CITY OF VANCOUVER

POLICY REPORT
DEVELOPMENT AND BUILDING

Report Date: June 25, 2018
Contact: Lon LaClaire
Contact No.: 604.873.7336
RTS No.: 12403
VanRIMS No.: 08-2000-20
Meeting Date: July 24, 2018

TO: Vancouver City Council

FROM: General Manager of Engineering Services, and
General Manager of Planning, Urban Design and Sustainability

SUBJECT: Parking By-law Updates to Achieve Transportation 2040 Actions

RECOMMENDATION

A. THAT the Director of Legal Services bring forward changes to the Parking By-law generally as presented in Appendix A that advance City policy to reduce or eliminate some minimum parking requirements, and increase requirements and opportunities for bicycle parking, passenger loading, and transportation demand management in new development.

B. THAT Council endorse the Transportation Demand Management Administrative Bulletin presented in Appendix C for immediate policy implementation.

C. THAT Council direct staff to report back with recommendations on the priority actions outlined in this report.

REPORT SUMMARY

The management of off-street parking for vehicles and bicycles is one of the most powerful levers to achieve long-term transportation goals. In the Vancouver context, the Parking By-law is most effective when fully aligned with Transportation 2040 (T2040). With significant investments being made in transit, cycling and walking infrastructure, alongside a comprehensive housing strategy, an update of Vancouver's Parking By-law is important to ensure the different elements of the transportation network are aligned.

The actions proposed in this report will advance many T2040 actions by improving access to buildings, taking steps to address the needs of a changing mobility landscape, and driving investment in Transportation Demand Management (TDM) measures that encourage sustainable travel. Together, these changes will ensure that the supply of parking better

reflects actual demand and responds to the context of development sites and the TDM measures that are put in-place.

The more significant actions put forward in this report can be broken down into those proposed for the Downtown and City-wide:

Downtown Actions:

a) Eliminate all minimum vehicle parking requirements[1]; and
b) Require the provision of TDM plans for new buildings

City-wide Actions:

a) Require the provision of passenger loading spaces for all land uses;
b) Require visitor parking for all residential developments;
c) Increase requirements for bicycle parking and end-of-trip facilities to better reflect current and future cycling mode share; and
d) Enable reduced vehicle parking requirements for developments opting to provide a TDM plan, with deeper reductions offered for rental developments.

These actions will work together to ensure the long-term supply of parking is optimized, while not moving too quickly in eliminating parking requirements where future vehicle demand cannot be met either through district parking or on-street performance management tools. Further, the opportunities created by reduced parking requirements and alternatives to parking will assist in delivering infill housing options and rental supply, which facilitates the policy goals of Housing Vancouver.

Several administrative changes are also proposed as part of this report, to provide greater ease of understanding and application of the Parking By-law. Combined, these actions introduce significant and meaningful modernization of Vancouver's Parking By-law and set the stage for additional updates.

This report recommends priority actions for subsequent updates to the Parking By-law and associated documents, as well as other actions for future consideration. These actions are aimed at growing access and mobility, simplifying the Parking By-law's application, and connecting land use and mobility. Priority actions include:

a) *Optimize accessible parking requirements and design standards City-wide;*
b) Consolidate and update Parking By-law supporting materials;
c) Respond to increased density in single-family neighborhoods; and
d) Achieve consistency of approach in calculation and assessment of parking rates.

The changes recommended in this report seek to implement existing policies around parking in Transportation 2040 in a thoughtful way that enhances access and mobility for all residents, workers, and visitors in the City of Vancouver.

[1] Except for residential developments in the West End and Robson North residential parking permit areas

COUNCIL AUTHORITY/PREVIOUS DECISIONS

The Vancouver Charter provides authority for Council to regulate parking spaces for vehicles and bicycles in buildings through the Parking By-law. The modern Parking By-law was enacted in 1986 and contains sections for vehicle parking, commercial loading, bicycle parking, and passenger loading.

A number of amendments to the By-law have been undertaken over the past 30 years. Some significant updates include:

- 1995: Requirements for bicycle parking were added into the By-law.
- 2005: Definitions and provisions for reductions to parking requirements for co-operative vehicles were added to the By-law, introducing shared vehicles.
- 2009: Substantial changes, including creation of the Downtown, Central Broadway, and Mount Pleasant Industrial Areas, along with lower parking rates and parking maximums were introduced.

Generally, changes to the Parking By-law have been incremental with focused changes responding to specific needs or issues.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager supports the Parking By-law updates as presented in this report which facilitate the advancement of key Transportation 2040 actions. The changes enable higher-performing developments through the introduction of TDM, expanded passenger loading, increased bicycle parking, and reduced or eliminated requirements for vehicle parking. Through this work, and the work of future priority actions, the Parking By-law will be better positioned to support an efficient and adaptable transportation network.

REPORT

Background/Context

A modern Parking By-law is an important tool in realizing our long-term transportation goals as a City. There are several opportunities that have been identified with the existing Parking By-law, including:

- Opportunities to better reflect long-term transportation policy;
- Requirements that are outdated;
- Requirements that may be inconsistent with other policies and objectives; and
- Confusing language and structure of the By-law.

By undertaking the above opportunities, a comprehensive update of the By-law can be achieved in a phased approach. This report recommends a number of actions to be implemented effective January 1, 2019 and priority actions for further study.

Applicable Policies

The Parking By-law is linked to a wide variety of policies surrounding development in the City. In particular, Transportation 2040 and the Greenest City Action Plan provide the foundation for this report.

Transportation 2040 - Transportation 2040 is a long-term strategic vision for the City that guides transportation and land use decisions and public investments.

Greenest City Action Plan - Many of the goals in T2040 are founded on the principals of the Greenest City Action Plan, which seek to put Vancouver on the path to becoming the greenest city in the world.

Project Schedule and Implementation

A comprehensive update to the Parking By-law is proposed in several phases. The initial phase, included in this report, introduces specific changes responding to actions in Transportation 2040.

Based on discussions with stakeholders, and to align with upcoming updates of the Parking By-law related to electric vehicles and bicycle end-of-trip facilities, staff recommend these actions be implemented effective January 1, 2019. Development permits received after this date would be expected to conform to the new By-law. Projects currently underway, including updates to the City's Rezoning Policy for Sustainable Large Developments, which may be influenced by these changes are anticipated to be completed by this time.

In the interim, staff recommend consideration of development permit applications that meet all of the new recommended requirements if proposed by applicants.

Subsequent phases of this project will examine other Parking By-law related policies, beginning with priority actions described in this report.

Strategic Analysis

The actions are organized into three categories; updates which impact the Downtown only, actions which have City-wide impacts, and administrative changes.

A complete draft of changes to the Parking By-law is included in **Appendix A**. Additional details on the proposed changes, including rationale, supporting information, and discussion, are provided in **Appendix B**.

Downtown Policy Changes

Elimination of Vehicle Parking Requirements within the Downtown

Transportation 2040 provides direction to eliminate minimum vehicle parking requirements in the Downtown. Many cities have similar policies in place, including Seattle, Portland, Austin, Pittsburgh, Baltimore and Detroit. Downtown Vancouver's high levels of access to transit, shared vehicles, bike share, existing district parking, and local services supports the elimination of minimum requirements.

Non-Residential Parking

For non-residential developments, elimination of minimum parking requirements is recommended throughout the Downtown, with the exception of maintaining existing provisions for accessible spaces to support persons with disabilities and seniors.

Many developments today provide above the minimum parking requirements which indicates new buildings may continue to provide parking based on market needs, although sometimes at a lower rate than today. Based on recent utilization trends of existing public parking, which indicate decreasing occupancy over the last 10 years despite a small reduction in overall supply, sufficient capacity exists to support this recommendation. A review of other travel behaviour on non-residential sites in the Downtown is included in **Appendix D**.

Residential Parking

Elimination of minimum residential parking is recommended throughout the Downtown. Staff recommend maintaining the existing rate for accessibility parking spaces.

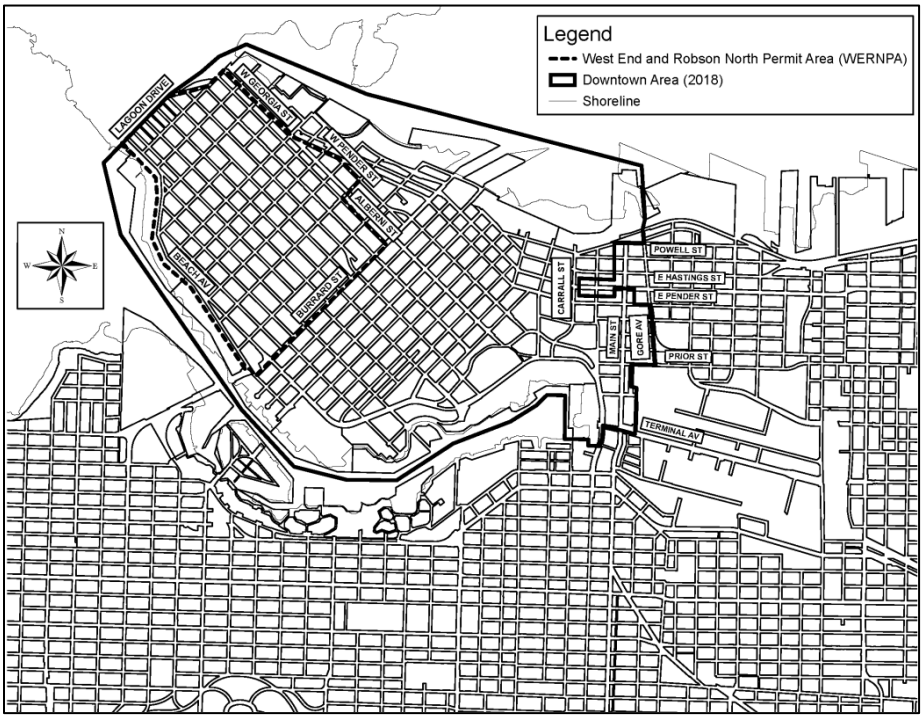
Based on current development patterns, and experience in other jurisdictions, staff expect strata housing will continue to provide parking on-site at rates that generally exceed the existing By-law minimums. Conversely, it is expected that rental and social housing developments will be more likely to take advantage of reduced rates. Eliminated residential parking requirements will assist in delivering rental supply downtown, which facilitates the policy goals of Housing Vancouver.

A review of other Canadian developments with zero minimum parking requirements is included in **Appendix D**.

Residential developments in the West End and Robson North Residential Permit Parking Areas have been excluded, and must provide parking at existing rates[2]. This is to allow for further advancement of changes to the residential permit parking program initiated in 2017 through the West End Parking Strategy. Staff anticipate residential minimums in the West End and Robson North Residential Permit Parking Areas will be removed in the future. A map of Downtown areas as defined in the Parking By-law is illustrated in **Figure 1.**

[2] Social and shelter rate housing need not provide parking

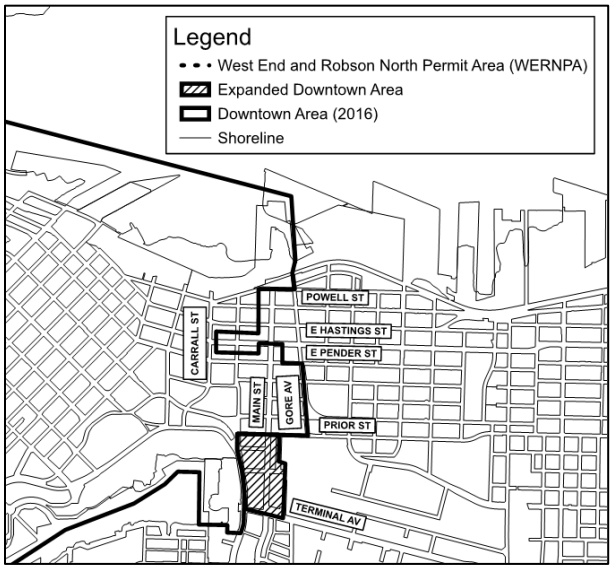
Figure 1 - Downtown



Expansion of Downtown Boundaries

A small expansion of the Downtown, as defined in the Parking By-law, is proposed to capture an area between Quebec Street and Station Street from Prior Street to Terminal Avenue. This area is bordered by large development areas such as the new St. Paul's Hospital site and Southeast False Creek, and functions much like the Downtown. Recent developments within this area are proposing to use the Downtown parking rates. A map of the proposed change is included in **Figure 2** and also reflected in **Figure 1**.

Figure 2 - Recommended Expanded Downtown Area



City-wide Changes

These changes apply to the entire city, including the Downtown. In some cases, policies relating to the Downtown are slightly different.

Increase Passenger Loading Requirements

Today, passenger loading spaces are required only for medical uses, supportive housing and hotels. However, reallocation of curb space, shared vehicles, future ride-hailing, autonomous vehicles, and an aging population will expand needs for short-term, flexible spaces in buildings.

Staff recommend passenger loading spaces be required in multi-family residential, retail, and office buildings, with the number of spaces based on the size of development, as follows:

- One (1) space for residential uses containing 50 or more units, plus one (1) additional space for each 150 units over 50 units;
- One (1) space for retail and similar uses with over 2,000 m^2 of gross floor area, plus one (1) additional space for each 4,000 m^2 of gross floor area over 4,000m^2; and
- One (1) space for office uses with over 5,000 m^2 of gross floor area, plus one (1) additional space for each 10,000 m^2 of gross floor area over 10,000 m^2

The first passenger loading space is to be sized as an accessible parking space. This will improve convenience for residents and visitors, and support persons with disabilities and seniors.

Visitor Parking for Vehicles in Residential Developments

Today, visitor parking spaces are required only for rental residential uses at a rate of 0.075 to 0.15 spaces per unit. Ensuring the provision of visitor parking spaces for residential buildings helps to improve convenience and access for visitors, service providers, and care-givers while also reducing demand for on-street parking. Visitor parking supports the needs of seniors and persons with disabilities who may or may not have a SPARC parking permit.

Staff recommend that visitor parking be required on all new residential developments, including social and supportive housing at a minimum of 0.05 and a maximum of 0.10 spaces per unit. Where no minimum residential parking requirement exists, visitor parking is only required if a development chooses to construct resident parking.

Adjust Social Housing Parking Requirements

Current social housing parking rates in the Parking By-law require updating. Based on surveys of managers of 13 existing projects in Vancouver, resident surveys, and correspondence with operators, new and revised rates for social housing are recommended. Supporting data is presented in **Appendix D**.

- HILs[3] rate units: 0.3 spaces per unit for one-bedroom units and studios. 0.5 spaces per unit for family-size units.
- Shelter Rate Units: one (1) space per 15 units, which are intended for staff.

These rates may take advantage of reductions for proximity to transit and provision of TDM measures, as outlined later in this report.

Currently, the Moderate Income Rental Housing Pilot Program (MIRHPP) is underway, with applications in the pre-submission review stage. Some units within MIRHPP developments will likely be rented at rates eligible for social housing parking rates, making them eligible for the new social housing rates. To reduce potential impacts for these City-priority projects, staff recommend that applications for the MIRHPP program be assessed using the lower of either:

- the current vehicle parking requirements of one (1) space per 125 m^2, with a 30 percent reduction for developments within two blocks of excellent transit; or
- the new recommended vehicle parking requirements.

Adjust Bicycle Parking Requirements

The Parking By-law provides requirements for Class A, long-term, secure bicycle parking for residents, and Class B, short-term, visitor bicycle parking.

Residential Class A Bicycle Parking

Through various surveys, it has been established that insufficient bicycle parking capacity is a primary challenge to bike owners and presents a key barrier to cycling, even in newer developments. Observed bicycle ownership rates of close to two (2) spaces per unit are well above the current standard for multi-family residential of 1.25 spaces per unit.

Based on bicycle ownership surveys conducted in 2015 and 2018, an increased provision of bicycle parking is recommended, with consideration for unit size.

- 1.5 spaces for each dwelling unit under 65 m^2
- 2.5 spaces for each dwelling unit over 65 m^2 and under 105 m^2
- Three (3) spaces for each dwelling unit over 105 m^2
- For seniors housing, and single room accommodation, a rate of 0.75 spaces per unit it proposed.

Other changes to harmonize the rates for residential bicycle parking requirements in different districts have been included to support an overall rate applicable to all forms of multi-family housing.

Non-Residential Class A Bicycle Parking

For retail and service uses, as well as office uses, to support long-term mode share targets, it is proposed that new, non-residential developments accommodate up to 15

[3] Units secured for households with incomes below housing income limits, as set out in the current "Housing Income Limits" table published by the British Columbia Housing Management Commission

percent of employees cycling to work. This compares to observed bicycle to work mode share for commuters to Vancouver of nine (9) percent and bicycle to work mode share of Vancouverites of 11to15 percent depending on the season. Details on rate-setting methodology can be found in **Appendix B**.

This results in a 190 percent increase to office requirements, and a 45 percent increase to retail and service use requirements:

- One (1) space per 170 m^2, for office uses, and
- One (1) space per 340 m^2, for retail and service uses

As a result, revised requirements for end-of-trip facilities including lockers, showers, changing areas and grooming stations are also recommended, as outlined in **Appendix B.**

Class A Bicycle Parking Access

A number of policy changes are recommended in order to better accommodate bicycle parking in new developments. These changes enable the accommodation of non-standard bikes and trikes, improvements for accessibility, and opportunities for stacked parking. Details on these proposed changes can be found in **Appendix B.**

Class B Bicycle Parking Requirements

Class B bicycle parking is provided for the benefit of visitors to buildings and are typically located outside, on private property, in the form of bike racks.

For residential buildings, it is proposed that the provision of Class B bicycle parking scale with the size of the building, similar to the recommended visitor vehicle parking rates.

In order to improve usability of Class B bicycle parking, increased dimensions are recommended in line with Class A spaces of 0.6 m x 1.8 m.

Transportation Demand Management

Transportation Demand Management (TDM) programs are a way for buildings to encourage reduced driving in a comprehensive manner. A clear mandate, ongoing support, effective marketing, and a commitment to monitoring results are important elements of successful TDM programs.

Today, the Parking By-law includes TDM measures such as shared vehicles and additional bicycle parking that can help to reduce parking demand. However, many other strategies exist that can reduce parking demand and encourage more sustainable travel choices. Enabling more diverse opportunities for TDM measures to reduce parking requirements will help enable new forms of development, especially housing.

Staff recommend implementing a comprehensive TDM program for new development, enabled by the draft By-law changes in **Appendix A**, and based on the Administrative Bulletin in **Appendix C:** "Transportation Demand Management for New Developments in Vancouver."

Key elements of this program include:

- By-law changes that:
  - Require an acceptable TDM plan be provided for all new development within the Downtown[4]; and
  - Allow the Director of Planning to reduce parking City-wide when an acceptable TDM plan is submitted with a development application.
- A TDM Administrative Bulletin that:
  - Details a list of acceptable TDM measures and assigns point values to each (a "TDM menu");
  - Outlines requirements for an acceptable TDM plan, including a number of TDM points that must be obtained;
  - Describes expectations around the form that TDM measures must be provided;
  - Outlines available parking reductions for different land uses and locations;
  - Provides additional reductions for developments that are in proximity to high-quality transit service, with higher reductions possible for rental housing; and
  - Includes funding requirements for monitoring of measures on development sites to inform future TDM policies.

Staff seek Council's endorsement of this Administrative Bulletin.

To support planning work on "Making Room," this TDM program is intended to provide opportunities for reductions in parking requirements on sites of varying size and density. Recognizing the unique constraints on small development sites, alternative TDM solutions that meet the intent of reduced parking demands in new developments may be considered.

On large sites, there is an expanded capacity to explore new mobility strategies. The Rezoning Policy for Sustainable Large Developments currently encourages leadership in sustainable transportation options through its Green Mobility Plan requirement. The TDM program recommended in this report is intended to replace this Green Mobility Plan requirement, and expands requirements to all large sites. The TDM menu continues to expect leadership from large sites through a City-wide requirement for TDM plans, and increased requirements.

Transportation Demand Management is an evolving field in which existing research is challenging to apply in a local context. Many of the TDM measures and point values recommended in the TDM Administrative Bulletin are founded on best practices identified in other leading jurisdictions, such as San Francisco. Further information detailing a review of regional TDM practices and technical justification of each TDM measure is provided in **Appendix B**. The proposed TDM measures have been reviewed by an external consultant, and their findings are included in **Appendix D**.

A robust TDM monitoring program will help to ensure that long-term impacts of TDM measures are well-understood within a Vancouver context. To facilitate this, each new development will be required to provide a contribution towards a City TDM monitoring program.

To accommodate the new TDM Policy, the *Traffic Assessment and Management Study Guidelines for Consultants* has been updated and is presented in **Appendix F.**

[4] Excluding strata and market rental developments in the West End and Robson North Permit Area

Payment-in-Lieu

Vancouver City Council accepts payment of money in lieu of parking spaces for sites that are unable to meet the Parking By-law. This policy is available to both residential and non-residential developments.

Revisions to the Payment-In-Lieu policy are recommended:

1. The assignment of funds collected for payment-in-lieu to either the Off-Street Parking fund for replacement parking, or Green Transportation fund for non-auto initiatives, is recommended to be assessed on a case-by-case basis, rather than based on land use as is policy today. Future Payment-In-Lieu reports would include an assessment and recommendation of the appropriate fund which to allocate monies.

2. Based on recent studies of the Mount Pleasant Industrial Area it is recommended that Council consider Payment-In-Lieu applications for sites within the Mount Pleasant Industrial Area, as defined in the Parking By-law. It is anticipated that monies received would be directed towards the City-funded replacement parking at 2221 Main Street, currently under development.

Administrative Changes

Recommended administrative changes to the By-law include:

- The addition or modification of several new definitions which update language around accessibility, social housing, and TDM to be consistent with current policies, and in response to the recommendations in this report.
- Renumbering of certain sections to correct inadvertent errors in previous versions of the By-law.
- Minor spelling and grammar corrections.

These changes do not have any policy implications.

Future Actions

Future actions are categorized below, with priority actions and other actions described under each category. The first report back to Council is expected in 2019.

1. Grow Access and Mobility

Access and mobility actions improve the way that developments provide transportation infrastructure on-site, minimizing reliance on the street.

Priority Action

Optimize Accessibility Parking Rates and City-Wide Design Standards

The current Parking By-law provides accessibility parking requirements for residential uses and non-residential uses based on floor areas. Current industry standards such as

those published in the Americans with Disabilities Act (ADA) and other Canadian cities, such as Toronto, provide requirements as a proportion of the total spaces provided.

In the context of an aging population, ensuring long-term needs for disability parking spaces for those who are more likely to rely on a vehicle for their mobility needs is important. This assessment will also include revaluation of the number of accessible spaces required, calculation methods, space dimensions, and potential adjustments to supporting infrastructure such as passenger spaces.

Additional Actions

Future updates will include:

- Assessment of loading space requirements with respect to number and dimensions;
- Assessment of bicycle parking requirements for land uses not considered in this report; and
- An update of vehicle parking requirements for land uses outside of the Downtown.

2. Simplify Application of the Parking By-law

Actions that simplify the application of the Parking By-law can improve the development process by encouraging more compliant and higher quality rezoning and development permit submissions. This may subsequently reduce processing times.

Priority Action

Consolidate and Update Parking By-law Supporting Materials

A number of supporting bulletins, documents and policies, guide the Parking By-law's application. These supporting documents include guidelines for Shared Vehicles, Public Bike Share, as well as additional design guidelines for the provision of off-street parking, loading, and bicycle parking facilities.

Consolidating supporting documents into a single, convenient reference, in conjunction with updates to their content, would improve usability for developers.

Additional Action

The Parking By-law text will be rewritten to improve clarity and concision.

3. Connect Land Use and Mobility

Transportation and land use are intrinsically linked. Higher densities promote accessibility and reduce reliance on personal vehicles. In turn, reduced parking requirements enable improved developments and more diverse forms of housing. Actions that connect land use and mobility help the Parking By-law respond to these opportunities.

Priority Actions

Respond to Increased Density in Single-Family Neighborhoods

The Making Room planning program will examine opportunities for increasing density in single-family neighbourhoods. The provision of adequate new parking and management of existing parking are key to the success of this program. In support of this, the Parking By-law will be updated to reduce parking requirements on small development sites in ways that do not result in management issues on-street.

Strategies include:

- TDM measures tailored to small sites;
- District parking opportunities in neighborhoods; and
- Innovative parking systems such as mechanical parking.

In addition to changes to the Parking By-law, opportunities to improve management of on-street parking in some neighborhoods can be addressed outside of changes to the Parking By-law.

Achieve Consistency of Approach in Assessment of Parking Rates

The objective of this action is to make determination of parking requirements simpler, and more consistent for similar land uses and situations.

Many similar land uses in the Parking By-law are treated differently with respect to how their parking rates are determined. For example, the parking rate for secure market rental uses is based on gross floor area, while other multi-family rental developments have parking requirements based on a combination of number of units as well as gross floor area. Simplifying calculations and consolidating requirements for similar land uses will simplify application of the Parking By-law and provide a technical foundation for requirements.

Additional Actions

Additional actions for future updates include:

- Implementation of criteria-based rates that require parking based on a site's land use and context to replace area-specific parking requirements;
- Assessment of the potential for Payment-In-Lieu for additional areas;
- Support for unbundling of parking in the Parking By-law; and
- Expansion of parking maximums.

Public Input

Engagement with stakeholder groups and the public included a series of presentations and discussions with Council Committees and external stakeholder groups, as well as a Talk Vancouver Survey.

Stakeholder groups included:

- Transportation 2040 Stakeholders;
- Renters Advisory Committee;
- Seniors Advisory Committee;
- Persons With Disabilities Advisory Committee;
- Active Transportation Policy Council;
- The Urban Development Institute; and
- Business Improvement Associations

In general, support was received for the suite of actions proposed, with strong themes of increased affordability, accessibility for seniors and persons with disabilities, and support for alternative modes of transportation through the provision of TDM.

Notable concerns of the groups included:

- Accessibility for persons with disabilities and seniors for future low or no-parking sites;
- Visit-ability for seniors and persons with disabilities;
- Long-term TDM monitoring obligations;
- Elimination of parking minimums in the Downtown leading to difficulty finding parking;
- Public parking supply in the Downtown; and
- Security and availability of bicycle parking.

Through the Talk Vancouver Survey, most recommendations were supported by the majority of respondents, with the exception of the elimination of minimum parking requirements in the Downtown, which had 40 percent in favour and 50 percent against.

A summary of the key comments and questions from the engagement process can be found in **Appendix E**.

Response to Public Input

In response to the feedback provided from all advisory groups, changes were made to the initial recommendations. A summary of these changes are included in Table 1.

Table 1 - Changes in Response to Public Comment

Concern	Initial Recommendation	Revised Recommendation
Downtown Zero Parking Minimums	- Remove all Downtown parking minimums for all land uses - Require TDM plans for all developments in the Downtown	- Maintain the existing residential parking requirements within the West End and Robson North Residential Parking Permit Areas; and - No requirement for TDM in the West End. Opportunities for parking requirement reductions with TDM in-line with City-wide recommendations. This is in response to feedback regarding existing on-street challenges in these neighbourhoods, as well as the recent changes made to permit parking in the West End.
Accessible Parking	- Keep existing requirements where parking is provided - For low-parking developments, at least 25% of spaces to be universally accessible - No requirement for zero parking developments	- Maintain the existing parking requirements for accessible spaces throughout the City; - Report back on suggested updates once there has been an opportunity to conduct additional research; and - In the Downtown, except the West End and Robson North Residential Parking Permit Areas, only require parking for accessible spaces, and pick-up/drop-off spaces.
Visitor Parking	- No recommendations (in some presentations, this was changed and incorporated into later presentations)	- Provide visitor parking in new residential development. Within the Downtown, require a percentage of all spaces to be designated for visitors.
TDM Monitoring	- Developers to provide TDM studies on regular intervals for up to 10 years after occupancy	- Developers will contribute to a TDM monitoring program that will be implemented by the City to support data-driven approaches to future Parking By-law and TDM program updates.

With respect to concerns about parking supply in the Downtown, additional research was conducted to confirm changes to supply and demand. Over the past 10 years the amount of public parking available in the Downtown has decreased by approximately six (6) percent (from 35,100 to 33,000 spaces). The occupancy of the remaining parking has also decreased by six (6) percent (from 67 percent to 61 percent occupied), indicating that demand for parking is falling faster than the supply.

Implications

Financial

As part of the TDM Program, monitoring will be undertaken by the City after the occupancy of development projects to assess the uptake and efficacy of the various TDM measures, and use of on-site transportation infrastructure. To facilitate this, new developments providing a TDM

plan and benefiting from reduced parking requirements will contribute towards a TDM monitoring fund, as follows:

- All large sites, and development projects in the Downtown, will be required to provide a contribution towards TDM monitoring in an amount equal to $2 per square meter of new gross floor area as part of their TDM plan.
- City-wide, new development projects will be required to provide a contribution towards TDM monitoring equal to $280 for each vehicle parking space being relaxed.

These rates can be compared to the approximate cost of constructing parking, which range from $40,000 to $80,000 a space. These amounts have been estimated based on recent data of approved developments in the Downtown. Assuming that the current rate of development of approvals continues, it is projected that this fund will provide approximately $250,000 per year to be used for to be used for monitoring and reporting on the TDM program and assessing the efficacy of the program.

Monitoring will occur periodically following occupancy of a development project to measure and will include:

- Surveys and assessments of developments of a similar land use and site characteristics who do not have a TDM plan, to establish baselines;
- Vehicle generation and parking demand;
- Travel mode survey for the users and assessment of mode shares; and
- Other information, as required, to assess efficacy of on-site transportation infrastructure.

The contribution amount of $2 per square meter or $280 per vehicle space will be reassessed on a regular basis to ensure that overall amounts received are appropriate.

The elimination of minimum vehicle parking requirements from the Downtown, except in the West End and Robson North parking permit areas, will result in reduced applicability of the Payment in Lieu (PIL) program. Historically, PIL has collected an average of $250k per year in the downtown. Monies collected from PIL are transferred from a PIL reserve to the Parking Sites Reserve for the purpose of capital maintenance, once replacement parking spaces are identified in City-owned facilities.

The introduction of PIL to the Mt. Pleasant Industrial Area will result in monies being collected for the dedicated replacement parking at 2221 Main Street. The uptake of PIL in Mt. Pleasant is difficult to forecast since it is dependent on site context but challenging lot sizes and access issues in this planning area make PIL a useful tool for achieving parking requirements.

Human Resources/Labour Relations

Additional staff to manage and conduct the TDM monitoring program and future policy changes will be funded from the TDM monitoring fund. The number and classification of roles required to complete this work will be assessed as TDM plans are received and more information is available about uptake of TDM plans City-wide.

Legal

The recommendations direct Legal Services to prepare amendments to the Parking By-law.

CONCLUSION

The changes recommended in this report seek to implement existing policies around parking in Transportation 2040 in a thoughtful way that enhances access and mobility for all residents, workers, and visitors in the City of Vancouver. Implementing requirements for additional passenger loading spaces, bicycle parking spaces, and Transportation Demand Management plans will support reduced reliance on personal vehicles within the City. This allows for reduced or eliminated vehicle parking requirements, while ensuring that developments continue to accommodate the needs of all users.

* * * * *

DRAFT By-law to amend Parking By-law No. 6059

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. This By-law amends the indicated provisions of the Parking By-law.

2. In section 2, Council:

   (a) strikes out the definition for "Disability Parking Space" and substitutes "Accessible Parking Space";

   (b) strikes out Map 2B and substitutes a new Map 2B as attached to this By-law as Schedule A;

   (c) adds a new definition, in correct alphabetical order, as follows:

   "**Social Housing HILS Units** means dwelling units secured for households with incomes below housing income limits, as set out in the current "Housing Income Limits" table published by the British Columbia Housing Management Commission, or equivalent publication;"

   (d) adds a new definition, in correct alphabetical order, as follows:

   "**Traffic Demand Management Measures** means measures intended to reduce reliance on personal motor vehicles by residents, patrons and visitors of a development, and to support reduced vehicle parking requirements;"

   (e) adds a new definition, in correct alphabetical order, as follows:

   "**Traffic Demand Management Plan** means a document forming part of a development permit application that sets out the commitments made by the owner of a development regarding the implementation of Traffic Demand Management Measures;" and

   (f) adds a new definition, in correct alphabetical order, as follows:

   "**West End and Robson North Permit Area** means those areas outlined by the dashed black line on Map 2B.".

3. Council strikes out the words "Disability Parking Space" wherever they appear in sections 3 and 4 and substitutes "Accessible Parking Space".

4. Council strikes out sections 3.2.2, 3.2.2A, and 3.2.2B and substitutes the following:

   "3.2.2 The Director of Planning, in consultation with the City Engineer, on conditions that are satisfactory to them, may reduce the minimum number of required off-street parking spaces.

   3.2.3 The conditions referred to in section 3.2.2 must include the following:

(a) the owner of the development must provide of a Transportation Demand Management Plan satisfactory to the Director of Planning; and

(b) the owner of the development must register against title to the development, with such priority as the Director of Legal Services may require, and in form and substance satisfactory to the Director of Legal Services, a covenant under section 219 of the Land Title Act of British Columbia, statutory right of way, or other instrument satisfactory to the Director of Legal Services, securing the Transportation Demand Management Measures set out in the Transportation Demand Management Plan, as appropriate.".

5. Council strikes out Map 3.2.2A.

6. Council re-numbers sections 3.2.3 and 3.2.4 as 3.2.4 and 3.2.5.

7. In section 4.1.1, Council adds the words "and section 4.1.16" after "section 4.2".

8. In section 4.1.3, Council:

(a) strikes out "Outside an HA District or Sub-area C2" and substitutes "Outside Downtown";

(b) in subsection (a), strikes out "outside an HA District or in sub-area C2" and substitutes "outside Downtown"; and

(c) in subsection (b), strikes out "outside an HA District or in sub-area C2" and substitutes "outside Downtown".

9. In section 4.1.4, Council:

(a) adds the words "and section 4.1.16" after "section 4.2"; and

(b) adds the words ", except that visitor parking for all dwelling uses, including live-work use, shall be calculated in accordance with section 4.1.16" after "gross floor area of such uses".

10. In section 4.1.6, Council adds the words "and section 4.1.16" after "section 4.2".

11. Council adds a new section 4.1.16 as follows:

"4.1.16 Visitor Parking for Dwelling Uses including Live-Work, except Downtown

Where parking spaces are provided for dwelling uses, including live-work use, except Downtown, a minimum of an additional 0.05 parking spaces for every dwelling unit and a maximum of an additional 0.1 spaces for every dwelling unit must be provided and reserved for the use of visitors and shall be included in the calculation of any applicable maximum, except that if the provision of the minimum number of required visitor parking spaces causes the development to exceed the maximum parking permitted, the number of visitor parking spaces shall be reduced by the number required to meet the maximum.".

12. In the title of Column 1 in section 4.2.1, Council strikes out "Building Classfication" wherever it appears and substitutes "Building Classification".

13. In Column 2 of section 4.2.1.4, opposite "Multiple Dwelling in RM-7, RM-7N and RM-7AN (not including Rowhouse)", Council strikes out "0.65" and substitutes "0.8".

14. In section 4.2.1.8, Council:

(a) in Column 1, strikes out the words "Three or more dwelling units designated solely for senior citizens' housing under the provisions of the National Housing Act, or other similar use." and substitutes "Social Housing HILS Units."; and

(b) in Column 2, strikes out "A minimum of one space for every six dwelling units." and substitutes "A minimum of 0.3 spaces per unit for units with fewer than 2 bedrooms, and a minimum of 0.5 spaces per unit for units with 2 or more bedrooms.".

15. In section 4.2.1.9, Council:

(a) in Column 1, strikes out the words "Three or more dwelling units designated solely for families of low income under the provisions of the National Housing Act." and substitutes "Three or more dwelling units designated solely as social housing low end of market units."; and

(b) in Column 2, strikes out "A minimum of one space for every two dwelling units." and substitutes "The rate applicable for secure market rental housing in section 4.5B1.".

16. In section 4.2.1, Council adds a new section 4.2.1.9A, as follows:

(a) in Column 1, adds the words "Three or more dwelling units designated solely as shelter rate units."; and

(b) in Column 2, adds the words "1 space for every 15 units.".

17. In Column 2 of section 4.2.1.13, Council strikes the words "and car-sharing vehicle parking space".

18. Council strikes out sections 4.3.1 through 4.3.9, and substitutes the following:

"4.3.1 Non-residential Uses - Downtown

Except for accessible parking which is to be provided in accordance with section 4.8.4, and parking spaces for water based uses which are to be provided in accordance with section 4.2.4.9, all non-residential uses Downtown shall provide a maximum of one parking space for each 115 m^2 of gross floor area."

4.3.2 Residential Uses including Live-Work – Downtown, except in the West End and Robson North Permit Area

Except for accessible parking which is to be provided in accordance with section 4.8.4, and residential parking in the West End and Robson North Permit Area which is to be provided in accordance with sections 4.3.3 and 4.3.5, there is no minimum residential parking requirement for residential uses Downtown, including live-work use.

4.3.3 Residential Uses including Live-Work - West End and Robson North Permit Area

Except as provided in section 4.3.5, residential uses in the West End and Robson North Permit Area, including live-work use, shall provide the lesser of:

(a) at least one parking space for each 140 m^2 of gross floor area; and
(b) one parking space for every dwelling unit.

4.3.4 Residential Visitor Parking - Downtown

Where parking spaces are provided for residential uses Downtown, the lesser of

(a) 5% of the total number of residential parking spaces; and

(b) 0.05 spaces per dwelling unit,

to a maximum of 0.1 spaces per dwelling unit, must be designated and reserved for the use of visitors.

4.3.5 Social Housing HILS Units and Shelter Rate Units - West End and Robson North Permit Area

Except for accessible parking which is to be provided in accordance with section 4.8.4, no parking is required for Social Housing HILS Units or shelter rate units in the West End and Robson North Permit Area.

4.3.6 Transportation Demand Management - Downtown

Except for sites required to provide parking under section 4.3.3, the owners of all developments Downtown must provide a Traffic Demand Management Plan satisfactory to the Director of Planning.".

19. In section 4.4, Council strikes out the words "Table of Number of Required and Permitted Accessory Parking Spaces for Heritage Sites Outside HA Districts and Sub-area C2 (Victory Square)" and substitutes "Number of Required and Permitted Accessory Parking Spaces for Heritage Sites Outside Downtown".

20. In section 4.4.1, Council strikes out the words "an HA District and sub-area C2" and substitutes "Downtown".

21. In section 4.4.2, Council strikes out the words "HA Districts and sub-area C2 (Victory Square)" and substitutes "Downtown".

22. In section 4.4.3, Council strikes out the words "HA Districts and sub-area C2 (Victory Square)" and substitutes "Downtown".

23. Council strikes out section 4.4.4 and substitutes the following:

"4.4.4 Dwelling Uses

Dwelling uses on heritage sites outside Downtown shall provide a minimum amount of parking at 0.75 times the parking standards otherwise applicable for that location."

24. Council strikes out section 4.4.5.

25. Council strikes out section 4.4.6.

26. In section 4.5A.1, Council:

(a) in Column 1, adds the words "except for Social Housing HILS Units and shelter rate units" after "Multiple Dwelling";

(b) in Column 1, strikes out the two notes in square brackets; and

(c) in Column 2, strikes out the following:

"Despite the preceding paragraph in this Column 2, a minimum of 0.075 space for each dwelling unit and a maximum of 0.15 space for each dwelling unit for designated visitor parking unless the Director of Planning and General Manager of Engineering Services allow visitor parking off site at a location and on terms and conditions satisfactory to them.

Visitor parking shall be part of minimum parking requirements and the total of all spaces must not exceed the maximum parking limit.

For the purpose of calculating visitor parking spaces, the number of dwelling units is to include the number of live work units under section 4.5A.5 and social housing units under sections 4.5A.6, 4.5A.7, and 4.5A.8.".

27. In Column 1 of section 4.5A.2, Council strikes out the note in square brackets.

28. Council strikes out the note in square brackets underneath section 4.5A.2.

29. In Column 2 of section 4.5B1, Council:

(a) strikes out the following:

", except that if the secured market rental housing is within two blocks of a rapid transit station, or within two blocks of the intersection of two distinct bus routes that run north to south and east to west, or within the Metro Core described in Map 3.2.2A, except for the downtown area and Southeast False Creek, the minimum parking requirements is 20% less.

A minimum, for visitor parking, of that number of spaces which is equal to 7.5% of the total number of dwelling units in the secured market rental housing."; and

(b) strikes out the following:

"A maximum, for visitor parking, of that number of spaces which is equal to 15% of the total number of dwelling units in the secured market rental housing.".

30. In section 4.9.1, Council adds "4.8.2A" and "4.8.4A" in the correct numerical order.

31. In subsection (a) of section 4.12.1, Council adds the words "or in the Mount Pleasant Industrial Area" after "Map 4.12.1".

32. Council adds a new section 4.14 as follows:

"4.14 Transportation Demand Management Plan for Large Sites

All development sites involving a land parcel or parcels having a total site size of 8,000 m^2 or more, or containing 45,000 m^2 or more of new development floor area, must provide a Traffic Demand Management Plan satisfactory to the Director of Planning.".

33. In section 5.5.2, Council:

(a) adds the words "requiring loading" after "individual occupancy use"; and

(b) adds the words "and sufficient space to conduct loading and unloading activities within the site" after "within a development to a space".

34. In section 6.2.1, Council:

(a) in Column 1 of section 6.2.1.1:

(i) adds the words "including live-work use," after "Dwelling Uses,", and
(ii) strikes out "and 6.2.1.6" and substitutes "6.2.1.5, and 6.2.1.6";

(b) strikes out section 6.2.1.2 and:

(i) in Column 1, substitutes "Multiple Dwelling, Infill Multiple Dwelling, or three or more dwelling units in conjunction with another use, including live-work, except as provided for in sections 6.2.1.3, 6.2.1.4 and 6.2.1.5.",
(ii) under Class A in Column 2, substitutes the following:

"A minimum of 1.5 spaces for every dwelling unit under 65 m^2.

A minimum of 2.5 spaces for every dwelling unit over 65 m^2 and under 105 m^2.

A minimum of 3 spaces for every dwelling unit over 105 m^2.", and

(iii) under Class B in Column 2, substitutes "A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.";

(c) strikes out section 6.2.1.3 and:

(i) in Column 1, substitutes “Three or more dwelling units designated solely for seniors citizens housing.”,
(ii) under Class A in Column 2, substitutes “A minimum of 0.75 spaces for every dwelling unit, except that where designated spaces are provided for the purpose of parking mobility scooters, these designated spaces may form part of the required minimum.”, and
(iii) under Class B in Column 2, substitutes “A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.”;

(d) strikes out section 6.2.1.4 and

(i) in Column 1, substitutes “Shelter rate units.”,
(ii) under Class A in Column 2, substitutes “A minimum of 0.75 spaces for every unit designed for single room accommodation or similar use, and according to the standard in Section 6.2.1.2 for all other units, except that where dwelling units have explicitly been designed to adequately accommodate bicycles, the Director of Planning may reduce this requirement.”, and
(iii) under Class B in Column 2, substitutes “A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.”;

(e) strikes out section 6.2.1.5 and

(i) in Column 1, substitutes “Seniors Supportive or Assisted Housing.”,
(ii) under Class A in Column 2, substitutes “A minimum of 0.10 spaces for every residential unit.”, and
(iii) under Class B in Column 2, substitutes “A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.”; and

(f) strikes out sections 6.2.1.6 and 6.2.1.7.

35. In section 6.2.4.1, under Class A in Column 2, Council strikes out “500 square metres” and substitutes “170 square metres”.

36. In section 6.2.5.1, under Class A in Column 2, Council strikes out “500 square metres” and substitutes “340 square metres”.

37. Council strikes out section 6.2.9.

38. Council strikes out section 6.2A.

39. In section 6.3.6, Council:

(a) strikes the words “where an elevator is supplied offering direct access to outside” and substitutes “where an elevator designed to accommodate the loading and

unloading of at least two bicycles is provided, offering direct, convenient access to the outside"; and

(b) adds the following new sentences to the end of the section as follows:

"Where an elevator is provided to access bicycle parking, a distinct call button for that elevator shall be provided on all levels with bicycle parking and all levels that provide access to the outside. Where an elevator is provided to access bicycle parking for residential uses, it shall not also be normally used for the loading or unloading of goods, for move in or move out activity associated with residential uses, or other activities which may significantly reduce accessibility to the elevator for people with bicycles.".

40. Council strikes section 6.3.9 and substitutes the following:

"6.3.9 Bicycle Space Size

All required Class A bicycle spaces shall have a minimum vertical clearance of 1.9 metres, shall be a minimum of 0.6 metres in width and shall be:

(a) a minimum of 1.8 metres in length if the bicycles are to be placed horizontally; or
(b) a minimum of 1.0 metres in length if the bicycles are to be placed vertically,

except that a minimum of 5% of the spaces must be oversized spaces of 2.4 m in length and 0.9 m in width, and may not be vertical or stacked spaces.".

41. Council adds a new sentence to the end of section 6.3.10 as follows:

"All doors on the route from Class A bicycle parking spaces to the outside are to be fitted with automatic door openers.".

42. Council strikes section 6.3.13 and substitutes:

"6.3.13 Vertical and Stacked Bicycle Spaces

Vertical bicycle space racks shall support the bicycle without the bicycle being suspended on the wheels. No more than 30% of the required Class A bicycle spaces may be vertical, and in total, no more than 60% of the required Class A bicycle spaces may be vertical and stacked. Stacked bicycle spaces shall be designed to provide access without the need to lift the bicycle entirely off of the ground, and must provide convenient access. Where the Director of Planning accepts equipment proposed for providing stacked bicycle spaces, the dimensions required in 6.3.9 may be reduced for those spaces, and the dimensions required in 6.3.10 may be increased.".

43. In section 6.3.13A, Council strikes "20%" and substitutes "10%".

44. In section 6.3.19, Council strikes out the word "The" and substitutes "Bicycle lockers shall be designed to accommodate a maximum of 1 bicycle, and the".

45. In section 6.4.2, Council strikes “0.3” and substitutes “0.6”.

46. Council adds a new sentence to the end of section 6.4.3 as follows:

“All doors on the route from Class B bicycle parking spaces to the outside are to be fitted with automatic door openers.”.

47. strikes section 6.5.4 and substitutes the following:

“6.5.4 The number of water closets, wash basins and showers required by section 6.5.2 shall conform to Table 6.5A for Office and Retail and Service uses, and shall conform to Table 6.5B for all other uses.”.

48. Council adds the following as Table 6.5A:

“Table 6.5A

	Minimum Number Of:		
Use	Water Closets	Wash Basins	Showers
Office	1 shower for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50	1 wash basin for any development requiring between 5 and 10 Class A bicycle parking spaces, plus one for every additional 20 spaces up to 50 spaces and one for every 40 spaces above 50	1 water closer for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50
Retail and Service Uses	1 shower for any development requiring between 5 and 10 Class A bicycle spaces, plus one for every 40 spaces above 10	1 wash basin for any development requiring between 5 and 10 Class A bicycle parking spaces, plus one for every additional 20 spaces up to 50 spaces and one for every 40 spaces above 50	1 water closer for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50

”.

49. Council re-numbers Table 6.5 as Table 6.5B.

50. In section 7.2.1, Council strikes the words “No requirement.” in Column 2 for Class A and substitutes the following:

"A minimum of one space for any development with 50 to 125 dwelling units, plus one space for every additional 150 dwelling units.".

51. In section 7.2.4, Council:

(a) renumbers section 7.2.4.1 as 7.2.4.2; and

(b) adds a new section 7.2.4.1 by:

(i) in Column 1, adding the words "Office, except as required in 7.2.4.2",
(ii) under Class A in Column 2, adding the words "A minimum of one space for each 10,000 m^2 of gross floor area.",
(iii) under Class B in Column 2, adding the words "No Requirement.", and
(iv) under Class C in Column 2, adding the words "No Requirement.".

52. In section 7.2.5.1, Council strikes out the words "No Requirement." under Class A in Column 2 and substitutes "A minimum of one space for each 4000 m^2 of gross floor area.".

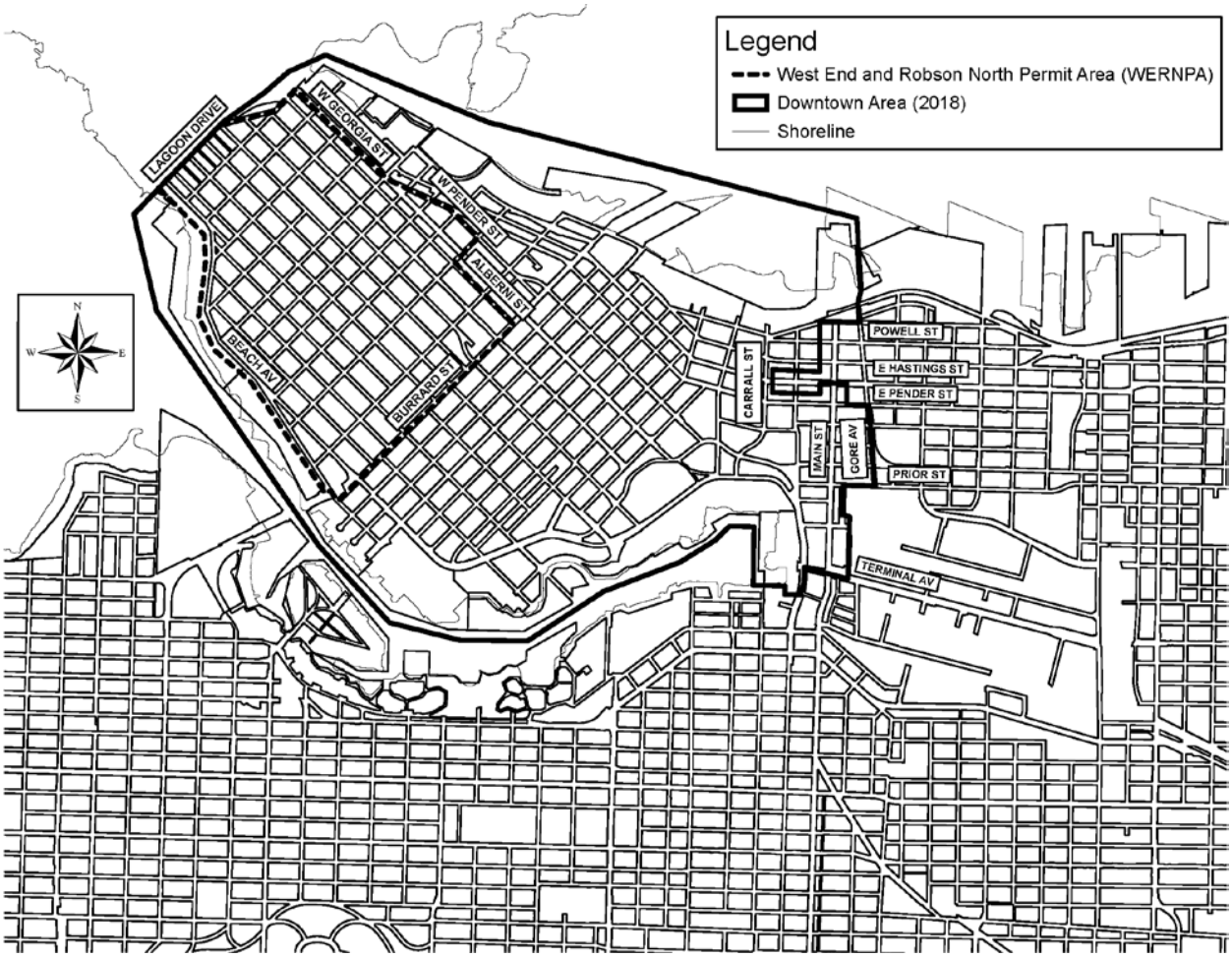
53. In section 7.3.2, Council:

(a) strikes the words "The minimum width of spaces must be 2.5 metres, the minimum vertical clearance of spaces must be 2.0 meters" at the beginning of the section and substitutes "Except for the first Class A passenger space for any site, which must be a minimum width of 4 m with a minimum vertical clearance of 2.3 m, the minimum width of spaces must be 2.5 m and the minimum vertical clearance of spaces must be 2.0 m,"; and

(b) strikes the words "and the minimum length of spaces" and substitutes "and the minimum length of all spaces, including the first Class A passenger space,".

*****[Schedule A]

Downtown Map 2B



Parking By-law Updates to Achieve Transportation 2040 Actions - Technical Rationale

Background

In general, the Parking By-law prescribes rates at which parking or loading spaces are required for different land uses. The rates are presented in terms of variables that influence the demand for parking, such as retail gross floor areas, or the number and size of residential units. Because some areas of the City have different characteristics, for example in terms of observed parking demand, feasibility of parking provision, heritage resources, and accessibility of public transportation or neighborhood amenities, several parts of the Parking By-law provide specific rates for different areas of the City, such as the Downtown or Broadway Corridor.

In addition to prescribing rates for parking supply, the Parking By-law contains standards regulating the location, access, and design of parking spaces. The Parking By-law also provides for Payment-in-Lieu, in which a sum of money is provided to the City instead of construction of parking spaces.

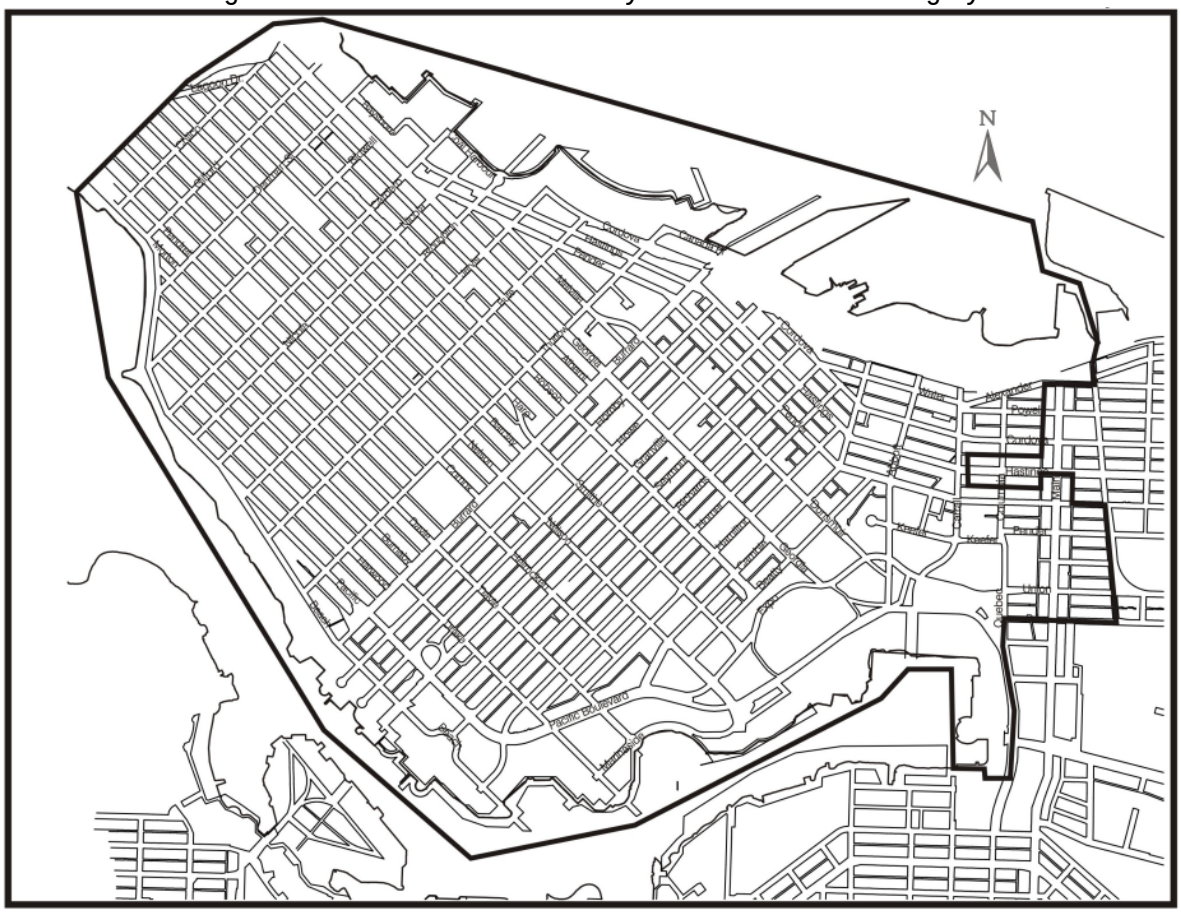
A number of supporting bulletins and documents, which do not form part of the By-law, guide its application. These supporting documents include guidelines for Shared Vehicles, Public Bike Share, as well as additional design guidelines for the provision of off-street parking, loading, and bicycle parking facilities.

The City's transportation network, and the choices people make in how to get around are complex, with different components relying on one-another. The package of changes proposed work together to respond to the broad transportation needs of new development and long term changes in mobility.

The following discussion provides evidence and rationale for proposed changes in the Council Report, Parking By-law Updates to Achieve Transportation 2040 Actions.

The proposed changes can be divided into three areas; Downtown policy changes, City-wide policy changes, and administrative changes. In the Parking By-law, the Downtown is defined as shown on the following map, **Figure 1**.

Figure 1 – Downtown as Currently Defined in the Parking By-law



Downtown Specific Changes

Elimination of Vehicle Parking Requirements within the Downtown

Transportation 2040 provides direction to eliminate minimum vehicle parking requirements Downtown, enabling new buildings to build as much[5] or as little parking as they wish. Policies like this are in place in Downtown Seattle, Portland, Austin, Pittsburgh, Baltimore and Detroit, among other cities. Downtown Vancouver offers very high levels of access to transit, shared vehicles, district parking resources, and bike share, as well as local services and recreation opportunities, which supports elimination of minimum parking requirements. Potential changes to the mobility landscape in the region, such as the introduction of ride-sharing services and mobility pricing, may also drive significant reductions to parking demand Downtown.

Non Residential Parking

For non-residential developments, elimination of minimum parking requirements is recommended throughout the Downtown, with the exception of requirements for accessibility spaces in order to support the needs of persons with disabilities.

Based on current parking provisions in new development, staff expect that the majority of developments will continue to provide parking based on market needs, although at a rate lower than what is provided today. However, an assessment was needed to determine the strength of the district parking supply in the Downtown as well as current demand for parking related to commercial developments.

A commuter mode share survey[6] of 445 workers was completed to understand travel patterns of those working in Downtown Vancouver. Driving mode share for Downtown commuters requiring parking was 32 percent.

In order to quantify the district (public) parking supply, a study was conducted to update comprehensive inventory information from 2008. Reviews of new development since 2008 were undertaken alongside occupancy counts for a subset of parking areas to quantify overall demand, including spaces used by shared vehicles. Based on this assessment, a current supply of approximately 33,000 parking spaces exists in the Downtown. The observed occupancy, based on a sample of 14,000 spaces, was 61 percent. This indicated an approximate free supply of 7900 based on a working maximum occupancy of 85 percent.

Compared to the 2008 study, total parking supply has decreased by approximately six (6) percent (about 2,100 spaces from a previous total of 35,100 spaces) over ten years. During this time occupancy has decreased by 6 percent from the previous count of 67 percent. This is despite significant amounts of new development and employment growth in the downtown over the past ten years.

[5] Subject to maximum allowable parking provisions.
[6] Refer to Appendix D for survey details

With nearly 1/3 of commuters to downtown requiring parking, demand for parking is expected to remain. However, data on parking supply and occupancy provide confidence that sufficient parking capacity exists to support the elimination of minimum non-residential parking requirements in the Downtown.

Residential Parking

For residential development, elimination of minimum parking is recommended throughout the Downtown with the exception of the West End and Robson North Residential Permit Parking Areas. Similar to the non-residential recommendation, staff recommend maintaining the existing rate for accessibility parking spaces to support persons with disabilities.

Downtown strata residential developments approved over the past three years provide approximately 1.16 spaces per unit, exceeding the current parking minimum by approximately 80 percent. Based on this observation, staff expect strata housing to continue to provide parking despite the elimination of minimum requirements. In the future, maximum parking allowances should be explored to reduce the potential for excessive parking supply.

Rental housing developments in the Downtown currently provide 0.53 spaces per unit; this is approximately 10 percent above current By-law requirements. In about half of new rental developments parking is provided below or just at minimum requirements due to relaxations in response to hardship conditions. Staff expect some rental developments to provide little or zero parking beyond the required accessibility spaces and new requirements for passenger loading spaces. Eliminating parking for rental and social housing development is in-line with motions passed by the Renters Advisory Council Committee and supports the creation of new rental and social housing opportunities.

A consultant memo providing additional information on completed and occupied zero parking developments in Canada is included as part of the consultant studies in **Appendix D**. The results indicate that while buildings may provide zero parking, some parking demand remains. In other cities, alternative parking may be found on-street or through district parking. The consultant recommendations include requirements for TDM plans for all developments in the Downtown, which are intended to reduce parking demand by providing greater access to alternative modes of transportation. Additionally, existing and new district parking supply can absorb new demand as discussed in reference to non-residential parking.

Long-term experience in Seattle with zero minimum residential parking requirements indicates that approximately 30 percent of residential developments will elect to provide zero parking. Typically, rental buildings elect to provide less parking than strata buildings. With the proposed recommendations, which include requirements for accessible parking, and passenger pick-up/drop-off spaces, developments may be more likely to provide some residential parking due to floor plate efficiencies.

The West End and Robson North Residential Permit Parking Areas have been excluded to allow for further advancement in on-street parking management tools needed to address oversubscription to the residential permit parking program. Measures to

resolve on-street parking congestion have been implemented as part of the West End Parking Strategy, approved by Council in 2017. As this strategy is implemented, it is anticipated that residential minimums in the West End and Robson North Residential Permit Parking Areas can be removed in the future. Other areas of the Downtown do not have residential parking on-street due to metering and time limits, therefore the potential for spillover impacts on the curbside are mitigated.

The recommendations do not require Social housing within the West End and Robson North Residential Permit Areas to provide parking. This is supported by observed lower vehicle ownership rates, resulting in less likelihood of spillover impacts.

In order to improve accessibility to development sites in light of potential low or zero parking developments, further actions are proposed to support elimination of parking minimums. Actions that support the elimination of parking minimums within the Downtown are discussed later in this appendix and include:

- New requirements for passenger pick-up/drop-off spaces
- Increased bicycle parking requirements
- Requirements for Transportation Demand Management plans in the Downtown

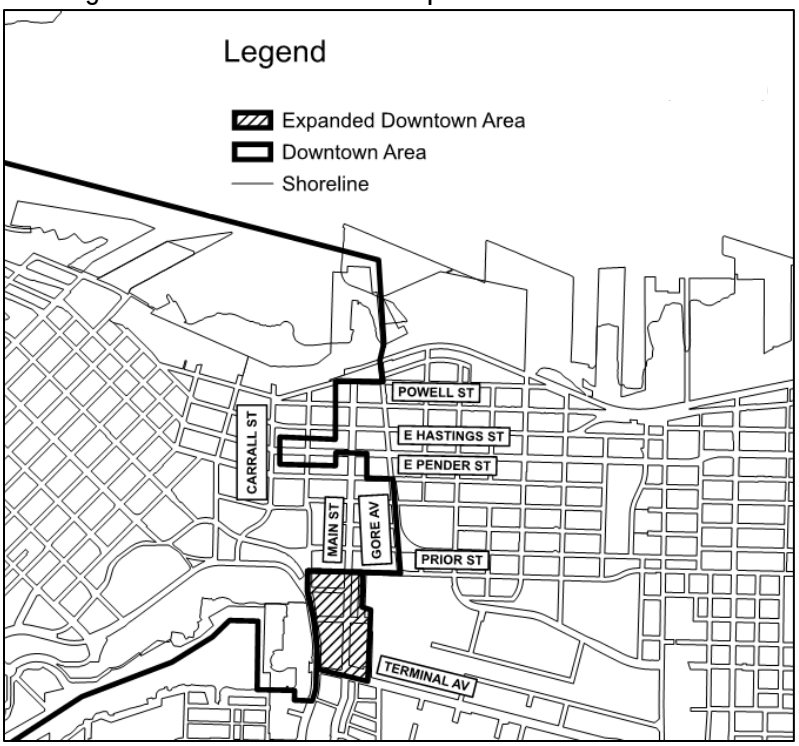
Revision of Downtown Boundaries

The current southeast extents of the Downtown boundary are Quebec Street and Prior Street. This configuration results in an area of the City bounded by Quebec Street, Prior Street, Station Street and Terminal Avenue which does not fall under the Downtown and is subject to the City-wide parking rates. The current zones applicable for this area are CD1- (256), CD-1 (432) and FC-1. The FC-1 zone does not provide district specific parking standards.

This is a highly accessible location containing a SkyTrain station and functions similarly to the rest of the Downtown. It is surrounded by the Downtown, the SEFC ODP, future St. Paul's hospital site, and other large sites for which specific policies are in development, or have been developed that encourage reduced parking provisions. Furthermore, recent development applications within this area proposing the Downtown parking rates have been accepted by the Director of Planning. As such, it is recommended this area be included as part of the Downtown.

Figure 2 below indicates the changes recommended.

Figure 2 – Recommended Expanded Downtown Area



City-Wide Changes

These changes apply to the entire City, including the Downtown. In some cases, policies relating to the Downtown are slightly different.

Increase Passenger Loading Requirements

Passenger loading zones are currently required only for medical uses, supportive housing and hotels. However, reallocation of curb space for transit lanes, bicycle facilities, and wider sidewalks can reduce space available on-street for short-term parking and passenger loading in some locations. In addition, shared vehicles, ride-hailing services, and an aging population create additional needs for flexible, short-term spaces.

In order to support actions in Transportation 2040 that consider changes to curbside use, staff recommend the provision of passenger loading spaces in multi-family residential, retail and office buildings. The provision of these spaces improves convenience for residents and visitors, and supports persons with disabilities and seniors by providing more convenient places for pick-up/drop-off. In order to support the ease of use of these passenger loading spaces, the first passenger loading space is to be sized as an accessible parking space (4.0m width 2.3m height). The width and vertical clearance of passenger loading spaces has been slightly increased to 2.9m and 2.3m respectively, to better accommodate all the types of activities expected. Class A Passenger Loading spaces are to be conveniently located to ensure usability.

It is recommended that Class A Passenger Loading spaces be required for:

- One (1) space for residential uses containing 50 or more units, plus one (1) additional space for each 150 units over 125 units
- One (1) space for retail and similar uses with over 2,000 m^2 of gross floor area, plus one (1) additional space for each 4,000m^2 of gross floor area over 4,000 m^2
- One (1) space for office uses with over 5,000 m^2 of gross floor area, plus one (1) additional space for each 10,000 m^2 of gross floor area over 10,000 m^2

The required number of Class A passenger loading spaces increases for larger developments based on the additional demand generated. For office and retail development, these requirements are based on estimated needs for pick-up and drop-off at one passenger loading space for each 150 person trips a development generates in a peak hour. For residential development, with more diverse types of needs and higher proportions of seniors and persons with disabilities, the requirement is based on one passenger loading space for each 75 person trips a development generates in a peak hour, but with a reduced threshold triggering the first passenger loading space. As this is a new requirement, the City will be monitoring usage to ensure future requirements continue to be performance-based.

Visitor Parking for Vehicles in Residential Developments

In response to the same emerging challenges as passenger loading, the provision of visitor parking spaces for residential developments helps improve convenience and access for visitors, service providers and care givers while also reducing demand for on-street parking. Visitor parking is also a way the City can support the needs of seniors and persons with disabilities who may or may not have a Social Planning and Research Council of British Columbia (SPARC) parking permit.

Staff recommend that visitor parking be required on all new residential developments, including social and supportive housing, at a minimum of 0.05 and a maximum of 0.1 spaces per unit. This would replace the current requirements for visitor parking in residential developments where they exist in the By-law today.

This rate of provision is 33 percent lower than the 0.075 spaces per unit that is currently required for secure market rental developments. The new requirement reflects a desire to reduce reliance on motor vehicles for all forms of development while also responding to new requirements for passenger pick-up drop-off spaces which serves complementary functions.

In areas where no minimum residential parking requirement exists or is proposed, the minimum visitor parking requirement is based on a percentage of total spaces provided, instead of a requirement per unit. This means that visitor parking is only required if a development chooses to construct residential parking. However, since areas that support zero parking requirements contain metered street parking and public off-street parking, visitors can continue to be supported with their parking needs.

Adjust Social Housing Parking Requirements

Current social housing parking rates in the Parking By-law are provided only for seniors and social housing for families. Considering this does not capture the many forms of social and supportive housing built in the City, Engineering reviews parking rates for social housing on a site-by-site basis. Social housing projects have a range of unit types including units rented at the Housing Income Limits (HILs) rates set by the province, as well as low end of market

units. A data driven parking rate for future projects is recommended to provide certainty and meet the needs of future residents.

Surveys were conducted with managers of 13 built projects in Vancouver, representing 423 units, to assess parking rates alongside a survey opportunity for residents to self-report parking requirements. Requests for feedback on existing parking were also sent to non-profit housing operators who work with the City. The results of the surveys indicated that for 100 percent subsidized social housing, approximately 0.26 parking spaces per unit were observed with additional demand on-street. Self-reported parking requirements were significantly higher at 0.65 vehicles per unit. Issues with bicycle parking congestion were also noted.

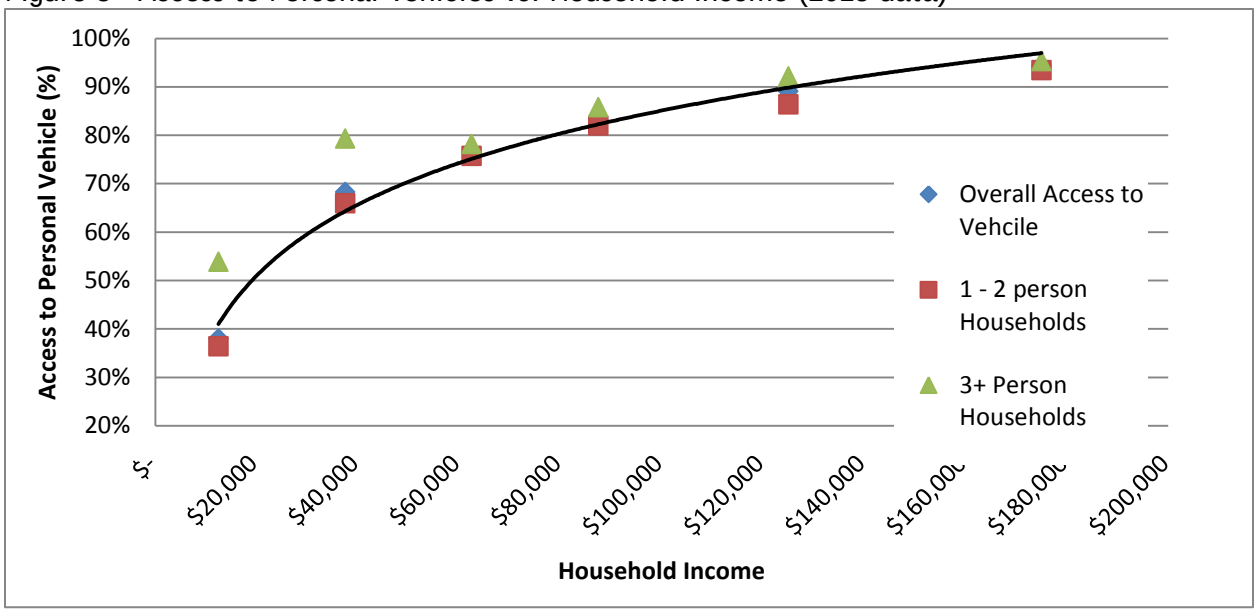
Responses from non-profit operators of City-owned social housing, which contain a blend of HILs units and low end of market units representing 168 units, indicated that there were waiting lists for parking, especially for units for families. Challenges with sufficient accessible parking spaces were also noted as well as bicycle parking that was well over capacity. These developments provided between 0.37 and 0.47 spaces per unit overall.

Parking requirements for social housing must balance the competing interests of providing sufficient parking to accommodate demand, while considering the benefits that reduced parking requirements could have for the feasibility of future projects and provision of more housing units.

It is recommended that parking requirements for units secured at HILs rates be assessed at a rate of 0.3 spaces per unit for studios and one-bedroom units, with 0.5 spaces required for two-bedroom and larger units. These rates are similar to recommended rates for social housing used in the past.

Units rented at low end of market rates should be assessed using the existing secured market rental rates. Data on access to personal vehicles in the City of Vancouver based on income levels indicates that vehicle ownership remains significant at modest incomes, especially for families, as shown in **Figure 3**.

Figure 3 – Access to Personal Vehicles vs. Household Income (2015 data)



The parking supply rates proposed may take advantage of substantial reductions for proximity to transit and provision of Transportation Demand Management measures outlined later in this report in order to improve project viability, with additional reductions available for rental and social housing.

Separate from social housing are shelter/supportive housing developments. Currently this land use is not listed in the Parking By-law. Surveys of three supportive housing developments were conducted, representing 424 units. Observed staff parking demand was 0.06 spaces per unit overall with very low resident demand noted. Based on these results, staff recommend provision of one (1) space per 15 units for supportive/transitional housing developments. Accessibility spaces should be included for residents.

Currently, the Moderate Income Rental Housing Pilot Program (MIRHPP) has applications in the pre-submission review stage. The policy associated with the MIRHPP program outlined incentives for projects located near transit in the form of further reductions to parking requirements beyond those available today. These provide for a 30 percent reduction in parking requirements for projects within two blocks of high quality transit compared to the baseline secure market rental rate. Some units within MIRHPP developments will likely be rented at rates eligible for social housing parking rates making them eligible for the new social housing rates.

In order to reduce potential impacts for these City-priority projects, staff recommend that applications for the MIRHPP program be assessed using the lower of either the current vehicle parking requirements of one (1) space per 180 m^2 for developments within two blocks of excellent transit, or the new recommended vehicle parking requirements. Other recommendations proposed in this update would apply to MIRHPP projects should their development application be received after the effective date of the recommendations.

Bicycle Parking Provisions

Class A Residential Bicycle Parking Requirements

The current standard for multi-family residential of 1.25 bicycle parking spaces per unit falls short of observed bicycle ownership rates in the City. This rate does not account for the fact that larger families in larger units tend to own more bicycles than smaller families in smaller units. Qualitative surveys about challenges with bicycle parking frequently cite insufficient parking capacity as a primary challenge. Inconvenience of bicycle parking also represents a key barrier to cycling.

Surveys of Vancouver households conducted in 2015 and 2018 revealed an average of approximately two (2) bicycles per household, as shown in **Table 1**.

Table 1 – Bicycle Ownership vs Unit Size (2018 Talk Vancouver Survey)

Unit Size	*Average*	*60th Percentile*
0 to 37 m^2	1.04	1.31
37 to 46m^2	1.25	1.57
46 to 55 m^2	1.16	1.44

56 to 74 m^2	1.49	1.81
74 to 92 m^2	2.11	2.49
93 to 130 m^2	2.19	2.59
130 to 167 m^2	2.43	2.83
167 m^2 or more	2.75	3.20
Overall	1.98	

Based on the data collected connecting bicycle ownership with dwelling unit size, an increased provision of bicycle parking is recommended, with consideration for unit size. The following numbers represent approximately the 60th percentile bicycle ownership rate for a simplified range of unit sizes.

- 1.5 spaces for each dwelling unit under 65 m^2
- 2.5 spaces for each dwelling unit over 65 m^2 and under 105 m^2
- Three (3) spaces for each dwelling unit over 105 m^2
- For seniors housing and single room accommodation, a rate of 0.75 spaces per unit is recommended.

With this updated provision of bicycle parking based on observed data, several district specific bicycle parking rates have been removed. Bicycle parking requirements related to lock-off units have also been eliminated since this is now addressed through unit size dependent parking rates.

In order to support the potential for long-term increases in bicycle ownership, additional work on retrofit parking is essential to allow for long-term increases in bicycle parking as mobility needs change. A robust retrofit program is also essential to improving bicycle parking in existing buildings which have inadequate facilities. This work would be undertaken separately from any updates to the Parking By-law.

Class A Non-Residential Bicycle Parking Requirements

Non-residential bicycle parking requirements vary by land use. For retail and service uses, as well as office uses, the existing rate provides for up to six- to eight-percent (6-8%) of employees to cycle to work. Currently, approximately 11 percent of Vancouver residents cycle to work in the Fall, with approximately 15 percent of residents cycling to work in the Summer months. Many workers in Vancouver commute from outside of the City of Vancouver. Surveys of Downtown workers indicate that nearly 10 percent of staff normally commute to work using a bicycle.

As part of this project, surveys of office and retail employers in the Downtown were conducted to determine commute-to-work mode share. In general, the observed mode share for cycling was lower than the reported rate for Vancouver residents, likely due to the fact that many workers in the Downtown commute from outside of the City of Vancouver.

In support of long term mode share targets, it is proposed that new retail and similar uses, as well as office uses provide sufficient bicycle parking to accommodate up to 15 percent of employees cycling to work.

For office uses, based on approximately one (1) employee per 25 m^2 of gross floor area, this requires one (1) space per 170 m^2. This represents a 190 percent increase in provision from the existing one (1) space per 500 m^2 of gross floor area.

For retail and service uses, based on approximately one (1) employee per 50 m^2 of gross floor area, a 15 percent cycling mode share requires one (1) space per 340m^2. This represents a 45 percent increase in provision from the existing one (1) space per 500m^2 of gross floor area.

Additionally, requirements for end-of-trip facilities including lockers, showers, changing areas and grooming stations for these land uses have been adjusted to account for the substantial increase in bicycle parking required for non-residential developments. The threshold below which end-of-trip facilities are not required has been raised in order to reduce requirements for small developments. Similarly, the number of additional facilities for larger developments has been reduced to prevent requirements for extremely large facilities on larger sites. Additionally, a distinction between office uses and retail/service uses has been created to account for the different arrival to work patters for these land uses and intensity of use of facilities.

Additional end-of-trip facility requirements are presented in **Table 2**.

Table 2 – Recommended End-of-Trip Facility Requirements

	Minimum Number Of:		
Use	***Shower***	***Wash Basins***	***Water Closet***
Office	1 shower for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50	1 wash basin for any development requiring between 5 and 10 Class A bicycle parking spaces, plus one for every additional 20 spaces up to 50 spaces and one for every 40 spaces above 50	1 water closer for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50
Retail and Service Uses	1 shower for any development requiring between 5 and 10 Class A bicycle spaces, plus one for every 40 spaces above 10	1 wash basin for any development requiring between 5 and 10 Class A bicycle parking spaces, plus one for every additional 20 spaces up to 50 spaces and one for every 40 spaces above 50	1 water closer for every 10 Class A bicycle spaces up to 50 spaces and one for every 20 spaces above 50

Class A Bicycle Parking Access

In order to provide additional flexibility in the provision of bicycle parking in new developments, a number of policy changes are recommended. Additional changes include:

- Requirements for a minimum of five (5) percent of bicycle parking spaces provided to accommodate non-standard bicycle such as recumbent, tandem, and cargo bikes, as well as trailers. This requires a larger space of 2.4 m x 0.9 m compared to

a typical 1.8 m x 0.6 m bicycle parking space, as well as a wider access aisle of 1.5 m.

- Requirements for automatic door openers on doors leading to and from bicycle parking. This formalizes a request that is typically included as part of the review process.

- Allowances for stacked bicycle parking at up to 60 percent of the provided spaces. This reduces the amount of space required for bicycle parking in a development and can improve accessibility to bicycle rooms. Approval of stacked bicycle parking would be subject to review of the proposed equipment by Engineering. Stacked bicycle parking is not considered appropriate for seniors housing which have a much lower bicycle parking requirement.

- Adjustment of maximums for vertical spaces to accommodate provision of stacked bicycle parking. A combined total of 60 percent of spaces may be vertical and stacked, with up to 30 percent of spaces being vertical. This maintains the current 30 percent maximum for vertical spaces, while avoiding potential issues with a high number of combined stacked and vertical spaces.

- Adjustment to and minimums for lockers to 10 percent of the total number of spaces. Currently 20 percent of spaces must be bicycle lockers however this is proposed to be reduced based on the increase in overall number of bicycle spaces required, and concerns with bicycle lockers being used for purposes other than bicycle storage.

Class B Bicycle Parking Requirements

Class B bicycle parking is provided for the benefit of visitors to buildings and are typically located outside, on private property, in the form of bike racks. Current Class B bike parking requirements are based on groupings of six (6) spaces which reflect the design of bike racks that prevailed at the time the bicycle parking section of the PBL was developed.

Modern short-term bike parking is often provided in the form of 'U' racks or similar, which can accommodate two (2) bicycles. It is recommended to adjust short-term bicycle parking provisions to be based on multiples of two (2) spaces. This will help to reduce requirements for small developments while increasing requirements for larger developments.

For multi-family residential uses, two (2) spaces should be required for any development with at least 20 dwelling units with an additional one (1) space for each 20 additional dwelling units. This is similar to the recommended visitor vehicle parking rates of about 0.05 spaces per unit.

Class B Bicycle Parking Access

In order to improve usability of Class B bicycle parking, increased spacing requirements and dimensions are recommended. Currently, Class B bicycle spaces are 0.3 m x 1.8 m. This is half the size of a Class A space and based on the assumption that high density bike racks provide a lower level of service.

It is recommended that the Class B bicycle parking space sizes be aligned with Class A bicycle parking sizes at 1.8 m x 0.6 m.

Payment-in-Lieu

Vancouver City Council accepts payment of money in lieu of parking spaces for sites that are unable to fulfil their obligation to provide parking spaces as per the Parking By-law. This policy is available to both residential and non-residential developments.

Under current Council policy, non-residential payment-in-lieu funds are directed to the Payment-in-Lieu Parking Reserve: Off-Street Parking. When replacement parking spaces are identified in a nearby City-owned parkade, staff report back to Council with a recommendation to assign spaces to the development. Once assigned, the funds are transferred to the Parking Site Reserve (PSR). The PSR was created by Council to fund the capital construction, maintenance, and rehabilitation of the City's parking facilities, and is primarily funded by EasyPark net revenues.

Residential payment-in-lieu of parking funds are directed to the Payment-in-Lieu Parking Reserve: Green Transportation. This account funds transportation infrastructure that supports walking, cycling, public transit or other alternative forms of transportation. Allocation of funds from the Green Transportation reserve to capital projects are considered and prioritized through the Capital Planning process.

Revisions to the Payment-in-Lieu policy are recommended:

1. The assignment of funds collected for payment-in-lieu to either the Off-Street Parking fund, or Green Transportation fund, is recommended to be assessed on a case-by-case basis rather than as an overarching policy. This would allow the specific needs of the neighborhoods in which a development is located to dictate the allocation, instead of land use. Future payment-in-lieu reports would include an assessment and recommendation of a fund which to allocate monies received.

2. Based on recent studies of the Mount Pleasant Industrial Area, Council has previously recommended that staff consider payment-in-lieu applications for sites within the Mount Pleasant Industrial Area, as defined in the Parking By-law. The recommended changes to the Parking By-law in the associated report formalize this direction. It is anticipated that funding received would be directed towards the City-funded replacement parking at 2221 Main Street, currently under development.

Transportation Demand Management

Background

Transportation Demand Management (TDM) may be defined as a set of strategies aimed at maximizing the utility of sustainable transportation choices. TDM is used to manage traffic and parking demands, and enhance the effectiveness of non-personal vehicle transportation. Generally, the goal of TDM plans or programs focus on enhancing traveler mobility to reduce overall vehicle trips and encourage more sustainable modes of travel. Under a more holistic sense, TDM measures aim to improve not only traffic congestion, but broadly improve

sustainability and livability by influencing economic development, affordability, climate change, and active aging.

The existing Parking By-law includes TDM measures, such as the provision of shared vehicles and additional bicycle parking, to reduce vehicle parking requirements. However, many other strategies exist that can reduce parking demand and encourage more sustainable travel choices. TDM provides an opportunity for the City to accept lower parking provisions while still ensuring the needs of residents, visitors, and employees are met. TDM measures can accelerate changes to travel behaviours by incentivising individuals to choose non-personal vehicle travel.

To support many of the actions in this phase of the Parking By-law updates, a comprehensive TDM Program is required. Being a new program for the City, research was conducted into best practices of the framework of various TDM program practices. This section discusses the overall goals of TDM, and a review of best practices leading to the creation of a TDM Program appropriate for the City of Vancouver.

TDM is most commonly associated with employer-based measures, for example, transit benefits, carpooling, telecommuting, and flexible work hours, to reduce the vehicle trips immediately associated with the employment area. There are many examples of proactive TDM initiatives currently being implemented by municipalities and regions (e.g. education and awareness campaigns, active transportation master plans, transit-oriented development policies, congestion pricing, etc.). For the purposes of this project, this report focuses solely on TDM measures and programs which can be implemented as part of the development approvals process, and focuses on efforts to reduce vehicle parking requirements.

Studies have shown that areas with high parking supply are associated with higher overall vehicular traffic than areas with less parking, and that abundant, free parking encourages driving and helps create dispersed, automobile-dependent land use patterns[7]. By encouraging sustainable travel, providing travellers with the incentives and tools to support non-auto modes, and disincentives to using personal vehicles, a reduction in overall vehicle trips can be achieved, and subsequently a reduction in the demand for and need to supply dedicated off-street parking at origins and destinations.

Quantifying the impacts of specific TDM measures, whether it be in terms of reduced parking demand or other transportation network impacts, is challenging. The most effective TDM programs are generally comprised of a package of several measures, resulting in a cumulative effect on travel and parking demand. As such, there is limited literature available which quantify the efficacy of specific TDM measures concisely and succinctly[8]. **Table 3**, **Table 4** and **Table 5** summarize some known effects of TDM programs on reduction in vehicle trip and parking requirements.

[7] Litman, Todd. Parking Management, Strategies, Evaluation and Planning. Victoria Transport Policy Institute, 2016 www.vtpi.org/park_man.pdf.
[8] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 19, Employer and Institutional TDM Strategies. Transportation Research Board, 2010, pp. 19–7 – 19-9, www.nap.edu/read/14393/chapter/1.

Table 3 - National Evidence on TDM Program Impacts on Vehicle Trip Reduction[9]
(Source: Cambridge Systematics, 2010)

TDM Program or Strategy	High Transit	Moderate Transit	Low Transit
Support, Promotion, Information	3-5%	1-3%	<1%
Alternative Commute Services	5-10%	5-10%	1-3%
Financial Incentives	10-20%	5-15%	1-5%
Combined Strategies			
With Free Parking	15-20%	10-15%	3-7%
With Paid Parking	25-30%	15-20%	N/A

Table 4 - Impact of Selected Employer-Based TDM Strategies[10]

Strategy	Details	Employee Vehicle Trip Reduction Impact
Parking Charges	Previously free parking	20%-30%
Information Alone	Information on available SOV alternatives	1.4%
Services Alone	Ridesharing, shuttles, guaranteed ride home	8.5%
Monetary Incentives Alone	Subsidies for carpool, vanpool, transit	8-18%
Services + Monetary Incentives	Example: transit voucher and guaranteed ride home	24.5%
Cash Out	Cash benefit offered in lieu of accepting free parking	17%

Table 5 – Parking Management Strategies and Typical Reduction in Parking Requirements[11]

Strategy	Description	Typical Reduction	Traffic Reduction
Walking and Cycling Improvements	Improve walking and cycling conditions to expand the range of destinations serviced by a parking facility.	5-15%	✓
Parking Pricing	Charge motorists directly and efficiently for using parking facilities.	10-30%	✓
Parking Maximums	Establish maximum parking standards.	10-30%	
Financial Incentives	Provide financial incentives to shift mode, such as cash out.	10-30%	✓
Bicycle Facilities	Provide bicycle storage and changing facilities.	5-15%	✓
Improve User Information and Marketing	Provide convenient and accurate information on parking availability and price, using maps, signs, brochures and electronic communication.	5-15%	✓

[9] Integrating Demand Management into the Transportation Planning Process: A Desk Reference. U.S. Department of Transportation Federal Highway Administration, 2012, p. 160, Integrating Demand Management into the Transportation Planning Process: A Desk Reference. https://ops.fhwa.dot.gov/publications/fhwahop12035/chap10.htm
[10] Transportation Demand Management, State of Practice. Smart Growth America, 2013, p. 15, Transportation Demand Management, State of Practice. https://smartgrowthamerica.org/app/legacy/documents/state-of-the-practice-tdm.pdf
[11] Adapted from: "Parking Management, Strategies for More Efficient Use of Parking Resources." Victoria Transport Institute - Online TDM Encyclopedia, www.vtpi.org/tdm/tdm28.htm.

Existing City of Vancouver TDM Opportunities

Parking By-law

The City of Vancouver Parking By-law currently allows provision of TDM measures in some forms of development, in exchange for relaxations to typical off-street parking requirements. A summary of TDM measures and their applicable relaxations is provided below:

- **Shared Vehicles**
  Section 3.2.2 generally allows for the substitution of shared vehicles and shared vehicle parking spaces for required parking spaces at residential developments at a 1:5 ratio, at the discretion of the Director of Planning and General Manager of Engineering Services

- **Transit Proximity**
  Section 4.5.B1 allows for a 20% reduction in parking supply requirements for developments located within two blocks of an intersection of two distinct bus routes that run north-south and east-west, or within the Metro Core (area of the City bounded by Burrard Street, 16th Avenue, and Clark Drive). This relaxation applies only to secured market rental housing developments.

- **Payment-in-Lieu (PIL)**
  Under Section 4.12 of the Parking By-law, development proposals within a specified PIL-eligible area may submit an application together with a fee, to the Director of Planning, for a waiver of parking requirements. The current PIL fees are set at $20,200 per parking space to be waived. Typically, provision of PIL is considered in hardship cases where minimum parking requirements cannot physically be met, due to site constraints.

  In and of itself, provision of PIL is not necessarily considered TDM measure, as traditionally the funds acquired go towards provision of new or maintenance of existing district parking spaces. However, there may be opportunities for PIL funding to be directed towards new and/or improved sustainable transportation infrastructure, such as walking and cycling facilities, which would contribute to improved modal splits.

- **Parking Maximums**
  In general, the Parking By-law prescribes minimum rates at which parking spaces are required for different land uses. However, some land uses include maximum allowable amounts of parking. Requirements for parking maximums prescribed in the By-law include:
  - Section 4.1.7(b) - For non-residential uses in the Mount Pleasant and Central Broadway areas, not more than one (1) space for each 40 m^2 of gross floor area,
  - Section 4.3.1 – All non-residential uses (except Hotel) in the Downtown area shall provide a maximum of one (1) parking space for each 115 m^2 of gross floor area,
  - Section 4.3.2 – Hotels Downtown shall provide a maximum of 0.5 parking spaces for every sleeping or housekeeping unit, and a maximum of 1.1 parking spaces shall be provided for each 40 m^2 of floor area used for meeting room of ballroom assembly purposes.

- **Increased Bicycle Parking**
  Under Section 6.2A, the provision of additional Class A bicycle parking spaces above and beyond the By-law requirement allows for a vehicle parking relaxation at a five-to-one (5:1) ratio for developments of non-residential uses, with maximum restrictions.

Rezoning Policy for Sustainable Large Developments

As part of the their application, the City requires defined plans or studies of the developer responding to higher sustainability standards as an essential component in the rezoning of large development sites. One such plan is the Green Mobility Plan, which is required to provide acceptable TDM measures and strategies which prioritize more sustainable travel to and from the site. The primary deliverable is a detailed plan that assesses the site's transportation infrastructure and programming.

Under the City's Rezoning Policy for Sustainable Large Developments[12], historically-accepted TDM strategies have included:

- transit pass subsidies
- increased bicycle parking in all types of development
- bicycle repair and maintenance facilities
- transportation information packages

The primary purpose of the Green Mobility Plan is to identify and evaluate acceptable TDM opportunities to support sustainable transportation choices above and beyond minimum By-law requirements and should illustrate how the recommended measured intend to meet the City's transportation goals and principles from T2040. While not necessarily intended to facilitate a parking relaxation, the Green Mobility Plans are considered if a parking relaxation is being sought by a developer.

The City currently does not formally require TDM plans as part of the development application process for sites that do not meet the large development criteria.

Review of TDM Practices

Zoning and Parking By-laws

Similarly, many other municipalities include TDM-supportive parking policies within their zoning By-laws to provide developers an opportunity to relax their parking requirements. **Table 6** summarizes common TDM measures included in parking and zoning By-laws among a sampling of municipalities within the region.

Table 6 - Sampling of TDM Measures in Other Metro Vancouver By-laws

Municipality	TDM Measure	By-law Summary
City of Burnaby	Payment-in-Lieu	SCHEDULE NO. VIII OFF-STREET PARKING 800.4 (34) For Commercial uses on Hastings Street between Boundary Road and Delta Avenue, where the use is located within 1 km of an off-street parking facility owned and operated by the City, the owner may elect to pay $8,000 for each required parking space not provided.

[12] The policy states that development proposals put forward though rezoning applications meeting the following criteria are considered "large developments": involve a land parcel or parcels having a total site size of 8,000 m2 (1.98 acres) or more; or, contain 45,000 m2 (484,375 sq. ft.) or more of new development floor area

City of Coquitlam	Transit Proximity Payment-in-Lieu TDM Plans	Zoning By-law Section 713 Parking reductions are permitted in areas near the SkyTrain stations if TDM measures (first 5%) and payment-in-lieu (next 5% or 10%) are provided by the developer.
City of Richmond	Shared Use Parking TDM Plans	Zoning By-law 8500, Section 7 Shared on-site parking areas for two or more uses may be permitted where the maximum demand of such parking areas by the individual uses occurs at different periods of the day; or the maximum demand of such parking areas is substantiated by a parking study. On-site parking requirements may be reduced by up to a maximum of 10% where the City implements transportation demand management measures, including the use of car co-operatives, transit passes, private shuttles, carpools or enhanced end-of-trip cycling facilities; and parking requirements are substantiated by a parking study.
City of Surrey	Criteria-Based Rates Shared Use Parking	SURREY ZONING BY-LAW 12000 Part 5 C Parking requirements may generally be reduced by 20% in City Centre, except for the following uses: Care Facilities; Community Services; and Offices Shared on-site parking areas for two or more uses may be permitted where the maximum demand of such parking areas by the individual uses occurs at different periods of the day, up to a maximum of 25% shared spaces.

TDM Plans and Programs

While the City of Vancouver does not currently require TDM plans for all developments at the rezoning or development review level, save for those who meet the size requirements for the Rezoning Policy for Sustainable Large Developments, other municipalities have successfully implemented policy which require developers to provide TDM plans at various scales of development to limit auto-use. The plans are generally required as part of overarching policy to encourage sustainable modes of travel and not necessarily to specifically reduce parking requirements. TDM plans typically range in scale commensurate with the scale of development.

This section discusses various styles of existing and recommended practices which implement TDM as part of the development approvals process. This is by no means a comprehensive listing of TDM practices in use, but is intended to illustrate the varying scale of intensity of TDM plan requirements in practice throughout the industry.

TDM Supportive Guidelines for Development Approvals (2008), Association for Commuter Transportation of Canada

In 2008, the Association for Commuter Transportation of Canada (ACT Canada) released the "TDM Supportive Guidelines for Development Approvals: A Handbook for Professionals." The report, completed by BA Consulting Group, conducted a comprehensive review of how TDM is applied in the new development approval process in Canada. The final product established recommended guidelines and approaches for Canadian municipalities to integrate TDM into the land development process. Key conclusions and recommendations applicable to the City of Vancouver context include:

- In the categories defined by the report, the City of Vancouver is considered a Class 3 (high density / heavy congestion) urban context, the highest class defined in the report.

- Develop and implement an aggressive TDM-checklist as an evaluation tool for new developments, to help staff determine the TDM-effectiveness of a development. Developments with low TDM scores can be encouraged to increase their scores through the addition of other TDM elements.

- Require a 'TDM Aggressive' checklist for any mid-to-high density residential apartment use having more than 250 units.

- Require TDM plans for any institutional uses such as hospitals and universities with set trip reduction goals that commit to a monitoring program to evaluate success.

- Require TDM plans for any commercial office/employment development that provides more than 150 parking spaces with set trip reduction goals that commits to a monitoring program to evaluate compliance.

- In the case of large developments and institutions in a Class 3 urban context, municipalities should supplement the proposed TDM strategies by either reducing the parking supply for a development below the zoning By-law level, implementing parking maximums, or by enforcing a cash-in-lieu policy.

TDM Plan Guidelines for New Developments in Transit Oriented Development Strategy (TDS) Core and Shoulder Areas, City of Coquitlam, BC

In the City of Coquitlam, the requirement for development TDM plans is triggered solely by developer request for off-street parking relaxations. The Zoning By-law permits reductions in the minimum off-street parking requirements with provision of a TDM plan (up to five (5) percent of the minimum requirement). The TDM program is only applicable to developments located within the Evergreen Line Core and Shoulder Station Areas.

The total value of all TDM measures, exclusive of any applicable taxes, is required to be equivalent to the number of stalls not being provided multiplied by $20,000, which is calculated at half the average cost of an underground parking stall. This $20,000 parking space value is also consistent with the City of Coquitlam's payment-in-lieu amount for each required parking stall not provided.

To assist them in providing an acceptable suite of measures, developers may choose a collection of measures from a pre-defined list in consultation with City staff that best fit the intended land uses and site context, including:

- Car-sharing vehicle, memberships and initial driving credits
- Public transit credits
- Bicycle repair/maintenance station
- Real-time information screen for sustainable travel modes
- Transportation options move-in package and personal travel planning (for residential developments)
- End-of-trip cycling facility (for commercial developments only)
- Contributions to TDM monitoring fund

Other TDM measures not in this list may be proposed by the developer for consideration, but must demonstrate a clear link to encouraging a switch from single occupancy vehicle travel to non-motorized modes such as public transit, cycling and walking.

SHIFT: Transportation Demand Management Program (2016), City of San Francisco, CA

The City of San Francisco recently adopted the "SHIFT" program in 2016. The intent is to shift more typical car dependent travel practices by providing a series of development-focused TDM measures. The primary purpose of the program is to reduce vehicle miles traveled (VMT) generated by new development projects and is designed to work with developers to provide more on-site amenities that will encourage smarter travel options so people can get around more easily without a car.

The SHIFT program requires developers to provide a TDM plan from a defined "menu" of options, each assigned a specific point-value. The detail and scale of the TDM plan is commensurate with the size of development and the required number of accessory parking spaces. Generally, developers are required to meet a certain number of points, which is determined as a function of the development's parking requirements. The more parking proposed for a land use, the higher the target for the development project to achieve.

The TDM Program applies to nearly all types of new development and changes of use. However, the following land uses are exempt:

- Residential properties with nine units or less;
- Non-residential developments less than 10,000 ft^2;
- 100 percent affordable housing projects; and
- Parking garages and parking lots.

Non-residential developments with 20 or more off-street vehicular spaces are required to submit a Large Project Parking and TDM (PTDM) Plan which includes a commitment to reducing its mode share to 10 percent below the census average. The Large Project PTDM requires annual monitoring and reporting. Non-residential projects with five (5) to 19 off-street vehicular parking spaces, must only select three measures from the menu. These smaller projects are not subject to performance targets of reporting requirements.

TDM for Development Guidelines (2015), City of Hamilton, ON

The City of Hamilton has developed the TDM for Development document, as a guideline for developers and staff to apply consistent integration of TDM initiatives into the development approvals process for all applications. During the development approvals process, the City may allow reduced parking requirements through minor variances to zoning and their existing cash-in-lieu of parking program, where it is deemed feasible and appropriate.

The guidelines identify specific report requirements and provide lists of recommended TDM measures by land use, for the applicant's consideration. The scope of the TDM report is determined by City staff based on the locations, context, and characteristics of the development:

- **TDM Memo**
  Developments which generate 20-50 new peak hour trips require a short one- to two-page document outlining existing and proposed TDM measures to be implemented on the site.

- **Standard TDM Report**
  Standard TDM reports are required for developments which generate more than 50 peak hour trips; developments located in a special study area, or which require special

attention to their impact on the surrounding community; or where the application is seeking a reduction from the parking requirements in the zoning By-law. The report must include existing and proposed TDM opportunities, and resulting projected reductions in trips.

- **Detailed TDM Report**
  Detailed TDM reports are required for large developments (e.g. new subdivisions, large shopping or office centres, schools), or where the application is seeking a significant reduction from the parking requirements in the zoning By-law. The report must include existing and proposed TDM opportunities, resulting projected reduction in vehicle trips, and proposed steps towards future monitoring and evaluation.

Following their submission, City staff evaluate the TDM reports using a standard checklist and identify additional TDM opportunities that developers may wish to explore.

Land Use and Circulation Element (LUCE) "No Net New Trips", City of Santa Monica, USA

The City of Santa Monica's 2010 Land Use and Circulation Element (LUCE) commits to no net increase in vehicle trips in the evening peak period. The LUCE requires implementation of aggressive TDM programs including trips reduction measures and incentivizing alternative modes of travel.

Chapter 9.53 of Santa Monica's Zoning Ordinance details developer and employer TDM requirements in support of the "No Net New Trips" goal. Developer TDM plans are required for developers of projects that result in the construction of:

- **Non-residential projects:** 7,500 ft^2 or more
- **Residential projects:** 16 or more residential units
- **Mixed-use projects:** 16 or more residential units with any associated non-residential floor area or 7,500 ft^2 or more of non-residential floor area with any number of residential units

Additionally, the City required an Annual Developer TDM Fee for administration and enforcement of TDM plans.

Developer TDM plan requirements are aggressive; as an example non-residential projects that result in the addition of 7,500 square feet of floor area or more must provide, at minimum, the following TDM measures:

- New employee orientation
- Parking cash-out
- Incentives for employees that live within ½ mile of workplace
- Information regarding availability of bike commute training offered either on-site or by a third party
- Free on-site shared bicycles intended for employee use during the work day
- Commuter matching services for all employees on an annual basis, and for all new employees upon hiring
- Information regarding benefits of: Compressed Work Schedule, Flex-Time Schedule, Telecommuting, and Guaranteed Ride Home
- Transportation allowance equal to at least 50 percent of the current cost of a monthly regional transit pass of the employee's choice. An employee accepting the Transportation Allowance shall be required to execute a contract agreeing that said

employee will not utilize a single occupancy vehicle for the majority of their daily commute distance more than five business days per month.

- Customer and visitor incentives for uses with significant numbers of customers and visitors such as retail, food service, hospitality, and medical office:
    - Customer incentive program
    - Public directions prioritizing rideshare modes
    - Special event rideshare services
    - Shared ride service
- Any additional measures that would result in the developer achieving the applicable Average Vehicle Ridership (AVR) Target.
- Active participation in the formation and ongoing activities of a Transportation Management Organization (TMO).

Similarly, Employers are required to submit an Emission Reduction Plan (ERP) or Worksite Transportation Plan (WTP) and are also subject to Employer Transportation Fees. Employer ERPs or WTPs submitted subsequent to approved Developer TDM plans are required to be consistent with the approved plans.

TransLink TravelSmart Program

TransLink's TravelSmart Program is a regional TDM program which provides various customer groups in the Metro Vancouver area with a variety of tools to promote sustainable travel options at their site. While the program is not implemented directly through a land development approvals process, TravelSmart Programs are characterized under categories aligning with common land uses and may provide a benefit to developers requiring assistance developing appropriate TDM plans. Relevant categories include:

- **Businesses**
  TravelSmart assists businesses manage their site's parking demand and achieve corporate social responsibility goals. TravelSmart provides services such as: site audit and assessment, measurement tool for employee mode choice and level of interest in trying something new, employee engagement opportunities, online tracker for company campaigns, on-going support, resource materials, knowledge network of best practices and lessons learned from others

- **Schools**
  TravelSmart provides tools to inform students, teachers, and parents of common transportation problems and the range of solutions, transportation mode options, and health and safety issues related to transportation. The program includes workshops, advice on how to launch a school transportation campaign, and child-friendly activities to promote sustainable travel.

Leadership in Energy and Environmental Design (LEED) v4 for Building Design and Construction, Canada Green Building Council (CaGBC)

The LEED program provides independent, third-party verification and accreditation to projects achieving high performance in environmentally responsible construction. While the LEED program is not specifically intended to serve as a basis for TDM planning, developers electing to become LEED-certified can implement TDM strategies and promote sustainable transportation by implementing available transportation-related credits in their projects. Creditable sustainable transportation strategies include measures related to:

- Access to Quality Transit
- Bicycle Facilities
    - Development location with access to the bicycle network
    - Provision of Bicycle Storage and Shower Rooms
- Reduced Parking Footprint
- Green Vehicles

City of Vancouver Transportation Demand Management for New Developments Program

TDM provides an opportunity for the City to accept lower parking provisions while still ensuring the needs of residents, visitors, and employees are met. TDM measures can accelerate changes to travel behaviours by incentivising individuals to choose non-personal vehicle travel.

Following the review of TDM best practices, a TDM program was developed for the City of Vancouver (The CoV TDM Program). Using a framework loosely modeled on the "points menu" used by the City of San Francisco described above, a comprehensive TDM program for all new developments in the Downtown will be required. This framework was selected for its ease of use, by giving clear guidance for developers on the creation of a TDM plan, and a basis for staff to easily evaluate submitted plans. Key elements of this program include:

- List of applicable TDM measures (the "TDM menu") and assigned point values in the form of an administrative bulletin that outlines a variety of TDM opportunities for new developments;
- Requiring TDM plans for all new development within the Downtown, with the exception of residential developments within the West End and Robson North residential Parking Permit areas;
- Requiring TDM plans for all new developments on large sites City-wide;
- Incentivising provision of TDM plans for new developments outside of the Downtown and residential developments within the West End and Robson North residential Parking Permit areas through parking requirement reductions;
- Providing a reduction for developments that are in proximity to good transit, with higher reductions possible for rental housing; and
- Monitoring of TDM plans to enable long-term assessment of TDM measure effectiveness.

TDM Measures

An administrative bulletin detailing the CoV TDM Program has been created which outlines the program standards regarding TDM plans for new developments, including details on the process, targets, acceptable TDM measures, and specific guidance on how to apply these measures and create a TDM plan.

The CoV TDM program menu includes 22 measures, some with various sub-options, as an opportunity to meet the requirements of a development project's TDM plan. Menu options are divided into six categories:

- **Financial Incentives** – these include programmatic measures where an incentive with obvious monetary value is provided to encourage mode shift;

- **Active Transportation** – these include measures which improve or enhance availability and accessibility to sustainable transportation modes, such as walking and cycling;
- **Alternative Commute Services** – these include measures which facilitate commuting by shared vehicles or high-occupancy vehicles;
- **Support, Promotion, and Information** – these include more passive measures to provide awareness of available transportation options;
- **Parking Management** – these include measures that control parking supply and pricing; and
- **Other** – this category is provided as an opportunity to encourage innovative strategies proposed by the developer for the City's consideration.

Each of the 22 TDM measures on the menu is assigned a number of points, intended to reflect its relative effectiveness in reducing vehicle miles traveled (VMT). As previously noted, given the many ways that TDM strategies can be bundled and applied, it is challenging to quantify travel impacts for individual strategies, and there is limited data to illustrate numerical impacts. As such, as a basis for assigning value to each of the TDM strategies in the proposed menu for the City of Vancouver, the methodology used by the City of San Francisco was used as a starting point.

The City of San Francisco's *Transportation Demand Management Technical Justification Report* (subsequently referred to as the "SF TDM Report") identifies the efficacy of various TDM measures in terms of reduced vehicle miles travelled (VMT), based on detailed research largely derived from the 2010 California Air Pollution Control Officers Association (CAPCOA) report, wherever possible. The report quantified project-level land use, transportation, energy use, and other measures effects on greenhouse gas emissions. VMT was a metric used to estimate transportation-related greenhouse gas emissions from projects. While the research referenced by the City of San Francisco is based on conditions local to California, and the reduction in VMT found for individual TDM strategies may not be directly applicable in a Vancouver context, the assignment of point values to each measure provides a good indication of each measure's relative effectiveness in reducing vehicle trips. This may not correlate as strongly with reduced parking demand for residential land uses.

For the CoV TDM program, point values were generally assigned as follows: for each one (1) percent reduction in VMT expected for a given TDM measure, rounded to the next full percent, two (2) points was assigned. Those measures with little or no data to accurately quantify its effectiveness in reducing VMT were assigned lower point values (roughly two [2] points). Point values were further refined based on cost of implementation. A consultant assessment was carried out in an attempt to generally normalize point values so that TDM points being awarded would be fairly equitable in terms of the associated costs needed to achieve each point. Point values for individual TDM strategies range up to 16 points.

An assessment of costs of implementation was included in order to:

- Ensure that the cost of TDM measures is less than the cost of providing vehicle parking spaces and so incentivises uptake of TDM measures.
- Encourage the implementation of a diverse range of TDM measures which will provide long-term data on their effectiveness in the Vancouver context and enable refinements to the CoV TDM policy in the future.

This section discusses the initial value assignment of each proposed TDM measure based on the San Francisco research. While alternative quantitative empirical data on the general

effectiveness of TDM measures at inducing mode shift, and reducing parking demand and VMT is limited, additional findings are included to provide insight into the importance of implementing various TDM strategies.

As part of the TDM Program, monitoring will be undertaken by the City to assess the efficacy of the various packages of TDM measures. As data is collected over time, the TDM menu and points may be revised to reflect updated findings on the efficacy of various measures.

Financial Incentives

Financial incentives include measures which influence mode shifts by providing a cash value incentive to commuters to encourage use of alternative transportation modes. These actions typically have an obvious monetary value, such as a subsidy. As noted in **Table 3** through **Table 5**, providing financial incentives has been found to reduce vehicle trips up to 30 percent in some cases. TDM plans which do not include financial incentives generally achieve less than a 10 percent reduction in peak-period auto trips at the site[13].

Car Share Membership (FIN-01)

According to the SF TDM Report, up to a 4.1 percent reduction in vehicle miles travelled was identified for providing a car-share membership. Using the simple formula identified above, this equates to a base value of 10 points. To normalize the point value based on costs, the point value was revised to two (2) and four (4) points, for strata and rental developments, respectively. Additional findings in support of the provision of transit subsidies include:

- An analysis of 2013 data by University of British Columbia (UBC) researchers[14] identified that the average Vancouverite has 1.6 cars per household, and car sharing families have fewer vehicles to begin with;
    - The average one-way car sharing member had 2/3 that rate of car ownership. This falls by 10 percent when they become a member.
    - The average two-way car sharing member had 1/3 as many cars per household. This falls by a further 50 percent when they become a member.

Public Transit Passes (FIN-02)

The SF TDM Report identifies up to a 7.5 percent reduction in VMT for providing a transit subsidy. Using the simple formula outlined above, this measure was assigned up to 16 points, depending on land use and the amount of subsidy provided. Additional findings in support of the provision of transit subsidies include:

- A review of an 82-program sample of employer TDM plans observed that employers who featured transit subsidies in the TDM plans experienced an average vehicle trip reduction (VTR)[15] of 21 percent, compared to 13 percent in those TDM plans not offering transit fare subsidies[16].
- King County Metro (Seattle) collaborates with employers to offer subsidized transit FlexPasses to their employees. A review of seven (7) employer TDM plans which included a FlexPass (provided fully subsidized or a nominal co-pay amount) observed

[13] Commute Trip Reduction (CTR), Programs That Encourage Employees to Use Efficient Commute Options." Victoria Transport Institute - Online TDM Encyclopedia, www.vtpi.org/tdm/tdm9.htm.
[14] Namazu, M., & Dowlatabadi, H. Vehicle ownership reduction: A comparison of one-way and two-way car sharing systems. Transport Policy, 2018, pp. 64, 38–50
[15] Vehicle Trip Reduction (VTR) - percentage of vehicles removed from a site's commute traffic load. The incremental reduction achieved in the vehicle trip rate, expressed as a percentage of the starting-point trip rate
[16] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 19, Employer and Institutional TDM Strategies. Transportation Research Board, 2010, pp. 19–42, www.nap.edu/read/14393/chapter/1.

transit mode share increases up to 41 percent when combined with other TDM measures[17]

Active Transportation

TDM measures relating to active transportation include approaches to improving access to safe pedestrian and cycling options for all ages and abilities. This may include an increase to the required number of bicycle facilities, or improvements to facilities to encourage their use. According to the Victoria Transport Policy Institute (VPTI), such improvements may shift 10 percent of auto trips to an alternative active mode[18], and further, as summarized in **Table 5**, may reduce typical parking demands by up to 15 percent.

Bicycle Parking & Facilities (ACT-01, ACT-02, ACT-03, ACT-04, ACT-05, ACT-06)

The SF TDM Report did not identify quantified impacts to VMT for providing bike parking and maintenance facilities. According to the VPTI, strategies aimed at making cycling convenient, safe, and pleasant are considered "very beneficial" in shifting automobile travel to alternative modes[19]. Further, for cycling to be an attractive alternative, it is important to ensure users have safe, convenient, and secure places to park. Several opportunities related to improving access cycling and bicycle parking are included in the TDM menu;

- Additional Class A Bike Parking (ACT-01),
- Improved Access to Class A Bike Parking (ACT-02),
- Enhanced Class B Bike Parking (ACT-03), and
- Secure Public Bike Parking (ACT-04)
- Bicycle Maintenance Facilities (ACT-05)
- Improved End-of-Trip Facilities (ACT-06)

In absence of data to quantify the impacts of improved bicycle facilities in terms of VMT, these measures were assigned a base value of two points, with opportunities to increase up to eight (8) points depending on the land use and number of improvements provided. Additional findings in support of the provision of improved bicycle facilities include:

- A 2007 study of the United Kingdom National Travel Survey and stated preference data examined the effects on bike commute shares of various degrees of workplace bike parking and facilities provision. The review identified that, for a site with a starting bike mode share of 5.8 percent, bike share would increase to 6.3 percent with outdoor parking, 6.6 percent with indoor secure parking, and 7.1 percent if showers were also provided.[20]
- A 2007 stated preference study in Edmonton, Alberta estimated the effects of providing secure bicycle parking and showers at the trip destination. Results of the study identified that provision of bicycle parking led to an equivalent reduction of 26.5 minutes of en-route cycling time in mixed traffic and 3.6 minutes for showers.[21]
- A construction company in California installed bike lockers, changing facilities, and offered access to cycling repair tools are part of a TDM package which also included financial incentives. Over the course of its bicycle commuter program, which ran from

[17] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 12, Transit Pricing and Fares. Transportation Research Board, 2010, pp. 12-26 – 12-27, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c12.pdf .
[18] "Nonmotorized Transport Planning." Victoria Transport Institute - Online TDM Encyclopedia, www.vtpi.org/tdm/tdm25.htm.
[19] "Online TDM Encyclopedia - Cycling Improvements." Victoria Transport Institute - Online TDM Encyclopedia, www.vtpi.org/tdm/tdm93.htm.
[20] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 16, Pedestrian and Bicycle Facilities. Transportation Research Board, 2012, pp. 16-153, http://californiawalks.org/wp-content/uploads/2012/12/TCRP-Rpt-95-Ch.-16.pdf
[21] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 16, Pedestrian and Bicycle Facilities. Transportation Research Board, 2012, pp. 16-153, http://californiawalks.org/wp-content/uploads/2012/12/TCRP-Rpt-95-Ch.-16.pdf

the late-1980s to early-1990s, a 10 percent bicycle commute mode share was achieved, 10 times the regional average at the time[22].

- The City of Portland's "Bike Central" program implemented four (4) for-fee locations offering showers, changing facilities, and bicycle storage, as part of an aggressive program to provide bicycle parking, while retaining vehicle parking in the central business district. A before and after study conducted between 1998 and 2001 found that users increased cycling frequency to 15.5 days per month, up from 3.1 days per month. First year estimates were 14,600 cycling trips generated and a reduction of 46,400 vehicle miles travelled[23].

Public Bike Share (ACT-07)

The SF TDM Report did not identify quantified impacts to VMT for providing a shared bicycle fleet. Public bike share stations provide convenient rental bicycles for short urban trips and allow users the convenience of not having to purchase, store, and maintain a bike. According to the VPTI, public bike share systems are considered "moderately beneficial" in shifting automobile travel to alternative modes and "very beneficial" in improving basic mobility[24]. The nature of one-way trips throughout a network of stations may influence trips at both the origin and destination of a tour. This TDM measures was assigned a medium value of eight (8) points, which reflects the relative effectiveness of Public Bike Share. Additional findings in support of the provision public bike share include:

- Research conducted in 2016 to quantify the impacts of the Washington DC Capital Bike share program on traffic congestion identified that the availability of bike share reduces traffic congestion upwards of four percent within a neighbourhood[25].
- Many people have incorporated Mobi by Shaw Go – Vancouver's public bike share program – into their commute combined with other modes such as walking and transit. Most Mobi trips are made by local residents, who may own a bike already but use Mobi because picking up a bike and dropping it off somewhere else gives them more flexibility. Also, people prefer to start and end their trip at convenient locations near their destinations and near to the City's network of nearly 80 kilometres of all-age-and-ability bike routes.

Shared Bike Fleet (ACT-08)

The SF TDM Report did not identify quantified impacts to VMT for providing a shared bicycle fleet. The provision of a private bike fleet for the use of resident and employees supports occasional bicycle need and use, and may introduce bicycling for transportation for those who do not regularly bicycle. Further, provision of a private fleet may provide an opportunity for users to access non-standard bicycle types, to complement their own standard bicycle ownership. While somewhat similar to the existing City of Vancouver Mobi Public Bike Share system, the private bicycle fleet serves back-to-one (two-way) cycling trips only, therefore only influencing trips at the site, versus a one-way system which may influence trips at both the origin and destination of a trip. Therefore, this TDM measure was assigned a low value of up to four (4) points depending on land use, half the value of the Public Bike Share TDM measure.

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[22] ibid
[23] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 16, Pedestrian and Bicycle Facilities. Transportation Research Board, 2012, pp. 16-154, http://californiawalks.org/wp-content/uploads/2012/12/TCRP-Rpt-95-Ch.-16.pdf
[24] Online TDM Encyclopedia - Public Bike Systems." Victoria Transport Institute - Online TDM Encyclopedia, www.vtpi.org/tdm/tdm126.htm.
[25] ibid

Walking Improvements (ACT-09)

According to The SF TDM Report, a two (2) percent reduction in vehicle miles travelled in San Francisco was identified for providing improvements to the pedestrian network, equating to a base point value of four (4) points. This measure was assigned a value of up to six (6) points to allow flexibility in the number of points credited for higher levels of contribution. According to the VPTI, walkability improvements are considered "very beneficial" in shifting automobile travel to alternative modes[26]. Additional findings in support of the provision of walking improvements include:

- A 2008 study by the Canada Mortgage and Housing Corporation (CMHC) measured walking and driving directness to nearby retail and recreational destinations in Seattle neighbourhoods of varying levels of pedestrian connectivity. Walk mode shares were 18 percent where pedestrian connectivity exhibited greater directness than vehicle connectivity, versus 10 percent where pedestrian connectivity has inferior[27].
- One (1) mile of partly commercial arterial in University Place, Washington was rebuilt with bike lanes, widened sidewalks, a median, and two mid-block crosswalks. Prior to construction, few pedestrians walked along or across this roadway, compared to 3,200 monthly pedestrian crossings after construction[28].

Alternative Commute Services

Car Share Spaces (COM-01)

According to SF TDM Report, a 0.5 percent reduction in vehicle miles travelled in San Francisco was identified for on-site car-share parking. Using the simple formula above, this equates to a base value of two (2) points. However, to normalize the point value based on costs, the base point value was revised to eight (8) points and 16 points, depending on land use.

Car Share Vehicles and Space (COM-02)

According to SF TDM Report, a 4.1 percent reduction in vehicle miles travelled in San Francisco was identified for providing on-site car-share parking. This TDM measure was assigned a base value of up to eight (8) points for providing one (1) car share vehicle with vehicle parking space per 50 dwelling units. For rental developments, a maximum of 16 points can be achieved if the development project provides one (1) car share vehicle, with vehicle parking space per 25 dwelling units. These rates of provision are consistent with the existing By-law. Additional findings in support of car share and spaces include:

- Membership surveys conducted by Modo identified that 75 percent of their members do not own a vehicle and that 80 percent of Modo members primarily use sustainable transportation modes (walking, cycling, and transit) to commute to work. Further, the survey identified that employers using Modo, encouraged the use of car sharing among their employees for both business and personal needs.
- On average, 100 households using either Modo or car2go as their only car sharing service experienced a nine percent to 47 percent reduction in vehicle ownership.

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[26] Online TDM Encyclopedia – Walkability Improvements." Victoria Transport Institute - Online TDM Encyclopedia, http://www.vtpi.org/tdm/tdm92.htm.

[27] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 16, Pedestrian and Bicycle Facilities. Transportation Research Board, 2012, pp. 16-115, http://californiawalks.org/wp-content/uploads/2012/12/TCRP-Rpt-95-Ch.-16.pdf

[28] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 16, Pedestrian and Bicycle Facilities. Transportation Research Board, 2012, pp. 16-36, http://californiawalks.org/wp-content/uploads/2012/12/TCRP-Rpt-95-Ch.-16.pdf

Additional Passenger Loading Spaces (COM-03)

The provision of additional passenger loading spaces is not included as a TDM measure in San Francisco's TDM program, and therefore the SF TDM Report did not identify its impacts to related to VMT. The provision of passenger loading spaces in new areas (multi-family residential, retail, and general office uses) shall be required under new the new Parking By-law proposals to improve convenience for residents and visitors, support persons with disabilities and seniors by providing convenient places for short-term loading, such as pick-up and drop-off activities. In the absence of other data, this measure was assigned a low base value of two (2) points, with opportunities to receive up to eight (8) points, for providing additional spaces above the minimum By-law requirement.

Shuttle Bus Service (COM-04) & Vanpool/Carpool Service (COM-05)

The SF TDM Report identifies a maximum 13.4 percent reduction in VMT for providing shuttles and a vanpool program, combined. Using the simple formula identified above, this would equate to 14 points for each TDM measure. 14 points was therefore assigned to Shuttle Bus Service. Research has shown that in most cases, slightly over half of new vanpool and buspool users formerly drove an automobile to work[29]. While commute by vehicle pooling help to reduce overall vehicle trips and miles traveled, this measure is still reliant on the use of personal vehicles. In order to reduce reliance on personal vehicles and encourage lower vehicle ownership trends overall, the value of providing Vanpool/Carpool services was reduced to four (4) points, depending on land use.

Support, Promotion, and Information

In order for a TDM program and plan to be successful, targeted users must be persuaded of the inherent value of shifting their travel behaviour, be aware of and have convenient access to information to understand their options, and be motivated to test and ultimately decide to continue using alternative transportation modes. As noted in **Table 3** through **Table 5**, providing information and support alone may result in a vehicle trip reduction of up to five (5) percent. While there is some nominal value in providing support and information as a stand-alone service, these actions are best implemented as part of a larger TDM plan. Three (3) measures are included under this category.

Transportation Marketing Services (SUP-01)

The SF TDM Report identified a maximum four (4) percent reduction in VMT for providing transportation marketing services, such as promotional material and welcome information packets. This would equate to a value of eight (8) points using the simple formula above. To normalize the value based on cost, this measure was reduced to two (2) points.

Real-Time Information (SUP-02) & Multimodal Wayfinding Signage (SUP-03)

The SF TDM Report did not quantify the impacts of implementing real-time information displays or wayfinding signage. Therefore, these measures were assigned a low value of two (2) points.

Parking Management

Areas with high parking supplies influence a higher demand for vehicle use. When users are aware of an abundant parking supply, it is challenging to implement effective transportation demand management programs since it is difficult to price or otherwise restrict use of parking that drivers know to be available. Parking Management strategies encourage more efficient

[29] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 5, Vanpools and Buspools. Transportation Research Board, 2005, pp. 6-7, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c3.pdf

use of parking facilities to reduce parking demand. As seen in **Table 3** through **Table 5**, parking pricing and restriction of parking supply (parking maximums) may encourage up to 30 percent reduction in parking requirements. Two (2) TDM measures are included under this category.

Parking Pricing (PKG-01)

As noted previously, financial incentives (or, in this case, disincentives) are a successful means of reducing parking demand. The SF TDM Report identifies an overall two (2) percent reduction in VMT when parking passes could not be purchased in bulk (monthly versus daily passes). This measure was therefore assigned a value of four (4) points.

Parking Supply (PKG-02)

The SF TDM Report identified a maximum of 12.5 percent reduction in VMT related to parking supply, which would equate to a value of 25 points. However, it would seem counterintuitive to reduce the requirements for TDM measures to mitigate low levels of parking, therefore, to incentivize development projects to provide the minimum parking supply required under the Parking By-law, without sacrificing the quality of TDM plans, this measure was assigned two (2) points to reduce the development's overall TDM plan targets.

Other

Innovative Strategies (0TH-01)

This category has been included as an opportunity to encourage innovative strategies proposed by the developer, which have not been previously identified and defined in this TDM menu, for the City's consideration. This measure shall require the property owner to propose strategies supported by acceptable rationale and justification completed by a transportation consultant. Given the variability of this TDM measure, development projects may achieve up to 16 points in this category, at the discretion of the City.

Targets

Developers will be required to create a TDM plan by selecting a package of pre-defined strategies from the TDM Menu to meet the minimum targets and requirements set out in **Table 7**.

Table 7 - TDM Plan Requirements

Development	Downtown	City-Wide
Large Sites As defined by the Rezoning Policy for Sustainable Large Developments: - involve a land parcel or parcels having a total site size of 8,000 m^2 (1.98 acres) or more, or - contain 45,000 m^2 (484,375 ft^2) or more new floor area		
• Any land use	30 points TDM Plan must include: • at least 8 points from car share related measures TDM Plan is **required** for all Large Sites	
All Sites (except Large Sites)		

Development	Downtown	City-Wide
• Social housing developments of any size	12 points	
• Multiple Dwellings with less than 20 dwelling units • Commercial developments with less than 930 m^2 (10,000 ft^2)	12 points	24 points
• Multiple Dwellings with 21 to 220 dwelling (except social housing) • Commercial developments containing: o 931 m^2 to 8,100 m^2 GFA of office use, and/or o 931 m^2 m to 2,400 m^2 GFA or retail use	24 points	
• Multiple Dwellings with 221 dwelling units or more (except social housing) • Commercial developments containing: o 8,100 m^2 GFA or more office use, and/or o 2,400 m^2 GFA or more retail use	24 points TDM Plan must include: • at least 8 points from car share related measures	
• All other non-residential land uses	24 points	

Requiring TDM plans within the Downtown addresses potential mobility needs that eliminating minimum parking requirements may create. For sites *in the Downtown*, all developments must provide a TDM Plan meeting the minimum requirements as outlined in **Table 7**. Residential developments in the West End and Robson North Residential Parking Permit areas need not provide a TDM Plan.

Outside the Downtown, the TDM program includes opportunities for sites to reduce parking requirements City-wide through the provision of TDM measures. This offers a clear path to reducing parking requirements for all land uses. City-wide, achieving the maximum point target outlined in **Table 7** allows developments to achieve the maximum vehicle parking relaxation for each respective land use, as follows:

Residential - Rental Developments

- with no TDM Plan
  - with Level A Transit Accessibility - 20 %
  - with Level B Transit Accessibility - 10 %
- with maximum TDM Plan requirements

- with Level A Transit Accessibility - 60 %
- with Level B Transit Accessibility - 50 %
- with Level C Transit Accessibility - 40 %

All Other Land Uses

- with no TDM Plan
  - with Level A Transit Accessibility - 10 %
  - with Level B Transit Accessibility - 5 %
- with maximum TDM Plan requirements
  - with Level A Transit Accessibility - 30 %
  - with Level B Transit Accessibility - 25 %
  - with Level C Transit Accessibility - 20 %

As noted above, additional reductions in parking requirements may be provided based on a site's proximity to high quality transit. Observed parking demand is lower for sites with access to transit. Further, the efficacy of TDM plans is enhanced for sites with good proximity to transit[30]. This is reflected in a maximum 20 percent reduction in parking requirements near excellent transit. This is consistent existing provisions for rental housing, but with a clearer definition of excellent transit. Levels of transit accessibility are defined as follows:

Level A, within:

- 100 m walking distance of any one (1) existing FTN[31] route, including B-Line stops, or
- 200 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or
- 400 m walking distance of a SkyTrain station

Level B, within:

- 101 m to 200 m walking distance of any one (1) existing FTN route, including B-Line stops, or
- 201 m to 400 m walking distance of any intersection of two (2) existing FTN routes, including B Line routes, or
- 401 m to 800 m walking distance of a SkyTrain station

Level C, greater than:

- 200 m walking distance of any one (1) existing FTN route, including B-Line stops, or
- 400 m walking distance of any intersection of two (2) existing FTN routes, including B Line routes, or
- 800 m walking distance of a SkyTrain station

Minimum TDM plan targets have been set such that the cost to deliver the TDM plan is generally roughly equal to 30 percent of what the cost would have been to deliver previous minimum parking requirements in the Downtown, while ensuring the point value is high enough such that a robust set of TDM strategies can be implemented. As it is expected that many developments will continue to provide a parking supply at market demand rates, higher targets would make delivery of development projects financially challenging.

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[30] Transit Cooperative Research Board (TCRP) Report 95, Traveler Response to System Changes, Chapter 19, Employer and Institutional TDM Strategies. Transportation Research Board, 2010, pp. 19–47, www.nap.edu/read/14393/chapter/1.

[31] Frequent Transit Network, as defined by TransLink

In order to support ongoing work on the Missing Middle Housing Strategy, this TDM program is intended to provide opportunities for reductions in parking requirements on small sites. Smaller development sites may have challenges achieving the TDM targets as outlined in this program. Recognizing unique constraints on small development sites, Engineering may consider proposed alternative TDM solutions that meet the intent of reduced parking demands in new, small developments and relaxations to the maximum allowable parking relaxations.

On large sites, there is an expanded capacity to explore new mobility strategies due to efficiencies of scale, and the significant financial investments that large sites represent. The Rezoning Policy for Sustainable Large Developments sought to encourage leadership in sustainable transportation options through its Green Mobility Plan requirement. The new TDM program is intended to replace this Green Mobility Plan requirement, and expands requirements to all large sites including those which have not undergone a developer initiated rezoning process. The TDM menu continues to expect leadership from large sites through a City-wide requirement for TDM plans, and a higher point requirement for those large sites.

Monitoring and Reporting

As aforementioned, transportation demand management is a continually evolving field in which detailed research, in terms of impacts to vehicle travel and parking impacts, is challenging to source. As a result, many of the TDM measures and point values recommended in the TDM Administrative Bulletin are founded on best practices identified in other jurisdictions, such as San Francisco, and professional engineering judgement.

As the TDM program is a new initiative being undertaken by the City, this initial phase of implementation is largely experimental and is a stepping stone towards developing a detailed and locally data-driven TDM program. A robust TDM monitoring program will help to ensure that long-term impacts of TDM measures are well understood within a Vancouver context. As part of the TDM Program, monitoring will be undertaken by the City periodically after the occupancy of development projects to assess the uptake and efficacy of the various packages of TDM measures. To facilitate this, each new development will be required to provide a contribution towards a TDM monitoring fund, as follows:

- All large sites and development projects in the Downtown will be required to provide a contribution towards TDM monitoring in an amount equal to $2 per square metre of new gross floor area.
- City-wide, new development projects will be required to provide a contribution towards TDM monitoring equal to $280 for each vehicle parking space being relaxed.
- Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

Recovery of these funds and agreements will facilitate a robust ongoing data-collection and monitoring program to identify incremental impacts of the selected TDM packages on mode shifts over time, to support long-term reductions in parking supply. Monitoring will occur periodically following occupancy of a development project to measure and may include:

- Surveys and assessments of developments of a similar land use and site characteristics, who do not have a TDM plan, to establish baselines;
- Vehicle generation and parking demand;
- Travel mode survey for the all users and assessment of mode shares; and
- Recommended adjustments or changes to a development's TDM Plan, and/or revised targets

As data is collected over time and as new technologies continue to be introduced end evolve, the TDM menu options and point values may be revised to reflect new research and updated findings on the efficacy of various TDM measures.

Administrative Changes

Use of the Term "Accessible Parking Spaces"

The Parking By-law currently uses the term "disability parking spaces" to refer to larger spaces intended for use by persons with disabilities and seniors with parking permits provided by SPARC. This terminology is considered out of date. The term "accessible parking" is used elsewhere in the City and should be included within the Parking By-law. The draft changes in **Appendix A** incorporate this change.

New Definitions in the Parking By-law

Several new definitions are required for the Parking By-law to accommodate the policy changes recommended. Additional definitions for the following have been added:

- Traffic Demand Management Plan
- Traffic Demand Management Measures
- West End and Robson North Permit Area
- Social Housing HILs Units

Other definitions have been modified:

- "Disability Parking Spaces" has been changed to "Accessible Parking Spaces"

Other definitions have been removed:

- Shared Vehicle Parking Space
- Shared Vehicle
- Shared Vehicle Organization

Administrative Bulletin: Transportation Demand Management for New Developments in Vancouver

1 Introduction

This bulletin provides guidance on developing TDM plans as provided for in the Parking By-law.

Transportation Demand Management (TDM) may be defined as a set of strategies aimed at maximizing the utility of sustainable transportation choices. TDM is used to manage traffic and parking demands, and enhance the effectiveness of non-personal vehicle transportation. The intent of encouraging sustainable transportation is to:

- Support a thriving economy, to improve the health of residents and the vibrancy of the City, and to enhance the natural environment;
- Meet mobility needs while minimizing environmental impacts and providing long-term health benefits; and
- Support the use of efficient and sustainable travel modes that consume less energy, and emit fewer GHG emissions.

The City may require a Transportation Demand Management (TDM) plan that provides measures which prioritize more sustainable travel as part of rezoning and/or development permit applications. This contributes to the Transportation 2040 and Greenest City targets of:

- Having walking, cycling and public transit trips make up at least 50% of all trips by 2020 and 66% of all trips by 2040;
- Reducing motor-vehicle kilometres traveled per resident by 20% from 2007 levels; and
- Reducing community-based greenhouse gas emissions by 33% from 2007 levels.

2 Process

The overall process for approval of a TDM plan includes:

1. **Development**
   The applicant determines if the TDM program is applicable to the development project, as outlined in **Section 3**, and submits a TDM plan with the rezoning and/or development permit application.

2. **Review**
   Engineering staff review the TDM plan and determine its compliance with the TDM Program Standards, as outlined in **Section 4.2**, and suitability of the proposed measures.

3. **Conditions and Agreements**
   If the development project is approved, the requirement for the TDM plan is included as a Condition of Approval with the required agreements to secure the proposed measures.

3 Required and Permitted TDM Projects

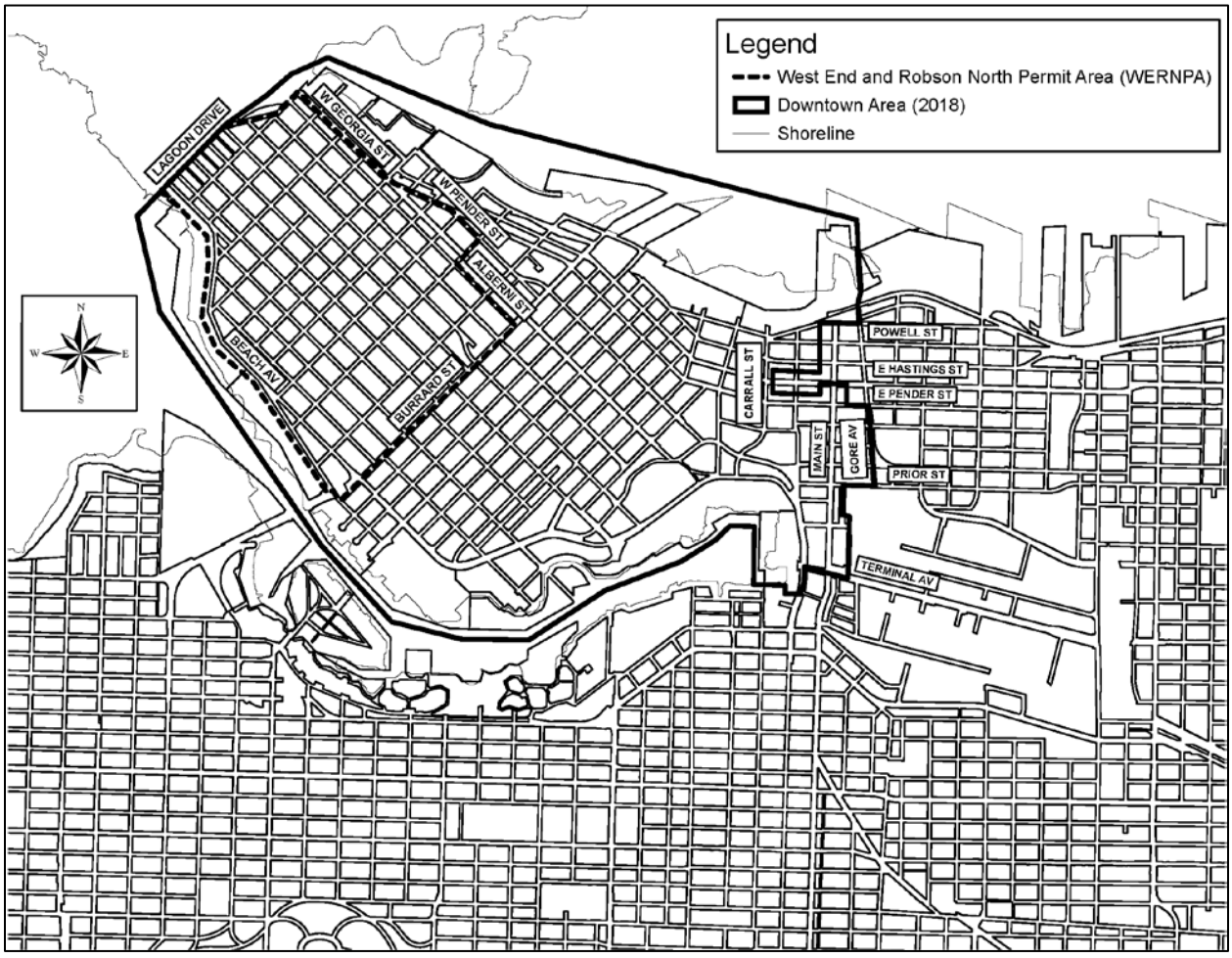
3.1 Required TDM Projects

The following developments *must* provide a TDM plan:

- Projects in the Downtown, except for residential strata and non-social housing rental developments in the West End and Robson North Permit Area, as illustrated in **Figure 3.**
- Large Sites, as defined by the Rezoning Policy for Sustainable Large Developments, involving a land parcel or parcels:
    - having a total site size of 8,000 m^2 (1.98 acres) or more, or
    - contain 45,000 m^2 (484,375 ft^2) or more new floor area
-

TDM plans for all new developments defined are required to achieve point targets, as outlined in **Section 4.2.1**, **Table 2.**

Figure 3 - Downtown



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3.2 Permitted TDM Projects

For all other development projects not defined under **Section 3.1**, a TDM plan may be provided in order to achieve parking relaxations, as outlined in **Section 4.2.1**, **Table 3.**

4 Primary Deliverable

The primary deliverable is a Transportation Demand Management (TDM) plan, which may form part of a Transportation Assessment and Management Study (TAMS). This plan outlines TDM measures that will be incorporated into the development project as well as information detailing how the program will be delivered. This section describes the recommended content and layout of a TDM plan or TAMS chapter:

4.1 Sample TDM plan Contents

1. Area / Site Description
    a. Location – Downtown or City-wide
    b. Project Description (land uses)
    c. Transit Accessibility, as defined in **Section 4.2.1, Table 5**
    d. TDM Point Requirement or Target, as defined in **Section 4.2.1, Table 2** or **Table 3**
2. Proposed TDM Measures
    a. Summary of TDM measures
    b. Financial Incentives
    c. Active Transportation
    d. Alternative Commute Services
    e. Support, Promotion, and Information
    f. Parking Management
    g. Other
3. Summary of Parking and Loading Required and Provided
4. Site Plan showing proposed TDM measures

The TDM plan may not need to be prepared by a transportation engineer. The City may request additional supporting information or design details as part of the review process.

4.2 TDM Program Standards

4.2.1 Targets

A point target is specified based upon land use, size, and location of the development. If a project involves multiple land use categories (mixed-use development), each of the land uses are subject to separate targets. TDM measures may count towards multiple land uses if they are accessible to them. For example, a single two-way shared vehicle with public access may provide points to all land uses on a project.

- For sites *requiring* a TDM plan per **Section 3.1**, a TDM plan must be submitted meeting the point target in **Table 2.**
- For sites *that do not require* a TDM plan per **Section3.2**, a TDM plan may be submitted to achieve parking relaxations. Achieving the maximum point target outlined in **Table** 3 allows developments to achieve a maximum vehicle parking relaxation for each respective land use, as per **Table 4** and **Table 5.** A proportionally lower parking relaxation may be granted for achieving a lower number of points. Note that while a TDM plan is *required* for all Large Sites, outside of the Downtown, achieving the point target set in **Table 2** and **Table 3** permits Large Sites to benefit from parking relaxations by land use, per **Table 3** and **Table 4.**

Table 2 - TDM Point Targets for Downtown and Large Sites Requiring TDM plans

Development	Required Points
Large Sites As defined by the Rezoning Policy for Sustainable Large Developments: - involve a land parcel or parcels having a total site size of 8,000 m^2 (1.98 acres) or more, or - contain 45,000 m^2 (484,375 ft^2) or more new floor area	
• Any land use	30 points TDM plan must include: • at least 8 points from car share related measures
All Sites (except Large Sites)	
• Social housing developments of any size	12 points
• Multiple Dwellings with less than 20 dwelling units • Commercial developments with less than 930 m^2 (10,000 ft^2) of office or retail use.	12 points
• Multiple Dwellings with 21 to 220 dwelling (except social housing) • Commercial developments containing: o 931 m^2 to 8,100 m^2 GFA of office use, and/or o 931 m^2 to 2,400 m^2 GFA or retail use	24 points
• Multiple Dwellings with 221 dwelling units or more (except social housing) • Commercial developments containing: o 8,101 m^2 GFA or more of office use, and/or o 2,401 m^2 GFA or more of retail use	24 points TDM plan must include: • at least 8 points from car share related measures
• All other non-residential land uses	24 points

GFA: gross floor area

Table 3 - TDM Point Targets to Achieve Parking Relaxations

Development	Optional Points
Large Sites* As defined by the Rezoning Policy for Sustainable Large Developments: - involve a land parcel or parcels having a total site size of 8,000 m^2 (1.98 acres) or more, or - contain 45,000 m^2 (484,375 ft^2) or more new floor area	
• Any land use	30 points TDM plan must include: • at least 8 points from car share related measures *A TDM plan is **required** for all Large Sites
All Sites (except Large Sites)	
• Social housing developments of any size	Up to 12 points
• Multiple Dwellings with up to 220 dwelling units (except social housing) • Commercial developments with up to: o 8,100 m^2 GFA of office use, and/or o 2,400 m^2 GFA of retail use	Up to 24 points
• Multiple Dwellings with 221 dwelling units or more (except social housing) • Commercial developments containing: o 8,101 m^2 GFA or more of office use, and/or o 2,401 m^2 GFA or more of retail use	Up to 24 points TDM plan must include: • Up to 8 points from car share-related measures, proportional to total points achieved
• All other non-residential land uses	Up to 24 points

GFA: gross floor area

Table 4 - Maximum Vehicle Parking Relaxation by Land Use, Transit Accessibility, and TDM Commitment

Development	Transit Accessibility		
	Level A	Level B	Level C
Residential – Rental (including social housing) no TDM plan	20%	10%	0%
Residential – Rental (including social housing) with TDM plan achieving Point Target per **Table 3**	60%	50%	40%
All other land uses no TDM plan	10%	5%	0%
All other land uses with TDM plan achieving Point Target per **Table 3**	30%	25%	20%

Table 5 - Transit Accessibility Definitions

Transit Accessibility	Development Location
Level A	Within: • 100 m walking distance of any one (1) existing FTN route, including B-Line stops, or • 200 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or • 400 m walking distance of a SkyTrain station
Level B	Within: • 101 m to 200 m walking distance of any one (1) existing FTN route, including B-Line stops, or • 201 m to 400 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or • 401 m to 800 m walking distance of a SkyTrain station
Level C	Greater than: • 200 m walking distance of any one (1) existing FTN route, including B-Line stops, or • 400 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or • 800 m walking distance of a SkyTrain station

FTN: Frequent Transit Network, as defined by TransLink, https://www.translink.ca/Plans-and-Projects/Frequent-Transit-Network.aspx

4.2.2 Menu of Acceptable TDM Measures for New Developments

To achieve a target, developers may select from a menu of 22 TDM measures from the Menu of Acceptable TDM Measures for New Developments. Each TDM measure is assigned a number of possible points, summarized in
Table 6**.** The TDM measures are grouped into six (6) categories:

- Financial Incentives;
- Active Transportation;
- Alternative Commute Services;
- Support, Promotion, and Information;
- Parking Management; and,
- Other.

For simplicity, the TDM program standards classify land uses into four (4) categories:

- Residential – Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Not all TDM measures are applicable to each land use category or appropriate for every development. A single TDM measure may count towards multiple land uses if it is usable by each land use. TDM plan targets and applicable measures for land uses not defined above will be determined on a case-by-case basis, to the satisfaction of the Director of Planning in consultation with the General Manager of Engineering Services.

Table 6 - Menu of Acceptable TDM Measures for New Developments

TDM Measure		Details	Maximum Points	Applicable Land Uses			
				Residential - Strata	Residential - Rental	Commercial - Office	Commercial - Retail
Financial Incentives							
FIN-01	**Car Share Membership**	Provide annual car share memberships to residents.	•••• 4	✓	✓		
FIN-02	**Public Transit Passes**	Provide subsidized transit passes for residents and employees.	•••••••••• 10 •••••• 6		✓	✓	✓
Active Transportation							
ACT-01	**Additional Class A Bike Parking**	Provide additional Class A bicycle parking above minimum requirements.	•••••••• 8	✓	✓	✓	✓
ACT-02	**Improved Access to Class A Bike Parking**	Provide improved access to Class A bicycle parking.	•••••••• 8	✓	✓	✓	✓
ACT-03	**Enhanced Class B Bike Parking**	Provide enhanced visitor Class B bicycle parking, including well-lit, secure, indoor facilities.	•• 2	✓	✓	✓	✓
ACT-04	**Secure Public Bike Parking**	Provide secure public bicycle parking on-site.	•• 2			✓	✓
ACT-05	**Bike Maintenance Facilities**	Provide on-site bike maintenance facilities.	•• 2	✓	✓	✓	✓
ACT-06	**Improved End-of-trip Amenities**	Provide improved and/or additional end-of-trip amenities for employees.	•••••••• 6			✓	✓
ACT-07	**Public Bike Share Space**	Provide space, foundation, and SRW for on-site Public Bike Share (PBS) station, where required by the City.	•••••••• 8	✓	✓	✓	✓
ACT-08	**Shared Bike Fleet**	Provide fleet of bicycles for residents, employees, and/or guests to use (private bike share).	•••• 4		✓	✓	✓
ACT-09	**Walking Improvements**	Provide safe, attractive, and direct off-site connections for pedestrians linking building entrances with public sidewalks, transit stops, and key destinations, where required by the City.	•••••••• 6	✓	✓	✓	✓
Alternative Commute Services							
COM-01	**Car share Spaces**	Provide dedicated publicly available parking space(s) for car share vehicles (one-way or two-way).	•••••••••• 10 •••••• 6	✓	✓	✓	✓

TDM Measure		Details	Maximum Points	Applicable Land Uses			
				Residential - Strata	Residential - Rental	Commercial - Office	Commercial - Retail
COM-02	**Car share Vehicles and Spaces**	Provide publicly accessible two-way car share vehicle(s) and space(s) on-site.	•••••••••• 1 •••••• 6	✓	✓	✓	✓
COM-03	**Additional Pick-Up/Drop-Off Spaces**	Provide additional short-term pick-up/drop-off passenger spaces.	•••••••• 8	✓	✓	✓	✓
COM-04	**Shuttle Bus Service**	Provide free local shuttle bus services to between the development site and regional transit hubs, commercial centres, and residential areas for customers, employees, and visitors.	•••••••••• 1 •••• 4			✓	✓
COM-05	**Vanpool/Carpool Service**	Provide vanpool/carpool services to employees.	•••• 4			✓	✓
Support, Promotion, Information							
SUP-01	**Transportation Marketing Services**	Provide travel planning resources such as individualized marketing, including active transportation maps, community resources.	•• 2		✓	✓	✓
SUP-02	**Real-Time Information**	Install real-time alternative transportation information boards in lobbies and/or other public areas.	•• 2		✓	✓	✓
SUP-03	**Multimodal Wayfinding Signage**	Provide directional signage to major destinations and public amenities.	•• 2	✓	✓	✓	✓
Parking Management							
PKG-01	**Parking Pricing**	Implement daily paid parking for all users, including employees, customers, visitors. This measure is only applicable to sites outside the Downtown.	•••• 4			✓	✓
PKG-02	**Parking Supply**	Provide no more than the minimum vehicle parking required as per **B**y-law for all individual land uses on site. Outside the Downtown, this measure is only applicable to large developments.	•• 2	✓	✓	✓	✓
Other							
OTH-01	**Innovative Strategies**	The City may consider other innovative developer-proposed strategies.	•••••••••• 1 •••••• 6	✓	✓	✓	✓

4.2.3 TDM Monitoring

Monitoring is required to assess the effectiveness of the package of TDM measures to inform future policy. Developments will be required to provide a contribution towards a City-led TDM monitoring program, as follows.

- All large sites and development projects in the Downtown will be required to provide a contribution towards TDM monitoring in an amount equal to $2 per square meter of new gross floor area.
- City-wide, new development projects will be required to provide a contribution towards TDM monitoring equal to $280 for each vehicle parking space being relaxed.

In addition, access agreements shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections and data collection activities, as needed.

5 TDM Measures Fact Sheets

A fact sheet is provided for each TDM measure that guides its inclusion in a TDM plan. Each fact sheet includes the following information:

TDM Measure

This language describes the measure itself, including a description of the transportation amenity being provided, the amount/frequency of this amenity, and the property owner's responsibilities with regard to this measure over the life of the project.

Applicability

The applicability section states which land use categories the measure applies to among land use categories (i.e. Residential-Strata, Residential-Rental, Commercial-Office, and Commercial-Retail). In some cases, additional applicability information is also supplied. Additional information typically relates to the size and/or location of the development project.

Points

The points section identifies the maximum number of points awarded for the selection of the TDM measure. In some cases, a range of point values are assigned. Here, it is important to carefully review each option, as the options provide key details on how to earn a particular number of points for the measure.

Compliance Information

The compliance information section includes information about the property owner's actions and obligations during the development review phase, and the ongoing monitoring and reporting phase.

Development Review

This section documents what the property owner must provide with the TDM plan in order to document how the TDM measure would be implemented so that City staff may confirm that the TDM measure meets the criteria in the TDM fact sheet, is in compliance with relevant supporting policy and documents, and so that the appropriate point value may be assigned.

Ongoing Monitoring and Reporting

This section documents what the property owner must provide on an ongoing basis to show that the TDM measure continues to be correctly and appropriately implemented.

Supporting Policy & Documents

This includes a list of (and links to) relevant sections of supporting policy and documents that apply to the TDM measure. It is important to review the references prior to selecting a TDM measure, as these references may contain key details. In some cases, a property owner may receive a point value for selecting a TDM measure, even if the TDM measure is required elsewhere per City policy.

The Fact Sheets are provided on the following pages:

FIN-01 // CAR SHARE MEMBERSHIP

TDM Measure

Two options depending on land use:

Option A, Residential - Strata
For stratified residential developments, the property owner of the development project shall provide a two-way car share membership for each dwelling unit with the purchase of that unit. The membership shall remain associated to that residential unit, regardless of owner, for a minimum of 20 years. This shall be secured with agreements, as appropriate.

Option B, Residential - Rental
The property owner shall proactively offer two-way car share memberships and credits to residents on a minimum semi-annual basis for a minimum of 20 years. If requested by the resident, the property owner shall pay for, or otherwise provide, memberships equivalent to one annual membership, including $200 annual driving credits, per Dwelling Unit. Program participants are not permitted to take cash in lieu of the TDM measure. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential – Strata
- Residential - Rental

Points

Up to four (4) points, depending on land use:

- For Residential – Strata, Two (2) points
- For Residential – Rental, up to four (4) points assigned as follows:
    - Two (2) points, for providing memberships
    - Two (2) points, for providing $200 driving credits

Compliance Information

Development Review

The property owner shall provide the City with:

- A letter of support from a car share provider (for Option A)
- An operational plan detailing how the memberships will be offered and delivered, and the schedule for doing so
- If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will offer car share memberships and credits.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts,

resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

For Option B, after occupancy of the development project, the City may periodically request that the property owner submit documentation to verify implementation of the TDM measures, including, but not limited to:

- The total number of occupied Dwelling Units and the number of memberships purchased annually, and
- Documentation demonstrating that the incentives were offered.

Supporting Policy & Documents

- Transportation 2040
- Greenest City Action Plan

FIN-02 // PUBLIC TRANSIT PASSES

TDM Measure

The property owner shall proactively offer monthly subsidies toward TransLink Compass Cards (stored value or monthly pass) to residents and/or employees on a minimum semi-annual basis for a minimum of 10 years. If requested by a resident or employee, the property owner shall pay for contributions, or otherwise provide, a monthly subsidy equivalent to:

- $100 for Residential – Rental land uses, and/or
- $50 for Non-Residential land uses.

Program participants are not permitted to take cash in lieu of the TDM measure. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 16 points, depending on land use:

- For Residential – Rental, up to 16 points
- For Commercial - Office, up to 16 points
- For Commercial - Retail, up to six (6) points

Development projects may receive points commensurate with the level of contribution. For example, development projects providing a $25 monthly subsidy shall be eligible for 4 points towards Residential – Rental land uses, and 8 points towards Commercial - Office land uses.

Compliance Information

Development Review

The property owner shall provide the City with:

- An operational plan detailing the level of contribution, how subsidies will be offered, and how it will be delivered.
- If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will offer transit subsidies.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically request that the property owner submit documentation to verify implementation of the TDM measures, including, but not limited to:

- The number of employees and/or occupied Dwelling Units, that requested and were provided with subsidies,
- Copies of invoices or receipts, with sensitive billing information redacted, to document the number and dollar amount of transit subsidies purchased annually. and
- Documentation demonstrating that the contributions or incentives were offered.

Supporting Policy & Documents

- Transportation 2040
- Greenest City Action Plan

ACT-01 // ADDITIONAL CLASS A BICYCLE PARKING

TDM Measure

The property owner shall provide additional Class A bicycle parking, up to a maximum of 40% above minimum requirements as defined by the Parking By-law. The property owner may choose to provide more, however only up to 40% may be eligible for TDM points.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 8 points, depending on land use:

- For Residential – Strata, up to eight (8) points
- For Residential – Rental, up to eight (8) points
- For Commercial - Office, up to eight (8) points
- For Commercial - Retail, up to three (3) points

Development projects may receive points commensurate with the amount of additional parking provided. For example, for a Residential – Strata development, 2 points will be assigned for every 10% above the minimum required Class A bicycle parking provided.

Compliance Information

Development Review

The property owner shall submit plans that identify the amount and location of the additional Class A bicycle parking. City staff will review the plans to ensure that the bicycle parking spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Transportation 2040
- Greenest City Action Plan

ACT-02 // IMPROVED ACCESS TO CLASS A BICYCLE PARKING

TDM Measure

The property owner shall provide improved access to Class A bicycle parking, which may include:

- An entry for bicycles fully separated from the vehicle ramp for bicycle parking located underground
- Location of at least 40% of Class A bicycle parking above grade
- Automated bicycle parking that is accessed at grade

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 8 points, depending on land use:

- For Residential – Strata, up to eight (8) points
- For Residential – Rental, up to eight (8) points
- For Commercial - Office, up to eight (8) points
- For Commercial - Retail, up to three (3) points

Development projects may receive points assigned as follows:

- Two (2) points, for providing a bicycle access ramp fully separated from the vehicle parking ramp. Only applicable to developments which provide some portion of bicycle parking below grade.

- Two (2) points, for providing a minimum 40% Class A cycle parking at-grade, or
- Four (4) points, for providing 100% of Class A parking is provided at-grade, or
- Four (4) points, for providing fully-automated bicycle parking with no user fees

- Up to two (2) points, for providing excellent access design with respect to: lighting, finishes, grades, convenience, weather protection.

Compliance Information

Development Review

The property owner shall submit:

- Plans that identify the amount and location of the additional Class A bicycle parking, as well as note the access route to reach the Class A bicycle parking from the outside; and
- Operational and design specifications for automated bicycle parking (if applicable)

City staff will review the plans to ensure that the bicycle parking spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- City of Vancouver Bicycle Parking Design Supplement
- Transportation 2040
- Greenest City Action Plan

ACT-03 // ENHANCED CLASS B BIKE PARKING

TDM Measure

The property owner shall provide enhanced visitor Class B bicycle parking, consisting of well-lit, secure, indoor facilities, excellent access design with respect to: lighting, finishes, grades, convenience.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to two (2) points

Compliance Information

Development Review

The property owner shall submit plans that identify the amount, location and characteristics of the enhanced Class B bicycle parking. City staff would review the plans to ensure that the bicycle parking spaces provided exceed the standards and minimums identified in the Parking By-law.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- City of Vancouver Bicycle Parking Design Supplement
- Transportation 2040
- Greenest City Action Plan

ACT-04 // SECURE PUBLIC BIKE PARKING

TDM Measure

The property owner shall provide secure bicycle parking spaces available to the public, which includes users not associated with the building. The design of the secure public bicycle parking shall meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines, for Class A bicycle parking. These spaces need not be in addition to the required Class A bicycle parking. Building occupants must have priority access to Class A bicycle parking. Public Class A bicycle parking must be advertised. This measure shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Commercial – Office
- Commercial - Retail

Points

Up to two (2) points

Compliance Information

Development Review

The property owner shall submit plans that identify the amount and location of public Class A bicycle parking spaces, as well as note the access route to reach the secure public Class A bicycle parking from the outside. City staff will review the plans to ensure that the bicycle parking spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- City of Vancouver Bicycle Parking Design Supplement
- Transportation 2040
- Greenest City Action Plan

ACT-05 // BIKE MAINTENANCE FACILITIES

TDM Measure

The property owner shall include bicycle maintenance facilities in a designated, secure area within the building with proper drainage, where sufficient workspace with bicycle maintenance tools and supplies are readily available on a permanent basis and offered in good condition to encourage bicycling. Tools and supplies should include, at minimum, those necessary for fixing a flat tire, adjusting a chain, and performing other basic bicycle maintenance, such as: a bicycle pump, wrenches, a chain tool, lubricants, tire levers, hex keys/Allen wrenches, torx keys, screwdrivers, and spoke wrenches. Facilities provided at non-residential sites must be accessible for public use. This measure shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to two (2) points

Compliance Information

Development Review

The property owner shall submit:

- Plans that demonstrate the provision of the on-site bike maintenance facilities
- An operational plan detailing:
    - A description of the amenities to be provided,
    - A means of providing access to all residents, commercial tenants, and the public (if applicable), and
    - Plan for maintaining these amenities.
- If available, the property owner shall also submit any additional information regarding this measure (e.g. tool receipts, instructions for using an online sign-up portal, or marketing/ instructional materials) that demonstrates how the property owner will operate, administer, and maintain this common facility.

City staff will review the documentation to ensure that the proposed on-site bike maintenance facilities comply with this measure.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits or request photographs to verify that the project continues to meet the standards specified in the project approvals, including that: tools continue to be in place, maintained, and available to residents, tenants, and the public (if applicable).

Supporting Policy & Documents

- Vancouver Building By-law
- Transportation 2040
- Greenest City Action Plan

ACT-06 // IMPROVED END OF TRIP AMENITIES

TDM Measure

The property owner shall provide and maintain improved and/or additional end-of-trip amenities for employees, including but not limited to: clothes dryers (or hot air drying rack systems), permanent hair dryers, shower doors, secure facilities for charging bike lights and electric bike batteries, enhanced facility finishes.

More points may be given for additional showers, change rooms, lockers, up to 100% above minimum requirements in the Parking By-law. The developer may choose to provide more, however only up to 100% may be eligible for TDM points.

Applicability

This measure is applicable to the following land uses:

- Commercial – Office
- Commercial - Retail

Points

Up to 6 Points, depending on land use:

- For Residential – Strata, up to six (6) points
- For Residential – Rental, up to six (6) points
- For Commercial - Office, up to six (6) points
- For Commercial - Retail, up to two (2) points

Development projects may receive points assigned as follows:

- 2 points, for providing improved facilities for all end-of-trip amenities being provided.
- Up to 4 points, for providing additional end-of-trip facilities, commensurate with the amount of additional facilities provided, up to 50% above the minimum requirements of the Building By-law. For example, a development project providing 25% additional end-of-trip facilities shall be eligible for two (2) points.

Compliance Information

Development Review

The property owner shall submit plans that identify the location, number and type of end-of-trip amenities being provided. City staff will review the proposed plan to ensure that the amenities exceed the standards and minimums identified in the Parking By-law and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits or request photographs to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Building By-law
- City of Vancouver Parking By-law
- Transportation 2040
- Greenest City Action Plan

ACT-07 // PUBLIC BIKE SHARE SPACE

TDM Measure

The City may require the property owner to provide space for Public Bike Share (PBS) as a condition of approval. The property owner shall provide space and Statutory Right of Way (SRW) in a location, as approved by the City. Since PBS may be a requirement as a condition of approval, the City shall provide points to the development project to reduce the overall requirements of its TDM plan. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to eight (8) points shall be assigned to development projects meeting the PBS size and siting requirements as set out by the City.

Compliance Information

Development Review

The property owner shall submit plans that illustrate the size and location of the PBS space being provided, and how the development project is meeting the requirements as specified by City staff and in the Design Standards for Public Bike Share (PBS) Rezoning and Development Application Requirements. City staff will review the plans to ensure that the PBS space provided meet the terms as intended.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits or request photographs to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- Transportation 2040 Plan
- Greenest City Action Plan
- Design Standards for Public Bike Share (PBS) Rezoning and Development Application Requirements

ACT-08 // SHARED CYCLING FLEET

TDM Measure

The property owner shall provide a fleet of cycles including proportion dedicated to specialty cycling equipment including, but not limited to: adaptive (tri-, hand-, recumbent-cycles, etc.), cargo, and/or electric cycles for use by residents and/or employees for 20 years to encourage all types of cycling. Electric-powered cycles are encouraged. The fleet size shall be provided as follows:

- One (1) cycle for each 10 dwelling units for Residential – Rental land uses
- One (1) cycle for each 3,000 m^2 gross floor area for Commercial – Office and Commercial - Retail land uses

At minimum, six (6) cycles shall be provided.

The property owner shall ensure that the cycles are properly stored and maintained, and shall provide additional secure Class A bicycle parking, beyond the amount required by the Parking By-law, to adequately accommodate these cycles of various shapes and sizes.

All cycles should only be useable by residents, employees, and/or visitors in the presence of the resident/employee, 24 hours a day, 365 days a year. The cycles shall be available for usage without any additional user fees and there shall be a reasonable liability to the user in case of loss or damage. All the equipment shall be privately owned and operated by the Project Owner.

The cycles shall facilitate two-way trips only; each trip has to start and end on-site as a back-to-one bike share system. It is prohibited to determine the location of the cycles outside of the bicycle room or bicycle cage (i.e. no geolocation). Commercial external third party ownership, operation, and branding are prohibited.

All bicycles shall be ISO Certified. Further, the property owner shall provide for every cycle: helmets, locks, automatic lights (white in front and red in back) and other safety features (reflectors, bell) to support compliance with the laws of British Columbia and the By-laws of the City of Vancouver. Other amenities to facilitate convenient use of the fleet are encouraged.

This shall be secure with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 4 points, depending on land use:

- For Residential – Rental, up to four (4) points
- For Commercial - Office, up to four (4) points
- For Commercial - Retail, up to two (2) points

Development projects may receive points commensurate with the rate of provision of the shared cycling fleet.

Compliance Information

Development Review

The property owner shall submit plans that identify the location of the Class A Bicycle Parking designated for the fleet of cycles, proposed cycle type(s), and operational plan. The operational plan should describe:

- Ownership of equipment
- Equipment Maintenance for: storage, locking, charging (if applicable), user limitations (ride time, hours of operation, number of bikes, etc.), administration, terms and conditions of use, and capital replacement of cycles and parts
- Plan for providing ongoing monitoring and reporting standards set out below
- If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will deliver this service.

City staff will review the proposed plan to ensure that the fleet of cycles shall be properly housed, maintained and easily accessed.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: Site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits, and/or request that the property owner submit documentation to verify that the project continues to meet the standards specified in the project approvals, including, but not limited to: usage and ridership data gathering and sharing, such as inventory of available equipment, usage per resident, usage per bike, ridership numbers. If no users have opted to use the available private fleet, then the property owner shall submit documentation demonstrating that the services were offered and declined.

Supporting Policy & Documents

- British Columbia Motor Vehicle Act
- City of Vancouver Bicycle Parking Design Supplement
- City of Vancouver Parking By-law
- Transportation 2040 Plan
- Greenest City Action Plan

ACT-09 // WALKING IMPROVEMENTS

TDM Measure

Where the City requires large scale improved and enhanced pedestrian facilities off-site as a condition of approval, the property owner shall provide safe, attractive, and direct off-site connections for pedestrians linking building entrances with the surrounding pedestrian network, transit stops, and key destinations. Since the walking improvements may be a requirement as a condition of approval, the City shall provide points to the development project to reduce the overall requirements of its TDM plan. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to six (6) points, based on level of implementation.

Compliance Information

Development Review

The property owner shall submit a streetscape plan and sections that show the location, design, and dimensions of existing and proposed pedestrian-oriented streetscape elements along the project frontage(s).

City staff will review the proposed streetscape plan during the development review process to provide a staff recommendation regarding the streetscape improvements. If City staff recommend that the streetscape improvements should be approved, the development project would receive the points based on the level of implementation.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

The property owner shall maintain all streetscape improvements in good condition, and repair or replace, as needed, unless the maintenance and ownership of specific streetscape elements have been transferred to the City. After occupancy of the development project, the City may periodically conduct site visits, and/or request that the property owner submit documentation to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

City of Vancouver Street & Traffic By-law
City of Vancouver Street Tree By-law
Transportation 2040 Plan
Greenest City Action Plan

COM-01 // CARSHARE SPACES

TDM Measure

The property owner shall provide dedicated publicly available parking spaces for car share vehicles (one-way or two-way), up to the following ratios:

- Residential - Strata: Up to one (1) car share parking space for every 20 Dwelling Units;
- Residential - Rental: Up to one (1) car share parking space for every 10 Dwelling Units;
- Commercial - Office Up to one (1) car share parking space for each 2,300 square metres of gross floor area;
- Commercial - Retail: Up to one (1) car share parking space for each 930 square metres of gross floor area.

The car share space shall be provided in perpetuity and they shall only be occupied by car share vehicles operated by a professional car share organization. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 16 points, depending on land use and commensurate with the rate of provision, as follows:

- For Residential – Strata, up to eight (8) points
- For Residential – Rental, up to 16 points
- For Commercial - Office, up to eight (8) points
- For Commercial - Retail, up to eight (8) points

Compliance Information

Development Review

The property owner shall submit plans that identify the car-sharing parking spaces. City staff will review the location to ensure public accessibility and compliance with the Parking By-law.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits, and/or request that the property owner submit documentation to verify that the project continues to meet the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Transportation 2040 Plan
- Greenest City Action Plan

COM-02 // CARSHARE VEHICLES AND SPACES

TDM Measure

The property owner shall provide publicly accessible two-way car share vehicle(s) and space(s) on-site for at least 3 years, up to the following ratios:

- Residential - Strata: A minimum of one (1) car share vehicle and space for every 50 Dwelling Units;
- Residential - Rental: A minimum of one (1) car share vehicle and space for every 25 Dwelling Units;
- Commercial - Office Up to one (1) car share vehicle and space for each 4,600 square metres of gross floor area;
- Commercial - Retail: Up to one (1) car share vehicle and space for each 4,600 square metres of gross floor area.

The car share space shall be provided in perpetuity. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 16 points, depending on land use and commensurate with the rate of provision, as follows:

- For Residential – Strata, up to eight (8) points
- For Residential – Rental, up to 16 points
- For Commercial - Office, up to eight (8) points
- For Commercial - Retail, up to three (3) points

Compliance Information

Development Review

The property owner shall submit plans to the City that identify the total number of two-way public car share vehicles and parking spaces, as well as letter of support from a professional two-car car sharing organization. City staff will review the location to ensure public accessibility and compliance with the Parking By-law.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically conduct site visits, and/or request that the property owner submit documentation to verify that the project continues to meet the standards specified in the project approvals, such as verification of car share operations associated with any car share spaces and vehicles such as copies of operating agreements with a Professional Car Share Organization. City staff will verify that the submitted documentation complies with the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Transportation 2040 Plan
- Greenest City Action Plan

COM-03 // ADDITIONAL PASSENGER LOADING SPACES

TDM Measure

The property owner shall provide additional on-site passenger loading spaces, fully accessible at-grade, to facilitate short-term loading activities such as pick-up/drop-off. The spaces shall be provided in perpetuity. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 8 points based upon level of provision, as follows:

- *Two (2) points, for providing one (1) Class A passenger space, or*
- *Four (4) points, for providing two (2) Class A passenger spaces, and/or*
- *Four (4) points, for providing one (1) Class B passenger space. Subject to City approval.*

Compliance Information

Development Review

The property owner shall submit plans showing the location, design, and dimensions of passenger loading spaces. City staff will review the proposed plan to ensure public accessibility and that the spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

City staff would verify that the standards specified in the project approvals continue to be met. City staff may contact the TDM coordinator for further information regarding this measure.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Transportation 2040
- Greenest City Action Plan

COM-04 // SHUTTLE BUS SERVICE

TDM Measure

The property owner shall provide local shuttle service for 20 years. The local shuttles will primarily provide service between the project site and regional transit hubs, commercial centers, and/or residential areas. Local shuttle service shall be provided free of charge to residents, tenants (employees), and visitors. Shuttle stop locations shall be posted with shuttle schedules (or frequency and hours).

Shuttle service lines may not replicate TransLink transit service lines, unless recommended for approval by the City of Vancouver. Shuttles must stop at legal curb space and comply with parking and traffic regulations. Eligible shuttle service should typically run from 7 a.m. to 8 p.m., continuously, and must offer headways of 15 minutes or better during peak hours (generally 7 - 9 a.m. and 4 - 6 p.m. on weekdays), and headways of 30 minutes or better during off-peak periods (which should generally run at least until 8 p.m., unless unnecessary for the particular land use). This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Commercial – Office
- Commercial - Retail

Does not apply to development projects located within a Level A transit accessibility area, i.e.:

- Within 100 m walking distance of any one (1) existing FTN route, including B-Line stops, or
- Within 200 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or
- Within 400 m walking distance of any SkyTrain station

Points

Up to 14 points, for depending on level of service frequency

Compliance Information

Development Review

The property owner shall submit a conceptual service plan describing the hours of operation, stop location(s), routes, and headways for the shuttle service. The property owner shall also submit plans that identify the location and dimensions of potential shuttle stops at the development project site and the proposed destination(s) stops. If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will offer this service. The plans should identify any other relevant information that may be helpful in understanding potential conflicts at the proposed shuttle stop locations (e.g., proximity to transit stops, crosswalks, etc.). Shuttles must stop at existing legal curb space and comply with parking and traffic regulations, or stops shall be provided on-site. City staff will review the feasibility and adequacy of the proposed service plan, including the shuttle stop locations.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may conduct site visits, or periodically request that the property owner submit documentation to verify that the provided services continue to comply with the standards specified in the project approvals, including, but not limited to: shuttle schedule, routes, average daily ridership, and agreement with the shuttle operator.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- City of Vancouver Street and Traffic By-law
- Transportation 2040
- Greenest City Action Plan

COM-05 // VANPOOL/CARPOOL SERVICE

TDM Measure

For development projects with at least 25 employees, the property owner shall implement an employer- or building manager-sponsored Vanpool or Carpool service for 20 years. The Vanpool or Carpool will primarily provide service between the project site and locations where Vanpool or Carpool users live. The property owner shall purchase or lease vehicles for employee use and pay for mileage and maintenance of the vehicles. The pooling service should primarily serve the development site and locations where users live. Eligible service should typically run during the peak hours, intended to serve trips at the beginning and end of the workday. The program must provide an active matching service using manual or automated matching of addresses and providing employees with potential carpools (passive matching alone such as bulletin boards is not acceptable). Pooling services may not replicate any TransLink service route. Preferential parking spaces for carpool/vanpool vehicles should also be provided to accommodate 5% of employees carpooling. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Commercial – Office
- Commercial - Retail

Points

Up to four (4) points, depending on land use:

- For Commercial – Office, four (4) points
- For Commercial – Retail, two (2) points

Compliance Information

Development Review

The property owner shall submit an operational plan detailing how the service will be delivered. The property owner shall also submit plans that identify the location and dimensions of the carpool or vanpool parking spaces on the project site. If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will offer this service. City staff will review the feasibility and adequacy of the proposed service plan, and the site plans to ensure that the parking spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may conduct site visits, or periodically request that the property owner submit documentation to verify that the provided services continue to comply with the standards specified in the project approvals, including, but not limited to: copies of invoices for carpool/ vanpool services provided during the last year with any sensitive billing information redacted, documentation of marketing materials provided for the service, routes, and average daily ridership.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Transportation 2040
- Greenest City Action Plan

SUP-01 // TRANSPORTATION MARKETING SERVICES

TDM Measure

The property owner shall provide individualized, tailored marketing and communication campaigns, including incentives to encourage the use of sustainable transportation modes. Marketing services shall either be provided by an assigned TDM coordinator or a communications professional.

Marketing services shall include, at a minimum, the following activities:

Promotions - The TDM coordinator shall develop and deploy promotions to encourage use of sustainable transportation modes. This includes targeted messaging and communications campaigns, incentives and contests, and other creative strategies. These campaigns may target existing and/or new residents/employees/ tenants; and

Welcome Packets - New residents and employees shall be provided with tailored marketing information about sustainable transportation options associated with accessing the project site (e.g. specific transit routes and schedules; bicycle routes; carpooling programs, etc.) as part of a welcome packet. For employees, the packet should reflect options for major commute origins. New residents and employees shall also be offered the opportunity for a one-on-one consultation about their transportation options.

The property owner shall proactively provide ongoing travel planning resources to residents and employees for 20 years. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Two (2) points

Compliance Information

Development Review

The property owner shall provide a description of the services to be provided to City staff. . If available, the property owner shall also submit any additional information regarding this measure (e.g., online sign-up portals or additional marketing materials) that demonstrates how the property owner will offer this service.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, the City may periodically request that the property owner submit documentation to verify that the provided services continue to comply with the standards specified in the project approvals, including, but not limited to: updated contact information for the contracted TDM coordinator, marketing plan and documentation of marketing activities—for example, promotions and outreach activities.

Supporting Policy & Documents

- Transportation 2040
- Greenest City Action Plan

SUP-02 // REAL-TIME INFORMATION

TDM Measure

The property owner shall provide real-time transportation information for 20 years on displays (e.g. large television screens or computer monitors) in prominent locations (e.g. entry/ exit areas, lobbies, elevator bays) on the project site to highlight sustainable transportation options and support informed trip-making. At minimum, a development project should include such screens at each major entry/exit.

The displays shall include real time information on sustainable transportation options in the vicinity of the project site, which may include, but are not limited to, transit arrivals and departures for nearby TransLink routes, walking times to these locations, and the availability of car share vehicles (within or adjacent to the building), shared bicycles, and shuttles. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Two (2) points

Compliance Information

Development Review

The property owner shall submit plans that identify the general locations for proposed displays and a description of the content (e.g. transit lines, walk time to transit locations, availability of on-site car share vehicles, availability of nearby shared bikes, etc.) to be displayed. City staff would review the proposed plan to ensure that the display placement and content meets the intent of this measure.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed. After occupancy of the development project, City staff may periodically verify the ongoing maintenance and operation of the displays by performing site visits or request that the property owner submit documentation, e.g. photographs of the displays, to verify that the provided services continue to comply with the standards specified in the project approvals.

Supporting Policy & Documents

- Transportation 2040
- Greenest City Action Plan

SUP-03 // MULTIMODAL WAYFINDING SIGNAGE

TDM Measure

The property owner shall provide multimodal wayfinding signage that can withstand weather elements (e.g., wind, rain) in key locations. That is, the signs shall be located externally and/or internally so that the residents, tenants, employees and visitors are directed to transportation services and infrastructure, including transit, bike share, car share parking, bicycle parking and amenities (including repair stations and fleets), showers and lockers, taxi stands, and shuttle/carpool/Vanpool pick-up/drop-off locations. Wayfinding signage shall meet City standards for any on-street wayfinding signage, in particular for bicycle and car share parking, and shall meet best practices for any interior wayfinding.

Applicability

This measure is applicable to the following land uses:

- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Two (2) points

Compliance Information

Development Review

The property owner shall submit plans that identify general locations and content for the proposed signage. City staff would review the proposed plans to ensure that sign placement meets the intent of this measure.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, City staff may periodically verify the ongoing maintenance of signage by performing site visits or request that the property owner submit documentation, e.g. photographs of the displays, to verify that the provided services continue to comply with the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Sign By-law
- Wayfinding Guidelines for Utility Cycling in Metro Vancouver V1.1: https://www.translink.ca/-/media/Documents/cycling/get_there_by_bike.pdf
- Transportation 2040
- Greenest City Action Plan

PKG-01 // PARKING PRICING

TDM Measure

The property owner shall implement paid parking for all users, including employees, customers, and visitors. The property owner shall not include a parking rate or pass beyond one day; in other words, no weekly, monthly, or annual parking passes would be provided. This shall be secured with agreements, as appropriate.

Applicability

This measure is applicable to the following land uses:

- Commercial – Office
- Commercial - Retail

Does not apply to development projects located within the Downtown.

Points

Four (4) points

Compliance Information

Development Review

The measure must be included in the development project's TDM plan.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, City staff may periodically conduct site visits or request that the property owner submit documentation to verify that the provided services continue to comply with the standards specified in the project approvals, including but not limited to: copies of parking rate sheets, photos of signs documenting the parking rates for the facility, and evidence of parking revenues that reflect daily or shorter (i.e., hourly) payments for parking.

Supporting Policy & Documents

- Transportation 2040
- Greenest City Action Plan

PKG-02 // PARKING SUPPLY

TDM Measure

The property owner shall provide off-street private vehicular parking in an amount no greater than the minimum vehicle parking provisions required as per the Parking By-law for all individual land uses on site, including allowable reductions provided in this Administrative Bulletin.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Outside the Downtown, this measure is only applicable to large sites, as defined by the Rezoning Policy for Sustainable Large Developments.

Points

Two (2) points

Compliance Information

Development Review

The property owner shall submit plans showing the proposed number of parking spaces and the spatial layout of the parking, including means of ingress/egress. City staff will review the plans to ensure that the parking spaces provided meet the standards and minimums identified in the Parking By-law, and/or applicable Design Guidelines.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, City staff may periodically conduct site visits or request that the property owner submit documentation, e.g. photographs, to verify that the provided services continue to comply with the standards specified in the project approvals.

Supporting Policy & Documents

- City of Vancouver Parking By-law
- Rezoning Policy for Sustainable Large Developments
- Transportation 2040 Plan
- Greenest City Action Plan

OTH-01 // INNOVATIVE STRATEGIES

TDM Measure

The City may consider other innovative strategies proposed by the property owner, with acceptable rationale, justification, and assessment completed by a transportation consultant.

Examples of acceptable measures may include, but are not limited to: accommodation of Class A bike parking for non-standard or different types of bikes (cargo, recumbent, trailers, etc.), subsidies for sustainable transportation use not previously defined, use of electric shared vehicles where shared vehicles are provided, electric vehicle rapid charging stations in excess of any stations required in applicable By-laws, guaranteed ride home, parking cash out, bike repair services, unbundled parking, bicycle valet, on-site child-care, delivery services and supportive amenities.

Items that shall not be considered as part of an acceptable TDM plan include:

- Virtues of the development project's location, e.g. being located close to existing transit or cycling infrastructure, or being located in a walkable neighborhood with plentiful services
- Virtues of the developments proposed uses, e.g. by orienting towards 'green' tenants.
- Meeting bylaw requirements, e.g. providing bicycle parking that meets bylaw requirements, or taking advantage of vehicle parking reductions by providing shared vehicles
- Unless otherwise provided for in the TDM menu, fulfilling engineering requirements noted as part of the rezoning and development application process, e.g. improving pedestrian realm by providing additional sidewalk widths or improved lighting.

Applicability

This measure is applicable to the following land uses:

- Residential - Strata
- Residential – Rental
- Commercial – Office
- Commercial - Retail

Points

Up to 16 points, subject to review.

Compliance Information

Development Review

The property owner shall submit plans that identify the location of the on-site or off-site amenities and services. The property owner shall provide a description of the amenities and/or services to be provided, a means of providing access to all residents, tenants, and employees and a plan for maintaining these amenities. In addition, the property owner shall provide an acceptable rationale, justification, and assessment completed by a transportation consultant. City staff will review the plans and description to ensure they meet the relevant standards and minimums.

Ongoing Monitoring and Reporting

Statutory rights-of-way (SRW) and agreements, as appropriate, shall be required to secure long-term City access to the site to conduct future TDM monitoring, which may include, but not be limited to: site inspections, vehicle generation and parking demand counts, resident/tenant/employee travel mode share surveys, and other data collection activities, as needed.

After occupancy of the development project, City staff may periodically conduct site visits or request that the property owner submit documentation to verify that the provided services continue to comply with the standards specified in the project approvals.

Supporting Policy & Documents

- Transportation 2040 Plan
- Greenest City Action Plan

MEMO

DATE: June 20, 2018
PROJECT NO: 04-18-0086
PROJECT: City of Vancouver Parking By-law Update
SUBJECT: Zero Residential Parking Research (Draft)

TO: John Turecki, P.Eng.
City of Vancouver

PREPARED BY: Nicole He, EIT.
REVIEWED BY: Christephen Cheng, P.Eng.

1. INTRODUCTION

This memo summarizes the research findings on both existing and proposed developments with zero on-site residential parking in Canada. As part of the analysis, Bunt reached out to appropriate building managers and City staff in order to understand the parking and loading management at the zero-parking buildings. In addition, a phone interview was also conducted with the Social Planning and Research Council (SPARC BC) to understand the emerging trend with regards to accessible parking requirements for buildings. Specifically, the research examined the following aspects of buildings with zero residential parking:

- Options for residential and visitor parking when no on-site parking is provided;
- Accessible parking requirement; and
- Pick-up / Drop-off requirement.

Table 1 summarizes the existing and proposed developments currently with zero residential parking in other communities within Canada. **Exhibit 1** shows the development projects in Alberta and **Exhibit 2** shows the developments in Toronto, Ontario.

Table 1: List of Existing and Proposed Developments with Zero Residential Parking

BUILDING	TENURE TYPE	LOCATION	UNITS	STATUS	SOURCE OF FEEDBACK
The Crawford Block	Rental	Edmonton, AB	40 Units	Built	Building Manager
N3 Condo	Condo	Calgary, AB	167 Units	Built	Bunt Database & Project Website
RCMI Condominium	Condo	Toronto, ON	315 Units	Built	City of Toronto Staff
24 Mercer Street	Condo	Toronto, ON	27 Units	Pre-construction	City of Toronto Staff
8 Elm Street	Condo	Toronto, ON	469 Units	Under review	City of Toronto Staff

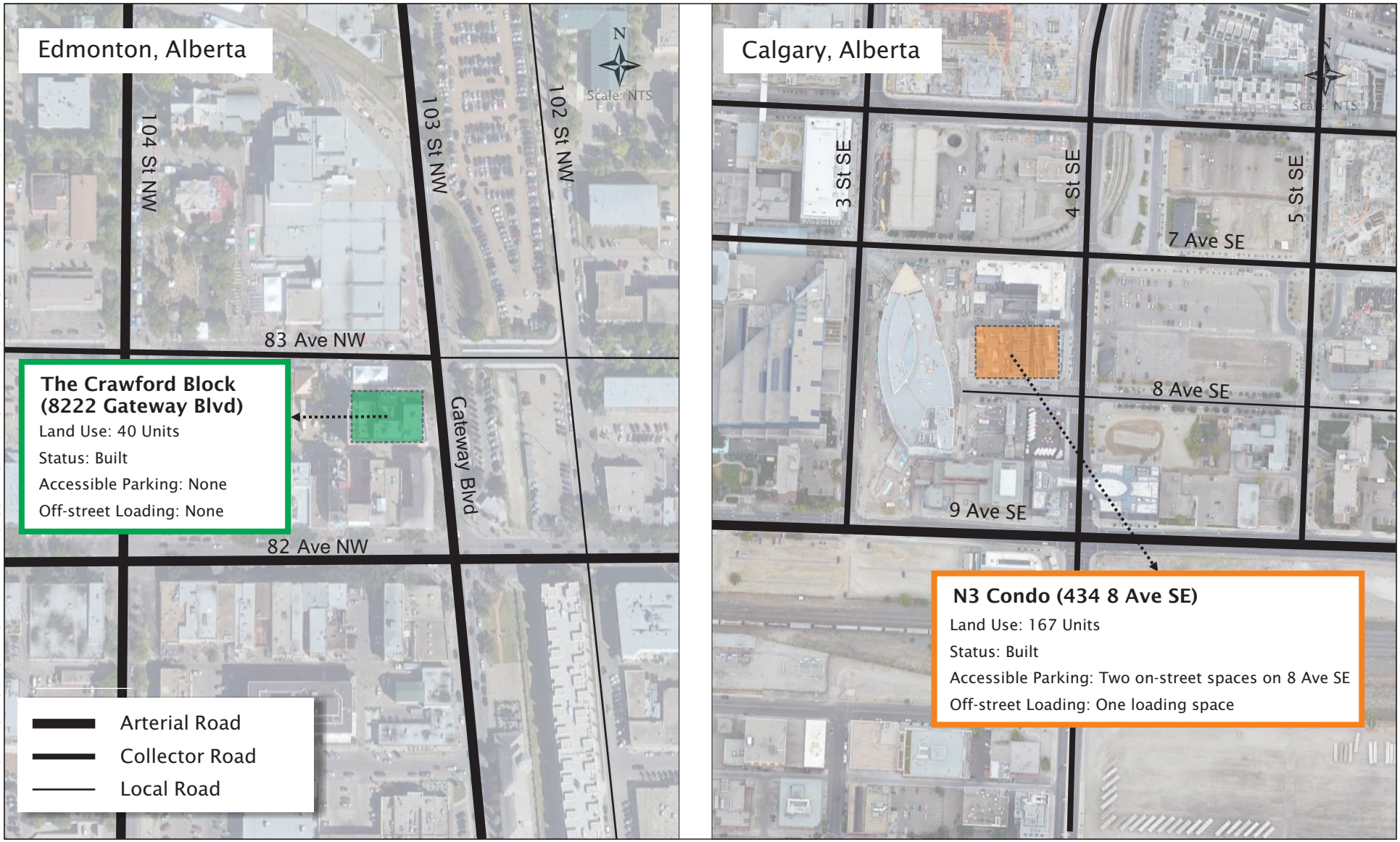

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Exhibit 1

Development Projects with Zero Residential Parking in Alberta

City of Vancouver Parking By-law Update
04-18-0086 June 2018

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Exhibit 2

Development Projects with Zero Residential Parking in Toronto

City of Vancouver Parking By-law Update
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2. PARKING OPTIONS

When the development site does not provide any off-street parking spaces for residents and visitors, the drivers have two main options: (1) park on-street; or (2) park at a nearby public parking lot.

2.1 Edmonton, AB

At the Crawford Block in Edmonton, residents and visitors would choose to park on-street, as there is plenty of parking along surrounding streets including 82 Avenue NW (classified as an Arterial – Class C Road), Gateway Boulevard (classified as an Arterial – Class D road) and 102 Street NW (classified as a Local – residential road). Residents do not need special permits to park on-street in Edmonton. However, they do need to pay for the parking. In Edmonton, the on-street parking rates vary from $2.00 to $3.50 per hour during 6am – 6pm, and overnight parking is $4.00. Public parking lots nearby the Crowford Block site charge $5.00 for 12 hours.

82 Avenue NW currently has many retail and restaurants along the street. According to the building operator, it gets difficult to find on-street parking in the evening on 82 Avenue, particularly in the summer. However, the drivers have the option to park further on-street. The building operator also commented that it would be preferable to provide parking for residents because of the climate in the winter.

2.2 Toronto, ON

The City of Toronto allows off-site parking within 300m of a project site in downtown Toronto, because of generally decreasing residential parking demand in the downtown area. Generally in the City of Toronto, when a development proposes zero residential parking, a Parking Study is required to be submitted to show that nearby parking lots and on-street parking can accommodate parking needs of residents and visitors.

For the RCMI Condominium in downtown Toronto, there are nine on-site carshare stalls at the RCMI Condominium available for residents. Residents and visitors may choose to park in nearby parking lots within reasonable walking distances. The public parking lot next to the RCMI condominium charges $4.00 per 30 minutes and maximum $15.00 daily (7am – 6pm); the overnight parking (6pm - 12am) is $6.00 and the monthly cost is $250. The on-street parking along Simcoe Street (classified as collector road) and University Avenue (classified as major arterial road) is up to $3.50 per hour (8am – 9pm Monday to Saturday and 1pm-9pm on Sunday).

In 2014, Bunt interviewed Tribute Communities, the developer of the RCMI Condominium, and they indicated that there was no issue was raised their residents and visitors concerning the zero parking supply for the building.[1] However, according to Joe D'Abramo, the Acting Director of Zoning By-law and Environmental Planning of the City of Toronto in 2013, he indicated that there were people who own cars

[1] N3 East Village Zero Parking Feasibility – Final Report, Bunt & Associates Engineering Ltd., September 2014.

but not using them every day and that their cars would need to be parked somewhere. In most instances, "...if [developer] don't provide a place to put the car on the private side, the burden goes to the public side," and "the first place people ask to park in on the street."[2]

The development at 24 Mercer Street in Toronto was approved with the proposal of zero residential parking, primarily because it was not practically possible to provide off-street parking on this small site.

2.3 Calgary, AB

The N3 condo in Calgary provides two carshare spaces for residents. Despite have zero off-street residential parking, the N3 condo was also sold out in two weeks at the time when the project was available for purchase in the market. After the opening of the N3 condo, however, the public expressed different opinions[3] towards the zero-parking concept: many people supported the car-free lifestyle but meanwhile some visitors were frustrated because that they cannot find a parking space in the area, while some residents were concerned about the safety of walking back home from off-site parking locations in the evening.

3. ACCESSIBLE PARKING

In both Toronto and Edmonton, the developments with zero residential parking also do not provide any accessible parking spaces. Similar to residents and visitors, people with disabilities also need to park on-street, or at other parking lots in the area.

For both the Crawford Block and the RCMI condominiums, there are no signs that indicate curb space are reserved for disabled parking along surrounding streets. Neither Toronto nor Edmonton requires any dedicated accessible parking spaces for these buildings with zero on-site parking. The City of Toronto staff did not recall any public complaints about not providing on-site accessible parking spaces. The building manager at the Crawford Block did not recall a specific number of people in the building who need accessible parking. The building manager was only able to indicate at most five people in the building would need accessible parking spaces although this may be overstated.

In Calgary, the N3 condo's site plan identified two dedicated on-street parking spaces for people with disabilities along the site's frontage, although they are not currently marked as such. These two accessible parking spaces would be governed by Alberta Building code, and they belong to the City of Calgary rather than the development. It is noted that there are three other accessible on-street parking spaces available on 8th Avenue and 5th Street SE, approximately 200 metres from the N3 condo.

[2] "Parking Issues: New condo building triggers car alarm in the Beach." Carys Mills, February 2013.

[3] "Young and old move into car-free condo", Calgary Herarld, April 2017. https://www.pressreader.com/canada/calgary-herald/20170408/281676844767401

In consultation with Bunt, SPARC BC indicated that accessible parking requirements for buildings vary depending on the location and the intended users for the building. Generally, it was advised that at a minimum, the Ontario Building Code should be used as a guideline in establishing the minimum accessible parking spaces. Unlike the City of Vancouver Parking By-law, requirements for accessible parking in the Ontario Building Code is based on the overall number of parking spaces provided, where as the City of Vancouver's Parking By-law currently is based on the number of dwelling units for Residential Use, and gross floor area for Non-Residential Use.

For comparison purposes, **Table 2** below provides a calculation of the required accessible parking for a 350 dwelling unit residential building (28,000 sq m GFA assuming 70 sq m per unit on average, plus 15% uplift for Gross Floor Area) and a 37,500 sq m GFA commercial building based on the guidelines from the City of Vancouver's Parking By-law and the Ontario Building Code.

Table 2: Comparison of Accessible Parking Requirements

USE	CURRENT VEHICLE PARKING REQUIREMENT (DOWNTOWN, MINIMUM)	REQUIRED ACCESSIBLE STALLS BASED ON CITY'S PARKING BY-LAW	REQUIRED ACCESSIBLE STALLS BASED ON ONTARIO BUILDING CODE
Residential (350 units, 28,000 sq m GFA)	200	13	7
Non-Residential (37,500 sq m GFA)	259	16	8

From **Table 2**, it is apparent that the requirement for accessible parking from the current City of Vancouver Parking By-law is approximately double than that required from the Ontario Building Code.

In terms of the appropriateness of the current Parking By-law's accessible parking requirements, based on Bunt's interview with a local developer for a number of their recent residential projects, it was found that the number of requests for accessible parking stalls for their buildings only represents approximately 15% of the required accessible stalls for each building.

For Non-Residential Use, based on Bunt's recent observations from a number of commercial parking facilities in Downtown, it was found that the peak demand for accessible parking only represented approximately 15% of the current Parking By-law requirements.

The information above would suggest that the current City's Parking By-law requirements for accessible parking maybe excessively high and therefore the City may want to consider lowering the requirements to either align with the Ontario Building Code (i.e. approximately 50% of the current Parking By-law rates), or to reflect the actual utilization observed from other existing Residential and Non-Residential buildings (i.e. approximately 15% of the current Parking By-law rates).

4. PICK-UP / DROP-OFF AND LOADING

Bunt also conducted research on the pick-up/drop-off and loading conditions at the completed and occupied "zero parking" residential developments referenced earlier in this memo. For the Crawford Block building in Edmonton, no off-street loading space was provided because the City does not require any loading spaces for only 40 dwelling units. The site has a rear lane for both residential loading and pick-up/drop-off activities.

The RCMI Condominium in Toronto is providing one Class B loading space located off Simcoe Street as per the City of Toronto By-law requirement. The building at 24 Mercer Street is not proposing any off-street loading space because of the small size of the development. Loading activities will be accommodated at the rear lane.

5. SUMMARY

Table 3 summarizes the key statistics of parking and loading management at existing and proposed developments with zero off-street residential parking. As shown, none of the buildings below provide any off-street accessible parking spaces. Based on Bunt's recent observation and inputs from building operator in other buildings, the current City's Parking By-law requirements for accessible parking maybe excessive and therefore the City may want to consider revising the requirements as appropriate.

Table 3: Accessible Parking, Loading and Pick-Up/Drop-Off in Zero-Parking Buildings

BUILDING	UNITS	OFF-STREET ACCESSIBLE PARKING	ON-STREET ACCESSIBLE PARKING	LOADING	PICK-UP / DROP-OFF
The Crawford Block	40	None	No dedicated on-street accessible parking	Rear lane	Rear lane
N3 Condo	167	None	Two spaces along 8 Ave SE; plus three spaces 200m away from the site at 8 Ave SE & 5 St SE.	One loading space	None
RCMI Condominium	315	None	No dedicated on-street accessible parking	One Class B loading space	No dedicated curb space
24 Mercer Street	27	None	No dedicated on-street accessible parking	None	No dedicated curb space

MEMO

DATE: June 20, 2018
PROJECT NO: 04-18-0086
PROJECT: CoV Parking Bylaw Update
SUBJECT: Social and Supportive Housing Parking Research (Draft)

TO: John Turecki, P.Eng. & Billy Dong, P.Eng.
City of Vancouver

PREPARED BY: Julian Cheung, EIT
REVIEWED BY: Christephen Cheng, P.Eng.; Peter Joyce, P.Eng.

This memorandum summarizes the findings from the travel and parking surveys that Bunt conducted for a number of Social Housing and Supportive Housing sites in Vancouver. It will first provide the definitions for the sites selected. It will then present the survey findings and close with the suggested parking supply rates based on the survey findings.

1. DEFINITIONS

Bunt has consulted with the City of Vancouver Engineering Department and it was agreed that for the purpose of this study, the **Social Housing** and **Supportive Housing** sites are defined based on the expected income ranges for tenants, specifically:

- **Social Housing:** Units renting at BC Housing income limits, typically affordable to incomes ranging from $30-50K for singles and $50-80K for families.
- **Supportive Housing:** Units renting at shelter rates, typically affordable to incomes ranging from $0-15K for singles and $15-30K for families.

Based on these criteria, Bunt, in consultation with the City, developed two lists in early May consisting of 13 Social Housing and 14 Supportive Housing that could potentially be surveyed to understand the current travel and parking behaviours. Bunt subsequently contacted the individual building managers and received confirmation in late May that 8 Social Housing and 3 Supportive Housing sites had agreed to participate in the survey.

Table 1 provides a summary of the sites surveyed along with the type of surveys that the building managers agreed to participate in.

Table 1: List of Surveyed Sites in Vancouver

NO.	PROJECT NAME	SITE ADDRESS	NUMBER OF UNITS	TYPES OF SURVEY COMPLETED
Social Housing				
1	Chimo Terrace	2080 & 2140 Wall Street	80	Residents Surveys & Manager Interviews
2	Brant Villa	2270-2290 25th Avenue & 2269-2291 27th Avenue East	48	Residents Surveys & Manager Interviews
3	Rupert Lane	4830 - 4854 Rupert Street	42	Residents Surveys & Manager Interviews
5	Cypress Walk	2425 Cypress Street	32	Residents Surveys & Manager Interviews
6	Redwood Mews	420 16th Avenue West	30	Residents Surveys & Manager Interviews
8	Carolina Court	600 6th Avenue East	50	Residents Surveys & Manager Interviews
9	China Creek	1040 7th Avenue East	18	Residents Surveys & Manager Interviews
10	Kingsway Continental	3484 Kingsway	123	Residents Surveys & Manager Interviews
		Social Housing Sub-Total	*423*	-
Supportive Housing				
5	First Place	188 1st Avenue East	129	Residents Surveys, Manager Interviews & Field Observations
6	Marguerite Ford Apartments	215 2nd Avenue West	147	Manager Interviews & Field Observations
12	Budzey Building	606 Powell Street & 220 Princess Street	147	Manager Interviews & Field Observations
		Supportive Housing Sub-Total	*423*	-

Note: Bunt initially contacted all 13 Social Housing and 14 Supportive Housing sites, some of them did not respond to our phone calls despite multiple attempts from our end. For the 3 supportive housing sites that agreed to participate in the surveys, two of them were unable to assist with distributing the residents' surveys as they do not have the capacity to take on the extra workload and did not want Bunt staff to take this on.

2. SURVEY FINDINGS

2.1 Preamble

When contacting the Social and Supportive Housing sites, the caretaker/building managers of these buildings provided some insights related to the survey findings. In general, the caretaker/building managers of the Social Housing sites explained that the response rates of the surveys would likely be relatively low due to low vehicle ownership, and that parking is sufficient at most of the sites. In addition, one of the caretakers also noted that residents generally were not very receptive to surveys and had a negative perception towards the City due to housing affordability concerns.

For the Supportive Housing sites, many of the caretakers/building managers did not want to participate in parking survey as most residents do not own vehicles and parking is generally not provided to residents.

Staff also felt overworked and did not want to assist distributing the survey and felt that most residents would have difficulty understanding or completing the survey.

Copies of the questionnaire surveys are included in **Appendix A**.

2.2 Social Housing

Table 2 summarizes the survey response rate at each of the site. Each site was given two weeks to respond to the paper or online survey. Notices were also posted on each sites' bulletin board. Each household received a paper copy of the survey, with the exception of China Creek. The overall response rate was 8% of households. **Table 3** provides general parking information for each site.

Table 2: Social Housing Response Rate

NAME	ADDRESS	NUMBER OF UNITS	SURVEYS RETURNED	SURVEY RESPONSE RATE
Brant Villa	2269-2291 E 27th Ave	48	1	0.02
Chimo Terrace	2080-2140 Wall St	80	11	0.14
Cypress Walk	2425 Cypress St	32	3	0.09
Redwood Mews	420 W 16th Ave	30	1	0.03
Rupert Lane	4830-4854 Rupert St	42	2	0.05
China Creek	1040 E 7th Ave	18	1	0.06
Carolina Court	600 E 6th Ave	50	3	0.06
Kingsway Continental	3484 Kingsway	123	13	0.11
	TOTAL	423	35	0.08

Table 3: Social Housing Site Information

NAME	REGULAR SIZED PARKING	ACCESSIBLE PARKING	DROP-OFF / PICK-UP SPACE	SECURE BIKE PARKING
Brant Villa	40	4	0	1 per unit (storage locker)
Chimo Terrace	46	0	0	Yes
Cypress Walk	23	0	0	12
Redwood Mews	15	0	0	0
Rupert Lane	28	4	0	1 per unit (storage locker)
China Creek	17	1	0	1 per unit (storage locker)
Carolina Court	24	0	0	10
Kingsway Continental	40	1	1	0

With the exception of Chimo Terrace and Rupert Lane, parking for all the studied Social Housing are reserved for residents only. For Chimo Terrace, the building manager indicated that only 16 of the residents requested for a parking space, whereas the rest of the parking spaces were made available for visitors. For Rupert Lane, out of the 28 regular sized parking spaces, 5 of them were assigned for visitors, 1 of them was assigned for caretaker, and the remainder were all assigned to residents.

Table 4 summarizes the parking rates based on the residential and building manager surveys.

Table 4: Social Housing Survey Results (spaces per unit)

NAME	RESIDENT PARKING DEMAND RATE	VISITOR PARKING DEMAND RATE	ACCESSIBLE PARKING DEMAND RATE	DROP-OFF / PICK-UP FREQUENCY	SECURE BIKE PARKING DEMAND RATE
Brant Villa	0.42	Sample Size Too Low			
Chimo Terrace	0.21				
Cypress Walk	0.47				
Redwood Mews	0.47				
Rupert Lane	--				
China Creek	0.39				
Carolina Court	0.12				
Kingsway Continental	0.16				
OVERALL (WEIGHTED AVG.)	**0.26**	**0.14**	**0.03**	**0.40*/DU/DAY**	**0.80***

*Resident survey response indicate that 63% of residents own a vehicle when building manager survey indicate that only 26% of household own vehicles. As such, the resident survey results are heavily skewed toward household with vehicles.

Key Findings:

- Resident parking rate (0.26 per dwelling unit) is based on responses provided by the building managers; as such the rate may be slightly higher to account for street parking.
- Visitor parking rate is based on resident survey responses.
- The resident parking rate of 0.26 per dwelling unit is similar to the "blended" parking rate that the City has recommended for other approved Social Housing projects (i.e. 1 stall for every 6 dwelling units for 1-Bedroom and Studio Units, 1 stall for every 2 dwelling units for 2-Bedroom and 3-Bedroom units, assuming 35% of them being 2-Bedroom and 3-Bedroom units – 0.65 x 1/6 + 0.35 x 0.5 = 0.28).
- Accessible parking rate (0.03 per dwelling unit) is based on the responses provided by the building managers from 2 of the studied sites based on their knowledge of the residents need.
- Drop-off/pick-up frequency (0.40 vehicles per dwelling unit per day) is based on resident survey responses, due to the potential skew toward households with vehicles; the actual rate may be slightly higher. The building manager survey asked if a passenger zone was provided what would be the maximum frequency of drop-off/pick-up within a 5 minute timeframe, most responded that one space would be sufficient for the residents.
- Secure bike parking rate (0.80 per unit) is based on resident survey response, due to the potential skew toward households with vehicles; the actual rate may be slightly higher.

Other Trends:

- 80% of residents who park on street parked less than a 5 min walk away.
- 9% of households have a carshare membership.
- 63% of households have a Compass Card.
- 9% of households use HandyDART.
- 11% of bicycle parking users require additional space for trailers.
- 74% are unlikely to purchase a plug-in electric vehicle in the next 5 years.

Comments from Building Managers:

- Secure bike rooms are poorly used due to concerns about theft.
- Loading zone/Passenger zone would be useful if located near lobby entrance.
- Poor snow removal makes driving on local roads almost impossible.
- Visitors have indicated difficulty finding parking.

2.3 Supportive Housing

Table 2 summarizes the survey response rate at each of the site. Only one site participated in the resident surveys. Each household received a paper copy of the survey. **Table 3** provides general parking information for each site.

Table 5: Supportive Housing Response Rate

NAME	ADDRESS	NUMBER OF UNITS	SURVEYS RETURNED	SURVEY RATE
Budzey Building	220 Princess Avenue	147	Did Not Participate in Resident Survey	
Marguerite Ford Apartments	215 2nd Avenue West	147		
First Place	188 1st Avenue East	129	52	0.40
	TOTAL	423	--	--

Table 6: Supportive Housing Site Information

NAME	RESIDENT PARKING	VISITOR PARKING	STAFF PARKING	DROP-OFF / PICK-UP SPACE	SECURE BIKE PARKING
Budzey Building	0	0	10	2	100
Marguerite Ford Apartments	0	0	3	0	Unsure
First Place	10	2	10	0	60

Table 7 summarizes the survey results from the managers and residents, and site observations.

Table 7: Supportive Housing Survey Results and Site Observations (spaces per unit)

NAME	RESIDENT PARKING DEMAND RATE	VISITOR PARKING DEMAND RATE	STAFF PARKING DEMAND RATE	ACCESSIBLE PARKING DEMAND RATE	DROP-OFF / PICK-UP FREQUENCY	SECURE BIKE PARKING DEMAND RATE
Budzey Building	--	--	0.07	--	5/hour*	--
Marguerite Ford Apartments	--	--	0.02	--	3/hour*	--
First Place	0	0.05	0.08	--	0.77/DU/day	1.29

*Number of drop-off/ pick-up observed during peak hour.

Key Findings:

- Residential survey were used to determine the resident parking rate (0 per dwelling unit), visitor parking rate (0.05 per dwelling unit) and secure bike parking rate (1.29 per dwelling unit). Of the three sites only one site provided resident parking at the rate of 0.08 per dwelling unit.
- The staff parking rate (0.08 per dwelling unit) is based on the building manager survey response.
- Drop-off / pick-up rate (0.77 per dwelling unit per day) is based on resident survey responses. Additional site observations during the PM peak hour. For the Budzey Building a maximum of 2 drop-off / pick-up occurrences were observed within a 5 minute timeframe.

Other Trends:

- 60% of residents who park on street parked between 5 to 10 min walk away.
- 4% of households have a carshare membership.
- 69% of households have a Compass Card.
- 19% of households use HandyDART.
- 15% of bicycle parking require an electrical outlet.
- 75% are unlikely to purchase a plug-in electric vehicle in the next 5 years.

Comments from Building Managers:

- Insufficient space in secure bike parking was due to many abandoned bikes.
- Staff complained about insufficient parking, this is made worse due to the need for fleet vehicle parking.

3. CONCLUSION AND RECOMMENATIONS

Table 8 summarizes our recommended parking rates.

Table 8: Recommended Parking Rates for Social and Supportive Housing

USE	MINIMUM PARKING RATE	ACCESSIBLE PARKING (IN ADDITION TO MINIMUM)	PASSENGER LOADING SPACES	STAFF PARKING (IN ADDITION TO MINIMUM)
Social Housing	Downtown: None; Non-Downtown: Residents: 1 space per 6 dwelling unit for Studio and 1-Bedroom Units; 1 space per 2 dwelling units for 2-Bedroom and 3-Bedroom units. Visitors: 0.05 space per dwelling unit	0.03 space per dwelling unit	1 per building	1 per building
Supportive Housing	Downtown: None; Non-Downtown: Residents: None. Visitors: 0.05 space per dwelling unit	0.03 space per dwelling unit	1 per building	0.08 space per dwelling unit

Appendix A – Building Manager / Resident Survey

City of Vancouver Parking Study (Building Manager)

SURVEY CONDUCTED ON SITE BY FIELD CREW

Address: _____

1. In the last week, approximately how many deliveries were made on an average day?
   _____ (i.e. Canada Post, Fedex, Purolator, etc.)

2. Are drop-off/pick-up spaces provided at the building? (please circle) Yes / No
   If so, how many spaces are provided on-site? _____
   How many spaces are provided on-street? _____

3. Please provide the total number of vehicle parking stalls for the following:
   Resident Parking: _____
   Visitor Parking: _____
   Accessible Parking: _____

4. Are parking stalls bundled with units? (I.e. assigned parking space is included in the rental cost) (please circle) Yes / No

5. Is there a person with a disability without an accessible stall? (please circle) Yes / No
   Are there any strata-bylaws or agreements that allow reallocation of accessible stalls to that unit? (please circle) Yes / No

6. What is the approximately cost to rent a parking space for one month at the building? $_____

7. Is there secure bicycle parking provided in the building? (i.e. bike racks in a locked room/cage or bike racks in a designated parking stall) (please circle) Yes / No
   If yes, how many secure bicycle parking? _____
   If so, approximately how full are the bike rooms in the evening?
   ☐ 0% ☐ 10% ☐ 20% ☐ 30% ☐ 40% ☐ 50%
   ☐ 60% ☐ 70% ☐ 80% ☐ 90% ☐ 100% ☐ Unsure

8. Are there other bike facilities in the building (i.e. showers, lockers, bike repair room, etc.)

---

9. How many dwelling units are subsidized by BC Housing in the building? _____

10. Are there senior (65+) resident units only? (please circle) Yes / No
    If so, how many dwelling units? _____

11. Does the building provide any of the following Transportation Demand Management measures:
    ☐ Car Share Parking
    ☐ Car Share Membership
    ☐ Transit Subsidies
    ☐ Bicycle Parking
    ☐ Bicycle Repair Station
    ☐ Electric Vehicle Parking
    ☐ Showers and Lockers
    ☐ Fleet of Bicycles
    ☐ Shuttle Bus Service
    ☐ Vanpool Program
    ☐ Carpool Program
    ☐ On-site Childcare
    ☐ Transportation Demand Management Coordinator
    ☐ Other (please specify)

---

12. Any additional comments:

Thank you for completing the questionnaire!

City of Vancouver Parking Study

If you would like to complete the survey online, please use the following link or QR code.
http://m.sgizmoca.com/s3/fb48c08f63a8

Pre-fill, Building Name
Address: Pre-fill, Street number – Street Name, Vancouver, Postal Code
Unit # (Optional): _____

Resident Vehicle Parking

1. How many vehicles does your household own or lease? (please circle) 0, 1, 2, 3, 4, 4+
   (Please include all cars, vans or light trucks that are brought home and parked overnight, but not motorcycles, scooters, bicycles, or car share vehicles)

2. Where do you typically park your vehicle(s) overnight? Please note number of vehicles (please circle):
   Number of vehicle(s) in my building's parking facility (parking lot or garage): 0, 1, 2, 3, 4, 4+
   Number of vehicle(s) in a nearby off-street parking facility (parking lot or garage): 0, 1, 2, 3, 4, 4+
   Number of vehicle(s) I park on the street near my building: 0, 1, 2, 3, 4, 4+

   If you typically park on the street, how far do you park from your building?
   ☐ Less than 5 min walk ☐ Between 5 to 10 min walk ☐ More than 10 min walk

3. How many of your parking spaces in the building are: (please circle)
   Included in the unit rent: 0, 1, 2, 3, 4, 4+
   Rented for an extra fee: 0, 1, 2, 3, 4, 4+

4. How many of your parking spaces in the building do you rent out to other people? 0, 1, 2, 3, 4, 4+

5. Do you use any of the following? (Check all that apply)

Car Share	*Bike Share*	*Translink*
☐ Modo	☐ Mobi	☐ Compass Card
☐ Car2go		☐ HandyDART
☐ Evo		
☐ Zipcar		

Visitor Vehicle Parking / Accessible Parking

6. In the last week, how many visitor(s) required parking and during which period? (please fill in number)

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning	_____	_____	_____	_____	_____	_____	_____
Noon	_____	_____	_____	_____	_____	_____	_____
Afternoon	_____	_____	_____	_____	_____	_____	_____
Evening	_____	_____	_____	_____	_____	_____	_____

7. How many accessible (disability) parking spaces does your household have?
   (please circle) 0, 1, 2, 3, 4, 4+

Drop-off and Pick-up

8. In the last week, how frequent does your household drop-off / pick-up people at your building? (i.e. Vehicle does not park in the building)

☐ Zero ☐ Twice a day ☐ Four times a day
☐ Once a day ☐ Three times a day ☐ Five times or more a day

Bicycle Parking

9. Is there secure bicycle parking provided in the building? (i.e. bike racks in a locked room/cage or bike racks in a designated parking stall)

☐ Yes ☐ Maybe/unsure ☐ No

10. A. How many bicycles does your household own? _____ (do not include tricycles, scooters, push toys and etc.) If you don't have any bicycles skip to questions 12.

B. Does your household use the building's bicycle parking facility? (select all that apply)

Yes
- ☐ Because it's a good facility
- ☐ Because the strata requires me to

No
- ☐ It's too crowded or full
- ☐ I'm afraid the bike will be stolen or damaged
- ☐ I feel uncomfortable or unsafe in the building's bike parking facility
- ☐ It's inconvenient
- ☐ Other, please specify _____

11. How many of the following does your household own? (please circle)

Electric bike: 0, 1, 2, 3, 4, 4+
Bike trailer (cargo): 0, 1, 2, 3, 4, 4+
Bike trailer (children): 0, 1, 2, 3, 4, 4+

Household Information

12. How many bedrooms are in your apartment?

☐ 0 (bachelor/studio) ☐ 1 ☐ 2 ☐ 3 ☐ 4 or more

13. How large is your apartment (excluding balcony/patio)?

☐ Under 400 sq ft ☐ 800-999 sq ft ☐ 1,400 and higher sq ft
☐ 400-599 sq ft ☐ 1,000-1,199 sq ft ☐ Unsure
☐ 600-799 sq ft ☐ 1,200-1,399 sq ft

14. How many people in your household are within the following groups? (please fill in number)

Ages 0-5 years: _____ Ages 6-18: _____ Ages 19-64: _____ Ages 65+: _____

15. City of Vancouver is conducting research to better understand the demand for electric vehicles. How likely are you to consider buying a plug-in electric vehicle within the next five years?

☐ Very unlikely ☐ Somewhat unlikely ☐ Undecided/neutral ☐ Somewhat likely ☐ Very likely

16. Please provide any ideas or comment:

_____

_____

_____

Thank you for completing the questionnaire!

Please return completed surveys to your building manager's office.

MEMO

DATE: June 20, 2018
PROJECT NO: 04-18-0086
PROJECT: CoV Parking Bylaw Update
SUBJECT: Non-Residential Parking Research (Draft)

TO: John Turecki, P.Eng. & Billy Dong, P.Eng.
City of Vancouver

PREPARED BY: Julian Cheung, EIT
REVIEWED BY: Christephen Cheng, P.Eng.

This memorandum summarizes the findings from the travel surveys that Bunt conducted for a number of Non-Residential sites in downtown Vancouver. It will first provide the definitions for the sites selected and will then presents the survey findings and trends.

1. DEFINITIONS

For the purpose of the surveys, Bunt have consulted with the City of Vancouver Engineering Department and it was agreed that for the purpose of this study, the **Non-Residential** sites are defined based on the following categories

- **Hotel:** An establishment providing rooms, meals, and other services for travelers and tourists.
- **Retail:** A standalone store that sales good to the public
- **Office:** A space used as a place for commercial, professional, or bureaucratic work.
- **Restaurant:** A place where people pay to sit and eat meals that are cooked and served on the premises.

Given travel characteristics for Hotel use is generally different from the other Non-Residential uses; Bunt has separated out the travel survey information for Hotel in a different memo.

Based on these criteria, Bunt developed a list in mid May consisting of 100 businesses that could potentially be surveyed to understand the current travel and parking behaviours. Bunt subsequently contacted the individual office/building managers and received confirmation in early June that 25 businesses and four hotel sites agreed to participate in the survey.

Building/office manager surveys were sent out electronically to help establish the business' staffing numbers, square footage, parking facility and additional building information. **Table 1** provides a summary of the sites surveyed along with the type of surveys that the office/building managers have agreed to participate in.

Table 1: List of Surveyed Sites

NO.	BUSINESS	SITE ADDRESS	EMPLOYEE SURVEY RESPONSES	CUSTOMER SURVEY RESPONSES	TYPES OF SURVEY COMPLETED
Office					
1	Anthem Properties Group Ltd.	550 Burrard St #300	1	-	Manager & Employee
2	Aplin and Martin Consultants Ltd.	1111 West Hastings Street #910	5	-	Manager &Employee
3	Bunt & Associates Engineering Ltd.	1050 W Pender St #1550	16	-	Employee
4	Chard Development Ltd.	509 Richards St #500	9	-	Manager &Employee
5	Coliers International	200 Granville St #1900	91	-	Manager &Employee
6	Creative Energy Vancouver	720 Beatty St 1st floor	6	-	Employee
7	HCMA Architecture + Design	675 W Hastings St #400	22	-	Manager & Employee
8	Henriquez Partners Architects	598 W Georgia St	19	-	Employee
9	HSBC Bank Canada	885 West Georgia Street	6	-	Employee
10	IBI Group	1285 West Pender Street	51	-	Manager & Employee
11	ICON West Construction Corp.	1067 West Cordova Street	6	-	Employee
12	Integral Group	200 Granville St	41	-	Manager & Employee
13	KBK #11 Ventures Ltd.	1166 Alberni St	1	-	Employee
14	Manning Elliott LLP	1050 W Pender St #1100	34	-	Manager & Employee
15	MCM Partnership	1066 W Hastings St #1900	19	-	Manager & Employee
16	Perkins+Will	1220 Homer St	62	-	Manager & Employee
17	PWL Partnership Landscape Architects Inc	1201 W Pender St	8	-	Manager & Employee
18	Shape Properties	505 Burrard St #2020	19	-	Manager & Employee
19	Shaw Communications	1067 W Cordova St	1	-	Employee
20	Westbank Projects Corp.	1067 W Cordova St #501	22	-	Employee
		Office Sub-total	**439**	-	-
Restaurant					
1	Cactus club cafe	1085 Canada Pl	2	19	Manager, Employee & Customer Interview
2	JOEY Restaurant	507 Burrard St	1	-	Employee
3	Market by Jean-Georges	1115 Alberni St	1	-	Employee
		Restaurant Sub-total	**4**	**19**	-

NO.	BUSINESS	SITE ADDRESS	EMPLOYEE SURVEY RESPONSES	CUSTOMER SURVEY RESPONSES	TYPES OF SURVEY COMPLETED
Retail					
1	Arc'teryx	813 Burrard St	1	14	Manager, Employee & Customer Interview
2	Urban Fare (Save On Foods)	177 Davie St	1	-	Employee
		Retail Sub-total	**2**	**14**	-
		GRAND TOTAL	445	33	-

2. SURVEY FINDINGS

2.1 Employee Survey Results

An electronic employee survey with the City of Vancouver's cover letter was sent out in early June to the office/building managers, which instructed them to issue the survey to their employees electronically with a link to SurveyGizmo. Below is a summary of the Non-Residential employee parking survey results excluding Hotel.

2.1.1 Which mode of Transportation did you use TODAY for your trip to work?

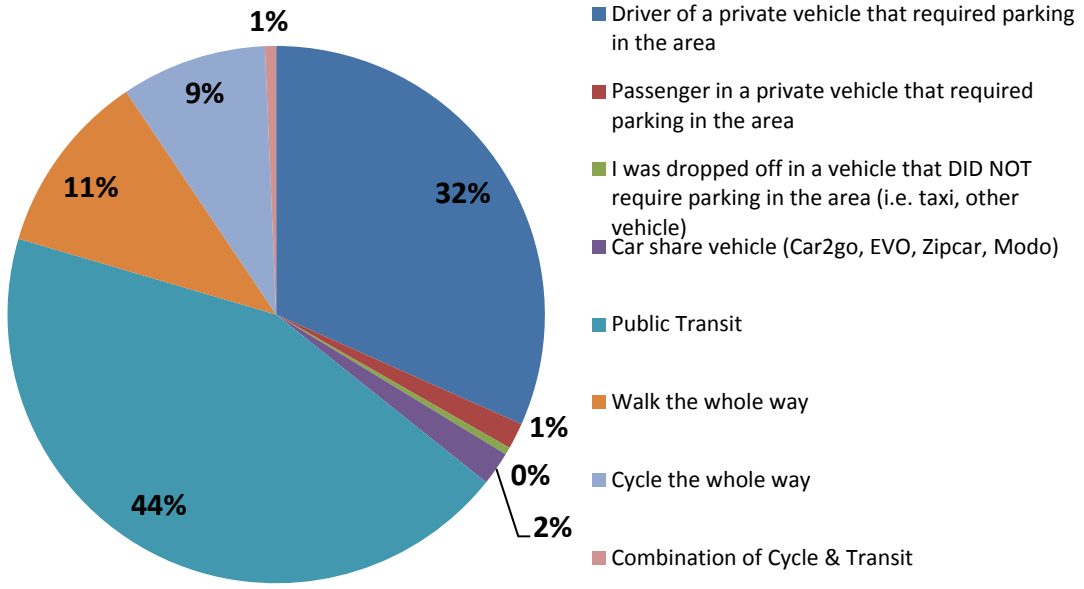

Table 2.1.1: Employee Commuting Transportation Mode

TRANSPORTATION MODE	COUNT	PERCENTAGE
Driver of a private vehicle that required parking in the area	141	32%
Passenger in a private vehicle that required parking in the area	7	2%
I was dropped off in a vehicle that DID NOT require parking in the area (i.e. taxi, other vehicle)	2	0%
Carshare vehicle (Car2go, EVO, Zipcar, Modo)	9	2%
Public Transit	195	44%
Walk the whole way	49	11%
Cycle the whole way	39	9%
Combination of Cycle & Transit	3	1%
TOTAL NO. OF RESPONSES	445	100%

It can be seen that the Auto mode split for employees commuting to Downtown is already very low at 34%. Majority of the employees come to Downtown by Public Transit with a mode split of 44%. Walking and Cycling combined have contributed 21% of all commuting trips to the employment in Downtown. There is only a very small portion of employees that arrive Downtown by carshare vehicles or being dropped off by a vehicle that does not require parking in the area.

2.1.2 If you are a driver where did you park TODAY?

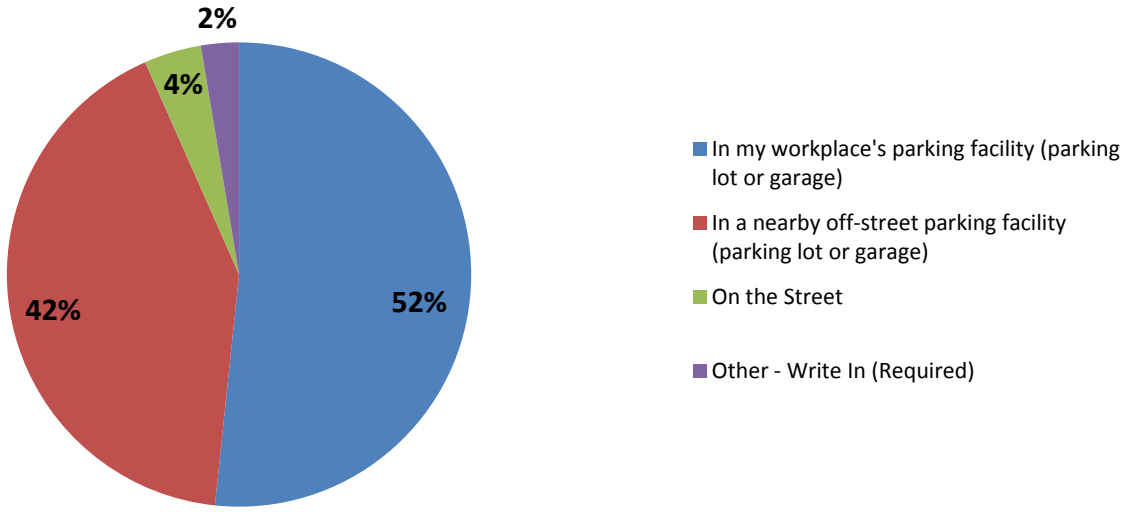

Table 2.1.2: Employee Parking Location

PARKING LOCATION	COUNT	PERCENTAGE
In my workplace's parking facility (parking lot or garage)	78	51%
In a nearby off-street parking facility (parking lot or garage)	63	42%
On the Street	6	4%
Other - Write In (Required)	4	3%
TOTAL NO. OF RESPONSES	151	100%

Out of the 151 respondents who responded to question regarding parking location, slightly more than half of the people indicated they parked at the on-site parking facilities at their workplace, whereas more than 40% of the people indicated they park in nearby off-street parking facilities with a small portion parked on-street.

2.1.3 How far away did you park?

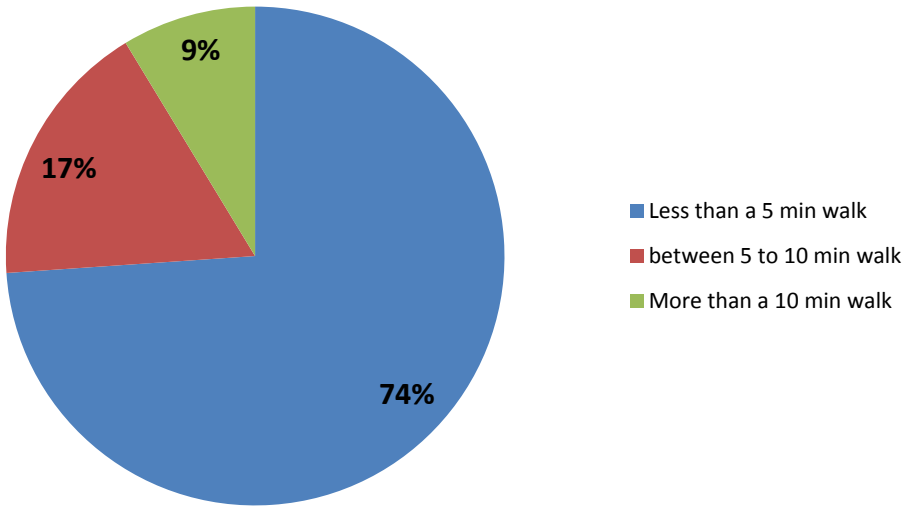

Table 2.1.3: Distance of Parking Facilities from Workplace

DISTANCE OF PARKING FACILITIES	COUNT	PERCENTAGE
Less than a 5 min walk	51	74%
between 5 to 10 min walk	12	17%
More than a 10 min walk	6	9%
TOTAL NO. OF RESPONSES	69	100%

2.1.4 If you arrive by carpool TODAY, how many people were in your vehicle, including yourself?

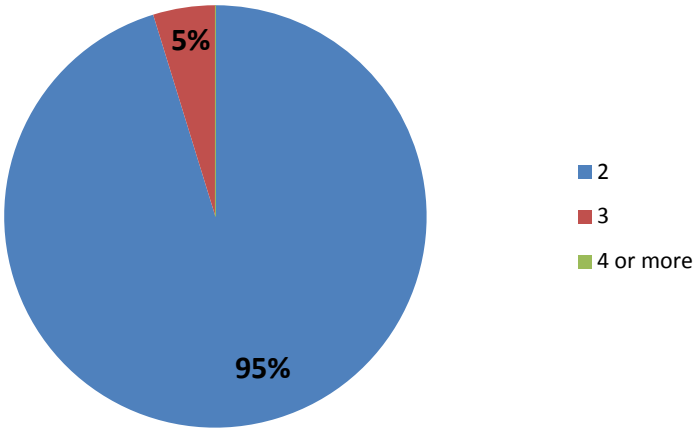

Table 2.1.4: HOV Vehicle Occupancy

HOV VEHICLE OCCUPANCY	COUNT	PERCENTAGE
2	20	95%
3	1	5%
4 or more	0	0%
TOTAL NO. OF RESPONSES	21	100%
AVERAGE VEHICLE OCCUPANCY	1.14 PERSON PER VEHICLE	

The results suggested that for the 34% of the people who drive to Downtown to work, not many of them are sharing a ride with others as indicated in the relatively low average vehicle occupancy.

2.1.5 If you require an accessible (disability) parking, do you have access to an accessible parking space at work?

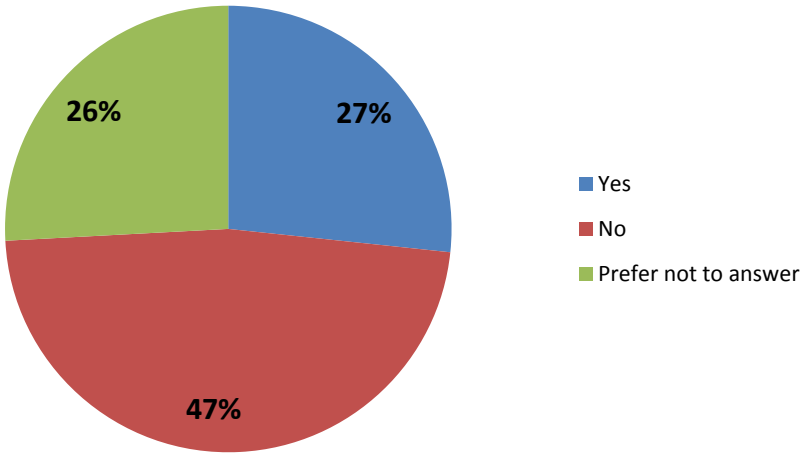

Table 2.1.5: Access to an Accessible Parking Space

ACCESS TO AN ACCESSIBLE PARKING SPACE	COUNT	PERCENTAGE
Yes	32	27%
No	57	48%
Prefer not to answer	31	25%
NO. OF RESPONSE	120	100%

The response to this question seems to be inaccurate, as the wording of the question may be misleading to survey respondents and treated the question as a hypothetical question (i.e. the term "if you require") instead of responding to their actual need. The wording of this question may be better represented by saying "If you possess an accessible parking decal, can you easily find an accessible parking space at work?" and provide "I do not process an accessible parking decal" as an option.

Given that the phasing is misleading, the results should be disregarded from the survey.

2.1.6 Are you a member of a car-share service provider?

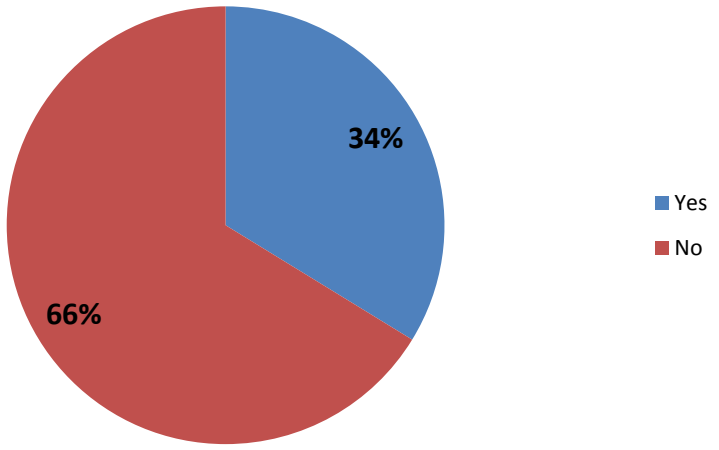

Table 2.1.6: Carshare Members

CARSHARE MEMBERS	COUNT	PERCENTAGE
Yes	53	34%
No	104	67%
NO. OF RESPONSES	157	100%

Based on the survey responses, of the 53 respondents who are members of a carshare program:

- 2% (1) were dropped off from a vehicle that did not require parking in the area.
- 4% (2) were passengers in a private vehicle that required parking in the area.
- 17% (9) used a Car Share vehicle
- 77% (41) were drivers of a private vehicle that required parking in the area.

The results indicated that there are a high proportion of people who are carshare members that drive their own vehicles to work.

2.1.7 Where did you park your bike TODAY?

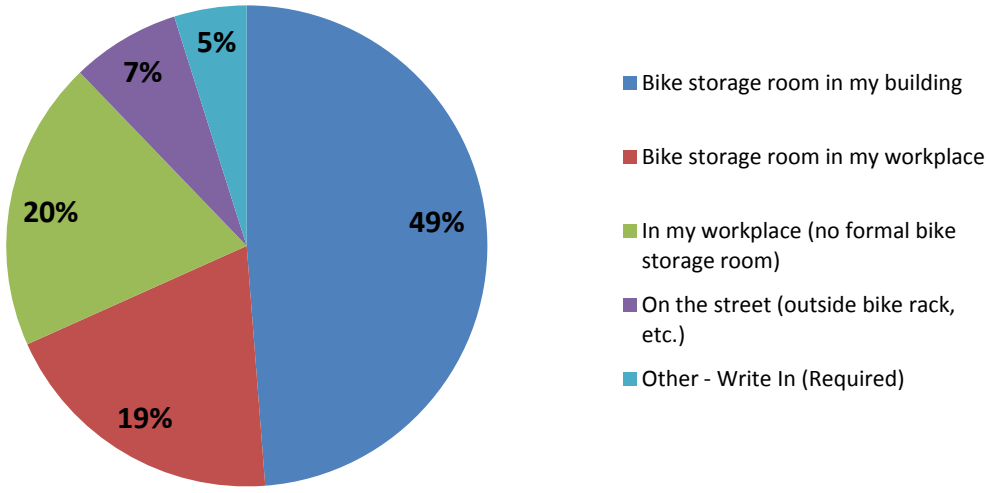

Table 2.1.7: Bicycle Parking Location

BICYCLE PARKING LOCATION	COUNT	PERCENTAGE
Bike storage room in my building	20	49%
Bike storage room in my workplace	8	19.5%
In my workplace (no formal bike storage room)	8	19.5%
On the street (outside bike rack, etc.)	3	7%
Other - Write In (Required)	2	5%
NO. OF RESPONSES	41	100%

For the people who rode their bicycles to work, about 70% of them parked their bicycles in the bicycle storage room in their buildings or workplaces. There were 20% of them that parked their bicycles in their workplace with no formal bicycle storage room. Approximately 7% of the people who rode their bicycles to work parked their bike at bike racks outside of their buildings. People choose to park their bicycles outdoor may be due to ease of access, convenience, etc.

2.1.8 Do you use any of the following? Or require additional storage space for your bike?

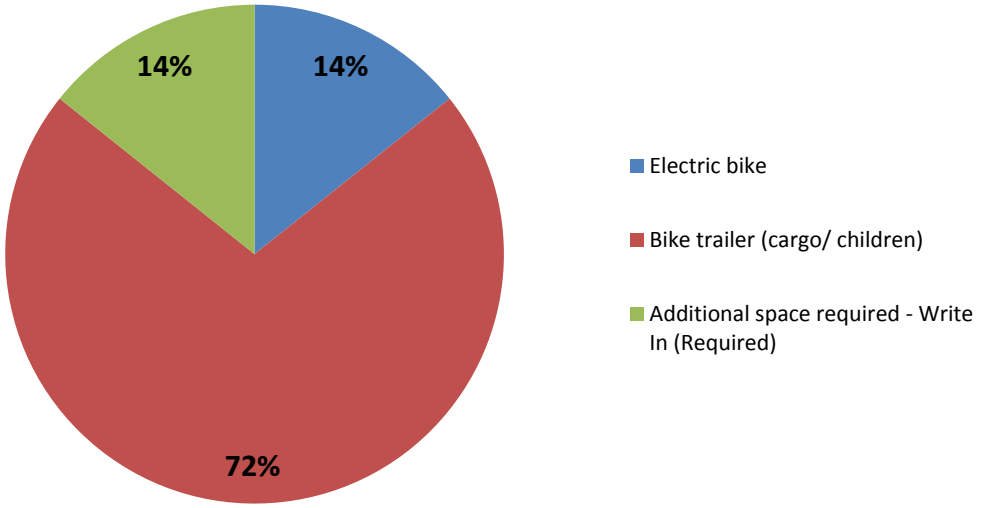

Table 2.1.8: Use of Electric Bike, Bike Trailer, or Bike that requires additional space

USE OF ELECTRIC BIKE, BIKE TRAILER, OR BIKE THAT REQUIRES ADDITIONAL SPACE	COUNT	PERCENTAGE
Electric bike	1	15%
Bike trailer (cargo/ children)	5	71%
Additional space required - Write In (Required)	1	14%
NO. OF RESPONSES	7	100%

There was only 7 out of the 41 respondents who rode their bicycles to work were using special types of bicycles such as electric bike or bike trailer. In percentage term that represents 17% of the all the respondents who indicated they biked to work. However, given the small number of responses it is uncertain whether the number is representative of the bicycle fleets in the market.

2.1.9 If you typically drive your own vehicle to work, what alternative travel mode would you most likely switch to if that was something you would consider:

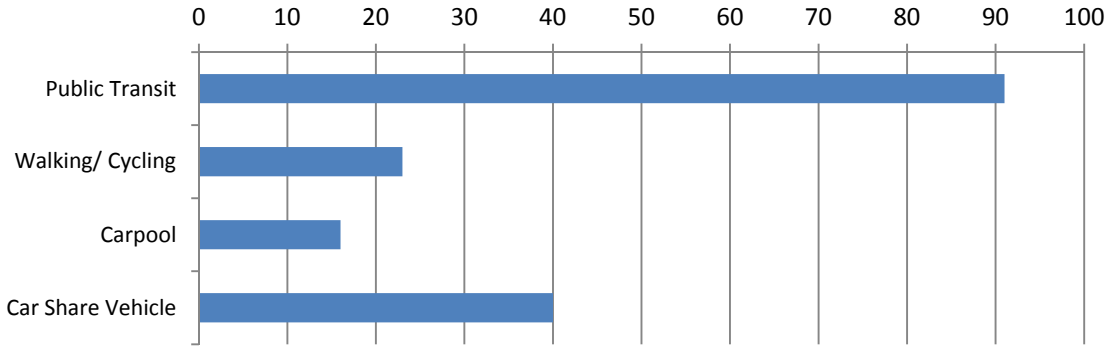

Table 2.1.9: Use of Alternative Mode

ALTERNATIVE MODE	COUNT	PERCENTAGE
Public Transit	91	65%
Walking/ Cycling	23	16%
Carpool	16	11%
Carshare Vehicle	40	28%
NO. OF RESPONSES	141	100%

For the 141 respondents who indicated they currently drive to Downtown to work, 65% of them indicated they would consider switching to public transit. The second choice would be to switch to using carshare vehicles, followed by walking or cycling, and finally carpooling.

2.1.10 Which of the following would induce you to switch to cycling or walking as your main travel mode to work instead of driving your own vehicle?

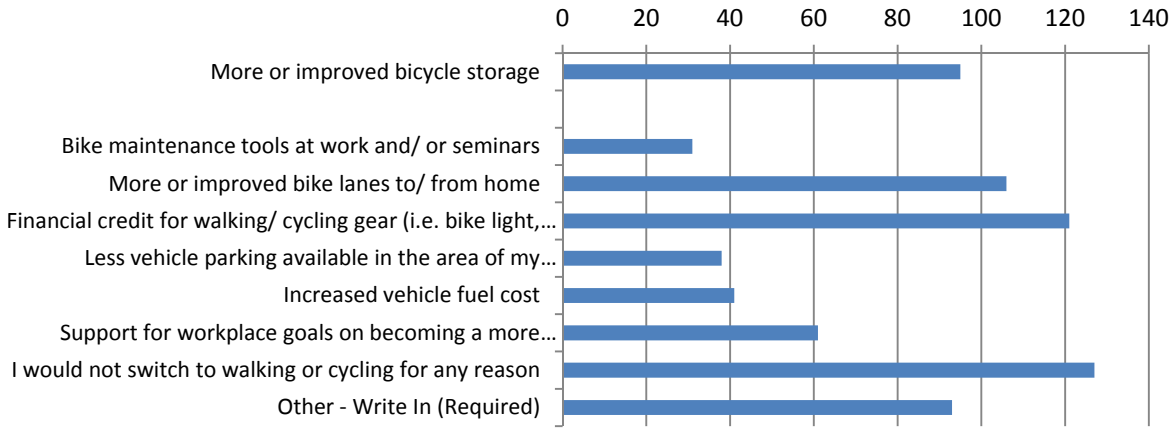

Table 2.1.10: Motivation to Switch to Cycling or Walking

MOTIVATION TO SWITH TO CYCLING OR WALKING (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More or improved bicycle storage	95	13%
More or improved employee showers, lockers and changing	0	0%
Bike maintenance tools at work and/ or seminars	31	4%
More or improved bike lanes to/ from home	107	15%
Financial credit for walking/ cycling gear (i.e. bike light, pannier, runners) instead of free parking	121	17%
Less vehicle parking available in the area of my workplace	38	5%
Increased vehicle fuel cost	41	6%
Support for workplace goals on becoming a more environmentally sensitive company	61	9%
I would not switch to walking or cycling for any reason	128	18%
Other - Write In (Required)	93	13%
NO. OF UNIQUE RESPONSES	715	100%

Out of all the choices that would induce respondents to switch to cycling or walking, Improved Bicycle Storage and Financial Credit for Walking and Cycling Gear seem to have to highest potential to motivate employees to switch from driving to cycling or walking. As such, these two items might represent the most effective TDM measures to induce employees to switch from driving to walking or cycling.

There is also an equal portion of people that indicated they would switch mode with improved bike lanes to/from their places of residence. However, this is likely something that is beyond the control of the building operators or business owners and is not considered to be an implementable TDM measures for employers.

2.1.11 Which of the following would induce you to switch to transit as your main travel mode to work instead of driving your own vehicle?

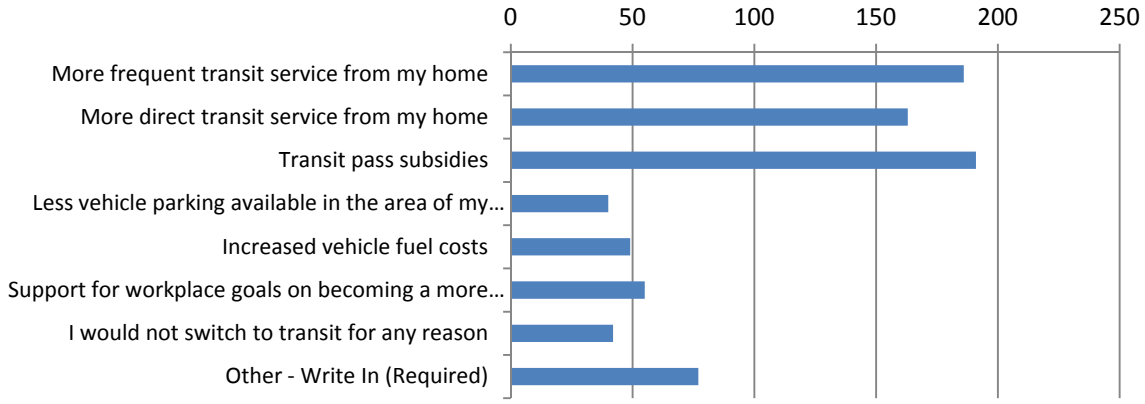

Table 2.1.11: Motivation to Switch to Transit

MOTIVATION TO SWITH TO TRANSIT (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More frequent transit service from my home	187	23%
More direct transit service from my home	165	20%
Transit pass subsidies	192	24%
Less vehicle parking available in the area of my workplace	40	5%
Increased vehicle fuel costs	49	6%
Support for workplace goals on becoming a more environmentally sensitive company	56	7%
I would not switch to transit for any reason	42	5%
Other - Write In (Required)	77	10%
NO. OF UNIQUE RESPONSES	808	100%

Out of all the choices that were provided to respondents, there were almost equal portions of people indicating more frequent or direct transit services from home, as well as transit pass subsidies would induce employees to switch from driving to taking public transit. This indicated that, while financial incentives would be attractive so some employees, it is also noted that the transit service levels, both frequency and directness of transit network, would play an important role in encouraging employees to switch mode. Therefore, it may be prudent for the City to consider partnering with TransLink to implement developer funded transit subsidies as a tool to fund transit service improvements.

2.1.12 Which of the following would induce you to switch to using a Car-sharing vehicle (i.e. Car2gGo, EVO, ZipCar, Modo) as your main travel more to work instead of driving your own vehicle?

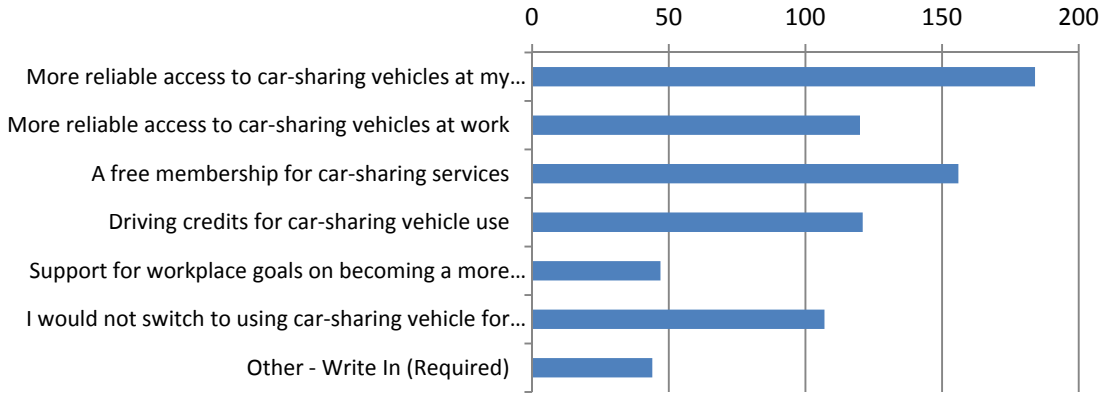

Table 2.1.12: Motivation to Switch to Carshare

MOTIVATION TO SWITH TO CARSHARE (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More reliable access to car-sharing vehicles at my home	185	24%
More reliable access to car-sharing vehicles at work	121	15%
A free membership for car-sharing services	157	20%
Driving credits for car-sharing vehicle use	121	15%
Support for workplace goals on becoming a more environmentally sensitive company	48	6%
I would not switch to using car-sharing vehicle for any reason	107	14%
Other - Write In (Required)	44	6%
NO. OF UNIQUE RESPONSES	783	100%

Similar to the findings concerning switching from driving to taking public transit, while people would be motivated to switch to carshare with the provision of a financial incentive, there were also an equal proportion of people that indicated reliable access to carshare vehicles would motivate them to switch modes.

2.1.13 Does your workplace provide any of the following Transportation Demand Management measures?

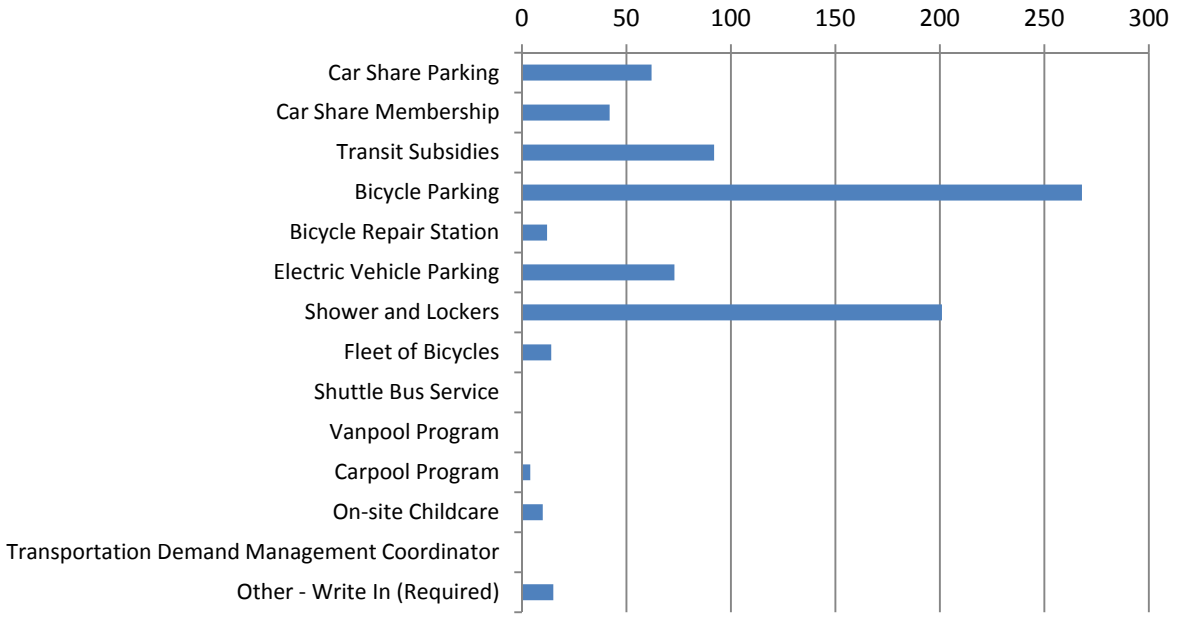

Table 2.1.13: Existing Workplace TDM

EXISTING TDM PROGRAM AT WORK (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
Car Share Parking	62	8%
Car Share Membership	42	5%
Transit Subsidies	92	12%
Bicycle Parking	268	34%
Bicycle Repair Station	12	2%
Electric Vehicle Parking	73	9%
Shower and Lockers	201	25%
Fleet of Bicycles	14	2%
Shuttle Bus Service	0	0%
Vanpool Program	0	0%
Carpool Program	4	0%
On-site Childcare	10	1%
Transportation Demand Management Coordinator	0	0%
Other - Write In (Required)	15	2%
NO. OF UNIQUE RESPONSES	793	100%

Out of the 445 employees surveyed, more than 10% of them indicated their employers are already providing transit subsidies to them. A quarter of them indicated their workplaces have provided them with shower and locker facilities. It is noted that none of the respondents indicated that there is a TDM Coordinator at their workplaces hence the lack of formal arrangements for Carpool or Vanpool programs. These also suggest that a formalized requirement for a workplace TDM program (and coordinator) may help to further extend the effectiveness and variety of TDM measures to be offered to employees.

2.1.14 Other Findings

Several questions throughout the employee survey have a write-in option. Bunt reviewed the responses and summarized the notable comments below. Note that only reoccurring themes are listed. A copy of the raw data set has also been issued to the City for reference.

Respondents noted that they use a vehicle to commute to work for the following reasons:

- Need a vehicle for work related trips
- Children drop-off and pick-up & errands before/after work
- Weather makes cycling difficult
- Too far to use alternative mode (i.e. poor transit)
- Transit are too crowed/service is too infrequent/unreliable
- Need more carshare in downtown/area of residence

Respondents want:

- More efficient transit/easier connections
- Protected bikeways/more bicycle facilities (i.e. showers and lockers)
- Better secure bicycle parking options in downtown
- Lower housing price so that they can live closer to work
- Subsidies for using sustainable modes of transportation
- On-site/nearby child care

Out of these written comments, it is worth noting that some have indicated the need for better secure bicycle parking options and end-of-trip facilities. There were also mention about subsidies or financial incentives for sustainable modes of transportation, but at the same time recognizing the lack of services from the existing network (e.g. overcrowded or infrequent transit services, lack of reliable carshare and bikeway networks near workplace or place of residence, etc.). Finally, while this may not be typically considered as a TDM measure, the request for having on-site or nearby Child Care facilities also suggested that the lack of these services nearby the workplaces would cause employees not able to switch to other modes given they need to travel a longer distance to attend to their children before and after work.

The City may consider expanding the TDM Menu to award TDM points for providing complementary land uses in new developments.

2.2 Customer Interview Survey Results

Bunt conducted customer interview surveys with the approval from the store managers in mid-June at the following sites:

Table 2.2.1: List of Customer Intercept Surveyed Sites

NO.	BUSINESS	SITE ADDRESS	TIME	SURVEY RESPONSE	NUMBER OF CUSTOMERS	AVG. GROUP SIZE
1	Arc'teryx	813 Burrard St	4:00 pm – 5:00 pm	14	26	1.9
2	Cactus club cafe	1085 Canada Pl	11:30 am – 12:30 pm	19	60	3.2

Two field staff was positioned near the main entrance of each establishment and ask customers before entering if they would be willing to conduct a travel survey in order to assist the City of Vancouver in research work required to update the Parking Bylaw. The surveys were then completed electronically on a tablet. The results of the customer intercept survey are summarized in **Table 2.2.2**.

Table 2.2.2: Customer Intercept Survey Results

	ARC'TERYX		CACTUS CLUB – JACK POOLE PLAZA	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
Arrived By:				
Vehicle	7	28%	13	22%
Bike	0	0%	1	2%
Walk	16	64%	39	66%
Combination of Transit	2	8%	6	10%
	25		**59**	
Vehicle Trip:				
Private Vehicle (Driver)	2	29%	6	40%
Car-Share (Driver)	0	0%	1	7%
Vehicle (Passenger-Parked)	3	43%	3	20%
Vehicle (Passenger-Dropped-off)	2	29%	3	20%
Taxi (Passenger-Dropped-off)	0	0%	2	13%
	7		**15**	
Parking:				
Building's parking facility (parking lot or garage)	3	100%	1	14%
Nearby off-street parking facility (parking lot or garage)	0	0%	3	43%
On-street	0	0%	3	43%
	3		**7**	
Drop-off Prior to Parking?				
Yes	1	33%	2	33%
No	2	67%	4	67%
	3		**6**	
Average Parking Distance (in minutes)	**8-min**		**4-min**	
Accessibility Parking Required?				
Yes	1	33%	0	0%
No	2	67%	6	100%
	3		**6**	
Bike Parking:				
On-Street	0	--	0	--
Nearby bike room (secure)	0	--	0	--

From the table above, it can be seen that almost two-thirds (2/3) of the patrons to the retail stores or restaurants in Downtown arrived by walking, with approximately 20% to 30% of them came by vehicles. The high proportion of the walking for customers may suggest that majority of the patrons to the retail or restaurants in Downtown would have already arrived to Downtown for other purposes, and the proportion of people coming to the Downtown retail stores or restaurants as "single purpose trips" would be very low.

In light of the City's emerging policy of removing parking minimums for Non-Residential use in Downtown, its impact to retail stores or restaurants should be relatively low. Also, it is important to note that the removal of parking minimums will not preclude developers or property owners to provide parking for their patrons and therefore the market demand may very well dictate the parking provision for these types of use.

Appendix A – Manager / Employee / Customer Survey

City of Vancouver Parking Study (Manager)

NOTE THAT SURVEY WILL BE ISSUED ELECTRONICALLY VIA SURVEYGIZMO ONLY.

The City of Vancouver has retained a Consultant, Bunt & Associates Engineering Ltd., to assist in research work necessary to support possible changes to the City of Vancouver Parking By-law. As part of this work, the City would like to better understand the travel and parking demand patterns for commercial units.

We are looking for your participation in collecting responses for the enclosed questionnaire survey. Note that all data collected will remain confidential in a secure environment.

1. Name of your company:_____

2. Approximate number of staff working at this location on a typical workday and in total: (i.e. full staff complement assuming no time away, no work offsite/ from home)
   Typical workday: _____
   Total: _____

3. Approximate floor area square footage at this location and seating capacity (if restaurant/lounge)
   _____
   _____

4. Is the business entitled to on-site, reserved parking as part of the lease? If so, how many spaces are you entitled to and how many are used?
   No
   Yes, _____ parking spaces entitled to,
   _____ parking spaces used

5. Total parking provided on-site (including other businesses)
   General Parking: _____
   Accessibility (disability parking) Parking: _____

6. Does the building provide any of the following Transportation Demand Management measures:

☐ Car Share Parking	☐ Electric Vehicle Parking	☐ Carpool Program
☐ Car Share Membership	☐ Showers and Lockers	☐ On-site Childcare
☐ Transit Subsidies	☐ Fleet of Bicycles	☐ Transportation Demand Management Coordinator
☐ Bicycle Storage (Secure)	☐ Shuttle Bus Service	
☐ Bicycle Repair Station	☐ Vanpool Program	☐ Other (please specify)

City of Vancouver Parking Study (Employee)

NOTE THAT SURVEY WILL BE ISSUED ELECTRONICALLY VIA SURVEYGIZMO ONLY.

1. Name of your company:_____
2. Type of Employee: (select one)
    a. Full-time
    b. Part-time
    c. Other (Please Specify): _____
3. Please provide the first 3 letters of your home postal code. (Optional, **V7C**-xxx) _____
4. When do you typically arrive to work?_____ (hh:mm am/pm)
5. When do you typically leave work?_____ (hh:mm am/pm)
6. Which mode of Transportation did you use TODAY for your trip to work? (select one)
    a. Driver of a private vehicle that required parking in the area
    b. Passenger in a private vehicle that required parking in the area
    c. I was dropped off in a vehicle that DID NOT require parking in the area (taxi, other vehicle)
    d. Car share vehicle (Car2Go, EVO, ZipCar, Modo)
    e. Public Transit
    f. Walk the whole way
    g. Cycle the whole way
    h. Combination of Cycle & Transit

Vehicle Trip [Ask only if there arrive by car]

7. If you are a driver where did you park TODAY? (select one)
    a. In my workplace's parking facility (parking lot or garage)
    b. In a nearby off-street parking facility (parking lot or garage)
    c. On the street
    d. Not applicable
8. If you arrived by carpool TODAY, how many people were in your vehicle, including yourself? _____
9. If you require an accessible (disability) parking, do you have access to an accessible parking space at work? Yes / No
10. Are you a member of a car-sharing service provider? Yes / No

Bike Trip [Ask only if there arrive by bike]

11. Where did you park your bike TODAY? (select one)
    a. Designated bike storage room in my building
    b. Designated bike storage room in my workplace
    c. In my workplace (no formal bike storage room)
    d. On the street (outside bike rack, etc.)

12. Do you use any of the following? Or require additional storage space for your bike? (select one)
    a. Electric bike
    b. Bike trailer (cargo/children)
    c. Other (Please Specify): _____

Transportation Demand Management

13. If you typically drive your own vehicle to work, what alternative travel mode would you most likely switch to if that was something you would consider: (select one)
    a. Public Transit
    b. Walking/Cycling
    c. Carpool
    d. Car Share Vehicle
14. Which of the following would induce you to switch to cycling or walking as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More or improved bicycle storage,
    b. More or improved employee showers, lockers and changing facilities
    c. Bike maintenance tools at work and/or seminars
    d. More or improved bike lanes to/ from home
    e. Financial credit for walking/cycling gear (i.e. bike light, pannier, runners) instead of free parking.
    f. Less vehicle parking available in the area of my workplace
    g. Increased vehicle fuel costs
    h. Support for workplace goals on becoming a more environmentally sensitive company
    i. I would not switch to walking or cycling for any reason.
    j. Other (Please Specify): _____
15. Which of the following would induce you to switch to transit as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More frequent transit service from my home
    b. More direct transit service from my home
    c. Transit pass subsidies
    d. Less vehicle parking available in the area of my workplace
    e. Increased vehicle fuel costs
    f. Support for workplace goals on becoming a more environmentally sensitive company
    g. I would not switch to transit for any reason.
    h. Other (Please Specify): _____

16. Which of the following would induce you to switch to using a Car-sharing vehicle (i.e. Car2Go, EVO, ZipCar, Modo) as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More reliable access to car-sharing vehicles at my home
    b. More reliable access to car-sharing vehicles at work
    c. A free membership for car-sharing services
    d. Driving credits for car-sharing vehicle use
    e. Support for workplace goals on becoming a more environmentally sensitive company
    f. I would not switch to using car-sharing vehicle for any reason.
    g. Other (Please Specify): _____

17. Does your workplace provide any of the following Transportation Demand Management measures: (select all that apply)

☐ Car Share Parking	☐ Electric Vehicle Parking	☐ Carpool Program
☐ Car Share Membership	☐ Showers and Lockers	☐ On-site Childcare
☐ Transit Subsidies	☐ Fleet of Bicycles	☐ Transportation Demand Management Coordinator
☐ Bicycle Parking	☐ Shuttle Bus Service	
☐ Bicycle Repair Station	☐ Vanpool Program	☐ Other (please specify)

---

18. Please provide any ideas or comments:

_____

_____

City of Vancouver Parking Study (Customer)

If you would rather complete the survey online, please use the following link or QR code.

http://m.sgizmoca.com/s3/43c1d8e4d85c

1. Name of Business:

2. How many people are in your group? _____

3. For your stay at the hotel, please indicate with a number, how many of you arrived in the following method:

   (i.e. 1) Car (including Taxi, Carpool, Car-share)
   (i.e. 1) Walk
   (i.e. 1) Bike
   (i.e. 1) Combination of Transit/ Walk / Bike

   Other – Please describe: _____

Answer this section only if someone in your group arrived by Car.

4. Please indicate with a number, how many of you arrived today in the following method:

   (i.e. 1) Private Vehicle (Driver)
   (i.e. 1) Vehicle (Passenger)
   (i.e. 1) Carpool (Driver)
   (i.e. 1) Taxi (Passenger)
   (i.e. 1) Car-Share (Driver)

Answer this section only if you are the Driver(s).

5. Where did you park the vehicle(s)? Please indicate with a number if more than 1 vehicle.

   (i.e. 1) Building's parking facility (parking lot or garage)
   (i.e. 1) Nearby off-street parking facility (parking lot or garage)
   (i.e. 1) On-street

   Other - Please describe: _____

6. Did you drop anyone off before parking? (please circle one) YES / NO

7. How far away did you park? _____ (mins)

8. Did anyone require the use for an accessible (disability) parking space? (please circle one) YES / NO

Answer this section only if someone in your group arrived by Bike.

9. Where did you park the bike(s)? Please indicate with a number if more than 1 bike.

   (i.e. 1) On-Street
   (i.e. 1) Nearby Bike Room (secure)

   Other - Please describe: _____

Thank you for completing the questionnaire!

Please return completed surveys to the front desk before Noon Sunday June 17, 2018.

MEMO

DATE: June 20, 2018
PROJECT NO: 04-18-0086
PROJECT: CoV Parking Bylaw Update
SUBJECT: Non-Residential Parking Research – Hotel (Draft)

TO: John Turecki, P.Eng. & Billy Dong, P.Eng.
City of Vancouver

PREPARED BY: Julian Cheung, EIT
REVIEWED BY: Christephen Cheng, P.Eng.

This memorandum summarizes the findings from the travel surveys that Bunt conducted for a number of Hotel sites in downtown Vancouver.

1. DEFINITIONS

For the purpose of the surveys, Bunt have consulted with the City of Vancouver Engineering Department and it was agreed that for the purpose of this study, the **Non-Residential** sites are defined based on the following categories

- **Hotel:** An establishment providing rooms, meals, and other services for travelers and tourists.
- **Retail:** A standalone store that sales good to the public
- **Office:** A space used as a place for commercial, professional, or bureaucratic work.
- **Restaurant:** A place where people pay to sit and eat meals that are cooked and served on the premises.

This memo focuses on the hotel survey results. A separate memo has been prepared for the other non-residential survey results.

Based on these criteria, Bunt developed a list in mid-May consisting of 100 businesses that could potentially be surveyed to understand the current travel and parking behaviours. Bunt subsequently contacted the individual office/building managers and received confirmation in early June that 25 businesses and four hotel sites agreed to participate in the survey.

Manager surveys were sent out electronically to help establish the business' staffing numbers, square footage, parking facility and additional building information. In the same email, employee surveys were also provided to the hotel managers to distribute to their employees.

Table 1 provides a summary of the hotel sites surveyed along with the type of surveys that the hotel managers have agreed to participate in.

Table 1: List of Surveyed Hotel Sites

NO.	BUSINESS	SITE ADDRESS	NO. OF ROOMS	SURVEY RESPONSE	TYPES OF SURVEY COMPLETED
Hotel					
1	Executive Hotel Vintage Park	1379 Howe St, Vancouver	124	13	Manager & Employee
2	Fairmont Hotel Vancouver	900 W Georgia St	556	50	Manager, Employee & Customer
3	Fairmont Pacific Rim	1038 Canada Pl	377	24	Employee
4	Shangri-La Hotel Vancouver	1128 W Georgia St	119	22	Employee
		TOTAL	1,176	109	-

2. SURVEY FINDINGS

2.1 Employee Survey Results

An electronic employee survey with the City of Vancouver's cover letter was sent out in early June to the hotel managers, which instructed them to issue the survey to their employees electronically with a link to SurveyGizmo. Below is a summary of the Hotel employee parking survey results.

2.1.1 Which mode of Transportation did you use TODAY for your trip to work?

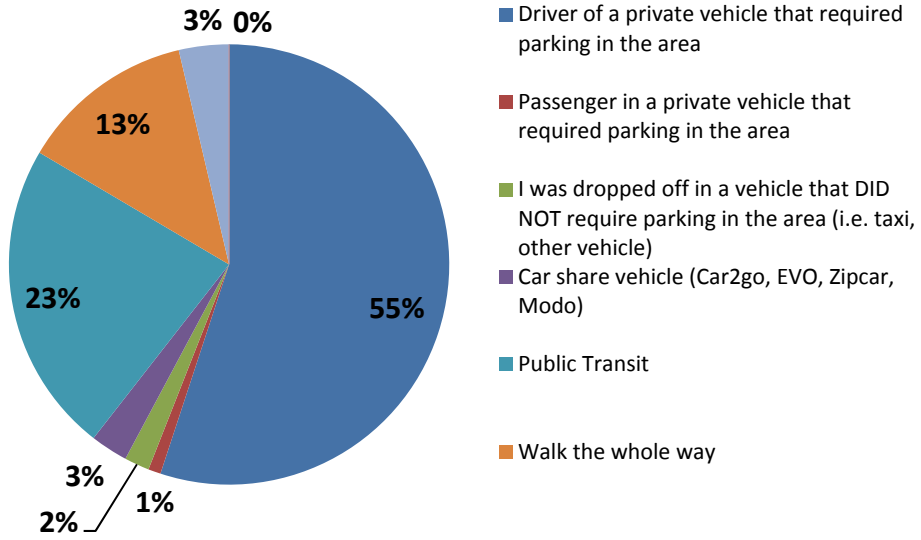

Table 2.1.1: Employee Commuting Transportation Mode

TRANSPORTATION MODE	COUNT	PERCENTAGE
Driver of a private vehicle that required parking in the area	60	55%
Passenger in a private vehicle that required parking in the area	1	1%
I was dropped off in a vehicle that DID NOT require parking in the area (i.e. taxi, other vehicle)	2	2%
Car share vehicle (Car2go, EVO, ZipCar, Modo)	3	3%
Public Transit	25	23%
Walk the whole way	14	13%
Cycle the whole way	4	3%
Combination of Cycle & Transit	0	0%
NO. OF RESPONSES	109	100%

Slightly more than half of the employees indicated they commute to work by driving their own vehicles. The reported Auto mode split for Hotel use is higher than other Non-Residential uses in Downtown at 56%. This may in part due to the shift work nature for Hotels (i.e. some people would work in nightshifts where other transportation services might not be readily available). Walking, Cycling and Transit make up approximately 40% of all the employee trips, while the remaining trips were undertaken by carshare vehicles or by vehicles drop off that did not require parking in the area.

2.1.2 If you are a driver where did you park TODAY?

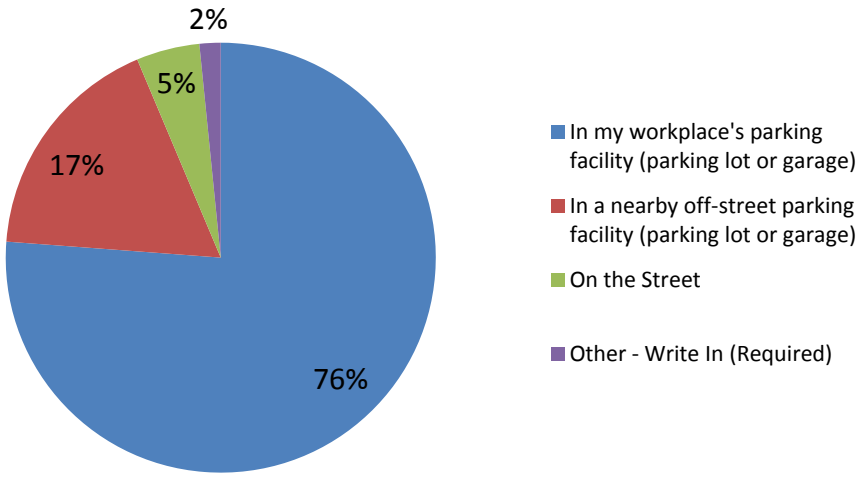

Table 2.1.2: Employee Parking Location

PARKING LOCATION	COUNT	PERCENTAGE
In my workplace's parking facility (parking lot or garage)	48	76%
In a nearby off-street parking facility (parking lot or garage)	11	17%
On the Street	3	5%
Other - Write In (Required)	1	2%
NO. OF RESPONSES	63	100%

Out of the 63 respondents who responded to question regarding parking location, slightly more than three quarters of the people indicated they parked at the on-site parking facilities at their workplace, whereas 17% of the people indicated they park in nearby off-street parking facilities with a small portion parked on-street. This would also suggest some of the existing hotel sites have excessive parking on-site that are not being used by the hotel guests.

2.1.3 How far away did you park?

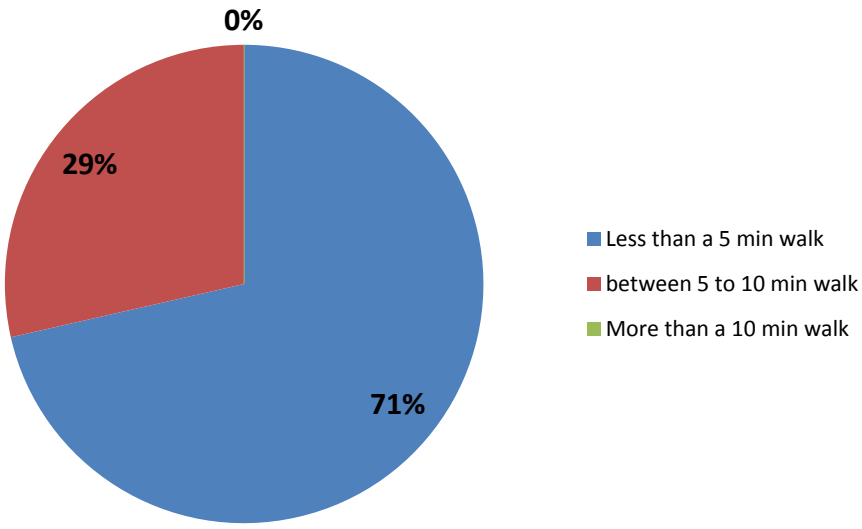

Table 2.1.3: Distance of Parking Facilities from Workplace

DISTANCE OF PARKING FACILITIES	COUNT	PERCENTAGE
Less than a 5 min walk	10	71%
between 5 to 10 min walk	4	29%
More than a 10 min walk	0	0%
NO. OF RESPONSES	14	100%

The number of responses received for this question is notably lower comparing to the preceding question. Nevertheless, given more than three quarters of the respondents indicated they parked on-site, it can be assumed that more than three quarters of the employees who drove to work would be parking at facilities that are within a 5-minute walk from their workplace. This is confirmed with the fact that 71% out of the 14 responses received for this question indicated they park within a 5-minute walk from their workplaces.

2.1.4 If you arrive by carpool TODAY, how many people were in your vehicle, including yourself?

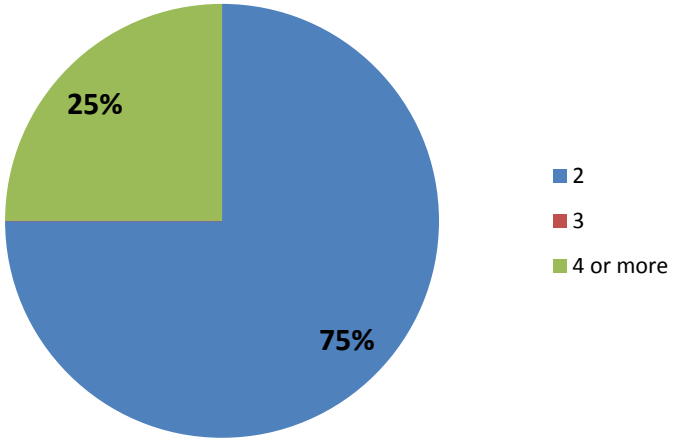

Table 2.1.4: HOV Vehicle Occupancy

HOV VEHICLE OCCUPANCY	COUNT	PERCENTAGE
2	3	75%
3	0	0%
4 or more	1	25%
NO. OF RESPONSES	4	100%
AVERAGE VEHICLE OCCUPANCY	1.09 PERSON PER VEHICLE	

The results suggested that for the 56% of the people who drive to Downtown to work, not many of them are sharing a ride with others as indicated in the relatively low average vehicle occupancy.

2.1.5 If you require an accessible (disability) parking, do you have access to an accessible parking space at work?

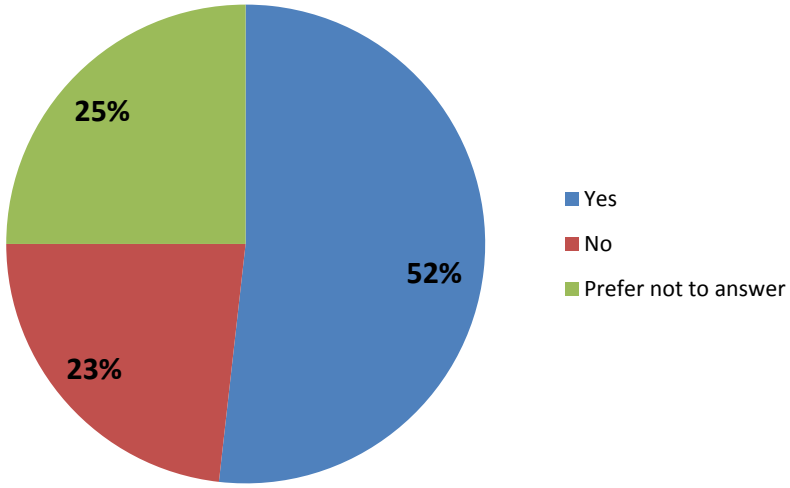

Table 2.1.5: Access to an Accessible Parking Space

ACCESS TO AN ACCESSIBLE PARKING SPACE	COUNT	PERCENTAGE
Yes	29	52%
No	13	23%
Prefer not to answer	14	25%
NO. OF RESPONSES	56	100%

The response to this question seems to be inaccurate, as the wording of the question may be misleading to survey respondents and treated the question as a hypothetical question (i.e. the term "if you require") instead of responding to their actual need. The wording of this question may be better represented by saying "If you possess an accessible parking decal, can you easily find an accessible parking space at work?" and provide "I do not process an accessible parking decal" as an option.

Given that the phasing is misleading, the results should be disregarded from the survey.

2.1.6 Are you a member of a car-share service provider?

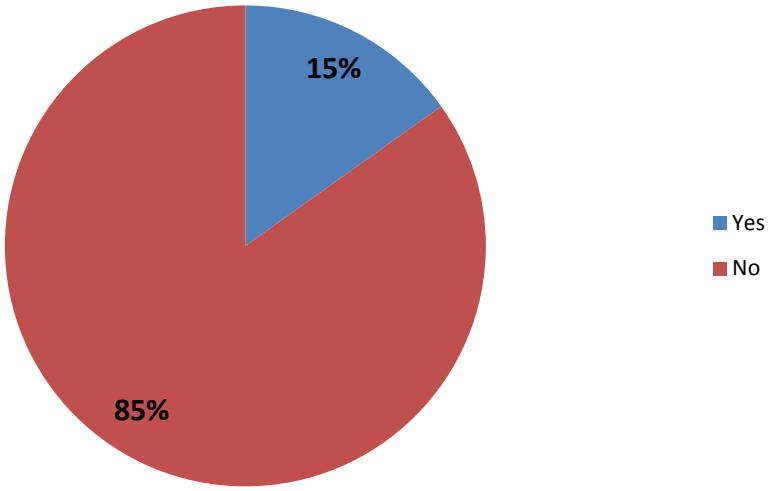

Table 2.1.6: Carshare Members

CARSHARE MEMBERS	COUNT	PERCENTAGE
Yes	10	15%
No	56	85%
NO. OF RESPONSES	66	100%

Based on the survey responses, of the 10 respondents who are members of a car share program:

- 10% (1/10) were passengers in a private vehicle that required parking in the area.
- 30% (3/10) Used a Car Share vehicle
- 60% (6/10) were drivers of a private vehicle that required parking in the area.

The results indicated that there are a high proportion of people who are carshare members that drive their own vehicles to work, consistent with the findings for other Non-Residential use.

2.1.7 Where did you park your bike TODAY?

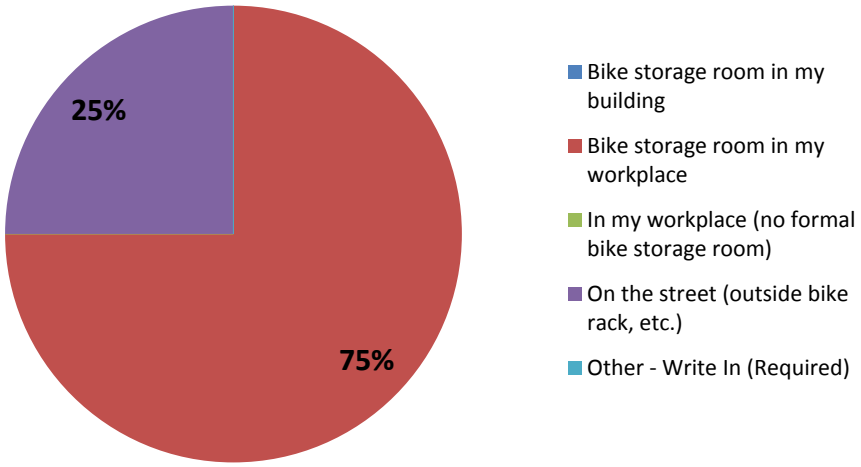

Table 2.1.7: Bicycle Parking Location

BICYCLE PARKING LOCATION	COUNT	PERCENTAGE
Bike storage room in my building	0	0%
Bike storage room in my workplace	3	75%
In my workplace (no formal bike storage room)	0	0%
On the street (outside bike rack, etc.)	1	25%
Other - Write In (Required)	0	0%
NO. OF RESPONSES	4	100%

3 out of the four respondents to this question indicated they parked their bicycles at their workplaces while 1 of them parked their bike on-street. The sample size is probably too small to draw any useful information.

2.1.8 Do you use any of the following? Or require additional storage space for your bike?

Table 2.1.8: Use of Electric Bike, Bike Trailer, or Bike that requires additional space

USE OF ELECTRIC BIKE, BIKE TRAILER, OR BIKE THAT REQUIRES ADDITIONAL SPACE	COUNT	PERCENTAGE
Electric bike	0	--
Bike trailer (cargo/ children)	0	--
Additional space required - Write In (Required)	0	--
NO. OF RESPONSES	0	-

None of the respondent indicated they rode a special type of bicycle to work.

2.1.9 If you typically drive your own vehicle to work, what alternative travel mode would you most likely switch to if that was something you would consider:

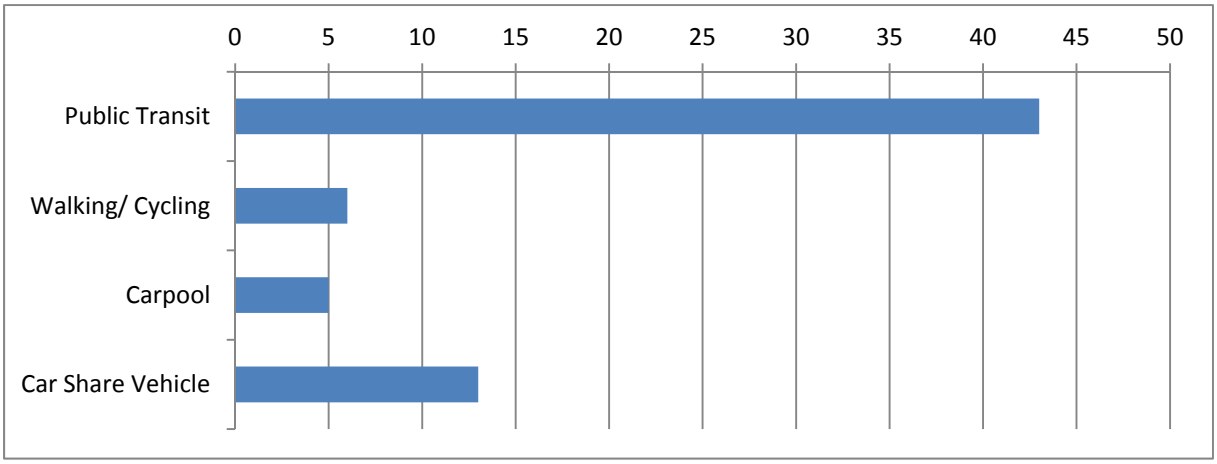

Table 2.1.9: Use of Alternative Mode

ALTERNATIVE MODE	COUNT	PERCENTAGE
Public Transit	43	64%
Walking/ Cycling	6	9%
Carpool	5	7%
Car Share Vehicle	13	20%
NO. OF RESPONSES	67	100%

For the 67 respondents who indicated they currently drive to Downtown to work, 64% of them indicated they would consider switching to public transit. The second choice would be to switch to using carshare vehicles, followed by walking or cycling, and finally carpooling.

2.1.10 Which of the following would induce you to switch to cycling or walking as your main travel mode to work instead of driving your own vehicle?

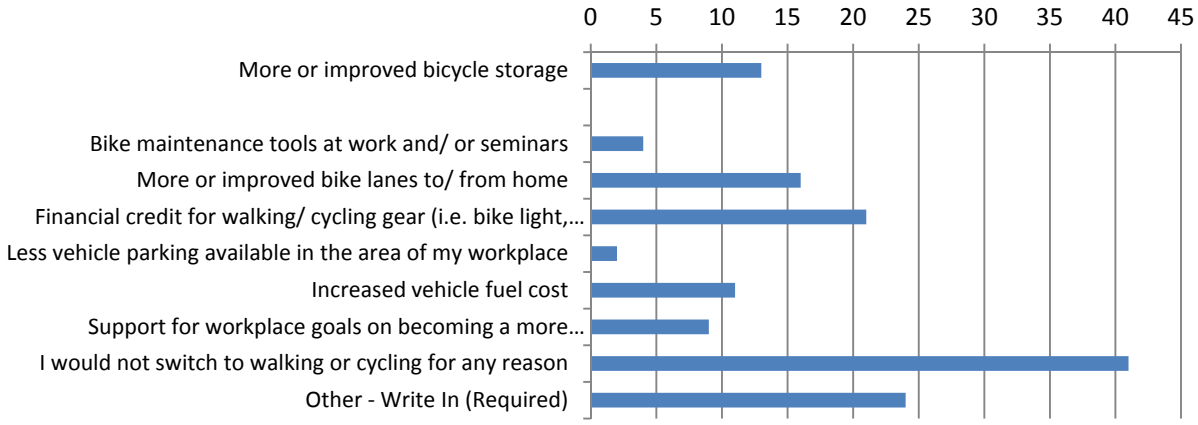

Table 2.1.10: Motivation to Switch to Cycling or Walking

MOTIVATION TO SWITH TO CYCLING OR WALKING (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More or improved bicycle storage	13	9%
More or improved employee showers, lockers and changing	0	0%
Bike maintenance tools at work and/ or seminars	4	3%
More or improved bike lanes to/ from home	16	11%
Financial credit for walking/ cycling gear (i.e. bike light, pannier, runners) instead of free parking	21	15%
Less vehicle parking available in the area of my workplace	2	1%
Increased vehicle fuel cost	11	8%
Support for workplace goals on becoming a more environmentally sensitive company	9	6%
I would not switch to walking or cycling for any reason	41	29%
Other - Write In (Required)	24	18%
NO. OF UNIQUE RESPONSES	141	100%

Unlike the results for the other Non-Residential use, for the respondents who currently drives to work, almost 30% of them would not want to switch to waking or cycling for any reason, although 15% of the respondents did indicate that they would consider switching mode if financial credit was provided for purchasing walking or cycling gear.

2.1.11 Which of the following would induce you to switch to transit as your main travel mode to work instead of driving your own vehicle?

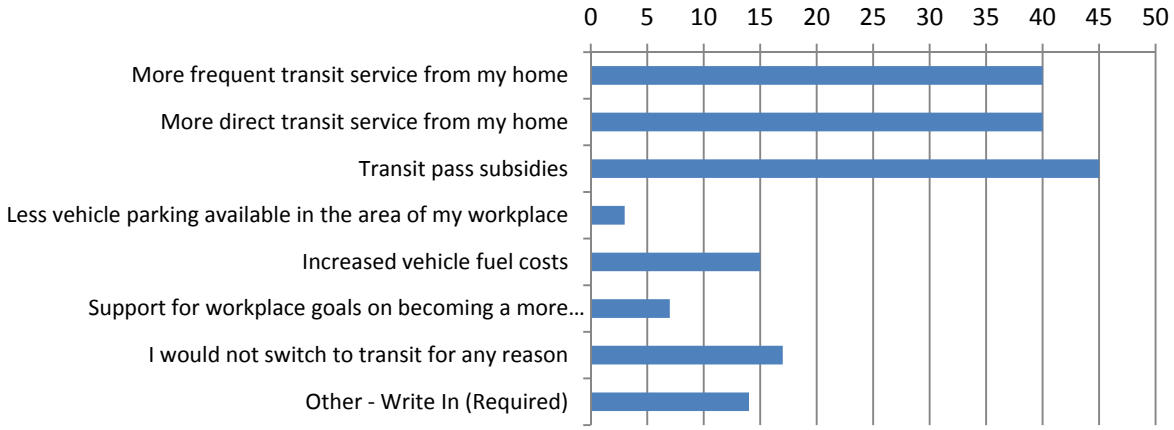

Table 2.1.11: Motivation to Switch to Transit

MOTIVATION TO SWITH TO TRANSIT (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More frequent transit service from my home	40	22%
More direct transit service from my home	40	22%
Transit pass subsidies	45	25%
Less vehicle parking available in the area of my workplace	3	2%
Increased vehicle fuel costs	15	8%
Support for workplace goals on becoming a more environmentally sensitive company	7	4%
I would not switch to transit for any reason	17	9%
Other - Write In (Required)	14	8%
NO. OF UNIQUE RESPONSES	181	100%

Out of all the choices that were provided to respondents, there were almost equal portions of people indicating more frequent or direct transit services from home, as well as transit pass subsidies would induce employees to switch from driving to taking public transit. This indicated that, while financial incentives would be attractive so some employees, it is also noted that the transit service levels, both frequency and directness of transit network, would play an important role in encouraging employees to switch mode. Therefore, it may be prudent for the City to consider partnering with TransLink to implement developer funded transit subsidies as a tool to fund transit service improvements.

2.1.12 Which of the following would induce you to switch to using a Car-sharing vehicle (i.e. Car2gGo, EVO, ZipCar, Modo) as your main travel more to work instead of driving your own vehicle?

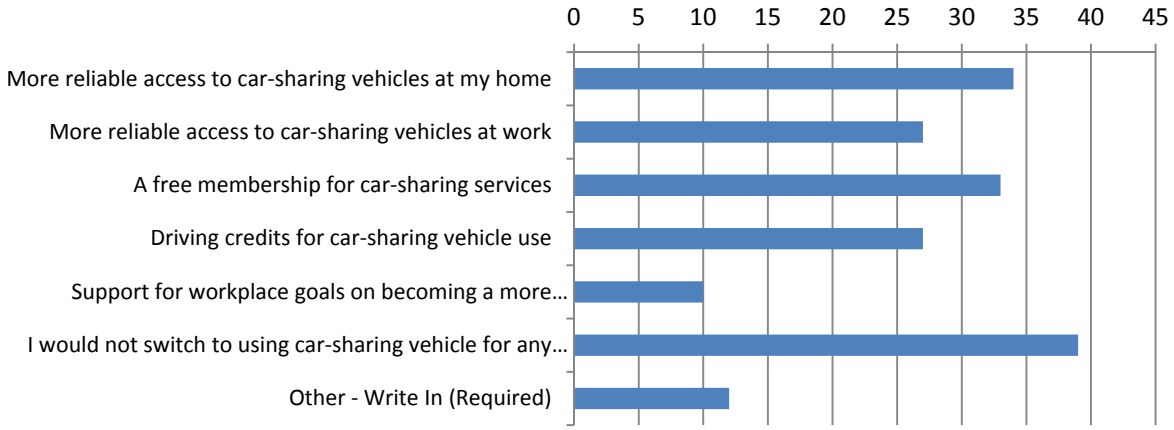

Table 2.1.12: Motivation to Switch to Carshare

MOTIVATION TO SWITH TO CARSHARE (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
More reliable access to car-sharing vehicles at my home	34	19%
More reliable access to car-sharing vehicles at work	27	15%
A free membership for car-sharing services	33	18%
Driving credits for car-sharing vehicle use	27	15%
Support for workplace goals on becoming a more environmentally sensitive company	10	5%
I would not switch to using car-sharing vehicle for any reason	39	21%
Other - Write In (Required)	12	7%
NO. OF UNIQUE RESPONSES	182	100%

Similar to the findings concerning switching from driving to taking public transit, while people would be motivated to switch to carshare with the provision of a financial incentive, there were also an equal proportion of people that indicated reliable access to carshare vehicles would motivate them to switch modes.

2.1.13 Does your workplace provide any of the following Transportation Demand Management measures?

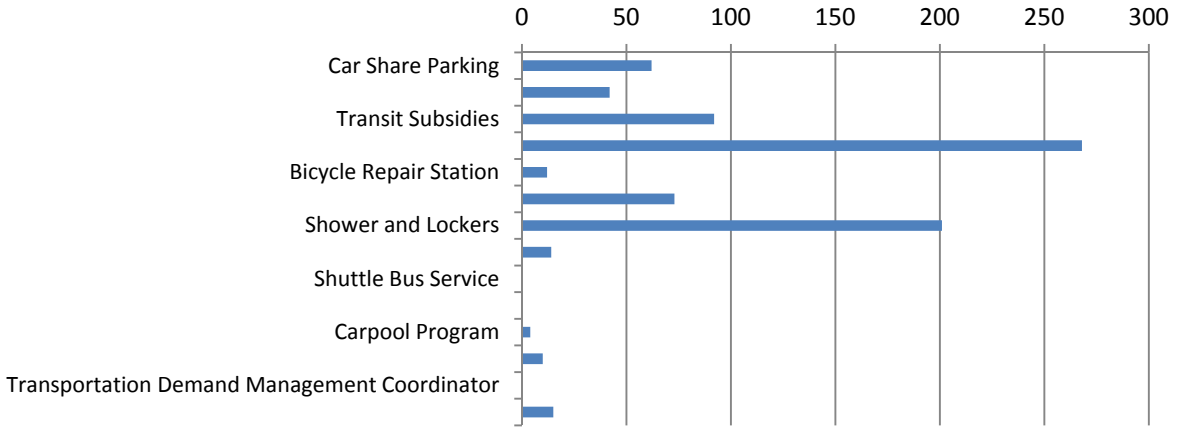

Table 2.1.13: Existing Workplace TDM

EXISTING TDM PROGRAM AT WORK (MULTIPLE RESPONSES CAN BE CHOSEN)	COUNT	PERCENTAGE
Car Share Parking	9	3%
Car Share Membership	1	0%
Transit Subsidies	69	26%
Bicycle Parking	75	28%
Bicycle Repair Station	2	1%
Electric Vehicle Parking	34	13%
Shower and Lockers	61	23%
Fleet of Bicycles	3	1%
Shuttle Bus Service	6	2%
Vanpool Program	1	0%
Carpool Program	1	0%
On-site Childcare	0	0%
Transportation Demand Management Coordinator	0	0%
Other - Write In (Required)	6	2%
NO. OF UNIQUE RESPONSES	268	100%

Out of the 109 employees surveyed, more than 25% of them indicated their employers are already providing transit subsidies to them. Almost a quarter of them indicated their workplaces have provided them with shower and locker facilities. It is noted that none of the respondents indicated that there is a TDM Coordinator at their workplaces hence the lack of formal arrangements for Carpool or Vanpool programs. These also suggest that a formalized requirement for a workplace TDM program (and coordinator) may help to further extend the effectiveness and variety of TDM measures to be offered to employees.

2.2 Hotel Guest Survey Results

Bunt attempted to coordinate a customer survey with the selected Hotel sites. However, many of them decline to participate in the hotel guest surveys due to concern about disturbing the Hotel guests. The Fairmont Hotel Vancouver did agree to participate and help distributing the surveys to the hotel guests. A paper survey was distributed to the hotel, but only one response was received after several days of surveying. Given this, Bunt is unable to provide any meaningful analysis based on a single survey response. Bunt instead reached out to the General Managers of the studied hotel sites, and the General Manager of the Executive Vintage Park Hotel provides the following information with regards to the travel profile for their hotel guests:

October to April

- 80% of the guests would use the parking facilities,
- 20% would use other means such as taxi and public transportation.

May to September

- 45% of the guests would use the parking facilities,
- 20% tour busses
- 35% by air and use taxis from the airport.

Assuming an average occupancy of 1.5 guests per room and an average occupancy of 80%, based on the information provided by Executive Hotel, that would mean parking demand for the hotel guests is estimated to be 0.8/1.5 x 80% = 0.43 stalls per room, whereas in the summer, parking demand would drop to 0.45/1.5 x 80% = 0.24 stalls per room.

The current Parking By-law requires *0.30 stalls per room* be provided for Hotels located in Downtown. This ratio would mean that in the summer months, there would be sufficient parking available for hotel guest, plus approximately 0.06 stalls per unit available for Hotel employees. In the winter months, however, the current Parking By-law requirement of 0.30 stalls per room would mean a potential shortfall of 0.13 stall per room for hotel guest, plus additional shortfall if accounting for the parking need for hotel employees.

As in the cases for other Non-Residential use in Downtown, the City's emerging policy of removing parking minimums will not preclude property owners or hotel operators to provide parking for their guests and employees and therefore the market demand may very well dictate the parking provision for these types of use.

In terms of requirements for accessible parking and passenger space, Bunt was unable to obtain enough responses from the hotel guest surveys to produce any meaningful assessment. However, given the nature of the Hotel use (i.e. temporary accommodation), it would reasonable to assume the passenger loading behaviour would be similar to one would expect for a residential building. Therefore, at minimum

1 passenger space should be provided for each building, and that accessible parking stall should be provided at 0.03 stall per unit, based on Bunt's research findings for other residential sites.

Appendix A – Manager / Employee Survey

City of Vancouver Parking Study (Manager)

NOTE THAT SURVEY WILL BE ISSUED ELECTRONICALLY VIA SURVEYGIZMO ONLY.

The City of Vancouver has retained a Consultant, Bunt & Associates Engineering Ltd., to assist in research work necessary to support possible changes to the City of Vancouver Parking By-law. As part of this work, the City would like to better understand the travel and parking demand patterns for commercial units.

We are looking for your participation in collecting responses for the enclosed questionnaire survey. Note that all data collected will remain confidential in a secure environment.

1. Name of your company:_____

2. Approximate number of staff working at this location on a typical workday and in total: (i.e. full staff complement assuming no time away, no work offsite/ from home)
   Typical workday: _____
   Total: _____

3. Approximate floor area square footage at this location and seating capacity (if restaurant/lounge)
   _____
   _____

4. Is the business entitled to on-site, reserved parking as part of the lease? If so, how many spaces are you entitled to and how many are used?
   No
   Yes, _____ parking spaces entitled to,
   _____ parking spaces used

5. Total parking provided on-site (including other businesses)
   General Parking: _____
   Accessibility (disability parking) Parking: _____

6. Does the building provide any of the following Transportation Demand Management measures:

☐ Car Share Parking	☐ Electric Vehicle Parking	☐ Carpool Program
☐ Car Share Membership	☐ Showers and Lockers	☐ On-site Childcare
☐ Transit Subsidies	☐ Fleet of Bicycles	☐ Transportation Demand Management Coordinator
☐ Bicycle Storage (Secure)	☐ Shuttle Bus Service	
☐ Bicycle Repair Station	☐ Vanpool Program	☐ Other (please specify)

City of Vancouver Parking Study (Employee)

NOTE THAT SURVEY WILL BE ISSUED ELECTRONICALLY VIA SURVEYGIZMO ONLY.

1. Name of your company:_____
2. Type of Employee: (select one)
    a. Full-time
    b. Part-time
    c. Other (Please Specify): _____
3. Please provide the first 3 letters of your home postal code. (Optional, **V7C**-xxx) _____
4. When do you typically arrive to work?_____ (hh:mm am/pm)
5. When do you typically leave work?_____ (hh:mm am/pm)
6. Which mode of Transportation did you use TODAY for your trip to work? (select one)
    a. Driver of a private vehicle that required parking in the area
    b. Passenger in a private vehicle that required parking in the area
    c. I was dropped off in a vehicle that DID NOT require parking in the area (taxi, other vehicle)
    d. Car share vehicle (Car2Go, EVO, ZipCar, Modo)
    e. Public Transit
    f. Walk the whole way
    g. Cycle the whole way
    h. Combination of Cycle & Transit

Vehicle Trip [Ask only if there arrive by car]

7. If you are a driver where did you park TODAY? (select one)
    a. In my workplace's parking facility (parking lot or garage)
    b. In a nearby off-street parking facility (parking lot or garage)
    c. On the street
    d. Not applicable
8. If you arrived by carpool TODAY, how many people were in your vehicle, including yourself? _____
9. If you require an accessible (disability) parking, do you have access to an accessible parking space at work? Yes / No
10. Are you a member of a car-sharing service provider? Yes / No

Bike Trip [Ask only if there arrive by bike]

11. Where did you park your bike TODAY? (select one)
    a. Designated bike storage room in my building
    b. Designated bike storage room in my workplace
    c. In my workplace (no formal bike storage room)
    d. On the street (outside bike rack, etc.)

12. Do you use any of the following? Or require additional storage space for your bike? (select one)
    a. Electric bike
    b. Bike trailer (cargo/children)
    c. Other (Please Specify): _____

Transportation Demand Management

13. If you typically drive your own vehicle to work, what alternative travel mode would you most likely switch to if that was something you would consider: (select one)
    a. Public Transit
    b. Walking/Cycling
    c. Carpool
    d. Car Share Vehicle
14. Which of the following would induce you to switch to cycling or walking as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More or improved bicycle storage,
    b. More or improved employee showers, lockers and changing facilities
    c. Bike maintenance tools at work and/or seminars
    d. More or improved bike lanes to/ from home
    e. Financial credit for walking/cycling gear (i.e. bike light, pannier, runners) instead of free parking.
    f. Less vehicle parking available in the area of my workplace
    g. Increased vehicle fuel costs
    h. Support for workplace goals on becoming a more environmentally sensitive company
    i. I would not switch to walking or cycling for any reason.
    j. Other (Please Specify): _____
15. Which of the following would induce you to switch to transit as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More frequent transit service from my home
    b. More direct transit service from my home
    c. Transit pass subsidies
    d. Less vehicle parking available in the area of my workplace
    e. Increased vehicle fuel costs
    f. Support for workplace goals on becoming a more environmentally sensitive company
    g. I would not switch to transit for any reason.
    h. Other (Please Specify): _____

16. Which of the following would induce you to switch to using a Car-sharing vehicle (i.e. Car2Go, EVO, ZipCar, Modo) as your main travel mode to work instead of driving your own vehicle? (select all that apply)
    a. More reliable access to car-sharing vehicles at my home
    b. More reliable access to car-sharing vehicles at work
    c. A free membership for car-sharing services
    d. Driving credits for car-sharing vehicle use
    e. Support for workplace goals on becoming a more environmentally sensitive company
    f. I would not switch to using car-sharing vehicle for any reason.
    g. Other (Please Specify): _____

17. Does your workplace provide any of the following Transportation Demand Management measures: (select all that apply)

☐ Car Share Parking	☐ Electric Vehicle Parking	☐ Carpool Program
☐ Car Share Membership	☐ Showers and Lockers	☐ On-site Childcare
☐ Transit Subsidies	☐ Fleet of Bicycles	☐ Transportation Demand Management Coordinator
☐ Bicycle Parking	☐ Shuttle Bus Service	
☐ Bicycle Repair Station	☐ Vanpool Program	☐ Other (please specify)

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18. Please provide any ideas or comments:

_____

_____

MEMO

DATE: June 18, 2018
PROJECT NO: 04-18-0086
PROJECT: CoV Parking Bylaw Update
SUBJECT: Potential TDM Implementation Challenges - DRAFT

TO: John Turecki, P.Eng. & Rosemarie Draskovic, P.Eng., PTOE, PTP
City of Vancouver

PREPARED BY: Christephen Cheng, P.Eng.
REVIEWED BY: Floris van Weelderen, P.Eng., PTOE & Peter Joyce, P.Eng.

This memorandum outlines the potential implementation challenges that in our professional opinion may arise when implementing the TDM measures presented in the draft TDM menu of options provided to us by Rosemarie via E-mail on June 14, 2018.

1. Developers or Building Owners may not want to or be prepared to commit to a 20-year timeline. Could it be shorter? Could monies be paid upfront to a third party that would administer the TDM Program?

2. The return on investment (ROI) of transit subsidies appears to be too low.

3. FIN-01 (Car Share Membership) and FIN-02 (Public Transit Passes) should include language to cap the amount of financial contribution to *50% of the dwelling units* for Residential Use, and *1 employee per 60 sq m GFA, or 50% of the employees, whichever is less* for Non-Residential Use.

4. If Public Bike Share (PBS) space dedication is now part of the TDM menu of options, does that mean it would no longer showing up as a rezoning condition?

5. For ACT-02 (Improved Access to Class A Bike Parking), awarding only 2 points for automated bike parking seems to be too little comparing to the capital cost required to install the system.

6. ACT-04 (Secure Public Bike Parking) should include a minimum quantity (e.g. 30 spaces) to be eligible for the TDM point. Also, could this be scalable to award more TDM points if Developers elect to provide a larger facility to accommodate more bicycles?

7. ACT-08 (Shared Bike Fleet) should have a specification regarding the quantity of shared bikes in order to qualify for the TDM points. Based on Bunt's recent research, it is suggested that, the shared-bike fleet should be provided at 1 per 20 dwelling units for residential uses and, 10 bikes for every 1,000 people (= 1 per 3,000 sq m assuming each employee occupies 30 sq m GFA) for non-residential uses.

8. It is anticipated that office developers would still want to provide some level of parking to meet market demand and therefore the ROI maybe significantly impacted, especially in the Downtown. Bunt's recent project experiences for a number of office development projects in the Downtown indicate that the minimum "marketable" parking supply ratio in Downtown Vancouver is *1 stall per 3,000 sq ft (1 stall per 278 sq m)*. Also, as a general note, the construction cost for underground parking should be closer to $50,000 per stall (not $40,000).

9. The requirement for TDM programs for office developments may result in new offices being less competitive (more expensive, less affordable) than existing offices in Downtown as the new office space will be encumbered by additional costs (i.e. TDM programs) which would not be subjected to existing office space.

10. Although OTH-02 (OTHER) may include measures that are not currently included in the TDM menu of options, we wonder if **Guaranteed Ride Home** and/or **Additional Passenger Spaces** should be explicitly considered in the menu.

11. In general, the vehicle trip reductions for the various TDM measures do not appear to be commensurate with the TDM points awarded for each measure. This should be further evaluated to ensure that the most effective TDM measures are implemented.

12. Similarly, the cost associated with each TDM measure is not necessarily equal on a point-by-point comparison, which may result in under-utilization of certain TDM measure. For comparison purposes, **Table 1** provides an estimate of the cost of the different TDM measures and the equivalent cost to achieve one point for each measure.

Based on **Table 1**, with the exception of the TDM points under the *Support, Promotion, Information (SUP)* category, as well as the mandatory TDM measures (i.e. TDM monitoring and 2 points for Carshare-related TDM), it is our professional opinion that the point allocation for the TDM measures should be normalized such that the TDM points being awarded would be more equitable in terms of the associated costs needed to achieve each point. A cursory review of Table 1 suggests that the TDM points should be normalized as follows:

- Residential Uses - 1 TDM point should cost between $180,000 and $200,000
- Non-Residential Use - 1 TDM point should cost between $90,000 and $110,000

Furthermore, for the Carshare-related TDM measures (i.e. COM-01, COM-02, COM-03), each point should

cost between $350,000 and $400,000 for Residential Uses, and between $200,000 to $250,000 for Non-Residential Uses. With these in mind, **Table 2** summarizes the suggested changes to the maximum TDM points awarded for each TDM measures.

Table 1 – Comparison of Costs to Achieve One (1) TDM Point

TDM MEASURE		DETAILS	TDM PTS. (MAX)	ESTIMATED COST FOR MEASURE		ESTIMATED COST PER POINT	
				RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)	RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)
FIN-01	Car Share Membership	Provide annual car share membership to residents and employees, with included $200 annual driving credits for 20 years, assuming 50% uptake.	2	$791,000	$2,638,000	$395,500	$1,319,000
FIN-02	Public Transit Passes	Provide subsidized transit pass for residents and employees, for 20 years, assuming $100 monthly per resident and $50 monthly per employee, with 50% uptake.	8	$4,200,000	$7,500,000	$525,000	$937,500
FIN-03	Bike Share Membership	Provide annual Public Bike Share (PBS) membership for new residents and employees. More points for proximity to existing PBS stations.	2	$417,000	$1,488,000	$208,500	$744,000
FIN-04	Free Bicycles	Provide new bicycle and helmet with the purchase of each dwelling unit or 1-year rental lease. More points if 100% e-bikes are provided for this incentive, assuming $1,800 per e-bike.	3	$640,500	n/a	$213,500	n/a
ACT-01	Additional Class A Bike Parking	Provide additional Class A bicycle parking above minimum requirements. More points for providing additional Class A bicycle parking.	4	$756,000	$180,000	$189,000	$45,000
ACT-02	Improved Access to Class A Bike Parking	Provide improved access to Class A bicycle parking. More points depending on design of bicycle parking.	5	Varies	Varies	Varies	Varies
ACT-03	Enhanced Class B Bike Parking	Provide enhanced visitor Class B bicycle parking, including well-lit, secure, indoor facilities.	1	Varies	Varies	Varies	Varies
ACT-04	Secure Public Bike Parking	Provide secure public bicycle parking on-site, assuming minimum 30 spaces	1	n/a	$90,000	n/a	$90,000
ACT-05	Bike Maintenance Facilities	Provide on-site bike maintenance facilities.	1	Varies	Varies	Varies	Varies

TDM MEASURE		DETAILS	TDM PTS. (MAX)	ESTIMATED COST FOR MEASURE		ESTIMATED COST PER POINT	
				RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)	RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)
ACT-06	Improved End-of-trip Amenities	Provide improved and/or additional end-of-trip amenities for employees. More points for additional facilities.	5	n/a	Varies	n/a	Varies
ACT-07	Public Bike Share Space	Provide space, foundation, and SRW for on-site Public Bike Share (PBS) station. Site subject to City approval. More points for proximity to existing cycling route.	4	Varies	Varies	Varies	Varies
ACT-08	Shared Bike Fleet	Provide fleet of bicycles for residents, employees, and/or guests to use (private bike share). More points if 100% e-bikes are provided for this incentive. Each e-bike typically costs $28,000 for 20 years.	3	$489,000	$351,000	$163,000	$117,000
ACT-09	Walking	Provide safe, attractive, and direct off-site connections for pedestrians linking building entrances with public sidewalks, transit stops, and key destinations. Subject to City approval.	3	Varies	Varies	Varies	Varies
COM-01	Carshare Spaces	Provide dedicated publicly available parking spaces for carshare vehicles (1-way or 2-way). More points for higher rate of provision.	2	$1,750,000	$800,000	$875,000	$400,000
COM-02	Carshare Vehicles and Spaces	Provide publicly accessible two-way carshare vehicle(s) and space(s) on-site for 3 years. More points for higher rate of provision.	4	$1,400,000	$800,000	$350,000	$200,000
COM-03	Electric Carshare Vehicles	Provide 100% electric carshare vehicles. This measure is only applicable in addition to TDM measure COM-02.	1	Varies	Varies	Varies	Varies
COM-04	Additional Pick-Up / Drop-Off Spaces	Provide improved and/or additional short-term pick-up / drop-off passenger spaces. More points for additional spaces.	6	Varies	Varies	Varies	Varies

TDM MEASURE		DETAILS	TDM PTS. (MAX)	ESTIMATED COST FOR MEASURE		ESTIMATED COST PER POINT	
				RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)	RESIDENTIAL (350 UNITS)	NON-RESDIENTIAL (37,500 M^2)
COM-05	Shuttle Bus Service	Provide free local shuttle bus services to between the development site and regional transit hubs, commercial centres, and residential areas for customers, employees, and visitors. More points for more frequent service and if 100% electric vehicles are used for this incentive.	8	Varies	Varies	Varies	Varies
COM-06	Vanpool/Carpool Service	Provide vanpool/carpool services to employees. More points if 100% electric vehicles are used for this incentive.	3	Varies	Varies	Varies	Varies
SUP-01	Transportation Marketing Services	Provide Travel planning resources such as individualized marketing, including active transportation maps, community resources.	1	$10,000	$10,000	$10,000	$10,000
SUP-02	Real-Time Information	Install real-time alternative transportation information boards in lobbies and/or other public areas.	1	$10,000	$10,000	$10,000	$10,000
SUP-03	Multimodal Wayfinding Signage	Provide directional signage to major destinations and public amenities.	1	$10,000	$10,000	$10,000	$10,000
PKG-01	Parking Pricing	Implement paid parking for all users, including employees, customers, visitors. This measure is only applicable to sites outside the Downtown.	2	n/a	Varies	n/a	Varies
PKG-02	Parking Supply	Provide no more than the minimum vehicle parking provisions required as per bylaw for all individual land uses on site. Outside the Downtown, this measure is only applicable to Large developments.	1	Nil	Nil	Nil	Nil
OTH-01	TDM Monitoring	Provide long-term post-occupancy monitoring of implemented TDM strategies.	1	Varies	Varies	Varies	Varies
OTH-02	Other	The City may consider other innovative developer-proposed strategies proposed by the developer, with acceptable rationale, justification.	8	Varies	Varies	Varies	Varies

Table 2 – Recommended TDM Measure Point Allocation

TDM MEASURE		TDM POINTS (MAX)	
		CURRENTLY PROPOSED	SUGGESTED CHANGES
FIN-01	Car Share Membership	2	Residential – no change; **Non-Residential - reduce annual driving credits to $150 for 5 years.**
FIN-02	Public Transit Passes	8	**Residential - reduce transit subsidies to $40 per month (approximately 30% discount for 2-Zone Transit Pass);** **Non-Residential - reduce transit subsidies to $25 per month for 5 years only (approximately 20% discount for a 2-Zone Transit Pass).**
FIN-03	Bike Share Membership	2	Residential – no change; **Non-Residential - increases to 4 TDM points, and reduce duration to 5 years only.**
FIN-04	Free Bicycles	3	No change
ACT-01	Additional Class A Bike Parking	4	Residential – no change; **Non-Residential - reduce to 2 TDM points for Non-Residential use.**
ACT-02	Improved Access to Class A Bike Parking	5	No change (or TBD with additional information)
ACT-03	Enhanced Class B Bike Parking	1	No change (or TBD with additional information)
ACT-04	Secure Public Bike Parking	1	No change
ACT-05	Bike Maintenance Facilities	1	No change (or TBD with additional information)
ACT-06	Improved End-of-trip Amenities	5	No change (or TBD with additional information)
ACT-07	Public Bike Share Space	4	No change (or TBD with additional information)
ACT-08	Shared Bike Fleet	3	No Change
ACT-09	Walking	3	No change (or TBD with additional information)
COM-01	Carshare Spaces	2	**Residential – increases to 4 TDM points or reduce supply ratio;** **Non-Residential - increases to 4 TDM points or reduce supply ratio.**
COM-02	Carshare Vehicles and Spaces	4	No change
COM-03	Electric Carshare Vehicles	1	No change
COM-04	Additional Pick-Up / Drop-Off Spaces	6	No change (or TBD with additional information)
COM-05	Shuttle Bus Service	8	No change (or TBD with additional information)
COM-06	Vanpool/Carpool Service	3	No change (or TBD with additional information)
SUP-01	Transportation Marketing Services	1	No change

TDM MEASURE		TDM POINTS (MAX)	
		CURRENTLY PROPOSED	SUGGESTED CHANGES
SUP-02	Real-Time Information	1	No change
SUP-03	Multimodal Wayfinding Signage	1	No change
PKG-01	Parking Pricing	2	No change (or TBD with additional information)
PKG-02	Parking Supply	1	No change
OTH-01	TDM Monitoring	1	No change
OTH-02	Other	8	No change

Engagement & Stakeholder Consultation Summary

The project team consulted with the following stakeholders:

- Transportation 2040 Stakeholders,
- Renter's Advisory Committee,
- Business Improvement Associations (BIA),
- Active Transportation Policy Council (ATPC),
- Seniors Advisory Committee,
- Persons with Disabilities Advisory Committee, and
- The Urban Development Institute (UDI).
-

In addition, the team conducted a Talk Vancouver survey of considered changes to the Parking By-law. The public engagement and stakeholder consultation process took place between April and June, 2018.

Stakeholder Group Consultation

The Parking By-law Update team delivered in-person presentations to individual stakeholder groups, as well as facilitated discussions of the proposed amendments to the current Parking By-law.

The feedback regarding proposed changes to the Parking By-law update was generally supportive, with some notable concerns. **Tables 1** though **7** summarize the top area of concern of each group.

Table 1 – Renter's Advisory Committee (April 18, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Other	Continued engagement with public about Parking By-law updates
Accessibility	Consideration of how eliminating parking minimums will impact seniors and persons with disability

Table 2 – Transportation 2040 Stakeholders (April 26, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Bicycle Parking	Availability and security for bicycle parking
Eliminating Parking Minimums Downtown	Vehicle commuters who do not have any other options cannot be disregarded and must be considered when parking is being discussed Shrinking public parking supply in downtown.
Other	Desire to explore ways to shift residential parking off-street as there is too much residential parking supply off street sitting empty

Table 3 – Business Improvement Associations (May 2, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Eliminating Parking Minimums Downtown	Supportive of zero minimum requirements Downtown area based on cost implications associated with requiring parking with new developments. Highlighted benefits to small developments downtown.
Access	Improve access overall for seniors and persons with disability

Table 4 - Active Transportation Policy Council (May 2, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Bicycle Parking	Increase availability and security for bicycle parking
Accessibility	Consider how eliminating parking minimums will impact seniors and persons with disability;
Transportation Demand Management Plans (TDM)	Implement measures to monitor TDM

Table 5 - Person with Disabilities Advisory Committee (May 10, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Reduction of Auto Use through Parking Minimums and Transportation Demand Management Plans (TDM)	The issue of "visit-ability." Consider in-home care workers providing support to people with short- and long-term disability; if zero parking minimums are implemented, skeptical that developers will consider accessible parking; TDMs preclude inclusivity and are short-sighted and do not meet needs of persons with disabilities
Access	Increase levels to meet demand of population growth and aging population

Table 6- Seniors Advisory Committee (May 11, 2018)

Top Areas of interest/Concern	
Theme	**Description**
Accessibility	Ensure that this type of parking is monitored and forced
Loading and Unloading Zones	Increase time limits

Table 7 - Urban Development Institute (May 17, 2018)

Top Areas of Interest/Concern	
Theme	**Description**
Reduction of Auto Use through Parking Minimums and Transportation Demand Management Plans	Long-term monitoring obligations for TDM plans. Suggested that the City develop an in-house program; Suggested allowing opportunities to coordinate with external agencies on TDM like TransLink to include TDM measures such as additional public restrooms, station entrances

Talk Vancouver Survey

To capture broader public feedback as to how off-street parking is used and thoughts about policy changes being considered, a survey was made available through Talk Vancouver, from May 16 to 30, 2018. This survey assessed levels of support for the various proposed changes, as well as provided respondents the opportunity to voice specific comments and concerns. The survey was also sent to stakeholder groups for their information and participation.

The Talk Vancouver survey presented the City's proposed recommendations to the Parking By-law. The public were asked to indicate their level of agreement for each recommendation described below and offer related comments or concerns. 1,909 people took part in the survey.

Pick-Up and Drop-Off Spaces

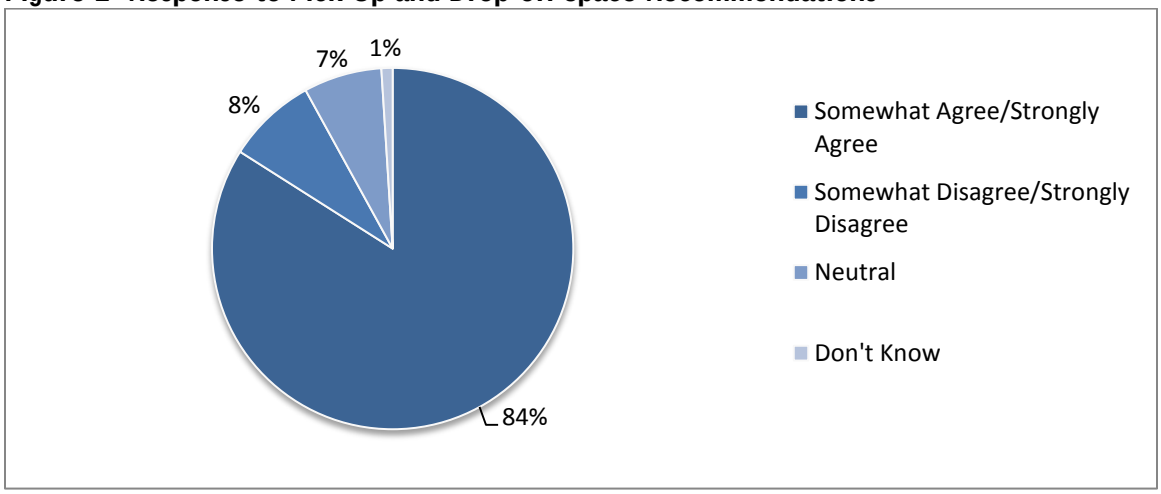
Recommendations

- Requiring pick-up drop off spaces in new developments above a certain size and more for larger developments.
- Requiring spaces be sized and located to accommodate persons with disabilities.
- Require visitor parking in new residential developments

Response

Overall, 84 percent of the public support expanding requirements for pick-up and drop-off spaces. Support frequently cited the accommodation of persons with disabilities and mobility restrictions of seniors. The main concerns cited related to enforcement of these spaces. **Figure 1** illustrates the survey responses to the pick-up and drop-off space recommendations.

Figure 1 –Response to Pick-Up and Drop-off Space Recommendations



Transportation Demand Management Plans

Recommendations:

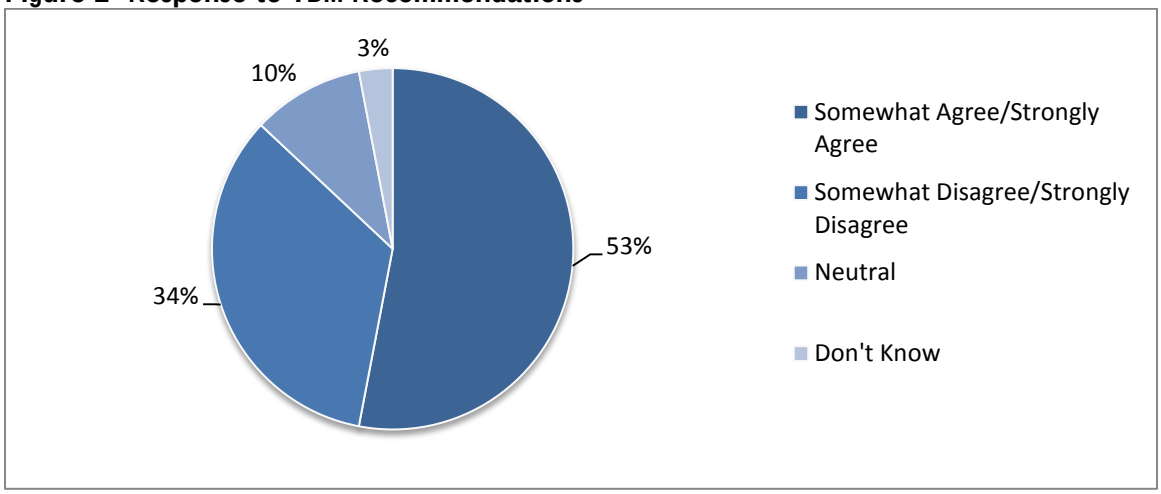
To encourage Transportation Demand Management plans, the City is considering:

- Creating a menu of acceptable TDM measures, where each measure is assigned a value in points.
- Requiring all large developments to provide a TDM plan that meets a certain number of points.
- Reducing parking requirements by up to 30 percent where a TDM plan is submitted and meets a minimum number of points, with special consideration for sites near transit service and for rental residential.

Response

Results of the survey identified 53 percent in support of the proposal of TDM plans. The main concerns of participants appear to be the 30 percent reduction in parking requirements, and the implications to those owning vehicles. Comments included those who felt that the 30 percent reduction was too low, as well as those who felt it was too high. **Figure 2** illustrates the survey responses to the TDM recommendations.

Figure 2 –Response to TDM Recommendations



Bicycle Parking Requirements

Residential Recommendations

- Increasing bicycle parking for residences to match observed ownership rates of about 1.8 bikes per unit.
- Allow double stacked bicycle parking to reduce space required.
- Making the number of spaces required based on the size of residence.
- Requiring 5 percent of bicycle spaces to accommodate non-standard, recumbent and cargo bicycles, and mobility scooters.

Non-residential Recommendations

- Increasing bicycle parking requirements for retail, office and community uses.
- Allow double stacked bicycle parking

- Requiring five (5) percent of bicycle parking spaces to accommodate non-standard bicycles like recumbent and cargo bicycles.

Response

With respect to updates regarding bicycle parking in residential and non-residential developments, over 70 percent of participants agree with the recommendations. The primary concerns raised regarding bicycle parking related to the security of parking and the perceived awkward nature of stacked parking (e.g., a shorter individual trying to lift a bicycle from a space taller than 1.5 m). **Figure 3** and **Figure 4** illustrate the survey responses to the bicycle parking recommendations.

Figure 3 –Response to Residential Bicycle Parking Recommendations

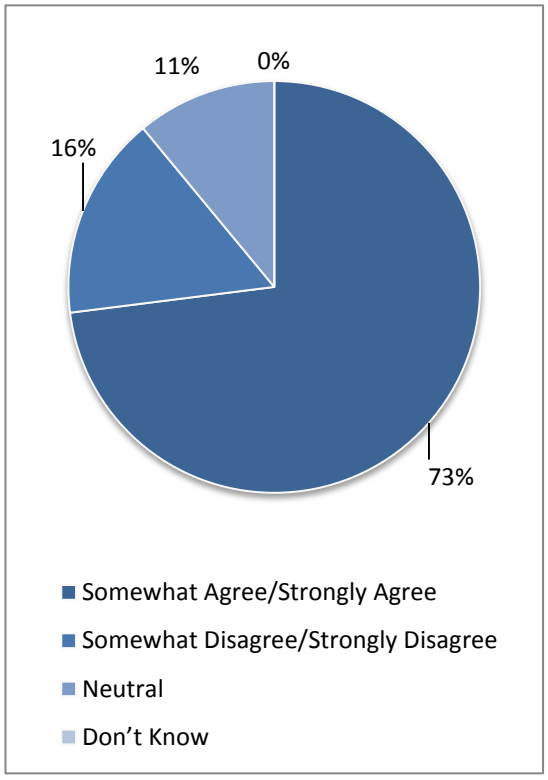
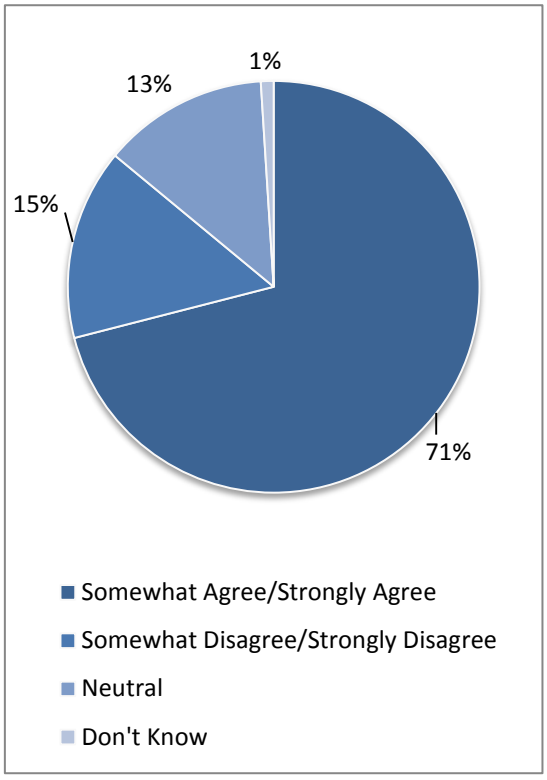


Figure 4 –Response to Non- residential Bicycle Parking Recommendations



Eliminating Vehicle Parking Requirements within Downtown

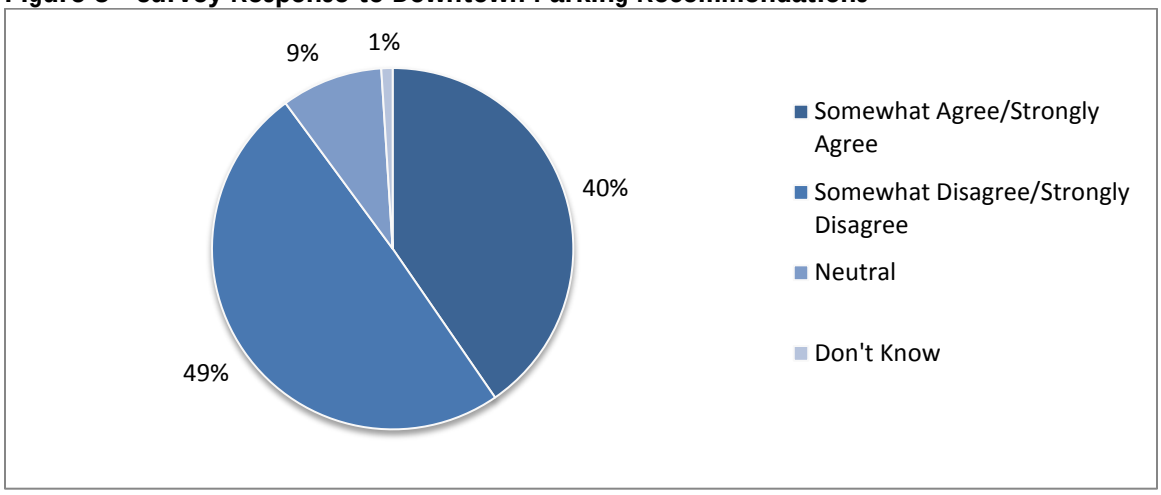
Recommendations

- Eliminating parking requirements enables developments to provide alternatives to driving to support their residents, workers, and customers, such as extra bicycle parking, shared vehicles, or subsidized transit passes.
- Based on current parking provisions in new development, we expect that the majority of developments will continue to provide parking based on market needs.
- In order to encourage new buildings to provide residents, workers and customers alternatives to driving, the City is proposing to eliminate minimum parking requirements in Downtown.

Response

Results of the survey identified 40 percent of respondents in support of eliminating parking minimums in the Downtown. Participants felt that zero minimum parking requirements were unrealistic as survey participants note the perceived prevalence of vehicle ownership and parking demand. **Figure 5** illustrates the survey responses to the Downtown parking recommendations.

Figure 5 – Survey Response to Downtown Parking Recommendations



Disability Parking Spaces within the Downtown Area

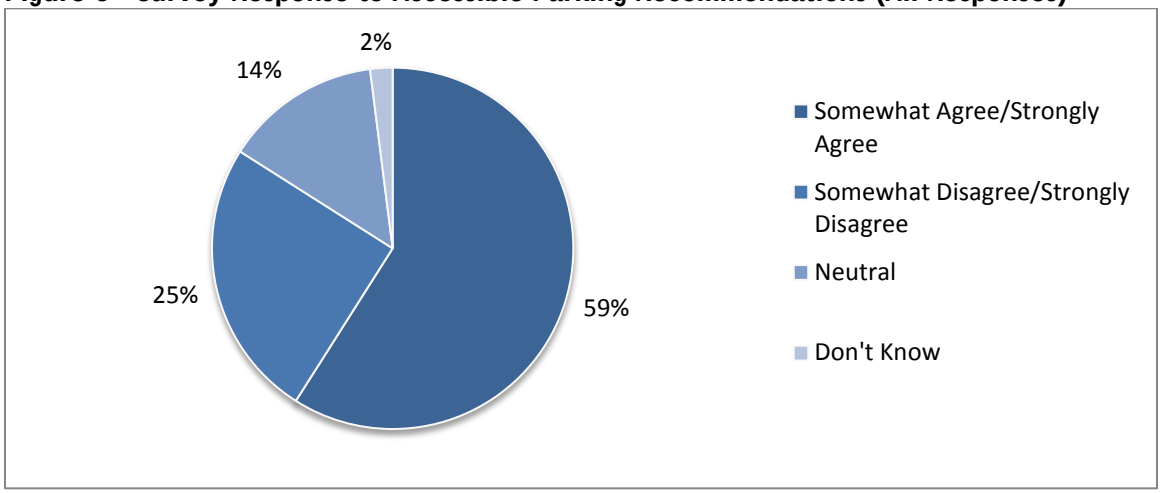
Recommendations

- Provision of visitor, pick-up/drop-off, and non-standard bicycle parking spaces noted in previously in survey.
- For developments providing parking, the existing requirements for universally accessible parking apply.
- For low parking developments, at least 25 percent of the provided spaces must accommodate persons with disabilities.
- Developments providing no parking must provide at least one universally accessible pick-up/drop-off space.

Response

In regards to the proposed requirement of accessible parking spaces within new developments, eight (8) percent (159) of respondents identified as having a disability. Of these, 62 percent (99 people) strongly agreed or somewhat agreed that the proposed measures adequately addressed the needs of persons with disabilities. This compares to 26 percent (42 people) who strongly disagreed or disagreed with that the proposed measures adequately addressed the needs of persons with disabilities. **Figure 6** illustrates the overall responses to the accessible parking recommendations.

Figure 6 – Survey Response to Accessible Parking Recommendations (All Responses)



Generally, respondents demonstrated understanding of the needs of persons with disabilities and an aging population. However, the proposed amount of 25 percent of parking to be accessible was met with some concern. Support for ensuring adequate visitor parking is divided with those against stating the cost for this inclusion increases the price of development and further exacerbates the lack of affordability in the City.

TRANSPORTATION ASSESSMENT AND MANAGEMENT STUDY GUIDELINES FOR CONSULTANTS

INTRODUCTION

This document is intended to provide guidelines for transportation consultants who produce transportation reports for the City of Vancouver. Studies requested may include a Transportation Impact Assessment, a Parking Study, and a Transportation Demand Management Plan; collectively called a Transportation Assessment and Management Study (TAMS). These guidelines establish the scope, form, and analysis required to properly assess the impacts of a proposed development on existing transportation infrastructure, determine the required mitigation measures and document the results.

TRANSPORTATION ASSESSMENT AND MANAGEMENT STUDY REPORT STRUCTURE

The format of Transportation Assessment and Management Studies (TAMS) should follow the guidelines outlined in this document. The following is a suggested report structure:

REPORT CONTEXT

Description of the development (include all of the following that are known at the time of the application):

- Municipal address;
- Development application number;
- Location relative to existing transportation systems;
- Proposed land uses and relevant planning regulations to be used in the analysis;
- Proposed development size (building size, number of residential units, etc.) and location on site;
- Estimated date of occupancy;
- Planned phasing of development;
- Proposed number and type of vehicle parking spaces, number and type of loading spaces, number and type of bike parking spaces;
- Type of access (full turns, right-in/right-out, other turning restrictions, etc.);
- Proposed pedestrian, bicycle, vehicle, and loading access points;
- Development time periods and phasing; and
- Horizon years for traffic (include reference to phased development)

The TAMS must include a key plan and a context plan that shows the general location of the development in relation to the surrounding area. The TAMS must define the study area and must also provide a draft site plan of a suitable scale that shows the proposed accesses and parking areas. If the proposed development is to be constructed in phases, a description must be provided for each phase, identifying the proposed timing of implementation. The TAMS must include, the proposed access locations, and the existing

conditions in the surrounding area; figures documenting the existing travel demands by mode; and a summary of collisions for the affected study area roads. A photographic inventory of the transportation infrastructure in the vicinity of the proposed access points would be beneficial for better context.

EXISTING CONDITIONS

Full description of relevant existing conditions, including:

- Existing vehicle, pedestrian, cyclist, and transit trip volumes, wherever possible
- Existing roads ramps and driveways in the study area, including classification and number of lanes
- Existing intersections, indicating type of control, lane configurations, turning restrictions, and any other relevant data (e.g., extraordinary lane widths, grades);
- Transit routes and facilities ;
- Existing access points to adjacent developments (both sides of all roads bordering the site);
- Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks;
- Existing pedestrian network (within a 400-metre diameter) and existing bicycle network (within a five-kilometre diameter);
- Assessment of existing intersection and roadway operations, including volume-to-capacity ratio (V/C) and levels of service (LOS); and
- Major trip generators/attractors within the study area should be indicated.

DEMAND FORECASTING

For future time horizon(s) the TAMS must include**:**

- General background traffic growth, including a description and justification of how the background growth has been calculated;
- Other study area developments within one kilometre;
- Planned or anticipated changes to the study area road network;
- Future intersection and roadway operations (V/C, LOS, queue lengths);
- Figures documenting future background travel demands at study area intersections by mode for each horizon year;
- Trip generation rates for vehicles, pedestrians, cyclists, and transit, including breakdown of new and pass-by trips, as well as description and justification for any adjustments;
- Trip distribution and assignment, include description of how distribution was determined;
- Current and future mode splits;
- Figures documenting forecasted site trip generation and assignment by mode; and
- Plans showing total (background plus site generated) future travel demands by mode for each horizon year.

TRANSPORTATION IMPACT ANALYSIS

Impact analysis methodologies shall be consistent with methodologies outlined in the most current editions (at the time of the study) of ITE Trip Generation Manual, ITE Trip Generation Handbook, ITE Transportation Impact Analyses for Site Development, Highway Capacity Manual, and other guidelines, as applicable. Where deviations from industry-standard practices are proposed, additional data, rationale, and justification shall be provided to support methodology.

- Assessment of intersection and roadway operations (V/C, LOS, queue lengths);
- Traffic, pedestrian and bike signal and auxiliary lane warrants, as required ;
- Operational/safety assessment (e.g., sight line assessment where vertical and/or horizontal alignment are an issue) ;
- Storage analysis for closely spaced intersections and identification of operational and safety issues;
- Site access location assessment;
- Pedestrian and bicycle network connections and continuity;
- On-site vehicle, pedestrian, and cycling circulation and design;
- Potential for neighbourhood impacts; and
- Potential for impacts on existing and planned cycling infrastructure.

TRANSPORTATION IMPACT STUDY REQUIRMENTS

OPERATIONAL ANALYSIS

An operational evaluation of all intersections and roadway sections within the study area that will be affected by site generated traffic volumes during any or all of the relevant periods and scenarios is required. Summaries are to be provided in tabular format clearly identifying intersection performance under existing, future background, and total future traffic conditions including impacts of any adjacent future developments anticipated.

Operational analysis shall be completed using industry-standard simulation software (e.g. Synchro/SimTraffic, VISSIM, VISTRO, HCS, SIDRA, etc.) and shall be consistent with methodologies outlined in most current edition (at the time of the study) of the Highway Capacity Manual, the Canadian Capacity Guideline for Signalized Intersections, and other guidelines, as applicable. Where deviations from industry-standard practices are proposed, additional data, rationale, and justification shall be provided to support methodology.

Volume-to-capacity (V/C) ratio calculations relating to future conditions should be determined using signal timing optimized for the volume conditions being studied. In cases where minimum pedestrian phase times prevent equalizing the level of service for critical movements, then the V/C ratio for the most heavily saturated critical movement should be considered as the V/C ratio for the intersection.

The consultant must undertake at least one (1) hour of continuous observations during each of the morning (AM) peak, afternoon (PM) peak, and peak hour traffic conditions to verify that the traffic volumes through the intersections reflect existing demands and to

identify unusual operating conditions. Mid-day and/or weekend peaks shall be analyzed, as required, to reflect the revised/proposed land use. Timing of observations and conditions observed should be documented in the report.

Intersection evaluations should identify:

- **Signalized intersections** – V/C ratios for the overall intersection, as defined above, and for individual movements and
- **Unsignalized intersections** – Level of service (LOS) and capacity based on gap analysis.

Existing signal timing information such as cycle length, offset, phasing, pedestrian minimums, and clearance intervals must be used as a base to analyze the existing capacity of signalized intersections. This signal timing data can be obtained from the City of Vancouver Traffic Data and Management (TDM) Branch.

In cases where roadways have closely spaced signalized intersections where there are heavy turning movements, the analysis should confirm that vehicle storage limitations would not prevent signalized intersections from operating at the predicted V/C ratio.

QUEUING CAPACITY AND DELAY AT MAJOR INTERSECTIONS

Intersection evaluation should identify projected queue lengths and available storage for left turn and through lanes on all approaches. Mitigation measures in the form of the additional lane capacity, signal timing/phasing adjustments and/or transportation demand management (TDM) measures will be required where the projected 95th percentile queue lengths exceed available storage. Traffic signal and auxiliary lane warrants using the most current methodologies (at the time of the study) from the Transportation Association of Canada (TAC), and/or other applicable guidelines should also be completed and documented in the report, as required, to supplement operational recommendations.

SYSTEM OPERATIONS, SAFETY, AND PERCEIVED SAFETY

An evaluation is required of potential operational and safety concerns at intersections, on road segments or at driveways that will be created or affected by site-generated traffic during any or all of the relevant periods and scenarios. Consideration must be given to the potential to exacerbate existing safety concerns, and operational issues such as:

- Pedestrian and cycling conflicts;
- Vulnerable road users;
- Access points for non-vehicular modes;
- Vehicle-pedestrian and vehicle-cyclist conflicts;
- Weaving;
- Merging/diverging;
- Corner clearances;
- Sight distances/sight line assessment (where grades at access points are an issue);

and
- Access conflicts.

The consultant must undertake at least one (1) hour of continuous observations during AM peak and PM peak traffic conditions and any other "critical traffic" time periods to evaluate operating conditions and any safety issues along the study area roadways.

Where there are known safety concerns, at minimum, a desktop review of the five-year collision history at key intersections and roadway segments may be required.

PROVISION FOR NON-AUTO MODES

As per the policy directions established by the City of Vancouver Transportation 2040 Plan, 2012 (T2040)proposals must support pedestrian movements, cycling, transit ridership, and goods movement. Pedestrian and bicycle network continuity should be considered, as should the T2040 requirements related to the provision of infrastructure to promote sustainable modes of transportation.

An assessment of potential impacts on transit operations must be undertaken where the site accesses connect to, or cross, any bus route. The assessment will identify the potential for increased delay to transit vehicles, safety concerns/conflicts with transit vehicles and any impacts on bus stops.

Gaps in pedestrian and cycling network continuity should be identified.

Site accesses from intersecting existing or planned bike routes are not supported and should be avoided wherever possible. Where site access along a bike route is unavoidable, the consultant should identify measures to mitigate the impacts on bicycle route(s).

A detailed assessment of pedestrian facility level of service will be required in the vicinity of the site where the development is expected to produce significant pedestrian volumes. The consultant shall identify any conflicts between any two modes of travel accessing to the site. The consultant shall also identify pedestrian and cycling facilities in the public realm. Additional sidewalk or facility width or a 'bicycle hub' may be required in such circumstances. Pedestrian warrants following the most current methodologies (at the time of the study) of the Transportation Association of Canada (TAC) and/or British Columbia Pedestrian Crossing Control manual should be provided to supplement recommendations.

ON-SITE DESIGN AND OPERATIONS

Particular attention must be paid to the potential for on-site traffic operations to affect the safe and efficient operation of the adjacent roads. It is expected that the consultant will provide:
- Evaluation of proposed on-site circulation and provision for pedestrian and cycling movements (clear and direct pedestrian and cycling pathways must be provided, including connections to existing facilities);

- Identification of end-of-trip facilities for cyclists ;
- Identification of potential for conflict/spill-back from on-site parking aisles/stalls to driveway intersections with the City's road network; and
- Identification of truck access location and loading/unloading facilities

COMMUNITY TRANSPORTATION IMPACTS

A transportation impact assessment report will review the local transportation network in the vicinity of the proposed development and identify potential neighbourhood impacts during both the commuter peak and the projected site peak as well as appropriate mitigation strategies, where required.

PARKING AND LOADING STUDY

A parking and loading study shall be provided for developments where deviations from the requirements of the Parking By-law are proposed. Recommendations shall adhere to the principles of City of Vancouver Parking and Loading Design Supplement, and consider vehicle and bicycle parking, as well as, loading requirements.

The proposed parking and loading supply is to be compared to the minimum requirements set by the Parking By-law. Acceptable justification and rationale for providing less than the minimum standards shall be included in this section. Full parking survey study of off-street and on-street conditions may be required, including an assessment of parking supply, occupancy, turnover, and duration, may be required if a significant shortfall is proposed.

An assessment of vehicle maneuvering, including vehicle turn swaths, should also be included where access and maneuvering for vehicles and loading may be challenging.

TRANSPORTATION DEMAND MANAGEMENT (TDM) PLANS

Where Transportation Demand Management (TDM) strategies are required as part of a rezoning and/or development permit application, or where a TDM strategies are being provided to support a proposed relaxation, a TDM Plan shall be provided in accordance with the minimum standards set by the Parking By-law and the Administrative Bulletin: Transportation Demand Management for New Developments Program.

MITIGATION MEASURES AND SITE DESIGN CHARACTERISTICS

The TAMS must identify all physical and operational mitigation measures required to offset network impacts from the development and justification for those measures.

The TAMS must include all of the following where they are required by the subject development:

- Mitigation measures required to offset impacts to and/or encourage increased usage of the Transit networks;
- Mitigation measures required to offset impacts to and/or encourage increased usage of cycling and pedestrian networks and facilities;
- Mitigation measures required to offset impacts on existing and planned cycling

and pedestrian facilities;
- Location and timing of proposed changes to existing traffic controls at intersections (e.g., new traffic signals, stop signs, etc.);
- Location and timing of new intersections, including proposed traffic control measures (.e.g., traffic signals, etc.);
- Requirements for left-turn lanes and in some cases right-turn lanes; and
- Operational changes (e.g. turn restrictions);

SUBMISSION

All Transportation Assessment and Management Studies should be signed and sealed by a Professional Engineer.