METROLINX

REGIONAL PARKING POLICY STUDY

2041 Regional
Transportation Plan

Prepared by WSP
2017

Metrolinx
Regional Parking Policy - State of Practice Review

Regional Transportation Plan (RTP) Policy Implication Memo

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1 STUDY BACKGROUND

In 2008, the Regional Transportation Master Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA), The Big Move, was adopted. The plan set out a common vision for transportation in the region and included a number of measures as targets (such as a shifting mode-share and increasing accessibility), for the 25-year time span. The vision in the RTP was accompanied by a number of strategies that included priority actions and supporting policies. These strategies encompassed a variety of areas of interest, several of which related to parking. In 2016, Metrolinx began a full review of the RTP, as mandated by the Metrolinx Act. The review has led to the creation of a Draft 2041 RTP, now out for consultation. This study informed the recommendations included in the Draft 2041 Plan.

The purpose of this study is to provide Metrolinx with off-street parking related policy recommendations to include in the RTP update. The following list of emerging off-street parking practices were included in this study:

3.1 New Development Parking (Commercial / Residential):
- → Parking Minimum Exemptions
- → Parking Maximums
- → Unbundled Parking
- → Shared Parking
- → Electric Vehicle (EV) Parking
- → Car-Share Parking
- → Bicycle Parking
- → Stormwater Charges

3.2 Employer Parking Strategies:
- → Parking Cash-Out
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- → Charging For Parking
- → Preferential Parking (EVs)
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- → Smart Parking
- → Mobile Payment
- → Demand Responsive Parking
- → Peer-to-peer Parking
- → Autonomous Vehicle (AV) Parking

2 APPROACH

In order to assist in the development of off-street parking policy recommendations for the Draft 2041 RTP, background research was completed which consisted of four components: a case study review, a jurisdictional scan of GTHA municipalities, interviews with municipality representatives and a comparative pricing analysis. The approach taken for each of the components is described in the following sections.

Case Studies

To determine the relevance of each off-street parking trend included in the study, national and international case studies were reviewed and evaluated against draft goals and objectives defined during the RTP update process. Case studies were selected to represent the potential benefit and application of each off-street parking trend included in the study.

Published reports, pilot projects, surveys and peer-reviewed research articles were included in this review to support the recommendations developed through this study for the Draft 2041 RTP. A research hypothesis was created for each trend to guide the case study selection and review process, which allowed for each trend to be evaluated according to its potential benefits. A full memo detailing the cases reviewed for each trend and the sources used is included in Appendix A.

Jurisdictional Scan

A scan of municipal parking regulations, policies and practices was conducted for each local and regional municipality in the region. The intent of the municipal scan was to determine which off-street parking trends had been implemented by municipalities and transit authorities. All resources used for this exercise are publicly available documents and have been cited within each section. To assess the level of implementation at the municipal level, an evaluation was conducted using a three-coloured scale (green, yellow and red) to depict a high, medium or low level of implementation.

The results of this jurisdictional scan were reviewed by representatives from each corresponding local and regional municipality during the municipal interviews. A complete summary matrix of the levels of implementation across the 26 GTHA municipalities was prepared, along with a comprehensive summary for each municipality. A full memo detailing the jurisdictional scan is included in Appendix B.

Parking Pricing

The high-level study of parking prices in the GTHA was intended as a selective review to understand general parking pricing trends in the GTHA across a range of sizes of municipality. The study focused on Toronto (population 2,730,000; highly urbanized); Mississauga (population 720,000; urban and suburban); and Whitby (population 130,000; primarily suburban). Parking pricing data across Toronto, Mississauga, and Whitby was collected using online tools in March 2017 for the hourly, daily (weekday), evening (weekday) and weekend time periods.

A comparative analysis of public versus private parking costs was preformed to understand price variations. The study then used price variations to estimate the degree to which public parking may be discounted, and the degree to which employee and customer parking (where free-of-charge) may be discounted relative to nearby paid lots. The resulting data is presented on maps of the region to highlight geospatial and temporal trends in parking pricing and/or pricing discounts. A full memo detailing parking pricing analysis is included in Appendix B.

Local and Regional Municipal Interviews

Telephone interviews with representatives from each municipality were conducted during the development of this report. The interviews provided an opportunity to expand on the analysis of each emerging practice and included the following list of questions:

1. What are the major off-street parking issues in your municipality?
2. Are you contemplating any updates to your municipal planning documents relating to off-street parking?
3. In reference to the regulations, policies, and practices summarized within our review, have we accurately captured the current state of practice?
4. Of the emerging practices explored through this assignment, which two or three are the most promising or realistic for implementation in your community?
5. In the context of off-street parking, what should be included within the RTP (including its supporting documents) to support your parking management efforts? Which areas of your work would benefit from being elevated to the regional scale?

For municipalities with off-street parking facilities:

6. Are you contemplating updates to the pricing management of your off-street parking facilities?
7. Would your municipality consider removing pricing subsidies for off-street parking facilities (common practice is for municipal facilities is to offer lower prices than nearby private lots)?

Information collected during the interviews was recorded and topic-specific input is embedded into the reported findings of this study.

Recommendations

Recommendations for off-street parking policies were then developed for the Draft 2041 RTP and for Metrolinx based on the research identified above. The recommendations are topic-specific and have been created for each of the 20 off-street parking practices included in this study, as well as for the pricing analysis conducted (Appendix C). The topic-specific recommendations, including recommended updates for the RTP, are included in the respective policy implication sections in Part 3 of this report. Each practice has been categorized as either a priority local practice, encouraged local practice or a monitored practice.

Priority local practices, are those which this study has demonstrated, have the highest potential benefit for local communities in the GTHA and best reflect the goals of the RTP. Second to priority practices, encouraged local practices should be considered on a site specific basis as the demonstrated benefits may not be applicable across the region. Practices that have been recommended as a monitored practice are not clearly defined at this time due to technological uncertainties and should be tracked by local agencies as their benefits and constraints become further defined.

3 POLICY IMPLICATIONS

3.1 New Development Parking

Parking Minimum Exemptions

Definition

Parking minimum exemptions is the removal of traditional minimum parking requirements from municipal zoning provisions to permit reduced levels of parking. By stating traditional minimum requirements, GTHA municipalities are defining a threshold of parking supply that will accompany all new developments, regardless of consumer preferences or what is considered to be most economical or efficient. The removal of minimum parking requirements shifts decisions regarding the provision of off-street parking to the developers and provides the opportunity to reduce the amount of parking supplied.

Potential Benefit (Case Studies)

Parking minimum exemptions were found to give developers an opportunity to provide less parking for residential units than what parking minimums typically require. The case studies demonstrated that developers were inclined to provide lower levels of parking when presented with the opportunity to do so. This practice has been found to support more compact development, in more urban areas, which leads to walking, cycling and transit becoming attractive alternatives to single occupancy vehicles trips.

Case studies referenced:

- → New York City, New York, USA
- → London, England

Current State of Practice in the GTHA (Municipal Scan)

Three out of 26 municipalities have included parking minimum exemptions in their current regulations. This practice is cited by five municipalities within their local policies to encourage the inclusion of these exemptions in municipal practices.

Municipal Perspective (Interviews)

Parking minimum exemptions were regarded as realistic practices for local municipalities to implement in the appropriate policy areas such as high density areas or along transit corridors. The input gathered during the interviews revealed that parking minimums exemptions are already an acceptable practice, even without formal regulation developed within local by-laws, as local council may approve lower parking requirements on a site-by-site basis and with the provision of a site-specific transportation impact study.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen the policy language to present this as a priority practice by indicating zoning by-laws shall be updated to remove minimum parking requirements (where appropriate) rather than simply indicating decreases are needed
ii. Define where and under what scenarios parking minimums should be removed (i.e. higher density, nodes and frequent transit corridors)
iii. Consistent with provincial land use policies, introduce development guidelines for parking supply to correspond with existing and planned levels of transit

The Big Move – 2008:
Priority Action 7.13
"Municipal parking and zoning by-laws shall be updated to: … decrease minimum parking requirements where appropriate"

Parking Maximums

Definition

Similar to the definition of parking minimums, parking maximums are defined by a municipality's comprehensive zoning by-law to limit the extent of parking supplied by all or specified land uses. Parking maximums are also referred to as parking caps.

Potential Benefit (Case Studies)

The cases referenced demonstrated the benefit of parking maximums as a parking reform when working in conjunction with the removal of parking minimums and on-street parking management, based on pre-reform development practices being compared with post-reform practices. Parking maximums can reduce the amount of parking provided by developers and encourage more compact development. However, the cases showed that parking maximums must be set at an effective level to prompt desirable development practices as maximums set too generously will not influence development.

Case studies referenced:

- → New York City, New York, USA
- → London, England

Current State of Practice in the GTHA (Municipal Scan)

Six out of 26 municipalities have included parking maximums in their current regulations. This practice is cited by 11 municipalities within their local policies to encourage the inclusion of the maximums in municipal practices.

Municipal Perspective (Interviews)

Parking maximums were identified as a realistic practice to include in local regulations and policy. Input gathered from the interviews indicated that this practice is understood to be beneficial in areas with high quality transit services. A handful of municipalities that do not currently have parking maximums within their local regulations stated that there is currently discussion internally to include this practice in the next update of their zoning by-law.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen policy language to present parking maximums as a priority practice for inclusion within municipal zoning by-laws, with recommended maximum levels of parking per use
ii. Define where and under what scenarios parking maximums are most appropriate (i.e. higher density, nodes, frequent transit corridors)
iii. Consistent with provincial land use policies, introduce development guidelines for parking supply to correspond with existing and planned levels of transit.

The Big Move – 2008:
Priority Action 7.13
"Municipal parking and zoning by-laws shall be updated to: … establish maximum parking requirements"

Unbundled Parking

Definition

Unbundled parking is a policy initiative whereby local standards require that the cost of parking be separated from other leasing or purchasing costs associated with a unit or property. Unbundled parking provides residential and commercial users with the opportunity to make an informed decision by better understanding the cost of parking outside of the costs of leasing, purchasing or renting a given unit. Additionally, unbundling allows users to opt out of parking when desired.

Potential Benefit (Case Studies)

By unbundling the cost of parking, users are made aware of the true cost of each parking space, allowing for informed decision-making. When combined with other Transportation Demand Management (TDM) initiatives (in this case, car-sharing service), the provision of unbundled parking reduced the levels of auto ownership and encouraged more compact development practices amongst surveyed developments. The case study also found that the presence of car-sharing or unbundled parking alone did not result in a statistically significant change in the vehicle ownership rate or mode choice for commute trips.

Case studies referenced:

- → San Francisco, California, USA

Current State of Practice in the GTHA (Municipal Scan)

No municipalities in the GTHA have included unbundled parking in their current regulations. This practice is cited by two municipalities within their local policies to encourage the unbundling of parking in municipal practices.

Municipal Perspective (Interviews)

Input gathered from the interviews revealed that unbundled parking is an unregulated practice that has been tested in municipalities such as Hamilton and Toronto. However, the timing of when this practice would be regulated was unknown to local representatives. Unbundled parking is understood as a beneficial practice, however it would need to be agreeable to the development industry. No market sounding input was gathered to reveal how developers would respond to regulating this practice, but some developers in Toronto have unbundled parking.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Include a policy supporting unbundled parking regulations in zoning by-laws and local policies to present the cost of parking during all purchasing or leasing decisions
ii. Recommend local or provincial agencies study which conditions should accompany unbundling to ensure parking is available to residents where needed and that the amount of spaces purchased per resident is capped
iii. Recommend local or provincial agencies undertake a study to define unbundling guidelines for the GTHA to support local policy making

The Big Move – 2008:

No policies

Additional Considerations

To phase the implementation of unbundled parking (if necessary), an initial recommendation could be to have the cost of a unit shown separately from the cost of a parking space. This would demonstrate the true costs of auto ownership and parking, even if parking spaces are automatically sold with units.

Shared Parking

Definition

Shared parking allows multiple developments to combine minimum off-street parking requirements to result in a single parking facility that serves multiple uses or properties. Different property uses within a standalone development or neighboring developments often have varying, and complementary, schedules and levels of demand, and as a result they may be accommodated within a single parking facility. Shared parking facilities align the true parking demand with parking supply to promote a more efficient use of developed land and an overall reduction of parking supply.

Potential Benefit (Case Studies)

In each jurisdiction studied, development proposals must include a transportation impact analysis to demonstrate the feasibility of a shared facility. Each case showed a reduction in the supply of parking in areas or districts with shared parking policies. This has led to more compact development practices and more efficient use of land as unnecessary parking spaces are avoided.

Case studies referenced:

- → Portland, Oregon, USA
- → Denver, Colorado, USA
- → Metro Vancouver, British Columbia, Canada

Current State of Practice in the GTHA (Municipal Scan)

This is a fairly common practice in the GTHA as 11 of the 26 municipalities have included shared parking in their current regulations. For this practice, a transportation impact study is always required for local approval, however there are varying approaches to shared parking calculations across the regulations reviewed. This practice is cited by 19 municipalities within local policies to encourage parking to be shared when feasible.

Municipal Perspective (Interviews)

Shared parking was regarded by municipal representatives as a beneficial and fairly common off-street parking practice. For municipalities that do not currently include this practice within their local regulations, it was stated that shared parking proposals are already accepted on an ad hoc basis by local council. Input gathered through the interviews revealed that shared parking regulations would be relatively simple to implement formally through regulation, if not already regulated.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen the language contained in the previous RTP and present shared parking as a priority practice for the GTHA
ii. Define a framework (including calculation method) for shared parking provisions and opportunities
iii. Define a communication strategy to inform developers on the benefits of shared parking and to provide guidance pertaining to the ownership of shared facilities

The Big Move – 2008:
Priority Action 7.13 "Municipal parking and zoning by-laws shall be updated to: ... permit off-site, on-street and shared-parking capacity to be counted towards meeting parking requirements"

Additional Considerations

Since shared parking is widely understood, this is a quick win for municipalities to formally regulate within their zoning by-laws. This practice could be studied further to determine whether differing combinations of land use would suit different approaches to shared parking arrangements.

Electric Vehicle (EV) Parking

Definition

Electric vehicle (EV) parking is the provision of designated parking spaces for these vehicles at residential and commercial developments and often includes charging infrastructure. To prepare for more widely adopted use of electric vehicles, many municipalities are beginning to implement regulations that require new developments to provide the necessary infrastructure / electrical provisions to make them compatible with charging stations. The regulations are intended to encourage more electric vehicle use by making the ancillary infrastructure that is required more affordable and accessible to everyone.

Potential Benefit (Case Studies)

The provision in development for parking by electric vehicles, i.e. parking spaces with EV chargers results in an increase in accessibility for EV users. Providing, or protecting for, electric vehicle parking in new developments was demonstrated as an innovative practice that could help prepare the region adapt to technological changes in automobiles.

Case studies referenced:

- → California, USA

Current State of Practice in the GTHA (Municipal Scan)

Four of the 26 municipalities in the GTHA have included parking for electric vehicles in their current regulations and green standards. This practice is cited by eight municipalities within local policies to encourage parking for electric vehicles to be provided by new developments.

Municipal Perspective (Interviews)

Municipal representatives indicated that electric vehicle parking is entering local planning discussions and, where not already regulated, is being implemented on a case-by-case basis through private initiatives or pilot projects. Input gathered through the interviews indicated that preferential parking for these vehicles would likely be accompanied with provisions for charging infrastructure; therefore, the infrastructure and the parking spaces for electric vehicles would need to be coordinated regulations. Additionally, determining the appropriate amount of electric vehicle parking was identified as an area for future study, locally or regionally.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Include preferential parking policies for both electric vehicles and low-emission vehicles as a regional priority practice
ii. Include policy on the provision of electric vehicle infrastructure within parking facilities to ensure the necessary connections are available for future retrofitting
iii. Define a resiliency standard for parking facilities to maintain flexibility across all vehicle types and for emerging technologies

The Big Move – 2008:

No policies

Car-share Parking

Definition

Car-share parking is the provision of designated car-share spaces at residential and commercial developments. With the recent increase in the number of car-share operators, it is becoming more common for developers to provide car-share parking spaces in new developments. Municipalities are either allowing for car-share spaces in new developments that result in a reduction of parking minimum requirements or are mandating designated spaces in all new developments. These car-share space provisions are being introduced to encourage residents to switch to more sustainable modes of transportation and ultimately reduce the number of privately owned vehicles driven.

Potential Benefit (Case Studies)

Increasing the number of car-share spaces available to residents by requiring them in new developments results in more access for car-share users. The referenced case study compared car ownership levels between developments with designated spaces to those without. The results found that developments with car-sharing spaces coupled with unbundled parking carried lower car ownership levels. Additionally, a study of the city's car-share users indicated an overall reduction in VKT and greenhouse gas emissions, contributing to environmental sustainability and resilience.

Case studies referenced:

- → San Francisco, California, USA

Current State of Practice in the GTHA (Municipal Scan)

Two of the 26 municipalities in the GTHA have included parking for car-share vehicles in their current regulations and green standards. This practice is cited by 10 municipalities within local policies to encourage parking for car-share vehicles to be provided in new developments.

Municipal Perspective (Interviews)

Where there is a local market for car-share companies to operate, municipal representatives regarded preferential parking for car-share vehicles as a realistic practice to include in regulations and policy. Car-share parking is viewed as a sustainable transportation demand management measure that could help local areas meet their mode share targets. The benefits of car-share services is not widely understood, especially by local councils, suggesting opportunity exists to design an educational campaign across the GTHA to raise awareness.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen the language of the policy so that car-share parking spaces are provided for all new major developments, including major transit station areas, as a regional priority practice
ii. Acknowledge this practice as a market driven practice whereby local or provincial agencies should leverage the car-share services available locally and explore private partnerships

The Big Move – 2008:
Supporting Policy 3.13 "Whenever parking is provided at mobility hubs, major transit station areas or major commercial or employment areas, priority spaces shall be provided for carpool and carshare vehicles."

Additional Considerations

This practice is largely market-driven, so partnerships with the predominant car-share service companies will need to be explored and defined. There is an opportunity for best practice guidelines to be prepared to guide car-share service agreements between private companies and public / private property owners.

Bicycle Parking

Definition

Bicycle parking is the requirement that new residential and commercial developments provide a specified level of bicycle parking and storage amenities. It is becoming more common for municipalities to include regulations in their zoning by-laws to require the provision of safe and secure bicycle parking infrastructure in all new developments. The intent of this practice is to supply the infrastructure required to allow for more cycling ownership and an increased cycling mode share.

Potential Benefit (Case Studies)

The case study demonstrated that the provision of adequate and convenient bicycle parking will increase the attractiveness of cycling in travel mode decisions. Reducing the number of motor vehicle parking spaces required in exchange for increased, secure bicycle parking supports more compact development practices. Furthermore, the provision of cycling infrastructure (parking) in new developments improves access for cyclists and helps support a network of cycling facilities in the overall transportation system.

Case studies referenced:

- → Vancouver, British Columbia, Canada

Current State of Practice in the GTHA (Municipal Scan)

Bicycle parking is a fairly common practice in the GTHA as 13 of the 26 municipalities have included the practice in their current regulations and green standards, and 23 municipalities have referenced it within local policies to encourage that bicycle parking be provided in new developments.

Municipal Perspective (Interviews)

The provision of bicycle parking at new developments is viewed as a current best practice to support active transportation trips. For municipalities that have not include bicycle parking within their local regulation, it was regarded by the majority of municipal representatives that the next update of local zoning by-law and planning documents would include provisions for this practice as bicycle parking is already being provided on an ad hoc basis.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Include bicycle parking as a regional policy for both residential and non-residential land uses and state the regulation of bicycle parking within zoning by-laws as a regional priority

ii. Develop guidelines to demonstrate the importance of bicycle parking facilities in supporting the regional cycling network

The Big Move – 2008:

No policies

Additional Considerations

Since bicycle parking is widely understood, this is a quick win for municipalities to formally regulate within their zoning by-laws. The provision of bicycle storage should be differentiated from the provision of bicycle racks within local by-laws, and the provision of storage should be recommended as a continuation of current practice.

Stormwater Charges

Definition

The stormwater management charge is a new revenue generation tool being considered by municipalities to support their growing capital works expenditures. The charge is a policy tool that directly charges property owners according to their impact on the stormwater management system based on the calculated impacts of runoff produced from impervious surface cover. The addition of this cost to water bills informs property owners and developers on the property's impacts to the stormwater management system and is intended to curb tendencies for the oversupply of surface parking.

Potential Benefit (Case Studies)

A stormwater charge can be an equitable and consistent funding source that will support a municipality's ongoing maintenance and expansion expenditures. It is likely that the stormwater charges will increase operating costs for parking facilities which may trigger an increase in user fees. The charge helps reveal the true cost of development as facilities are billed in a manner where the cost may be passed down to the user (i.e. increases in daily rates for parking fees).

Case studies referenced:

- → Mississauga, Ontario, Canada

Current State of Practice in the GTHA (Municipal Scan)

7 of the 26 municipalities in the GTHA have introduced stormwater charges at varying levels of implementation into their municipal practice. However, no municipalities have referenced the stormwater charge within their local policies.

Municipal Perspective (Interviews)

The stormwater charge is becoming more common on local agendas as municipalities look for new funding mechanisms and methods to guide development. Municipal representatives cited stormwater management as a major challenge and some respondents indicated that this practice is being studied currently for council review.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Use regional policy to encourage stormwater management charges that are applied by municipalities so that developments cover the full cost of stormwater management associated with impervious surfaces

The Big Move – 2008:

No policies

Additional Considerations

This practice could be included within urban or suburban sustainability guidelines to associate the impacts of impervious surface with heat island effects, run-off concerns and stormwater management initiatives.

3.2 Employer Parking Strategies

Parking Cash-out

Definition

The California Health and Safety Code describes parking cash-out as: "*an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space".* [1] As an employer strategy, the cash-out presents an opportunity for employees to receive a financial benefit to choose non-auto oriented modes to travel to and from work.

Potential Benefit (Case Studies)

By presenting travelers with the opportunity to receive a cash allowance in the place of a parking space, the costs associated with parking are explicit and alternative modes of transportation more evenly compared. As a result of this practice, the case study stipulated that single occupancy vehicle trips will decrease as more sustainable modes are acknowledged as affordable and realistic alternatives.

Case studies referenced:

- → Los Angeles Count, California, USA

Current State of Practice in the GTHA (Municipal Scan)

One out of 26 municipalities have included Parking Cash-Out as a policy recommendation to quantify the cost of free parking. No municipalities were found to include this practice in their current regulations.

Municipal Perspective (Interviews)

Parking cash-out was not highlighted by municipal representatives as a practice that could be implemented in the foreseeable future.

RECOMMENDED RTP UPDATES (ENCOURAGED PRACTICE)

i. Include stronger language within policy to encourage opportunities for parking cash out as a recommended area-wide practice for all major employers
ii. Recommend that local and regional agencies lead by example and implement parking cash-out initiatives first for internal staff

The Big Move – 2008:
Priority Action 4.4 "Encourage employers who currently offer their employees free or subsidized parking a choice between the parking or a cash equivalent that can be used for other means of transportation."

[1] State of California. (2017) California Health and Safety Code (prevailing). Retrieved from: http://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-43845.html

Workplace Parking Levy

Definition

A workplace parking levy refers to a pricing mechanism used by municipalities to charge employers for the number of parking spaces they provide to their employees. The intent of the levy is to address congestion issues by incentivizing employers to manage their parking provisions and to fund transportation infrastructure expenditures. Although employers are responsible for the levy charge, they may choose to recover the cost, in part or fully, from their employees.

Potential Benefit (Case Studies)

The case study indicated that the implementation of the workplace parking levy supported transit investments that encouraged more compact urban form (i.e. new tram lines). This policy also has the potential to influence the amount of parking employers choose to provide to their employees, and transferring the cost to employees may incentivize them to choose alternative modes of transportation, however these long term impacts have yet to be evaluated.

Case studies referenced:

- → Nottingham, UK

Current State of Practice in the GTHA (Municipal Scan)

No municipalities were found to include this practice in their current regulations. Six out of 26 municipalities have included workplace parking levies as a policy recommendation.

Municipal Perspective (Interviews)

The workplace parking levy was not highlighted by municipal representatives as a practice that could be implemented in the foreseeable future. However, some municipalities do charge staff for parking. Municipal representatives did state that a workplace parking levy would be most effectively implemented if delivered as a regional initiative; concerns were raised surrounding the competitiveness of one municipality to another for office location decisions if workplace parking was charged inconsistently.

RECOMMENDED RTP UPDATES (ENCOURAGED PRACTICE)

i. Investigate workplace parking levies as part of a wider investment strategy initiative

The Big Move – 2008:

No policies

Additional Considerations

This strategy would be most effective as a regional initiative whereby the costs of parking are demonstrated and the subsequent charges are first introduced as revenue neutral.

3.3 Transit Station Parking

Charging for Parking

Definition

Charging for parking refers to the practice of introducing user fees at train or bus stations for occupying a parking space.

Potential Benefit (Case Studies)

Parking fees can be used to fund transit related improvements or to maintain parking. Paid parking has the potential to encourage users to access the station by other modes of transportation; however it may also deter users who do not wish to pay the user fees from taking transit.

Case studies referenced:

- → Perth, Australia
- → Edmonton, Alberta, Canada
- → Metro Vancouver, British Columbia, Canada

Current State of Practice in the GTHA (Municipal Scan)

With the exception of one, all municipalities contain regional transit stations that offer both free and reserved / charged parking at their stations. Toronto is the only municipality in the GTHA whose local transit authority charges users for parking. Six out of 26 municipalities have included paid parking as a policy recommendation for parking at and around transit stations.

Municipal Perspective (Interviews)

Municipalities have expressed an understanding of the rationale for charging parking fees at transit stations and the input received indicated an openness to the implementing the practice. In areas with high parking demands, charging for parking was encouraged by local representatives to address supply issues. Charging for parking must be context specific as many residents in certain municipalities have no alternative options to accessing station other than by car. Charging for parking was also regarded as a long term measure if there was not sufficient demand to justify a charge.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen policy language and identify as a priority practice; include wording that links transitioning to paid parking to recovering capital and maintenance costs
ii. Act as a champion by implementing strategy at Metrolinx facilities
iii. Can be pursued as part of a wider investment strategy
iv. Implementation to be context specific i.e. ensure opportunities for accessing station with other modes such as transit are viable

The Big Move – 2008:

Priority Action 7.18 "For those transit corridors that are identified as intensification corridors … municipalities… shall set out policies in their Official Plans and Transportation Master Plans that: … discourage free parking"

Priority Action 7.15 "Municipalities… shall prepare detailed master plans for each mobility hub… At minimum, master plans will: …establish a surface parking reduction strategy…that includes a scheduled transition from free surface parking to a limited supply of fairly priced, structured parking"

Preferential Parking – Electric Vehicles (EVs)

Definition

The provision of preferential parking spaces for low-emission or electric vehicles is where visible priority is given to this mode in the design and allocation of parking facilities corresponding to the access point of a transit station (i.e. closest to the main entrance). Providing charging stations with these spaces allows users to charge their vehicles while parked.

Potential Benefit (Case Studies)

Providing EV parking spaces at transit stations results in EV users having a wider range of mobility options, as they can charge their vehicle at the point of access to the transit system. Providing EV parking spaces also contributes to environmental sustainability by providing transportation users with a more sustainable option for travel to and from stations. A sustainable energy source can also be used to power charging stations further contributing to emissions reductions.

Case studies referenced:

- → Huntington, New York, USA

Current State of Practice in the GTHA (Municipal Scan)

There are currently five municipalities with regional transit stations (GO Transit stations) in which permanent EV parking spaces are provided as a result of a GO Transit pilot project. No local rapid transit service provides EV parking. One municipality has included provisions for EV parking as an encouraged practice in local policy documents.

Municipal Perspective (Interviews)

Preferential parking for electric vehicles was frequently regarded as a realistic practice to regulate at transit stations, especially as electric vehicles become more prominent.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Include policies that support preferential parking for sustainable modes of transportation, including Electric Vehicles, at transit stations as a regional priority practice

The Big Move – 2008:

No policies

Preferential Parking (Car-share)

Definition

The provision of preferential parking spaces for car-share service vehicles is where visible priority is given to these services in the design and allocation of parking at transit facilities. The provision of car-share service parking spaces at transit stations has the opportunity to incentivize travelers to use car-share services for first and last mile connections. Car-share spaces are permitted at transit stations through agency partnerships with private companies such as ZipCar and Car2Go.

Potential Benefit (Case Studies)

Introducing car-share spaces at transit usage has the potential to increase car-share usage which in turn has been shown to reduce personal automobile ownership. Reducing automobile trips leads to emissions reductions, helps contribute to a more compact urban form as well as to a more efficient transportation system.

Case studies referenced:

- → Buffalo, New York
- → Minneapolis-Saint Paul, Minnesota, USA
- → GTHA, Ontario, Canada

Current State of Practice in the GTHA (Municipal Scan)

Nine municipalities have GO Transit stations with car-share vehicles. The City of Toronto also has transit stations with car-share vehicles. Five municipalities have included preferential parking for car-share vehicles at transit stations within local policy documents.

Municipal Perspective (Interviews)

Municipal representatives were familiar with the benefits of car-share spaces and services being provided at transit stations. However, not all municipalities currently have car-share operators operating in their jurisdiction so local context is important when introducing a GTHA-wide policy.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Continue to include policies that support car-share vehicles at mobility hubs and major transit station areas, but update language to state preferential parking for these vehicles as a regional priority practice

The Big Move – 2008:

Supporting Policy 3.13 "Whenever parking is provided at mobility hubs, major transit station areas or major commercial or employment areas, priority spaces shall be provided for carpool and carshare vehicles."

Priority Action 7.15 "Municipalities, in consultation with transit agencies, landowners, major stakeholders, and public agencies and institutions, shall prepare detailed master plans for each mobility hub. Where appropriate, master plans should also be prepared for major transit station areas and unique destinations…At minimum, master plans will: … establish a surface parking reduction strategy in consultation with transit agencies … that includes … policies to set aside reserved parking spaces for carpool and carsharing vehicles"

Additional Considerations

This practice is largely market-driven, so partnerships with the predominant car-share service companies will need to be explored and defined. There is an opportunity for best practice guidelines to be prepared to guide car-share service agreements between private companies and public / private property owners.

Preferential Parking (Car-pool)

Definition

The provision of preferential parking spaces for car-pool trips is where visible priority is given to this mode in the design and allocation of parking facilities corresponding to the access point of a transit station (i.e. closest to the main entrance).

Potential Benefit (Case Studies)

Preferential parking for car-pool vehicles at transit stations can be made more effective when coordinated with the implementation of pricing.

Case studies referenced:

- → Metro Vancouver, British Columbia, Canada

Current State of Practice in the GTHA (Municipal Scan)

All municipalities with GO stations, with the exception of Hamilton, provide preferential parking for car-pool vehicles at transit facilities. Three municipalities have included preferential parking for car-pool vehicles at transit stations within local policy documents.

Municipal Perspective (Interviews)

Car-pool parking is a common practice at transit stations, as well as at other private or municipal parking facilities. Car-pool parking is supported by Smart Commute, a program of Metrolinx and the municipalities in the GTHA that helps travelers in the region explore smarter travel options such as walking, cycling, transit, and carpooling. However it has typically been implemented informally, so there is an opportunity to regulate the provision of car-pool parking spaces in local transit station areas through the zoning by-law and the development application process.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Continue to include policies that support car-pool vehicle spaces at mobility hubs, major transit station areas, but update language to state preferential parking for these vehicles as a regional priority practice

The Big Move – 2008:

Supporting Policy 3.13 "Whenever parking is provided at mobility hubs, major transit station areas or major commercial or employment areas, priority spaces shall be provided for carpool and carshare vehicles."

Priority Action 7.15 "Municipalities, in consultation with transit agencies, landowners, major stakeholders, and public agencies and institutions, shall prepare detailed master plans for each mobility hub. Where appropriate, master plans should also be prepared for major transit station areas and unique destinations…At minimum, master plans will: … establish a surface parking reduction strategy in consultation with transit agencies … that includes … policies to set aside reserved parking spaces for carpool and carsharing vehicles"

Bicycle Parking

Definition

Bicycle parking at stations refers to the provision of bicycle racks or storage to support transit users accessing transit stations by bicycle.

Potential Benefit (Case Studies)

Bicycle parking supports compact development at stations – spatially, bicycle parking is significantly more efficient than car parking. Increasing bicycle parking supports choice for first and last mile travel, resulting in more efficient use of road space and more environmentally sustainable travel.

Case studies referenced:

- → Munich, Bavaria, Germany

Current State of Practice in the GTHA (Municipal Scan)

Bicycle parking is provided at all GO transit and local rapid transit stations in the GTHA. Provisions for bicycle parking at transit stations is included in 17 municipalities' local policy documents.

17 municipalities include bicycle parking at transit stations within their local policy documents.

Municipal Perspective (Interviews)

Bicycle parking at transit stations is recognized as an important sustainable transportation policy, however, municipal representatives raised concerns about inadequate off-street cycling connections to and from transit stations.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen the language and identify as a priority practice to better support the removal of barriers for active transportation
ii. Include more prescriptive language that specifies a requirement for bicycle parking at all transit station locations

The Big Move – 2008:

Priority Action 7.6 "With the guidance of a multi-stakeholder roundtable, undertake a comprehensive parking study to identify best practices and guidelines with respect to: … design of parking facilities to ensure they do not act as barriers to transit or active transportation"

Priority Action 7.15 "Municipalities, in consultation with transit agencies, landowners, major stakeholders, and public agencies and institutions, shall prepare detailed master plans for each mobility hub. Where appropriate, master plans should also be prepared for major transit station areas and unique destinations … At minimum, master plans will: … establish a surface parking reduction strategy in consultation with transit agencies, that is based on site-specific redevelopment opportunities and the existing or planned availability of alternative modes of access to the mobility hub"

Additional Considerations

Since bicycle parking is widely understood, this is a quick win for municipalities to formally regulate within their zoning by-laws. The provision of bicycle storage should be differentiated from the provision of bicycle racks within local by-laws, and the provision of storage should be recommended as a continuation of current practice. Additionally, storage should be presented as more important at long term parking locations like transit stations.

3.4 Emerging Technologies

Smart Parking

Definition

"Smart parking" describes the use of parking spaces equipped with vehicle sensors and communications technology to provide real-time information on the usage of publicly-accessible parking. Such technology is currently being applied at major destinations in the area, such as shopping centres and transit stations, to display parking information on variable message signs. In other jurisdictions, parking sensors have been installed for on-street parking spaces and live information has been communicated more widely to users via website and mobile device applications (apps).

Potential Benefit (Case Studies)

The case study demonstrated that implementing smart parking technology benefits user experience at parking facilities by providing live updates of utilization rates, resulting in less time searching for available spaces. This practice may also assist municipalities with better planning, management and enforcement of supply through increased data collection.

Case studies referenced:

→ Westminster, UK

Current State of Practice in the GTHA (Municipal Scan)

Although smart parking technology is currently not installed in any paid municipal parking facilities, the Town of Newmarket has partnered with the University of Toronto to have the technology implemented in their main municipal parking lot. Smart parking is included by two municipalities within their local planning documents.

Municipal Perspective (Interviews)

Smart parking was regarded by a handful of municipal representatives as a promising practice at municipal parking facilities. Representatives were familiar with the use of smart parking technologies at retail or major GO station parking facilities and recognized the benefit of providing real-time capacity information to travelers.

RECOMMENDED RTP UPDATES (ENCOURAGED PRACTICE)

i. Encourage implementation of smart parking technology in areas with high occupancy rates and demonstrate the benefits of the investment to owners (i.e. data collection and increased utilization)
ii. Identify opportunities to work with the private sector to implement smart parking technology in privately owned parking lots

The Big Move – 2008:

No policies

Mobile Payment

Definition

Mobile payment allows parking users to pay for parking via a mobile application. Mobile payment has been implemented within the GTHA and in many other jurisdictions. Mobile payment parking apps are developed by specific parking authorities or by third parties that partner with multiple facility managers, and are intended to improve convenience and save time for parking users. The apps are often designed to notify users when their session has almost ended and allow the session to be extended remotely, or to allow users to stop their parking session whenever desired. In both cases, this removes the need for users to return to their vehicle to "top up the meter." Although not necessary to enable mobile payment, in some cases, the same apps developed can also provide information to users on parking availability and pricing across an area or period of time, based on live or historical data.

Potential Benefit (Case Studies)

Mobile payment appears to improve convenience and reduce time for parking; however, the benefits to user experience and manager operations are context-specific and are likely dependent on app design and implementation. The case study demonstrated that mobile payment options have been quickly adopted by users where available, which has positively impacted the efficiency of both on- and off-street paid parking.

Case studies referenced:

- → Toronto, Ontario, Canada

Current State of Practice in the GTHA (Municipal Scan)

Four municipalities currently have mobile payment technologies available for their municipal parking facilities. No municipalities have included mobile payment technologies in their local planning documents.

Municipal Perspective (Interviews)

Mobile payment was regarded as a viable practice for local municipalities to use and is a practice that is currently being studied for implementation. Where parking is charged, payment is often collected through credit card machines or even coins. Therefore, managing parking payments through a phone application was acknowledged to be a promising investment that would lead to the application of other parking management technologies. Municipal representatives also stated that a GTHA regional application that municipal and private parking facilities could use to register pricing and availability would be beneficial. Duplication of phone applications for payments and parking management across jurisdictions would impede on the quality of the user experience.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Encourage the utilization of mobile payment technology for parking facilities
ii. Develop an approach to ensure inter-jurisdictional compatibility to improve user convenience across municipal boundaries

The Big Move – 2008:

No policies

Additional Considerations

Metrolinx could coordinate a regional approach to establishing an application or standard for these technologies, similar to mobility hub guidelines or transit oriented development (TOD). This would avoid duplication of local efforts or investments. The application should be available to both private and public parking facility owners.

Demand Responsive Pricing

Definition

Demand-responsive pricing uses historical information on parking occupancy and availability to set the price of parking for a given street or area, at a given time of day, such that the parking supply is optimally used. The intention being that parking spaces are mostly full, with some availability maintained for arriving users. By increasing the cost of parking in high-demand areas and times, this approach to parking pricing is intended to shift users towards lower-demand areas and times, improving the ease of finding parking and reducing the extra congestion and emissions created by automobile users looking for parking.

Potential Benefit (Case Studies)

The case study demonstrated that parking occupancy rates are improved in both under- and over-occupied locations with demand responsive parking, suggesting accessibility (both economic and physical) is improved overall.

Case studies referenced:

- → San Francisco, California, USA

Current State of Practice in the GTHA (Municipal Scan)

There are currently no municipalities in the GTHA that have implemented demand responsive pricing in their municipal parking facilities. One municipality has included this practice within local policy documents.

Municipal Perspective (Interviews)

Demand responsive parking was stated by one municipality as a promising practice for municipal parking facilities. Otherwise, this practice was not regarded as applicable for current levels of demand and local planning priorities.

RECOMMENDED RTP UPDATES (ENCOURAGED PRACTICE)

i. Encourage local or provincial agencies to consider the implementation of demand-responsive pricing where parking supply and demand are poorly matched

The Big Move – 2008:

No policies.

Additional Considerations

There is an opportunity to bundle smart parking, mobile payment and demand responsive parking technologies across the GTHA.

Peer-to-peer parking

Definition

Widespread use of smartphones and other mobile devices, and increasing participation in the "Sharing Economy", has led to the emergence of numerous mobile applications and platforms for peer-to-peer parking arrangements. These apps allow residents to list their available private parking spaces (such as a portion of a driveway) for other users to rent, either on-demand or for an established period of time (e.g. monthly). Peer-to-peer parking services have emerged in many jurisdictions and are popular amongst their users, but they have also met opposition from some municipal parking manager and planning staff. Users view the apps positively because the apps can make it easier to locate parking near their destination, often at a lower cost than commercial lots or public parking. However, opponents suggest that usage of the apps will attract unwanted traffic to local streets, and may imply that a private driveway is being used as a commercial parking lot (in contradiction to zoning bylaws).

Potential Benefit (Case Studies)

Peer-to-peer parking has the potential to increase the utilization of existing parking infrastructure, enabling the overall supply to be reduced, dependent on coordination between peer-to-peer parking service providers and transportation planners. However, without effective coordination, peer-to-peer parking may counteract TDM measures related to parking supply and management. The case also demonstrated that in areas where supply is limited, peer-to-peer parking can improve accessibility.

Case studies referenced:

- → Toronto, Ontario, Canada

Current State of Practice in the GTHA (Municipal Scan)

There are currently no regulations or policies in GTHA municipalities related to peer-to-peer parking applications.

Municipal Perspective (Interviews)

Peer-to-peer parking was acknowledged by municipal representatives as an emerging practice. There is a municipal awareness that the market for peer-to-peer parking negotiations is growing as a result of phone applications becoming more popular. Methods to regulate peer-to-peer parking and when this regulation would become more pressing is not known, which demonstrates an opportunity for best practice studies to be conducted.

RECOMMENDED RTP UPDATES (ENCOURAGED PRACTICE)

i. Investigate regulatory provisions for peer-to-peer parking

The Big Move – 2008:

No policies.

Additional Considerations

There is an opportunity for Metrolinx to investigate how the market is evolving to determine where peer-to-peer parking is most appropriate (i.e. along which corridors) and identify model regulations. Since this practice is evolving informally with mobile applications like Rover, the need for regulation is growing to protect both the municipalities and the parties involved in peer-to-peer negotiations.

Autonomous Vehicle (AV) Parking

Definition

Autonomous vehicles will have implications on how and where parking is required, supplied, and used. As car manufacturers and technology companies continue to develop autonomous vehicles (AVs), governments around the world are working to advance policy and regulation that address automated vehicle adoption and to better understand the implications. Specifically, autonomous vehicles could impact the demand for parking supply, the location of parking facilities, pick-up / drop-off locations and the design of parking facilities.

Potential Benefit (Case Studies)

AV use may reduce the overall amount of parking required, in support of this objective, or may simply enable parking to be provided off-site and more dispersed. While there is a high level of uncertainty around the impacts AVs will have, at least some benefit is likely due to the reduced area per parked vehicle that will be required. AVs are also likely to reduce the need for concentrated parking around transit stations, which currently creates a barrier to access.

Case studies referenced:

- → Somerville, Massachusetts, USA

Current State of Practice in the GTHA (Municipal Scan)

With the exception of York Region, no local municipalities or regional municipalities have included regulations or policies related to the adoption of autonomous vehicles. York Region has included provisions in their TMP whereby they have identified a need to monitor the benefits and impacts of autonomous vehicles on parking.

Municipal Perspective (Interviews)

The impact of autonomous vehicles is unknown and municipal representatives unanimously understand that these vehicles will impact travel behaviour and parking once rolled out. However, similar to how York Region has stated their priority of monitoring autonomous vehicle technology, municipal representatives have regarded the need to follow this trend as more information becomes available.

RECOMMENDED RTP UPDATES (MONITORED PRACTICE)

i. To support municipalities, Metrolinx could track and study emerging technologies including autonomous vehicles and consider their potential impacts on parking facilities and regulation
ii. Recommend that new parking facility developments are constructed in a manner that allows for re-purposing of space

The Big Move – 2008:

No policies

3.5 Parking Pricing

Current State of Practice

Large Municipality (Toronto)

Where sampled, public parking in Toronto appears to be discounted relative to private parking. Average parking prices were found to be 27-44% lower at public facilities, when measured across all time periods. Summary results of the parking pricing samples retrieved are presented in Table 1.

Table 1: Average Public and Private Parking Prices of Sample Facilities in Toronto

Time Period	Public Price (Sample Avg.)	Private Price (Sample Avg.)	Public Prices Relative to Private (Sample Avg.)
Hourly	$3.61	$6.40	-44%
Daily	$11.30	$15.52	-27%
Evening	$6.08	$8.42	-28%
Weekend	$5.80	$8.57	-32%

The City of Toronto's 2017 budget estimates gross revenue of $156-million and net revenue of $63-million[2] from public parking, indicating the City uses public parking fees both to regulate parking usage as well as to generate revenue for the municipality.

Medium-Sized Municipality (Mississauga)

Where sampled, public parking in Mississauga appears to be discounted relative to private parking, with prices ranging from 63% to 100% lower at public facilities when measured across all time periods. Notably, free parking is offered at some public facilities during all time periods. Summary results of the parking pricing samples retrieved are presented in Table 2.

Table 2: Average Public and Private Parking Prices of Sample Facilities in Mississauga

Time Period	Public Price (Sample Avg.)	Private Price (Sample Avg.)	Public Prices Relative to Private (Sample Avg.)
Hourly	$0.50	$3.88	-87%
Daily	$3.00	$11.11	-73%
Evening	$1.22	$9.56	-87%
Weekend	$1.22	$9.56	-87%

The City of Mississauga's 2017-2020 business plan estimates 2017 gross revenue of $1.6-million from parking fees[3] against a total 2017 budget of $760-million, indicating the City likely uses parking fees more to control access to parking spots than as a municipal revenue generation tool. A comparison of historical parking prices in Mississauga indicates that the City has not adjusted parking rates in keeping with inflation.

Small Municipality (Whitby)

Where sampled, public parking in Whitby appears to be discounted relative to private parking, with public facility prices ranging from 83% to 100% lower than private facilities when measured across all time periods. Summary results of the parking pricing samples retrieved are presented in Table 3 below.

[2] Source: City of Toronto (http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=576fec7fe7628510VgnVCM10000071d60f89RCRD&vgnextchannel=bb12031d15528510VgnVCM10000071d60f89RCRD)

[3] Source: City of Mississauga (http://www7.mississauga.ca/eCity/Budget/img/serviceareas/business-plans/2017-roads-storm-drainage-watercourses-summary.pdf)

Table 3: Average Public and Private Parking Prices of Sample Facilities in Whitby

Time Period	Public Price (Sample Avg.)	Private Price (Sample Avg.)	Public Prices Relative to Private (Sample Avg.)
Hourly	$0.28	$2.79	-90%
Daily	$0.00	$7.95	-100%
Evening	$0.00	$5.94	-100%
Weekend	$0.00	$5.94	-100%

It is important to consider these results within the context of a small municipality: in Whitby, little private parking is offered as public parking is generally plentiful, with low rates provided by the municipality. This renders private facilities less able to generate substantial revenues, and private facilities therefore tend to be operated only at a handful of locations – such as major health and education facilities – where there is strong demand for parking within a small geographic area. A comparison of these rates to the standardized municipality rates leads to what appears to be a high level of discounting for public parking across the municipality. In reality, however, this sizeable discount is likely only occurring at a small number of locations.

Whitby's low rates generate relatively little parking revenue (approximately $500,000 in 2010)[4] and even less net revenue, indicating that the Town uses parking fees more to control access to parking spots than as a municipal revenue generation tool. A comparison of historical parking prices in Whitby indicates that the Town has not adjusted parking rates in keeping with inflation.

Summary of Findings from Toronto, Mississauga, and Whitby

No facility-specific data related to average daily parking volumes or occupancy rates was available for the purposes of this study. Unfortunately, quantifying the degree to which public parking is discounted is impossible without knowing occupancy rates and turnover at each facility. Cheaper facilities will have higher average occupancy rates due to attractive pricing, all other things being equal, lessening the degree of discounted at cheaper facilities. Additionally, facilities which, for example, charge a low hourly rate but incentivize frequent turnover, may generate more revenue per parking spot per day than facilities which encourage all-day parking. Finally, a number of factors beyond price can affect occupancy rates, including visibility and accessibility of facilities; convenience; parking quality (size of spaces, lighting, general maintenance, etc.); and other factors. Such variations could exacerbate the difference in annual revenue between facilities, or might lessen revenue differences. Additional information regarding the limitations of the study, municipal feedback, and next steps can be found in appendix C-1.

This imperfect relationship between rates and revenue makes it impossible to draw strict conclusions about the degree to which parking is being discounted by municipalities without having timestamped occupancy data for each facility. Further, public versus private price variations might appear inflated as private parking operators presumably choose to operate parking facilities only in lucrative locations, thus commanding high prices, whereas municipalities might operate paid parking facilities in locations where operation is revenue neutral, or even operates at a net loss. This is particularly true in smaller, less dense municipalities, where parking prices tend to be low. Nevertheless, the data gathered for this study indicates that, where sampled, each of the three municipalities provides publicly availably parking at lower rates than nearby private facilities.

There are two primary disadvantages for a municipality which provides discounted parking. First, even where public parking is profitable, if a municipal facility generates less revenue (or, arguably, less net revenue) per parking spot than an equivalent private facility, it is providing users with discounted parking. Providing parking at below-market revenue-generation rates represents an opportunity cost in the form of lost revenue. Second, municipal discounting of parking is a driving factor in demand for parking, which in turns fuels demand for auto-based transportation. A municipality or region intent on promoting non-auto modes of transportation should either remove its parking discounts, or explicitly state the policy priority

[4] Source: 2010 Town of Whitby Recommendation Report (https://whitby.civicweb.net/document/3869)

and rationale for discounting parking.

Municipal Perspective (Interviews)

According to our research, 10 of the 26 municipalities in the GTHA currently have paid municipal parking facilities. From our interviews with municipalities, the priorities of pricing management strategies were revealed to be service-oriented rather than being used for revenue generation. For example, paid parking was commonly referenced as a mechanism to deter long-term parking. Additionally, council priorities and input from local business improvement associations (BIAs) influence the parking strategies developed for local areas. Representatives from municipalities with paid parking facilities indicated that there was no anticipated change in pricing protocol and that parking discounts would remain as they are.

The benefits of paid parking facilities were understood, however, the implementation of a parking fee or an increase to an existing fee was represented as a long-term goal.

Additional Considerations

Increases to user fees for services are rarely popular with residents. Increasing public parking prices to remove or reduce user discounts is likely to be no exception. However, much of the instinctual negative response from residents can be overcome by implementing a well-organized communication campaign – informing residents of how, when, where, and why prices are being increased – and, perhaps more importantly, by offsetting public parking rate increases with commensurate decreases in other user fees or taxes within the municipality (i.e., making the parking rate increases revenue-neutral). This strategy was used effectively in the lower mainland in British Columbia, where a carbon tax (applied primarily to vehicle fuels) was used to encourage non-auto modes of transportation, while using the proceeds to offset the cost of transit, helping to minimize transit fares.

Justifying increases to parking prices (to remove or reduce discounts) will require municipalities to understand to what degree parking is currently discounted in each region, or even at each parking facility. Currently, little or no facility-specific data related to average daily parking volumes or occupancy rates is collected and curated GTHA municipalities. Determining comprehensively the degree to which municipalities in the GTHA discount parking rates would require a detailed study, including a significant data-collection exercise. Such a study could also be used to estimate the opportunity cost (i.e., lost revenue) municipalities pay by charging below-market rates at public parking facilities. This kind of data-collection effort could be greatly simplified by use of smart-parking technology at public facilities, underscoring the value of incorporating such systems into public parking facilities.

RECOMMENDED RTP UPDATES (PRIORITY PRACTICE)

i. Strengthen the policy language to present paid parking as a regional priority practice at all municipally-owned parking facilities
ii. Suggest local policies to be updated to report pricing management strategies and the priorities behind parking pricing decisions

The Big Move – 2008:

Priority Action 7.6
"With the guidance of a multi-stakeholder roundtable, undertake a comprehensive parking study to identify best practices and guidelines with respect to: … transitioning from free to paid parking…; separating parking costs from transit fares at mobility hubs…; implementation mechanisms such as municipal parking authorities."
Priority Action 7.18
"For those transit corridors that are identified as intensification corridors…, municipalities… shall set out policies in their Official Plans and Transportation Master Plans that… discourage free parking"

4 MUNICIPAL INTERVIEWS

In order to verify the findings from the jurisdictional scan and expand on the analysis of the relevance of each emerging parking practice, interviews with representatives from each local and regional municipality were requested. This exercise gathered responses from 22 local municipalities (of the 26 local municipalities in the GTHA) and each of the four regional municipalities. The questions included:

1. What are the major off-street parking issues in your municipality?
2. Are you contemplating any updates to your municipal planning documents relating to off-street parking?
3. In reference to the regulations, policies, and practices summarized within our review, have we accurately captured the current state of practice?
4. Of the emerging practices explored through this assignment, which two or three are the most promising or realistic for implementation in your community?
5. In the context of off-street parking, what should be included within the RTP (including its supporting documents) to support your parking management efforts? Which areas of your work would benefit from being elevated to the regional scale?

For municipalities with municipal off-street parking facilities:

6. Are you contemplating updates to the pricing management of your off-street parking facilities?
7. Would your municipality consider removing pricing subsidies for off-street parking facilities (common practice is for municipal facilities is to offer lower prices than nearby private lots)?

Respondents provided written and verbal feedback to these questions and were particularly helpful with providing representative insight on the current state of off-street parking policies as our exercise focused on publically available plans and case studies. Trend-specific feedback is reported in Section 3.0 of this document under “Municipal Perspective.” The following list of general observations relating to off-street parking management include:

- → Parking is typically managed at the local level and specific regional policies are not common. However, the majority of representatives stated their support for regional guidance on best practices, how to respond to emerging technologies (i.e. EVs and AVs) and the implementation of paid parking.
- → Municipalities would benefit from a suite of measures relating to off-street parking management and adjacent land use practices to guide policy development at the local level.
- → Local council perspectives, as well as their constituents, heavily influences the policy developed to manage off-street parking. Whether parking management was acknowledged as a transportation demand management measure or a revenue generation measure determined the objectives of local policy.
- → Changes made to off-street parking management need to reflect the options available at the local level (i.e. transit service available as a viable alternative to auto use).
- → Charging for parking at GO Stations is encouraged by municipal representatives with GO Station parking properties in urban areas.
- → Partnerships with local academic institutions is a model being used by a handful of GTHA municipalities to research emerging technologies and their impact on off-street parking practices.
- → The responsibility to develop first and last mile solutions should be shared by regional and local transit providers.

5 RECOMMENDATIONS

5.1 Role of the RTP

The RTP update provides the opportunity to guide local and regional municipalities in the planning and regulating of off-street parking and identify opportunities for regional collaboration. Through a scan of current municipal and regional practice, international practice, and through interviews with municipal representatives, it is clear that there is a need for region-wide guidelines to support local policy making efforts and adoption of evolving parking practices. The RTP can support coordination across the region so as to avoid the duplication of policy or technology initiatives. Through this study, 20 off-street parking policy areas were studied and analyzed in relation to their applicability in the GTHA. Recommendations are organized into three categories for consideration within the 2041 RTP:

1. practices recommended as a priority local practice;
2. practices recommended as an encouraged local practice; and
3. practices recommended as a monitored practice.

Priority local practices, are those which this study has demonstrated, have the highest potential benefit for local communities in the GTHA and best reflect the goals of the RTP. Second to priority practices, encouraged local practices should be considered on a site specific basis as the demonstrated benefits may not be applicable across the region. Practices that have been recommended as a monitored practice are not clearly defined at this time due to technological uncertainties and should be tracked by local agencies as their benefits and constraints become further defined.

The following table identifies the anticipated implementation timeframe and the associated responsibility (parties required for effective implementation / regulation) of each practice to be recommended in the RTP update. The implementation timeline identified for each of the trends gives the anticipated level of priority anticipated for each practice, as well as the appropriateness of each practice considering current levels of regulation. The implementation timeframes are defined accordingly:

- → Quick Win: priority practice that can be implemented with relative ease (<1 year)
- → Short Term: priority practice that require additional studies before implementation / regulation (1 – 2 years)
- → Short to Medium Term: encouraged practice that will require additional studies and potential pilot programs before implementation / regulation (2 – 4 years)
- → Medium to Long Term: monitored practice that will require ongoing consultation, feasibility analysis and potential pilot programs before implementation / regulation (4+ years)

Trend	Implementation Timeframe	Lead Responsibility
PRIORITY PRACTICE		
Shared Parking	Quick Win	Local Municipality
Unbundled Parking	Quick Win	Local Municipality
Bicycle Parking	Quick Win	Local Municipality
Preferential Electric Vehicle Parking at Transit Stations	Quick Win	Metrolinx / Local Transit
Preferential Car-share Vehicle Parking at Transit Stations	Quick Win	Metrolinx / Local Transit
Preferential Car-pool Vehicle Parking at Transit Stations	Quick Win	Metrolinx / Local Transit
Bicycle Parking at Transit Stations	Quick Win	Metrolinx / Local Transit
Electric Vehicle Parking	Short Term	Local Municipality
Car-share Parking	Short Term	Local Municipality
Parking Minimum Exemptions	Short Term	Local Municipality
Parking Maximums	Short Term	Local Municipality
Stormwater Charge	Short Term	Local Municipality
Mobile Payment	Short Term	Metrolinx
Paid Parking at Transit Stations	Short Term	Metrolinx / Local Transit
ENCOURAGED PRACTICE		
Peer-to-Peer Parking	Short to Medium Term	Metrolinx / Local Municipality
Parking Cash-out	Short to Medium Term	Regional Municipality
Workplace Parking Levy	Short to Medium Term	Regional Municipality
Smart Parking Practice	Short to Medium Term	Metrolinx / Local Municipality
Demand Responsive Parking	Short to Medium Term	Metrolinx / Local Municipality
MONITORED PRACTICE		
Autonomous Vehicles	Medium to Long Term	Metrolinx / Local Municipality

5.2 Role of Metrolinx

Following the consolidation of this study's findings, a handful of the recommendations provided in section 3.4 were found to be applicable across multiple parking practices. In addition to the specific recommendations developed for each parking practice, the following three key recommendations have been developed by WSP.

1. Educate and Market Off-street Parking Strategies

Demonstrate the benefit of each parking practice to the public to support the implementation of the practice through an educational / marketing campaign. This will ensure each policy area is appropriately understood and the opportunities of each are made clear to the development industry.

2. Coordinate the Provision of Off-Street Parking with Transit Expansion

Coordinate off-street parking requirements with the ongoing expansion of GO Transit services. There is an opportunity for Metrolinx to include conditions for transit station approval to require local governments to amend the applicable by-laws in transit station areas to support local mode share targets and have regulations place emphasis on transit use.

3. Develop a GTHA Parking Charter

With the municipalities, develop an Off-street Parking Charter, that identifies common goals for parking management and establishes common and agreed upon guidelines. This would act as an off-street parking guideline that local municipalities could reference and build off for local policy making.

Based on the feedback received from municipal representatives and the findings reported by the case studies, a selection of key studies has been identified for the GTHA to equip local and regional agencies with the information needed to better manage off-street parking, both today and in the future. The list of potential future studies is included in the following table.

Proposed Study	Purpose	Lead Responsibility
Parking as an Energy Generator	To study alternate opportunities for parking facilities to consider energy generation or additional revenue generation tools	Metrolinx / Local Municipality
Transit / Parking Provision Guidelines	To link parking provision to the level of transit service	Metrolinx / Local Municipality
Unbundled Parking Guidelines	To support local policy making	Metrolinx / Local Municipality
Shared Parking Methodology	To define the appropriate method to calculate shared parking provisions and opportunities	Metrolinx / Local Municipality
Shared Parking Communication Strategy	To inform developers on the benefits of shared parking and to provide guidance pertaining to the ownership of shared facilities	Metrolinx
Best Practices for Stormwater Charges	To study the regional cost of impervious surfaces on the regional Stormwater system and recommend the most effective method for delivering a Stormwater charge to local municipalities	Metrolinx
Resiliency Standard for Off-street Parking Facilities	To maintain flexibility for repurposing of parking space, across all vehicle types and emerging technologies, and to work in coordination with Ontario building standards	Metrolinx
Pricing Model for Publically-owned Off-street Parking Facilities (to include guidelines and data collection requirements)	For local municipalities to track the opportunity costs and revenue estimates for annual parking pricing business model reviews	Metrolinx / Local Municipality

APPENDICES

Metrolinx

Regional Parking Policy - State of Practice Review

APPENDIX A

Case Study Evaluation Memo

November 2017
Project No. 161-54669-07

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1 STUDY BACKGROUND

In 2008, the Regional Transportation Master Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA), The Big Move, was adopted. The plan set out a common vision for transportation in the region and included a number of measures as targets (such as a shifting mode-share and increasing accessibility), for the 25-year time span. The vision in the RTP was accompanied by a number of strategies that included priority actions and supporting policies. These strategies encompassed a variety of areas of interest, several of which related to parking. In 2016, Metrolinx began a full review of the RTP, as mandated by the Metrolinx Act. The review has led to the creation of a Draft 2041 RTP, now out for consultation. This study informed the recommendations included in the Draft 2041 Plan.

The purpose of this study is to provide Metrolinx with off-street parking related policy recommendations to include in the RTP update. The following list of emerging off-street parking practices were included in this study:

3.1 New Development Parking (Commercial / Residential):
- → Parking Minimum Exemptions
- → Parking Maximums
- → Unbundled Parking
- → Shared Parking
- → Electric Vehicle (EV) Parking
- → Car-Share Parking
- → Bicycle Parking
- → Stormwater Charges

3.2 Employer Parking Strategies:
- → Parking Cash-Out
- → Workplace Parking Levy

3.3 Transit Station Parking:
- → Charging For Parking
- → Preferential Parking (EVs)
- → Preferential Parking (Car-Share)
- → Preferential Parking (Car-Pool)
- → Bicycle Parking

3.4 Emerging Technologies:
- → Smart Parking
- → Mobile Payment
- → Demand Responsive Parking
- → Peer-to-peer Parking
- → Autonomous Vehicle (AV) Parking

2 APPROACH

Phase One of the Regional Parking Policy Study identified a number of national and international parking trends. The purpose of Phase Two is to determine whether the implementation of new trends will assist the region with meeting its goals and objectives. This will be accomplished by evaluating international and Canadian case studies in which the trends were implemented and subsequently analyzed to determine whether the outcomes of implementation correlate with the RTP's goals and objectives. Published studies, pilot projects, surveys and peer-reviewed research articles were included in this review to support the RTP's recommendations. A study hypothesis was created for each trend to guide the case study selection process which allow for each trend to be evaluated according to its potential benefits demonstrated by the available research.

The outcome of the evaluation will be summarized in a results matrix at the end of this document using the following criteria:

- Objectives that are met are identified with ✓;
- Objectives that are not met are identified with ✗; and,
- Where there is uncertainty, objectives are identified with ○.

The following is the list of the 10 updated goals and objectives utilized for this study:

DRAFT RTP GOALS & OBJECTIVES		
GOALS	**OBJECTIVES**	
A Complete Communities	1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
	2	Coordinated planning for transportation and land use reduces travel distances.
B An Equitable and Accessible Transportation System	3	The transportation system is reliable and provides a range of travel options.
	4	Transit provides good connectivity to jobs, services and other destinations, including for those who rely on it most.
	5	Transportation infrastructure, services and technology are accessible to everyone.
C A Comfortable, Convenient and Safe Journey	6	Transit offers an attractive, high-quality user experience.
	7	The transportation system is designed to be safe for all users.
	8	The transportation system is reliable, seamless and well-coordinated with other modes.
D A Sustainable and Competitive Region	9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
	10	The transportation system is designed for environmental sustainability and resilience.

3 TREND EVALUATION

NEW DEVELOPMENT PARKING (COMMERCIAL / RESIDENTIAL)

PARKING MINIMUM EXEMPTIONS

Parking minimum exemptions is the removal of traditional minimum parking requirements from municipal zoning provisions to permit reduced levels of parking. A municipality's comprehensive zoning bylaw will dictate the conditions for parking provisions for new developments and is commonly delivered through a threshold minimum value. Although the intention for this zoning mechanism is to meet the anticipated needs of travelers and to prevent undesirable levels of on-street parking, parking minimums tend to result in an oversupply of parking infrastructure and demonstrated priority being given to auto-oriented travel. By stating a minimum, municipalities are defining a threshold of parking supply that will accompany all new developments, regardless of consumer preferences or what is considered to be most economical. The removal of minimum parking requirements shifts decisions regarding the provision of off-street parking to the developers.

In a report prepared by Donald Shoup, a vicious cycle of parking demand is described whereby the provision of parking increases auto-oriented travel behavior which further increases the demand on parking supply.[1] To combat the collective oversupply of parking and influence travel behaviours, the removal of parking minimums is being introduced internationally and in select Canadian municipalities.

Hypothesis

The following goals and objectives are anticipated to be met through the reduction / removal of regulations for parking minimums:

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
> 2. Coordinated planning for transportation and land use reduces travel distances.
>
> *An Equitable and Accessible Transportation System*
> 5. Transportation infrastructure, services and technology are accessible to everyone.
>
> *A Sustainable and Competitive Region*
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

New York City, New York, USA

In 1982 the city of New York City shifted away from traditional parking minimums and lifted their parking requirements and introduced multiple full and partial exemption opportunities in the Manhattan core and the surrounding boroughs of the city. Since that time, developers have largely guided the provision of parking in Manhattan as it is estimated that only five parking spaces per 100 units is required in Manhattan due to exemption opportunities. Since 1982, the parking supply in Manhattan has declined as a result of the city's reform and the redevelopment of parking facilities, and the majority of new parking facilities in the core operate as public facilities but still operate to meet residential neighborhood parking needs.[2] To further analyze the impact of this reform on developer behaviour, the Institute for Affordable Housing Policy in New York City studied whether parking minimums are effective in matching developer priorities. For this study, the Institute was interested in determining whether parking minimums guided developer decisions in an effort to assess the potential impact of removing parking minimum policies on future building practices. The study utilized property data to compare the amount of built parking supply

to the required amount as cited within the applicable zoning by-law.

The survey included over 1,000 residential developments in the New York City area to determine which provided exactly the minimum required amount of parking and which developed above that threshold. Of the developments that had a parking requirement, 77% constructed exactly, or very close to, the prescribed minimum. For the developments that do not have a parking requirement (due to the City's exemption policy), 83% provided zero parking for their residential units. Of the developments that had their parking requirements waived due to the size of the development or the lot, only 17% constructed any parking. The study's findings suggest that minimum parking requirements heavily influence development practices and that minimum parking requirements drive development practices to provide more parking than the current real estate market would point to based on parking alternatives (i.e. off-site or on-street parking), auto ownership and affordability.[3]

London, England

In 2004, the City of London became the first major city to implement a parking reform that shifted zoning practice from parking minimums to mandated parking maximums in the metropolitan area. This reform was widely supported by the national government and their policies to reduce auto-oriented travel through parking policies, and was executed through the London Plan. As a result of this reform, 22 of the 33 boroughs updated their local regulations to remove parking minimums from development regulations.[4] In a 2016 report prepared by Zhan Guo, London's parking reform was analyzed to determine its impacts on development practices, auto ownership and urban form. By comparing the pre-reform practices to those afterwards (2004 compared to 2010), the study found that the amount of parking provided for residential developments decreased by approximately 40%; this translates to over 140,000 fewer spaces. New developments consistently provided less than the maximum standard as well as much less than the abandoned minimum standard.

This study concluded that the removal of parking minimums from development standards was much more effective than introducing parking maximums on development practices. As noted by Donald Shoup in response to Guo's study, the significant reduction in London's parking supply following the reform demonstrates that parking minimums supplied nearly double the amount of residential parking that developers would willingly construct (as an indicator for true market demand and consumer needs)[5].

Furthermore, Shoup adds that minimum parking requirements tend to result in large expanses of impervious surface that compel auto-oriented travel behaviour. In regards to off-street parking's relation on demands for on-street parking, Guo's study notes that providing more off-street parking is not an adequate tool for combatting overspill and that implementing metered practices are more effective tools in this regard.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	The NYC case study revealed that developers are inclined to provide less parking for residential units than what parking minimums typically require.	✓
2	Coordinated planning for transportation and land use reduces travel distances.	There are currently no studies available that have published the impact on travel distances. However, with higher densities of productive land uses, more opportunities for shorter trips may be implied.	○
Goal B: An Equitable and Accessible Transportation System			
5.	Transportation infrastructure, services and technology are accessible to everyone.	By reducing the priority placed on the automobile, parking minimum exemptions support alternative modes of transportation, increasing the accessibility to all users.	✓
Goal D: A Sustainable and Competitive Region			
10	The transportation system is designed for environmental sustainability and resilience.	The London case study demonstrated that minimum parking requirements result in more parking supply than what would be otherwise provided by developers. Therefore, removal of minimums allow for land to be used in a more sustainable manner.	✓

PARKING MAXIMUMS

Traditionally, the amount of parking required for various developments is regulated by parking minimums developed according to the property characteristics, location, property use and anticipated demand. Similar to the delivery of parking minimums, parking maximums are defined by a municipality's comprehensive zoning by-law to limit the extent of parking supplied by all or specified land uses. Parking maximums are also referred to as parking caps. To prioritize more productive land uses, the instatement of maximums are being introduced internationally and in select Canadian municipalities. It is important to recognize that parking maximums are only effective alternatives to traditional parking minimum regulations as maximums set too high will not influence developer behaviour.

Hypothesis

The following goals and objectives are anticipated to be met through the instatement of parking maximums:

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
2. Coordinated planning for transportation and land use reduces travel distances.

An Equitable and Accessible Transportation System
5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

New York City, New York, USA

In 1982, the city of New York City instated parking maximums to replace their minimum off-street parking requirements for residential parking in the Manhattan Core.[15] This reform was implemented to prevent the oversupply of parking and included multiple partial and full exemption opportunities for parking provisions. Since 1982, residential parking is considered optional and developments are subject to strict mixed-use and residential use conditions that limit the supply of parking.[6] Although this reform has been compatible with the city's growing core, the instatement of parking maximums alone was not effective as it has been regarded that the maximums have been set too generously. At three spaces per unit for all residential developments, Guo and Ren note that the maximum standard is ignored as a policy and other parking policies (i.e. removal of parking minimums) have been more influential in New York City.[7]

London, England

In 2004, the City of London became the first major city to implement a parking reform that shifted zoning practice to mandated parking maximums in the metropolitan area. This reform was widely supported by the national government and their policies to reduce auto-oriented travel, and was executed through the London Plan. As a result of this reform, 30 of the 33 boroughs updated their local regulations to include parking maximums in their zoning regulation.[8] For residential developments were generally restricted to less than one parking space per one to two bedroom unit and less than one space per unit in transit accessible areas, and all residential developments are restricted to 1.5 spaces per unit project-wide.

In a 2016 report prepared by Zhan Guo, London's parking reform was analyzed to determine its impacts on development practices. By comparing the pre-reform practices to those afterwards (2004 compared to 2010), the study found that new developments consistently provided less than the maximum standard. However, the maximum standard is regarded as less effective than the removal of minimum parking standards as the study determined only 22.4% of new developments were controlled by the maximum

requirement, which represents only 2.2% of housing units. Guo recommends that maximum standards be coordinated with on-street parking management practices to manage parking spillover and ensure the effectiveness of parking policies.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS		
OBJECTIVE	**OUTCOME**	
Goal A: Complete Communities		
1 The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	As long as parking maximums are set at a meaningful level and in conjunction with other on-street policies, this regulation will encourage more compact development.	✓
2 Coordinated planning for transportation and land use reduces travel distances.	There are currently no studies available that have published the impact on travel distances. However, with higher densities of productive land uses, more opportunities for shorter trips may be implied.	○
Goal B: An Equitable and Accessible Transportation System		
5. Transportation infrastructure, services and technology are accessible to everyone.	By reducing the priority placed on automobile, parking maximums support impact the built environment and support alternative modes of transportation, increasing the accessibility to all users.	✓
Goal D: A Sustainable and Competitive Region		
10 The transportation system is designed for environmental sustainability and resilience.	As regarded in the NYC and London cases, parking maximums must be set at meaningful level, this regulation will encourage land to be used more sustainably.	✓

UNBUNDLED PARKING

Unbundled parking is a policy initiative whereby local standards require the cost of parking be separated from other leasing or purchasing costs associated with a unit or property. Unbundled parking presents occupants with an opportunity to purchase parking according to their need on a monthly or daily basis.[9] Unbundled parking provides residential and commercial users with the opportunity to make an informed decision by better understanding the cost of parking outside of the costs of leasing, purchasing or renting a given unit. It is estimated that the cost of below-grade parking comprises 30% of the cost of a residential unit[10] and that parking facilities have been found to reduce the number of productive uses (i.e. residential units) by 20%.[11] It is believed that the unbundling of parking has the opportunity to reduce the amount of parking required for new developments by representing true demand, to increase the affordability of residential and commercial units and for parking supply to be better utilized, which carries the potential to influence household vehicle ownership and the demands for parking facilities[12].

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of an unbundled parking policy:

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
>
> *A Sustainable and Competitive Region*
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

San Francisco, California, USA

The City of San Francisco, California has historically taken a progressive approach in the provision of parking and parking minimums that began in the 1970s. In 2002, the city's Planning Commission introduced the implementation of parking unbundling on select large residential projects on a case by case basis. Unbundled parking became a requirement in 2006 following a policy reform to control the provision of parking in the downtown area.

In a study funded by the Federal Highway Administration and published by the Transportation Research Record, the cumulative impacts of car-sharing and unbundled parking on vehicle ownership and mode choice were studied to determine the effectiveness of San Francisco's 2006 parking reform. This study surveyed 13 developments from four central neighbourhoods to include control sites and case sites to test the study's research questions on developments with and without car-sharing and unbundled parking strategies. The comprehensive analysis of the 298 survey responses collected resulted in the following key findings:

- Residents between 18 and 34 years of age were more influenced by the cost of parking than those over the age of 35 when making residential location decisions.
- The presence of both car-sharing and unbundled parking in a development resulted in a car ownership rate of 0.76 vehicles per household in comparison to a rate of 1.03 in developments without either strategy. The study did not find the presence of car-sharing or unbundled parking alone resulted in a statistically significant different vehicle ownership rate.
- The presence of car-sharing or unbundled parking alone did not result in a statistically significant change in mode choice for commute trips.
- Synergies between car-sharing and unbundled parking should be acknowledged as unbundled parking influences the demand for car-sharing.[12]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	San Francisco is a successful example of a progressive parking reform and the follow-up survey does present meaningful conclusions about the reform's effectiveness. There is little standalone research on unbundled parking policies. However, the synergies of unbundling parking with other parking strategies (here, provision of car-sharing services) is noteworthy and can encourage lower vehicle ownership leading to reduced demand for parking and more compact development practices.	✓
Goal D: A Sustainable and Competitive Region			
10	The transportation system is designed for environmental sustainability and resilience.	By unbundling the cost of parking, users are made aware of the true cost of each parking space which will reduce the attractiveness of auto ownership. As the case study stated, when combined with car-sharing services, the provision of unbundled parking in the surveyed developments demonstrated reduced levels of auto ownership.	✓

SHARED PARKING

To avoid an oversupply of parking, shared parking allows multiple developments to combine minimum off-street parking requirements to result in a single parking facility that serves multiple uses or properties[13]. Different property uses within a standalone development or neighboring developments often carry varying schedules and levels of demand which offers opportunity for complimentary travel demand schedules to consolidate parking facilities, resulting in an overall reduction of parking supply.[14] Shared parking facilities align the true parking demand with parking supply to promote a more efficient use of developed land.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of a shared parking policy:

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
>
> *A Sustainable and Competitive Region*
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Portland, Oregon, USA

The City of Portland, Oregon has implemented a joint parking regulation within their zoning by-law to allow for two or more property uses to share parking facilities. In order to meet the zoning requirements set by the City of Portland, developers must demonstrate the effectiveness of a shared parking facility by submitting a shared parking strategy. With this approach, the City of Portland's zoning code permits shared parking facilities that result in fewer parking spaces than what would have been provided if the uses were separated.[15] Through the implementation of shared parking policies, the instatement of parking maximums and parking transfers, the City of Portland has reported an increase in transit mode share to 48% in the mid-1990's, in comparison to 20% - 25% in the 1970's when most of these initiatives were implemented. The City of Portland's zoning code states "limiting the number of spaces allowed promotes efficient use of land, enhances urban form, encourages use of alternative modes of transportation, provides for better pedestrian movement, and protects air and water quality."[16]

Denver, Colorado, USA

With similar intent, the City of Denver, Colorado has developed parking requirements that respond to not only individual land uses but also the interaction of land uses. The City of Denver requires developers in mixed-use zones with access to public transportation to prepare a Shared Parking Analysis and Trip Reduction Strategy. The development of such a strategy and the facilitation of consolidated parking has reportedly reduced the amount of parking spaces within a district by 26 to 50%.[17]

Metro Vancouver, British Columbia, Canada

In a technical report prepared by Metro Vancouver, parking was recognized as a heavy influencer of the observed development practices and transportation choices in the region. Metro Vancouver stated that in their region on-site parking within a structure can cost up to $45,000 per space. With this information, the agency has prioritized the study of their zoning practices to ensure that parking regulations are set to meet true demand in an effort to address housing affordability and reducing unnecessary development of parking facilities. Metro Vancouver surveyed their municipalities and found that three of the seven municipalities in the Metro Vancouver area that have implemented shared parking policies reported a reduction of total parking supply by 25%.[18] Similar to Portland and Denver, a transportation impact analysis must be prepared to have the sharing of parking facilities by compatible mixed-use

developments approved by municipal authorities.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS		
OBJECTIVE	**OUTCOME**	
Goal A: Complete Communities		
1 The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Referenced case studies report a reduction in the supply of parking in areas with shared parking policies, leading to more compact development practices.	✓
Goal D: A Sustainable and Competitive Region		
10 The transportation system is designed for environmental sustainability and resilience.	Shared parking policies have resulted in consolidated parking facilities in the three cities cited. In the case of Portland, Oregon, the City reported a higher transit mode share following the implementation of their parking reform that started in the 1970's.	✓

ELECTRIC VEHICLE PARKING

Electric vehicle parking is the provision of designated parking spaces for these vehicles at residential and commercial developments and often includes charging infrastructure. With the introduction of electric vehicles on our roadways, developments have begun to construct parking spaces with associated charging stations. These parking spaces equipped with charging stations allow electric vehicle owners to charge their vehicles while at home or at their destinations (i.e. workplace/commercial office buildings). In order to install charging stations, parking spaces require certain electrical provisions to safely supply the electric power that is used by the charging station, a costly endeavor when refurbishing existing spaces. To prepare for more widely adopted use of electric vehicles, many municipalities are beginning to implement regulations that require new developments to provide the necessary infrastructure/electrical provisions to make them compatible with charging stations. The regulations are intended to encourage more electric vehicle use by making the ancillary infrastructure required more affordable and accessible to everyone.

Hypothesis

The following goals and objectives are anticipated to be met by providing electric vehicle parking spaces in new residential or commercial developments:

An Equitable and Accessible Transportation System
5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

California, USA

The State of California includes provisions in their building code that require new residential and non-residential developments to install electric vehicle supply equipment (EVSE) to prepare the developments for possible installation of EV charging stations.[19] The EVSE ensures that the power supply required for the EV charging station is sufficient and will not require costly refurbishing in the future. For nonresidential developments requirements range from one EV charging space for developments with 10-25 parking spaces, to a requirement of a 6% of the total number of parking spaces if the developments has 201 spaces or over.[20] For new residential developments, one and two family dwellings and town-houses with attached private garages, each dwelling unit requires EV supportive spaces; multifamily dwellings where 17 or more multifamily dwelling units are constructed 3% of the total number of parking spaces are required to be EV supportive (never less than 1 space).[21]

Regulations requiring new developments to provide EV parking provisions are innovative practices which have not yet widely been adapted or evaluated. The regulations are based on estimated benefits of the implementation of the provisions. The California Environmental Protection Agency's Air Resources Board has estimated the benefits for implementing the EV parking regulations include sustaining natural resources by reducing greenhouse gas emissions and reducing the dependency on fossil fuels. Estimated benefits also include avoided costs for the state of $94 million to $285 million with the prevention of retrofit costs.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	The provision of developing parking for electric vehicles, i.e. parking spaces with EV chargers results in an increase in accessibility of EV users.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Providing low-emissions and electric vehicle parking in new developments is an innovative practice that will help prepare the region adapt to technological changes to automobile vehicles.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Although the intent of the regulations are meant to encourage EV usage which would lead to more environmental sustainability, there are currently no studies which have evaluated the impacts of providing these types of regulations and their influence.	○

CAR-SHARE PARKING

Car-share parking is the provision of designated car-share spaces at residential and commercial developments. With the recent introduction of numerous car-share organizations, it is becoming more common for developers to provide car-share parking spaces in new developments. Municipalities are either allowing for car-share spaces in new developments that result in a reduction of parking minimum requirements or mandating them in all new developments. These car-share space provisions are being introduced to encourage residents to switch to more sustainable modes of transportation and ultimately reduce the number of privately owned vehicles driven.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of regulations requiring car-share parking spaces in new developments:

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

An Equitable and Accessible Transportation System
5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

San Francisco, California, USA

In 2010, the City of San Francisco updated their Planning Code to include car-share requirements for both residential and non-residential uses in all zoning districts.[22] A study which sought to evaluate impacts of car-share on car ownership in the City of San Francisco found that two years into the introduction of car-sharing in the city, nearly 30% of members got rid of one or more of their vehicles and two-thirds of respondents stated they decided not to purchase a car. Comparisons with a statistical control group suggested that over time car-share members reduced their total vehicular travel, per capita gasoline consumption and greenhouse gas emissions.[23] Another study funded by the Federal Highway Administration resulted in findings that suggest developments with both car-sharing and unbundled parking result in a greater impact to reductions in car ownership:

- The study found that the presence of both car-sharing and unbundled parking in a development resulted in a car ownership rate of 0.76 vehicles per household in comparison to a rate of 1.03 in developments without either strategy. The study did not find the presence of car-sharing or unbundled parking alone resulted in a statistically significant different vehicle ownership rate.[24]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	The San Francisco case study indicates an increase in car-share usage reduces the number of personal automobiles purchased, therefore reducing the need for additional parking space and leading to more compact communities.	✓
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Increasing the number of car-share spaces available to residents by requiring them in new developments results in more access to users.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Providing opportunities for car-sharing to residents ensures the region is allowing innovative transportation solutions to exist.	✓
10	The transportation system is designed for environmental sustainability and resilience.	The San Francisco case study indicates a reduction in VKT and greenhouse gas emissions for residents utilizing car-share, therefore contributing to environmental sustainability and resilience.	✓

BICYCLE PARKING

Bicycle parking is the requirement that new residential and commercial developments provide a specified level of bicycle parking and secure storage amenities. It is becoming more common for municipalities to include regulations in their development by-laws that require new developments to provide convenient and secure bicycle parking infrastructure in their developments. The intent is to provide the infrastructure required to allow for more cycling ownership and, as a result, increase cycling mode share.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of regulations for bicycle parking in new developments.

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
>
> *An Equitable and Accessible Transportation System*
> 5. Transportation infrastructure, services and technology are accessible to everyone.
>
> *A Sustainable and Competitive Region*
> 9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Vancouver, British Columbia, Canada

The City of Vancouver's Parking By-law includes provisions that are dedicated to off-street bicycle parking. The by-law requires office, retail, and residential uses to provide either 'Class A' or 'Class B' type spaces within their developments. Class A provisions outline bicycle room requirements and Class B provisions outline requirements for bicycle racks. The by-law also includes provisions for associated clothing lockers. Reductions in the number of motor vehicle parking spaces for office or retail uses are permitted if additional Class A bicycle spaces are provided (more than the by-law stipulates). The province of British Columbia's building by-law supplements the municipal bylaw by setting out requirements for shower and change facilities within their building by-law.

A study completed by Metro Vancouver discovered that a large portion of bicycle owners surveyed are frustrated by the lack of secured and sufficient-sized bicycle parking facilities in their buildings. The report suggests that by providing an adequate supply of bicycle parking and appropriate facilities, the option of utilizing bicycles becomes more attractive.[25]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Reducing the number of motor vehicle parking spaces required and replacing them with bicycle parking results in more compact development.	✓
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Providing more cycling infrastructure (parking) in new developments improves access for cyclists.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Bicycle parking supports increased active mode share and more efficient use of road and parking infrastructure.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Bicycle parking supports increased active mode share which contributes to environmental sustainability.	✓

STORMWATER CHARGE

Traditionally, zoning guidelines for property owners and developers that specify parking minimums according to peak demand, result in both an oversupply of parking and an unsustainable amount of impervious surface. The system-wide impact of impervious surfaces is often overlooked by policy making practices as stormwater management costs are conventionally recovered through water rates as an embedded cost based on usage. By not charging property owners directly for the impact of impervious surfaces onsite, unsustainable development practices are effectively discounted. This is especially true for land uses that do not have significant water usage to bill, such as surface parking facilities.

In addition to the land, facility and opportunity costs incurred by surface parking lots, the hydrological and stormwater management costs generated by large impervious surfaces is a growing concern for municipal utility providers. The stormwater management charge is a new revenue generation tool being considered by municipalities to support their growing capital works expenditures.[26] The charge is a policy tool that directly charges property owners according to their impact on the stormwater management system based on the calculated amount of runoff produced from impervious surface cover. The implementation of this charge varies from flat rate charges according to property type to site specific charges based on calculated impervious surface coverage. The addition of this cost to water bills informs property owners on the impacts of a property on the stormwater management system and has the potential to curb tendencies for the oversupply of surface parking as the true costs become more evident.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of a stormwater charge:

Complete Communities
1. The transportation system supports compact and efficient development.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Mississauga, Ontario, Canada

The City of Mississauga was recognized for their stormwater management fee program by the Canadian Association of Municipal Administrators (CAMA) with the Environment Award in 2016. In 2012, the City of Mississauga undertook a stormwater financing study to investigate revenue generation opportunities that would support the growing pressures being placed on their aging infrastructure and stormwater management system. The program adds a separate stormwater charge on municipal water bills according to a 5-tier pricing structure (based on the calculated rooftop area) for residential properties. For non-residential properties, the stormwater charge is calculated on a site by site basis according to the amount of impervious surface (i.e. roof and surface parking) present on site, and non-residential properties have the opportunity to receive a credit if best practice interventions are installed on site to reduce stormwater runoff. Unique to this case, the City of Mississauga incentivizes non-residential properties to reduce the amount of impervious surface on site by revealing the true costs of these surfaces through an online property assessment tool. Furthermore, the Environmental Commissioner of Ontario regarded the equitable nature of stormwater charges, as properties without water meters will now be accountable for the runoff generated on site. For example, surface parking lots typically will not have a water meter on site but are significant contributors to the runoff managed by the system, which demonstrates the effectiveness of the City of Mississauga's program as these parking facilities will now share the financial burden of stormwater management.[27] It is likely that the stormwater charge will increase operation costs for parking facilities which may trigger an increase in user fees and reduce the

affordability of auto-oriented travel. For example, the University of Toronto Mississauga campus states that stormwater management related-costs have shaped on campus parking fees; this initiative is unrelated to the city-wide stormwater charge but demonstrates an increased accountability in parking facility user fees to charge users equitably.[28]

The City of Mississauga program has been in operation for just over one year and no formal reports have been published on the status of the program or the measured impacts of the additional cost on development practices. However, the program was projected to generate $33 million in revenue for 2016 to support operation and maintenance costs and infrastructure renewal.[29]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Due to the recent nature of this trend, data has not been reported on the impacts to development practices. However, stormwater charges may contribute to compact development by providing incentives to developers to minimize parking areas.	○
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	As demonstrated by the City of Mississauga case study, the stormwater charge is an equitable and consistent funding source that will support the municipality's ongoing maintenance and expansion expenditures.	✓
10	The transportation system is designed for environmental sustainability and resilience.	The introduction of a stormwater management charge will support resiliency by collecting funds to manage runoff, and will encourage environmental sustainability by providing incentive to incorporate stormwater management features in parking facility design.	✓

EMPLOYER PARKING STRATEGIES

PARKING CASH-OUT

Employer-paid parking has been described as "a tax-exempt fringe benefit you qualify for only by driving to work."[30] The California Health and Safety Code describes parking cash-out as: "*an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space."*[31]

Previous attempts to introduce parking cash out in North America have been largely concentrated in California, where state law provides a legal framework to deal with the tax implications of introducing such a scheme. Individual employers in Canada also offer informal parking cash out arrangements, particularly where parking is known to be expensive.

Hypothesis

It is expected that parking cash out would support the following draft RTP goals and objectives:

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

An Equitable and Accessible Transportation System
3. The transportation system provides a range of travel options.
5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Los Angeles County, California, USA

An analysis of the implementation of parking cash out based on employers in Los Angeles County was conducted by Donald Shoup and has been summarized in his 2009 Parking Cash Out Report. The findings from his study concluded that:

1. Commuter mode choice (modal split) to drive alone dropped by 13%, carpool increased by 9%, transit increased by 3%, combined walking and cycling increased by 2%
2. The number of daily vehicle trips to work fell by 11 per cent
3. VMT to work decreased by 652 miles (annualized) or 12% less per employee per year. This equates to removing one in every eight cars driven to work at case study firms.
4. Vehicle emissions to work reduced by 12 per cent, or 367kg CO_2 per year per employee (based on US average vehicle fleet statistics) [30]

It also concluded that the five main benefits of parking cash out are as follows:

1. Promotion of travel choices instead of 'take it or leave it' approach
2. Rewards for alternatives to solo driving
3. Reductions in vehicle trips
4. Equal treatment of all commuters
5. 'Little cost' on employers

The report also stipulates that the introduction of paid parking at workplaces generates an even greater incentive to switch to alternative modes than merely cashing out. This finding is also reinforced by other recent studies.[32] This trend is explored further in the workplace parking levy section.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Parking cash out decreases solo driving and achieves a significant modal shift from automobiles to more sustainable modes.	✓
Goal B: An Equitable and Accessible Transportation System			
3	The transportation system provides a range of travel options.	Parking cash out increases the attractiveness and viability of alternative travel options.	✓
5	Transportation infrastructure, services and technology are accessible to everyone.	Parking cash out provides incentives which can be utilized to make alternative transportation choices more affordable and therefore accessible.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Case study shows significant number of commuters are willing to take after tax cash value of parking instead of free parking, which contributes to a more efficient transportation system.	✓
10	The transportation system is designed for environmental sustainability and resilience.	The case study signifies a reduction in single occupancy vehicles which results in positive environmental impacts.	✓

WORKPLACE PARKING LEVY

A workplace parking levy refers to a pricing mechanism used by municipalities to charge employers for the number of parking spaces they provide to their employees. The intent of the levy is to address congestion issues by incentivizing employers to manage their parking provisions. Although employers are responsible for levy charge, they may choose to recover the cost in part or fully from their employees. Transferring the cost to employees may incentivize them to choose alternative modes of transportation to access their workplace rather than choosing to utilize the provided parking spaces. In addition to incentivizing employers and/or employees to provide/utilize less parking, the levy collected is often spent on improving public transit and providing the infrastructure necessary for residents to make more sustainable travel decisions.

Hypothesis

The following goals and objectives are anticipated to be met by implementing Draft RFP policies based on this trend.

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

An Equitable and Accessible Transportation System
3. The transportation system provides a range of travel options.
4. Transit provides good connectivity to jobs, services and other destinations, including for those who rely on it most.
5. Transportation infrastructure, services and technology are accessible to everyone.

A Comfortable, Convenient and Safe Journey
6. Transit offers an attractive, high-quality user experience.

A Sustainable and Competitive Region
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Nottingham, UK

The City of Nottingham requires that employers with 11 or more parking spaces pay a charge for each of their spaces. In 2017 the parking space levy was £387 (roughly $630 CAD).[33] The funds collected are used to fund transit infrastructure. The specific transit improvements that are being implemented as a result of the levy's collected funds include two new tram routes; the modernization and refurbishment of Nottingham Station (which will result in improved connections between trains, cyclists, pedestrians, taxis, and car parking); and investment into a new fleet of zero-emissions buses.[34]

A study evaluating the early years following the implementation of the parking levy found that the investments made as a result of the funds collected helped the most in reducing or constraining traffic growth as compared to implementation of the levy alone. [35] Several concerns were voiced regarding the levy were identified in the study as well. This included the fairness of the levy, as it did not distinguish between those who travelled in congested periods and those who did not, or those with or without access to practical public transport; the affordability of the levy on lower-income families; and the potential for parking displacement into neighbouring communities that could occur after implementation.[36]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	The case study indicates the implementation of the workplace parking levy resulted in transit investments that help support more compact urban form (i.e. new tram lines). Implementation also has the potential to influence the amount of parking employers choose to provide to their employees however these long term impacts have yet to be evaluated.	✓
Goal B: An Equitable and Accessible Transportation System			
3	The transportation system provides a range of travel options.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized for transit investments, resulting in a greater range of travel options for residents	✓
4	Transit provides good connectivity to jobs, services and other destinations, including for those who rely on it most.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized for transit investments, resulting, resulting in greater transit connectivity to multiple destinations.	✓
5	Transportation infrastructure, services and technology are accessible to everyone.	Although transit infrastructure became more accessible to residents in the case study, access to certain jobs may decrease if the costs from the employers are transferred to employees.	○
Goal C: A Comfortable, Convenient and Safe Journey			
6	Transit offers an attractive, high-quality user experience.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized for transit investments, resulting in improved bus vehicles, a refurbished station, and new tram lines, and an overall improvement to the user experience for transit users in the city.	✓
8	Travel by transit is reliable, seamless and well-coordinated with other modes.	The case study identified investments that resulted in a more connected transit station as a result of the workplace parking levy.	✓
Goal D: A Sustainable and Competitive Region			
10	The transportation system is designed for environmental sustainability and resilience.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized for transit investments as alternatives to unsustainable automobile travel including investments to new tram lines, and environmentally sustainable zero carbon emissions buses.	✓

TRANSIT STATION PARKING

CHARGING FOR PARKING

Charging for parking refers to the practice of introducing fees at train or bus stations for the use of their parking facilities. These facilities are commonly referred to as 'park and ride' facilities. The park and ride concept is usually based on the idea that providing access to stations via private motor vehicle helps to maximize the number of people who can easily get to the stations.[37] Hence park and ride facilities are more commonly found in auto-centric urban areas. Examples however can also be found in both very low as well as high density contexts.

Many park and ride facilities are deliberately offered at low to no cost to the end user as a means of attracting ridership ('free parking'). It is often argued that the attractiveness of park and ride as a means of accessing transit and generating additional ridership is intrinsically linked to the 'free parking' approach. Cultural attitudes towards free parking are also closely tied to customer perceptions of 'comfort and convenience' and charging a fee for use could potentially run contrary to this.[38] Despite this, transit agencies are beginning to move away from the free parking model in order to begin relaying the true financial and economic costs to consumers.

Hypothesis

It is considered that the introduction of paid parking at stations has the potential to contribute to the following draft RTP Goals and Objectives:

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
>
> *An Equitable and Accessible Transportation System*
> 5. Transportation infrastructure, services and technology are accessible to everyone.
>
> *A Comfortable, Convenient and Safe Journey*
> 6. Transit offers an attractive, high-quality user experience.
>
> *A Sustainable and Competitive Region*
> 9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Perth, Australia

In 2013, the State Government of Western Australia directed the Public Transport Authority 'Transperth' to expand the existing small-scale paid parking concept, called *SmartParker* at suburban railway stations. A 'flat fee' of $2 was expanded to cover all parking at stations and is charged in 24 hour increments to park in non-reserved parking spaces at any suburban railway station, regardless of the actual time parked. Payment is made either via pay and display machines or by validating smartcards using the existing electronic ticketing system. Smartcard users are required to register their number plates for compliance purposes. Non-compliance is subject to a $50 fine.

Transperth reports they have conducted some provisional monitoring since implementation and established anecdotally that the uptake of SmartParker has increased due to increased levels of convenience.. The authority advises they have not reviewed detailed occupancy statistics since its introduction.[39]

Edmonton, Alberta, Canada

Up until late 2016, the City of Edmonton, through the Edmonton Transit System (ETS), operated 87% of its 5,022 park and ride spaces at LRT stations and Transit Centres (bus interchanges) free of charge. Similar to Perth, the remaining 13% were subject to fees. Unlike Perth, a monthly reservation fee of $42 per space applied. One of the actions in the City's 2010 Strategic Plan *The Way We Move* was to consider 'fees at park and ride facilities where demand exceeds supply'.[40]

To this end, in early 2016, the Edmonton Transit System Advisory Board (ETSAB), made up of community representatives, recommended to City Council that the amount of paid parking stalls be increased and that the monthly price be increased. ETSAB concluded that this would lead to a fairer allocation of spaces than a 'free for all' situation.[40]

In August 2016, the City moved to implement paid parking at five of the major LRT stations by offering reserved spaces for an increased cost of $50 per space per month. 75% of spaces have been converted to paid parking. The spaces are managed by a private parking operator, Impark, on behalf of the City. There are currently waiting lists for spaces at all stations, demonstrating that the up-take of the reserved spaces has been strong. Meanwhile, the University of Alberta, who has a universal transit pass arrangement 'UPass' with the City providing students unlimited ETS travel, has reported that demand for their paid parking facilities on campus has increased significantly in the period immediately after the introduction of paid parking, suggesting that some people have shifted mode from transit to private vehicles. Up until recently, the University had reported a substantial decrease in demand for parking after UPass was introduced.[40]

To compensate for the loss of 'free' spaces, the City of Edmonton made a limited number of additional temporary parking spaces in areas farthest away from stations available for those persons who do not wish to pay.[40]

Metro Vancouver, British Columbia, Canada

In 2012 TransLink – Metro Vancouver's regional transit authority, developed a Park and Ride policy to bring a consistent approach to Park and Ride management and establish clear planning principles to guide decision making[41]. There are three main focuses of the Park and Ride policy: supply, pricing, and management. The intent of the policy was to achieve the following:

- Greater equity in the regional transportation system;
- Cost recovery to contribute to the cost of operations and construction of Park and Ride facilities;
- Revenue generation;
- Improved efficiency of the regional transportation system;
- Successful opportunities to realize the potential for land development to become more transit supportive; and
- Support for major projects to maximize the return on investment.

There are 18 Park & Ride facilities located in Metro Vancouver, 9 of which are managed by TransLink. The 9 Park & Ride facilities managed by TransLink have usage fees of either $2 or $3.[22]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Requiring transit users to pay full cost of driving to the station makes alternative transportation options more competitive. Increasing costs of accessing transit may however induce longer travel by automobiles as well.	○
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Paid parking has a potential to improve station planning and improving access by other modes of transportation, however it may also deter users who do not wish to pay the user fees.	○
Goal C: A Comfortable, Convenient and Safe Journey			
6	Transit offers an attractive, high-quality user experience.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized to improve the quality of parking infrastructure at stations.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	As demonstrated by the case, there is an opportunity for the funds that collected from the workplace parking levy to be utilized to maintain parking structures, and can be invested for expansion in transit or innovative improvements to parking/transit.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Requiring transit users to pay full cost of driving to the station makes alternative transportation options more competitive. Increasing costs of accessing transit may however induce longer travel by automobiles as well.	○

PREFERENTIAL PARKING - ELECTRIC VEHICLES (EVs)

The provision of preferential parking spaces for low-emissions or electric vehicles is where visible priority is given to this mode in the design and allocation of parking facilities corresponding to the access point of a transit station (i.e. closest to the main entrance). Providing charging stations with these spaces allows users to charge their vehicles while parked. The provision of low-emissions or electric vehicle parking spaces has the opportunity to incentivize travelers to utilize more sustainable vehicles to travel to and from transit stations and help contribute to emissions reductions.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of low-emissions or electric vehicles reduction.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Huntington, New York, USA

Five level 2 EV charging stations were installed at the Long Island Railroad Station in Huntington. The charging stations are energy neutral as the electricity consumed by the cars are offset by electricity produced by solar panels installed on the roof of the parking garage. An evaluation of the project identified that the stations were providing zero-emission power for the EVs. However the town has identified that users occupy the parking spots for long period of times. Although the town in interested in installing additional charging stations it will likely consider locations that have faster turnover rates such as shopping centers, the downtown area, and movie theatres.[42]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Providing electric vehicle parking at transit stations may not contribute to future needs of the region as the turnover rate at transit stations is low and therefore a small portion of EV users will be able to utilize the spaces.	✘
10	The transportation system is designed for environmental sustainability and resilience.	Requiring transit stations to provide the infrastructure required to support EV technology provides residents with the ability to own EVs (an option which may not have previously existed). This in turn contributes to environmental sustainability. Utilizing a sustainable energy source (ie. solar) to power the charging stations further contributes to environmental sustainability.	✓

PREFERENTIAL PARKING - CAR-SHARE

The provision of preferential parking spaces for car-share service vehicles is where visible priority is given to these services in the design and allocation of parking at transit facilities. The provision of car-share service parking spaces at transit stations has the opportunity to provide travelers additional transportation options to and from the stations. Car-share spaces are permitted at transit stations through agency partnerships with private companies like ZipCar and Car2Go. Car-share services are effective alternatives to personal automobile travel at transit stations with limited local transit connections and at terminal stations to extend service coverage[43].

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of a preferential parking at transit station for car-share service vehicles:

An Equitable and Accessible Transportation System
3. The transportation system provides a range of travel options.
5. Transportation infrastructure, services and technology are accessible to everyone.

A Comfortable, Convenient and Safe Journey
8. Travel by transit is reliable, seamless and well-coordinated with other modes.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Buffalo, New York, USA

In Buffalo, New York, car-share services have been found to be mutually beneficial with public transit through the co-locating of these two mobility services. Buffalo CarShare, a car share service in Buffalo, stated 59% of its members often combined their car-share trips with transit services and that 17% of its members take advantage of both services with every car-share vehicle use. The co-location of car-share services with transit stations provides increased mobility options for travelers which has the opportunity to shift travel behavior away from travel made by personal vehicle.[44] In 2011, Buffalo CarShare had approximately 400 members and reported that over 100 vehicles had already been taken off the road at that time.

Minneapolis-Saint Paul, Minnesota, USA

In Minneapolis-Saint Paul, Minnesota, the regional transit agency (Metro Transit) introduced car-share spaces for a local nonprofit car-sharing service (Hourcar) at their transit stations over ten years ago. In a survey completed in 2007, it was estimated that each Hourcar vehicle removed 2.5 vehicles from the streets of the Twin Cities[45]. The service's long-standing partnership with Metro Transit reached a milestone in 2015 when the fares for the two services were integrated onto a single transit card. The fare integration has encouraged multi-modal trips and has reduced barriers for car-share service use, resulting in a more seamless and coordinated transportation system. A spokesperson for Metro Transit attributes the provision of car-share parking at transit stations over the past 10 years as a foundational element for their partnership which has encouraged efforts for fare integration between the two services.[46] When combined with their transit service, Metro Transit promotes the car-sharing service as a viable alternative for travel to and from transit stations and provides transit rider with opportunities for extended service coverage.[47]

Greater Toronto and Hamilton Area (GTHA), Ontario, Canada

In 2014, Metrolinx announced a partnership with ZipCar to provide car-share vehicles at six of the agency's stations; this was expanded to 16 stations with car-share vehicles in 2015.[48] The presence of car-share vehicles at transit stations is increasing as Metrolinx and Zipcar partner to influence first and last mile travel behaviors and discover the benefits to the on-demand service as a viable mobility strategy.[49]

As benefits that can be attributed to car-sharing altogether, Zipcar has reported that each service vehicle in operation has the potential to remove up to 15 personal vehicles from the road and that up to 40 ZipCar service members are serviced by a single Zipcar vehicle. Zipcar has also reported that their members save up to $600 per month through reduced vehicle ownership and travel costs which demonstrates the affordability of car-share services in the GTHA and influences the attractiveness of personal vehicle ownership[50].

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal B: An Equitable and Accessible Transportation System			
3	The transportation system provides a range of travel options.	Providing car-share spaces at transit stations results in more travel options being provided to users.	✓
5	Transportation infrastructure, services and technology are accessible to everyone.	The case studies indicate that car-share members reported frequently combining car-share use with transit and that personal automobile ownership declined. Transit becomes more accessible to users by providing more transportation options (car-share). Providing more affordable travel options (car-share vs. vehicle ownership) results in a more accessible transportation system as well.	✓
Goal C: A Comfortable, Convenient and Safe Journey			
8	Travel by transit is reliable, seamless and well-coordinated with other modes.	Preferential parking at transit stations for car-share vehicles promotes a more seamless transfer between transit and car-share trips. In the Twin Cities case study, fare integration was a successful venture that demonstrated the synergies associated with well-coordinated car-sharing and transit services.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	With a reduction in single occupancy vehicle trips resulting from an uptake in car-share usage the transportation system has the ability to more efficiently move people and goods. Introducing car-share parking spaces at transit stations also allows the region to implement an innovative approach to meet its future needs.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Reducing single occupancy vehicle trips contributes to environmental sustainability. Providing additional transportation options for users creates a more resilient transportation system.	✓

PREFERENTIAL PARKING - CAR-POOL

The provision of preferential parking spaces for car-pool trips is where visible priority is given to this mode in the design and allocation of parking facilities corresponding to the access point of a transit station (i.e. closest to the main entrance). The provision of car-pool parking spaces has the opportunity to incentivize travelers to travel together on trips to and from transit stations and to reduce single-occupancy vehicle trips. An increase in carpooling increases the utility of transit station parking facilities and allows for more users to access transit stations by automobile.

Hypothesis

The following goals and objectives are anticipated to be met through the implementation of a preferential parking policy at transit stations for car-pool vehicles:

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

A Comfortable, Convenient and Safe Journey
8. Travel by transit is reliable, seamless and well-coordinated with other modes.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Metro Vancouver, British Columbia, Canada

In Metro Vancouver, British Columbia, regional park and ride facilities that provide commuters with transit connections offer priority parking and financial incentives to Translink commuters. For example, the Scott Road Skytrain Station and the South Surrey Park and Ride offer preferred parking for carpool vehicles and parking is provided free of charge for registered carpool vehicles.[51] Therefore, the affordability of transit trips will increase as carpoolers will save costs on parking fees as well as through the shared cost of vehicle travel for trips to and from transit stations. There is no data currently available to indicate the effect that Translink's carpool program has had on travel behaviour.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS		
OBJECTIVE	**OUTCOME**	
Goal A: Complete Communities		
1 The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Preferential parking and fair treatment for carpool vehicles increases the affordability of traveling to / from and parking at transit facilities, thereby increasing the competitiveness of transit services.	✓
Goal C: A Comfortable, Convenient and Safe Journey		
8 Travel by transit is reliable, seamless and well-coordinated with other modes.	Preferential parking for carpool vehicles supports regional initiatives (i.e. HOV lanes) to provide coordinated travel options for carpool vehicles.	✓
Goal D: A Sustainable and Competitive Region		
9 The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Encouraging more users to carpool to stations results in a for efficient transportation network, especially in scenarios where pricing mechanisms are implemented concurrently to present carpool as an affordable solution.	✓
10 The transportation system is designed for environmental sustainability and resilience.	Encouraging more users to carpool to stations results in reduced personal automobile usage which leads to greater environmental sustainability, especially in scenarios where pricing mechanisms are implemented concurrently.	✓

BICYCLE PARKING

Bicycle parking at stations refers to the provision of bicycle racks or secure storage to support transit users accessing transit stations by bicycle. They are generally intended to promote multimodal travel behavior, but they have a number of other distinct benefits such as land use efficiency, reduction in environmental impact when compared with vehicular parking and cost effectiveness, both for capital and operating costs. Bicycle parking facilities at transit stations are sometimes referred to as 'bike and ride' which is similar to the 'park and ride' concept.

Hypothesis

It is expected that bicycle parking would support the following draft RTP goals and objectives:

Complete Communities
1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

An Equitable and Accessible Transportation System
3. The transportation system provides a range of travel options.
5. Transportation infrastructure, services and technology are accessible to everyone.

A Comfortable, Convenient and Safe Journey
8. Travel by transit is reliable, seamless and well-coordinated with other modes.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Munich, Bavaria, Germany

Munich is the state capital of Bavaria and at the centre of the Munich Region, with 2.6 million residents spread over an area of some 5504km^2 and approximately half of these residents living in the city boundaries. In recent years, government and transit operators have made modest investments into bicycle parking with significant uptake. In 2009, it was estimated that 50,000 people were using bike and ride daily as an access method to train stations. In the wider region, investment has continued so that there are now 45,000 additional bike and ride parking spaces at a total of 96 train station in the region, suggesting that the daily figure would have increased significantly since this time. Within the immediate city area, 4,300 parking spaces exist and many are monitored by video surveillance.

Review of data associated with this expansion shows that bike and ride is 10 times more spatially efficient than park and ride. That is, that up to 10 bikes can be parked in the same area required for one car. The bicycle has been found to be most effective at increasing access to transit over distance of 3 to 5km. The 2009 study found that 35 % of bicycles were found to be left overnight and 20% of these overnight bicycles were used again by 10am the next day, demonstrating their effectiveness as a last mile solution to and from train stations for work purposes.

In recent years, the main local transit operator, the Münchener Verkehrsgesellschaft (MVG), has expanded into bike-share and created additional bicycle parking at many transit stations (train, tram, and bus). MVG now operates a bike-share system with bicycles that can be rented from 125 bike stations across the region. The capital cost of the system was estimated at €2.5M ($3.76M CAD) and has led to 50,000 registered customers. In February 2017, citing continued growth in the popularity of the bike-share system, the City resolved to increase the supply of bicycles by 2020 from 1,200 to 3,200 bicycles.

Other bicycle trends to emerge in the past 20 years include full-time supervised bike stations in which bikes can be stored, rented, and serviced. The typical cost of storing a bicycle in such a facility is around €0.7 ($1 CAD) per day or €4 ($6 CAD) per week.[52] [53] [54] [55]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Bicycle parking supports compact development at stations. Spatially, bicycle parking is up to 1000% more efficient than car parking.	✓
Goal B: An Equitable and Accessible Transportation System			
3	The transportation system provides a range of travel options.	Multimodal travel is supported by the introduction of bicycle parking.	✓
5	Transportation infrastructure, services and technology are accessible to everyone.	Providing bicycle parking at transit stations makes that mode of travel more accessible at those locations.	✓
Goal C: A Comfortable, Convenient and Safe Journey			
8	Travel by transit is reliable, seamless and well-coordinated with other modes.	Bicycle parking is very effective at increasing coordination between modes. Master planning helps to further realize these benefits by improving access routes to stations.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Bicycle parking is spatially efficient at moving people to and from stations.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Providing bicycle parking at transit stations encourages more users to use bicycles – an environmentally sustainable mode of transportation.	✓

EMERGING TECHNOLOGIES

SMART PARKING

"Smart parking" describes the use of parking spaces equipped with vehicle sensors and communications technology to provide real-time information on the usage of publicly-accessible parking. Such technology is currently being applied at major destinations in the region, such as shopping centres and transit stations, to display parking information on variable message signs. In other jurisdictions, parking sensors have been installed for on-street parking spaces and live information has been spread more widely to users via website and mobile device applications (apps).

Hypothesis

The following goals and objectives are anticipated to be met by implementing policies based on this trend:

An Equitable and Accessible Transportation System
5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region
9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Westminster, UK

Smart parking technology has been piloted in several locations, including the City of Westminster, UK, where average city-wide parking occupancy often exceeds 70%.[56] In October 2014, the Westminster pilot was launched through the activation of sensors which had been installed in 3,400 parking spaces. Real-time information on parking space occupancy was disseminated through the City's app, made available to third-party app developers, and logged for future parking management and planning. A subsequent, on-going pilot is building on the network of sensors by issuing RFID permits for the users of reserved accessibility spaces.[57] The sensors detect the RFID permits when authorized vehicles park in these spaces, and alert parking enforcement officers if a non-permitted vehicle enters the space.

To date, evidence suggests that providing users with real-time parking availability information does not have a significant impact on shifting users from high-demand areas to low-demand areas.[58] While the application of smart parking systems provides significant increases in information for planning purposes[56], and may help users locate parking easier and faster at their destination, it does not appear to shift demand spatially to use available parking more efficiently.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Improves information and ease of access to available parking – however, does not increase the actual amount of available parking.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Enables better planning, management, and enforcement of parking supply.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Parking demand in congested areas is not impacted, resulting in no anticipated reduction to vehicle emissions or congestion.	✘

MOBILE PAYMENT

Mobile payment allows parking users to pay for parking via a mobile application. Mobile payment has been implemented within the GTHA and in many other jurisdictions. Mobile payment parking apps are developed by specific parking authorities or by third parties that partner with multiple facility managers, and are intended to improve convenience and save time for parking users. The apps are often designed to notify users when their session has almost ended and allow the session to be extended remotely, or to allow users to stop their parking session whenever desired. In both cases, this removes the need for users to return to their vehicle to "top up the meter." Although not necessary to enable mobile payment, in some cases, the same apps developed can also provide information to users on parking availability and pricing across an area or period of time, based on live or historical data.

Hypothesis

The following goals and objectives are anticipated to be met by implementing policies based on this trend:

> *A Sustainable and Competitive Region*
> 9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.

Case Study

Toronto, Ontario, Canada

Mobile payment has been introduced in numerous locations, including the City of Toronto and other Ontario municipalities outside the GTHA. In Toronto, the Green P mobile payment app was introduced for municipal parking lots in the spring of 2015. A little over a year later, the app was being used for 25% of payments in municipal lots.[59] In the fall of 2016, support for the app was extended to enable its use for on-street parking as well. The Green P app is highly rated by its users, suggesting it has a positive impact on their experience.

User experiences have differed with mobile payment apps in other jurisdictions, suggesting that functionality of the app is highly important. However, usage of mobile payment parking apps is, in general, increasing steadily as a result of positive reception amongst users.[60]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Mobile payment has been quickly adopted by users where available and, in general, appears to improve convenience and reduce time for parking – benefits to user experience and manager operations are context-specific.	✓

DEMAND-RESPONSIVE PRICING

Demand-responsive pricing uses historical information on parking occupancy and availability to set the price of parking for a given street or area, at a given time of day, such that the parking supply is optimally used. The intention being that parking spaces are mostly full, with some availability maintained for arriving users. By increasing the cost of parking in high-demand areas and times, this approach to parking pricing is intended to shift users towards lower-demand areas and times, improving the ease of finding parking and reducing the extra congestion and emissions created by automobile users looking for parking. Demand-responsive parking is not necessarily a net-zero approach (i.e. price increases on one street do not necessarily coincide with price reductions elsewhere). However, by also reducing the costs of parking in low-demand areas, accessibility of nearby destinations is improved and the overall use of demand-responsive pricing can receive greater public support.[61]

Hypothesis

The following goals and objectives are anticipated to be met by implementing policies based on this trend:

> *An Equitable and Accessible Transportation System*
> 5. Transportation infrastructure, services and technology are accessible to everyone.
>
> *A Sustainable and Competitive Region*
> 9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

San Francisco, California, USA

The SF*park* pilot project in San Francisco, California, from 2011 to 2013 was an early example of demand-based pricing in North America. The project was funded through the United States Department of Transportation's Value Pricing Pilot Program. The project was led by the San Francisco Metropolitan Transportation Authority (SFMTA), which initiated the work in 2008. Smart parking sensors and new parking meters were installed between 2008 and 2010, demand-based pricing was implemented in the pilot areas in 2011, and an evaluation of the pilot performance was published in 2014, based on the first two years of data.[62] Concurrent evaluations were conducted by independent researchers during the pilot period, and further research has been supported by the public release of all SF*park* data. The SF*park* evaluation determined the pilot an overall success and, as a result, the use of parking sensors and demand-based pricing has continued in the pilot areas and are recommended for expansion.

The SF*park* pilot project established a goal of setting the price of parking as low as possible while still achieving target occupancy of 60-80%.[63] Prices were adjusted every six weeks, and were increased for zones where occupancy exceeded the target and vice versa. Prices were capped at a maximum of $6 per hour and a minimum of $0.25 per hour (all figures in USD). Demand-based pricing was applied to 6,000 on-street spaces and 12,250 off-street spaces within seven designated parking management areas.[63] Two additional areas were monitored as control areas. Live information on parking availability and pricing within the pilot areas was made available through a public website and the SF*park* app.

Overall, the evaluation conducted by the SMFTA indicates that the SF*park* pilot project was successful in achieving many anticipated impacts. The pilot improved parking availability by reducing the amount of time that street blocks were full or almost full (90-100% occupancy).[63] An analysis of individual price adjustments showed that two-thirds of the time, a price adjustment improved the occupancy rate on under- and over-occupied blocks.[61] It was also found that looking for parking took less time (a 43% decrease, compared with 13% in control areas) and generated less vehicle kilometres travelled and vehicle emissions (a 30% decrease compared with 6%).[63]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Parking occupancy rates are improved in both under- and over-occupied locations, suggesting accessibility (both economic and physical) is improved overall.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Due to the implementation of innovative technology and pricing, automobile users are able to travel in reduced time and with greater reliability.	✓
10	The transportation system is designed for environmental sustainability and resilience.	Vehicle emissions are reduced as a result of decreased distance travelled to find parking.	✓

PEER-TO-PEER PARKING

Widespread use of smartphones and other mobile devices, and increasing participation in the "Sharing Economy", have led to the emergence of numerous apps for peer-to-peer parking arrangements. These apps allow residents to list their available, private parking space (such as a portion of a driveway) for other users to rent, either on-demand or for an established period of time (e.g. monthly).

Peer-to-peer parking services have emerged in many jurisdictions and are popular amongst their users, but they have also met opposition from some municipal parking managers and planning staff. Users view the apps positively because the apps can make it easier to locate parking near their destination, often at a lower cost than commercial lots or public parking. However, opponents suggest that usage of the apps will attract unwanted traffic to local streets, and may imply that a private driveway is being used as a commercial parking lot (in contradiction to zoning bylaws). Additionally, it may be suggested that these apps enable parking to be used more efficiently, reducing the overall need for parking in an area, however, their use may also reduce the control that local planning authorities can exert over parking supply and has potential to counteract transportation demand management efforts, unless properly regulated.

A subgroup of peer-to-peer parking apps enable users to "sell" access to a public parking space they are about to vacate to another nearby user in search of parking. However, these apps tend to directly contravene municipal regulations and have been quickly banned in most locations where they have been introduced.

Hypothesis

The following goals and objectives are anticipated to be met by implementing policies based on this trend:

> *Complete Communities*
> 1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.
>
> *An Equitable and Accessible Transportation System*
> 5. Transportation infrastructure, services and technology are accessible to everyone.
>
> *A Sustainable and Competitive Region*
> 9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
> 10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Toronto, Ontario, Canada

Peer-to-peer parking services have emerged worldwide, including in Toronto with Rover Parking and other similar apps. Rover is popular amongst its users but has not received consistent public support. When asked about the potential to work with such services, the early response from municipal planning staff was "It's not legal. So I don't think we could enter a discussion about it."[64] Perhaps because of this stance, which is based on by-laws that preceded the emergence of mobile technology and peer-to-peer parking services, there is a lack of information available to planners on the extent of use and impacts of peer-to-peer parking in Toronto.

The approach by local planning authorities on this matter varies around the world. In many cases, authorities are consistent with the City of Toronto, in others, peer-to-peer parking has been allowed entirely or allowed so long as no nuisance issues arise.

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	Peer-to-peer parking has the potential to increase the usage of existing parking infrastructure, enabling the overall supply to be reduced, dependent on coordination between peer-to-peer parking service providers and transportation planners; without effective coordination, peer-to-peer parking may counteract TDM measures related to parking supply and management.	○
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	Peer-to-peer parking can improve access to parking where supply is limited.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	See Objective 1 note	○
10	The transportation system is designed for environmental sustainability and resilience.	See Objective 1 note	○

AUTONOMOUS VEHICLE PARKING

As car manufacturers and technology companies continue to develop autonomous vehicles (AVs), governments around the world are working to advance policy and regulation that address automated vehicle adoption. While Level 5 (fully automated) vehicles are not expected to be ubiquitous for at least a decade or more, the impacts of driverless technology on parking are beginning to emerge today.

Autonomous vehicles will have implications on how and where parking is required, supplied, and used. Specifically, autonomous vehicles could impact the following:

- Demand for parking supply – The demand for parking will largely depend upon what model of vehicle ownership prevails in the future (that is, the degree to which vehicle and ride sharing does or does not occur). If private vehicle ownership largely persists, the number of vehicles and demand for parking per capita may be largely unchanged. On the other hand, if vehicle and ride sharing increase (and private vehicle ownership decreases), parking demand may decrease.
- Location of parking facilities – Irrespective of how many people have their own AV, the location of parking could be relocated due to AVs' ability to drive themselves to parking locations after their intended use. Costs could be lowered by providing parking structures off-site or dispersing AVs along on-street parking when traffic levels permit it. It is noteworthy that if AV sharing is adopted without a sufficient portion of ride sharing, overall vehicle kilometres travelled per capita is likely to increase as a result of the new distances travelled by AVs deadheading to remote parking.
- Pick-up/Drop-off locations – While on-site parking will no longer be required, more pick-up/drop-off access will be needed.
- Design of parking facilities – AVs will be able to park themselves much closer together as a result of more precise maneuvering ability and no longer requiring vehicle doors to be accessible while parked, allowing for more vehicles to be stored in a smaller area. Other design standards, such as ceiling heights and the number of stairwells and elevators may also be able to be reduced in parking structures.

In combination, these factors could result in increased or excess capacity at existing parking structures. Driverless vehicles are also expected to impact the traffic in and around parking lots/spaces since the vehicles will no longer have to circulate to find parking (the vehicle will likely be informed to travel directly to available parking).

Hypothesis

The following goals and objectives are anticipated to be met by implementing policies based on this trend:

Complete Communities

1. The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.

An Equitable and Accessible Transportation System

5. Transportation infrastructure, services and technology are accessible to everyone.

A Sustainable and Competitive Region

9. The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.
10. The transportation system is designed for environmental sustainability and resilience.

Case Study

Somerville, Massachusetts, USA

Vehicles capable of fully autonomous parking are not yet available to the general public and, as a result, the impacts of this technology are still subject to speculation. An early adoption project is planned in Somerville, outside Boston, MA, for implementation in 2018. This project will combine the provision of a

local vehicle sharing service (equipped with autonomous parking) with innovative parking facility design and features to reduce the number of parking spaces and area per space required.[65] These technologies are estimated to have the potential to reduce the required area for parking by approximately 60%, with full adoption of autonomous vehicles, and initially by 25%, with a mixed fleet.[66]

Given the uncertainty of the exact timeline and impacts of AV adoption, increased focus is being placed on planning for adaptability. For example, while it is unclear exactly how much parking will be required in the future, it is expected that AV usage will decrease the need for concentrated parking around major destinations. In response to this, it is suggested that planning authorities should provide incentives for new parking structures to be designed for conversion (in part or in whole) to other uses later in their lifecycle.[67] [68]

Result

The following table summarizes the relation of the case study evaluation to the region's updated goals and objectives:

RESULTS			
OBJECTIVE		**OUTCOME**	
Goal A: Complete Communities			
1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	AV use may reduce the overall amount of parking required, in support of this objective, or may simply enable parking to be provided off-site and more dispersed – at least some benefit is likely due to the reduced area per parked vehicle that will be required.	✓
Goal B: An Equitable and Accessible Transportation System			
5	Transportation infrastructure, services and technology are accessible to everyone.	AVs are likely to reduce the need for concentrated parking around transit stations, which currently creates a barrier to access.	✓
Goal D: A Sustainable and Competitive Region			
9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.	Benefits to efficiency from reductions in the resources required to meet parking demand may be counteracted by increased VKTs from vehicles deadheading to offsite parking.	○
10	The transportation system is designed for environmental sustainability and resilience.	Benefits to environmental sustainability from reductions in the resources required to meet parking demand may be counteracted by increased VKTs from vehicles deadheading to offsite parking.	○

4 RESULTS MATRIX

In reviewing the findings, it should be noted that support for each of the draft objectives was not quantified. While one trend may support several objectives to a small extent, another trend may have a transformational impact on just one objective. As such, this information should be used to understand how the trends relate to the draft goals and objectives, and not weigh the performance of a single trend against that of another.

The findings of this trend evaluation are summarized in a single matrix below according to the hypotheses chosen and reported benefits, as categorized by the draft goals and objectives.

					New Development Parking (Commercial/Residential)								Employer Parking Strategies		Transit Station Parking					Emerging Technologies				
					Parking Minimums	Parking Maximums	Unbundled Parking	Shared Parking	Electric Vehicle Parking	Car-share Parking	Bicycle Parking	Stormwater Charge	Parking Cash-out	Workplace Parking Levy	Charging for Parking	Preferential Parking (EVs)	Preferential Parking (Car-share)	Preferential Parking (Car-pool)	Bicycle Parking	Smart Parking	Mobile Payment	Demand Responsive Pricing	Peer-to-peer Parking	AV Technology
Goals & Objectives	A	Complete Communities	1	The transportation system is congruous with compact development, making walking, cycling and transit competitive for more trips.	✓	✓	✓	✓		✓	✓	○	✓	✓	○			✓	✓				○	✓
			2	Coordinated planning for transportation and land use reduces travel distances.	○	○																		
			3	The transportation system is reliable and provides a range of travel options.									✓	✓			✓		✓					
	B	An Equitable and Accessible Transportation System	4	Transit provides good connectivity to jobs, services and other destinations, including for those who rely on it most.										✓										
			5	Transportation infrastructure, services and technology are accessible to everyone.	✓	✓			✓	✓	✓		✓	○	○		✓		✓	✓		✓	✓	✓
			6	Transit offers an attractive, high-quality user experience.										✓	✓									
	C	A Comfortable, Convenient and Safe Journey	7	The transportation system is designed to be safe for all users.																				
			8	The transportation system is reliable, seamless and well-coordinated with other modes.									○	✓			✓	✓	✓					
	D	A Sustainable and Competitive Region	9	The transportation system efficiently moves people and goods, and is able to meet the current and future needs of the region as a result of ongoing maintenance, expansion and innovation.					✓	✓	✓	✓	✓		✓	✗	✓	✓	✓	✓	✓	✓	○	○
			10	The transportation system is designed for environmental sustainability and resilience.	✓	✓	✓	✓	○	✓	✓	✓	✓	✓	○	✓	✓	✓	✓	✗		✓	○	○

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Metrolinx

Regional Parking Policy - State of Practice Review

APPENDIX B

Municipal Scan Memo

November 2017
Project No. 161-54669-07

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STUDY BACKGROUND

In 2008, the Regional Transportation Master Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA), The Big Move, was adopted. The plan set out a common vision for transportation in the region and included a number of measures as targets (such as a shifting mode-share and increasing accessibility), for the 25-year time span. The vision in the RTP was accompanied by a number of strategies that included priority actions and supporting policies. These strategies encompassed a variety of areas of interest, several of which related to parking. In 2016, Metrolinx began a full review of the RTP, as mandated by the Metrolinx Act. The review has led to the creation of a Draft 2041 RTP, now out for consultation. This study informed the recommendations included in the Draft 2041 Plan.

The purpose of this study is to provide Metrolinx with off-street parking related policy recommendations to include in the RTP update. The following list of emerging off-street parking practices were included in this study:

3.1 New Development Parking (Commercial / Residential):
- → Parking Minimum Exemptions
- → Parking Maximums
- → Unbundled Parking
- → Shared Parking
- → Electric Vehicle (EV) Parking
- → Car-Share Parking
- → Bicycle Parking
- → Stormwater Charges

3.2 Employer Parking Strategies:
- → Parking Cash-Out
- → Workplace Parking Levy

3.3 Transit Station Parking:
- → Charging For Parking
- → Preferential Parking (EVs)
- → Preferential Parking (Car-Share)
- → Preferential Parking (Car-Pool)
- → Bicycle Parking

3.4 Emerging Technologies:
- → Smart Parking
- → Mobile Payment
- → Demand Responsive Parking
- → Peer-to-peer Parking
- → Autonomous Vehicle (AV) Parking

APPROACH

To gain an understanding of the state of practice for parking in the region, a municipal scan of parking regulations, policies and practices was conducted for each local and regional municipality in the GTHA. The intent of the municipal scan was to determine the extent, if any, that municipalities and transit authorities have implemented each of the previously identified parking trends.

Where applicable, each municipality was assessed according to its current regulation, policy and demonstrated practice for new development parking (commercial / residential), employer parking strategies, transit station parking and applications of emerging technologies. For new development parking practices, zoning by-laws, provincial building code requirements and municipal green standards were reviewed to evaluate the implementation level of local regulations and local official plans and local / regional transportation master plans were reviewed to represent policy coverage.

For employer parking strategies, existing provincial and municipal legislation was evaluated and local official plans and local / regional transportation master plans were reviewed to represent policy coverage.

For transit station parking practices, local and regional transit authorities were studied to assess the current state of practice, and local official plans and local / regional transportation master plans were reviewed to represent policy coverage.

To assess the application of emerging technologies, this assignment focused on municipal paid-parking facilities and associated local and regional plans for smart parking, mobile payment and demand responsive parking practices. For peer-to-peer parking practices and autonomous vehicle technologies,

zoning by-laws and green standards were reviewed to evaluate current levels of regulatory implementation and local official plans and local / regional transportation master plans were reviewed to assess local policy coverage.

For local municipalities, only local official plans and transportation master plans were reviewed as the representative policy documents for each local municipality. In the cases where no transportation master plans have been developed at the local level, regional transportation master plans were included in the review. For all regional municipalities, only regional official plans and regional transportation master plans were reviewed. Due to scope restrictions for this study, additional policy documents such as local parking policies or secondary plans were not included within this jurisdictional scan.

All resources included in this exercise are publically available documents and have been cited within each section. The findings from this jurisdictional scan have been reviewed by representatives from each corresponding local and regional municipality during municipal interviews.

To score the level of implementation at the local level, a scalar evaluation was conducted using three colours (green, yellow and red) to depict a high, low and zero level of implementation. In circumstances where either the regulations or policy documents consulted resulted in a yellow (mid-range) score, a brief explanation was included to support the assessment. Where no transit or transitway stations with parking were found within municipal boundaries, the assessment was deemed not applicable and the local municipality was exempt from the transit station parking component of the evaluation. Where no municipal paid-parking facilities were found within municipal boundaries, the assessment was deemed not applicable and the local municipality was exempt from the smart parking, mobile payment and demand responsive parking components of the emerging technologies evaluation.

The scoring rationale used for regulations and policies is included in the following table.

Scoring Rationale

TRENDS	REGULATIONS (●)	POLICIES (■)
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)		
Parking Minimum Exemptions Parking Maximums Unbundled Parking Shared Parking Electric Vehicle (EV) Parking Car-share Parking Bicycle Parking	**Green:** Trend is implemented in at least one policy area for both commercial and residential uses. **Yellow:** Trend is implemented for either commercial or residential uses, not both. **Red:** No regulatory requirements	**Green:** Local or regional policies state trend will either be implemented or is a common practice in least one policy area. **Yellow:** Local or regional policies state consideration for trend, encouragement of the trend or a recommendation to study the trend's feasibility. **Red:** No policies
Stormwater Charges	**Green:** Stormwater charge is calculated based on impervious surface area on site-by-site basis. **Yellow:** Stormwater charge is delivered as a flat rate fee based on property type. **Red:** No stormwater charge	**Green:** Local or regional policies state the inclusion of the stormwater charge as a funding mechanism based on calculated impervious surface area (site-by-site basis) **Yellow:** Local or regional policies state consideration for a stormwater charge or recommendation for practice to be studied further as a funding mechanism. **Red:** No policies
EMPLOYER PARKING STRATEGIES		
Parking Cash-Out Workplace Parking Levy	**Green:** Trend is a mandated practice. **Yellow:** Not applicable **Red:** No regulatory requirements	**Green:** Local or regional policies state trend is a common practice in at least one policy area. **Yellow:** Local or regional policies state consideration for trend, encouragement of the trend or recommendation for study. **Red:** No policies
TRANSIT STATION PARKING		
Charging for Parking Preferential Parking (EVs) Preferential Parking (Car-share) Preferential Parking (Car-pool) Bicycle Parking	**Green:*** Trend is implemented at both local and regional transit station facilities in at least one transit station lot per agency. **Yellow:*** Trend is implemented at either a local or regional transit station facility. **Red:** Not a current practice *If there are no transit station parking lots operated by local transit, scoring only applies to regional transit stations.	**Green:*** Local policies state commitment to require practice at all major transit station facilities. **Yellow:*** Local or regional policies state consideration for the practice, encouragement of the trend or recommendation for practice to be studied further at either a local and regional transit station facilities. **Red:** No policies *If there are no transit station parking lots operated by local transit, scoring only applies to regional transit stations.
EMERGING TECHNOLOGIES		
Smart Parking Mobile Payment Demand Responsive Parking	**Green:** Trend is implemented in a least one municipally-owned parking facility **Yellow:** Not applicable **Red:** Smart parking is not a current practice.	**Green:** Local or regional policies state commitment to incorporate trend in municipal parking practices. **Yellow:** Local or regional policies state consideration for trend, encouragement of the trend or recommendation for trend to be studied further. **Red:** No policies
Peer-to-peer Parking Autonomous Vehicle (AV) Parking	**Green:** Trend is a regulated practice. **Yellow:** Not applicable **Red:** No regulatory requirements	**Green:** Local or regional policies state commitment to incorporate trend into municipal parking regulations. **Yellow:** Local or regional policies state consideration for trend or recommendation for trend to be studied further. **Red:** No policies

JURISDICTIONAL SCAN

The results of this jurisdictional scan for the GTHA are alphabetically presented in the following sections.

Local Municipalities

Town of Ajax

Durham Region

Zoning By-law

Town of Ajax, No. 95-2003, Zoning By-law, March 31, 2014

- Section 5: Parking, Loading and Queuing Requirements

Policies

Town of Ajax, Official Plan, January 15, 2016

Town of Ajax, Transportation Master Plan Update, February 2013

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** Maximum parking requirements for both residential and non-residential uses in the downtown area central zone in zoning by-law (5.10.1) **Policies** For developments adjacent to rapid transit corridors, the town shall establish parking maximum standards. (OP – 2016, 4.2.7)	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** No regulatory requirements **Policies** When peak parking demands do not conflict, the town shall encourage shared parking facilities for adjacent properties. (OP – 2016, 4.2.7) Central parking is encouraged to concentrate the supply in the town's downtown area. (TMP – 2013, 6.2.3) Yellow symbol to reflect policy being encouraged not required.	●	■
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements	●	■

	Policies No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** The town shall encourage the incorporation of bicycle parking and other end of trip bicycle facilities be provided by all new developments. (OP – 2016, 4.2.7) Yellow symbol to reflect policy being encouraged not required.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** To support approaches that quantify the cost of free parking, the town shall encourage employers to consider providing cash equivalents to employees in lieu of free parking. (OP – 2016, 4.2.7) Yellow symbol to reflect policy being encouraged not required.		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Ajax GO Station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** It is recommended that the city advocate for paid parking for all spaces at train stations to manage demand for parking. (TMP – 2013, 6.4.1) Yellow symbol to reflect policy being recommended not required.		
Preferential Parking (EVs)	**Current Practice** Parking for EV vehicles is provided at the Ajax GO station for transit users. **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** One Zipcar vehicle is available at the Ajax GO station. **Policies** No policies		

Preferential Parking (Car-pool)	**Current Practice** Preferential parking for car-pool vehicles is provided at the Ajax GO station for eligible users. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Ajax GO station. No bicycle storage is available. **Policies** Secure bicycle parking at train stations is recommended as a transit-supportive measure. (TMP – 2013, 6.4.1) Yellow symbol to reflect policy being recommended without a plan for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

Town of Aurora

York Region

Zoning By-law

Town of Aurora, No. 01-88, Comprehensive Zoning By-law, January 1, 2015

- Section 6.26: Parking Space Requirements

Policies

Town of Aurora, Official Plan, September 2010

The Regional Municipality of York, Transportation Master Plan, November 2016

Stormwater Charge

Town of Aurora, 2017 Aurora Water Rate Information, Retrieved from: https://www.auroragov.org/residents/water/pay_my_bill/rates/

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** Parking management policies that reduce parking minimums shall be incorporated for new developments (OP – 2010, 4.2.h)		
Parking Maximums	**Regulations** No regulatory requirements **Policies** Parking management policies that reduce parking maximums shall be incorporated for new developments (OP – 2010, 4.2.h)		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** Parking management policies that include shared parking requirements where appropriate shall be incorporated for new developments (OP – 2010, 4.2.h) In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (York TMP – 2016, 4.3.4)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (York TMP – 2016, 8.4.1)		
Car-share Parking	**Regulations** No regulatory requirements **Policies** Parking management policies that include spaces for car-share vehicles shall be incorporated for new developments (OP – 2010, 4.2.h) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (York TMP – 2016, 4.3.4)		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (York TMP – 2016, 4.3.4)		

Stormwater Charges	**Regulations** A charge per sq.ft is required for commercial properties and a flat rate for residential properties. Yellow symbol given as a result of stormwater fee not calculated based on impervious surface area. **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (York TMP – 2016, 8.4.2) Yellow symbol given as a result of the region's policy to study fees not implement them.		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Aurora GO Station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Two EV parking spaces are provided at the Aurora GO station. **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at GO station **Policies** The region acknowledges that the provision of dedicated car-share parking at transit stations can support their use. (York TMP – 2016, 4.3.2) Yellow symbol given as a result of car-share services being acknowledged without a policy for implementation.		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking spaces are provided for eligible car-pool users at the Aurora GO station. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Aurora GO station. No bicycle storage is available. **Policies** The region recognizes that bicycle parking at transit stations will make cycling a more competitive travel mode for first and last mile connections. (York TMP – 2016, 4.3.2) Yellow symbol given as a result of bicycle parking being acknowledged without a policy for implementation.		

EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (York TMP – 2016, 5.0)	●	■

City of Brampton

Peel Region

Zoning By-law

City of Brampton, No. 270-2004, Zoning By-Law (as amended), 2004

- Section 10.0 General Provisions for Residential Zones
- Section 20.0 General Provisions for Commercial Zones

Policies

City of Brampton, Official Plan, Consolidated September 2015 (a)

City of Brampton, Transportation Master Plan Update, September 2015 (b)

Municipal Parking Facilities

City of Brampton, Municipal Parking Garages, Retrieved from http://www.brampton.ca/EN/residents/Parking/Pages/municipal-parking-garages.aspx

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** The reduction or removal of minimums to have zero parking requirements is recommended to be mandatory in areas near transit nodes to control auto-oriented mode decisions. (TMP – 2015b, 10.2)	●	■

Parking Maximums	**Regulations** No regulatory requirements **Policies** To promote transit-oriented design in mixed-use development, the city will consider lower parking requirements. (OP – 2015a, 4.11.3.4.5) The implementation of parking maximums is recommended to be mandatory in transit nodes to control auto-oriented mode decisions. (TMP – 2015b, 10.2)		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** For developments in areas serviced frequent transit, parking should be unbundled from the costs associated with the construction costs of a unit. (TMP – 2015b, 10.1.2)		
Shared Parking	**Regulations** Shared parking requirements are present in city's zoning by-law for mixed-use developments in commercial zones. (20.3.2.1.c) **Policies** The city shall encourage the efficient use of parking facilities through shared parking provisions. (OP – 2015a, 4.5.5.4)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** Considerations for electric vehicle should be made, including the provision of charging infrastructure, to support lower emission travel. (TMP – 2015b, 12.3.4) Yellow symbol given to reflect consideration of policy.		
Car-share Parking	**Regulations** No regulatory requirements **Policies** Car-share parking is included as a transportation demand management incentive program that the city could implement. (TMP – 2015b, 10.1.7) Yellow symbol given to reflect policy being only considered of policy.		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Secure bicycle parking at employment nodes shall be encouraged by the city. (OP – 2015a, 4.5.6.12) Sufficient end of trip cycling facilities, including bicycle parking, shall be provided to provide active modes of transportation to travel to work. (TMP – 2015b, 10.1.1) Yellow symbol given to reflect policy applicable only to employment uses, not residential.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		

Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (3 GO Transit Stations)			
Charging for Parking	**Current Practice** Free and reserved parking is available to transit users at the Bramalea GO, Brampton GO and Mount Pleasant GO stations. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Brampton's GO stations **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** One Zipcar is available to users at the Brampton GO station. **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Car-pool spaces are provided at the Bramalea GO, Brampton GO and Mount Pleasant GO stations for eligible users. **Policies** Registered car-pool members should have prioritized parking available at transit stations. (TMP – 2015b, 10.1.2)		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Bramalea GO, Brampton GO and Mount Pleasant GO stations. No bicycle storage is available. **Policies** Secure bicycle parking at transit transfer stations shall be encouraged by the city. (OP – 2015a, 4.5.6.12) Secure and plentiful bicycle parking at station entrances with additional cycling amenities at high volume locations should be encouraged to the maximum extent possible. (TMP – 2015b, 8.3.1) Yellow symbol given to reflect policy encouragement of practice not policy for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		
Mobile Payment	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		
Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		

Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Township of Brock
Durham Region

Zoning By-law
Township of Brock, No. 287-78-PL, Comprehensive Zoning By-law, April 2016

- Section 10 – General Provisions

Policies
Township of Brock, Official Plan, Consolidated July 2014
Regional Municipality of Durham, Transportation Master Plan, Consolidated November 2005

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■

Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Bicycle Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies	●	■
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No regulatory requirements **Policies** No policies	●	■
Workplace Parking Levy	**Regulations** No regulatory requirements **Policies** No policies	●	■
TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots	●	■
Preferential Parking (EVs)	No transit station parking lots	●	■
Preferential Parking (Car-share)	No transit station parking lots	●	■
Preferential Parking (Car-pool)	No transit station parking lots	●	■
Bicycle Parking	No transit station parking lots	●	■
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■

Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

City of Burlington

Halton Region

Zoning By-law

City of Burlington, No. 2020, Comprehensive Zoning By-law Part 1, December 2015

- Section 2.25 – Off-street Parking and Loading Requirements
- Section 2.26 – General Parking Provisions

Policies

City of Burlington, Official Plan, Office Consolidation July 2015

- Part II: Functional Policies
- Part III: Land Use Policies – Urban Planning Area

City of Burlington, City of Burlington Downtown Urban Design Guidelines, October 10, 2006

- Section 4.5: Surface Parking Lot Design

Halton Region, The Road to Change – Halton Region Transportation Master Plan, September 2011

Municipal Parking Facilities

City of Burlington, Parking in Burlington, Retrieved from: http://www.tourismburlington.com/travel-tips/getting-here/parking/

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** Exceptions for land uses other than residential are made for properties within the "Downtown Parking Exemption Area" whereby no parking requirements are cited in the zoning by-law. (2.25 / 2.26) Yellow symbol given as a result of minimum exemptions for only commercial uses and not for residential uses **Policies** Functional policy stating no on-site parking is required for non-residential land uses in the Downtown Core. (OP – 2015, Part III, 5.5.8.2) Yellow symbol given to reflect parking minimums being removed only for non-residential uses in the specified area.	●	■

Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** Functional policy for zoning regulation in Mixed Use Corridors states that off-street parking requirements may be reduced on sites that are accompanied by transit-supportive designs or shared parking arrangements. (OP – 2015, Part III, 5.3.2) Functional policy for reduced and shared parking in Mixed Use Centres states that reduced or shared parking may be permitted in this areas to reflect increased density and transit accessibility, subject to the evaluation and approval by the City. (OP – 2015, Part III, 5.4.2) Shared parking between adjacent properties should be designed to minimize parking in the downtown area. (Design Guidelines – 2006, 4.5.5)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** The city's zoning by-law outlines requirements for bicycle parking in office, retail and service commercial uses (2.26 (10)) Yellow symbol given as a result of bicycle parking requirements for only commercial uses, not residential. **Policies** Functional policy for bicycle systems states that provisions will be made for cyclists in the development of land through the inclusion of bicycle facilities (i.e. appropriate paving material or bicycle parking areas). (OP – 2015, Part III, 5.6.3) Yellow symbol given to reflect no details on where or how policy will be implemented.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES (3 GO Transit Stations)			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		

Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (3 GO Transit Stations)			
Charging for Parking	**Current Practice** The Burlington GO, Aldershot GO and Appleby GO station parking facilities provide users with free and reserved parking. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Two EV parking spaces are available at Burlington GO Station. **Policies** No policies		
Preferential Parking (Car-Share)	**Current Practice** Two Zipcar vehicles are available at the Burlington GO station. **Policies** No policies		
Preferential Parking (Car-Pool)	**Current Practice** Car-pool parking is offered at the Burlington GO and Aldershot GO stations for eligible permit holders. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the all of Burlington's GO stations. Bicycle storage is available at the Burlington GO station for registered customers. **Policies** Functional policy for cycling integration with transit states that the integration of cycling and transit modes shall be encouraged by requiring adequate and secure bicycle parking at major transit stops, terminals and stations. (OP – 2015, Part II, 3.5.2)		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		
Mobile Payment	**Current Practice** Mobile payment available through TELEPARK. **Policies** No policies		
Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		

Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Town of Caledon
Peel Region

Zoning By-law
Town of Caledon, No. 2006-50, Zoning By-law, March 14, 2016

- Section 5 – Parking, Loading and Delivery Standards

Policies
Town of Caledon, Official Plan, Consolidated November 2016
Region of Peel, Long Range Transportation Plan, 2012

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** No regulatory requirements **Policies** Shared parking to discourage single occupant vehicle travel shall be encouraged. (OP – 2016, 7.14.10.16) Yellow symbol given to reflect no details on where or how policy will be implemented.	●	■

Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** Where possible, electric vehicle support infrastructure shall be supported. (OP – 2016, 7.14.11.4) Yellow symbol given to reflect no details on where or how policy will be implemented.		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** The provision of end of trip facilities, such as bicycle parking, to discourage single occupant vehicle travel shall be encouraged. (OP – 2016, 7.14.10.16) Yellow symbol given to reflect no details on where or how policy will be implemented.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots		
Preferential Parking (EVs)	No transit station parking lots		
Preferential Parking (Car-share)	No transit station parking lots		
Preferential Parking (Car-pool)	No transit station park&ride		
Bicycle Parking	No transit station parking lots		

EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Municipality of Clarington

Durham Region

Zoning By-law

Municipality of Clarington, No. 84-63, Zoning By-law, November 2015

- Section 3 – General Zone Provisions

Municipal Parking Facilities

Municipality of Clarington, Parking, Retrieved from: http://www.clarington.net/en/live-here/parking.asp

Policies

Municipality of Clarington, Official Plan, July 2017

Municipality of Clarington, Clarington Transportation Master Plan – November 2016

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** Non-residential uses exempt from parking space requirements in the historic Bowmanville (16.5.34, C1-34 zone) Yellow symbol given to reflect exemptions only applying to non-residential uses **Policies** Allows reduced parking requirements in historic downtowns (OPA 2017 - 19.6.29 f) Yellow symbol given to reflect possible exemption, not requirement	●	■

Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** Reduced parking requirements allowed when shared parking areas have appropriate laneways or cross-access easements and when lane uses have off-setting periods (OPA 2017 - 19.6.29 d,e)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** New developments shall consider zero emissions vehicles through preferential parking or reduced parking rates (OPA 2017 - 19.6.28 e) Yellow symbol given as a result of consideration for trend		
Car-share Parking	**Regulations** New developments shall consider car-share vehicles through preferential parking or reduced parking rates (OPA 2017 - 19.6.28 e) Yellow symbol given as a result of consideration for trend **Policies** No policies		
Bicycle Parking	**Regulations** Bicycle parking requirements in commercial areas. (3.16.L) Yellow symbol given as a result of bicycle parking requirements only for commercial uses, not residential **Policies** Bike parking and storage facilities required as a condition of approval of development applications (OPA 2017 – 19.5.4 h)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		

TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots	●	■
Preferential Parking (EVs)	No transit station parking lots	●	■
Preferential Parking (Car-share)	No transit station parking lots	●	■
Preferential Parking (Car-pool)	No transit station parking lots	●	■
Bicycle Parking	No transit station parking lots	●	■
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Mobile Payment	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** Policy to consider variable public or private pricing parking for peak parking periods (OPA 2017 – 19.6.29 a) Yellow symbol given as a result of policy promoting consideration rather than implementation	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Town of East Gwillimbury

York Region

Zoning By-law

Town of East Gwillimbury, No. 97-50, Comprehensive Zoning By-law, October 2016

- Part 5: Parking and Loading Standards – draft approval underway (approval recommended by Council September 7, 2016)

Development Standard
Town of East Gwillimbury, Thinking Green! Development Standard, February 2012

Policies
Town of East Gwillimbury, Official Plan, July 2014
Town of East Gwillimbury, Transportation Master Plan, June 2010

Stormwater Charge
Town of East Gwillimbury, Water and Waterwater Service Fees, Retrieved from:
http://www.eastgwillimbury.ca/Assets/3+2015+Services/1.4+User+Fees+and+Charges/I.pdf

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** Shared parking requirements present in city's zoning by-law for non-residential uses. (5.11) Yellow symbol given to reflect shared parking requirements only applying to non-residential uses. **Policies** No policies	●	■
Electric Vehicle (EV) Parking	**Regulations** East Gwillimbury's Thinking Green! Development Standards (site plan development checklist) requires non-residential developments to provide preferential parking for alternative fuel vehicles – 1 for every 20 vehicles (C-6). Yellow symbol given as a result of EV requirements for only commercial uses, not residential. **Policies** No policies	●	■
Car-share Parking	**Regulations** Not present in zoning by-law **Policies** No policies	●	■

Bicycle Parking	**Regulations** The town's zoning by-law requires bicycle parking for multi-unit residential, retail, and service commercial (5.14) and their Green Standard's outline requirements for high density residential, non-residential, industrial, office and mixed-use developments (C-8) **Policies** Provision and integration of bicycle parking and storage facilities shall be considered a component of the development approvals process for all commercial, industrial and multi-unit residential developments. (OP – 2014, 7.2.2.10)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** Recommendations are made for the town to develop a municipal parking strategy that would assess non-residential parking levies, in coordination with York Region. (TMP – 2010, 13.3.13) Yellow symbol given as a result of commitment to study levies without a policy for implementation.		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The East Gwillimbury GO Station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Est Gwillimbury's GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at Est Gwillimbury's GO station **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking spaces are provided for eligible car-pool users at the East Gwillimbury GO Station. **Policies** No policies		

Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the East Gwillimbury GO Station. No bicycle storage is available. **Policies** The town should consider improved bicycle parking at transit nodes, such as the East Gwillimbury GO Station, to support transportation demand management initiatives. (TMP – 2010, 13.3.12) Yellow symbol given to reflect local municipality's consideration of policy.		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

Town of Georgina

York Region

Zoning By-law

Town of Georgina, No. 500, Zoning By-law (consolidated edition), March 15, 2013

- Section 5.28: Parking Area Regulations

Policies

Town of Georgina, Official Plan, December 15, 2016 (a)
The Regional Municipality of York, Transportation Master Plan, November 2016 (b)

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies		

Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (York TMP – 2016b, 4.3.4)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (York TMP – 2016b, 8.4.1)		
Car-share Parking	**Regulations** No regulatory requirements **Policies** In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (York TMP – 2016b, 4.3.4) Yellow symbol given as a result of potential for car-share parking implementation, not requirement.		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (York TMP – 2016b, 4.3.4) Yellow symbol given as a result of potential for bicycle parking implementation, not requirement.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (York TMP – 2016b, 8.4.2) Yellow symbol given as a result of the region's commitment to study fees without a policy for implementation.		

TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots	●	■
Preferential Parking (EVs)	No transit station parking lots	●	■
Preferential Parking (Car-share)	No transit station parking lots	●	■
Preferential Parking (Car-pool)	No transit station parking lots	●	■
Bicycle Parking	No transit station parking lots	●	■
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (York TMP – 2016b, 5.0)	●	■

Town of Halton Hills

Halton Region

Zoning By-law

Town of Halton Hills, No. 2010-0050, Comprehensive Zoning By-law, December 2013

- Part 5.3: Residential Parking Requirements
- Part 5.4: Non-Residential Parking Requirements

Town of Halton Hills, Green Development Standard, March 2014

Policies

Town of Halton Hills, Official Plan, Consolidated January 2017

- Part II – Section D – Urban Land Use Policies
- Part II – Section H – Secondary Plans
- Part III – Appendix X4: Town of Halton Urban Design Guidelines

Town of Halton Hills, Transportation Master Plan, November 2011

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies		
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** The zoning by-law provides potential reductions from combined minimum requirements for properties with four or more non-residential uses within the Urban Commercial Zone and Urban Employment Zone (5.4.2 / 5.4.3) Yellow symbol given as a result of shared parking opportunities only applicable to non-residential uses. **Policies** Off-street parking requirements may be reduced in the North Precinct through a parking analysis that demonstrates the adjacent uses would support shared parking facilities (including differing demand schedules). (OP – 2017, H3.3.7 (e)) Shared parking is encouraged between multiple uses on a single site to optimize daily usage of parking facilities. (OP – 2017, X4.3.6.1)		
Electric Vehicle (EV) Parking	**Regulations** A minimum threshold of points must be achieved based on the Town of Halton Hills Green Development Standards Checklists in order for a development application to be approved, points can be accumulated by providing at least one electric vehicle parking space and plug-in station within mid to high rise (commercial and residential) developments and low rise non-residential developments (2 points). Yellow symbol given as a result of the checklist promoting EV parking spaces and not requiring them. **Policies** No policies		
Preferential Parking (Car-share)	**Regulations** No regulatory requirements **Policies** No policies		

Bicycle Parking	**Regulations** Requirements for bicycle parking spaces are defined by use as spaces per unit of gross floor area or as spaces per employee / student for non-residential uses in the town's zoning by-law. (5.7) The Town of Halton Hills Green Development Standards encourages bicycle parking in mid- to high-rise commercial and residential & low-rise non-residential uses by allocating points for weather protected and secured bicycle parking. Yellow symbol given as a result of bicycle parking requirements only applicable to non-residential uses. **Policies** The provision of bicycle racks should be encouraged for all major new developments. (OP – 2017, X4.4.2.4) Yellow symbol to reflect encouragement and requirement of policy.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (2 GO Transit Stations)			
Charging for Parking	**Current Practice** The Georgetown GO and Acton GO stations provide both free and reserved parking opportunities for users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Halton Hills' GO stations **Policies** The provision of parking / charging stations for electric vehicles at stations is highlighted as an objective to increase the accessibility of various modes of transportation to transit stations in Major Transit Station Areas. (OP – 2017, D5.4.1)		
Preferential Parking (Car-share)	**Current Practice** Not provided at GO stations **Policies** The provision of car-share vehicles at stations highlighted as an objective to increase the accessibility of various modes of transportation to transit stations for Major Transit Station Areas. (OP – 2017, D5.4.1)		
Preferential Parking (Car-Pool)	**Current Practice** Preferential parking for car-pool vehicles is provided at the Georgetown GO station **Policies** Car-pool parking is highlighted as an objective to increase the accessibility of various modes of transportation to transit stations in Major Transit Station Areas. (OP – 2017, D5.4.1)		

Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Georgetown GO and Acton GO stations. No bicycle storage is available **Policies** Bicycle parking is highlighted as an objective to increase the accessibility of various modes of transportation to transit stations in Major Transit Station Areas. (OP – 2017, D5.4.1)		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

City of Hamilton

Single Tier Municipality

Zoning By-law

City of Hamilton, No. 05-200, Zoning By-law, May 1, 2017

- Section 5: Parking Regulations

Policies

City of Hamilton, Urban Hamilton Official Plan, September 2013

- Chapter C – City Wide Systems and Designations

City of Hamilton, Rural Hamilton Official Plan, April 2014

- Chapter C – City Wide Systems and Designations

City of Hamilton, Downtown Transportation Master Plan – Five Year EA Review, August 2008

City of Hamilton, Transportation Master Plan, May 2007

Municipal Parking Facilities

City of Hamilton, Municipal Car Parks, Retrieved from: https://www.hamilton.ca/streets-transportation/tickets-parking/municipal-car-parks#CP80

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	🔴	🔴
Parking Maximums	**Regulations** For Transit Oriented Corridor zones, parking maximums apply for single and multiple dwelling residential uses. (5.6.e) Yellow symbol given as a result of maximum parking requirements for only residential uses, not commercial **Policies** No policies	🟡	🔴
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	🔴	🔴
Shared Parking	**Regulations** No regulatory requirements **Policies** Shared parking is included as an objective to encourage more efficient uses of off-street parking. (UHOP – 2013, C4.1.17)	🔴	🟢
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies	🔴	🔴
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies	🔴	🔴
Bicycle Parking	**Regulations** For both residential and commercial uses, the city's zoning by-law outlines bicycle parking minimums for Transit Oriented Corridor zones TOC1, TOC2 and TOC3, as well as requirements for long-term bicycle parking in zones M7 through M11 when minimum automobile parking is exceeded by 5%. (5.7) **Policies** Adoption of zoning regulations to require secure bicycle parking in high activity areas and for new developments is included as an objective to incentive the use of active modes of transportation. (UHOP – 2013, C4.5.16) (RHOP – 2014, C4.5.15)	🟢	🟢
Stormwater Charges	**Regulations** Volume-based stormwater charges based on metered amounts (flat rates). Yellow symbol given as a result of stormwater fee not calculated based on impervious surface area. **Policies** No policies	🟡	🔴

EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING **(1 GO Transit Station [with parking])**			
Charging for Parking	**Current Practice** The West Harbour GO Station provides parking free of charge. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Hamilton's GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at Hamilton's GO station **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Not provided at Hamilton's GO station **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking available at the West Harbour GO Station. **Policies** To support transit, bicycle parking and loading facilities shall be provided at major transit generators. (UHOP – 2013, 4.2.10)		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies		
Mobile Payment	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies		

Demand Responsive Parking	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Township of King
York Region

Zoning By-law
Township of King, No. 74-53, Comprehensive Zoning By-law, January 1998
Township of King, No. XX-XX, Zoning By-law for the Schomberg, Nobleton and King City Urban Areas – Final Draft, March 2017
- Part 4 – Parking and Loading Requirements

Policies
Township of King, Official Plan, June 6, 1970
Township of King, Transportation Master Plan, May 2015

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■

Shared Parking	**Regulations** No regulatory requirements **Policies** No policies		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** The municipality's zoning by-law outlines requirements for bicycle parking in residential apartment and commercial uses within zones CA, C1, C3, I and R4 zones. (4.7) **Policies** Bicycle parking requirements are to be included in the recommended parking policy study and placed at transit stations to promote an integrated network. (TMP – 2015, 4.7)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The King City GO station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at park & ride lot **Policies** No policies		

Preferential Parking (Car-share)	**Current Practice** Not provided at park & ride lot **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for eligible car-pool users is provided at the King City GO station. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the King City GO station. No bicycle storage is available. **Policies** No policies		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

City of Markham

York Region

Zoning By-law

City of Markham, No. 177-96, Zoning By-law, November 30, 2016

- Section 6: General Provisions

City of Markham, No. 28-97, Parking Standards By-law, November 30, 2016

- Section 3: Parking Standards

Performance Measures

City of Markham, Markham Centre Performance Measures Document for Sustainability & Smart Growth, 2009

- Section 7: Transportation Performance Measures

Policies

City of Markham, Planning Markham's Future – Markham Official Plan, June 2014

- Chapter 1: Planning Markham's Future
- Chapter 7: Transportation, Services and Utilities

City of Markham, Transportation Planning Study, June 2002

- Part 6: Policy Initiatives

The Regional Municipality of York, Transportation Master Plan, November 2016

Stormwater Charge

City of Markham, By-law 2015: A By-law to Repeal and Replace Stormwater Fee By-law 2014-168, Retrieved from: http://www2.markham.ca/markham/ccbs/indexfile/Agendas/2015/Council/cl150615/by%20-%20Stormwater.pdf

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	🔴	🟥
Parking Maximums	**Regulations** No regulatory requirements **Policies** In mixed-use area, intensification areas or areas with frequent transit service, parking maximums are to be included as standards for given land use classes. (OP – 2014, 7.1.5)	🔴	🟩
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	🔴	🟥
Shared Parking	**Regulations** Shared parking requirements present in city's zoning by-law for the specified non-residential uses (28-97, 4.0) Yellow symbol given to reflect shared parking regulation only applying to non-residential uses. **Policies** Reduced parking requirements shall be included in area-specific business plans for mixed-use developments where shared parking opportunities exist. (OP – 2014, 7.1.5) Support shall be given for preferential parking measures for car-share vehicles as a transportation demand management strategy. (OP – 2014, 7.1.5) In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (York TMP – 2016, 4.3.4)	🟡	🟩
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** Support shall be given for preferential parking measures for low-emission vehicles as a transportation demand management strategy. (OP – 2014, 7.1.5) The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (York TMP – 2016, 8.4.1)	🔴	🟩

Car-share Parking	**Regulations** No regulatory requirements **Policies** Reduced parking requirements shall be included in area-specific business plans for multi-unit residential developments where provisions for dedicated car-share spaces are made. (OP – 2014, 7.1.5) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (York TMP – 2016, 4.3.4)		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Bicycle parking is to be addressed through the design of surface parking lots and above-grade facilities. (OP – 2014, 7.1.5) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (York TMP – 2016, 4.3.4)		
Stormwater Charges	**Regulations** All properties must pay a stormwater fee based on property type Yellow symbol given as a result of stormwater fee not calculated based on impervious surface area. **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (York TMP – 2016, 8.4.2) Yellow symbol given as a result of the region's commitment to study fees without a policy for implementation.		
TRANSIT STATION PARKING (4 GO Transit Stations)			
Charging for Parking	**Current Practice** Free parking is available at all GO Transit park & ride lots, users are charged for reserved parking at the Markham GO and the Unionville GO stations Yellow symbol given as a result of payment required for only reserved parking. **Policies** The city will support the implementation of user pay parking at transit hub locations. (OP – 2014, 7.1.5)		
Preferential Parking (EVs)	**Current Practice** Two EV parking spaces are provided at the Centennial GO station for users. **Policies** No policies		

Preferential Parking (Car-share)	**Current Practice** One Zipcar vehicle is available at the Markham GO station. **Policies** The region acknowledges that the provision of dedicated car-share parking at transit stations can support their use. (2016b, 4.3.2) Yellow symbol given as a result of policy not indicating requirement for implementation.		
Preferential Parking (Car-pool)	**Current Practice** Car-pool parking spaces are provided at all four of the city's GO Transit stations. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Mount Joy GO, Markham GO and Unionville GO stations. **Policies** To support cycling as a competitive mode choice, the city will integrate secure bicycle parking at rail stations and transit stops. (OP – 2014, 7.1.4.2). The region recognizes that bicycle parking at transit stations will make cycling a more competitive travel mode for first and last mile connections. (York TMP – 2016, 4.3.2)		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (York TMP – 2016, 5.0)		

Town of Milton
Halton Region

Zoning By-law

Town of Milton, No. 016-2014, Comprehensive Zoning By-law, November 2014

- Part 5: Parking and Loading

Policies

Town of Milton, Official Plan, Consolidated August 2008
Halton Region, The Road to Change – Halton Region Transportation Master Plan, September 2011

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies		
Parking Maximums	**Regulations** No regulatory requirements **Policies** Maximum parking standards will be employed to ensure that only the amount of parking necessary is required. (OP – 2008, 3.5.3.25)		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** The evaluation criteria for the development applications of new highway commercial developments includes the provision of common parking facilities for abutting commercial uses where feasible. (OP – 2008, 3.7.3.4) The evaluation criteria for the development applications of new regional or sub-regional commercial developments includes the provision of common parking facilities for abutting commercial uses where feasible. (OP – 2008, 3.7.3.6) Yellow symbol given to reflect policies only applicable to commercial uses.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Preferential Parking (Car-share)	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** The city's zoning by-law requires bicycle parking for residential and non-residential uses. (5.10) **Policies** No policies		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		

EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Milton GO station provides free and reserved parking opportunities to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Milton's GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at Milton's GO station **Policies** No policies		
Preferential Parking (Car-Pool)	**Current Practice** Preferential parking for car-pool vehicles is available at the Milton GO for eligible members. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Milton GO station. No bicycle storage is available. **Policies** No policies		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		

Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

City of Mississauga
Peel Region

Zoning By-law
City of Mississauga, No. 0225-2007, Zoning By-law, September 30, 2014
- Part 3: Parking, Loading and Stacking Lane Regulations

Green Development Strategy
City of Mississauga, Green Development Strategy, June 28, 2010

Policies
City of Mississauga, Official Plan, Consolidated March 2017
- Chapter 8: Create a Multi-Modal City
- Chapter 9: Build a Desirable Urban Form

City of Mississauga, Moving Mississauga – Mississauga's Interim Transportation Strategy, July 2011
Region of Peel, Long Range Transportation Plan, 2012

Stormwater Charge
City of Mississauga, Stormwater Charge, Retrieved from: http://www.mississauga.ca/portal/stormwater/charge

Municipal Parking Facilities
City of Mississauga, Off-street Parking Mapping Tool, Retrieved from: http://www7.mississauga.ca/eCity/OffStreetParking/maps.asp
City of Mississauga, Municipal Lots and Garages, Retrieved from: http://www.mississauga.ca/portal/residents/offstreetpaidparking

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** Within intensification areas, reducing parking minimums will be considered to support transit investments. (OP – 2017, 8.4.7) Yellow symbol given to reflect policy being only considered without a plan for implementation.	●	■

Parking Maximums	**Regulations** No regulatory requirements **Policies** Within intensification areas, establishing parking maximums will be considered to support transit investments. (OP – 2017, 8.4.7) Yellow symbol given to reflect policy being only considered without a plan for implementation.		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** In the appropriate areas, the city will support the separation of parking costs from residential unit prices and building occupant costs. (OP – 2017, 8.5.6)		
Shared Parking	**Regulations** Shared parking requirements present in city's zoning by-law for mixed-use developments. (3.1.2.3) **Policies** To better utilize existing infrastructure, the city will encourage shared parking applications. (OP – 2017, 8.1.8)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** Reserved or priority parking for car-share vehicles are listed as a transportation demand management strategy that will be reviewed prior to the approval of development applications. (OP – 2017, 8.5.7) Yellow symbol given to reflect practice being acknowledged without a plan to implement a requirement.		
Bicycle Parking	**Regulations** The City of Mississauga Green Development Standard requires 50% of the bicycle spaces provided by a residential development to be in a secure, weather protected area (5.3). Red symbol given as a result of no requirements for bicycle parking, only recommendations for when they are provided. **Policies** Development shall support active transportation by providing destination amenities, including bicycle parking. (OP – 2017, 9.4.1.3)		
Stormwater Charges	**Regulations** The city has a stormwater charge based on surface runoff contribution calculated by amount of impervious surface. **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		

TRANSIT STATION PARKING (9 GO Transit Stations, 4 Transitway Stations)			
Charging for Parking	**Current Practice** All of Mississauga's GO stations provide both free and reserved parking to transit users. Where provided by MiWay, parking is provided free of charge at Mississauga's transitway stations. Yellow symbol given as a result of payment required for only reserved parking at GO Transit stations. **Policies** In appropriate areas, the city will encourage a fee for parking and the separation of parking costs from transit fares. (OP – 2017, 8.5.6) Yellow symbol given to reflect this practice being encouraged not required.		
Preferential Parking (EVs)	**Current Practice** EV parking is provided at the Clarkson GO and Erindale GO stations. No parking for EV vehicles is provided at Transitway stations. Yellow symbol given as a result of EV parking available at regional but not local transit stations. **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Zipcar vehicles are available at the Clarkson GO, Cooksville GO and Port Credit GO stations. No parking for car-share vehicles is provided at Transitway stations. Yellow symbol given as a result of car-share parking available at regional but not local transit stations. **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Car-pool parking spaces are provided at all of Mississauga's GO stations. No parking for car-pool vehicles is provided at Transitway stations. Yellow symbol given as a result of car-pool parking available at regional but not local transit stations. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the all of Mississauga's GO stations. No bicycle storage is available. MiWay provides bicycle parking and secure storage at all transitway stations. **Policies** Major transit station areas will be designed with consideration given to bicycle parking. (OP – 2017, 8.3.2.2) Yellow symbol given to reflect policy being only considered without a plan for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies		
Mobile Payment	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies		

Demand Responsive Parking	**Current Practice** Not provided at paid municipal parking facilities **Policies** No policies	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Technology	**Regulations** Not regulated **Policies** No policies	●	■

Town of Newmarket

York Region

Zoning By-law

Town of Newmarket, No. 2010-40, Zoning By-law, December 2013

- Section 5: Parking, Loading and Queuing Requirements

Town of Newmarket, No. 2017-05, Zoning By-law, February 13, 2017

Policies

Town of Newmarket, Official Plan, Consolidated September 2014
Town of Newmarket, Urban Centres Secondary Plan, Consolidation October 25, 2016 (a)
The Regional Municipality of York, Transportation Master Plan, November 2016 (b)

Stormwater Charge

Town of Newmarket, Stormwater Charge, Retrieved from: http://www.newmarket.ca/stormwatercharge

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■

Parking Maximums	**Regulations** Maximum parking requirements for all uses are provided in the municipal zoning by-law for Urban Centre Zones and the Historic Urban Centre Zone. (2010-40, 5.3.3 / 5.3.4) Maximum off-street parking requirements are included in the municipal zoning by-law for residential and non-residential uses in Urban Centres (2017-05, 5.3.3) **Policies** Parking maximums may be implemented for the town's urban centres through the zoning by-law. (OP – 2014, 4.2) Maximum parking standards will be implemented in the town's urban centres to promote transit ridership. (UCSP – 2016a, 4.2)		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** Shared parking requirements present in city's zoning by-law for mixed-use developments. (2010-40.5.3.5) **Policies** Where the mix of uses permits parking to be shared, the zoning by-law will establish the by-law accordingly. (OP – 2014, 15.5) Where feasible, shared parking is encouraged between adjacent developments in the town's urban centres. (UCSP – 2016a, 9.3.6) In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (York TMP – 2016b, 4.3.4)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** Parking facilities shall be designed to accommodate EV vehicle parking in the town's urban centres. (UCSP – 2016a, 9.3.6) Preferential parking for electric vehicles at all non-residential developments should be included as a transportation demand management strategy for the town. (UCSP – 2016a, 9.3.5) The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (York TMP – 2016b, 8.4.1)		
Car-share Parking	**Regulations** Car-share parking may reduce the required parking onsite by up to three parking spaces for each dedicated car-share space for mixed-use buildings and apartment buildings. (2017-05, 5.3.3.5) Yellow symbol given to reflect car-share parking as an optional practice. **Policies** Parking facilities shall be designed to accommodate car-share vehicle parking in the town's urban centres. (UCSP – 2016a, 9.3.6) Provision of car-share opportunities at major residential developments should be included as a transportation demand management strategy for the town. (UCSP – 2016a, 9.3.5) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (York TMP – 2016b, 4.3.4)		

Bicycle Parking	**Regulations** The town's zoning by-law outlines bicycle parking requirements for residential, commercial, industrial and institutional uses. (5.3.8) **Policies** Considerations for bicycle movements shall be made for all new development and redevelopment projects. (OP – 2014, 15.6) Parking facilities shall be designed to accommodate bicycle parking and minimum bicycle parking facilities should be established in the town's urban centres. (UCSP – 2016a, 9.3.6) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (York TMP – 2016b, 4.3.4)		
Stormwater Charges	**Regulations** The town has a stormwater charge based on surface runoff categories **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (York TMP – 2016b, 8.4.2) Yellow symbol given to reflect commitment to study.		
TRANSIT STATION PARKING (1 GO Station)			
Charging for Parking	**Current Practice** The Newmarket GO station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at GO station **Policies** The region acknowledges that the provision of dedicated car-share parking at transit stations can support their use. (York TMP – 2016b, 4.3.2)		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for eligible car-pool users is provided at the Newmarket GO station. **Policies** No policies		

Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Newmarket GO station. No bicycle storage is available. **Policies** To promote active transportation and transit use, town strategies will include the provision of bicycle parking infrastructure in close proximity to transit stations. (UCSP – 2016a, 9.3.5) The region recognizes that bicycle parking at transit stations will make cycling a more competitive travel mode for first and last mile connections. (York TMP – 2016b, 4.3.2)		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (York TMP – 2016b, 5.0)		

Town of Oakville

Halton Region

Zoning By-law

Town of Oakville, No. 2014-014, Comprehensive Zoning By-law, January 2, 2017

- Part 5: Parking, Loading and Stacking Provisions

Policies

Town of Oakville, Livable Oakville – Official Plan, Updated February 23, 2015
Town of Oakville, Official Plan Amendment 289 – North Oakville West Secondary Plan, May 25, 2009
Town of Oakville, Official Plan Amendment 272 – North Oakville East Secondary Plan, February 2008
Town of Oakville, Switching Gears – Oakville's Transportation Master Plan, February 2013

Municipal Parking Facilities

Town of Oakville, Downtown Parking September 2014, Retrieved from: http://www.oakville.ca/assets/town%20hall%20-%20employee%20resources/Downtown_Parking_Sept2014.pdf

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** Within growth areas and major transit station areas, parking minimums and parking restriction zones may be established to support the efficient use of land. (OP – 2015, 8.15.1) Yellow symbol given to reflect lack of implementation requirement.		
Parking Maximums	**Regulations** No regulatory requirements **Policies** Zoning by-law standards may establish parking maximums in response to replacing at-grade parking areas (OPA 289 – 2009, 8.7.2.7) (OPA 272 – 2008, 7.7.2.7) Within growth areas and major transit station areas, parking maximums may be established to support the efficient use of land. (OP – 2015, 8.15.1) Yellow symbol given to reflect lack of implementation requirement.		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** As a parking management strategy, the Town may consider opportunities for off-peak shared parking facilities. (OP – 2015, 8.15.6) In the uptown area, parking may be shared by adjacent properties if deemed satisfactory by the Town. (OP – 2015, 21.4.3) Reduced or shared parking for specific land uses is recommended as a travel demand management strategy. (TMP – 2013, 7.1) Yellow symbol given to reflect lack of implementation requirement.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Preferential Parking (Car-share)	**Regulations** No regulatory requirements **Policies** Promotion of car-share programs to reduce auto ownership is recommended as a travel demand management strategy. (TMP – 2013, 7.1) Yellow symbol given to reflect recommendation for promotion of this practice, no plan for implementation.		

Bicycle Parking	**Regulations** Minimum number of bicycle parking spaces are defined as spaces required per unit of net floor area for non-residential uses within the town's zoning by-law. For residential uses, bicycle parking spaces are to be provided according to the minimum set per unit (5.4.1) **Policies** Bicycle parking standards are to be prepared and implemented by the town's zoning by-law. (OPA 289 – 2009, 8.7.2.4) (OPA 272 – 2008, 7.7.2.4) Bicycle parking requirements are recommended initiatives for the town's parking management strategy. (TMP – 2013, 5.2.6) Bicycle parking standards are to be implemented through the town's zoning by-law. (OP – 2015, 8.10.8)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No regulatory requirements **Policies** No policies		
Workplace Parking Levy	**Regulations** No regulatory requirements **Policies** No policies		
TRANSIT STATION PARKING (2 GO Transit Stations)			
Charging for Parking	**Current Practice** The Oakville GO and Bronte GO stations have free and reserved parking opportunities available to users Yellow symbol given as a result of payment required for only reserved parking. **Policies** Increases to public parking facility rates is recommended. (TMP – 2013, 7.1) Yellow symbol given as it is unclear whether policy applies to transit stations.		
Preferential Parking (EVs)	**Current Practice** Two EV parking spaces are available at Oakville GO station. **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** There are two Zipcar vehicles available at the Oakville GO station. **Policies** No policies		
Preferential Parking (Car-Pool)	**Current Practice** Preferential parking for car-pool vehicles provided at all of the town's GO stations. **Policies** No policies		

Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Oakville GO and Bronte GO stations. No bicycle storage is available. **Policies** For development within 400m of a transit station, the town may require that bicycle facilities are provided for or supported by developers. (OP – 2015, 8.9.6) Yellow symbol given to reflect policy not being specific to transit stations.	●	■
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Mobile Payment	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

City of Oshawa
Durham Region

Zoning By-law

City of Oshawa, No. 60-94, Zoning By-law, April 2017

- Section 39: Parking and Loading

Policies

City of Oshawa, Official Plan, Consolidated September 2016.

City of Oshawa, Integrated Transportation Master Plan, September 2015.

- Technical Memorandum No. 3: Transportation Demand Management & Parking

Municipal Parking Facilities

City of Oshawa, Oshawa Municipal Parking System, Retrieved from: https://www.oshawa.ca/residents/resources/Oshawa-Municipal-Parking-System-2017.pdf

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies		
Parking Maximums	**Regulations** No regulatory requirements **Policies** Parking maximums should be explored by the city to increase parking efficiency. (ITMP – 2015, TM3 4.2) Yellow symbol given to reflect recommendation to study this practice without a plan for implementation.		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** Shared parking requirements present in city's zoning by-law for shopping centre and industrial mall land uses (39.2.1) Yellow symbol given as a result of shared parking requirements only being applicable to specific non-residential uses. **Policies** Shared parking should be explored by the city to increase parking efficiency and provide centralized facilities. (ITMP – 2015, TM3 4.2) Yellow symbol given to reflect recommendation to study this practice without a plan for implementation.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** Providing a fleet of car-share vehicles at places of employment should be considered for implementation to provide options for employees not travelling by alternative modes. (ITMP – 2015, TM3 3.1) Yellow symbol given to reflect the city's consideration of this practice without a plan for implementation.		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Sheltered bicycle facilities are to be provided by new public and private non-residential, mixed-use and multi-residential developments. (OP – 2016, 8.7.12.4.6)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		

EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** Instituting paid parking at places of employment to discourage single occupancy vehicle trips should be considered for implementation by the city. (ITMP – 2015, TM3 3.1) Yellow symbol given to reflect the city's consideration of this practice without a plan for implementation.		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Oshawa GO station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** Paid parking should be investigated to determine the effects of pricing on parking demand. (ITMP – 2015, TM3 4.2) Yellow symbol given to reflect recommendation to study this practice without a plan for implementation.		
Preferential Parking (EVs)	**Current Practice** Not provided at Oshawa's GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not provided at Oshawa's GO station **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for car-pool vehicles is provided at the Oshawa GO station for eligible users. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Oshawa GO station. No bicycle storage is available. **Policies** No policies		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies		
Mobile Payment	**Current Practice** Mobile payment available through HonkMobile. **Policies** No policies		

Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

City of Pickering
Durham Region

The City of Pickering's parent by-laws (No. 3036, No. 3937, No. 2511 and No. 2520) were first passed in the 1960s and, due to numerous subsequent amendments, the documents are not available online. The City of Pickering provided the following two by-laws directly as examples of the municipality's current practice.

Zoning By-law

City of Pickering, No. 7553-17, City Centre Zoning By-law, April 3, 2017
- Section 3.0 – Parking Regulations

City of Pickering, No. 7364-14, Seaton Area Zoning By-law, December 3, 2013
- Section 3.0 – Parking Regulations

Policies

City of Pickering, Official Plan – Edition 6, February 2010
Regional Municipality of Durham, Transportation Master Plan, Consolidated November 2005

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■

Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** Shared parking requirements for non-residential uses present in municipality's City Centre (3.4) and Seaton Area (3.3) zoning by-laws. Yellow symbol to reflect policy only applicable to non-residential uses. **Policies** No policies		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** The city's zoning by-law requires bicycle parking for residential and non-residential uses within City Centre by-law (3.9), not present in Seaton area by-law **Policies** The city shall encourage the provision of secure bicycle parking facilities near the entrances of important developments, such as commercial, community or cultural buildings. (OP – 2010, 13.8) Yellow symbol to reflect policy being encouraged without a plan for implementation.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Pickering GO station provides both free parking and reserved parking to transit users Yellow symbol given as a result of payment required for only reserved parking. **Policies**		

	No policies		
Preferential Parking (EVs)	**Current Practice** Parking for EV vehicles is provided at the Pickering GO station. **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** One Zipcar vehicles is available to users at the Pickering GO station. **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for car-pool vehicles is provided at the Pickering GO station for eligible users. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Pickering GO station. No bicycle storage is available **Policies** The city shall encourage the provision of secure bicycle parking at bus terminals and GO stations. (OP – 2010, 13.8.i) Yellow symbol to reflect policy being encouraged without a plan for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

Town of Richmond Hill

York Region

The Town of Richmond Hill's parent by-laws are not available online as there a numerous site- and area-specific by-laws that have been passed for the town. The Town of Richmond Hill provided the following four by-laws directly as examples of the municipality's current practice.

Zoning By-law

Town of Richmond Hill, No. 66-71, Consolidated August 1982

Town of Richmond Hill, Beaver Creek Zoning By-law No. 150-80, Consolidated December 1985

Town of Richmond Hill, Bayview Glen Secondary Plan Zoning By-law No. 278-96, Consolidated November 1996.
Town of Richmond Hill, Sixteenth Avenue – Duncan Road Area By-law No. 255-96, October 6, 1997

Policies

Town of Richmond Hill, Official Plan, Consolidation November 1, 2016 (a)
The Regional Municipality of York, Transportation Master Plan, November 2016 (b)

Stormwater Charge

Town of Richmond Hill, Stormwater Management Rate FAQs, Retrieved from: https://www.richmondhill.ca/en/our-services/Stormwater-Management-Rate-FAQs.aspx

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** Maximum parking standards shall be included in the town's zoning by-law to coincide with transit oriented development practices. (OP – 2016a, 3.5.4)	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** No regulatory requirements **Policies** Shared parking shall be encouraged between complementary uses to coincide with transit oriented development practices. (OP – 2016a, 3.5.4) In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (York TMP – 2016b, 4.3.4)	●	■
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (York TMP – 2016b, 8.4.1) Yellow symbol given to reflect policy only applying to regional facilities.	●	■

Car-share Parking	**Regulations** No regulatory requirements **Policies** Reductions in parking requirements may be considered in recognition of transit oriented development and the provision of transportation demand management measures, such as car-share operations. (OP – 2016a, 6.15) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (York TMP – 2016b, 4.3.4) Yellow symbol given to reflect no implementation requirement in policy.		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Bicycle parking and storage facilities shall be encouraged through the development approval process for all high density residential and non-residential developments. (OP – 2016a, 3.5.2) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (York TMP – 2016b, 4.3.4) Yellow symbol given to reflect no implementation requirement in policy.		
Stormwater Charges	**Regulations** The town has a stormwater management fee based on MPAC property classification. Yellow symbol given as a result of stormwater fee not calculated based on impervious surface area. **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (York TMP – 2016b, 8.4.2) Yellow symbol given as a result of the region's commitment to study fees without a policy for implementation.		
TRANSIT STATION PARKING (3 GO Transit Stations)			
Charging for Parking	**Current Practice** The Langstaff GO, Gormley GO and Richmond Hill GO station provide both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not provided at Richmond Hill's GO stations **Policies** No policies		

Preferential Parking (Car-share)	**Current Practice** Zipcars are available at the Richmond Hill GO station for transit users. **Policies** The region acknowledges that the provision of dedicated car-share parking at transit stations can support their use. (York TMP – 2016b, 4.3.2) Yellow symbol given as a result of the region's commitment to study fees without a policy for implementation.		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for eligible car-pool users is provided at the Langstaff GO and Richmond Hill GO stations. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Langstaff GO, Gormley GO and Richmond Hill GO stations. No bicycle storage is available. **Policies** The region recognizes that bicycle parking at transit stations will make cycling a more competitive travel mode for first and last mile connections. (York TMP – 2016b, 4.3.2) Yellow symbol given to reflect no implementation requirement in policy.		
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities		
Mobile Payment	No paid municipal parking facilities		
Demand Responsive Parking	No paid municipal parking facilities		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (York TMP – 2016b, 5.0)		

Township of Scugog

Durham Region

Zoning By-law

Township of Scugog, No. 14-14, Zoning By-law, August 2016

- Section 5.2 – Parking Space Regulations

Policies

Township of Scugog, Official Plan, Consolidated November 2014

Regional Municipality of Durham, Transportation Master Plan, Consolidated November 2005

Municipal Parking Facilities

Township of Scugog, Parking Information, Retrieved from: http://www.scugog.ca/en/live-and-play/Parking-Information.aspx

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Shared Parking	**Regulations** No regulatory requirements **Policies** Opportunities for shared parking in mixed-use developments will be considered by the township if the uses on the property have different parking demand schedules. (OP – 2014, 8.6) Yellow symbol given to reflect no implementation requirement in policy.	●	■
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Bicycle parking facilities should be established as sustainable design elements to be required for properties within a municipal right of way as a condition for approval. (OP – 2014, 8.3.5) Bicycle stands shall be required as a condition of site plan approval. (OP – 2014, 8.4)	●	■

Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies	●	■
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies	●	■
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies	●	■
TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots	●	■
Preferential Parking (EVs)	No transit station parking lots	●	■
Preferential Parking (Car-share)	No transit station parking lots	●	■
Preferential Parking (Car-pool)	No transit station parking lots	●	■
Bicycle Parking	No transit station parking lots	●	■
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■

Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

City of Toronto

Single Tier Municipality

Zoning By-law

City of Toronto, No. 569-2013, Zoning By-law Office Consolidation, September 30, 2016

- Chapter 200 Parking Space Regulations – entire section remains under appeal to the Ontario Municipal Board and is not in full force and effect
- Chapter 230 Bicycle Parking Space Regulations – entire section remains under appeal to the Ontario Municipal Board and is not in full force and effect/Council enacted amendments not yet in full force

Green Standard

City of Toronto, Toronto Green Standards Version 2.0, March 2015

- Mid to High-Rise Residential and All Industrial, Commercial and Institutional (ICI) Development
- New Low-Rise Residential Development

Policies

City of Toronto, Official Plan, Consolidated June 2015

City of Toronto, Congestion Management Plan 2014 – 2018, October 2013

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** Office and retail uses in commercial residential zones in policy area 1 are exempt from minimum parking requirements in the city's zoning by-law (200.5.200.40 (4)) Yellow symbol given as a result of minimum exemptions for only commercial uses, not residential. **Policies** No policies		
Parking Maximums	**Regulations** Office, Retail, and Apartment Building uses have maximum parking requirements in policy areas 1,2,3 and 4 in the city's zoning by-law (200.5.10.1) **Policies** To implement transportation demand management measures and reduce auto dependence, maximum parking requirements for developments well serviced by transit will be considered. (OP – 2015, 2.4) Yellow symbol given to reflect maximum parking requirements being considered and not required.		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		

Shared Parking	**Regulations** Shared off-street parking requirements present in city's zoning by-law for a mix of residential and non-residential uses in policy areas 1, 2, 3 and 4. (200.5.10.1(6)) **Policies** Shared parking considerations for site- or area-specific policies support transit use. (OP – 2015, Chapter 7, 55) Off-street parking will be better utilized by developing shared parking standards for mixed-use developments. (OP – 2015, 2.4) Yellow symbol given to reflect shared parking opportunities being considered and not required.		
Electric Vehicle (EV) Parking	**Regulations** Toronto's Green Standards require mid to high-rise commercial developments to dedicate spaces to low-emitting vehicles (LEV), car-pool, or car-share vehicles, if minimum parking requirements are exceeded (AQ.1.1) Toronto's Green Standards require mid to high-rise residential developments to equip spaces for future electric vehicle charging, if minimum parking requirements are exceeded (AQ.1.1) Yellow symbol given due to minimal provisions required in Toronto Green Standards. **Policies** To support transportation demand management policies, the conversion of required parking spaces to spaces designated for low emission vehicles, as well as the provision of charging stations, will be supported by the city. (OP – 2015, 2.4) Yellow symbol given to reflect policy stating only support for conversion of spaces, not requirement.		
Car-share Parking	**Regulations** Toronto's Green Standards require mid to high-rise commercial developments to dedicate spaces to low-emitting vehicles (LEV), car-pool, or car-share vehicles, if minimum parking requirements are exceeded (AQ.1.1) Yellow symbol given due to minimal provisions required in Toronto Green Standards. **Policies** To support transportation demand management policies, the conversion of required parking spaces to spaces designated for car-share services will be supported by the city (OP – 2015, 2.4) Yellow symbol given to reflect policy stating only support for conversion of spaces.		
Bicycle Parking	**Regulations** Bicycle parking requirements for commercial and residential uses are present in the city's zoning by-law (230.5.10.1) (10.5.10.1) and Toronto Green Standards (AQ.2.1) **Policies** To create a safe, pedestrian friendly environment, the provision of bicycle parking in new developments will be encouraged through the city's policies, programs and infrastructure. (OP – 2015, 2.4)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		

TRANSIT STATION PARKING (12 GO Transit Stations, 14 TTC Stations)			
Charging for Parking	**Current Practice** TTC provides parking to users at varying daily or hourly rates. GO Transit provides free parking and charges users for reserved parking. Yellow symbol given as a result of payment required for only reserved parking at GO stations. **Policies** For city-owned parking facilities in locations around rapid transit stations, consideration will be given to the establishment of parking rates to discourage long-term parking. (OP – 2015, 2.4) Yellow symbol given to reflect only consideration being given to discourage long-term parking and not for discouraging single-occupancy vehicle travel.		
Preferential Parking (EVs)	**Current Practice** Not provided at Toronto GO stations or TTC stations **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Zipcar spaces are provided at 6 of the 19 GO transit stations Zipcar vehicles are available in areas directly accessible to TTC stations by transit users and metro pass users are offered a discount on the membership for this service **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** 10 of the 19 GO Transit stations provide car-pool parking spaces to eligible transit users No provided at TTC stations Yellow symbol given as a result of car-pool spaces provided at only regional stations, not local ones. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking is provided at 16 of the 19 GO Transit stations Bicycle parking is available at all TTC stations either at the station or in the direct vicinity for transit users. **Policies** To create a safe, bicycle-friendly environment, the city will provide adequate and secure bicycle parking at rapid transit stations. (OP – 2015, 2.4)		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** The investigation of smart parking technologies to support congestion management is recommended to determine the need, feasibility and potential impact of smart parking. (CMP – 2013. E.3) Yellow symbol given to reflect only the recommendation to study smart parking without mention of implementation.		
Mobile Payment	**Current Practice** Mobile payment is offered by Green P, operated by the Toronto Parking Authority. **Policies** No policies		

Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** A review of parking charges is recommended to determine if the use of an escalating parking charge scale would discourage long term parking and increase the turnover of on-street parking. (CMP – 2013, E.1) Yellow symbol given to reflect only the recommendation to study an escalating parking charge without mention of implementation.	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Township of Uxbridge

Durham Region

Zoning By-law

Township of Uxbridge, No. 81-19, Zoning By-law, December 2016

- Part 5: General Zone Provisions

Policies

Township of Uxbridge, Official Plan, Consolidated January 2014
Regional Municipality of Durham, Transportation Master Plan, Consolidated November 2005

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** In the lands designated as a commercial corridor area, parking minimums will be established by the township. (OP – 2014, 2.5.16.4.2)	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** In the lands designated as a commercial corridor area, parking maximums will be established by the township. (OP – 2014, 2.5.16.4.2) Yellow symbol given to reflect policy only being implemented for commercial land uses.	●	■

Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** For mixed-use developments within the commercial corridor area, opportunities for reduced parking requirements through shared parking will be considered by the township. (OP – 2014, 2.5.16.4.2) Yellow symbol given to reflect policy only being considered by the township without a plan for implementation.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Provisions for bicycle parking should be a key consideration in the design of new developments. (OP – 2014, 2.4.2.9)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING			
Charging for Parking	No transit station parking lots		
Preferential Parking (EVs)	No transit station parking lots		
Preferential Parking (Car-share)	No transit station parking lots		

Preferential Parking (Car-pool)	No transit station parking lots	●	■
Bicycle Parking	No transit station parking lots	●	■
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

City of Vaughan

York Region

Zoning By-law

The Corporation of the City of Vaughan, No. 1-88, Comprehensive Zoning By-law (revised), January 2015

- Section 3.8 Parking Requirements

Policies

The Corporation of the City of Vaughan, Official Plan 2010, Consolidated January 2017

The Corporation of the City of Vaughan, Transportation Master Plan, November 2012

Stormwater Charge

The Corporation of the City of Vaughan, Rates and Billing Information, Retrieved from:
https://www.vaughan.ca/services/residential/water/Pages/Rates-and-Billing-Information.aspx

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** Establishing minimum parking standards in zoning by-laws is a council policy to reduce parking requirements. (OP-2017, 4.3.2.2.a). Standards should specify varying minimum parking requirements to reflect the diversity of the city's urban form and levels of urbanization. (TMP – 2012, 6.4)		
Parking Maximums	**Regulations** Maximum parking requirements are provided for commercial and residential uses within the Vaughan Metropolitan Centre and Carrville Centre in the zoning by-law (3.8.1 / 3.8.3) **Policies** Standards should specify varying maximum parking requirements to reflect the diversity of the city's urban form and levels of urbanization. (TMP – 2012, 6.4) Establishing maximum parking standards in zoning by-laws is a council policy to reduce parking requirements. (OP- 2017, 4.3.2.2.a.)		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** Shared parking requirements exist in the zoning by-law for mixed-use developments. (3.8.m / 3.8.1.c / 3.8.3.c) **Policies** To lower parking requirements for new developments and reduce single-occupant vehicle travel, shared parking facilities are promoted by the City. (TMP – 2012, 6.4) Considering the variability of peak parking periods for different uses to assess shared parking opportunities is a council policy to reduce parking requirements. (OP- 2017, 4.3.2.2.e.)		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** Support for zero-emission vehicles through preferential parking treatment is as a council policy to reduce parking requirements. (OP- 2017, 4.3.2.2.d.)		
Car-share Parking	**Regulations** No regulatory requirements **Policies** Support for car-share services through preferential parking treatment is a council policy to reduce parking requirements. (OP-2017, 4.3.2.2.d)		

Bicycle Parking	**Regulations** Bicycle parking is required in commercial and multi-unit residential units within the Vaughan Metropolitan Centre in the zoning by-law (3.8.2) **Policies** The development of bicycle parking standards within the city's zoning by-law is included as a council policy to plan for the provision of cycling facilities. (VOP2010, 4.2.3.8)		
Stormwater Charges	**Regulations** The city charges a stormwater fee as a flat charge associated with each property type Yellow symbol given as a result of stormwater fee not calculated based on impervious surface area **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (2 GO Transit Stations)			
Charging for Parking	**Current Practice** GO Transit provides free parking and charges users for reserved parking at the Maple and Rutherford GO stations. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not available at Vaughan's GO stations **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not available at Vaughan's GO stations **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Car-pool spaces available at both Maple and Rutherford GO stations. **Policies** At intermodal locations, the city will support car-pool parking and coordination areas to facilitate seamless connections. (VOP2010, 4.3.3.7). Yellow symbol given as a result of support for car-pool services being acknowledged without a policy for implementation.		

Bicycle Parking	**Current Practice** Bicycle racks available at both Maple and Rutherford GO stations. **Policies** Bicycle supportive infrastructure will be provided at transit stops and stations. (OP – 2017, 4.2.3.11) The integration of bicycle and public transit travel will be supported through the provision of bicycle parking and storage at transit stops and stations. (TMP – 2012, 6.1)	●	■
EMERGING TECHNOLOGIES			
Smart Parking	No paid municipal parking facilities	●	■
Mobile Payment	No paid municipal parking facilities	●	■
Demand Responsive Parking	No paid municipal parking facilities	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Town of Whitby

Durham Region

Zoning By-law

Town of Whitby, No. 2585, Zoning By-law, August 2015

- Section 6A: Parking and Loading Requirements

Policies

Town of Whitby, Official Plan, Consolidated September 2016

Town of Whitby, Transportation Master Plan, June 2010

Municipal Parking Facilities

Town of Whitby, Municipal Lots, Retrieved from: http://www.whitby.ca/en/residents/municipallots.asp

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies		
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies		
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies		
Shared Parking	**Regulations** No regulatory requirements **Policies** The town shall investigate opportunities for shared parking where appropriate to reduce the overall parking requirements. (OP – 2016, 4.13.7.10) Recommendation for the town to develop a parking management strategy to review opportunities for shared parking. (TMP – 2010, 7.1.2) Yellow symbol to reflect policy being recommended without a plan for implementation.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** The provision of bicycle facilities shall be addressed through the site approval process to encourage bicycle use. (OP – 2016, 11.10.15.11) Measures to support growth, including bicycle parking, must be considered for all new land uses. (TMP – 2010, 7.2)		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		

EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (1 GO Transit Station)			
Charging for Parking	**Current Practice** The Whitby GO station provides both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Not available at Whitby's GO station **Policies** No policies		
Preferential Parking (Car-share)	**Current Practice** Not available at Whitby's GO station **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for car-pool vehicles is provided at the Whitby GO station for eligible users. **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Whitby GO station. No bicycle storage is available **Policies** The town's active transportation plan should include objectives for an integrated network, including the provision of bicycle parking facilities at transit stations. (TMP – 2010, 7.2) Yellow symbol to reflect policy being recommended without a plan for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** Recommendation for the town to develop a parking management strategy to review opportunities for smart parking lots. (TMP – 2010, 7.1.2) Yellow symbol to reflect policy being recommended without a plan for implementation.		

Mobile Payment	**Current Practice** Town utilizes Honk Mobile. **Policies** No policies	●	■
Demand Responsive Parking	**Current Practice** Not provided in paid municipal parking facilities **Policies** No policies	●	■
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies	●	■
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies	●	■

Town of Whitchurch-Stouffville

York Region

Zoning By-law

Town of Whitchurch-Stouffville, No. 2010-001-ZO, Comprehensive Zoning By-law, November 2014

- Section 3.23: Parking Standards

Policies

Town of Whitchurch-Stouffville, Official Plan, August 2011

Town of Whitchurch-Stouffville, Transportation Master Plan, May 9, 2016

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION	
		REGULATIONS / PRACTICES	POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)			
Parking Minimum Exemptions	**Regulations** No regulatory requirements **Policies** No policies	●	■
Parking Maximums	**Regulations** No regulatory requirements **Policies** No policies	●	■
Unbundled Parking	**Regulations** No regulatory requirements **Policies** No policies	●	■

Shared Parking	**Regulations** No regulatory requirements **Policies** The sharing of parking facilities shall be encouraged to promote safe community design. (OP – 2011, 6.5.2.8) Yellow symbol to reflect policy being encouraged without a plan for implementation.		
Electric Vehicle (EV) Parking	**Regulations** No regulatory requirements **Policies** No policies		
Car-share Parking	**Regulations** No regulatory requirements **Policies** No policies		
Bicycle Parking	**Regulations** No regulatory requirements **Policies** Provision of secure bicycle parking at places of employment, transit stops and other non-residential uses is recommended to promote non-motorized travel. (TMP – 2016, 6.2.1) Yellow symbol to reflect policy being recommended without a plan for implementation.		
Stormwater Charges	**Regulations** No regulatory requirements **Policies** No policies		
EMPLOYER PARKING STRATEGIES			
Parking Cash-out	**Regulations** No existing legislation **Policies** No policies		
Workplace Parking Levy	**Regulations** No existing legislation **Policies** No policies		
TRANSIT STATION PARKING (2 GO Transit Stations)			
Charging for Parking	**Current Practice** The Stouffville GO station and Lincolnville GO station provide both free parking and reserved parking to transit users. Yellow symbol given as a result of payment required for only reserved parking. **Policies** No policies		
Preferential Parking (EVs)	**Current Practice** Two EV parking spaces are provided at the Lincolnville GO station. **Policies** No policies		

Preferential Parking (Car-share)	**Current Practice** Not provided at Whitchurch-Stouffville's GO stations. **Policies** No policies		
Preferential Parking (Car-pool)	**Current Practice** Preferential parking for eligible car-pool users is provided at both the Stouffville GO and Lincolnville GO stations **Policies** No policies		
Bicycle Parking	**Current Practice** Bicycle parking (i.e. racks) is provided at the Stouffville GO station. No bicycle storage is available **Policies** The provision of secure bicycle parking facilities at transit stations is regarded an important consideration when developing an integrated network. (TMP – 2016, 6.4.1) Yellow symbol given to reflect local policy only being considered by the local municipality without a plan for implementation.		
EMERGING TECHNOLOGIES			
Smart Parking	Not provided at paid municipal parking facilities.		
Mobile Payment	Not provided at paid municipal parking facilities.		
Demand Responsive Parking	Not provided at paid municipal parking facilities.		
Peer-to-peer Parking	**Regulations** Not regulated **Policies** No policies		
Autonomous Vehicle (AV) Parking	**Regulations** Not regulated **Policies** No policies		

Summary Table (Local Municipalities)

Municipality	2016 Population	New Development Parking								Employer Parking Strategies		Transit Station Parking					Emerging Technologies				
		Parking Minimum Exemptions	Parking Maximums	Unbundled Parking	Shared Parking	Electric Vehicle Parking	Car-share Parking	Bicycle Parking	Stormwater Charges	Parking Cash-out	Workplace Parking Levy	Charging for Parking	Preferential Parking (EVs)	Preferential Parking (Car-share)	Preferential Parking (Car-pool)	Bicycle Parking	Smart Parking	Mobile Payment	Demand Responsive Pricing	Peer-to-peer Parking	Autonomous Vehicle Parking
City of Toronto *Single Tier Municipality*	2,731,571	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Mississauga *Peel Region*	721,599	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Brampton *Peel Region*	593,638	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Hamilton *Single Tier Municipality*	536,917	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Markham *York Region*	328,966	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Vaughan *York Region*	306,233	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Richmond Hill *York Region*	195,022	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Oakville *Halton Region*	193,832	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Burlington *Halton Region*	183,314	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Oshawa *Durham Region*	159,458	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Whitby *Durham Region*	128,377	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Ajax *Durham Region*	119,677	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Milton *Halton Region*	110,128	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Municipality of Clarington *Durham Region*	92,013	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
City of Pickering *Durham Region*	91,771	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Newmarket *York Region*	84,224	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Caledon *Peel Region*	66,502	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Halton Hills *Halton Region*	61,161	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Aurora *York Region*	55,445	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Whitchurch-Stouffville *York Region*	45,837	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of Georgina *York Region*	45,418	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Township of King *York Region*	24,512	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Town of East Gwillimbury *York Region*	23,991	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Township of Scugog *Durham Region*	21,617	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Township of Uxbridge *Durham Region*	21,176	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■
Township of Brock *Durham Region*	11,642	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■	● ■

● = Regulatory Coverage
■ = Policy Coverage

Regional Municipalities

Durham Region

Policies

Durham Region, Durham Regional Official Plan, Consolidated June 26, 2015
Durham Region, Draft Transportation Master Plan, June 2017

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)		
Parking Minimum Exemptions	Create guidelines that support a reduction in parking minimums (Draft TMP 2017 – Action 80) Yellow symbol to reflect reduction and not necessarily exception to parking minimums	
Parking Maximums	Create guidelines that support setting parking maximums (Draft TMP 2017 – Action 80)	
Unbundled Parking	No policies	
Shared Parking	Create guidelines that allow shared parking (Draft TMP 2017 – Action 80)	
Electric Vehicle (EV) Parking	Develop an Electric Vehicle Strategy (Draft TMP 2017 – Action 78)	
Car-share Parking	Coordinate with area municipalities to maximize the application of TDM practices such as carshare parking (Draft TMP 2017 – 7.4.10)	
Bicycle Parking	Coordinate with area municipalities to maximize the application of TDM practices such as bicycle parking (Draft TMP 2017 – 7.4.10)	
Stormwater Charges	No policies	
EMPLOYER PARKING STRATEGIES		
Parking Cash-Out	No policies	
Workplace Parking Levy	No policies	
TRANSIT STATION PARKING		
Charging for Parking	No policies	
Preferential Parking (EVs)	Develop an Electric Vehicle Strategy (Draft TMP 2017 – Action 78) Yellow symbol because strategy not specific to transit stations or hubs	
Preferential Parking (Car-share)	Transit Hubs are also be expected to incorporate options and facilities for new mobility options such as car-share vehicles (Draft TMP 2017 – 3.4.4)	

Preferential Parking (Car-pool)	Develop program of individualized marketing that supports public awareness and use of Regional facilities and services for carpooling (Draft TMP 2017 –Action 75) Yellow symbol because strategy only for marketing and not specific to transit stations or hubs	
Bicycle Parking	Transit Hubs are also be expected to incorporate options and facilities for cycling (Draft TMP 2017 – 3.4.4)	
EMERGING TECHNOLOGIES		
Smart Parking	No policies	
Mobile Payment	No policies	
Demand Responsive Parking	No policies	
Peer-to-peer Parking	No policies	
Autonomous Vehicle (AV) Parking	No policies	

Halton Region

Policies

Region of Halton, Official Plan, Consolidated January 13, 2016.

Region of Halton, The Road to Change – Halton Region Transportation Master Plan, September 2011.

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)		
Parking Minimum Exemptions	No policies	
Parking Maximums	No policies	
Unbundled Parking	No policies	
Shared Parking	No policies	
Electric Vehicle (EV) Parking	No policies	
Car-share Parking	No policies	

Bicycle Parking	No policies	
Stormwater Charges	No policies	
EMPLOYER PARKING STRATEGIES		
Parking Cash-Out	No policies	
Workplace Parking Levy	No policies	
TRANSIT STATION PARKING		
Charging for Parking	No policies	
Preferential Parking (EVs)	Parking and recharging infrastructure for electric vehicles is to be provided at major transit stations to give access to alternative modes of transportation. (2016, 78(11))	
Preferential Parking (Car-share)	Parking car-share vehicles is to be provided at major transit stations to give access to alternative modes of transportation. (2016, 78(11))	
Preferential Parking (Car-pool)	Parking for car-pool vehicles is to be provided at major transit stations to give access to alternative modes of transportation. (2016, 78(11))	
Bicycle Parking	Infrastructure for bicycles, including bicycle parking, is to be provided at major transit stations to give access to alternative modes of transportation. (2016, 78(11))	
EMERGING TECHNOLOGIES		
Smart Parking	No policies	
Mobile Payment	No policies	
Demand Responsive Parking	No policies	
Peer-to-peer Parking	No policies	
Autonomous Vehicle (AV) Parking	No policies	

Peel Region

Policies

Region of Peel, Official Plan, Consolidated December 2016.
Region of Peel, Long Range Transportation Plan Update, 2012.

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)		
Parking Minimum Exemptions	No policies	
Parking Maximums	No policies	
Unbundled Parking	No policies	
Shared Parking	No policies	
Electric Vehicle (EV) Parking	No policies	
Car-share Parking	The region will encourage priority parking for car-share vehicles be provided at major employment centres. (2016, 5.9.9.2.9) Yellow symbol to reflect policy being recommended without a plan for implementation.	
Bicycle Parking	No policies	
Stormwater Charges	No policies	
EMPLOYER PARKING STRATEGIES		
Parking Cash-Out	No policies	
Workplace Parking Levy	No policies	
TRANSIT STATION PARKING		
Charging for Parking	The region will encourage new ways of financing including user-pay systems with charges based on individual consumption. (2012, 5.4) Yellow symbol to reflect policy being encouraged without a plan for implementation.	
Preferential Parking (EVs)	No policies	
Preferential Parking (Car-share)	The region will encourage priority parking for car-share vehicles be provided at major transit stations and mobility hubs. (2016, 5.9.9.2.9) Yellow symbol to reflect policy being encouraged without a plan for implementation.	

Preferential Parking (Car-pool)	The region will encourage priority parking for car-pool vehicles be provided at major transit stations and mobility hubs. (2016, 5.9.9.2.9) Yellow symbol to reflect policy being encouraged without a plan for implementation.	
Bicycle Parking	No policies	
EMERGING TECHNOLOGIES		
Smart Parking	No policies	
Mobile Payment	No policies	
Demand Responsive Parking	No policies	
Peer-to-peer Parking	No policies	
Autonomous Vehicle (AV) Parking	No policies	

York Region

Policies

Regional Municipality of York, Official Plan, Consolidated April 2016 (a).
Regional Municipality of York, Transportation Master Plan, November 2016 (b).

TRENDS	EXISTING POLICIES AND PRACTICES	IMPLEMENTATION POLICIES
NEW DEVELOPMENT PARKING (COMMERCIAL/RESIDENTIAL)		
Parking Minimum Exemptions	Secondary plans and zoning by-laws should incorporate parking management policies and standards that include reduced minimum parking requirements to reflect distance to transit and complimentary uses. (2016a, 5.2.10)	
Parking Maximums	Secondary plans and zoning by-laws should incorporate parking management policies and standards that include reduced maximum parking requirements to reflect distance to transit and complimentary uses. (2016a, 5.2.10)	
Unbundled Parking	No policies	
Shared Parking	Secondary plans and zoning by-laws should incorporate parking management policies and standards that include shared parking requirements to reflect variation in demand. (2016a, 5.2.10) In regional centres and corridors, local municipalities can follow the region's growth directions by promoting shared parking strategies. (2016b, 4.3.4)	
Electric Vehicle (EV) Parking	The region will work to create a system of electric vehicle charging stations at regional facilities and along corridors. (2016b, 8.4.1) Yellow symbol to reflect policy being encouraged without a plan for implementation.	

Car-share Parking	Secondary plans and zoning by-laws should incorporate parking management policies and standards that include preferential car-share parking requirements. (2016a, 5.2.10) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for car-share parking. (2016b, 4.3.4)	
Bicycle Parking	Secondary plans and zoning by-laws should incorporate parking management policies and standards that include bicycle storage requirements. (2016a, 5.2.10) The region requires that new institution, commercial and industrial developments consider the incorporation of bicycle facilities. (2016a, 7.1.9) In regional centres and corridors, local municipalities can follow the region's growth directions by offering parking reductions in exchange for bicycle parking. (2016b, 4.3.4)	
Stormwater Charges	No policies	
EMPLOYER PARKING STRATEGIES		
Parking Cash-Out	No policies	
Workplace Parking Levy	The region's priority on addressing first and last mile challenges includes a commitment to study the possibility of introducing a fee for employee parking at businesses that are located within their frequent transit network. (2016b, 8.4.2) Yellow symbol to reflect the commitment to study the policy without a plan for implementation.	
TRANSIT STATION PARKING		
Charging for Parking	No policies	
Preferential Parking (EVs)	No policies	
Preferential Parking (Car-share)	The region acknowledges that the provision of dedicated car-share parking at transit stations can support their use. (2016b, 4.3.2) Yellow symbol to reflect policy being beneficial without a plan for implementation.	
Preferential Parking (Car-pool)	No policies	
Bicycle Parking	The region recognizes that bicycle parking at transit stations will make cycling a more competitive travel mode for first and last mile connections. (2016b, 4.3.2) Yellow symbol to reflect policy being beneficial without a plan for implementation.	
EMERGING TECHNOLOGIES		
Smart Parking	No policies	
Mobile Payment	No policies	
Demand Responsive Parking	No policies	
Peer-to-peer Parking	No policies	
Autonomous Vehicle (AV) Parking	The region states that developing a road network that is fit for the future includes monitoring the benefits and impacts of autonomous vehicles on parking and mode choice. (2016b, 5.0)	

Summary Table (Regional Municipalities)

Municipality	New Development Parking								Employer Parking Strategies		Transit Station Parking					Emerging Technologies				
	Parking Minimum Exemptions	Parking Maximums	Unbundled Parking	Shared Parking	Electric Vehicle Parking	Car-share Parking	Bicycle Parking	Stormwater Charges	Parking Cash-out	Workplace Parking Levy	Charging for Parking	Preferential Parking (EVs)	Preferential Parking (Car-share)	Preferential Parking (Car-pool)	Bicycle Parking	Smart Parking	Mobile Payment	Demand Responsive Pricing	Peer-to-peer Parking	Autonomous Vehicle Parking
Durham Region	■	■		■	■	■	■					■	■	■	■					
Halton Region												■	■	■	■					
Peel Region						■					■		■	■						
York Region		■		■	■	■	■			■			■		■					■

■ = Policy Coverage

Metrolinx

Regional Parking Policy - State of Practice Review

APPENDIX C-1
Parking Pricing Memo

November 2017
Project No. 161-54669-07

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TABLE OF CONTENTS

1 STUDY BACKGROUND

In 2008, the Regional Transportation Master Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA), The Big Move, was adopted. The plan set out a common vision for transportation in the region and included a number of measures as targets (such as a shifting mode-share and increasing accessibility), for the 25-year time span. The vision in the RTP was accompanied by a number of strategies that included priority actions and supporting policies. These strategies encompassed a variety of areas of interest, several of which related to parking. In 2016, Metrolinx began a full review of the RTP, as mandated by the Metrolinx Act. The review has led to the creation of a Draft 2041 RTP, now out for consultation. This study informed the recommendations included in the Draft 2041 Plan.

The purpose of this memo is to provide Metrolinx with off-street parking related policy recommendations to include in the RTP update. In order to assist with developing policy recommendations WSP conducted a high-level scan of parking prices in the GTHA with the intention of completing the following objectives:

- Collect parking pricing data to understand parking pricing trends in the GTHA across a range of sizes of municipality. This study focused on Toronto (population 2,730,000; highly urbanized); Mississauga (population 720,000; urban and suburban); and Whitby (population 130,000; primarily suburban).
- Perform a comparative analysis of public versus private parking costs to understand price variations, if any.
- Review price variations, if any, to generate a rough estimate of the degree to which public parking is discounted.
- Display gathered data on maps of the region to highlight geospatial and temporal trends in parking pricing.

2 APPROACH

Parking pricing data across Toronto, Mississauga, and Whitby was collected using online tools in March 2017. Except where noted, all pricing collected and presented was current at the time of data collection. Pricing data was initially collected for public parking facilities across the abovementioned municipalities; following this, pricing data was collected for the closest private parking facility (ignoring free private parking dedicated to customers or employees) to each of the public facilities identified during the initial data collection effort. This was done to minimize location-related variations between public and private parking pricing. To the degree possible, private parking pricing was selected from a single parking provider, with the intention of achieving pricing *methodology* consistency (though not necessarily *price* consistency) from one location to the next. In other words, it was assumed that a single private parking operator (e.g., Impark) use a consistent pricing scheme at various locations, with overhead costs, price strategy, and rate structures similar across facilities.

The data sources used to inform this analysis are listed in Table 2-1.

Table 2-1: Data Sources

Parking Operator	Data Source
Toronto public parking pricing	Green P
Toronto private parking pricing	Impark Parkopedia (where prices in Toronto unavailable using Impark's website)
Mississauga public parking pricing	City of Mississauga
Mississauga private parking pricing	Impark Parkopedia, Sheridan College and the University of Toronto (where prices in Mississauga unavailable using Impark's website)
Whitby public parking pricing	Town of Whitby Parkopedia (where prices in Whitby unavailable using the Town of Whitby's website)
Whitby private parking pricing	Parkopedia HonkMobile, Ontario Shores, Lakeridge Health, and Durham College (where prices in Whitby unavailable using Parkopedia's website)

Data was gathered from the above sources for the hourly, daily (weekday), evening (weekday) and weekend time periods.

The cost of public parking versus private parking was evaluated for the time periods and locations described above in order to understand temporal and spatial trends associated with public parking discounting. Public parking prices generally reflect the cost of off-street parking, to provide as close a comparison as possible to adjacent private parking facilities. In locations where off-street public parking is unavailable, however, on-street prices were used as a proxy for comparison to private facilities.

Free public parking provided by municipalities was considered in this evaluation, since such parking is taxpayer funded. With the possible exception of park-and-ride / carpool parking facilities (primarily operated by Metrolinx / GO and MTO) which ultimately aim to reduce government expenditures and minimize regional congestion, municipalities and government agencies in the GTHA providing free parking to the public do not recoup costs and therefore provide discounted parking. However, free parking provided by *private* operators was not evaluated. The motivation for private operators to provide 'free' parking is to, at minimum, recoup parking costs through other means (selling on-site goods or services, attracting better employees, etc.). Furthermore, it was assumed that any 'free' private parking is provided only to customers, clients, employees, or some other subsection of the population given special

permission to use the facility, which does not constitute an unconditional offer of free parking to the general public.

With few exceptions, it was found that evening parking prices (generally applied 6pm – 7am) are priced at the same rate as weekend pricing. As a result, weekend prices were not evaluated using GIS (mapping) software, and instead the results of the evening parking pricing analysis were taken to be indicative of weekend pricing.

In the context of this report, the term “public parking” refers to parking facilities offering temporary parking, open to the public, operated by a municipality, with revenues contributing to municipal revenue. “Private parking” is used to refer to parking facilities offering temporary parking, open to the public, operated by a private firm, with revenues belonging to a private firm. Further, “private parking” refers only to locations of paid parking (i.e., it ignores free and discounted parking for customers provided by businesses since this is not a reflection of the market rate for parking).

3 FINDINGS

3.1 TORONTO PARKING PRICES

3.1.1 Public Parking

The Toronto Parking Authority is the largest municipal parking operator in North America, providing a total of nearly 40,000 on- and off-street public parking across Toronto under the brand “Green P Parking”. Green P provides detailed information about cost of parking in different neighbourhoods across the city, with off-street lot locations and pricing coded in human- and machine-readable JSON format. Green P also operates more than a dozen park-and-ride facilities on behalf of the Toronto Transit Commission (TTC).

Table 3-1 below summarizes the Toronto public parking data collected for this analysis. A comparison of public and private parking prices is provided in Section 0.

Table 3-1: Toronto 2017 Public Parking Prices[1]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$1.50	$3.61	$7.00
Daily	$4.00	$11.30	$25.00
Evening	$3.00	$6.08	$12.00
Weekend	$0.00	$5.80	$12.00

3.1.2 Private Parking

Dozens of private operators offer parking in Toronto. Some operators, such as Impark, list the cost and number of spaces by facility across Toronto. Others, such as Canada Auto Parks, provide virtually no publicly available information first-hand. A number of apps / websites, though some are technically not legal in the City of Toronto, aggregate parking cost and availability, with some acting as parking brokers (offering to reserve pricing and/or reserve parking spots), and others simply providing information to potential users.

Table 3-2 below summarizes the Toronto private parking data collected for this analysis. Values in green indicate private parking is cheaper than equivalent public parking; values in red indicate the opposite; and values in black indicate public and private parking prices are equal. Further comparison of public and private parking prices is provided in Section 0.

Table 3-2: Toronto 2017 Private Parking Prices[2]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$1.30	$6.40	$15.00
Daily	$3.00	$15.52	$29.00
Evening	$3.00	$8.42	$20.00
Weekend	$3.00	$8.57	$20.00

[1] Based on sample data recorded by WSP for 30 public parking facilities in Toronto.
[2] Based on sample data recorded by WSP for 30 private parking facilities in Toronto, with each location in close proximity to a sampled public parking facility.

3.1.3 Discounting of Public Parking

Where sampled, public parking in Toronto appears to be discounted relative to private parking when comparing price per unit time. In general, public and private minimum prices are similar both in terms of relative proportion and actual dollar value. However, maximum parking prices are 14-53% lower at public facilities and average parking prices are 27-44% lower at public facilities relative to at private facilities, when measured across all time periods. A summary of public versus private parking variations is shown in Table 3-3 and Figure 3-1 below.

Discussion of the implications of public parking discounting is provided in Section 1.1.

Table 3-3: Toronto 2017 Public Parking Prices Relative to Private Parking Prices[3]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	15%	-44%	-53%
Daily	33%	-27%	-14%
Evening	0%	-28%	-40%
Weekend	-100%	-32%	-40%

Figure 3-1: Toronto 2017 Public and Private Parking Prices by Time Period

[3] Based on sample data recorded by WSP for 30 public and 30 private parking facilities in Toronto. This table shows the cost of parking in public facilities relative to the cost of parking in private facilities, calculated as follows: Table 2-3 = (public – private) / private = [(Table 2-1) – (Table 2-2)] / (Table 2-2)

3.2 MISSISSAUGA PARKING PRICES

3.2.1 Public Parking

The City of Mississauga operates approximately four parking garages and 18 parking lots, each with listed capacity and daily rates available online. Pricing is $1.00 per hour, with typical daily maximums of $5.00 or $6.00. The City also provides on-street parking for $1.00 to $2.00 per hour, though the extent and availability of on-street parking is not clearly identified. On-street parking generally has a three-hour maximum window per location. Parking prices have not been adjusted since their introduction in 2009, with the exception of pricing in Port Credit which was increased in 2017 (following completion of data collection and analysis for this study). A comparison of public and private parking prices is provided in Section 0.

Table 3-4 below summarizes the Mississauga public parking data collected for this analysis.

Table 3-4: Mississauga 2017 Public Parking Prices[4]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$0.00	$0.50	$1.50
Daily	$0.00	$3.00	$6.00
Evening	$0.00	$1.22	$6.00
Weekend	$0.00	$1.22	$6.00

3.2.2 Private Parking

Several private operators offer parking in Mississauga. Apps, similar to those described in Section 3.1.2 though with lesser availability, advise users of parking cost and availability. Table 3-5 below summarizes the Mississauga private parking data collected for this analysis. Values in green indicate private parking is cheaper than equivalent public parking; values in red indicate the opposite; and values in black indicate public and private parking prices are equal. Further comparison of public and private parking prices is provided in Section 0.

Table 3-5: Mississauga 2017 Private Parking Prices[5]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$2.00	$3.88	$6.00
Daily	$7.00	$11.11	$16.00
Evening	$5.00	$9.56	$16.00
Weekend	$5.00	$9.56	$16.00

3.2.3 Discounting of Public Parking

Where sampled, public parking in Mississauga appears to be discounted relative to private parking when comparing price per unit time, with prices 63% to 100% lower at public facilities, when measured across all time periods. Notably, free parking is offered at some public facilities during all time periods. A summary of public versus private parking variations is shown in Table 3-6 and Figure 3-2 below.

Discussion of the implications of public parking discounting is provided in Section 1.1.

[4] Based on sample data recorded by WSP for 9-13 public parking facilities in Mississauga (some facilities do not offer parking during all time periods).
[5] Based on sample data recorded by WSP for 9-13 private parking facilities in Mississauga, with each location in close proximity to a sampled public parking facility (some facilities do not offer parking during all time periods).

Table 3-6: Mississauga 2017 Public Parking Prices Relative to Private Parking Prices[6]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	-100%	-87%	-75%
Daily	-100%	-73%	-63%
Evening	-100%	-87%	-63%
Weekend	-100%	-87%	-63%

Figure 3-2: Mississauga 2017 Public and Private Parking Prices by Time Period

[6] Based on sample data recorded by WSP for 9-13 public and 9-13 private parking facilities in Mississauga. This table shows the cost of parking in public facilities relative to the cost of parking in private facilities, calculated as follows: Table 3-3 = (public – private) / private = [(Table 3-1) – (Table 3-2)] / (Table 3-2)

3.3 WHITBY PARKING PRICES

3.3.1 Public Parking

The Town of Whitby offers 546 parking spots across eight municipal off-street lots, and a further 274 on-street parking spots, charging $0.50 per hour for off-street parking and $1.00 per hour for on-street parking. Parking can be paid for using cash, credit card, or Honk Mobile, a mobile app which helps users locate parking, provides pricing information, and enables mobile payment. Parking rates have not been adjusted since 2000; however, based on discussions with the Town, WSP understands that rates are expected to increase in 2017, with parking lots increasing from $0.50 to $1.00 per hour, and on-street parking in downtown Whitby increasing from $1.00 to $1.50 per hour. A comparison of public and private parking prices is provided in Section 0.

Table 3-7: Whitby 2017 Public Parking Prices[7]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$0.00	$0.28	$1.00
Daily	$0.00	$0.00	$0.00
Evening	$0.00	$0.00	$0.00
Weekend	$0.00	$0.00	$0.00

3.3.2 Private Parking

Limited private parking (as defined in Section 2) exists in Whitby. Much of the parking is provided at specific institutions (e.g., Ontario Shores Centre for Mental Health Sciences, Durham College, etc.). Table 3-8 below summarizes the Whitby private parking data collected for this analysis. Values in green indicate private parking is cheaper than equivalent public parking; values in red indicate the opposite; and values in black indicate public and private parking prices are equal. Further comparison of public and private parking prices is provided in Section 0.

Table 3-8: Whitby 2017 Private Parking Prices[8]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	$1.00	$2.79	$6.00
Daily	$4.00	$7.95	$14.00
Evening	$3.00	$5.94	$10.00
Weekend	$3.00	$5.94	$10.00

3.3.3 Discounting of Public Parking

Where sampled, public parking in Whitby appears significantly discounted relative to private parking when comparing price per unit time, with public facility prices ranging from 83% to 100% lower than private facilities, when measured across all time periods. However, in the case of Whitby (as opposed to Mississauga and particularly Toronto), it is important to consider these results within the context of the Town: little private parking (as defined in Section 2) is offered, as public parking is generally plentiful, with low rates provided by the municipality. This renders private facilities less able to generate substantial revenues. However, a handful of localized exceptions exist – such as major health and education facilities – where there is strong demand for parking within a small geographic area in the Town. As a result, few private parking facilities exist in Whitby, but those that do exist tend to command significant rates. A comparison of these rates to the standardized municipality rates leads to what appears to be a high level

[7] Based on sample data recorded by WSP for 3-9 public parking facilities in Whitby (several facilities do not offer parking during all time periods).
[8] Source: 3 Apr 2017 email from the City of Mississauga Transportation and Works, Municipal Parking Office

of discounting for public parking across the municipality. In reality, however, this sizeable discount is likely only occurring at a small number of locations.

A summary of public versus private parking variations, as measured for the purposes of this study, is shown in Discussion of the implications of public parking discounting is provided in Section 1.1.

Table 3-9 and Figure 3-3 below. Notably, free parking is offered at some public facilities during all time periods.

Discussion of the implications of public parking discounting is provided in Section 1.1.

Table 3-9: Mississauga 2017 Public Parking Prices Relative to Private Parking Prices[9]

Time Period	Min. Price	Avg. Price	Max. Price
Hourly	-100%	-90%	-83%
Daily	-100%	-100%	-100%
Evening	-100%	-100%	-100%
Weekend	-100%	-100%	-100%

Figure 3-3: Whitby 2017 Public and Private Parking Prices by Time Period

[9] Based on sample data recorded by WSP for 9-13 public and 9-13 private parking facilities in Toronto. This table shows the cost of parking in public facilities relative to the cost of parking in private facilities, calculated as follows: Table 3-3 = (public – private) / private = [(Table 3-1) – (Table 3-2)] / (Table 3-2)

3.4 GTHA PARKING PRICING TRENDS

3.4.1 Pricing Trend Summary

No facility-specific data related to average daily parking volumes or occupancy rates was available for the purposes of this study. Unfortunately, quantifying the degree to which public parking is discounted is impossible without knowing occupancy rates and turnover at each facility. Cheaper facilities will have higher average occupancy rates due to attractive pricing, all other things being equal, lessening the degree of discounting at cheaper facilities. Additionally, facilities which, for example, charge a low hourly rate but incentivize frequent turnover, may generate more revenue per parking spot per day than facilities which encourage all-day parking. Finally, a number of factors beyond price can affect occupancy rates, including visibility and accessibility of facilities; convenience; parking quality (size of spaces, lighting, general maintenance, etc.); and other factors. Such variations could exacerbate the difference in annual revenue between facilities, or might lessen revenue differences.

This imperfect relationship between rates and revenue makes it impossible to draw strict conclusions about the degree to which parking is being discounted by municipalities without having timestamped occupancy data for each facility. Refer to “Further Analysis” below for further discussion.

While the degree of discounting appeared to be inversely proportional to the population and population density of the municipality – with Toronto appearing to provide the least discounting and Whitby the greatest (in percentage terms) – it is important to note that, as discussed in Section 4.2, public versus private price variations might appear inflated as a result of publication bias. In other words, private parking operators presumably choose to operate parking facilities only in lucrative locations, thus commanding high prices, whereas municipalities might operate paid parking facilities in locations where operation is revenue neutral, or even operates at a net loss. This is particularly true in smaller, less dense municipalities, where parking prices tend to be low. Moreover, the provision of free or inexpensive parking by Metrolinx (GO) and the Ministry of Transportation of Ontario (MTO) at park-and-ride facilities and car-pooling lots limits the ability of local municipalities to charge for parking in locations close to these free facilities. While this may register as a parking discount, it is one that is challenging or impossible to avoid in such vicinities.

Nevertheless, the data gathered for this study indicate that, where sampled, each of the three municipalities provides publicly availably parking at significantly lower rates than nearby private facilities. The results of the geospatial public parking discounting analysis are displayed in Appendix C-1.

A comparison of historical parking prices in Mississauga and Whitby indicates that the municipalities have not adjusted parking rates in keeping with inflation. The Town of Whitby stated that, as of March 2017, public parking rates in Whitby have not been adjusted since 2000; the City of Mississauga stated that rates have not been adjusted since 2009, when paid parking was first introduced, with the exception of pricing in Port Credit which was increased in 2017. During this time, however, Statistics Canada’s Ontario All Items Consumer Price Index (CPI), a measure of inflation in the province of Ontario, has increased by over 31% (2000 to 2017) and 14% (2009 to 2017) respectively.[10] Prices which do not keep up with inflation in effect become cheaper, and this is particularly clear to consumers when compared against increasing costs of transit, taxis, and other modes of transportation for which prices do keep pace with inflation.

In Toronto, historical public parking rates were available for 2015. In the public parking locations sampled for this study, the average hourly price has increased 21% since 2015, while the CPI has only increased by 3%.[11] However, during this timeframe, many locations have not had any price increases, while others have had substantial price increases. It is therefore difficult to determine whether the increases in Toronto

[10] Statistics Canada, CANSIM, table 326-0021 and Catalogue nos. 62-001-X and 62-010-X.
Last modified: 2017-01-20. (http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ09g-eng.htm)
[11] Ibid.

public parking prices are “catching up” – making up for minimal price increases in previous years – or if Toronto is indeed raising the real (i.e., inflation-adjusted) cost of parking as time goes on. The Toronto Parking Authority (TPA) stated that prices are reviewed annually or more frequently at every TPA-owned lot, with prices adjusted to account for changes in parking supply and demand, in order to keep occupancy and turnover high at each facility. However, while this is generally a sound policy, even an anecdotal comparison reveals variation between pricing strategies at neighbouring TPA facilities.

3.4.2 Pricing Trend Implications and the Role of Parking Pricing Policy

There are two primary disadvantages for a municipality which provides discounted parking.

First, even where public parking is profitable, if a municipal facility generates less revenue (or, arguably, less net revenue) per parking spot than an equivalent private facility, it is providing users with discounted parking. Though this may not register in municipal accounting as a cost, and may therefore escape the degree of scrutiny given to municipal divisions which operate at a net loss, providing parking at below-market revenue-generation rates nevertheless represents an opportunity cost in the form of lost revenue. This lost revenue must be made up for in other ways; in the GTHA, the chief source of municipal revenue is property tax.

Second, fundamental principles of economics indicate that discounting a service or commodity will increase demand for that entity relative to the demand observed when market rate is charged, all other things being equal. Inasmuch as municipal discounting of parking is occurring, discounting can thus be considered a driving factor in demand for parking, which in turns fuels demand for auto-based transportation. A municipality or region intent on promoting non-auto modes of transportation should either remove its parking discounts, or explicitly state and justify in well-publicized policy the logic behind discounting parking, tying pricing strategy to policy objectives.

Municipalities need not be bound by traditional pricing models and periodic incremental pricing adjustments when determining appropriate public parking prices. New technology is giving municipalities far more control over parking pricing than was available in recent decades. For example, in 2011, San Francisco launched a pilot program called SFPark to set public parking prices dynamically, as a function of occupancy rates, in its Central Business District (CBD) and a handful of other neighbourhoods. The goal of the pilot was to keep parking occupancy at 60-80% full. Retrospective analysis revealed improved availability of parking, reduced vehicle kilometres traveled (VKT), reduced greenhouse gas emissions (GHGs), and reduced the amount of time drivers spend circling in search of parking.[12]

Refer to the findings reported within Appendix A of the State of Practice Review report for more detailed information regarding SFPark and other case studies.

Ultimately, each municipality must tailor its public parking pricing strategy to meet local needs and restrictions. As a regional organization, Metrolinx is positioned to provide high-level policy guidance rather than proscribing, for example, specific rates to be set by each municipality in the GTHA. This study of parking pricing provides evidence that GTHA municipalities appear to be providing parking at a below-market (discounted rate) in at least some locations and at some facilities, likely in part due to historical precedent and inertia of the legacy parking policies, as well as politicized decision-making related to municipal fees. A comprehensive review of regional parking policy would provide an excellent opportunity to incorporate new technologies and new ways of thinking into the guidance provided to the region’s municipalities to help municipalities achieve their long-term vision.

3.4.3 Further Analysis

As discussed above, no facility-specific data related to average daily parking volumes or occupancy rates was available for the purposes of this study. Determining comprehensively the degree to which

[12] http://sfpark.org/

municipalities in the GTHA discount parking rates would require a more detailed study; in particular, the following data would need to be collected and analyzed for each municipality of interest. Availability and completeness of data would likely need to be established as part of a precursor feasibility study.

- Current parking rates by facility, by time of day, by day of week
- Historical parking rates by facility, by time of day, by day of week
- Parking availability (number of parking spots) per facility
- Historical and/or sample occupancy rates by facility, by time of day, by day of week
    - This data could be gathered through sample vehicle counts or, with enough granularity of data, through parking fee collection data
- The above data would be required for several public and private parking facilities per municipality (number of facilities required would vary by municipality)

Gathering such data and making it publicly available through Open Data platforms would greatly increase transparency, facilitate more comprehensive evaluations of parking across the region, enable comparisons and coordination of parking strategies from one municipality to the next, and provide a clear, measurable link between municipal and regional parking policies and their impacts on parking usage and revenue generation across the region.

Further, there is a need to explore and quantify the potential benefits of pursuing a regional parking strategy for the GTHA, rather than leaving each municipality to pursue independent parking policies. A consistent, region-wide strategy would simplify parking for users, and enable a cohesive regional response to upcoming shocks to parking demand and requirements in the face of new forms of mobility (ride-sharing, car-sharing, mobility as a service, regional transit fare integration, connected and automated vehicles, etc.).

Beyond determining the degree to which municipalities are discounting parking in terms of dollars per hour or percentage terms, the abovementioned data could be used to produce an estimate of the opportunity cost (i.e., lost revenue) municipalities pay by charging below-market rates. Additionally, a comparison of current municipal parking prices to historical prices could be used to determine the pace at which prices have grown over time. This growth in prices could be compared against the Ontario All-Items CPI, as well as real-estate indices, to understand the real cost of parking over time.

Additionally, using WiFi or Bluetooth scanners, a future study could evaluate the destinations (or at least general direction) that parking customers seek from different parking facilities within a municipality. Such scanners could also be used to measure typical duration of parking, and give a rough indication of relative parking volumes from one facility to the next.

4 FEEDBACK / LIMITATIONS

4.1 Municipal Feedback

This section describes limitations of WSP's high-level scan of parking pricing trends in the GTHA, as well as feedback received from municipalities.

Municipalities in the GTHA were given an opportunity to review a draft of this evaluation to provide feedback and provide a municipal perspective on the findings contained herein. Feedback included the following.

- → Public parking policy objectives are too complex, with pricing mechanisms too nuanced, to be captured fully in this analysis of sample parking prices. Moreover, publicly operated parking facilities typically serve a market which is not directly comparable to that served by privately operated parking facilities.
- → An analysis of public parking discounts should focus on total revenue per parking stall per year, rather than hourly or daily parking rates. One municipality stated that, where they have compared publicly operated facilities to comparable privately operated facilities, annual revenue per stall is comparable or even higher for publicly operated facilities, owing to higher usage and turnover at public facilities.
- → Consideration should be provided for the destinations of parking customers.
- → The review should consider alternative parking pricing strategies and their alignment with other plan goals and objectives.
- → The analysis should include a review of free parking provided by private owners.

The above feedback is addressed as necessary and where possible in sections 2 and 3 of this memo.

4.2 Evaluation Limitations

WSP identified the following limitations to applicability, generalizability, and confidence of this evaluation's results. The limitations stem from two restrictions. First, as discussed in Section 1, the intent of this evaluation was to provide an initial high-level scan of parking pricing trends in the GTHA, rather than a comprehensive, detailed analysis of all parking facilities, facility types, and GTHA municipalities. The findings presented in Section 3 are based on a relatively small data sample (total of 40-50 public parking facilities and 40-50 private parking facilities across the study municipalities).

Second, the results were restricted by limited availability of data, particularly in terms of historical data; annual revenue data (as opposed to basic parking rates) and cost information; and published data for privately operated facilities.

Identified limitations to this evaluation are described as follows:

- → Public versus private price variations might appear inflated as private parking operators presumably operate parking facilities only in lucrative locations, thus commanding high prices, whereas municipalities might operate paid parking facilities in locations where operation is revenue neutral, or even operates at a net loss, in order to meet policy objectives. This is particularly true in smaller, less dense municipalities, where parking prices tend to be low.
- → Long-term trends in parking pricing were challenging to assess as a result of *limited* availability of historical data (public facilities) / *no* availability of historical data (private facilities).

- WSP did not have access to occupancy rates, facility-specific parking volumes, or other detailed data such as customer destinations and use cases. As a result, WSP was unable to assess annual revenue or profit generation per parking stall by facility, and as a result, it cannot be concluded decisively that municipalities are or are not discounting public parking. Further investigation, as described in Section 3.4.3, would be required to quantify true levels of public parking discounting, if any, in the GTHA.
- There is no single location from which privately operated parking facility data can be gathered for an entire municipality; many private facilities do not post rates online, or provide rate structures which are not directly comparable to public facility rate structures.
- Municipality-provided street-parking permits in residential neighbourhoods were not evaluated within this study owing to several challenges: Whitby does not offer paid permit street-parking; Mississauga only allows paid permit street-parking for temporary (up to 7-day) periods; in Toronto, permit parking is paid for by the month, making it difficult to compare to the majority of parking facilities, where non-monthly rates are typical; and further, in Toronto, the cost of permit parking varies by owner based on number of vehicles and availability of local off-street parking, but is generally unaffected by location or other traditional economic factors such as supply and demand.
- As described in Section 2 public versus private pricing comparisons were drawn by pairing a public facility with the nearest paid private facility. While private facilities were typically located quite close to the comparator public facilities (i.e., within 100–200m), this was not always the case in suburban locations.
- Discussion of public park-and-ride and carpool parking facilities, such as GO lots, is considered in the main report.

The findings of this evaluation should be considered within the context of the abovementioned limitations.

Metrolinx

Regional Parking Policy - State of Practice Review

APPENDIX C-2
Parking Pricing Maps

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Project No. 161-54669-07

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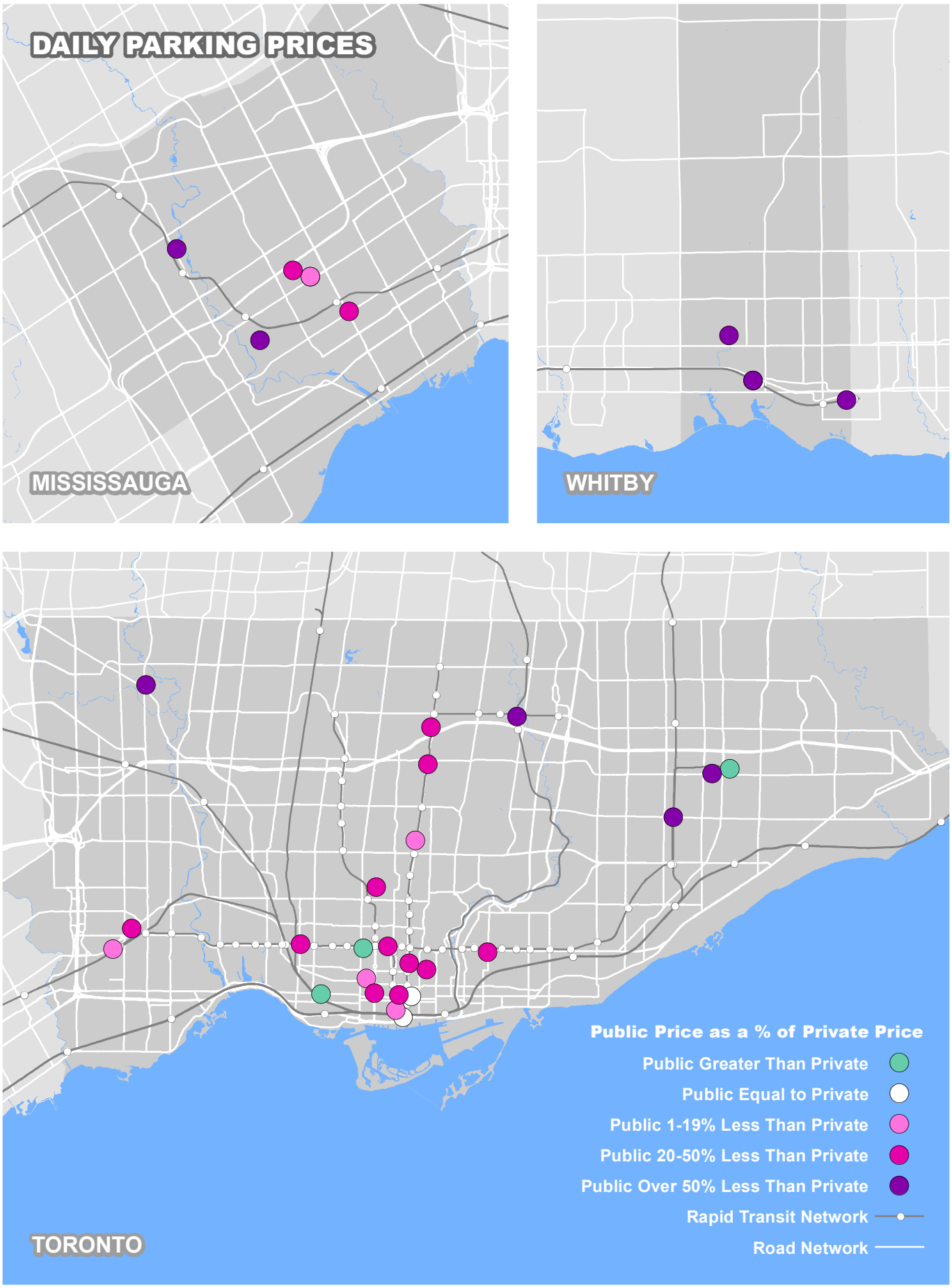
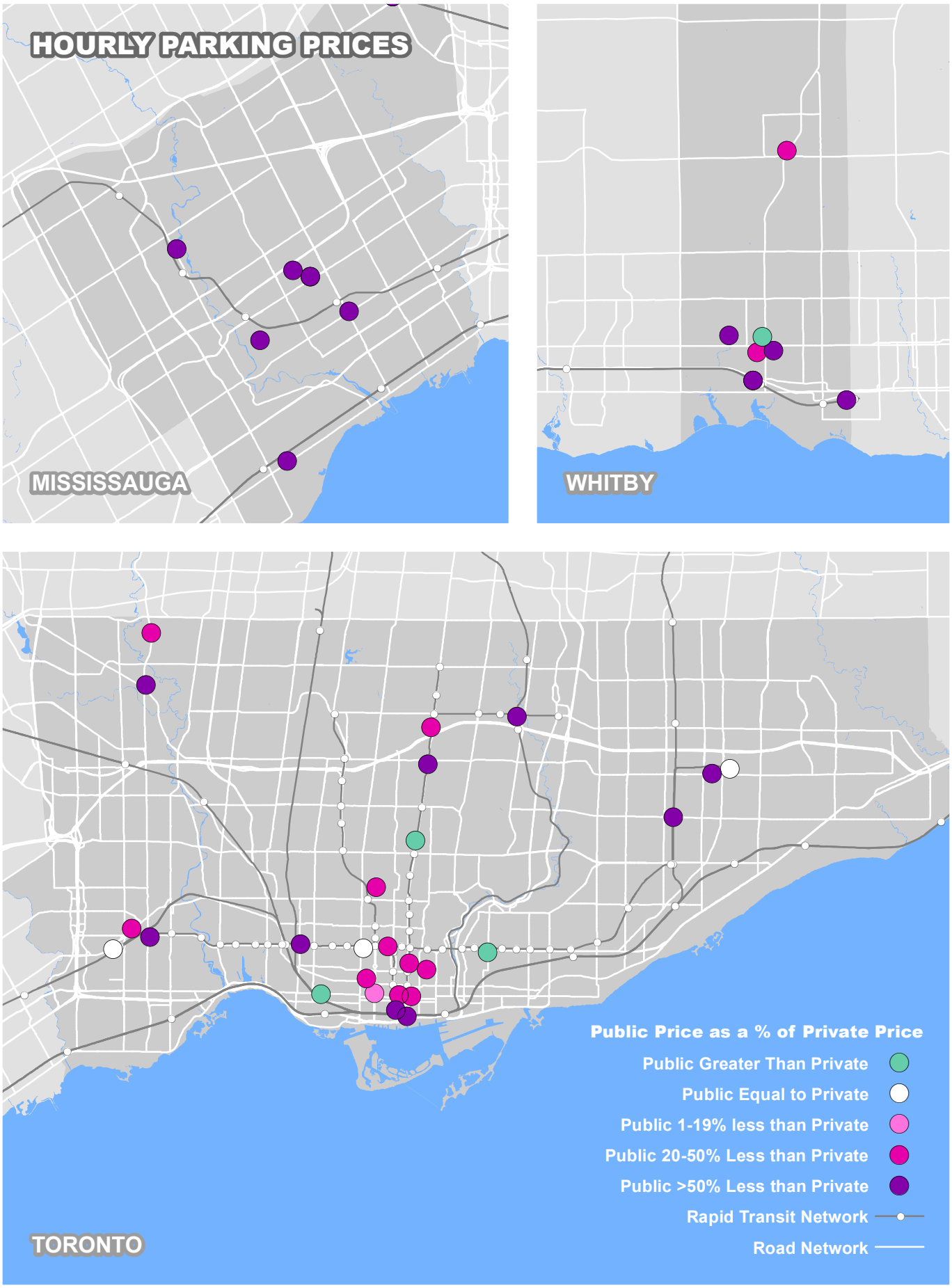
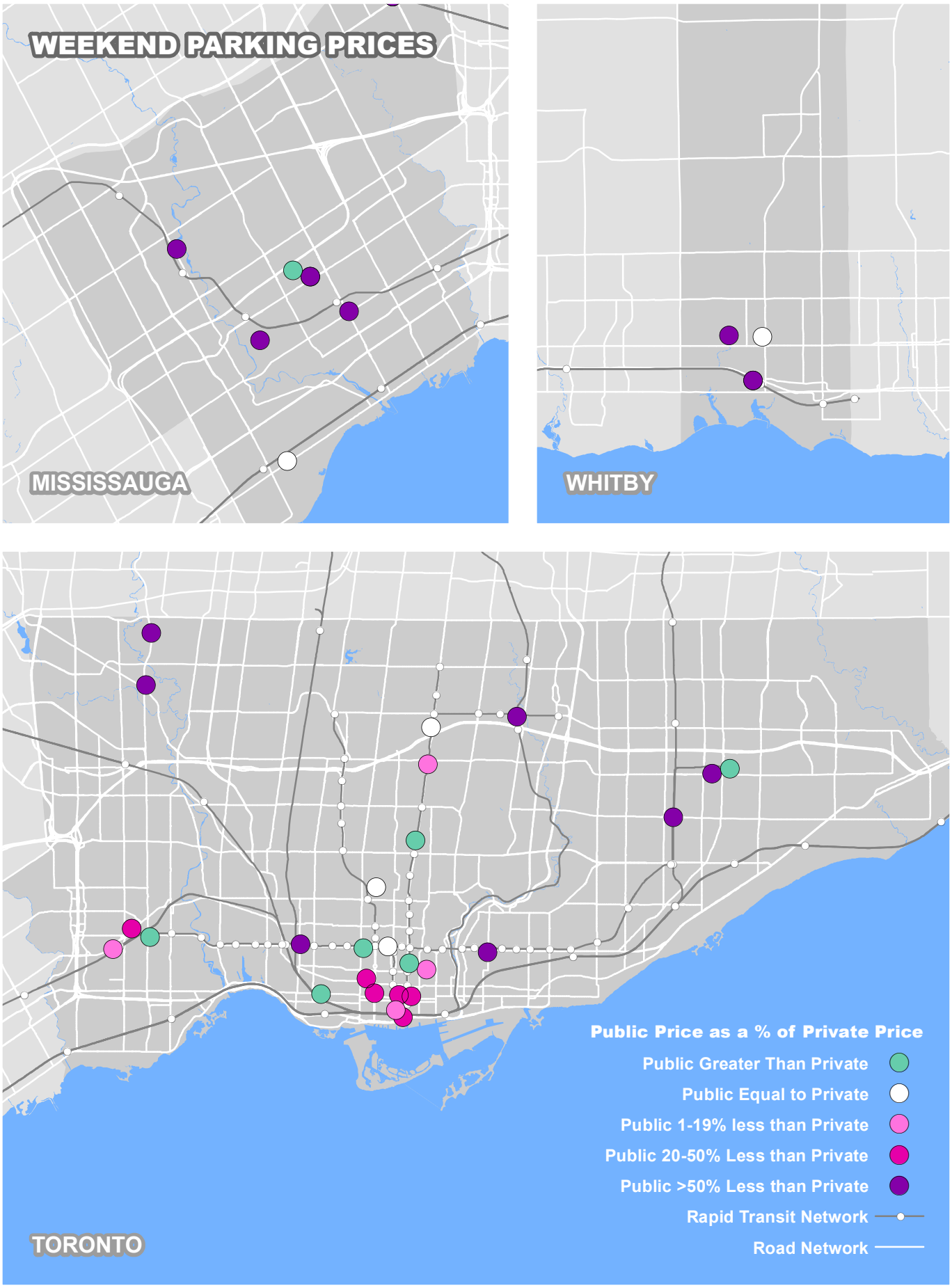

DAILY PARKING PRICES
MISSISSAUGA
WHITBY
TORONTO
Public Price as a % of Private Price
Public Greater Than Private
Public Equal to Private
Public 1-19% Less Than Private
Public 20-50% Less Than Private
Public Over 50% Less Than Private
Rapid Transit Network
Road Network


HOURLY PARKING PRICES
MISSISSAUGA
WHITBY
TORONTO
Public Price as a % of Private Price
Public Greater Than Private
Public Equal to Private
Public 1-19% less than Private
Public 20-50% Less than Private
Public >50% Less than Private
Rapid Transit Network
Road Network


WEEKEND PARKING PRICES
MISSISSAUGA
WHITBY
TORONTO
Public Price as a % of Private Price
Public Greater Than Private
Public Equal to Private
Public 1-19% less than Private
Public 20-50% Less than Private
Public >50% Less than Private
Rapid Transit Network
Road Network