◆	★★★	Full occupation	All
	Carshare subsidised membership	\$\$	◆◆	★★	Initial occupation	All
	Additional pick-up/drop off spaces (C)	\$	◆◆	★★	During construction	All
Parking management interventions	Unbundle parking	\$	◆◆	★★	Initial occupation	All
	Shared parking	\$	◆	★★	Initial occupation	All
On-site services	On-site transit ticket sales	\$	◆◆◆	★★★	Initial occupation	All
	On-site childcare	\$	◆◆	★★	Initial occupation	All
	Retail in underserved area	\$	◆◆	★★	Initial occupation	All
Marketing and Promotion	Recognition program	\$	◆◆◆	★★★	Initial occupation	All
	Low cost incentives (e.g. swag/prize draws) for those travelling using non-SOV modes	\$	◆	★	Initial occupation	All
	Marketing and education	\$	◆◆◆	★★★	Initial occupation	All
	Personalized trip planning assistance	\$	◆◆	★★	Initial occupation	All

<sup>2</sup> Ibid

**Table 4.2: Office TDM Toolkit**

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
Transit Improvements	Free Public Transit Pass	\$\$\$	◆◆◆◆	★★	Initial occupation	All
	Demand responsive shuttle	\$\$\$	◆◆◆◆	★★	Full occupation	All
	Real time information	\$	◆	★★	Initial occupation	All
Supportive Infrastructure for Shared Bikes	Public bikeshare space	\$	◆◆	★★	Initial occupation	Not suburban
	Shared bicycle fleet (public)	\$\$	◆	★	Full occupation	Not suburban
	Shared bike fleet (private)	\$\$	◆	★	Full occupation	Not suburban
Supportive Infrastructure for Biking & Walking	Improve long term bike parking - Class A	\$\$\$	◆◆	★★	During construction	All
	Improve short term bike parking - Class B	\$	◆	★★	During construction	All
	Showers/Changing rooms	\$	◆	★★	During construction	All
	Bike maintenance facilities	\$	◆	★★	Initial occupation	All
	Wayfinding and signage improvements	\$\$	◆	★	During construction	All
Car Pooling and HOV interventions	Preferential or discounted parking for HOV	\$	◆◆◆◆	★★★★	Initial occupation	All
	Carshare vehicles & spaces	\$\$\$	◆◆	★★★★	Full occupation	All
	Carpool/Vanpool service	\$\$	◆◆	★★	Full occupation	All
	Carshare subsidized membership	\$\$	◆◆	★★	Initial occupation	All
	Additional pick-up/drop off spaces	\$	◆◆	★★	During construction	All
Parking management interventions	Parking pricing/daily parking	\$	◆◆◆◆	★★★★	Initial occupation	Not suburban
	Unbundle parking	\$	◆◆	★★	Initial occupation	Not suburban
	Parking cash out (incentive to give up parking space)	\$	◆◆	★★	Initial occupation	Not suburban
	Shared parking	\$	◆	★★	Initial occupation	Not suburban
	Parking management/efficiency technology	\$\$	◆	★	Initial occupation	Not suburban
On-site services	On-site transit ticket sales	\$	◆◆◆◆	★★★★	Full occupation	All
	Guaranteed ride home	\$	◆◆◆◆	★★★★	Initial occupation	All

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
	On-site childcare	\$	◆◆	★★	Full occupation	All
	Retail in underserved area	\$	◆◆	★★	Full occupation	All
	Delivery supportive amenities (e.g. parcel lockers)	\$	◆	★★	During construction	All
Marketing and Promotion	Rewards, prizes, and benefits for employees	\$	◆◆◆	★★★	Initial occupation	All
	Recognition program	\$	◆◆◆	★★★	Initial occupation	All
	Low cost incentives (e.g. Swag/prize draws) for those travelling using non-SOV modes	\$	◆	★	Initial occupation	All
	Marketing and education	\$	◆◆◆	★★★	Initial occupation	All
	Personalized trip planning assistance	\$	◆◆	★★	Initial occupation	All

**Table 4.3: Retail TDM Toolkit (Employees (E) and Customers (C))**

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
Transit Improvements	Demand responsive shuttle (E/C)	\$\$\$	◆◆◆◆	★★	Full occupation	All
	Free Public Transit Pass (E)	\$\$\$	◆◆◆◆	★★	Initial occupation	All
	Real time information (E/C)	\$	◆	★★	Initial occupation	All
Supportive Infrastructure for Shared Bikes	Public bikeshare space (C)	\$	◆◆	★★	Initial occupation	Not suburban
Supportive Infrastructure for Biking & Walking	Improve long term bike parking - Class A (E)	\$\$\$	◆◆	★★	During construction	All
	Improve short term bike parking - Class B (C)	\$	◆	★★	During construction	All
	Showers/Changing rooms (E)	\$	◆	★★	During construction	All
	Bike maintenance facilities (E/C)	\$	◆	★★	Initial occupation	All
	Wayfinding and signage improvements (E/C)	\$	◆	★	During construction	All
Car Pooling and HOV interventions	Preferential or discounted parking for HOV (E)	\$	◆◆◆◆	★★★★	Initial occupation	All
	Carshare vehicles & spaces	\$\$\$	◆◆	★★★★	Full occupation	All
	Carpool/Vanpool service (E)	\$\$	◆◆	★★	Full occupation	All
	Additional pick-up/drop off spaces (C)	\$	◆◆	★★	During construction	All
Parking management interventions	Parking pricing/daily parking (E)	\$\$	◆◆	★★★★	Initial occupation	Not suburban
	Shared parking (E)	\$	◆	★★	Initial occupation	Not suburban
	Unbundle parking (E)	\$	◆◆	★★	Initial occupation	Not suburban
	Parking cash out (incentive to give up parking space)	\$	◆◆	★★	Initial occupation	Not suburban
	Parking management/efficiency technology (E/C)	\$\$	◆	★	Initial occupation	Not suburban
On-site services	On-site transit ticket sales (E)	\$	◆◆	★★★★	Full occupation	All
	Guaranteed ride home (E)	\$	◆◆◆◆	★★★★	Initial occupation	All
	On-site childcare (E)	\$	◆◆	★★	Full occupation	All
	Delivery supportive amenities (e.g. parcel lockers) (E/C)	\$	◆	★★	During construction	All

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
	Provide delivery services (e.g. bike courier) (C)	\$	◆	★★	Full occupation	Not suburban
Marketing and Promotion	Rewards, prizes, and benefits for employees (E)	\$	◆◆◆	★★★	Initial occupation	All
	Low cost incentives (e.g. Swag/prize draws) for those travelling using non-SOV modes (E/C)	\$	◆	★	Initial occupation	All
	Marketing and education (E/C)	\$	◆◆◆	★★★	Initial occupation	All
	Recognition program (E)	\$	◆◆	★★★	Initial occupation	All
	Personalized trip planning assistance (E/C)	\$	◆◆	★★	Initial occupation	All

**Table 4.4: Industrial TDM Toolkit**

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
Transit Improvements	Demand responsive shuttle	\$\$\$	◆◆◆◆	★★	Full occupation	All
	Free Public Transit Pass	\$\$\$	◆◆◆◆	★★	Initial occupation	All
	Real time information	\$	◆	★★	Initial occupation	All
Supportive Infrastructure for Biking & Walking	Improve long term bike parking - Class A	\$\$\$	◆◆	★★	During construction	All
	Bike maintenance facilities	\$	◆	★★	Initial occupation	All
	Showers/Changing rooms	\$	◆	★★	During construction	All
	Wayfinding and signage improvements	\$	◆	★	During construction	All
Car Pooling and HOV interventions	Preferential or discounted parking for HOV	\$	◆◆◆◆	★★★★	Initial occupation	All
	Carpool/Vanpool service	\$\$	◆◆	★★	Full occupation	All
Parking management interventions	Parking pricing/daily parking	\$	◆◆◆◆	★★★★	Initial occupation	Not suburban
	Unbundle parking	\$	◆◆	★★	Initial occupation	Not suburban
	Parking cash out (incentive to give up parking space)	\$	◆◆	★★	Initial occupation	Not suburban
	Shared parking	\$	◆	★★	Initial occupation	Not suburban
	Parking management/efficiency technology	\$\$	◆	★	Initial occupation	Not suburban
On-site services	On-site transit ticket sales	\$	◆◆◆◆	★★★★	Full occupation	All
	Guaranteed ride home	\$	◆◆◆◆	★★★★	Initial occupation	All
	On-site childcare	\$	◆◆	★★	Full occupation	All
	Retail in underserved area	\$	◆◆	★★	Full occupation	All
	Delivery supportive amenities (e.g. parcel lockers)	\$	◆	★★	During construction	All
Marketing and Promotion	Rewards, prizes, and benefits for employees	\$	◆◆◆◆	★★★★	Initial occupation	All
	Low cost incentives (e.g. swag/prize draws) for those travelling using non-SOV modes	\$	◆	★	Initial occupation	All
	Marketing and education	\$	◆◆◆◆	★★★★	Initial occupation	All

Theme	Strategy	Cost Benefit Assessment (indicative)			When to implement	Urban Context
		Cost	Impact	Cost: Benefit		
	Recognition program	\$	◆◆◆	★★★	Initial occupation	All
	Personalized trip planning assistance	\$	◆◆	★★	Initial occupation	All

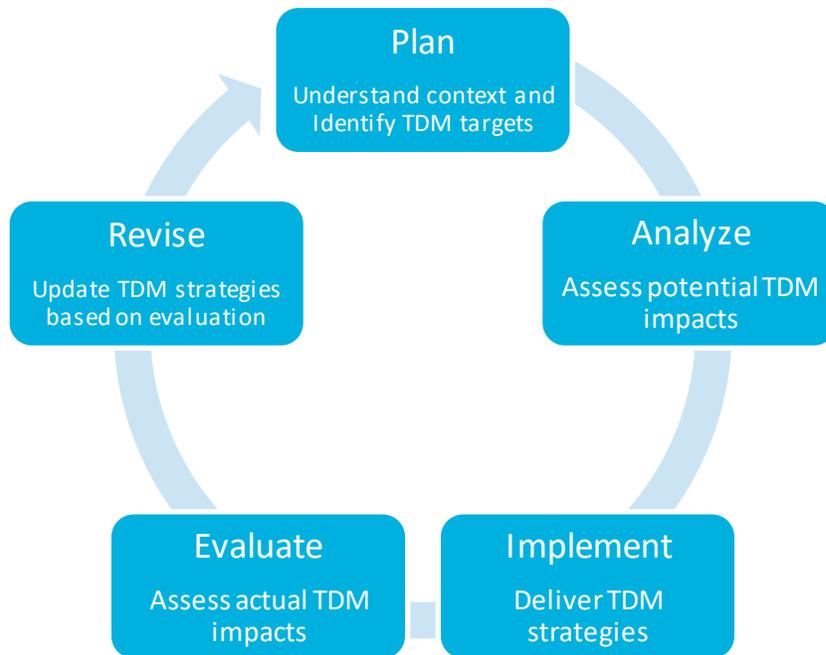
# 5 Forecasting and Evaluating Impacts



## Introduction

- 5.1 One of the most important components of any TDM program is understanding and assessing impacts on overall traffic as well as target audience. During the development process, that comes as forecasting the effect of the proposed TDM strategies. Once a site is occupied, the focus changes to evaluating the direct effects on building or site users/occupants. That evaluation process is important because it provides insight on what is or isn't working so the TDM program can be revised to better align with goals and targets.

Figure 5.1: TDM Planning and Evaluation Cycle

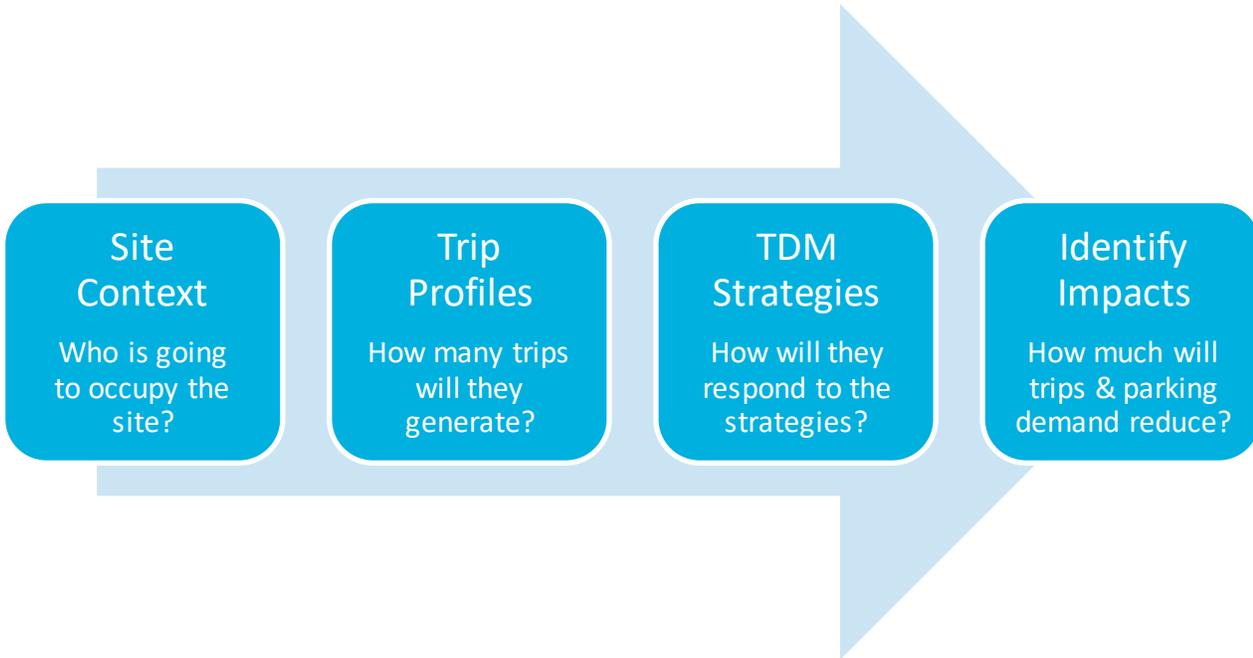


## Forecasting Impact of TDM Strategies

- 5.2 For site based TDM planning, goals and targets are largely identified based on traffic and parking constraints. For example, a local municipality might set a peak hour trip generation target. A developer might set their own target for parking spaces based on optimal development costs. Those targets will then inform the scale and need of the TDM program.

5.3 Forecasting the impacts of TDM strategies is a complex task because each site has such unique characteristics and it is a challenge to understand the travel behaviour of an unknown occupant population. In Canada, there are no open source tools to assess TDM strategies, but the analysis process usually includes identifying the site context and future occupant trip profiles, using professional judgement to identify how TDM strategies will respond and calculating the likely parking demand reductions.

Figure 5.2: TDM Forecasting Considerations



5.4 In the USA, TDM analysis models such as TRIMMS (<https://mobilitylab.org/calculators/download-trimms-4-0/>) and the ROI calculator (<https://mobilitylab.org/calculators/download-tdm-roi-calculator/>) exist and aim to more accurately identify GHG and vehicle miles travelled impacts of TDM strategies. In the UK, the Trip Rate Information Computer System (TRICS, [www.trics.org/system.html](http://www.trics.org/system.html)) database collects real world examples of developments with site-based TDM strategies to better understand trip patterns to aid TDM forecasting assessments.

**Quantifying the Effects of TDM Strategies:**

A report by CAPCOA in California attempts to quantify the effects of TDM strategies and identifies **unbundling parking**, **subsidizing transit passes**, creating **shared parking arrangements** and **trip reduction marketing** as the most effective TDM strategies.

CAPCOA, 2010. <http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoa-quantifying-greenhouse-gas-mitigation-measures.pdf>

## Monitoring and Evaluation

- 5.5 As mentioned in Section 3, part of the pre-development TDM planning and the forecasting process is to identify goals for trip generation and mode share in order to set the context for the TDM strategies required to meet those goals. The ultimate objective of TDM strategies is to influence the travel behaviour of the site or building occupants so monitoring those users post-development is key to understanding the effect of the TDM strategies and revising them if they do not meet the agreed goals and targets.
- 5.6 Once a development has been built, the ongoing TDM monitoring is usually primarily led by the property manager unless the developer still has a stake in the development and is actively involved in management. In most cases, it will be necessary to tweak and adjust the TDM program to respond to the occupants' lifestyles, interests, and motivations most effectively. Evaluation metrics which will help to measure the effectiveness of the TDM strategies can be organized by four key themes, as identified in Table 5.1.

**Table 5.1: TDM Evaluation Metrics**

Theme	Description	Question it Answers
<b>Activities</b>	Quantification of TDM programming, services, marketing, and incentive activities	What TDM strategies are being implemented?
<b>Awareness</b>	Identification and assessment of exposure to, and awareness of, TDM programming	How many people know about the TDM strategies?
<b>Participation</b>	Level of participation/usage of TDM programming, services, marketing, and incentives	How many people are engaging with the TDM strategies?
<b>Impacts</b>	Proportion of users adopting alternatives	What effect are the TDM strategies having?

### Key approaches to ensuring a monitoring and evaluation program is delivered:

- The developer or property manager **provides a site based TDM Coordinator** who takes responsibility for evaluation
- The developer **pays a fee to the local jurisdiction**, who then pools developer contributions to hire a TDM Coordinator and takes responsibility for evaluation
- The developer **commits to join a Transportation Management Organization (TMO)**, which usually involves an annual fee, and the TMO takes responsibility for evaluation.

5.7 When identifying key performance metrics (KPIs), the types of TDM strategies should be considered in parallel with the evaluation themes to ensure all strategies have at least one metric and data from all four themes is being covered.

Package	Example KPIs
Transit	Transit mode share (impact) Transit pass subsidy usage (activity and participation)
Biking & Walking	Bike locker usage (participation) Bike resources available (awareness)
Carpooling and HOV	Carpool parking usage (participation) Carpool trips made (impact)
Parking management	Parking utilization (impact) Parking policy (awareness)
On-site services	Number of on-site services (activity) Childcare enrollment (participation)
Marketing and promotion	Transportation web portal hits (awareness and participation) Incentive usage (participation)

5.12 There are various ways to collect data and gather insight on the effectiveness of TDM strategies. Several tools and technologies can be used.

Tool	
Standardized survey	To confirm mode share
Parking utilization analysis	To evaluate parking demand
Traffic and multimodal counts	To evaluate trip type and number
Commute management platform	To identify mode share and incentive use
Customer relationship management database	To manage contacts and communications

### Working towards an occupant-focused requirement

While TDM requirements during the development process help to ensure new buildings provide multimodal infrastructure, services, and programs, it is important to also frame the TDM strategy around the occupants and those whose travel behaviour is known.

The business license process provides a unique opportunity to align TDM measures with retail, office and industrial occupants to both ensure development related TDM is implemented effectively and empower existing occupants to use TDM strategies to manage trip and parking demand. As an example, business licence approval could be contingent on submission of a TDM Plan and employee survey for employers with over 50 employees.

# Appendices

# A | TDM Decision-Making Checklist



The following decision-making checklist presents a series of step-by-step considerations that can help developers and local jurisdictions effectively approach TDM within their localized contexts, helping to ensure jurisdictional transportation / project-related visions, goals, and targets are addressed. In addition, this checklist outlines opportunities for collaboration not just between developers and local jurisdictions, but other stakeholders and organizations (e.g. TransLink, Hub Cycling) which can help strengthen TDM decision-making processes.

Within each stage, the checklist identifies whether the consideration is relevant to developers, local jurisdictions, and / or additional stakeholders.

Stage of Development & Key Considerations	Developer	Local Jurisdiction	Additional Stakeholders
<b>Site Acquisition</b>			
How does the site context (e.g. potential use(s), size, number of units) related to its potential for multimodal mobility (e.g. proximity to transit, walking, cycling networks)?	✓		
What are the existing transportation networks that serve the development site?	✓		
What multimodal infrastructure is required in order to ensure the viability and convenience of all modes of transportation?	✓		
What are the local jurisdiction’s development requirements related to mobility, transportation and TDM?	✓		
<b>Design and Approvals / Working Drawings</b>			
What are the projected and target parking demand?	✓		
Using robust analysis methods, what impact can TDM strategies have on that demand?	✓	✓	
Has the local jurisdiction been engaged to understand relevant TDM requirements, site-based transportation infrastructure investment expectations or supported/recommended TDM strategies?	✓	✓	
Have TransLink and other stakeholders (e.g. service providers) been engaged to understand applicability, cost, effectiveness, and implementation considerations?	✓	✓	✓
What TDM strategies are most relevant for the site and could best contribute to reduce parking demand and SOV trips?	✓	✓	

Stage of Development & Key Considerations	Developer	Local Jurisdiction	Additional Stakeholders
Does the TDM Plan effectively cover a range of measures including infrastructure incentives, education, and program management?		✓	
Are the local jurisdiction’s TDM requirements being applied in a standardized and consistent manner to other similar developments?		✓	
Do the proposed TDM strategies meet the expectations of the local jurisdiction’s requirements?		✓	
Is phased development delivering an appropriate suite of TDM strategies based on the site population?		✓	
Is there a viable monitoring and evaluation plan in place to verify the development’s commitment to it’s agreed upon goals and targets?		✓	
<b>Construction</b>			
Is transportation infrastructure being constructed per plans and in accordance with the supporting needs of the TDM plan?		✓	
Have relevant vendors, service providers, TransLink or other stakeholders been informed of occupation dates and subsequent TDM program launch dates?	✓		✓
Has a marketing and promotions plan been identified to inform site occupants of the TDM program opportunities and benefits?	✓		
<b>Occupy</b>			
Had a Transportation Coordinator been identified and introduced to the local jurisdiction and relevant stakeholders?	✓		
Has the agreed upon TDM program been implemented?		✓	
Have site occupants been engaged, informed, and encouraged to utilize the TDM strategies, and effectively been provided with relevant incentives, subsidies, or access to mobility services?	✓		✓
Has evaluation and monitoring been conducted in accordance with the agreed upon TDM plan?	✓	✓	
Has the TDM program been revised based on the evaluation outcomes to achieve more effectively the agreed upon goals and targets?	✓		

## B | Detailed Case Study

### Carlsbad, California (USA)

Category	Summary
TDM Focus	<p>The City’s primary goal is to increase non-SOV mode share by 10% among workers by 2035.</p> <ul style="list-style-type: none"> <li>• <b>TDM Ordinance:</b> The ordinance applies to new non-residential developments and projects undergoing tenant improvements that are anticipated to generate 110 or more average daily trips (ADT) by employees. Requirements depend on which tier the project falls under, ranging from agreeing to participate in and promote the citywide program (Tier 1) to selecting required, infrastructure, and programmatic strategies totaling to 18 points (Tier 3). All Tiers are required to submit an existing conditions report and adhere to monitoring and reporting requirements. <ul style="list-style-type: none"> <li>– Tier 1 (new and TI projects with 110-220 ADT)</li> <li>– Tier 2 (new projects with 221-275 ADT and all TI projects with over 221 ADT)</li> <li>– Tier 3 (new projects with over 275 ADT)</li> </ul> </li> <li>• <b>Citywide TDM Plan:</b> A voluntary program for existing businesses to receive TDM support from the City via their TDM consultants.</li> </ul>
Best Practice	<ul style="list-style-type: none"> <li>• The 110 daily employee trips threshold was chosen to align with the Governor’s Office of Planning &amp; Research’s Technical Advisory document on evaluating transportation impacts in CEQA. That document, released in December 2018, identified that projects generating fewer than 110 average daily trips could generally be assumed to cause a less than significant transportation impact.</li> <li>• To ensure that TDM strategies continue throughout the life of the project, requirements are incorporated into the Covenants, Conditions and Restrictions (CC&amp;R) of the property and into tenant lease agreements. Language incorporated as part of a CC&amp;R include the obligation is tied to the property, and that all existing and future owners and occupants are subject to the TDM plan requirements.</li> <li>• The City developed an online menu of options to assist developers with picking and choosing the TDM strategies based on several categories, including strategy-type, mode, applicability to other policies/programs, geography, cost, and effectiveness. This provides developers with flexibility in selecting the mix of options that best suit the site’s specific needs and opportunities.</li> <li>• Guidance documents, including a handbook, templates, and case studies are available online to proactively help developers and businesses developer their TDM Plans.</li> <li>• To encourage participation in the voluntary Citywide TDM Program, the City highlights the health and productivity benefits to employees as well as recognition via the iCommute Diamond Awards and economic development newsletter.</li> </ul>
Usefulness for TransLink	<p>The case study provides the following aspects for further consideration when developing TransLink’s TDM Guidance:</p> <ul style="list-style-type: none"> <li>• In developing the TDM Guidance, the full life of a development project should be considered, including the transition from the developer to property management company or employer upon occupancy.</li> </ul>

	<ul style="list-style-type: none"> <li>• A similar menu of options or other list of pre-approved TDM strategies could help developers and businesses in Metro Vancouver in the preparation of their TDM Plans while giving them flexibility in choosing the strategies most applicable to their site.</li> <li>• Guidance documents, including templates and a how-to guide, help ensure developers and employers know exactly what is required of them. In addition, the standardization of the application and monitoring reports would help reduce the admin burden for TransLink as part of the approvals process.</li> </ul>
Key Resources	<ul style="list-style-type: none"> <li>• City of Carlsbad TDM Page: <a href="https://www.carlsbadca.gov/services/building/tdm.asp">https://www.carlsbadca.gov/services/building/tdm.asp</a></li> <li>• Carlsbad TDM Menu of Options: <a href="https://carlsbadtdm.com/">https://carlsbadtdm.com/</a></li> <li>• TDM Handbook: <a href="https://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=39379">https://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=39379</a></li> <li>• TDM Plan Template: <a href="https://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=39722">https://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=39722</a></li> </ul>

## C | Glossary of Terms

Abbreviation	Definition
TDM	Transportation Demand Management
TMO/A	Transportation Management Organization / Association
ETC	Employee Transportation Coordinator
TOD	Transit-Oriented Development
FTDA	Frequent Transit Development Area
SOV	Single-Occupancy Vehicle
AVR	Average Vehicle Ridership
CRM	Customer Relationship Management

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