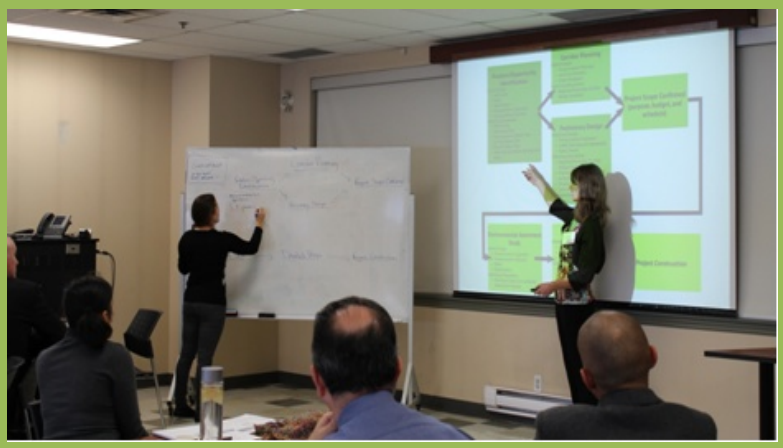
IDENTIFYING AND OVERCOMING BARRIERS TO THE IMPLEMENTATION OF ACTIVE TRANSPORTATION POLICIES

Final Report



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Clean Air Partnership

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Cover Photo Credit
Left: Focus Group Discussion, York Region, Nov 27, 2013 (Photo Credit: Elysia Leung)
Right: Focus Group Discussion, City of Burlington, Nov 29, 2013 (Photo Credit: Asya Bidordinova)

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Clean Air Partnership (CAP) is a registered charity dedicated to improving air quality, minimizing greenhouse gas emissions and reducing the impacts of air pollution and climate change. The Toronto Centre for Active Transportation (TCAT), a project of CAP, advances knowledge and evidence to build support for safe and inclusive streets for walking and cycling, and believes that active transportation plays a critical role in creating environmentally and economically sustainable cities.

Abstract:

This research paper explores the institutional barriers that exist to making better facilities that support active transportation (AT) as part of the design, construction and reconstruction of roadways in the Greater Toronto and Hamilton Area (GTHA).

Both policy and practice aimed at incorporating facilities for AT as part of roadway projects in the GTHA are evolving rapidly. From better language in the Provincial Policy Statement, to the more specific guidance in York Region's Context Sensitive Solutions document, to the current development of a Complete Streets policy and guidelines in Toronto, the policy context is increasingly oriented toward promoting better environments for AT. Facilities are also being built in places that would not have been expected a decade ago. Both the Regional Municipality of York and Halton Region, for example, are in the process of building extensive cycle networks along their regional roadways.

In order to better understand how these policies are or are not translating into current practices, between 2013 and 2014 the research team: (1) conducted a review of provincial policy, municipal policy, and professional street design guidelines such as those produced by the Transportation Association of Canada (TAC); (2) conducted two focus group sessions with planning and engineering professionals; (3) and carried out several case studies of Toronto area road projects that either incorporated, or failed to incorporate, active transportation facilities. The research was also carried out with the assistance of an advisory group of professionals involved in AT planning and design that reviewed project reports and provided critical feedback and insight into the policies and processes involved in providing AT facilities.

Overall, the research found that despite high level policies that encourage AT, institutionalized barriers continue to exist that promote roadway design primarily oriented toward accommodating motor vehicles. In some cases, such as the Municipal Class Environment Assessment, there is not consensus on how the process does and does not create barriers to AT, nor how the process *should* work. The promotion of motor vehicle roadway design in other cases, such as the standardized and often mandated performance measures such as Level of Service and Traffic Impact Studies, was much clearer. Complex interactions between different levels of government, the ways that the capital budgeting process works, and other aspects of how roadways are financed, designed, and produced all interact to produce environments that continue to prioritize the accommodation of motor vehicles, sometimes despite policy.

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1. Introduction

This report examines the implementation of provincial and municipal policies that seek to build communities that encourage walking and cycling in the Greater Toronto and Hamilton Area (GTHA). The presence of progressive policy language in existing provincial, regional, and local policy documents are not necessarily translating into successful on-the-ground changes, as many institutional barriers to implementation exist (Hess 2009, Southworth and Ben-Joseph 1995). This report is based on research conducted in 2013-2014 by Dr. Paul Hess at the University of Toronto in collaboration with Nancy Smith Lea at the Toronto Centre for Active Transportation (TCAT) and with support from Metrolinx. In order to better understand how policies intended to support active transportation are or are not translating into current practices, the project conducted a policy review, conducted two focus group sessions with planning and engineering professionals, and carried out several case studies of Toronto area road projects that either incorporated, or failed to incorporate, active transportation facilities. The goal of the research was to identify barriers and to make recommendations to overcome them.

The Province of Ontario and Metrolinx have established a number of policies, plans and guidelines – including the Growth Plan, the Provincial Policy Statement, and the regional transportation plan, *The Big Move* – that provide policy direction for municipalities to build complete communities and streets that encourage walking and cycling. Regional and local municipalities, too, over the past decade, are increasingly adopting policy language (i.e. in Official Plans and Transportation Master Plans) that is intended to support active transportation (AT) and Complete Streets (Whitney, 2012).

Creating policy, however, is different than aligning practices to those policies. In terms of developing streets and roadways that support AT, the focus of this report, detailed street planning, development, engineering and construction processes (including engineering standards and other institutionalized practices) have not necessarily caught up with, and may in fact be barriers to, higher-level policies. This report examines elements of current street design and project implementation processes in the GTHA with the aim of identifying barriers. At the outset of the research, two primary objectives were identified:

- To chart some of the real-world decision-making processes that move "policy" to "implementation" when it comes to infrastructure that prioritizes active transportation and helps to implement the Growth Plan and Regional Transportation Plan; and
- To identify any policy gaps and/or the need for new or updated tools (such as professional guidelines/standards, education/training, regulatory updates, etc.) to facilitate the achievement of active transportation policies.

The report is structured into nine separate sections. Following this introduction (Section 1) and methods (Section 2), Section 3 describes the Ontario transportation policy context as it relates to active transportation in the GTHA. Section 4 explores in some depth the significance of the Municipal Class Environmental Assessment (EA) process, and discusses the lack of clarity and consensus regarding the role the EA process plays resulting in either the inclusion or exclusion of active transportation facilities as part of road projects. Section 5 discusses the general project design process, including coordination between different levels of government, capital plans and funding of road projects. Although coordination and capital costs were not a specific focus of this study, their importance was raised frequently throughout the focus groups and advisory committee meetings. Section 6 discusses performance measures. Section 6.1 focuses on Level of Service in which active modes are largely disregarded in this ubiquitous performance measure of conditions of traffic flow. Section 6.2 describes the way in which Traffic Impact Studies, with their focus only on motor vehicle analysis and forecasting, result in streets designed for that mode. Section 7 discusses transportation guidelines and standards that can influence decisions to include or exclude active transportation in municipal road projects; the importance of design guidelines, which are the most referenced by GTHA practitioners; and two examples of different approaches taken to the design process at the regional and municipal level. Section 8 provides a succinct summary of the barriers found in this study to implementing active transportation in the road project planning process. Section 9 concludes with a list of recommendations offered for improving GTHA street design practices, processes, guidelines, and standards that support planning and implementing walking and cycling infrastructure on municipal and regional roads.

2. Methods

The study employed the following methods: 1) a review of the policy and legislation framework in Ontario as it relates to active transportation, 2) five case studies where active transportation infrastructure was either successfully included or excluded from street projects, and 3) two interactive discussion sessions (focus groups) specific to project scoping and design guidelines with professionals in the field including municipal policy staff, planners, municipal engineers, and consultants. In addition, the research team reported to and was given feedback by a research Advisory Committee that met at regular intervals during the project. The list of Advisory Committee members is provided in Appendix A.

The Advisory Committee was comprised of active transportation experts who work in transportation engineering or planning at the provincial, regional and municipal levels. The Advisory Committee role included reviewing project reports, providing insight and

feedback on the literature review and interactive group discussions; raising important considerations related to their profession or area of expertise; reviewing the literature review and report findings and providing comments. Inputs were provided during the Advisory Committee meetings and after the meetings by email or phone.

The literature review (Appendix B) examines the policy and legislation framework in Ontario as it relates to active transportation. Provincial policies and legislation, some regional and municipal plans, and some design guidance documents were reviewed to identify barriers to increasing active transportation in the GTHA. The review could be further strengthened by an analysis of all Official Plans and Transportation Master Plans in the region, but that was beyond the scope of this project. . In selecting documents to review, engineers, planners and others involved in the street design process were asked to provide a list of design guidelines and resources influencing the design process. Documents were drawn from relevant government sources at the provincial, regional, and municipal levels, and from the publications of national professional organizations, such as the Transportation Association of Canada (TAC), which have an important influence on street design. The research team solicited feedback and review of the literature review process and summary document by experts, including the Advisory Committee.

As a part of this study, street design and redesign projects in the GHTA were reviewed as case studies to gain a better understanding of the barriers and enablers of active transportation infrastructure in the design and implementation process. In June 2013 a public request for case study examples was circulated through the TCAT Newsletter (see Appendix C) and by way of direct email requests to active transportation professionals in the GTHA, including Advisory Committee members. They were asked to suggest examples of new or reconstructed streets from the past five years where 1) active transportation infrastructure was successfully included or 2) where there was an attempt to include active transportation infrastructure but in the end the final design didn't include it. Five projects were selected – 1) Bloor Street, Toronto; 2) Kingston Road, Toronto, 3) Plains Road, Burlington (Halton Region); 4) Rathburn Road, Mississauga (Peel Region), and 5) York Boulevard, Hamilton. Each case study describes the study area, process, lessons, and timeline. The case studies were discussed at the Advisory Committee and at the interactive sessions with experts and practitioners in York Region and Burlington (with focused attention paid to Plains Road and Rathburn Road). The case studies are provided in Appendix D.

The focus groups were conducted in November, 2014, one in York Region, and the other in the City of Burlington, with planners, engineers, consultants and other practitioners involved in the street design process. The York focus group principally had professionals from the regional municipality, but practitioners from local municipalities and private sector consultants also attended. The Burlington focus group was

comprised of local municipal staff and one representative from Halton Region. During each focus group preliminary project findings were presented and two general topics were discussed to help explore: (1) what guides decisions and priorities for setting a street project's purpose, budget and schedule, both in the upper and lower tier municipalities, particularly pertaining to pedestrian and cycling facilities; and (2) what street design guidelines support or impede the inclusion of AT facilities in a roadway project, the different types of AT facilities being implemented, and ideas for what could be changed to better facilitate cycling and walking. Participants were also asked to fill out a questionnaire about their occupation, education, and design guidelines that they use. The discussions were transcribed and summary documents were provided to the participants and presented to the Advisory Committee to inform the discussion of barriers to implementing AT and project recommendations. Follow-up interviews were conducted to clarify issues.

York Region and Burlington were selected as good sites for focus groups for several reasons, including that they both have strong AT policies and have demonstrated leadership and innovation in building AT networks.

Candidate streets were considered from York, the largest GTHA regional municipality outside of Toronto, but in the end there was not one chosen for the case study review. However, the process of converting and widening streets from rural to urban use in York Region is of particular interest from the perspective of opportunities for facilitating AT. In 2010, York Region Council made a decision that bicycle facilities must be considered in all regional road projects (York Region Focus Group, 2013). Since 2012, York Region has been developing Context Sensitive Solutions (CSS) Road Design guidelines including a catalogue of bicycle facilities for all types of roads.

Burlington, on the other hand, is a lower-tier municipality that is largely "built out" and is of interest as an example of a municipality that has a constrained existing right-of-way in which to include AT. To accommodate on-street bike lanes, Burlington has reduced traffic lanes to 3 meters – some of the narrowest traffic lanes in the region. This approach was taken with active participation of the local cycling community. For 20 years, the Burlington Cycling Committee (a citizen advisory committee) has assisted and advised Burlington Council in cycling related matters.

In both municipalities, engineers and planners work together and have a similar understanding of the importance of active transportation and agreement about how to incorporate walking and cycling into the road system. Discussing AT with these upper and lower-tier municipalities provided additional insights into AT barriers in the two-tier municipal system.

2.1. Study Limitations

Policies and processes that influence the provision of AT infrastructure are complex and a complete analysis of all of the contributing factors that create both opportunities and barriers to implementing walking and cycling facilities was outside of the scope of this project. For example, it is well known that there are many specific policies and guidelines governing street design and operations that are designed for vehicle movement without considering their impact on other modes (Hess 2009, Southworth and Ben-Joseph 1995), but we did not have the capacity to review these in detail. This is an enormous task, but also one that must be understood in the context of how they are used in day-to-day decision making. Different guidelines for traffic lane widths, warrants for installing traffic calming or for pedestrian crossings, and the establishing of speed limits, for example, do not get implemented in a straightforward way solely based on policy, but are, instead, worked out in the context of complex and often political decision making processes where participants do not have equal power to affect outcomes. These guidelines and active transportation specific design decisions are also affected by professional education and culture, the social capital, or lack thereof, of communities in which projects are carried out, and many other factors. We touch on some of these processes in this study. To understand more fully how they work would involve more time, resources and sociological methods. A full, systematic review of policies around active transportation in all the Official Plans and Transportation Master Plans across the Greater Toronto-Hamilton Area was also beyond the scope of this study. By design, we tried to bracket-off issues of economics and financing which are, of course, integral to any infrastructure provision. Instead, we offer an initial scan of how AT is considered in planning and design practices based on the methods we employed. The research captures important issues and should be taken as an initial understanding of how AT decisions are made in some parts of the GTHA.

3. Transportation policy context

Provincial policies and legislation, regional and municipal plans, and design guidance documents were reviewed to identify the incorporation of policies to increase active transportation use in the GTHA and potential policy barriers. A more detailed review of relevant policy documents can be found in Appendix B. We only summarize basic findings here.

Ontario's *Provincial Policy Statement* (PPS) (2005, revised in 2014) sets province-wide policy direction for land use planning. Other provincial plans build on the PPS policy foundation including the Growth Plan for the Greater Golden Horseshoe (2013) and the Metrolinx Regional Transportation Plan, *The Big Move (2008*). Together, these provide a

broad planning policy framework in the GTHA that explicitly includes active transportation.

While Ontario policies and regional plans are generally supportive of AT, stronger support for AT in the PPS and other provincial policies (such as the Planning Act) and regional plans (such as the Growth Plan for the Greater Golden Horseshoe) is necessary to better guide the development of municipal policy frameworks, including municipal Official Plans and Transportation Master Plans. Throughout this research, experts and practitioners identified Official Plans and Transportation Master Plans as critical to implementing active transportation, as they inform project scoping, clarify modal priorities, shape the environmental assessment process, protect the development of future right of way, and uphold municipal/regional priorities and designs with developers. Sections 3.1, 3.2 and 3.3 below discuss the role of the PPS, regional and municipal plans.

Experts and practitioners also identified the Municipal Class Environmental Assessment (MCEA) as an important element in the transportation planning process. The provincial *Environmental Assessment Act (2010)* mandates the MCEA for routinely implemented transportation and other infrastructure projects. Experts participating in this project had different opinions on the influence of MCEA in developing AT infrastructure. Some experts consider the MCEA a routine procedure that is policy-neutral. Others argued that the MCEA can be a barrier to developing AT infrastructure, in particular, building on-street bike lanes. The MCEA, too, is further discussed below.

Another important piece of provincial legislation is *The Accessibility for Ontarians with Disabilities Act, 2005* (amended 2012) that requires designs of sidewalks and road crossings to ensure accessibility of streets for people with disabilities. While improving accessibility by designing pedestrian infrastructure and road crossings for people with disabilities in mind is important, *the Accessibility Act* and provisions relevant to AT were not the focus of this study.

The following sections discuss how the PPS, Growth Plan and the Big Move, and municipal Official Plans and Transportation Master Plans inform transportation projects, outline barriers to including active transportation in road projects, and suggest approaches to promoting active transportation in the existing transportation policy framework.

3.1. Provincial Policy Statement

The *Provincial Policy Statement (PPS)* is a policy document first released in 1996 by the Ministry of Municipal Affairs and Housing (MMAH) that links the provincial Planning Act to Official Plans developed by municipalities. The PPS is an overarching, although fairly general policy document that is reviewed every five years.

A new version of the PPS was released on February 25, 2014. This version, for the first time, uses the term "active transportation," replacing "alternative transportation modes" in previous versions. Other notable changes are:

- That increasing the "use of active transportation and transit before other modes of travel" is prioritized (Part IV);
- That land use patterns within settlement areas shall be based on densities and a mix of land uses which … support active transportation (1.1.3.2);
- That streets should "foster social interaction and facilitate active transportation and community connectivity" (1.5.1).

Of the above, perhaps the most significant change is the word "shall" regarding the inclusion of active transportation in land use planning (1.1.3.2). The PPS is clear and transparent about the different types of language it uses and that words like "shall" are understood as a directive, rather than as enabling or supportive (PPS, 2014: 2). This is a positive step.

However, in the transportation section of the PPS, while the use of the term "active transportation" is an improvement, it is still only referred to as a transportation mode that "should be promoted" rather than using directive language to ensure it is supported. In two separate submissions (October 29, 2010 and November 23 2012), TCAT recommended that MMAH incorporate a statement requiring the adoption of both provincial and municipal Complete Streets policies, to ensure municipalities consistently design and operate the entire street network for all road users, including cyclists and pedestrians of all ages and abilities. In 2012, the Office of the Chief Coroner for Ontario made similar recommendations. First in the Cycling Death Review and subsequently in the Pedestrian Death Review, the Coroner's number one recommendation was directed toward the Ministry of Transportation (MTO) and MMAH that a Complete Streets approach be adopted in the redevelopment of existing communities and the creation of new communities. These recommendations were not incorporated into the current PPS.

While the PPS and the Growth Plan for the GGH (discussed in the next chapter) contain "robust policies" for planning active transportation, "the legislation behind these policies is inadequate" to implement these changes at the municipal level (Courtney 2009, p.101). Courtney (2009) argues that the PPS and the Growth Plan have been consistently ignored at the municipal level. For example, the $25 million Bloor Street Transformation Project (see Appendix B) that aimed to improve sidewalks, failed to provide any improvements to the cycling environment (Courtney 2009, TCAT 2009). While these policy documents can be used for appealing or challenging a planning decision in court (or the OMB), most road projects do not get appealed and opportunities to improve projects by including active transportation are often missed.

This disconnect between policy recommendations and the actual scope of municipal road projects may create a barrier to AT implementation. Municipal projects should comply with the provincial policies (Courtney 2009, p.102) and support AT-supportive environments.

3.2. Regional Plans

3.2.1. Growth Plan for the Greater Golden Horseshoe

In addition to the PPS, all Official Plans for municipalities within the Greater Golden Horseshoe (GGH) area are also required to conform to the policies of the *Growth Plan for the Greater Golden Horseshoe (Growth Plan)* adopted under the *Places to Grow Act.* The Growth Plan, released in 2006 by the Ontario Ministry of Infrastructure, aims to "create complete communities". The Growth Plan is a planning "vision" for the GGH that outlines a set of policies for managing growth and development and guiding planning decisions until 2041.

The Growth Plan contains broad policies with which municipal Official Plans must conform. The main thrust of the plan is allocating where growth should occur and setting intensification and density targets. The plan also contains broad policy statements about transportation, including ones that promote walking and bicycling. The plan is most specific in section 3.2.3, "Moving People" where it directs that "Municipalities will ensure that pedestrian and bicycle networks are integrated into transportation planning to: a) provide safe, comfortable travel for pedestrians and bicyclists within existing communities and new development, [and to] b) provide linkages between intensification areas, adjacent neighbourhoods, and transit stations, including dedicated lane space for bicyclists on the major street network where feasible." Having this broad direction to incorporate AT into land use and transportation planning is important, but the Growth Plan does not give further direction or benchmarks in how to do so or what constitutes the limiting clause "where feasible." This is left to municipal policy documents.

The general provisions of the *Growth Plan* are now coming up on being 10 years old. There has since been considerable evolution of thinking and policy around AT and Complete Streets, especially in terms of street design that should receive more emphasis and concrete policy language in revisions of the *Growth Plan*.

3.2.2. The Regional Transportation Plan – The Big Move (Metrolinx)

The Big Move (2008) is the overarching transportation plan in the GTHA, developed by Metrolinx, a provincial Crown Agency created in 2006 to plan, finance, and implement a regional multi-modal transportation system in conformance with *The Growth Plan*.

Thus, *The Big Move* sets the transportation planning framework for the region and is intended to guide more than 50 billion dollars in transportation investment over 25 years, with about one-third of the funds committed to date.

The importance of active transportation is highlighted throughout *The Big Move*, particularly in two of the overarching strategies. Strategy #2, "Enhance and Expand Active Transportation", recognizes the opportunity to increase the number of biking and walking trips through street and network planning and design. Strategy #7, "Build Communities that are Pedestrian, Cycling and Transit-Supportive", discusses the critical relationships and opportunities for integrated transportation and land use planning. Within both strategies, a "Supporting Policies" section uses binding and directed words (e.g. "shall" and "should") in relation to active transportation infrastructure and active transportation supportive development.

Of the $50 billion of planned capital investment, $16 billion has already been allocated, primarily for transit expansion projects. According to a TCAT report released in September 2013 called "The Other 25%: Active Transportation Investment and The Big Move", there are still no concrete plans for active transportation in the remaining $34 billion. In Metrolinx's *Investment Strategy* for the $34 billion "Next Wave" projects, 75% is committed for regional transit expansion and 25% for other local transportation projects, including walking and cycling infrastructure. However, Metrolinx has not yet established a funding program for municipal active transportation projects nor has it identified its regional priorities for active transportation.

Although not the focus of this project, the lack of regional coordination around active transportation investment is a significant barrier for GTHA municipalities. Funding and coordination through *The Big Move* could have an important impact on regional active transportation if used to prioritize the completion of gaps in cycling and walking networks. It is also important to note that unlike *The Growth Plan*, *The Big Move* does not have statutory status, and it is municipalities that have authority over local land use planning and development, including the development of active transportation facilities outside of Metrolinx facilities and projects. A Provincial Transportation Planning Policy Statement (TPPS) to provide statutory status to the Regional Transportation Plan (*The Big Move*) could be a means to promote the implementation of some of *The Big Move*'s policies for active transportation.

3.3. Municipal Official Plans and Transportation Master Plans

On the municipal level, Official Plans (OP) and Transportation Master Plans (TMP) are important strategic documents required to consider active transportation under *The Growth Plan*. In two-tier municipalities, the OP of a lower-tier municipality must conform to the OP of an upper-tier municipality. Municipal plans clarify modal priorities, inform

capital plans, protect the development of future right of way, and uphold municipal/regional priorities and designs with developers.

Given the regional focus of this project and the large number of municipalities, the lower-tier OPs were not reviewed. Generally, there is substantial variation in OPs across the GTHA and their level of consideration and priority for active transportation. As with the PPS, active transportation is typically not a direct focus of OPs.

Unlike OPs, Transportation Master Plans (TMP) are not mandated by the Province, but most GTHA municipalities have TMPs to align transportation priorities with the high-level vision and goals outlined in the OP. The City of Toronto is a notable exception and does not have a TMP.

The TMP forms the framework for transportation infrastructure and programs to be adopted for implementation as part of a long-term capital program (e.g., see York Region TMP update 2010). TMPs are subject to the Municipal Class Environmental Assessment (MCEA) approval process. Typically, municipalities will update their TMP in conjunction with the OP renewal, as mandated by the Province, every five years.

While we did not review TMPs for the lower-tier GTHA municipalities, we did review those of the Regions of Durham, Halton, Peel, and York (see table 1) and TCAT previously reviewed the OPs and/or TMPs of the 17 largest municipalities in Ontario including three GTHA municipalities: Hamilton, Oshawa and Toronto (Clean Air Partnership, 2012). Generally, GTHA TMPs now incorporate a vision for building a multi-modal transportation network that increases the modal share of transit, cycling and walking trips and decreases the reliance on motor vehicles, but as high-level policy documents they do not typically include the level of detail needed to provide concrete guidance on incorporating AT facilities into street projects. Some municipalities also have Cycling, Walking or Active Transportation Master Plans that feed into the Transportation Master Plan. Complete Streets policies and guidelines are also beginning to be produced by some municipalities such as Toronto (currently under development) and Ajax, in Durham Region (Sears, 2014).

Table 1. Active Transportation in Transportation Master Plans in the Four Regional Municipalities and Hamilton (GTHA)

Municipality	Active Transportation / Walking and Cycling
Regional Municipality of Durham Transportation Master Plan (2003)	"Walking and cycling alternatives should be promoted through supportive urban and road design, provision of appropriate facilities, such as dedicated paths and paved road shoulders, and education about routes and the benefits of active living. The TMP recommends the development of a Regional Bicycle Plan, and consideration of the needs of cyclists and pedestrians in the planning, design, construction, maintenance and operation of the Regional Road network." (p. 3) "Recommendations: Develop a Regional Bicycle Plan in consultation with the Local Municipalities, the Ministry of Transportation and other stakeholders ... Develop guidelines for ensuring the needs of pedestrians and cyclists are considered in the planning, design, construction, operation and maintenance of the Regional Road network." (3.2.3 Walking and Cycling pp. 29-31)
Regional Municipality of York Transportation Master Plan Update (2010)	"The TMP Update in combination with the Pedestrian and Cycling Master Plan (April 2008) and Regional Official Plan has an objective to reduce automobile dependence by enhancing opportunities for residents and workers to walk, cycle, take transit, and carpool." (p. 8) "A goal of the TMP Update was to promote alternative modes of transportation through its focus on active transportation and transit as priorities to achieve a more sustainable urban form." (p. 1)
Regional Municipality of Peel Transportation Master Plan (2012)	"Currently Peel Region is implementing an Active Transportation Initiative, which comprises of the Active Transportation Master Plan, and social marketing strategies, to promote walking and cycling." (p. 101). OP amendments include stronger language around active transportation, e.g. "to encourage and support the development of safe, accessible, attractive and integrated network of bicycle and pedestrian facilities ..." (p. 125)

Regional Municipality of Halton Transportation Master Plan (2011)	"All of Halton's Local Municipalities have undertaken the development of Active Transportation/ Cycling/ Trails Plans as outlined …" (p. 18) "The Regional Road Right of Way Guidelines include within an urban setting the accommodation of a 4.2metre curb lane and/or on road cycle lanes at 1.8metres wide to accommodate cyclists. On rural roads, 2.5 meter partially paved shoulders are provided with a 1.5 meter paved bike lane to accommodate cycle usage. The application of the Right of Way Guidelines will be confirmed through further implementation related studies including the Class Environmental Assessment process." (pp.17-18) "4.3.1 Active Transportation. To increase the use of Active Transportation (AT) a well-connected, safe and functional transportation network consisting of sidewalks/multiuse paths, designated bicycle lanes, separated bicycle lanes, wider paved shoulders and off road trails is required. Initiatives associated with education, planning, design and infrastructure development need to be closely coordinated with Halton's Local Municipalities. AT is being promoted as a year round travel mode option that should be available for all members of the community." (p. 26) "The policy target assumed in the TMP of a 5 percent mode split for Active Transportation by 2031 can be realized through investments in walking and cycling infrastructure and the introduction of policies to encourage shifts from auto travel to active modes for trips less than 10 kilometers in length." (p.33) "8.2.1 Active Transportation. It is recommended that: The Regional Active Transportation Advisory Committee to pursue a coordinated approach to non-motorised travel needs across the Region; and A detailed Region-wide Active Transportation Master Plan to be developed to establish a strategy defining educational and outreach initiatives and infrastructure improvements (e.g. sidewalks, multi-use paths, separated bicycle lanes) to promote increased non-motorised travel throughout the Region." (p. 62)
City of Hamilton Transportation Master Plan (2007)	Transportation Master Plan includes "reducing dependence on single-occupant vehicles and promoting improved options for walking, cycling and transit, while maintaining and improving the efficiency of trips related to the movement of goods and servicing of employment areas." (p. ES.2) A Vision for Transportation in Hamilton includes: "Offer a choice of integrated travel modes, emphasizing active transportation (walking and cycling), public transit and carpooling". (p. ES.2) "The Master Plan places a high emphasis on significantly improving transit services, providing options for cycling and walking and optimizing existing road capacity before considering major expansions." (p. ES.3) Short term action plan includes: "Constructing new bike facilities on York Boulevard, Hunter Street and other routes and embarking on an update to Shifting Gears, the City's cycling plan." (p. ES.5) TMP Volume 2 includes detailed AT documents: Cycling Network Strategy and Pedestrian Network Strategy.

4. Municipal Class Environmental Assessment

The Ontario Ministry of the Environment describes the Municipal Class Environmental Assessment (MCEA) as "a self-assessment process for how municipalities and private sector developers plan municipal infrastructure projects" (Ontario Ministry of the Environment, 2014). MCEA is intended to identify, evaluate, and mitigate environmental impacts of designs, while also ensuring that infrastructure investments comply with the Growth Plan and Provincial Policy Statement (MEA, 2011, Sections A.2.10 and B.1.1). As mandated by the Ministry of the Environment, municipalities must follow this process in order to meet the requirements of the Environmental Assessment Act.

Under the Act, road infrastructure projects are classified according to the size of the project and the level of impact they will have on the existing environment – for roadway projects this is mostly defined in terms of whether a proposed project reduces roadway vehicle capacity. Some projects can be classified what is termed a Schedule A or A+, and be exempt from requiring a fuller Class EA planning process. Projects with higher impacts are given higher "schedules" (from B to E), and require a more involved public consultation and assessment process, which is costly in terms of both time and money. Projects that do not alter the existing vehicle capacity of roadways are exempt, as are the construction of sidewalks and bike paths or lanes within existing right-of-ways. MCEA classification is subject to the proponent's (typically the municipality's) discretion, and documentation of the rationale for the classification is not required. A fuller description of the EA classification process is provided in Appendices B and E.

There was substantial disagreement on the role of MCEA among experts participating in the project. Some argue that MCEA stands in the way of implementing AT projects by treating maintaining roadway capacity as the standard by which projects are scheduled. Because new facilities for active transportation can change the motor vehicle environment, they can involve a more rigorous process. In contrast, projects that involve minimal change to the motor vehicle environment can be classified as a Schedule A or A+. Thus, the process rests on the assumption that the current transportation environment is in the desired state; neither the negative environmental impacts of maintaining motor vehicle capacity, nor the environmental benefits of increased active transportation are considered. Critics interpret this as creating incentives to avoid AT projects that might trigger a rigorous, expensive assessment. Exempting roadway projects without proposed AT facilities is also seen as preventing wider consideration of designs that would include their provision, as discussed in the Bloor St Case Study described in this project (see Appendix D).

As in the Bloor Street case, the discretion of the municipality in determining classification can be seen as contentious and limiting the scope of the project. Participants in our Burlington focus group, however, described the MCEA process as simply paralleling the

kind of public and stakeholder input on projects that should take place in the normal planning process, and as both an opportunity to build public support for AT, or as a forum of opposition where AT facilities are removed from designs. Lack of public support for a project during MCEA consultations was identified as one of the significant barriers in some road projects. While public demand for active transportation has the potential to add it to a project's scope (e.g., see Kingston Road case study in Appendix D), the public is not universally supportive of active transportation. For example, in Burlington, a proposal to eliminate a centre-turn lane to enable new bike lanes on Lakeshore Road was met with community opposition, and sharrows were put in as a compromise. Participants in the focus groups suggested that the public is often mostly likely to support the "do nothing" option as part of MCEA consultations.

Clearly, the relationship between the MCEA, project classification, and the inclusion or exclusion of AT facilities is complex and varied depending on the complexity, contentiousness, and context of the project. Although Burlington focus group participants did not see the MCEA process as a barrier in itself, it has a long history of being widely criticized by a range of stakeholders, including Ontario's Environmental Commissioner, in the case of the Bloor street project (ecoissues.ca n.d.), academics (e.g. Courtney 2009, Lindgren and Dunn 2010), the construction industry (Zechner 2010), planners (Cumming 2011), and transportation engineers (Korell 1996). On February 19, 2014 Peel Region hosted an environmental workshop titled "Advantages and Disadvantages of Master Plans in the EA Process" that documented a range of problems with the EA process, such as 1) the disconnect with land use planning, 2) the process being too cumbersome, lengthy, expensive and time-consuming, and 3) creating duplication in public input that has already been collected through Planning Act processes, municipal capital budget processes, etc.

Yet, according to the Chair of the MCEA monitoring committee at the Municipal Engineers Association (MEA), the MCEA is a value neutral tool that is not intended to be used to enforce or promote policy or any specific infrastructure design, including the provision of AT facilities. The Chair argues that whether AT facilities are considered in a project should properly be determined by OPs and other policy documents (in conversation, October 29, 2013). On the other hand, some focus group participants in this project believed that ensuring that AT is considered during road reconstruction should be built in to the MCEA process. Others identified specific excerpts in the MCEA document that are not neutral. For example, the MCEA document talks about road widening, but not about road narrowing or road diets, under safety conditions, even though narrower roadways may be safer for non-motorized vehicle users (e.g. Thompson, 1996).

Revisions are currently pending for the MCEA as proposed by the MEA. In December 2013, municipalities and organizations were invited to provide comments to the

proposed revisions (MEA, 2013). In their formal submission, TCAT expressed support for the recommended changes "with the notable exception of the proposal to streamline the removal or reduction of sidewalks, multi-purpose paths, or bike lanes." (TCAT, 2014) TCAT noted that these amendments do not address one of the primary barriers relating to active transportation, namely that bike lanes and widened sidewalks are only streamlined when they do not impact motor vehicle capacity. To address this barrier, TCAT recommends that "the Class EA should streamline road projects that reduce capacity for motor vehicles by expanding walking, cycling and public transit capacity." (TCAT, 2014).

Another recommendation we heard in our discussions with practitioners was that there would be benefit in the MEA convening a working group with municipalities that have substantial active transportation project experience to develop relevant and appropriate updates to the MCEA document for AT projects. A similar type of group was established for transit resulting in a new streamlined environmental assessment process for transit projects established in 2008. Given the lack of consensus on the role of the MCEA on the provision of AT projects, we believe it would be very beneficial to establish such a group.

5. General project design process

Road project planning and determining the scope and design features of a project is an iterative process whereby provincial, regional and municipal plans and processes, including public engagement, work in feedback loops (see Figure 1. York Region Road Design Process). Steps will vary from municipality to municipality, and from project to project, but the overall process follows similar logic. Scoping processes are usually initiated through a preliminary design report based on existing policies and plans (e.g. Official Plans, secondary plans, network plans). In some municipalities, project scoping includes a review of corridor design guidelines to ensure that design criteria as well as active transportation needs are being met and/or considered. Previously identified street-specific priority plans for improving active transportation (e.g. AT Master Plans or TMPs) are also key for including pedestrian or cycling improvements in projects.

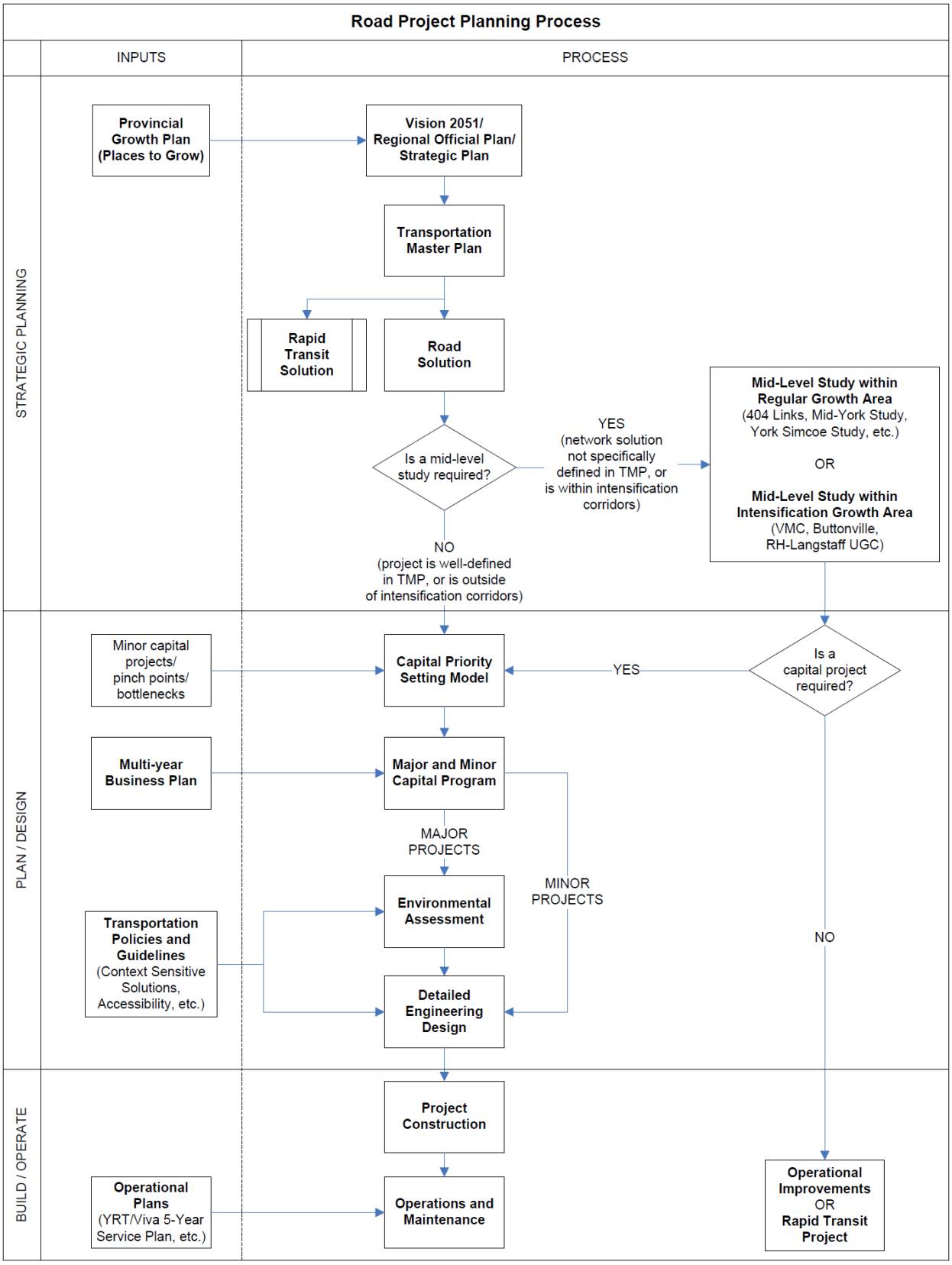
Whether AT will ultimately be included in a project and in what form is a complex multiple-stakeholder process involving land use planners, transportation planners, transportation engineers, lower-tier municipalities, municipal Councils, and the general public. Departments involved in designing a road vary in different municipalities (e.g. the Transportation and Community Planning division and York Region Rapid Transit Corporation in York Region; in Burlington, the Transportation Services department within the Development and Infrastructure division, the Capital Group, and the Capital Budget Committee). Also for regional municipalities, the project scoping process

includes consultation with lower-tier municipalities and consultations with the general public. AT facilities can get dropped from projects, or sometimes added to them, at multiple points in this process. Most participants in this study, though, were clear about the importance of having strong policy statements throughout all levels of the policy framework. In York, professional staff put great emphasis on the Region's new Context Sensitive Solutions policy in ensuring that AT facilities are properly considered on different types of roadways.

In general, however, it is impossible to summarize the complex interactions and negotiations of different actors in different settings and contexts that take place in the implementation of street projects with or without AT facilities, and we do not further attempt to do so.

However, based on our case studies and focus groups, we comment below on issues that emerged around the coordination between different levels of government in defining a project, and the importance of funding and capital plans in defining the scope of projects.

Figure 1. York Region Road Design Process



5.1. Coordination between different levels of government

Issues around coordinating both the allocation of costs and design standards between different levels of government were evident in both the case studies and focus group discussions. This issue was found between regions and lower-tier municipalities, but was especially contentious between the municipalities and the Ministry of Transportation of Ontario (MTO). An advisory committee member also reported similar issues between Metrolinx and local municipalities.

In general, several municipal practitioners and consultants that participated in this study felt the MTO made implementing newer roadway designs that better incorporate AT difficult. In particular, where provincial and local facilities intersect, MTO has jurisdiction and local roads have to adhere to MTO standards even when these differ from accepted municipal practice. The Plains Road case study in Burlington is an example (see Appendix D) where negotiations took place between MTO and the municipality around putting in bike lanes by reducing travel lane widths below MTO standards on a bridge that crossed an MTO facility. The MTO allowed some reduction (from 3.75 meters to 3.3 meters), but not as much as desired by the municipality (3.1 meters). MTO also required increased local costs for additional design features in order to allow this change (see further discussion on MTO standards in Section 7). In both the Burlington and York focus groups, some participants expressed a desire that MTO give more consideration to existing local practices in roadway design. When presented with the Plains Road case study, some participants in the York session said they were surprised that MTO compromised at all.

Parallel to MTO-municipal relationships, in two-tier municipalities, the lower-tier municipality must conform to regional policies such as Official Plans. Likewise, lower and upper-tier municipalities can have different roles and approaches to providing AT facilities as part of roadway projects. In the York Region focus group, participants commented that the division of responsibilities between upper and lower-tier municipalities for providing bike facilities was not always clearly defined. On regional roads, the region is responsible for what is in the roadbed, but not what is outside of the road yet still in the right of way. Thus, which tier has responsibility for financing, building, and maintaining a bike facility depends on whether it is located in the roadbed, and hence a regional responsibility, or along the roadway but outside of the roadbed and in the boulevard, and hence a local municipal responsibility. The region works closely with the local municipalities to plan and implement AT projects and negotiate which tier is responsible. Sidewalk facilities, located outside of the roadbed, are considered a local responsibility.

In the Burlington focus group, differences in the approaches between lower-tier Burlington and Halton Region were also discussed. As is typical elsewhere, including York, Burlington and Halton, both lower and upper tiers create new bike facilities as part

of roadway projects. For Halton Region, bike facilities are largely part of widening projects on regional roadways that increase traffic capacity. This can include buffered bike lanes or multi-use pathways. The regional government is involved with design and construction of sidewalks, and, as in Halton and York, sidewalks are then maintained as a local responsibility. Halton Region consults with local municipalities to ensure consistency in developing their AT Master Plan.

Halton Region's TMP envisages some regional roads to be widened to four or six lanes, typically with active transportation facilities. However, Burlington does not support the additional widening of most arterials within its boundaries given the built-up conditions and developed properties along arterial right of ways. Instead, where possible, Burlington creates AT networks within the existing right of way without road widening by narrowing vehicle travel lanes to make space for bike lanes.

Burlington's experience conforms to many built-out municipalities within the GHTA, where there are few opportunities to widen roadways and accommodating both active and motorized transportation modes requires reallocation of space in the existing right of way. While more challenging, this can actually create safer conditions for cyclists and pedestrians, with narrower streets that encourage slower speeds and decrease the distance that pedestrians need to cross streets. In contrast, while upper-tier municipalities like Durham and York are now building cycling facilities, they are largely doing so as part of creating very large roadways to move large volumes of traffic.

Both provincial policy and those of the regional municipalities should support the alternative strategies used by lower-tier municipalities to produce facilities without widenings. Likewise, guidance is needed where the design standards of different levels of government do not align, so that AT facilities are not compromised. In these cases, the allocation of costs also becomes a barrier when lower-levels of government, especially lower-tier municipalities, are burdened with the additional costs necessary to provide facilities to meet the requirements of higher levels of government.

5.2. Funding and Capital Plans

Although financial costs and budgets were not a focus of this project, experts and practitioners raised these issues during both York Region and Burlington focus groups as affecting AT projects and their scope. In general, costs and insufficient funding for implementing AT were identified as a barrier in implementing municipal AT plans. This seems to be especially true for the lower tier municipalities where, because of their more urban context, projects can cost more on a per meter basis than regional arterial road improvement projects.

Municipal priorities are set in Council-approved long term Capital Plans. Experts participating in the study agreed that because OPs and TMPs inform the capital planning process when municipal councils decide on their priorities, OPs and TMPs must contain strong language and support for AT to ensure that facilities are funded. The Context Sensitive Solutions policy recently developed in York Region was seen as part of such a strong policy context to guide investment. This is especially important because AT projects are typically bundled with larger road projects to minimize total costs, and, thus road projects are typically initiated when a road reaches the end of its life cycle or as a response to congestion/vehicle capacity. Therefore, AT facilities are primarily funded based on roadway construction priorities. If this funding is not built into the capital planning process, AT facilities will not be included in projects. For example, Toronto has a 5-year Capital Plan with sufficient budget to maintain and rehabilitate roads, but not to make any changes in design or construction for AT improvements. Thus, any monies for restructuring roads to incorporate AT must be found outside of the state of good repair budget. Even in cities with strong commitments to AT infrastructure, like Burlington, some councilors see money to pay for AT as extra costs, especially if there is not solid evidence for how specific facilities will increase AT use. Municipalities do not have the tools or resources to provide this evidence, which is very difficult or even impossible to establish.

At the Provincial level, despite Ontario's new Cycling Strategy (#CycleON, 2013), there is not yet any funding provided to regions and municipalities for implementing cycling infrastructure. Based on information from our Burlington focus group, for example, in order for the Ministry of Transportation (MTO) to even consider putting bike lanes at highway interchanges, municipalities need to put up at least half the money.

Again in the Burlington focus group, participants reported that the City has many priority projects, but no real source of funding. Traditionally, upper level governments would provide funding for AT, but Burlington is not aware of any existing provincial funding from MTO. Furthermore, as mentioned above, the Province may impose additional costs when municipalities are attempting to provide facilities across MTO roadways (see Plains Road case study in Appendix D).

Subsequent to the release of #CycleON, MTO released a Cycling Action Plan which proposes an investment of $10 million over three years to help municipalities improve cycling infrastructure and $15 million over three years to build cycling infrastructure on provincial highways and bridges (Ministry of Transportation, 2014). These plans aim to address some of the concerns expressed by municipalities.

For all levels of government (municipal, regional, provincial), however, a lack of transparency was noted in how municipal infrastructure investment is allocated, particularly in terms of its alignment with Growth Plan objectives.

6. Performance Measures: Level of Service and Traffic Impact Studies

Street and roadway investments and how they are designed are powerfully influenced by the institutionalized use of performance measures by engineers and planners. These measures may be mandated by policy, or simply accepted practice. Level of Service (LOS) and Traffic Impact Studies (TIS), key performance measures for roadways, are reviewed below. LOS evaluates street function as a measure of vehicle volume to street capacity. Traffic Impact Studies evaluate the impact of land development on local street facilities, mostly in terms of how development may affect LOS. Both are largely oriented towards evaluating the function of streets from the perspective of moving motor vehicles.

6.1. Performance Measures: Level of Service

Level of Service (LOS) captures street function as the relationship of vehicle volumes to capacity over a defined time span, with free flowing traffic being defined as a high LOS, and slow moving or stop-and-go traffic being defined as a low LOS. Road projects, or project components, are rated on a scale from A to F, where A represents best performance and F represents worst performance. Municipal planning policies and planning guidelines currently require the evaluation of motor vehicle LOS, both to estimate the traffic impacts of new development through the TIS process, and also as a planning tool to target new roadway investment and guide street design decisions when LOS is seen to drop below a desirable level. In Ontario, requirements do not exist for a similar level of evaluation for active transportation.

There is a clear disconnect between the ubiquitous use of motor vehicle LOS as a key evaluation and decision-making tool and current higher levels of policy that support active transportation as found in documents like the *Growth Plan* and *The Big Move*. Corresponding tools for AT are much weaker and not as widely used. Further, improving motor vehicle LOS can have negative impacts on creating walkable and bikeable streets (Donnelly and Toop, 2011; Henderson, 2011). For example, a high motor vehicle LOS can be correlated with low-density land development, wide, multi-lane roadways, and high-speed motor vehicle travel (Henderson, 2011), all factors that create poor walking and cycling environments. Additionally, the use of LOS as a standard planning tool promotes vehicle use by continually accommodating potential demand, rather than planning based on policies to shift modal shares to transit and AT, as emphasized in higher level policy. By continuing to prioritize motor vehicle LOS regardless of the context, active transportation designs cannot be simultaneously prioritized.

To understand the subsequent impact on road design, it is important to examine the specific ways that motor vehicle LOS is applied for planning purposes. Currently, the estimation of LOS is highly standardized with *Synchro* software widely used across the

GTHA by consultants and municipalities to model street designs under current and future traffic conditions. *Synchro is* a traffic analysis tool produced by the U.S. transportation software developer Trafficware. Designed for traffic engineers to determine intersection capacity, Synchro "supports the Highway Capacity Manual's methodology for signalized intersections." (Trafficware, n.d.) This has specific design implications. For example, the 2010 Highway Capacity Manual (HCM) suggests that using an analysis time of more than one hour may neglect critical peaks in traffic conditions, but this approach can lead to the provision of motor vehicle lanes that may only be required during a short period of peak demand.

If a longer peak period were used to analyze LOS with short periods of low LOS being acceptable, the resultant traffic model would require fewer travel lanes. In the focus groups for this project, practitioners also suggested that allowing lower vehicle LOS is becoming increasingly necessary because it is not possible to keep expanding roadways. For example, Burlington is interested in identifying ways to implement new active transportation infrastructure without road widening even if that means accepting low LOS for short periods during the day.

Measures of pedestrian and bicycle LOS do exist, including a LOS measure for all modes including walking and cycling in the *Highway Capacity Manual* (2010) and multi-modal LOS measures in the *Multimodal Level Of Service Analysis for Urban Streets* (TRB 2008). However, we did not find evidence that jurisdictions in the GTHA are evaluating bicycle or pedestrian LOS. Even for knowledgeable practitioners, it remains challenging to evaluate trade-offs between different modes and to adequately evaluate the effectiveness of recommended approaches to support active modes, such as lane reductions which currently generate a poor rating when modeled in *Synchro*. In general, methods for determining bicycle or pedestrian LOS are less refined than for motor vehicles (Donnelly and Top, 2011). Data availability is also an issue. While the HCM's Automobile LOS is dependent on routinely collected quantifiable data, their Bicycle and Pedestrian LOS are based on data reflecting traveller's *perception of service quality* (TRB, 2010, p. 17-6), which is more difficult to collect. Bicycle and pedestrian counts, which are needed to calculate TRB's (2010) LOS, are also lacking in Canadian jurisdictions. Developing robust measures of LOS for pedestrians and cyclists in not simply a matter of translating the concept in use for motor vehicles, as pedestrian and cyclist needs are fundamentally different.

In general, better measurement tools are needed. In the meantime, the use of tools and guidelines like *Synchro* and *The Highway Capacity Manual* should be reviewed in detail to better understand their role in generating roadway designs that are not AT supportive. We note that Trafficware recently released *SynchroGreen* which claims to take "a holistic approach when optimizing traffic signals by considering side-street and pedestrian traffic." (Trafficware, n.d.) This is potentially a positive development,

although we found no evidence of its use as of yet in the GTHA. The consideration of bicycles in *Synchro* is also still absent. A more focused review of the impacts of the current use of LOS for planning and design that supports AT facilities was beyond the scope of this project, but is a clear area that should be better understood.

6.2. Traffic Impact Studies: Designing streets for motor vehicles

According to MTO, the "main purpose of a Traffic Impact Study (TIS) is to demonstrate how the transportation impacts of a proposed development or redevelopment can be mitigated and addressed in a manner that is consistent with the objectives of the Ministry of Transportation." (MTO, 2012). The land developer is responsible for completing the TIS, but the terms of reference are agreed to by the developer and the applicable levels of government, with the process overseen by the highest jurisdiction involved (see Table 2). Each jurisdictional level has their own TIS guidelines, creating variations in their levels of consideration for active transportation. The general steps of a TIS are outlined in the literature review (Appendix B). The study itself is typically conducted by a consulting firm with engineering and planning expertise.

Table 2: Jurisdictional road and other infrastructure responsibilities

Level of Jurisdiction	Type of Roads
Province	Freeways and provincial highways
Region	Regional roads, transit facilities, most arterials, and municipal arterials that affect regional roads
Municipality	Some arterial roads, collector roads, local roads, sidewalks, bicycle facilities, and trails

At all jurisdictional levels TIS guidelines follow a similar analysis process (see Appendix B). We focus here on generalizable factors across the various guidelines based on their level of consideration for active transportation. The guidelines reviewed are as follows:

- Ontario (MTO): *General Guidelines for the Preparation of Traffic Impact Studies* (2008)
    - Active transportation consideration: none
- The Regional Municipality of Durham: *Traffic Impact Study Guidelines* (2011)
    - Active transportation consideration: moderate

- The Regional Municipality of Halton: *Guidelines for the Preparation of Traffic Impact Studies* (2001)
    - Active transportation consideration: low
- City of Toronto: *Guidelines for the Preparation of Transportation Impact Studies* (2013)
    - Active transportation consideration: high
- City of Mississauga: *Traffic Impact Study Guidelines* (2008)
    - Active transportation consideration: low

The consistent factor that mandates a TIS at any jurisdictional level is the estimated number of additional vehicle trips generated by the proposed development, although some jurisdictions are beginning to also consider other transportation modes. In general, jurisdictions can mandate a TIS at their discretion, but a TIS considers individual developments only, even if several developments may be in close proximity in the same corridor.

Bicycles and pedestrians may be mentioned in TIS guidelines, but TIS' typically focus on estimating additional motor vehicle trips generated by a development and requiring investments to maintain an acceptable LOS for vehicles during peak periods. In this way, TIS guidelines promote the provision of roadway designs according to the logic of LOS measures that seek to maintain vehicle flow during the peak demand for the area. This institutionalizes the flow of resources into prioritizing automotive capacity based on a small period of travel throughout the day.

An additional level of analysis to determine the *desired* number of motor vehicle trips or the desired mix of modes, rather than only considering the projected number of vehicle trips would provide a more consistent alignment with GTHA goals of reducing motor vehicle use.

TIS guidelines also refer to the following supplemental design guidelines, as listed below. These guidelines are based on motor vehicle provisions. They include either simplistic methods for considering active transportation, or none at all.

- Canadian Institute of Transportation Engineers (CITE)
    - *Canadian Capacity Guide for Signalized Intersections* (2008)
- Transportation Research Board (TRB)
    - *Highway Capacity Manual* (2010)
- Institute of Transportation Engineers (ITE)
    - The *Trip Generation Manual* (2012)
- Transportation Association of Canada (TAC)
    - *Geometric Design Guide for Canadian Roads* (1999)

Municipal requirements for TIS' are written into OPs, TMPs, and Secondary Plans and it is key that these documents require developers to look at all modes of travel, as is done in York Region. For example, if a secondary plan requires a transportation plan (including pedestrians, cyclists, transit), then any development must abide by those policies. If the policy framework does not require the measurement of transit, pedestrian and bicycle LOS, AT impacts will not be evaluated. One barrier is that consultants, developers, and municipalities use different methods, and robust, consistent methods of measuring AT impacts are absent. Additionally, if there is enough vehicular capacity, the TIS process will not consider AT whatsoever. The Province, which requires TIS', could provide further guidance on these issues.

7. Street and Roadway Design Standards and Guidelines

Street design standards and design guidelines have evolved from first being developed for highways, and have slowly been developed toward more urban applications, and finally to better incorporate AT, but they are well recognized as promoting motor vehicle oriented designs (Southworth and Ben-Joseph 1995). In our discussions with practitioners, we found some confusion and inconsistent use over the use of the term "standard" versus "guideline," although, in general, the transportation profession has moved away from the idea of standards as design requirements, instead emphasizing the use of some design discretion based on local conditions. (MMM, 2005: 19)

Still, design guidelines are taken extremely seriously. Design guidance on roadway features such as lane widths, turning radii, sight lines, and almost every detail of the roadway environment and its operation are key issue for designers, as professional engineers and municipalities can be held legally liable for unsafe designs. Guidelines approved by professional engineering bodies are thus highly influential in providing confidence that a design will pass a legal test as being "safe," even though safety is traditionally measured in terms of the vehicle traffic environment, and not necessarily from the perspective of all road uses such as pedestrians and cyclists. For example, street designers traditionally consider wider streets and lanes to increase safety. The Transportation Association of Canada 1999 guide states, "In many instances, the more generous a road's design dimensions are, the safer the road will be; though this is not always true" (1999, p. 1.1.1.1). Indeed, research has shown wider streets to increase motor vehicle travel speeds (Fitzpatrick et al. 2000), reducing safety for vulnerable road users such as pedestrians and cyclists.

The Ministry of Transportation of Ontario (MTO) is the governing transportation body in Ontario, but municipal transportation departments govern the design of local roads and streets. These governing bodies draw from a number of design guidelines and documents, particularly street design guidelines and performance measures that are

produced by professional engineering groups. The main engineering groups in Canada are the Transportation Association of Canada (TAC) and the Canadian Institute of Transportation Engineers (CITE), which is a chapter of the international Institute of Transportation Engineers (ITE). Other international sources also influence Canadian design practices, such as the American Association of State Highways and Transportation Officials (AASHTO) and Transportation Research Board (TRB). Provincial and municipal governments may adopt and adapt these guidelines and performance measures to fit their local context.

There are three primary aspects of street design for which design guidelines have been created: geometric design, traffic control design and intersection signalization design. This project focused on the most widely accepted Ontario guidelines in each area, inherently focusing on MTO, TAC, and CITE's guidelines. One of the gaps is that TAC guidelines focus on highways and arterial streets and there are not a set of geometric guidelines for urban streets similar to that produced by the U.S. National Association of City Transportation Officials (NACTO). TAC is, however, currently in the process of updating its *Geometric Design Guide for Canadian Roads* (1999), a project expected to be completed by April, 2016. This is a potential for guidelines that better incorporate designs that support AT.

In the meantime, American guidelines currently exist that are more oriented toward urban streets, such as ITE's *Context Sensitive Solutions* (2010) and the new *NACTO Urban Street Design Guide* (2013). These sources explicitly consider AT in street design including design speed, intersection design, and other street features to provide more context-sensitive guidance. For example, the NACTO document provides detailed plan drawings and designs and documents best practice in contemporary urban street design. These designs include measures to build Complete Streets and slow down and reduce motor vehicle traffic (e.g. curb extensions, green alleys, etc.) However, a brief survey of professionals participating in the focus groups for this study, working in jurisdictions actively promoting AT facilities, suggests that while there is high familiarity with design guidelines in general, there is much less familiarity with newer, more AT oriented documents (see Appendix F). Depending on what comes out of the current TAC process, a similar guide to NACTO's developed for the Canadian context, even specifically for the GTHA, could be a very useful tool for transportation practitioners and decision-makers alike.

The flexibility of applying existing guidelines was a recurrent theme that came up in this study. In the municipalities in the GTHA that are now "built out," there is little capacity to build new roads or widen existing ones. This is significant because where there is excess road space it's relatively easy, both politically and logistically, to install new bike and pedestrian infrastructure. Indeed, the provision of new AT infrastructure is principally happening only as part of large roadway widening projects across much of the region.

However, in more constrained contexts, deciding how best to reallocate road space to accommodate AT users, especially bicycles, is a complex balancing act and every millimeter of roadway matters. Typically, municipalities try to squeeze in as much as possible with the least amount of impact on motor vehicle traffic flow and capacity, but this requires being flexible in the use of guidelines and accepting different dimensions for street elements such as bike lanes, sidewalks and traffic lanes than current guidelines may call for. Minimized dimensions may be accepted in other guidelines or jurisdictions and thus further study may be needed to assess their applicability in the GTHA context.

How best to implement this flexibility into the street design process is not clear. In a recent consultant report commissioned by the City of Burlington, MMM Group concludes its report by saying that meeting minimum standards is not sufficient to ensure a safe bike facility, and recommends a context-sensitive approach. Despite recommending taking a flexible approach to designing bike facilities, the report cautions that it is a "perilous act" to disregard minimum standards (e.g. TAC's "Bikeway Traffic Control Guidelines") since these are "well thought out by a group of diverse transportation professionals, and are applicable in the majority of cases." (MMM, 2005: 4) This somewhat conflicting advice well demonstrates the conundrum that transportation planners find themselves in when developing designs to accommodate AT users on existing facilities.

In Burlington, the focus group participants reported that municipal planners and engineers are flexible in applying guidelines and believe that design should be context sensitive. They use TAC's *Geometric Design Guide for Canadian Roads*, and plan to soon use the newly released *Ontario Traffic Manual (OTM) Book 18: Bicycle Facilities*. Their design work starts with consulting TAC guidelines, but they also look for precedents that go beyond TAC. For the Plains Road project (see Appendix D), for example, municipal engineers and planners studied similar examples from other places and relied on their past experience and results of pilot projects. In the past, the municipality has piloted three-meter lanes in several locations, something not supported by TAC guidelines. The Engineering Division studied European experience with making narrower roads, and other examples including the 2.7 meter lanes on Queen's Park Crescent in Toronto. Participants reported that doing their design work in house, rather than using consultants, gave them increased flexibility in creating designs.

In York, the Region's *Road Design Guidelines,* updated in 2013, are the main source of guidance. The guidelines conform to provincial or federal standards. Lower-tier municipalities within York must conform to regional standards and guidelines, and the region encourages consultants to follow these guidelines when preparing packages for tender. If something is not described in the York Region Road Design Guidelines, or if there are questions, participants in the focus group report that consultants refer first to

TAC, which they see as more flexible, and then to MTO guidelines. If guidelines are competing, York Region brings together different disciplines including traffic signal, operations, maintenance, capital delivery group, planning group, urban design group, and as necessary MTO and consultants, to look for solutions.

7.1. Design flexibility for in-house design versus consultants

Road design work can be done in-house by city staff or by consultants and focus group participants discussed how much this influenced the ability of designers to go beyond guidelines and create more flexible designs (see Box 1). In-house engineering designs and approvals enable design flexibility, but require willingness of the staff and municipality to take on responsibility for design decisions. In Burlington, the city also expands its design choices by first implementing active transportation projects as pilot projects that are based on best practices in other cities in similar circumstances. Engineering judgment may be supported through studies and due diligence without guidelines. For example, Burlington did not rely on guidelines in the Plains Road project. Engineers and planners studied similar examples from other places and relied on their past experience and results of pilot projects.

The use of consultants for street design was also discussed during the York focus group, and particularly whether consultants tend to produce more conservative designs, based on older guidance that focuses on motor vehicle travel and safety. There was some disagreement expressed about whether or not this was the case. Some consultants are keen to be able to provide the most progressive designs as a competitive advantage. Direction ultimately had to come from the municipality, however, and participants suggested that producing designs that go beyond older, more conventional designs requires more time and expertise, and thus requires larger design budgets. Municipalities can also relieve consultants by providing design parameters that are different from guidelines, thus taking responsibility for this decision.

Box1. Design flexibility for in-house design versus consultants

Road design work is done by consultants: In York Region, most road projects' engineering drawings are done by consultants. Consultants follow provincial and local standards and are encouraged to follow the York Region's Road design guidelines when consultants prepare tender packages for the Region. Consultants work with different stakeholders who have a say in what to change about a road, including fire departments and other emergency services.

In-house design: In Burlington, 95% of designs are done by in house design staff. An advantage of this is staff cost and time savings. The municipality does not have to reissue design projects, so the design can be changed within one or several weeks, if necessary. Burlington design staff produces context sensitive designs and can be more creative. Consultants are hired only for specific things, e.g. structural engineering, because hiring such specialists as staff is not cost effective.

8. Summary of barriers to implementing active transportation in the road project planning process

Below we summarize some of the main barriers that we identified as part of this study. Before doing so, it is important to reiterate the very complex nature of the street planning and design process, and that the scope and methods of the study were limited. Although we cannot generalize the policy framework or street design process across the GTHA, we do believe that the following findings are important to understand if we are to be more successful at modifying our transportation system to better support active transportation.

POLICY

Policy language is not sufficiently strong to support AT implementation. For example, in the transportation section of the PPS, while the use of the term "active transportation" is an improvement, it is still only referred to as a transportation mode that "should be promoted" rather than using directive language to ensure it is supported. Policy at the provincial, regional, and municipal level has evolved greatly in recent years, but, in general, more specific policy directives using the concept of Complete Streets or similar language is still missing from the policy framework at many levels. Some municipalities are moving on this issue. York's Context Sensitive Solutions is one model. Toronto is also in the process of establishing a Complete Streets policy and guidelines.

The lack of regional coordination around active transportation planning and investment is a significant barrier for GTHA municipalities. Funding and coordination through *The Big Move* could have an important impact on regional active transportation if used to prioritize the completion of gaps in cycling and walking networks. It is also important to note that unlike *The Growth Plan, The Big Move* does not have statutory status, and it is municipalities that have authority over local land use planning and development, including the development of active transportation facilities outside of Metrolinx facilities and projects.

Insufficient support for active transportation projects from decision makers. This finding does not come directly out of the study focus or our review of issues above, but was woven throughout our conversations with practitioners in all phases of the research. If senior decision makers are not promoting active transportation, active transportation can get left out of projects despite a generally supportive policy framework. More specific requirements may partially counter this. In jurisdictions with strong support for AT, like Burlington and York Region, where progress is being made, there were also strong advocates in leadership positions.

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT PROCESS

One of the most striking findings of this research was the lack of consensus on either the proper role of the MCEA process in general, or on how the current process works in regard to AT facilities. Nevertheless, the following barriers were identified:

The MCEA is both seen as policy neutral and as biased towards maintaining designs that prioritize accommodating motor vehicle traffic, mostly in the way that it defines environmental impacts and in terms of potential design on traffic. Maintenance, resurfacing, reconstruction, and widening projects may be classified as a Schedule A or A+, which allows the project to be preapproved without consideration of alternative designs or public input. This limits the potential for enhanced pedestrian facilities (e.g. beyond minimum width sidewalks) or bike lanes to be added to the basic street design.

Reconstruction and widening, road narrowing and lane repurposing projects that include bicycle and pedestrian facilities may activate a Schedule B or C if they change the motor vehicle capacity, even though they are supported by higher policy documents. This may be lengthy and costly depending on how the municipality handles the process, discouraging the inclusion of these facilities.

MCEA Schedule: Which schedule proponents used is not always clear. Depending on the project, this can prevent the consideration of AT facilities by using a higher or a lower schedule than necessary.

Language: Specific language in the MCEA is still seen as being auto-centric. For example, road widening is referred to in relation to increasing safety, but narrowing roadways that may improve safety for AT users is not.

Public opposition: In the process of consulting stakeholders as part of the MCEA process, public opinion was identified as one of the significant barriers in some road projects. During public consultations, participants are given several alternative designs and a "do nothing" option, and they often choose "do nothing" option as a matter of course.

COORDINATION BETWEEN DIFFERENT LEVELS OF GOVERNMENT

Upper-levels of government prevent, or do not support, more supportive designs by lower levels. This was seen in interactions with the Ministry of Transportation and municipalities where their facilities intersect, and MTO requires more conservative, auto-oriented designs. It also occurred between Metrolinx and the municipalities and between upper-tier and low-tier municipalities. For example, regional roadways within the City of Burlington may be planned to be widened, even though Burlington sees this as undesirable and too expensive. Burlington is trying to use alternative

strategies like narrowing travel lanes to create room for bike facilities on its roadways.

The division of responsibilities for creating AT facilities on regional roads are sometimes not clear between regional and local municipalities, even though there are consultations between different levels of government. On regional facilities, bike facilities and sidewalks that are outside of the actual roadway may be considered a local responsibility and thus may not be included or funded with a regional project.

FUNDING AND CAPITAL PLANNING

Budget considerations may remove active transportation from a project's scope. AT funding may not be accounted for if excluded in the initial scope.

Because **AT facilities are often bundled as part of large roadway projects,** they are funded as part of roadway construction priorities. This has two important impacts. One, new cycling facilities are largely being developed on high-capacity roadways designed for higher traffic speeds. These facilities, if not designed well and with cyclist safety and comfort in mind, will likely not feel safe for many cyclists and may not attract many new cyclists. Two, when costs are an issue, AT facilities may be seen as "extras" and be cut from budgets.

Despite Ontario's new Cycling Strategy and AT policies in other provincial policies and plans, there are **no consistent sources of funding for regions and municipalities to implement AT infrastructure.** The Province may even impose more expensive designs on municipalities where they interact with MTO facilities. When retrofitting cycling facilities is needed to adhere to MTO's standards, the cost implication is too great for municipalities to support.

PERFORMANCE MEASURES

Level of Service (LOS) continues to emphasize accommodating motor vehicles during peak operations, despite provincial and regional policies to change mode use away from motor vehicles. The use of LOS is highly institutionalized in traffic planning, including in common software packages such as *Synchro,* and is a key input to transportation planning and roadway design decisions. Thus, the current use of LOS measures continues to prioritize the building and expansion of high-capacity roadways, environments that may be detrimental to AT.

Methods and data for incorporating AT modes into LOS analysis are not at the same level as for motor vehicles, and are generally not used by practitioners. Thus, motor vehicle considerations are prioritized over any impacts on AT environments. Furthermore, LOS as a performance model is not directly transferable to AT, and

offers limited value in measuring the multi-faceted criteria that is important for providing a high-quality experience for vulnerable road users.

Traffic Impact Studies (TIS) are designed to accommodate motor vehicle traffic generated from new development. Like LOS, **methodologies for considering active transportation are lacking**. TIS works along with, and very much uses the same logics as LOS.

STANDARDS AND DESIGN GUIDELINES

Street and roadway design guidelines are extremely influential for practitioners and help municipalities and consultants to have confidence that their designs will pass legal liability claims in terms of safety. In general, however, **they continue to be oriented toward accommodating motor vehicles**, including the ways they conceptualize safety.

The updated *Bikeway Design Manual*, *Ontario Traffic Manual (OTM, Book 18)*, and *Ontario Cycling Strategy* show that municipalities, regions and the province recognize the need for a new approach to road design, but **there are no current state-of-the-art guidelines that fully incorporate AT into the street design** from influential Canadian organizations such as the Transportation Association of Canada (TAC). TAC is currently updating its *Geometric Design Guide for Canadian Roads* from 1999, which gives some opportunity to promote designs that incorporate and support the needs of AT.

Many practitioners that participated in this project were not familiar with the most recent U.S. examples of guidelines that focus on AT, even though they were generally very knowledgeable and supportive of AT. One example of guidelines that include more Complete Street approaches for urban contexts is NACTO's recently published Urban Street Design Guide.

Municipal practitioners reported that **MTO standards are not sufficiently flexible and do not reflect the needs of municipalities.** Likewise, **lower-tier municipalities may also need more flexibility in designing AT infrastructure,** especially where they cannot or do not desire to widen roadways, and therefore, cannot provide AT facilities as part of widening projects.

Guidelines give flexibility, but deviating from guidelines raises liability issues and increases project design costs. As a result, consulting firms need direction from municipalities to develop less conventional designs that deviate from standard guidelines. These increased design costs also need to be budgeted. Some study participants believed that **municipalities that produce their designs in-house were better able to be flexible in their designs** than those that rely on consultants, but there was not consensus on this point.

9. Recommendations

Our recommendations to address the barriers and policy gaps that we identified are as follows:

Policy Framework:

- The use of strong, direct language in municipal TMPs and OPs is needed to ensure that municipalities plan and prioritize streets for walking and cycling. Tools have been developed to help municipalities with this, for example the ten elements of a comprehensive Complete Streets policy (http://completestreetsforcanada.ca/policy-elements)
- All policy documents (e.g. PPS, Growth Plan, OPs, TMPs, The Big Move) and tools (e.g. MCEA) and performance measures (LOS, TIS) could be strengthened to provide clarity about provincial, regional and municipal goals and expectations for accommodating and encouraging walking and cycling. Complete Streets policies and policies such as York's Context Sensitive Solutions should be developed across the region.
- The practice of including on-street bike lanes as part of regional road widening projects (as in Halton Region and York Region) needs to be examined from the perspective of the safety of vulnerable road users and potential for mode shift – in these conditions, off-road or physically-separated bicycle facilities may be warranted.
- Provincial policies and upper-tier OPs and TMPs should do more to support the development of AT in lower-tier municipalities taking into account that many municipalities cannot widen roads because right of ways are built out (where widening would require extremely expensive expropriation or even demolition of buildings), and need to provide cycling infrastructure within the existing right of way.

Capital Planning and Budget:

- An annual, predictable, permanent funding commitment for active transportation within The *Big Move* regional transportation plan is needed. Similar recommendations were made in a recent report, *The Other 25% - The Big Move and Active Transportation Investment*, where TCAT also recommends that Metrolinx should:
    - Provide dedicated annual investment for active transportation as part of *The Big Move*
    - Develop an investment model for active transportation
    - Provide a specific proportion of regional transit funding for active transportation development
- A dedicated annual provincial budget to build cycling infrastructure projects across Ontario needs to be created. MTO's new Ontario's Cycling Strategy (2013) recently announced (in 2014) a funding commitment by the provincial government of 25 million for municipal cycling infrastructure, but this investment is for three years only.

- Municipalities should not be responsible for paying for meeting the guidelines of higher levels of government, if they have proven, less expensive designs for accommodating AT.
- An annual "report card" on the amount of provincial investment in active transportation, and how these funds are being spent.

Municipal Class Environmental Assessment Process

- MEA should convene a working group with municipalities that have substantial active transportation project experience to develop relevant and appropriate updates to the MCEA for AT projects. A similar type of group was established for transit resulting in a new streamlined environmental assessment process for transit projects established in 2008.
- MCEA should streamline road diets that include active transportation infrastructure and require a more rigorous approval process for removing bike lanes and sidewalks.

Standards and Guidelines

- At minimum, the province and/or Metrolinx should be involved in the update of the TAC design manual to produce guidelines that incorporate state-of-the-art ideas about urban streets that fully support AT. Ideally, a specific set of agreed-upon guidelines for designing active transportation infrastructure in the GTHA municipalities is needed, similar to NACTO's Urban Street Design Guide and Urban Bikeway Design Guide. This would also help address issues around design safety and legal liability. NACTO is also actively seeking city and state endorsements of its guidelines. If MTO were to provide such an endorsement that would represent a useful first step in legitimizing their use.
- In the meantime, training and education should be improved so that practitioners are fully aware of existing state-of-the-art guidance, such as that produced by NACTO.
- A fuller assessment of the ways current guidelines are used in practice and create barriers to AT should also be conducted.

Develop implementation plan to overcome barriers

- Once a more fulsome understanding is established of the barriers to implementing active transportation policy, a plan to overcome these barriers is the natural next step. To develop a viable plan requires the active participation of a multi-stakeholder group comprised of members with substantial active transportation experience, similar to the working group that was convened by the Ontario Minister of Transportation in 2013 that resulted in the #CycleOn Cycling Strategy.

10. Future Research

1. **Expand scope of study to verify results**

   This research report provides an initial snapshot of the barriers that exist in implementing active transportation policies in the GTHA. To more fully understand and document how decisions are made would require further study. The focus groups were a critical part of this study to test research assumptions and initial findings with practitioners in the field. They were also valuable for comparing how policies are translated into practice in different parts of the GTHA. However, since the scope of the study was limited to only two focus groups (one in York Region and one in Burlington), there is a limit to how much can be extrapolated to other municipalities, particularly pertaining to differences between the lower-tier and upper-tier levels. To add to the robustness of the findings in this study, it would be beneficial to conduct more focus groups at both the regional level (in Halton, Peel and Durham), and in the lower-tier municipalities.

2. **Evaluate effectiveness and safety of new road designs**

   There are several different approaches currently being taken to bikeway design across the GTHA (e.g. on-street bike lanes on major arterials as part of road widening projects, sharrows in high-volume traffic areas, etc.) which have not yet being systemically studied or evaluated. There is a need to inventory infrastructure changes that are being made and evaluate their effectiveness in terms of transportation system performance (including safety, congestion, mode share) and the key policy components that produce improved results. The goal of this work would be to improve the capacity of GGH municipalities in planning and evaluating transportation infrastructure, particularly infrastructure that facilitates walking, cycling and transit use.

3. **Knowledge Transfer and Training**

   This is a field that is changing quickly. This study documented an uneven knowledge base amongst GTHA practitioners regarding best practice for active transportation, including most recent design guidelines, liability precedents, and understanding of policy tools (e.g. EA process). Developing curriculum material targeted at these missing knowledge gaps and conducting a series of workshops for GTHA practitioners could be quite useful.

4. Cost-Benefit Analysis of Active Transportation

One of the recommendations in TCAT's *The Other 25%: Active Transportation Investment and The Big Move* report, was to undertake a thorough cost-benefit analysis to better understand the relative costs of active transportation infrastructure investment within the context of the Big Move and to help position the argument for investment decisions, as has been done for the regional transit expansion projects. This study also determined that this analysis would be useful for municipalities particularly to help inform decisions pertaining to active transportation infrastructure in the capital budget process.

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Appendix B: Literature Review

Overview

This literature review addresses policies, legislation, and design guidance documents with respect to identifying barriers to increasing active transportation in the Greater Toronto and Hamilton Area (GTHA). To select these documents, engineers, planners and others involved in the street design process were asked to provide a list of design guidelines and resources influencing the design process. Documents were drawn from relevant government sources at the provincial, regional, and municipal levels, and from the publications of national professional organizations, such as the Transportation Association of Canada (TAC), which have an important influence on street design.

First, the policy and legislation framework is discussed. Policies and legislation relevant to active transportation in the GTHA are largely implemented at a provincial level through the Places to Grow Act, Provincial Policy Statement, and Municipal Class Environmental Assessment, as well as through the regulation of municipal official plans. Official Traffic Impact Studies (TIS) are mandated provincially, regionally and municipally for developers, and transportation engineers typically hired to conduct them.

Secondly, factors that guide the technical details of roadway and street design are reviewed. Specific road designs are implemented at all jurisdictional levels, but road designs are strongly influenced by guidelines disseminated by professional engineering associations, namely TAC, Canadian Institute of Transportation Engineers (CITE), and the American Association of State Highway and Transportation Officials (AASHTO). Performance measures that strongly shape roadway design, such as Level of Service (LOS), are also considered. The Transportation Research Board's (TRB) guidance in this area is the focus of discussion, due to the use of their methodologies in calculating LOS in the GTHA

Documents were reviewed focusing on (1) the ways motor vehicles are used as the conceptual basis of policies and guideline, implicitly excluding the consideration of active modes, and (2) how considerations of walking and cycling are treated where they are explicitly included. The goal was to identify barriers to active transportation found within street design process.

For the purposes of this research project, a road or roadway will refer to the space between curbs and a street will refer to the space between adjacent buildings, which includes the road, bicycle facilities, and sidewalk.

1 Policy and Legislation

The Province of Ontario's Growth Plan for the Greater Golden Horseshoe (2013) (Growth Plan) under the *Place to Grow Act* (2005), and the 2008 supporting Metrolinx regional transportation plan, *The Big Move*, create a broad planning policy framework in the GTHA that explicitly includes active transportation. The Growth Plan is a key document because it has legislative stature with all municipal plans and infrastructure spending intended to conform to its policies. *The Big Move* is important because it sets out major transportation goals and investment across the region, including for walking and cycling, over a 25-year horizon.

1.1 Provincial Policy Statement

The *Provincial Policy Statement (PPS)* is a policy first released in 1996 by the Ministry of Municipal Affairs and Housing (MMAH) that links the provincial Planning Act to Official Plans

developed by municipalities. The PPS (updated in 2005 and most recently in 2014) establishes the policy foundation for regulating the development and use of land and informs official plans. The PPS is an overarching, although fairly general policy document that is reviewed every five years. Active transportation is not the primary focus of this document, although the symbiotic relationship between transportation and land use is discussed.

The most recent PPS version released on February 25, 2014 for the first time uses the term "active transportation," replacing "alternative transportation modes" in previous versions. Other notable changes are:

- That increasing the "use of active transportation and transit before other modes of travel" is prioritized (Part IV);
- That land use patterns within settlement areas shall be based on densities and a mix of land uses which … support active transportation (1.1.3.2);
- That streets should "foster social interaction and facilitate active transportation and community connectivity" (1.5.1).

1.2 Places to Grow Act

The Places to Grow Act (2005) is the Provincial Act that provides *The Growth Plan for the Greater Golden Horseshoe*'s legislative framework, released in 2006 and amended in 2013. *The Growth Plan* identifies urban growth areas, density and intensification targets, and urban growth centres for the Greater Golden Horseshoe (GGH) and is also intended as a framework to inform infrastructure investment. The importance of compact, intensified, and mixed use development, as well as complete communities, is repeatedly stated in the context of redeveloped and newly developed areas. These forms of development and communities are particularly discussed in relation to supporting transit (specifically transit hubs and corridors), walking, and cycling. Transportation networks with multi-modal access and uses, which include transit, walking, cycling, and motorized vehicles, are to be integrated so that people have modal choice.

Places to Grow is intended to work with other Provincial polices and plans, such as the PPS (2014) and Greenbelt Plan (2005), with a time horizon of 2041. The *Places to Grow Act, 2005,* states that the Growth Plan applies to all decisions made under the Planning Act and Condominium Act, 1998, and that municipal official plans in a growth plan area have to conform with the Growth Plan. The importance of coordinated and consistent land-use and transportation planning is discussed throughout *The Growth Plan*. Strong language is used in this document, such as, "All *intensification areas* will be planned and designed to… support transit, walking and cycling for everyday activities," (Government of Ontario, 2013, p. 15-16) although there are no explicit steps for how this should be done or assessed. All levels of government and transportation stakeholders are stated to have a critical role in integrated land-use and transportation planning. These aspects of *The Growth Plan* set a framework for complete communities with convenient access to public transportation and options for non-motorized travel. *The Growth Plan*'s policies are implemented by municipalities through official plan conformity.

1.3 The Big Move Regional Transportation Plan

The Big Move (2008) is the overarching transportation plan in the GTHA, developed by Metrolinx, a provincial Crown Agency created in 2006 to plan, finance, and implement a regional multi-modal transportation system in conformance with *The Growth Plan*. Thus, *The*

Big Move sets the transportation planning framework for the region and is intended to guide more than 50 billion dollars in transportation investment over 25 years. *The Big Move* does not have statutory status, and it is municipalities that have responsibility over community development procedures, such as local land planning. By being under the auspices of an implementation agency, Metrolinx, it has potential to influence planning and infrastructure investment by jurisdictions throughout the region.

The importance of active transportation is highlighted throughout *The Big Move*, particularly in two of the overarching strategies. Strategy #2, "Enhance and Expand Active Transportation", recognizes the opportunity to increase the number of biking and walking trips through street and network planning and design. Strategy #7, "Build Communities that are Pedestrian, Cycling and Transit-Supportive", discusses the critical relationships and opportunities for integrated transportation and land use planning. Within both strategies, a "Supporting Policies" section uses binding and directed words (e.g. shall and should) in relation to active transportation infrastructure and active transportation supportive development.

1.4 Official Plans

Official Plans (OPs) are municipal documents but are part of the larger policy framework as a main vehicle by which the Provincial Policy Statement (PPS) and the *Growth Plan* are implemented. OPs within *The Growth Plan* area must conform to both. OPs are used to describe the current urban context and goals for future development and maintenance. They are passed by municipal councils and have statutory authority where all district or secondary plans, zoning, and site plans for development must conform to their policies. OPs are also opportunities for municipalities to coordinate their planning efforts with other jurisdictions (PPS, 2014).

Given the regional focus of this project and the large number of municipalities, this project did not individually review OPs. Generally, there is substantial variation in official plans across the GTHA and their level of consideration and priority for active transportation. As with the PPS, active transportation is typically not a direct focus of official plans. Although both documents discuss the importance of designing land uses that support active transportation, active transportation is usually not a priority.

1.5 Municipal Class Environmental Assessments

The Municipal Class Environmental Assessment (MCEA)[1] is an approved planning document that describes the process municipalities must follow in order to meet the requirements of the Environmental Assessment Act[2]. The Ontario Ministry of the Environment mandates MCEAs. There are three types of MCEAs: Municipal Road Projects, Municipal Water and Wastewater Projects and Municipal Transit Projects. Municipal Road Projects, as laid out in the MCEA Manual (2011), will be the focus here. A more detailed description of the MCEA process is included in Appendix A.

MCEA is a process intended to identify and mitigate environmental impacts, while also ensuring that infrastructure investments comply with the Places to Grow Act and Provincial

[1] A Class Environmental Assessment, or "parent" Class Environmental Assessment", is a type of streamlined environmental assessment, where projects of a similar nature are assessed in a predetermined manner. Preapproval is provided given that all requirements are followed. Ontario has eleven Class Environmental Assessment, one of which is a MCEA.

[2] The full Environmental Assessment process involves the development of terms of reference, several stages of consultations and review with public and government agencies, creation of an Environmental Assessment document, and approval by the Ontario Ministry of the Environment and Cabinet. This process takes over 32 weeks.

Policy Statement (PPS) (MEA, 2011, Sections A.2.10 and B.1.1). Because active transportation is stated as a priority in these framework policies, in principle the MCEA process should facilitate the provision of active transportation infrastructure. The MCEA is not intended to stimulate the implementation of any one design, such as active transportation facilities, as this is the role of provincial and municipal policies. Through the MCEA process, environmental implications of designs are to be evaluated.

The classified project schedule, which is determined by the proposed project scope, indicates the minimum steps required to fulfill the MCEA (see Appendix A). A higher project schedule requires a more rigorous process. The classification is subject to the proponent's (typically the municipalities) discretion, and documentation of the rationale for the classification is not required (MEA, 2011, Appendix 1). The classification of the project's schedule depends on various factors given throughout the MCEA Manual, including the extent or risk of environmental impacts (MEA, 2011, Section A.1.2.2), project cost and description (MEA, 2011, Appendix 1; see Appendix A Table 2), project's technical requirements (MEA, 2011, Section A.2.1.1), level of complexity based on many components "including environmental effects, public and agency input and technical considerations" (MEA, 2011, Section A.2.1.1). Although the Manual does not refer to the project cost and descriptions provided in Appendix 1 to exclusively govern the classification process, it appears to be applied as such. When there is more than one classification that could be applied to a project, the more rigorous schedule is stated to apply (MEA, 2011, Appendix 1).

Based on the review of the MCEA Manual's Appendix 1, the following barriers to active transportation have been found:

- Maintenance, resurfacing, reconstruction, and widening projects may be classified as a Schedule A or A+ (see Appendix A, Table 2, project descriptions 5a and 20), which allows the project to be preapproved without consideration of alternative designs or public input. This limits the potentials for active transportation to be added to the street design as it is biased towards maintaining the original design, which often has basic pedestrian facilities and no bicycle facilities.
- Reconstruction and widening projects that include bicycle and pedestrian facilities are likely to activate a Schedule B or C (see Appendix A, Table 2, project description 20). Schedule B and C require public consultation, which may be lengthy and costly depending on how the municipality handles the process. Active transportation facilities are supported by provincial policy and are typically included within municipal plans, which involves its own public consultation process. Another stage of public consultation may create barriers to including new facilities due to the additional time, expense, and opportunities for opposition that are part of the assessment process. Such individual assessment may also undercut the development of a facility that has been identified as an important link in a larger network in a bicycle or pedestrian master plan. Through the Part II Order Request that are allowed in a Schedule B or C, municipal issues can be brought to the provincial government. Active transportation projects may be of more municipal relevance than provincial concern.

As a result of these barriers, a process that is intended to be unbiased to certain infrastructure designs provides less resistance to maintaining the motor vehicle environment and more resistance to active transportation facilities.

The MCEA process is governed by how a project is classified in terms of its environmental impacts, where projects with larger impacts require a more involved assessment

process. Because new facilities for active transportation can change the motor vehicle environment (i.e. the existing use, purpose and capacity in reconstruction or widening projects), they can involve a more rigorous process. In contrast, projects that involve minimal change to the motor vehicle environment can be classified as a Schedule A or A+. Thus the process rests on the assumption that the current transportation environment is in the desired state; neither the negative environmental impacts of maintaining motor vehicle capacity, nor environmental benefits of increased active transportation are considered.

According to the Ontario Environmental Assessment Act, the word "environment" encompasses several factors relating to the classification and scope of an MCEA, including the following:

> *a) Air, land or water;*
> *b) Plant and animal life, including human life;*
> *c) The social, economic and cultural conditions that influence the life of humans, or a community;*
> *d) Any building, structure, machine or other device or thing made by humans;*
> *e) Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or*
> *f) and part or combination of the foregoing and the interrelationships between any two or more of them,*
> *in or of Ontario.*
> (Ontario Ministry of the Environment, 2010)

Evaluation of the individual or collective environmental impacts of street projects is not required in the MCEA process particularly in relation to the emission of greenhouse gases, pollutants, sound, and vibrations of road projects. Minimal attention is also given to the enablement of social, economic and cultural environment created by bicycle and pedestrian supportive streets.

In January 2013, the MCEA Monitoring Committee wrote a letter to the Minister of the Environment, the Honourable Jim Bradley, recommending amendments to the MCEA Manual's Appendix 1 to clarify issues particularly pertaining to bicycle facilities (see Appendix A Table 3). Observations regarding these amendments are as follows:

- Projects involving bicycle facilities are discussed in specific detail rather than generally, decreasing the level of subjectivity and uncertainty involved in classifying bicycle projects.
- The potential for streets to be returned to their previous state without the consideration of improved designs, namely active transportation, is not addressed.
- The removal of sidewalks, multi-purpose paths, or bicycle lanes is specified as a Schedule A (see Appendix A, Table 3, project description 3 and "new") and the reduction of bicycle lanes is suggested as a Schedule A or A+ (see Appendix A, Table 3, project description 19 and 22), not requiring public consultation or detailed analysis. The removal or reduction of bicycle lanes was not previously discussed in the MCEA Manual.
- Changing the number of motor vehicle lanes can still instigate a higher schedule

Although the intent of the letter is to clarify issues relating to bicycles in the MCEA Manual, the amendments do not address the primary issues relating to active transportation barriers.

The MCEA Manual is scheduled for a complete review and update every five years. The current MCEA Manual was approved in 2000, the last full review and update occurred in 2007, and amendments were made in 2011. The 2007 version was scheduled for a full review in 2012, but this has not occurred to date. This next review is an opportunity for the MCEA Manual to

implement these recommendations and further support the implementation of active transportation facilities.

1.6 Traffic Impact Studies

The purpose of a Traffic Impact Study (TIS) is to identify how land and building development (or redevelopment) will affect transportation, and how such transportation effects can be accommodated and mitigated by transportation facilities. The TIS's terms of reference and study area extent are determined in collaboration between the developer and the applicable levels of government, and the process is overseen by the highest jurisdiction whose roads are influenced by the development (see Table 1). Private or public developers are responsible for conducting a TIS[3]. Corresponding TIS guidelines exist at each level of jurisdiction, creating variations in their levels of consideration for active transportation. The general steps of a TIS are outlined in Appendix B.

Table 1: Jurisdictional road responsibilities

Level of Jurisdiction	Type of Roads
Province	Freeways and provincial highways
Region	Regional roads, transit facilities, most arterials, and municipal arterials that affect regional roads
Municipality	Some arterial roads, collector roads, local roads, sidewalks, bicycle facilities, and trails

TIS guidelines, regardless of the overseeing jurisdiction, follow a similar analysis procedure (see Appendix B). We focus here on generalizable factors across the various guidelines based on their level of consideration for active transportation. A combination of provincial, regional and municipal guidelines was examined. Those guidelines reviewed are as follows:

- Ontario (MTO): *General Guidelines for the Preparation of Traffic Impact Studies* (2008)
    - Active transportation consideration: none
- The Regional Municipality of Durham: *Traffic Impact Study Guidelines* (2011)
    - Active transportation consideration: moderate
- The Regional Municipality of Halton: *Guidelines for the Preparation of Traffic Impact Studies* (2001)
    - Active transportation consideration: low
- City of Toronto: *Guidelines for the Preparation of Traffic Impact Studies* (2013)
    - Active transportation consideration: high
- City of Mississauga: *Traffic Impact Study Guidelines* (2008)
    - Active transportation consideration: low

Between the various jurisdictions, the consistent mandatory factor that mandates a TIS is the estimated number of additional vehicle trips generated by the proposed development (typically measured as 100 additional vehicle trips per hour). The extent to which motor vehicles, transit, bicycles, and pedestrians are influenced by the new development may also instigate a TIS, depending on the jurisdiction. In general, jurisdictions can mandate a TIS at their discretion.

[3] A TIS is typically conducted by a transportation engineer or transportation planner, depending on the jurisdiction's requirements.

A TIS may only be connected to individual developments, and the influence of several developments are not be collectively captured even when in close proximity.

TIS's typically focus on motor vehicles, and bicycles and pedestrians may be mentioned in TIS guidelines. The procedure to directly account for bicycles and pedestrians is not consistent in TIS guidelines and depends on the particular consultant, developer, or jurisdiction. Most TIS guidelines focus on estimating additional motor vehicle trips generated by a development and providing facilities to maintain an acceptable Level of Service for vehicles during peak periods.

The *Trip Generation Manual* (ITE, 2012) is the primary document used to estimate future demand, and active transportation trip generation methodologies are lacking. Trip generation models use the most recent modal split data to predict future demands. Active transportation is a part of the modal split, and therefore indirectly influences trip generation models. It is important that trip generation models use current data to account for changing travel behaviours, which may include increased active transportation trips and decreased motor vehicle trips.

While policy in the GTHA aspires to decrease motor vehicle trips, TIS guidelines promote the provision of roadway designs that maximize the accommodation of motor vehicles during peak demand for the area. This institionalizes the flow of resources into automotive infrastructure based on a small period of travel throughout the day. An additional level of analysis to determine the *desired* number of motor vehicle trips or the desired mix of modes, rather than only considering the *projected* number of vehicle trips would provide more consistent alignment with GTHA goals of reducing motor vehicle use.

TIS guidelines also refer to the following supplemental design guidelines, as listed below. These guidelines are based on motor vehicle provisions, and no or simplistic methods for considering active transportation are included.

- Canadian Institute of Transportation Engineers (CITE)
  - *Canadian Capacity Guide for Signalized Intersections* (2008)
- Transportation Research Board (TRB)
  - *Highway Capacity Manual* (2010)
- Institute of Transportation Engineers (ITE)
  - The *Trip Generation Manual* (2012)
- Transportation Association of Canada (TAC)
  - *Geometric Design Guide for Canadian Roads* (1999)

2 Design Factors

The Ministry of Transportation of Ontario (MTO) is the governing transportation body in Ontario, but municipal transportation departments govern the design of local roads and streets. These governing bodies draw from a number of design guidelines and documents, particularly street design guidelines and performance measures that are produced by professional engineering groups. The main engineering groups in Canada are the Transportation Association of Canada (TAC) and the Canadian Institute of Transportation Engineers (CITE), which is a chapter of the internationally based Institute of Transportation Engineers (ITE). Other international sources also influence Canadian design practices, such as the American Association of State Highways and Transportation Officials (AASHTO) and Transportation Research Board (TRB). Provincial and municipal governments may adopt and adapt these guidelines and performance measures to fit their local context.

2.1 Design Guidelines

Guidelines help to inform the design process, with the professional engineer responsible for approving a design legally liable. No guideline is legally binding, whether created by an engineering group or a provincial or municipal government. However, guidelines approved by professional engineering bodies are highly influential. In this respect, the guidelines produced by TAC are the most highly regarded in Canada. While engineers may strictly follow TAC's guidelines, TAC makes it clear that they are resources intended to supplement the design process and not substitute for professional judgment.

> *The purpose of this Manual is to provide optimum standards for the use of devices for the control of traffic and the provision of information to drivers and other road users. The contents of the Manual have no legislative authority and are not intended to be interpreted as minimum standards by which road authorities are to be judged. Similarly, this Manual is not intended to be used as a basis for establishing civil liability (*TAC, 1998, pre-page numbers).

There are three primary aspects of street design of which design guidelines have been created: geometric design, traffic control design and intersection signalization design. Safety is also discussed in this review as a framework for guiding design. This literature review focused on the most widely accepted Ontario guidelines in each area, inherently focusing on MTO, TAC, and CITE's guidelines. Streetscaping may be seen as an additional aspect of street design and is also included in some geometric and traffic control guidelines, however it was not reviewed in detail since it typically facilitates active transportation rather than creating barriers. Additional resources exist that provide guidance on when specific designs should be applied, such as Context Sensitive Solutions (ITE, 2010). These resources typically encourage active transportation, and thus are minimally discussed in this literature review.

Motor vehicle traffic designs typically provide the base design for a street section or intersection, and active transportation designs may be added subsequently. In the case where the roadway is constrained, guidelines influence an engineer's flexibility to approve designs below a given jurisdiction's standard. For example, in the Plains Road case study, MTO had a lane width standard of 3.75 m, while the City of Burlington had a minimum lane width of 3.1 m for the same design scenario. A negotiate lane width of 3.3 m was used. TAC (1999) discusses the concept of design domain, which suggests a minimum and maximum dimension for a given facility. Designers can then determine the particular dimension based on the context and their engineering judgment.

Geometric Design

Geometric design guidelines consider aspects such as lane widths, curb radii, horizontal curves, vertical curves, and stopping distances based on travel volumes, speeds and design vehicles. The *Geometric Design Guide for Canadian Roads* (TAC, 1999) is the primary geometric design guideline in Canada, informing provincial and municipal guidelines. The focus of this guideline is on motor vehicle mobility. There are two chapters in the Guide that exclusively discuss active transportation: *Streetscaping* (TAC, 1999, Chapter 3.3), which considers the pedestrian realm; and *Bikeways* (TAC, 1999, Chapter 3.4), which provides geometric designs specific to bicycles. Although active transportation may be mentioned periodically in the document and in the respective sections, methodologies are not provided to

address multimodal transportation needs collectively with motor vehicle needs. The impact of active transportation is sometimes viewed negatively; pedestrians, for example, are described to *restrict* and *interrupt* traffic flow (TAC, 1999, p. 1.3.3.1).

Within TAC's street classification system of freeways, expressways, arterials (major/minor), collector (residential; industrial/commercial), local (residential; industrial/commercial), and public lane, the only road type that explicitly indicates that either lane widening or separate bicycle facilities are needed is on arterial (both minor and major) streets (TAC, 1999, p. 1.3.3.1; see Appendix C). On the other road types, bicycles are either prohibited (e.g. freeways and expressways) or no special facilities are deemed necessary (e.g. collector and local streets). Pedestrian facilities are suggested on all arterials, collectors, and local roads, while they are prohibited on freeways and expressways.

Traffic Control Device Design

Traffic control guidelines specify when traffic control sings, signals, markings, and delineation devices are to be used with respect to the roadway condition, and the traffic control's placement within the roadway and its dimensions. The *Ontario Traffic Manual* is the primary traffic control device guideline used in Ontario. The Ministry of Transportation (MTO) is in the process of developing this 22 book manual, which explicitly considers active transportation in two of the books: *Pedestrian Control and Protection* (Book 15) (MTO, 2010) and *Bicycle Facilities* (Book 18) (MTO, 2013). *Traffic Calming* (Book 20), which typically encourages designs conducive to pedestrians and bicycles, is listed as one of the books that will be developed in the future.

TAC's *Manual of Uniform Traffic Control Devices for Canada* (1998) is by various jurisdictions across Canada, and is further referenced by the *Ontario Traffic Manual*. This Manual considers motor vehicle and pedestrian traffic control, and the *Bikeway Traffic Control Guidelines for Canada* (TAC, 2012) is a subsequent manual provided specifically for bicycles. Pedestrian facilities are included in the Manual, but motor vehicle mobility is considered a high priority when selecting the particular pedestrian facility design (TAC, 1998, Chapter A6.1).

NACTO integrates urban design perspectives into their technical traffic control device specifications. The *Urban Street Design Guide* (NACTO, 2013) accounts for the collective multimodal traffic control device designs of streets, focusing on pedestrians, cyclists, and transit users. Their *Urban Bikeway Design Guide* (NACTO, 2011) is frequently referenced by active transportation design guidelines in North America, including MTO's *Bicycle Facilities* (Book 18).

Intersection Signalization Design

Intersection signalization guidelines in the *Canadian Capacity Guide for Signalized Intersections* (2008), produced by CITE, primarily focuses on motor vehicles, but attention is also given to pedestrians. Unless there are "special requirements" (CITE, 2008, p. 4-83) for bicycles, bicycle volumes are incorporated into the pedestrian or motor vehicle calculations (CITE, 2008, Section 4.4.2). Incorporating bicycle counts into motor vehicle calculations occurs when bicycles are expected to travel in mixed traffic conditions. The "special requirements" may be present when there is a separate facility available for bicycles, including a shoulder, separate bicycle facility, or wide right lane (CITE, 2008, Section 3.4.2). However, "special requirements" are not defined in the CITE's Guide (2008). When bicycles are able to travel separately from motor vehicles on a wide lane or a separate facility, it is suggested that the signal timings are calculated separately for bicycles using the motor vehicle methodology (CITE, 2008, Section

3.4.2). However, this is only the case when signal timings are prioritized for bicycles; no evidence of this occurring in the GTHA has been found. Bicycles may be incorporated into pedestrian calculations when bicyclists are required to dismount and use a crosswalk (CITE, 2008, Section 4.4.2).

Safety

Canadian engineers consider safety exclusively through TAC's *Canadian Road Safety Engineering Handbook* (2009) and AASHTO's *Highway Safety Manual* (2010), and inclusively through design guidelines and resources. TAC's safety Handbook (2009) is currently under development. It will eventually contain eight books, three of which have been published. Book 1 of the Handbook, *Road Safety Engineering Management Guide,* has been developed and was the primary focus of this review. Eventually, TAC will create the *Urban Road Safety Engineering Guide* as a part of the Handbook, which will be an opportunity to address safety from the urban multimodal context.

Street designers traditionally consider wider streets and lanes to increase safety. TAC states, "In many instances, the more generous a road's design dimensions are, the safer the road will be; though this is not always true" (1999, p. 1.1.1.1). Research has shown wider streets to increase motor vehicle travel speeds (Fitzpatrick et al. 2000), reducing safety for vulnerable road users, such as pedestrians and cyclists.

Collision data is the primary way engineers consider road safety. Motor vehicle collisions are TAC (2009) and AASHTO's (2010) unit of analysis in analyzing past collisions or estimating future collisions. Active transportation safety incident data is often lacking or poorly detailed for bicycles and pedestrians in Ontario. This is the result of provincial procedures in place for reporting collisions, which typically requires the involvement of a motor vehicle:

- In Ontario, by law, all motor vehicle collisions must be reported to the police if there are any personal injuries or fatalities, and where damage to vehicles is $1,000 or more. (http://www.mto.gov.on.ca/english/safety/topics/reporting.shtml)
- The Ontario Highway Traffic Act defines a collision as, "the contact resulting from the motion of a motor vehicle or streetcar or its load that produces property damage, injury, or death." (http://trafficservicestps.blogspot.ca/)
- Police Services are required to complete a "Motor Vehicle Collision Report" (http://www.mto.gov.on.ca/english/trucks/cvor/collisions.shtml)

As a result police reports may lack detail pertaining to pedestrian and bicycles involved in a collision; safety incident data relating to collisions between active transportation modes, active transportation modes and fixed objects (including a car door opening into a bicycle's path), as well as active transportation falls resulting from pavement conditions or due to avoiding a potential collision with a motor vehicle, may not be collected. Active transportation safety studies that have been conducted typically rely on police data (limiting the study to those occurring between active transportation modes and motor vehicles), hospitals and insurance records.

Pedestrian safety may be commonly discussed in engineering design guidelines, but safety study procedures are lacking due to data availability. Bicycle safety is even more scarcely mentioned in design guidelines. Additionally, pedestrians and/or bicycles are addressed as an influencer of traffic conflicts/collisions, both in TAC's *Canadian Road Safety Engineering Handbook* (2009) and in other guidelines and manuals (TAC, 1999, p. 2.3.1.1.; MEA, 2011, Section B.2.2.2).

Additional Documents

The following additional guidelines may inform street design in the GTHA, but were not reviewed:

- American Association of State Highway and Transportation Officials (AASHTO)
  - *Policy of Geometric Design of Highways and Streets* (2011)
  - *Guide for the Development of Bicycle Facilities* (2012)
  - *Highway Safety Manual Knowledge Base* (2009)
- Institute of Transportation Engineers (ITE)
  - *Urban Street Geometric Design Handbook* (2008)
  - *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)*
  - *Promoting Sustainable Transportation Through Site Design: An ITE Recommended Practice* (2004)
- Ministry of Transportation of Ontario (MTO)
  - *Geometric Design Standards for Ontario Highways* (1994)
  - *Ontario Bikeways Planning and Design Guidelines* (1996)
  - *Ontario Provincial Standards for Roads & Public Works* (2013)

2.2 Performance Measures: Level of Service

Performance measures are used to gauge the state of an intersection or street segment under current or future transportation conditions. Municipal or consulting engineers apply performance measures, and the measures are used to understand the functionality of the street and to communicate with decision makers, ultimately guiding street design decisions. The *Highway Capacity Manual* (TRB, 2010) was the focus of this review due to its high usage in the GTHA, although it was created in the United States. This review further focused on Level of Service (LOS), as it is the most widely applied performance measure in the GTHA and across Canada.

To account for the unique and potentially conflicting needs of street users[4], TRB (2010) discusses each mode's LOS individually: Automobile LOS, Bicycle LOS, Pedestrian LOS, and Transit LOS. By considering each mode's LOS individually and exclusively, bicycle and pedestrian's considerations can be ignored unless their specific analysis is conducted. The decision to analyze Bicycle and Pedestrian LOS rests on jurisdictions. TRB's (2010) Automobile Level of Service (LOS) is the primary performance measure applied in the GTHA.

Motor Vehicle Level of Service

Motor vehicle LOS is intended to qualitatively categorize the flow and mobility of traffic through an intersection or street segment as high, LOS A, to low, LOS F. The volume to capacity ratio, which is a quantitative comparison of a street's given traffic conditions and capacity, is used to determine LOS. When the given traffic conditions reach the capacity of the facility, the volume to capacity ratio equals 1.0, LOS F. TRB's Automobile LOS is dependent on variables that are *field measurable* (2010, p. 17-6), and this data is routinely collected by jurisdictions. Synchro software is widely applied in the GTHA to model street designs under current and

[4] E.g. "Design or operational decisions that are intended to improve the service provided to one mode can sometimes have an adverse impact on the service provided to another mode" (TRB, 2010, p. 16-1); "The factors that influence the quality of service provided to these travelers [motorists, pedestrians, bicyclists, and transit passengers] vary by mode because each mode has a different trip purpose, length, and expectation" (TRB, 2010, p. 16-4).

future transportation conditions, further determining their LOS using TRB's (2010) Automobile LOS methodology. Synchro software is designed to analyze motor vehicle traffic and minimal consideration is given to designs conducive to bicycles and pedestrians.

While GTHA high level policy emphasizes the importance of active transportation, jurisdictions and guidelines (such as TIS guidelines) continue to require the evaluation of motor vehicle LOS. Requirements do not exist for a similar level of evaluation for active transportation.

Factors that influence motor vehicle LOS can be opposite to the elements that create walkable and bikeable streets (Donnelly & Toop, 2011; Henderson, 2011). For example, a high motor vehicle LOS can be correlated with low-density land development and high-speed motor vehicle travel (Henderson, 2011). This type of environment is not ideal for pedestrians or bicycles, and also encourages motor vehicle use. Jurisdictions typically view a decrease in motor vehicle LOS negatively, even though it can be attributed to an improvement in active transportation. By continuing to prioritize motor vehicle LOS regardless of the context, active transportation designs cannot be simultaneously prioritized.

Designing streets for a high motor vehicle LOS restricts the modal shift from motor vehicles to active transportation, as motor vehicle use increases when capacity increases (Metrolinx, 2008, p. 65). Modeled traffic volumes, which are used when calculating future motor vehicle LOS, are based on estimated future demands rather than the desired modal split aspired to in legislative policies, such as in the GTHA Regional Transportation Plan *The Big Move*.

The evaluation period selected for LOS, which is typically analyzed over 15 to 60 minutes (CITE, 2008; TRB, 2010), leads to the provision of motor vehicle lanes that may only be required during the maximum demand period. TRB (2010) suggests that using an analysis time of more than one hour may neglect critical peaks in traffic conditions. The City of Ottawa has used a longer peak period to analyze LOS, which corresponds to lower traffic volumes (see Figure 1). A lower traffic volume creates a higher LOS (i.e. the mobility of traffic increases when there are fewer motor vehicles on the road), and potentially allows fewer lanes to be required. By requiring fewer motor vehicle lanes to obtain the desired LOS, more space can be used to accommodate active transportation facilities.

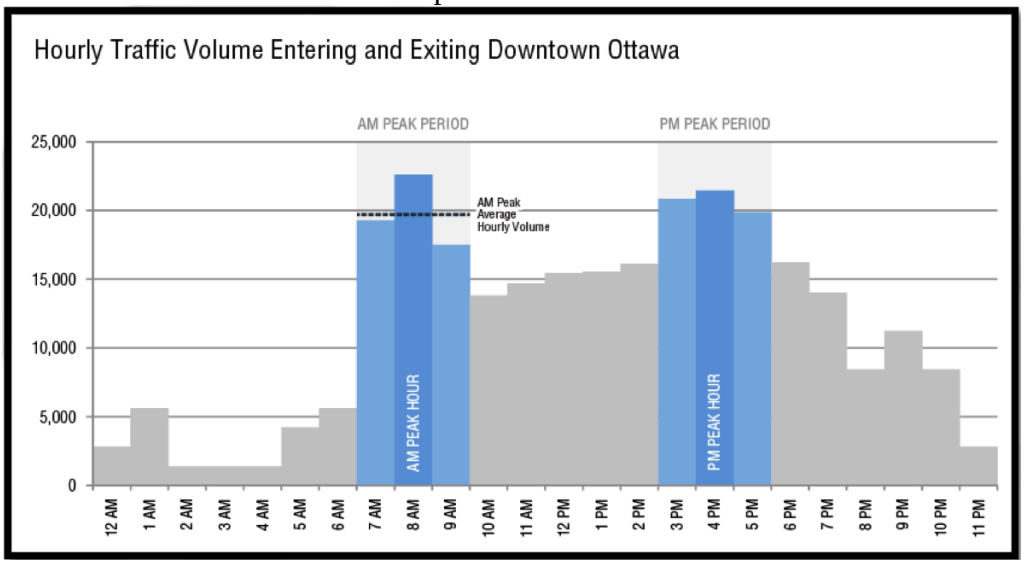


Figure 1: Hourly Traffic Volume Entering and Exiting Downtown Ottawa (source: TCAT's Complete Street Forum, 2013).

Bicycle and Pedestrian Level of Service

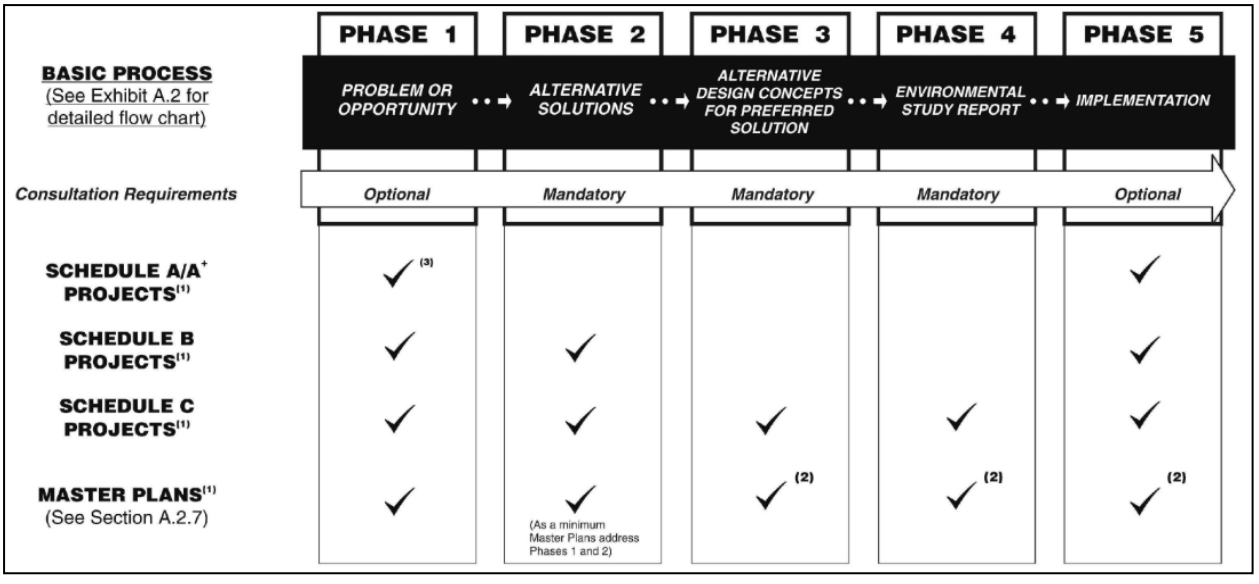
Evidence of jurisdictions evaluating bicycle or pedestrian LOS in the GTHA was not found. While this may be reflective of jurisdictions' priorities, barriers also exist due to the methods and required data. Methods for determining bicycle or pedestrian LOS are less refined to reflect the street experience quality in comparison to motor vehicle LOS (Donnelly & Toop, 2011). Data availability is also an issue when calculating bicycle and pedestrian LOS. While TRB's Automobile LOS is dependent on *field measurable* data that is routinely collected, their Bicycle and Pedestrian LOS are based on data reflecting traveller's *perception of service quality* (TRB, 2010, p. 17-6), which is more difficult to collect due to the need for data from users. Bicycle and pedestrian counts, which are needed to calculate TRB's (2010) LOS, are also lacking in Canadian jurisdictions.

Appendix A: Municipal Class Environmental Assessment Process

A project's classification determines the requirements of the MCEA process, where potential classifications include Schedule A, Schedule A+, Schedule B, and Schedule C. Schedule A projects are minimal in scale and environmental impacts, and involve street maintenance and operational deficiencies. If a proponent classifies a project as Schedule A, project pre-approval is given with no potential for the public or various agencies to appeal for a Part II Order[5] (MEA, 2011, Section A.1.2.2). Comments are to be directed to the municipal council (MEA, 2011, Section A.1.2.2), yet no privileges are given to the municipal council for changing the MCEA process. Schedule A+ project requires public notification, but a Schedule A project does not; neither schedule involves public consultation. All maintenance and reconstruction projects, where the street is returned to its previous state and the motor vehicle capacity is not changed, are classified as Schedule A or A+ (see Table 3).

Schedule B corresponds to projects with an increased risk for negative environmental impacts, and typically involve minor changes to existing facilities. The proponent must address the affected public and review agencies' concerns, and can implement the project once the concerns have been dealt with. Schedule C applies to projects with significant environmental impacts, generally involving new facilities and major expansions to existing facilities. This schedule involves the consideration of alternative design concepts and a full Environmental Study Report. The public and various agencies review this Report.

A MCEA may involve five phases, which include the (1) identification of the problem or opportunity, (2) identification of alternative solutions, (3) examination of alternative methods for implementing the preferred solution, (4) documentation of the conducted planning, design and consultation process, and (5) implementation of the recommended solution and monitoring of the completed facility (MEA, 2011, Section A.2.1). Figure 2 shows the minimum phases required for each schedule.



Notes:

[5] A Part II Order allows the public and various agencies to appeal for a higher level of Environmental Assessment. Requests for Part II Order are granted if the schedule cannot sufficiently account for issues in the proposed project, or if the issues cannot be mitigated with the proponent through discussions and mediation. The Minister of the Environment or a delegate processes a Part II Order request (MEA, 2011, Section A.2.8).

(1) Schedule A, A^+, B and C projects and Master Plans can also be integrated with the requirements of the Planning Act (See Section A.2.9)
(2) Complete Phases 3 and 4 for any Schedule C projects included in the Master Plan prior to implementation
(3) For Schedule A^+ projects, public to be advised. See Section A.1.2.2.

Figure 2 Key Features of the Municipal Class EA (reprinted from MEA, 2011, Section A.2.1)

Project descriptions that have implications on street design, as applicable to this research project, are included in Table 2. Table 3 incudes the amendments recommended by the MCEA Monitoring Committee to the Minister of the Environment.

Table 2: MCEA project classifications for project descriptions relating to street design (adapted from MEA, 2011, Appendix 1)

Description of the Project (Note: The Schedules shall be reviewed inclusively to ensure that the correct schedule is selected.)		Cost Limit for Project Approved Under Schedule			
		Pre-Approval		B	C
		A	A+		
1	Normal or emergency operation and NL maintenance of linear paved facilities and related facilities	NL	-	-	-
3	Construction or operation of sidewalks or bicycle paths or bike lanes within existing rights-of-way		NL	-	-
5	a) Urban: Resurfacing, with no change to - horizontal alignment	-	NL	-	-
	b) Urban: Patching and frost heave NL treatment	NL	-	-	-
11	Streetscaping (e.g. decorative lighting, benches, landscaping) not part of another project	-	NL		-
12	a) Construction of localized operational improvements at specific locations (e.g. the addition of a ramp to an existing interchange; turning lanes at an intersection, but not a continuous centre left turning lane) b) Installation of guide rail		NL		-
13	Installation, construction or reconstruction of traffic control devices (e.g. signing, signalization)	<9.5 m	-	>9.5 m	-
15	Installation of safety projects (e.g. lighting including "high mast", grooving, glare screens, safety barriers, energy attenuators)	<2.4 m	-	>2.4 m	-
19	Reconstruction where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will be for the same purpose, use, capacity and at the same location as the facility being reconstructed (e.g. no change in the number of lanes)	-	NL	-	-
20	Reconstruction or widening where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will not be for the same purpose, use, capacity or at the same location as the facility being reconstructed (e.g. additional lanes, continuous centre turn lane)	-	-	<2.4 m	>2.4 m
21	Construction of new roads or other linear paved facilities (e.g. HOV lanes)	-	-	<2.4 m	>2.4 m
22	Redesignation of an existing General Purpose Lane (GPL) or High Occupancy Vehicle (HOV) lanes through signage or pavement marking modifications (i.e. not requiring physical construction): • new parking or turning lane markings on an existing roadway • conversion of one-way or two-way streets • redesignation of existing GPL to HOV; or HOV to GPL	NL	NL	-	-
23	Construction of local roads which are required as condition of approval on a site plan, consent, plan of subdivision or plan of condominium which will come into effect under the Planning Act prior to the construction of the road. [Note – Reference to "local"	NL	-	-	-

	roads refers to roadway function not municipal jurisdiction. See definition in Glossary of Municipal Class EA.]				
24	Reconstruction of a water crossing where the reconstructed facility will be for the same purpose, use, capacity and at the same location. (Capacity refers to either hydraulic or road capacity.) This includes ferry docks.	-	NL	-	-
25	Reconstruction of a water crossing where the reconstructed facility will not be for the same purpose, use, capacity or at the same location. (Capacity refers to either hydraulic or road capacity.) This includes ferry docks.			<9.5 m	>9.5 m
26	Construction of new water crossings. This includes ferry docks.			<9.5 m	>9.5 m
27	Construction of new grade separations	-	-	<9.5 m	>9.5 m
28	Construction of underpasses or overpasses for pedestrian, recreational or agricultural use	-	-	<2.4 m	>2.4 m
29	Construction of new interchanges between any two roadways, including a grade separation and ramps to connect the two roadways	-	-	<9.5 m	>9.5 m
34	Utility removal, modification or relocation for safety or aesthetic purposes	NL	-	-	-
35	Restoration of a facility immediately after a natural disaster, provided the facility is for the same purpose, use, capacity and at the same location	NL	-	-	-
40	Retirement of existing roads and road related facilities	-	NL	-	-
41	Retirement of existing laneways		NL	-	-
42	All other road related works	-	-	<2.4 m	>2.4 m
43	Any project which would otherwise be subject to this Class EA and has fulfilled the requirements outlined in Section A.2.9 of this Class EA and for which the relevant Planning Act documents have been approved or have come into effect under the Planning Act, R.S.O 1990, Chapter P.13, as amended.	NL		-	-

Table 3: MCEA Appendix 1 MEA Recommended Amendments to the Ministry of the Environment (note: "or removal" is added to project description 3, but it is not underlined as the other additions are)

No.	Description of the Project (*Note: The Schedules shall be reviewed inclusively to ensure that the correct schedule is selected*)	Cost Limit for Project Approved Under Schedule				Rationale for Change
		Pre Approved		B	C	
		A	A+			
1.	Normal or emergency operation and maintenance of linear paved facilities, *cycling lanes & multi-purpose paths, sidewalks, parking lots* and related facilities *within existing right-of-way or located outside rights-of-way*.	NL	-	-	-	All normal or emergency operations are Schedule A
3.	Construction *or removal* ~~or operation~~ of sidewalks or *multi-purpose* ~~bicycle~~ paths or *cycling* ~~bike~~ lanes within existing or protected rights-of-way.	NL	-	-	-	Operation is covered above. The public should be advised any issues raised should be resolved locally with the municipality.
14.	Construction of new parking lots *not associated with a building*.	<9.5m	-	>9.5m	-	Parking lots that serve a building are covered by Planning Act Requirements.
19.	Reconstruction where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will be for the same purpose, use, capacity and at the same location ~~*as the facility being reconstructed*~~ (e.g. *addition or reduction of cycling or parking lanes, permitted provided* no change in the number of motor *vehicle* lanes).	-	NL	-	-	The public should be advised any issues raised should be resolved locally with the municipality.
20.	Reconstruction or widening where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will not be for the same purpose, use, capacity or at the same location ~~*as the facility being reconstructed*~~ (e.g. additional *motor vehicle* lanes, continuous centre turn lane.	-	-	<2.4m	>2.4m	Changes to motor vehicle capacity warrant a higher level of review.
22.	Redesignation of a *Linear Paved Facility,* ~~an existing General Purpose Lane (GPL) or High Occupancy Vehicle (HOV) lanes~~ through signage or pavement marking modifications (i.e. not requiring physical construction): • *addition or removal of* ~~new~~ parking or turning lane markings on an existing roadway; • conversion of one-way or two-way streets; • redesignation of existing *General Purpose Lane* (GPL) or on-street parking to *High Occupancy Vehicle* (HOV) *or cycling lanes*; ~~HOV to GPL~~ *vice versa;* • *create or remove cycling lanes*	NL	NL	-	-	The public should be advised any issues raised should be resolved locally with the municipality.

No.	**Description of the Project** (*Note: The Schedules shall be reviewed inclusively to ensure that the correct schedule is selected*)	Cost Limit for Project Approved Under Schedule				**Rationale for Change**
		Pre Approved		**B**	**C**	
		A	**A+**			
new	*Construction or removal of sidewalks, multi-use paths or cycling facilities including water crossings outside existing right-of-way.*	<3.5m		>3.5m	>9.5m	Maintain the existing exemption for smaller cycling projects. Larger projects follow a well accepted and proven process.
24.	Reconstruction of a water crossing where the reconstructed facility will be for the same purpose, use, capacity and at the same location. (Capacity refers to either hydraulic or road capacity *but does not include alterations to include or remove facilities for cycling, pedestrians or to support utilities*.) This includes ferry docks.	-	NL	-	-	The public should be advised any issues raised should be resolved locally with the municipality.
28.	Construction of underpasses or overpasses for pedestrian, *cycling*, recreational or agricultural use.	-	-	<2.4m	>2.4m	Clarification to ensure cycling is included.

Appendix B: Traffic Impact Study

The general approach of a TIS is as follows, although there are variations between jurisdiction's guidelines:

1. Details of the proposed development/redevelopment are given.
2. Existing transportation conditions surrounding the proposed site are outlined, where the jurisdiction and consultant determine the size of the study area. This section discusses existing multimodal transportation facilities, and some jurisdiction's guidelines also require planned transportation facilities from official plans, transportation master plans, and bicycle and pedestrian master plans to be outlined.
3. The expected motor vehicle traffic generated by the new development/redevelopment is estimated and the distribution of these trips among different routes is predicted. If there are a significant number of pedestrian trips, the jurisdiction's guidelines may require pedestrian trips to be analyzed in a similar way. Guidelines on what constitutes a significant number of pedestrian trips were not found during this literature search. Further, evidence of established methods to predict pedestrian and bicycle volumes were also not found.
4. The impacts of the expected traffic on transportation facilities are discussed. The motor vehicle volume over capacity ratio and level of service are used to determine the extent of facility changes needed. Pedestrian traffic may be considered in a similar way if high pedestrian volumes are expected.
5. Various transportation facility alternative changes are discussed to accommodate and mitigate expected traffic. Active transportation may be included in this section, particularly if pedestrian or bicycle master plans identify this area in their networks. Some jurisdictions additionally consider how multimodal transportation can accommodate some of the generated trips and how motor vehicle trips can be minimized through travel demand management (TDM) strategies and travel option plans. TDM strategies minimize peak hour travel and motor vehicle use, while increasing the number of passengers per vehicle, linked trips, and multimodal transportation use. As a part of a travel options plan, strategies for connecting the proposed development into existing services and programs is outlined.
6. Transportation facility design changes are recommended.

Appendix C: Design Guidelines

Table 4 outlines the street classification system used by TAC (1999), with relationships to active transportation noted.

Table 4: Street classification summary table (adapted from TAC, 1999, p. 1.3.4.3)

Type of Road	Traffic service function; land service/access; flow characteristics	Design Speed (km/h)	Traffic Volume (vehicles/day) (typical)	Accommodation of Cyclists	Accommodation of Pedestrians
Freeway	Optimum mobility; no access; free flow (grade separated)	80-120	>20 000	Prohibited	Prohibited
Expressway	Traffic movement primary consideration; no access; uninterrupted flow except at signals	80-110	>10 000	Prohibited	Prohibited
Arterial (Minor/Major)	Traffic movement major consideration/traffic movement primary consideration; some access control/rigid access control; uninterrupted flow except at signals and crosswalks	Minor Arterials: 50-70; Major Arterials: 60-100	Minor Arterials: 5000 to 20 000; Major Arterials: 10 000 – 30 000	Lane widening or separate facilities desirable	Sidewalks may be provided, separation for traffic lanes preferred
Collector (Residential; Industrial/Commercial)	Traffic movement and land access of equal importance; traffic movement and land access of equal importance; interrupted flow	50 – 80	Residential: <8000; Industrial/Commercial: 1000 – 12 000	No restrictions or special facilities	Sidewalks provided both sides; sidewalks provided where required
Local (Residential; Industrial/Commercial)	Traffic movement secondary consideration; land access primary function; interrupted flow	30 – 50	Residential: <1000; Industrial/Commercial: <3000	No restrictions or special facilities	Sidewalks normally on one or both sides; sidewalks provided where required
Public Lanes	Traffic movement not a consideration; land access only function; interrupted flow	30 – 40	Residential: <500; Commercial: <1000	No restrictions or special facilities	Pedestrians permitted, no special facilities

Appendix C: A public request for case study examples

TCAT Newsletter, June 2013

Call-out for research participants in new study

13 Jun 2013

TCAT, in collaboration with the University of Toronto is conducting a research project that considers how polices prioritizing active transportation infrastructure are being implemented in the Greater Toronto and Hamilton Area.

As a part of this study, new street design and redesign projects will be reviewed as case studies to gain a better understanding of the barriers and enablers of active transportation infrastructure in the design and implementation process.

Does your municipality have an interesting example from the past five years of new streets or reconstructed streets where:

- active transportation infrastructure was successfully included? OR
- where there was an attempt to include active transportation infrastructure but in the end the final design didn't include it?

Please contact TCAT by June 21st at info@tcat.ca with your name, municipality, street project, and a brief explanation why you think your example would provide valuable insight for this study.

Appendix D: Bloor Street Case Study

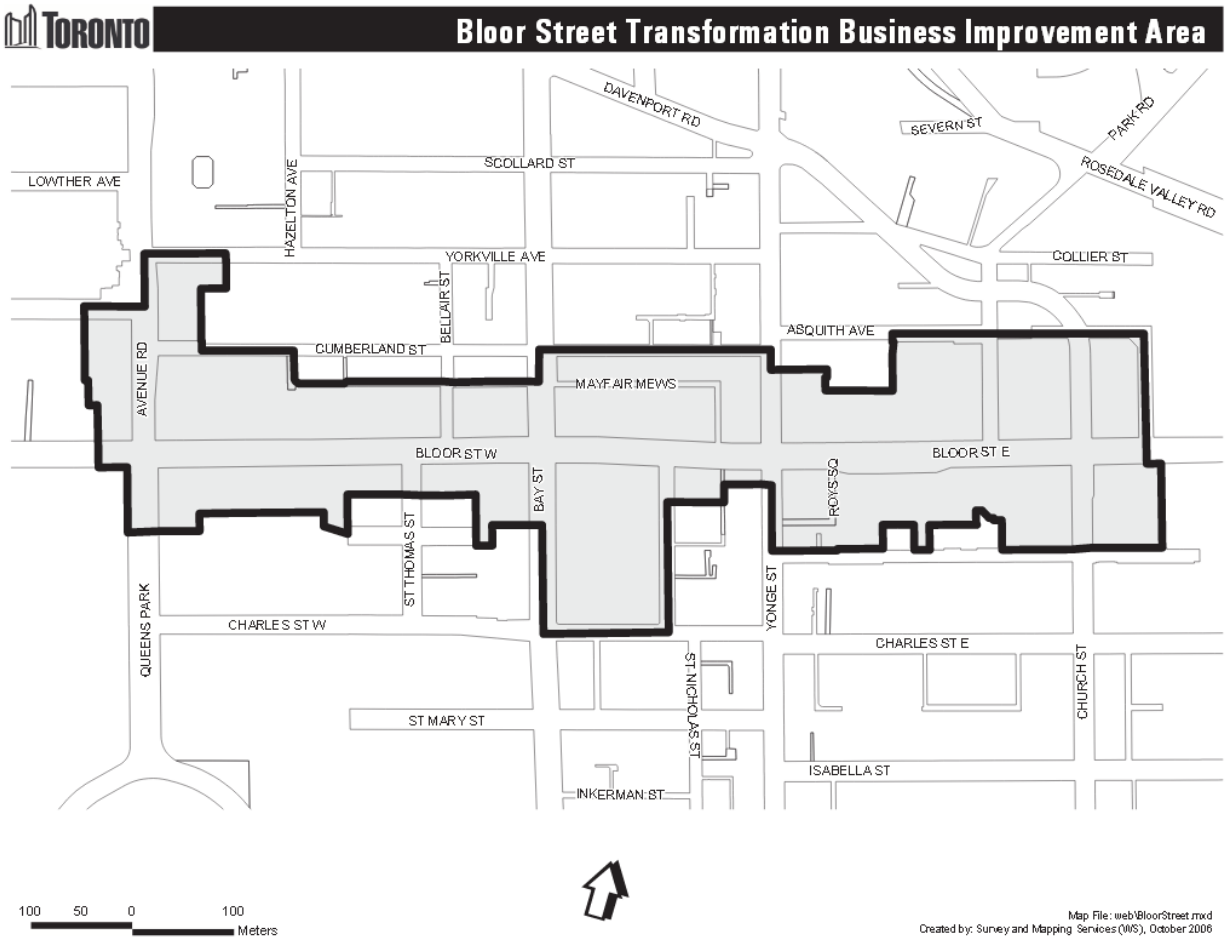
Contents

Introduction

The Bloor Street Transformation project was an initiative to revitalize a stretch of Bloor Street in Toronto, Ontario known for its shopping and hotels by improving the pedestrian realm through widened granite sidewalks, narrowed motor vehicle lanes, and extensive landscaping and tree cover.

The project is noteworthy for its focus on widening the sidewalk, the Municipal Class Environmental Assessment (MCEA) classification, and the process undertaken by interested parties to oppose and contest the City's choice of MCEA schedule, seeking ultimately to have the project reviewed in order to include on-street bike lanes on Bloor. Although sharrow markers were included in the final design instead of bicycle lanes, the resulting commissioner's report from the contested situation recommended the MCEA process always consider active transportation in municipal road projects.

Study Area



The Bloor Revitalization project occurred between Avenue Road and Church Street , which is within the Bloor Street Business Improvement Area (BIA). The Bloor Street BIA is an association of commercial property owners and tenants that work in coordination with the City on streetscape beautification and façade improvements. Funds are levied from each commercial property in the district by the City, and returned to the volunteer board that is elected from the members of the BIA to manage.

Process

The City of Toronto determined in the late 1990's that the water mains under Bloor Street between Avenue Road and Church Street would require extensive work in order to be replaced. The City notified the Bloor-Yorkdale BIA, whose members were interested in using the opportunity to make additional changes to the streetscape. The preferred changes by the BIA would narrow motor vehicle lanes while maintaining their capacity, remove on-street parking, widen granite sidewalks, and add extensive landscaping and tree cover. These changes were

intended to improve pedestrian's shopping environment. The economic and aesthetic benefits of pedestrian focused designs were central to private business' involvement in the project. Bicycle lanes were never included in the Bloor Street design, although advocates protested for their addition as part of a long-running campaign for bike lanes on Bloor,[i] dating back to at least 1992 when a consultant's report to the City of Toronto recommended Bloor Street as an "ideal route"[ii] .

The City began the planning process for the Bloor Street Transformation project, designating it in 2001 as a "Schedule A" MCEA. Schedule A is a classification created to streamline routine projects with minimal roadway changes without consultation or the consideration of alternative designs. This Schedule is applicable to projects that:

> *are limited in scale, have minimal adverse environmental effects and include a number of municipal maintenance and operational activities. These projects are pre-approved and may proceed to implementation without following the full Class EA planning process. Schedule A projects generally include normal or emergency operational and maintenance activities.* (MCEA, 2011, Section A.1.2.2)

The schedule classification was criticized by some, stating that the choice was arbitrary. A brief email from a city engineer was the only documentation found for schedule classification rationale, which stated that "based on the scope of work that is being proposed there are no EA implications "[iii]. Although this was the cause of public concern, the MCEA allows the classification and detail of documentation to be at the discretion of the proponent (MEA, 2011, Section A.2.1.1 and Appendix 1).

In 2003 the City established a reserve fund to accumulate funds from development in the vicinity of Bloor Street. This was done through Community Benefits contributions, which is a process outlined in Section 37 of the Planning Act and other sources.[iv] A funding model for the full project was devised in 2005, when city staff proposed the creation of a BIA specifically for those businesses that would benefit from improvements to the local streetscape. Staff polled the potential members, and upon receiving positive feedback, City Council authorized the BIA's creation. The project was led primarily by the BIA, which gave oversight of the design process to the local business owners rather than the standard street redesign process oversight by the City, under whose supervision similar cases have generally received greater public scrutiny.

The new BIA was proposed to be the main funding mechanism for the Bloor Street Transformation – the full cost of the $25 million reconstruction would be borne by the City, with $20 million of that amount to be recouped over 20 years through a special levy on the BIA members. The members of the new BIA would remain members of the existing Bloor-Yorkdale

BIA, with the new association having a mandate only to oversee the repayment of the City's investment before being wound down.

In 2007 the City reclassified the project as Schedule A+, a designation that pre-approves projects, and requires public notification without consultation. By classifying a project as a Schedule A+, Part II Order requests were not possible, meaning that the project schedule could not be protested to the MOE. This classification's purpose is described as follows:

> *… to ensure some type of public notification for certain projects that are pre-approved under the Municipal Class EA, it is appropriate to inform the public of municipal infrastructure project(s) being constructed or implemented in their area. There, however, would be no ability for the public to request a Part II Order. If the public has any comments, they should be directed to the municipal council where they would be more appropriately addressed.* (MCEA, 2011, Section A.1.2.2)

There are various factors outlined in the MCEA manual for guiding a proponent in the classification process. These include the extent or risk of environmental impacts (MEA, 2011, Section A.1.2.2), project cost and description (MEA, 2011, Appendix 1), and the project's technical requirements (MEA, 2011, A.2.1.1). The MCEA also considersthe sensitivity of the public and agencies to the project and their appropriate level of involvement in classifying a project, which deals with the level of public awareness and concern of a project and the impact of the proposed intervention on the public and agencies (MEA, 2011, A.2.1.1) Despite this, the project description was the main factor that was later used to justify this decision. The MCEA manual provides various project descriptions that can be weighed and used to guide a proponent in the classification of a project. The following project descriptions, which suggest a Schedule A+ classification regardless of the project's cost, were applied in this project (MEA, 2011, Appendix 1):

> *Project description 3: Construction or operation of sidewalks or bicycle paths or bike lanes within existing rights-of-way*
>
> *Project description 19: Reconstruction where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will be for the same purpose, use, capacity and at the same location as the facility being reconstructed (e.g. no change in the number of lanes)*

Subsequently in August of 2008, cycling advocates and a group of Bloor Street business owners concerned about loss of on-street parking[v] and "what they perceive[d] as a lack of due process and lack of proper notification."[vi] , under the combined banner of the Concerned About Bloor Coalition (CABC) filed a request for a judicial review of the city's classification of the project. They argued that the project merited a classification of Schedule B or C, which would

require more substantial consideration of alternatives and public consultation. The CABC argued that this reclassification was required due to the significant cost of the project, provincial laws requiring consideration of cycling infrastructure such as the *Provincial Policy Statement 2005* and the *Places to Grow Act 2005*, and the pollution that would result from maintaining traffic volumes on the street. [vii] CABC hoped that through the project would be reclassified as a Schedule B or C, so that on-street parking could be maintained (the business owners) or that a bicycle lane would be included in the new street's design (the cycling advocates).

In response to CABC's request, the Ontario Divisional Court dismissed the judicial review, finding both the initial classification of A and subsequent reclassification to A+ as reasonable[viii]. Indeed, the standard of reasonableness has been held by the courts to be the appropriate level of scrutiny of municipal actions in classifying EA schedules, meaning that the court will only intervene when the decision made "is not supported by any reasons that can stand up to a somewhat probing examination."[ix] This has been criticized by some, who argue that EAs are of such importance that they should not be subject to municipal discretion and should instead be held to the stricter standard of correctness.[x] In addition to the rejected judicial review, the Ontario Ministry of the Environment (MOE) also rejected a request for an investigation into the matter.

While the project proceeded apace, in his 2009 Annual Report, Ontario's Environmental Commissioner expressed concern with the process. He noted that the MOE's standard practice of working on a complaint-based compliance system rather than proactively reviewing and prosecuting Class EA infractions demonstrates reluctance to fulfill their obligations to prosecute failures to comply under the Environmental Assessment Act. Similarly, he noted that the MOE has been slow to provide documents and information to concerned citizens and appeal applicants. According to the Commissioner, there is a demonstrable need for better training with the MOE as shown when MOE staff provided incorrect information to the public, as staff were confused as to the legal relationship between the Bloor Street BIA and the City of Toronto. MOE staff initially dismissed public concerns, stating that the project was a private one, as the initiative was led by the BIA – a false statement, as the BIA is a public body created by the City, subjecting the City's obligations upon the BIA in the EA process.[xi]

The result of the commissioner's report was a recommendation that the MOE consider ordering the Municipal Engineer's Association to amend the Municipal Class Environmental Assessment to explicitly promote cycling and walking as modes of transport. Such a requirement would bring consideration of active transportation modes in all schedules of MCEA. Similarly, the Commissioner recommended municipalities "engage cyclists in their

deliberations on planning"[xii], noting the importance of transparent consultation in planning for active transportation.

The construction of the project took longer than initially expected due to mid-process expansions of scope by permitting additional utility providers to make changes to their subsurface infrastructure, among other factors.[xiii] Construction was completed in 2010 at a cost of $24.2 million, $4.5 million in excess of the planned $19.7 million budget.[xiv] The final design featured the widened sidewalks and pedestrian amenities that the BIA had sought, as well as on-street sharrow markings for cyclists.

In 2010 the City retained professional services to undertake a Schedule C Municipal Class EA Study for the establishment of a new bikeway in the Bloor-Danforth Corridor[xv] but the study was subsequently "put on hold, pending direction from the new Council following the 2010 municipal election."[xvi] On May 30, 2013 six City Councillors requested that City staff "include plans to resume work on Bloor Street bike lanes, including restarting the Environmental Assessment, in the Transportation Services 2014 budget and workplan."[xvii] The item will be considered at the September 20, 2013 Public Works and Infrastructure Committee.

Timeline

1990's
- Project initiated
- Identifcation of opportunity

2001
- Designation of project as MCEA Schedule A
- Identification of projet objectives

2003
- Creation of reserve fund for project

2004
- Conceptual design options created

2005
- Creation of Bloor BIA

2006
- Utility upgrades construction begun
- Detailed design created, includes widened sidewalks

2007
- Reclassification of project as MCEA Schedule A+
- Utility upgrades construction continued

2008
- Request for judicial review and MOE appeal of MCEA scheduling decision
- Utility upgrades construction continued
- Street reconstruction, includes widened sidewalks and sharrows

2009
- Environmental Commissioner's report criticized Bloor process and reccommends MCEA consider Active Transportation in all cases
- Street reconstruction

2010
- Street reconstruction completed

Lessons

The nature of the MCEA classification system is to streamline reconstruction and maintenance projects where there will be minimal changes to the road's motor vehicle capacity through Schedule A and A+. While active transportation may have had an increased opportunity to be included through Schedule B and C's consideration of alternative designs and mandatory public consultation, these Schedules would have been more costly and time consuming to follow. By classifying a project as a Schedule A or A+, the potential for the public or other agencies to request a change in classification was not possible. Given the current nature of the MCEA manual in streamlining projects that minimize changes to the roadway, the classification of an MCEA is a critical juncture for the implementation of active transportation facilities. Classifying a project as Schedule A or A+ precludes the consideration of design alternatives, detailed accounts of environmental impacts, and public involvement that is required in higher-graded schedules. The level of public interest is discussed as factoring the schedule classification in the MCEA manual (MEA, 2011, Section A.2.1.1), but this appears to have been overlooked in the Bloor Street case.

Innovative financing tools can overcome austere municipal financial conditions and help to implement active transportation infrastructure. In this instance, the City benefited from a substantial upgrade to the pedestrian realm worth over $25 million, while expecting to recoup the majority of the cost through a special levy on the local area. The businesses in the area benefit from increased visitor traffic, particularly pedestrians, and property owners from increased property values. Similar special levies have been used in other cities to fund specific projects such as burying overhead utilities,[xviii] but widespread use to fund active transportation projects has thus far not been observed. Future application of such financing tools and studies as to their impact on property values could help to improve local area buy-in to financing active transportation.

Public-private agreements can confuse and prevent public engagement in the planning process, reducing the opportunity to advocate for active transportation infrastructure. In this case, a privileged position was given by the City to the BIA, a consortium of private property owners and tenants, organized into a quasi-private body through their association with the City. Confusion over the nature of the BIA's obligations to the public was evidenced by the MOE initially describing them as a private body, despite their position as being created by City Council. Nonetheless, plans were drafted in consultation with the BIA and its architects that did not consider bicycle needs, concerns which may have been better represented had there been greater occasion for consultation with community members, interested parties, or residents.

Replacement or upgrades of infrastructure and utilities can provide an opportunity for the implementation of active transportation facilities. Street reconstruction occurs approximately every 20 years (TAC, 1999), providing a rare and cost effective time to include active transportation in the reconstruction process. Coordination between municipalities, stakeholders, and utility providers may allow for collaboration in the improvement of streetscapes and the implementation of active transportation facilities.

Contact

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Appendix D: Plains Road Case Study

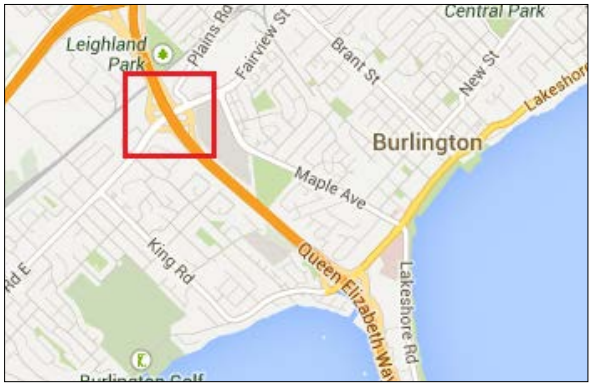
Contents

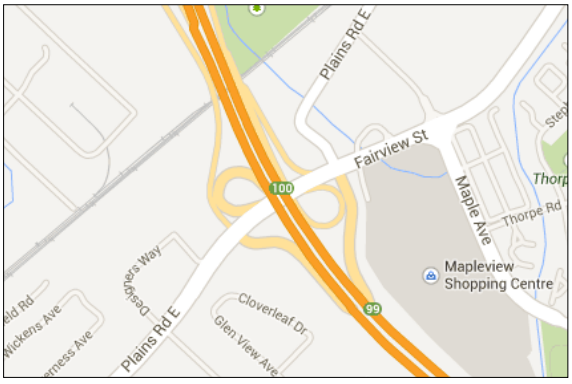
Introduction

In 2010 the City of Burlington worked with the Ministry of Transportation of Ontario (MTO) to build a new interchange on-ramp and install pilot project bicycle lanes along the Fairview-Plains Road corridor under the Queen Elizabeth Way (QEW). The inclusion of bicycle lanes under an overpass and alongside narrowed traffic lanes was previously untried in Ontario, making this project noteworthy. This project in Burlington allowed the design to be evaluated before similar designs were permitted elsewhere.

Study Area

The interchange of Fairview Street and Plains Road occurs at the overpass of the QEW in Burlington Ontario, and has long been an identified barrier in the city's cycling network. Burlington is divided by three highways: the QEW, the 403, and 407. These highways pose impermeable barriers for much of their length to cyclists, restricting their mobility and increasing travel times required to access crossing points. For instance, there are two crossings under the QEW in Burlington at Fairview Street





Figures 1 (a) and (b)- Study Area

and North Shore Blvd, both of which are four-lane arterials with long direct-taper lanes for access ramps to the highway. Crossings of the 403 and 407 are similarly designed, with only 3 of the 13 crossing points of the two highways lacking access ramp. The study area for this case study is one point where the QEW is crossed by Fairview Street/Plains Road East, a major arterial road shown in Figure 1 (a) and (b).

Indicated below in Figure 2 in blue, the study area was indicated in the Cycling Master Plan (CMP) as a *Highway Interchange Crossing* cycling facility. In a subsequent map, the crossing is indicated as being slated for long-term implementation (post-2021).

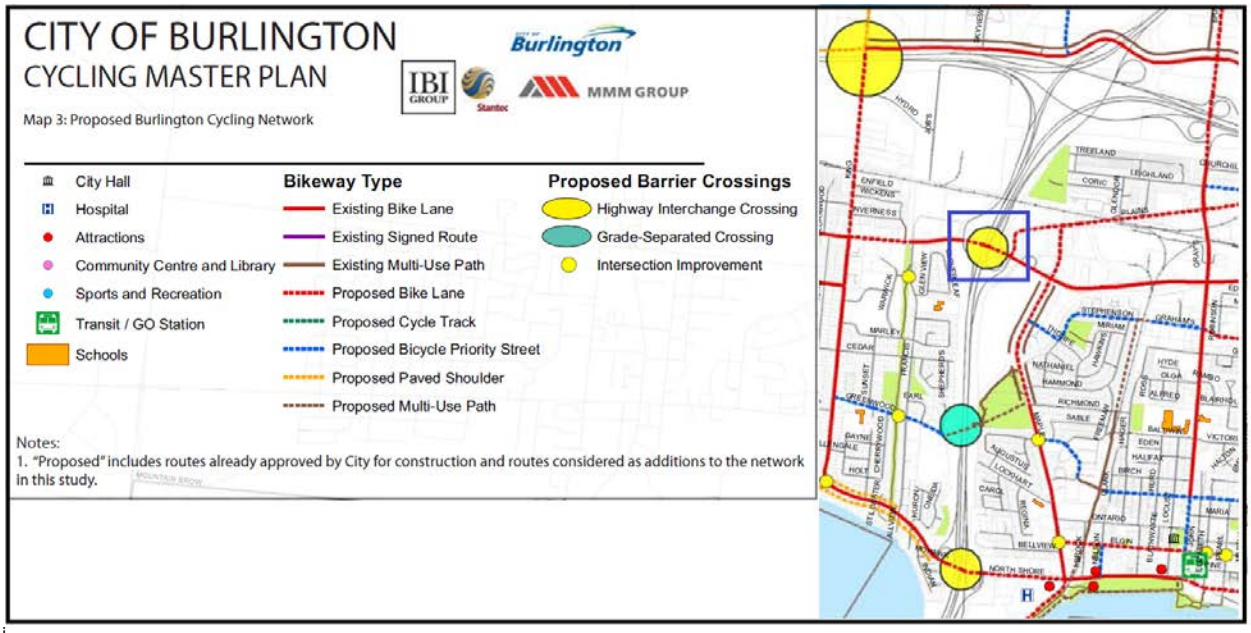


Figure 2- Study Area in Cycling Master Plan

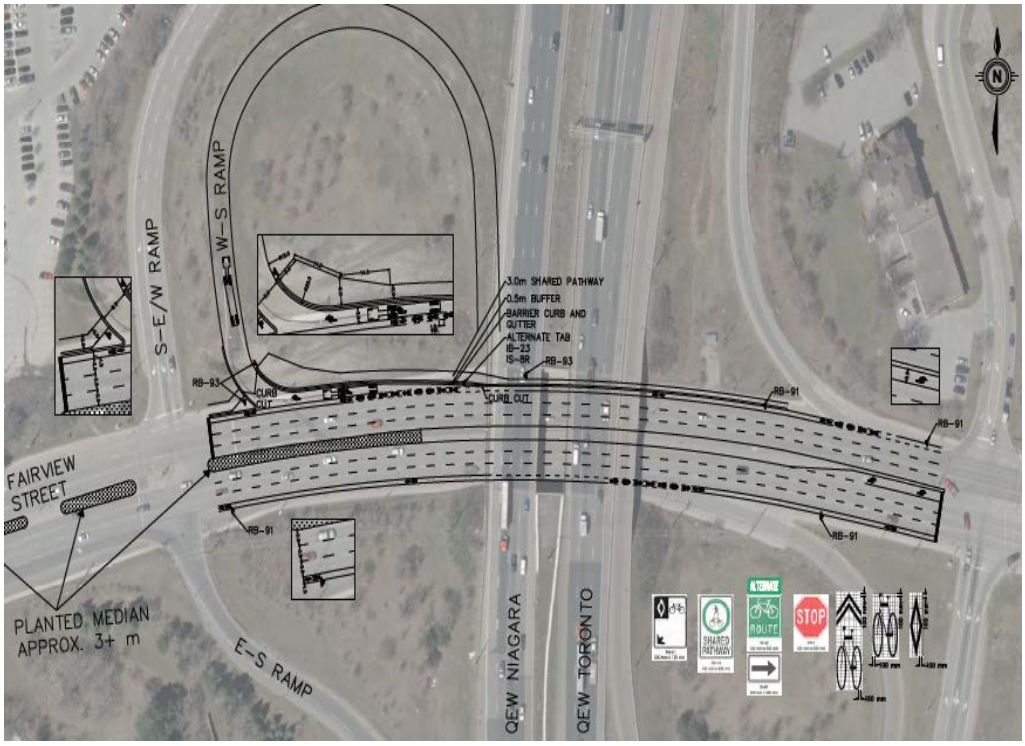
Process

The interchange where Plains Road East/Fairview Street crosses under the QEW has long been identified by the City of Burlington as a hazardous point for cyclists. Additionally, on-street bicycle lanes existed on Plains Road east and Fairview Street to the east, but the interchange served as a higher-risk barrier in the street network.

Previous efforts had been undertaken to improve the interchange. In 1997, the interchange was redesigned to feature access to on-ramps through 90-degree simple curve dedicated turning lanes instead of a wider curve that would permit higher speeds. The new design causes motor vehicles to decrease speeds during the turning motion. The need for this change was championed by Burlington's mayor, cycling advocacy groups, and the local MPP following a number of injuries and a fatality in accidents involving pedestrians and cyclists crossing the exit ramps at the interchange. In 2001 an onramp loop from Fairview Street to the QEW southbound was removed to allow for a ramp to the 407 to the north. This is noteworthy, as it was the reinstatement of this loop that was the impetus for the installation of the bicycle lane at the interchange.

In the early 2000's the 407 Express Toll Route (ETR) Concession Company Ltd, in conjunction with the Ministry of Transportation of Ontario (MTO) identified the need for widening the southbound connection between the 407 and the QEW, a project that was in close proximity to the Fairview interchange. The MTO and the 407 ETR undertook a detailed design process for the project, during which time Burlington completed its CMP in 2009. The City, having highlighted this interchange as a location in need of bicycle lanes, engaged in a number of meetings with the MTO regarding the potential installation of bicycle lanes in order to take advantage of the proposed interchange work and perform any necessary changes simultaneously. This engagement took place at an advanced stage of the process, during the detailed analysis of options. The MTO was not in favour of adding bicycle lanes, citing its design standards for maintaining the current 3.75 m lane width. The City demonstrated its design standards that permitted minimum lane widths of 3.1 m on surrounding arterial roads, and proposed 3.3 m wide lane through the interchange. With minor reconstruction on the east side of the intersection to allow for a new landscaped median island, sufficient width for on-street bicycle lanes[ii] would be provided.

The City of Burlington and the MTO held discussions on potential design scenarios for the installation of bicycle lanes through the interchange, as well as the potential layouts of the on-ramps. The City favored an exclusive right-turn lane for access to the on-ramp in order to provide shorter crossing distances through a 'jug-handle' crossing (see Figure 3).



iii

Figure 3- City of Burlington's Preferred Design

The MTO's preferred design, which was ultimately implemented, included a direct taper (see Figure 4), which is a direct connection from the driving lanes to the exit ramp with a

diagonal line (i.e. taper) and no storage lane space. In both evaluated design scenarios, on-street bicycle lanes were proposed through the interchange and both designs featured the lanes continuing directly across the ramp access. The MTO's design included narrowed lanes through the interchange and a reduction of the speed limit from 60 km/h to 50 km/h. The City did not feel the speed reduction was merited, based on its Speed Limits Policy that sets out major arterial roads such as Plains Road will have a speed limit of 60 km/h.[iv] However, the MTO was insistent that the speed reduction was an absolute requirement, and the final result was the implementation of the MTO's full design recommendations. At the time that these functional designs were submitted to Council in March of 2010, no cost-sharing agreement had yet been determined by the parties.

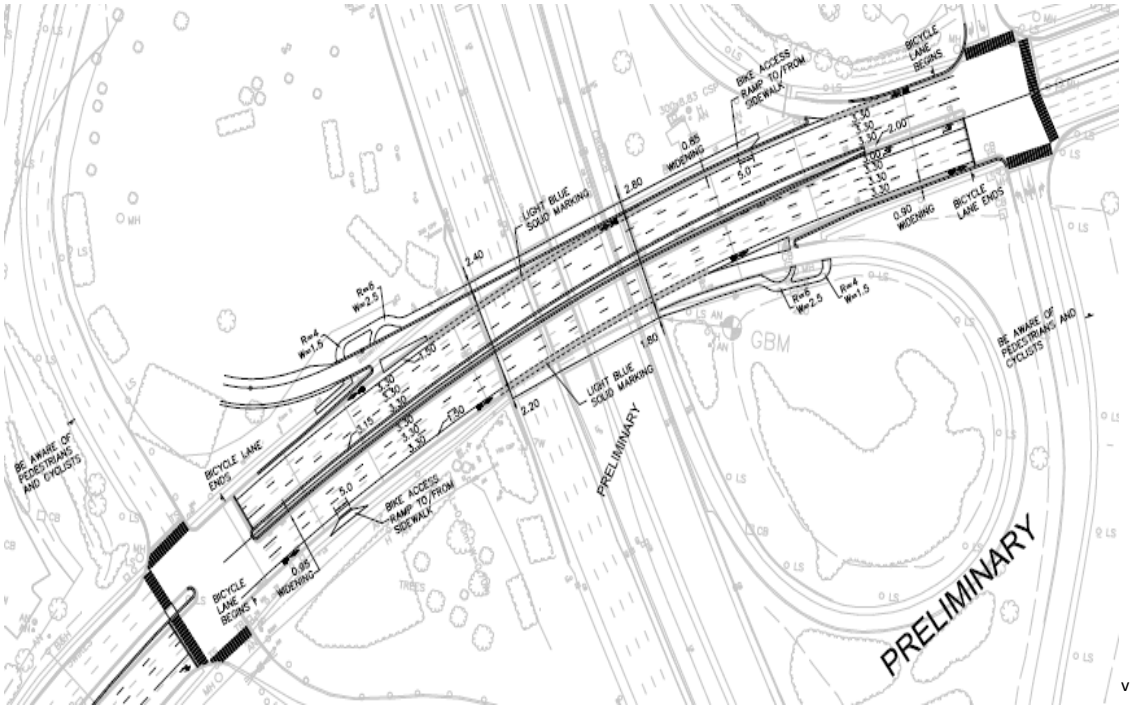


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Figure 4- MTO Preferred Design

407 ETR, as the partner completing the ramp works in coordination with the MTO, requested that all works at the site be completed by one contractor. This required the City to accelerate their plans and the cost-sharing agreement, and to locate funds in the existing 2010 Capital Budget that had not been allocated for this project.[vi] Surplus asset funds were located from existing reconstruction tenders and reallocated to the Fairview interchange project. The work was approved and carried out from late 2010 until the completion in September 2011 when blue surface treatment was added to the bike lanes (see Figure 5 and 6).

Figure 5- Completed Fairview Interchange

 [vii]

Figure 6 - Completed Fairview Interchange

Timeline

1996
- Problem identified- interchange unsafe for cyclists
- Attempted reconfiguration of interchange to increase visibility of cyclists

2001
- Original Fairview-to-QEW southbound loop removed

Early 2000's
- Need identified for additional lane on 407-to-QEW link

2005
- Detailed design options, public consultation
- Environmental assessment began
- Conceptual design completed

2009
- Detailed analysis completed
- Burlington Cycling Master Plan approved

March 2010
- City and MTO staff came to agreement on intersection design, includes bike lanes
- Functional design created

June 2010
- Council informed of MTO/407-ETR requirement for single contractor and details of cost-sharing agreement

July 2010
- Community Services Committee approved cost-sharing agreement

Sept 2010-Sept 2011
- Construction completed

Lessons

Active transportation projects that involve multiple jurisdictions pose unique challenges. Design standards that vary between jurisdictions (for example, the difference in preferred speed limit in this project) will require flexibility and discretion in order to apply them as suitable for the local context.

Coordinating between partners on a shared project requires not only a cost-sharing agreement but an understanding of individual timelines, budgetary processes, and approval processes. The City of Burlington had initially planned to allocate funding for its portion of the project in its 2011 Capital Budget, but had to act quickly to find funding in its 2010 Capital Budget due to shortened timelines caused by the 407 ETR's preference to use a single contractor. This late change of expectations could have precluded Burlington's ability to approve the necessary funds, causing increased costs by performing works outside the scope of the larger project.

This example demonstrates one level of government adopting another level of government's standards, which could be used as a precedent for similar future cases. Adhering to MTO's 3.75m lane width standards would not have provided sufficient space for bicycle lanes in the interchange. By using surrounding arterial streets with 3.1 m to 3.3 m lane widths and comparable traffic volumes as a precedent, MTO accepted the reduced lane widths and permitted a pilot project at this location.

Launching an active transportation project as a pilot project can allow for greater flexibility in standards and deviation from established norms. Generally accepted guidelines are used by municipalities because they are functional, but they can be treated as the default without consideration of alternatives specific to the local context. Municipalities may be averse to deviating from established standards due to concerns of liability. By implementing active transportation projects as pilot projects, it allows for alternative designs and standards to be demonstrated in a real-world application to prove their efficacy. Similarly, pilot projects provide a review period after which the design is evaluated through interactions with the public, and consequent concerns can be addressed.

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[vii] Photos provided by Dan Ozimkovic, C.E.T., City of Burlington

Appendix D: Rathburn Road Case Study

Contents

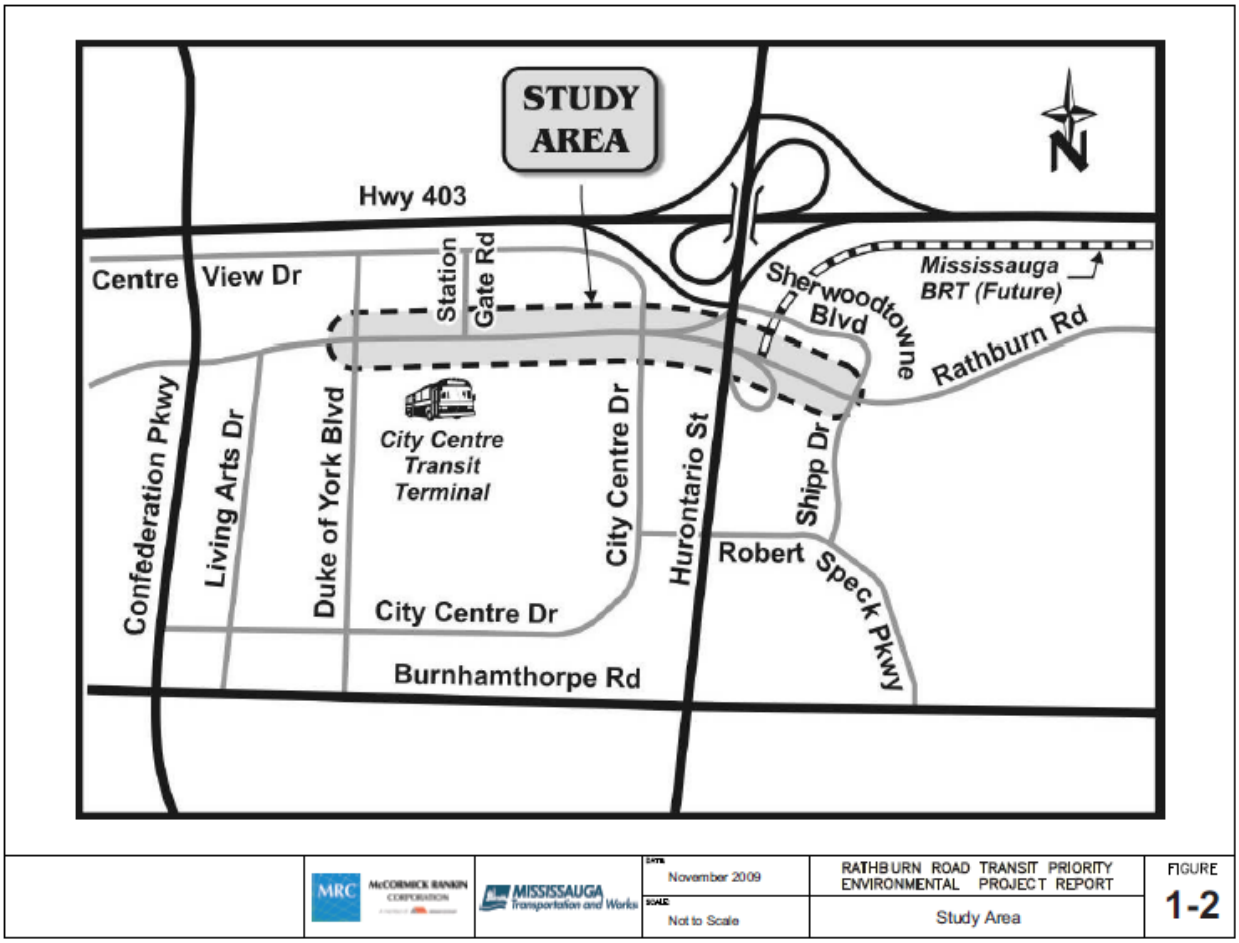
Introduction

The Rathburn Road Transit Priority Measures Project was an initiative to implement a Bus Rapid Transit (BRT) corridor along Rathburn Road in Mississauga, Ontario. A street link in this project was identified in the 2010 Mississauga Cycling Master Plan as requiring cycling facilities, but these facilities were not implemented.

The Rathburn Road project sought to evaluate the potential and preferred design alternatives to provide greater priority for the operation of Mississauga and GO Transit bus vehicles along Rathburn Road between Station Gate Road and the BRT facility just east of Hurontario Street. Mississauga Transit operates 23 bus lines in this corridor, and GO Transit an additional six lines.

The project is noteworthy for its rejection of the implementation of cycling facilities at a gap in the cycling network adjacent to the city's largest shopping centre.

Study Area

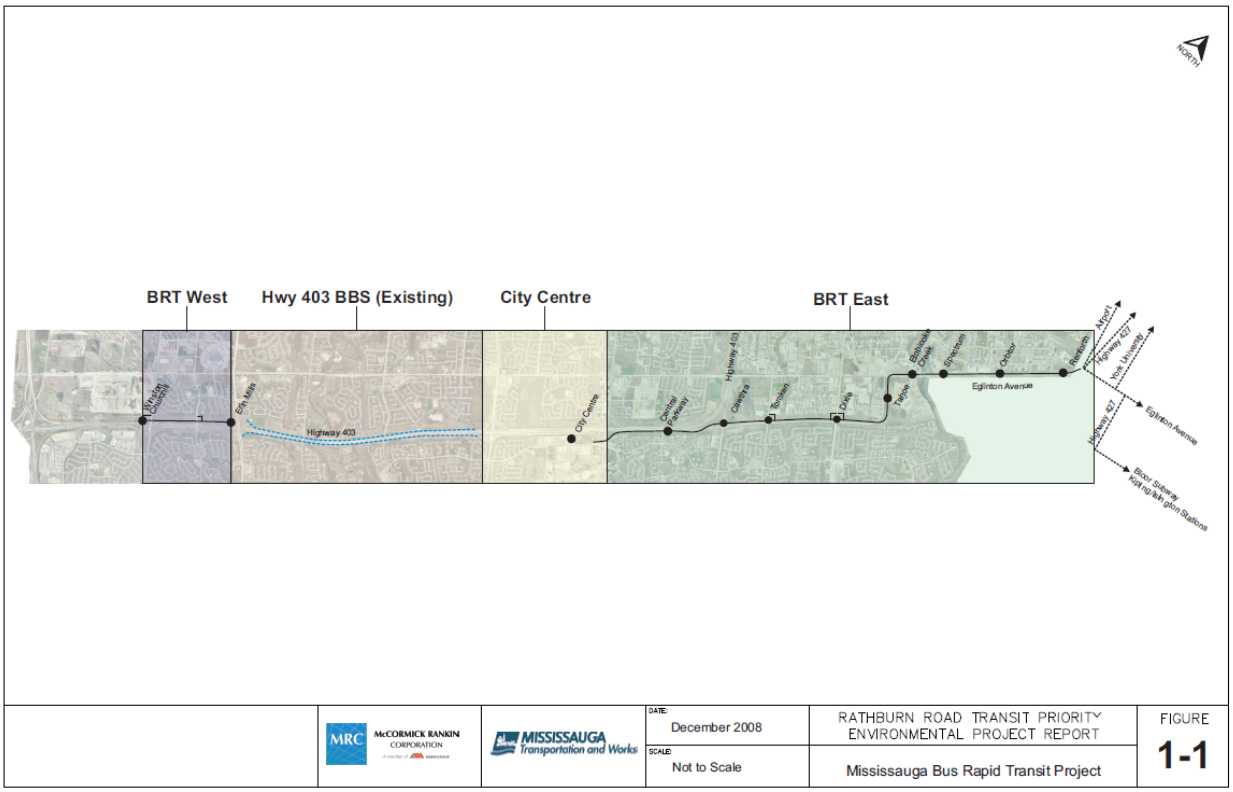


i

Located on Rathburn Road, a major collector within the City Centre District of Mississauga, this project would connect the Square One Shopping Centre and the Mississauga City Centre Transit Terminal with the surrounding arterial roads.

Process

The Rathburn Road Transit Priority Measures Project (RRTPMP) is one element of a BRT plan that spans the City of Mississauga. Phase One of Mississauga's BRT plan, which includes the four stops east of City Centre from Central Parkway to Dixie, is slated to open in 2013. This RRTPMP includes priority improvements in the City Centre area, linking existing BRT in the west and on Highway 403 to the east and future phases beyond. These stations and areas in the overall BRT project can be seen in the image below.



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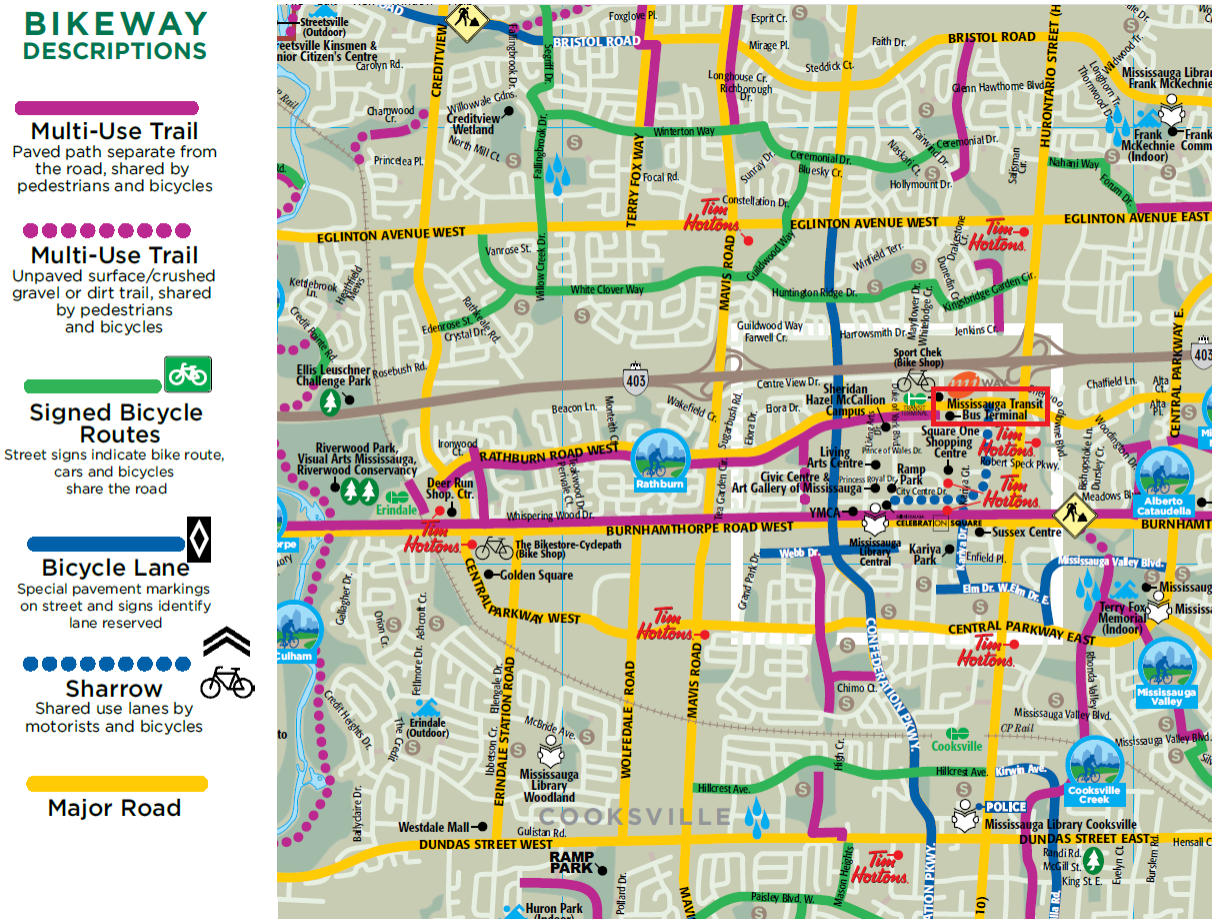
In order to implement the project, the City of Mississauaga undertook a Transit Projects Assessment Process (TPAP), which is an expedited transit project approval process set out by the Ontario Ministry of the Environment (MOE). This process allows proponents of transit projects to be exempt from certain requirements under the Environmental Assessment Act by following a set process. In particular, the process allows for an assessment of potential environmental impacts to be completed within six months. [iii]

In considering the alternatives for the study area, the project took direction from a number of planning documents from different levels of government. The Official Plan of the City of Mississauga sets out a goal of increasing public transit usage, particularly in the City Centre. One of the tools to achieve this end is the creation of a BRT 'Transitway' project through the City Centre to serve as a rapid transit link connecting to a network of other rapid transit corridors. The Official Plan, as well as the 'Downtown 21' plan, include goals of making the City Centre a more pedestrian and cyclist-friendly environment. The RRTPMP design scope was limited to the existing right of way (ROW).[iv]

Alternative designs did not initially include dedicated cycling facilities, despite the location of the project within a gap in the cycling network and at a highly traveled location. This is shown in Figure 1 below, where mixed-use paths (purple) end immediately east of the City

Centre Transit Terminal (CCTT) (referenced as the Mississauga Transit Bus Terminal), at the project's eastern terminus. The project area is outlined in red.

Expansion of the ROW was concluded to be logistically and financially infeasible, given the project's scope and the existing features to the north and south of Rathburn Road. Existing features included utilities, sidewalks, trees, and structures. The project's design was to convert the two centre travel lanes to exclusive bus lanes. In selecting this option, alternatives considered included curbside reserved lanes and the maintenance of the existing lanes. Curbside dedicated bus lanes were noted to have the additional benefit of potentially being shared with cyclists, but concerns of conflict with turning motorists delaying buses caused this alternative to be discarded.[v]



vi

The TPAP study did not address cycling issues in its report. Use of the existing ROW was evaluated by considering traffic counts modeled in 2006 and 2008 and the study area intersections' level of service (LOS). Evidence of metrics used to consider bicycle counts and

infrastructure, multimodal safety, or cyclists' perception of the level of stress of the existing ROW was not found. Future projections of traffic volumes indicated a 2% increase of motor vehicle traffic each year for the next 15 years. The application of Travel Demand Management strategies in reducing motor vehicle traffic was also not found to be a part of the process.

The TPAP process required consultation with internal stakeholders and the public, namely property owners within 30 m of the proposed works. Notices were provided to government ministries and involved departments, as well as to the general public. Public consultations on the addendum to the EA in 2008, required due to modifications to the original plan, led to requests to consider adding mixed-use paths and dedicated bicycle facilities. Similarly, active transportation was raised as an issue by the City's Community Services department, who requested that the project team investigate the possibility of 1.5 m bicycle lanes on Rathburn Road (a total of 3 or 4 m for bicycle lanes on both sides of the street). The bicycle lanes were rejected by the investigating team, who concluded that the costs incurred by the displacement of street lighting, trees, and utilities, were beyond the project's budget and scope. The necessary additional width for the street was based on a given minimum lane width, which in this case would be reduced to 3.75 m. In their response to the department, the project team committed to a separate study for an off-street multi-use path in the City Centre, writing that "Consideration will be given, under a separate study, to introduce an off-street multi-use path in the City Centre".[vii] This would link with the existing multi-use path on the south side of Rathburn Road, running east from the City CCTT to Erin Mills.[viii] Evidence of this multi-use path study has not been found.

Timeline

2007
- Funding for Phase One of BRT announced
- Mississauga BRT Preliminary Design studies

2008
- EA Addendum public consultations
- Mississauga BRT Preliminary Design / Canadian Environmental Assessment study

2009
- Completion of preliminary design, no bike lanes included in plan
- Initiation of Transit Project Assessment Process
- Study of impacts, mitigation, alternatives

2010
- Public and stakeholder consultations
- Community Services Department requests bike lanes be considered
- TPAP completed
- Minister's approval attained

2013
- Bidding for suppliers

Lessons

The TPAP provides an expedited approval process for public transit projects, which can be beneficial to public transit project efficiency but detrimental to the thoroughness of the project. The TPAP is a proponent-driven self-assessment process that does not require Ministerial approval before proceeding, but rather a waiting period in which the Minister of the Environment has the ability to intervene.[ix] For concerns of active transportation, the TPAP process does not require the proponent to look at the rationale for the project, nor the alternatives to or within the proposed project, but rather only offer an explanation of the impacts of the proposed project. In response to requests from the Community Services department, draft streetscapes with on-street bike lanes were created during the project. The TPAP allowed for the consideration of alternative street designs only when responding to submitted comments. This limited the full evaluation of potential designs, specifically those consistent with municipal and regional policies and plans which prioritize active transportation.

The process of determining project scope can privilege or prevent certain elements from future consideration; that is to say, project scope can allow for active transportation to be externalized. While the guiding principles of the project reference the objectives of a downtown that "includes enhanced pedestrian and cyclist facilities"[x] and the plan emphasizes the importance of pedestrian activity, when pressure came to consider bicycle lanes, staff externalized the issue as requiring a separate study outside of the Rathburn Road project. Were bicycle lanes included within the Rathburn Road ROW reconstruction project, they would have been accounted for within the scope of this project, its funding envelope, and timeline. However, as bicycle lanes were not identified within the initial project scope, the installation of active transportation facilities were externalized from the consideration of the project.

Traffic engineering guidelines play a role in determining what potential street designs are considered. For example, in responding to the request from the Community Services department, the project team determined that implementing a 1.5 m wide on-street bicycle lane on both sides of the street would require a total of 3 to 4 additional metres of pavement. This is predicated on a given minimum lane width, which in this case would be reduced to 3.75 m. Lanes narrower than 3.75 m, designed in some cases to accommodate active transportation facilities and to calm traffic flows, were not considered in this project. The choice of street design details– acceptable lane widths, for example – influence the provision of active transportation infrastructure.

Contact

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[i] *Rathburn road transit priority measures: Environmental project report (2010)*. Mississauga, ON: City of Mississauga.

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Appendix D: York Boulevard Case Study

Contents

Introduction

The York Boulevard Streetscape project was an initiative undertaken by the City of Hamilton to create a market precinct in its downtown as a part of the city's efforts to make a more pedestrian-friendly, liveable downtown core. The project included the narrowing of the street by reducing the number of lanes, converting the one-way street to a two-way street, installing on-street bike lanes, and adding a number of pedestrian amenities. In addition, the plan allows for the street to be more easily closed in order to hold public events on the street due to the proximity of large public venues nearby.

Study Area

York Boulevard is a major arterial street in the City of Hamilton, Ontario. It serves an alternative to Highway 403, connecting downtown Hamilton to Plains Road in Burlington across the mouth of the Hamilton Harbour . The section of York Boulevard between Bay Street North and James Street North is of interest to this case study (Figure 1a and 1b). This area was included in the York Boulevard Streetscape Master Plan.

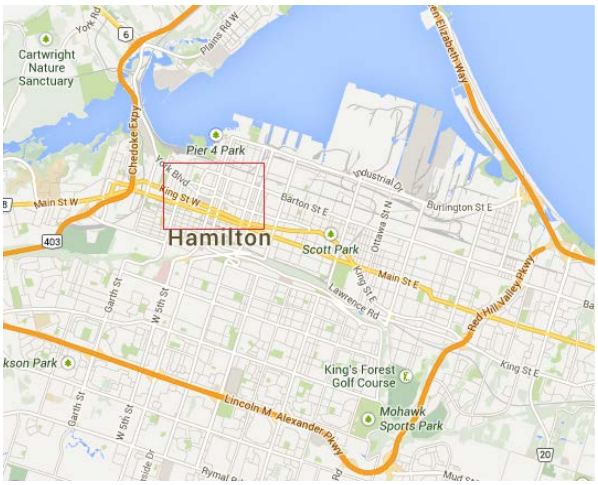

Figure 1a - Study Area

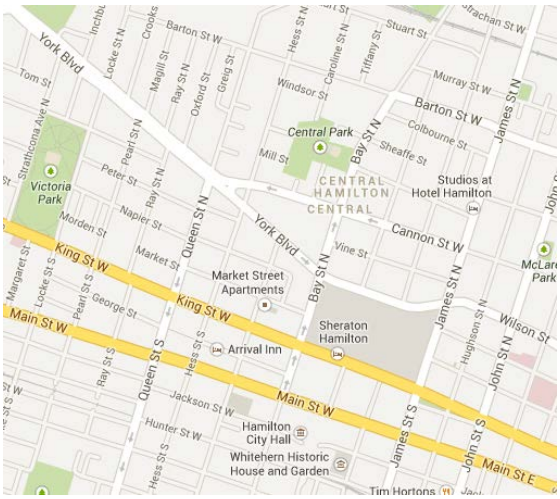

Figure 1b - Study Area Detail

This portion of the boulevard features major destinations, including Jackson Square, Copps Coliseum, the main branch of the Hamilton Public Library, and the Hamilton Farmer's Market. Along a one-way street, as with many arterial roads through downtown Hamilton, York Boulevard has been designated a "mobility street" by the City, focusing on improving mobility while enhancing the pedestrian environment.

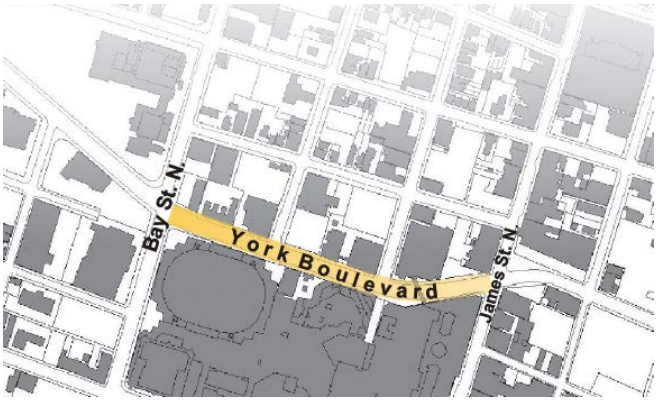

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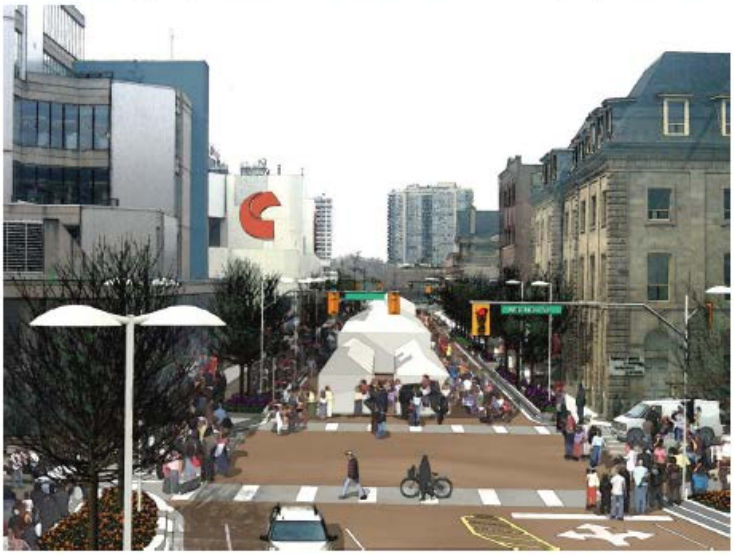
Figure 1c - Study Area Highlight

Above: Streetscape design showing trees, under storey planting modern furniture and lighting. **Below:** York Boulevard closure during a Special Event.



[ii]

Process

In the Downtown Hamilton Secondary Plan (DHSP) adopted in 2001, the city lays out the challenges that face the downtown core. The downtown, it states, "has been exposed to the same series of stresses that have threatened the well-being of city centres across North America. Disruptive urban renewal schemes, the dominance of vehicular over pedestrian needs, changes in retailing and a population shift toward suburban areas undermined the traditional roles of the Downtown".[iii] Titled "Putting People First", the DHSP was adopted in 2001 alongside the Downtown Hamilton Transportation Master Plan (TMP), and together the two served as an integrated land use and transportation planning exercise. They were the first steps in recent efforts to revitalize the downtown after a protracted period of growth on the urban fringes[iv]. Included in these plans was a renewed focus on active transportation and reducing the dominance of motor vehicle traffic in the downtown core.

The DHSP acts as a part of the City's Official Plan, meaning Council is legally obligated to implement its policies. The Plan serves to lay out a community vision for the downtown and indicate priorities for City-funded initiatives[v]. The Downtown TMP was closely tied to this process, being developed at the same time to offer recommendations regarding the transportation system in order to carry the same force and treat land use and transportation as an overall system rather than as separate issues[vi].

The Downtown TMP indicated York Boulevard as a major street that could benefit from one-way to two-way conversion as well as cycling improvements. Thus, the York Boulevard project was initiated in 2007, as Council authorized the creation of a master plan for the street between Bay Street North and James Street North, which had also been recommended in the Hamilton Downtown Mobility Street Master Plan 2003. City Council also began the mandatory 5-year review of the Downtown TMP, which was subsequently approved in 2008. The review's findings were relevant to the ongoing York Boulevard project, notably:

- Greater desire on the part of the public and the City for pedestrian improvements
- Recommendations for York Boulevard to be converted from one-way to two-way
- Need for improved pedestrian amenities and on-street bicycle lanes on York Boulevard

These plans informed the creation of the initial conceptual designs of the York Boulevard project, which were prepared in 2008 for the initial public consultation open house held in November of 2008. The information provided for the public at this open house set out initial principles, including improving the quality of pedestrian amenities and overall pedestrian safety.

The initial concept designs featured three options that all included enhanced widened sidewalks with tree-lined streets; bicycle lanes were not included at this stage[vii]. The feedback from the open house supported the option that featured the greatest interventions, including lane reductions and the possibility of closing the entire street for festivals. Public feedback also supported "improving cycling opportunities along York with bike lanes and biking facilities".[viii]

This feedback was integrated into the second set of concept plans, which were displayed for public input at an open house in February 2009. The revised concept plans included on-street bicycle lanes, reflecting public input. The plans note that they are subject to the Cycling Master Plan (CMP) which was under a process of revision as the York Boulevard plans were being drafted. The CMP, drafted in 1999, did not include York Boulevard as a street requiring cycling facilities. This changed in the revised CMP, which was approved by City Council in June of 2009[ix].

Following the open house, staff completed detailed designs for construction of the project in a compressed timeline in order to allow for the streetscape changes to coordinate with other works in the area, including renovations and façade improvements to the Farmer's Market and Public Library as well as local utility work. City Council approved the final plans for the project in December of 2009 at a total cost of $1.9 million. The work was completed from May to December of 2010.

Lessons

Overlapping revisions and studies of plans can cause uncertainty or provide the opportunity for innovation. The York Boulevard case took place as the city was completing its Downtown TMP and beginning a revision of its CMP. These could have been grounds for delay of the project or hesitation from bold interventions, but instead allowed for the consultations of the York Boulevard project to take advantage of the potential for change and to influence and be influenced by the ongoing parallel plans.

Coordination between major public entities can allow for greater impact and savings in construction efforts. The streetscape construction plans, coordinated by Hamilton's Planning Department, were accelerated in order to coincide with renovations to the Public Library and the Farmer's Market (also publicly owned). This permitted more dramatic changes to the area and avoided prolonged rounds of construction of the same area.

A project's success and feedback must be considered over a long-term timeline. The report emphasizes the need to communicate with impacted local residents and to give ample time to residents to acclimatize to the changes before evaluating them. In one survey of businesses along James Street, which was converted from a one-way to a two-way street in two phases, there was much higher support from those businesses along the phase that took place three years earlier than those on the more recently converted street – demonstrating that adjustment time, among other factors, is a factor of support for changes and the likelihood of building success for similar projects elsewhere.

Communication of plans and potential changes are critical to public approval, and a robust engagement process can be important in identifying misconceptions among the public regarding the challenges of a project and its likely consequences. The Downtown TMP review found over 50% of residents were opposed to the proposed one-way to two-way conversions of downtown streets, but that such conversions were necessary to change the character of the street from one of motor vehicle predominance. In the York Boulevard case, public engagement was handled largely by Public Works staff that approached the issue in a highly technical manner that did not confront common beliefs that one-way to two-way conversions inevitably lead to stagnation, and did not adequately offer arguments for the social and health benefits of the conversion. In cases such as this, which challenge longstanding patterns of use and commonly-held beliefs, public engagement needs to make the case with a comprehensive engagement strategy.

Timeline

2001
- Problem identified
- City of Hamilton adopts Downtown Hamilton Secondary Plan
- City of Hamilton adopts Downtown Hamilton Transportation Master Plan

2007
- Project objectives identified
- York Boulevard Streetscape Master Plan study initiated

2008
- City Council approves Downtown Transportation Master Plan Five Year review
- City Council initiates new Cycling Master Plan update

November 2008
- Conceptual designs created, widened sidewalks included but bike lanes not proposed
- Open house for Streetscape Master Plan study, broad support for bike lanes is noted

Feburary 2009
- Final concept design created, includes both widened sidewalks and bike lanes
- Final open house

June 2009
- Cycling Master Plan, "Shifting Gears 2009", approved by City Council

December 2009
- Detailed design completed
- Council adopts York Boulevard Streetscape Master Plan

May to October 2010
- Construction completed

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Appendix D: Kingston Avenue Cliffside Community Case Study

Contents

Introduction

Kingston Road is a major arterial corridor in the City of Toronto, stretching west from Queen Street East through Scarborough and onwards towards Kingston. The road once served as a major commercial street and a principal link eastwards from Toronto to Kingston and Montreal, but saw this role vanish following the construction of the 401 in the 1960's. High crime rates in the area during the 1980's helped to drive growing commercial vacancies. Over the past decade a series of studies and projects have examined parts of Kingston Road and its communities with the aims of revitalizing the area. The street is a significant corridor for transit, a major artery for automobile traffic, and a long connector with diverse neighbourhoods along its length. While each area has its own local context, several studies have highlighted common issues along the length of Kingston Road – commercial vacancies, commercial-to-residential conversions, lack of development, insufficient transit service, a lack of infrastructure for pedestrians and cyclists, and ongoing congestion.

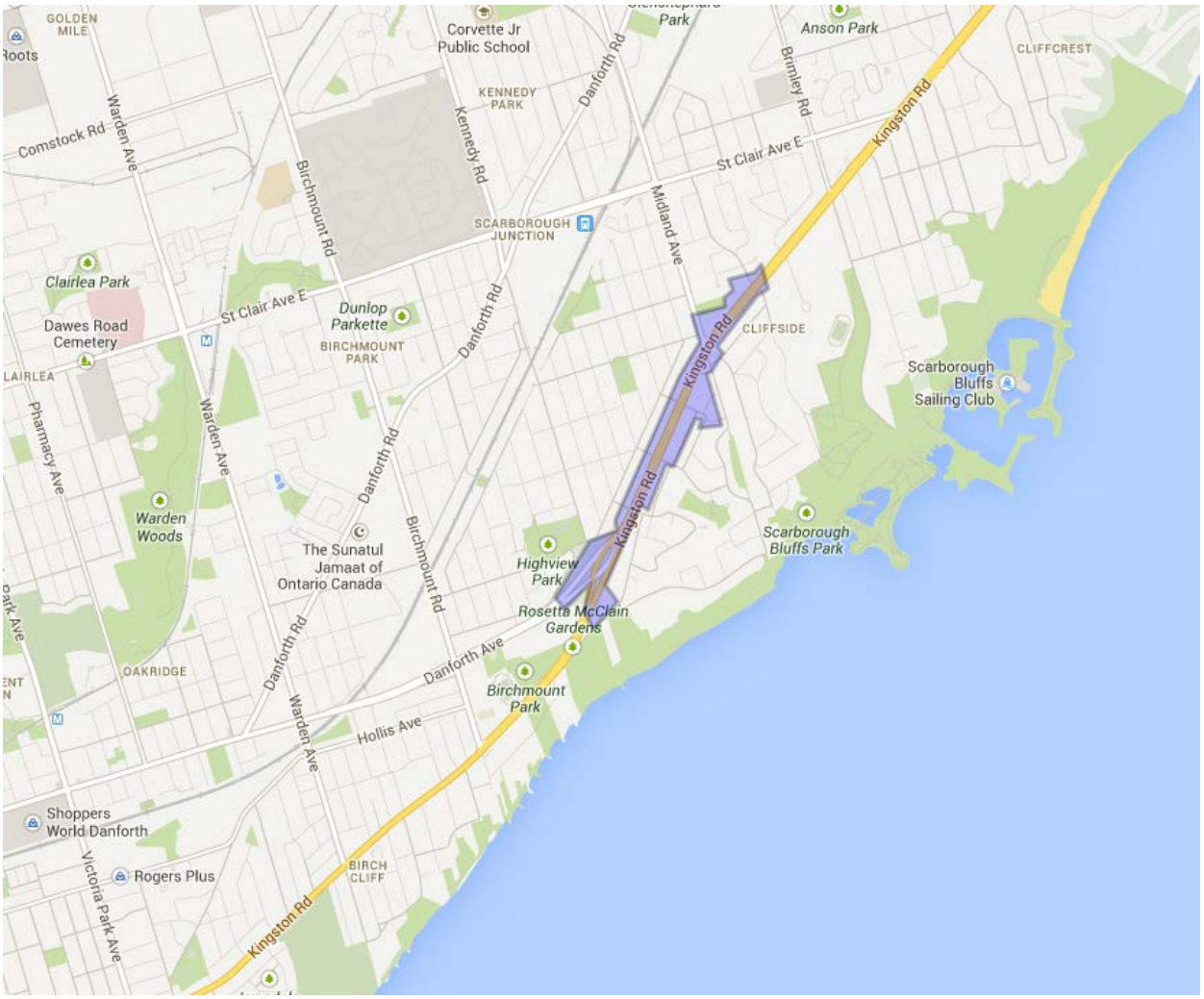
This case study will address how new active transportation infrastructure was planned for in the case of the Kingston Road Cliffside Community. This study will aim to understand how policies related to the creation of active transportation infrastructure are or are not operationalized into concrete projects and how the planning process can promote or prevent such active transportation implementation.

Study Area

In the context of Toronto's Official Plan, Kingston Road is designated as an Avenue, which indicates it as an important main street intended as an appropriate local street for densification and redevelopment. As part of the City's plan to manage growth, Avenues such as Kingston Road are meant to accommodate new housing, retail, employment and community

facilities – all linked to public transportation.[i] Such changes are meant to take place within the given local contexts, encouraging mid-rise development and intensification of use through the addition of additional floorspace above existing buildings.

Kingston Road is also identified in the Official Plan as a Higher Order Transit Corridor, a route where transit service will be improved or expanded in the future, although without explicitly defined technologies, priorities or timelines. Higher order transit routes are defined in other planning documents as transit routes with exclusive rights-of-way and corridors allowing transit priority within road rights-of-way.[ii]



Process

The Kingston Road 'Avenue' Study in Cliffside Community began in March of 2008, which was during the time an Environmental Assessment of Kingston Road's length was being conducted regarding improvements to transit. The Cliffside study aimed to "create a framework

for new development and identify needed service, transportation or streetscape improvements.[iii]" Public consultation for the study in June of 2008 highlighted the current car-focused orientation of the street and the need for greater pedestrian amenities and safety, comments which were echoed by the attendees.

The creation of a Local Advisory Committee and a series of subsequent meetings led to the creation of guiding principles for the planning process which set out ideals for the community including a number of provisions for promoting active transportation through both land use and transportation infrastructure. These included:

- **Progressive Community**
    - Promote the use of transit, cycling and walking as viable modes of transportation, reducing the overall dominance of cars in the area.
    - Minimize motor vehicle-related features such as surface parking and traffic lanes to accommodate an improved pedestrian and cyclist environment. Harmonize movement and connectivity within the study area and to adjacent areas to achieve a better balance between pedestrians, cyclists, motorists and transit.
- **Safe, Secure, and Accessible**
    - The physical environment will be designed to foster comfort and safety and will accommodate people of all abilities and ages. A balance will be achieved between pedestrian, cyclist and motor vehicle movement that will maximize safe and controlled interfaces within the study area while creating fluid connections to adjacent communities.
- **Pedestrian Place**
    - Encourage a mix of uses and built form that promotes high quality, attractive and vibrant places that elevate the experience of the pedestrian.
    - Restore the urban street wall, encourage retail, commercial or public uses at grade and reduce the dominance of vehicles in the corridor. Create an organized, beautiful and green infrastructure for pedestrian movement that addresses linkages to existing community assets and includes a new civic place for the community and destination for visitors.

A design charette in September of 2008 reiterated the earlier community comments, including the need for wider sidewalks, efforts to slow and reduce traffic, and dedicated bicycle lanes. Public feedback on potential organization of the right of way demonstrated the greatest support for a layout which featured a removed centre median, a dedicated transit Right of Way, two lanes of traffic in each direction, dedicated bike lanes, and one lane of parallel parking on each side.

The final Local Advisory Committee meeting in October 2008 summarized the feedback on proposed changes to the streetscape, with public support throughout the process favouring

widened sidewalks, a row of trees, dedicated bike lanes, two lanes of traffic in each direction, a dedicated transit lane, and on-street parking or left turn lanes as needed.

Following a meeting with the local business community, staff presented recommendations to Scarborough Community Council, and to Toronto City Council, recommending, among other actions, that "City Council adopt the Urban Design Concept Plan and Urban Design Guidelines shown in Attachment 6 to the report (October 16, 2009) from the Director, Policy and Research, and the Director, Community Planning, Scarborough District."[iv] This Urban Design Concept Plan included provisions for on-street bike lanes and the discussed streetscape elements from the community consultation, which were adopted by Council.

Adopted in the final year of the mandate of the 2006-2010 Toronto City Council, the design standards were not yet operationalized into interventions in the Kingston Road Cliffside community. The streetscape design has thus been approved in concept, but has had no funding allocated to the project and no construction slated for the street.

As a part of a later planning process, further study of the Cliffside community has been undertaken. In April of 2012 the Toronto Board of Health adopted the *Road to Health: Improving Walking and Cycling in Toronto* report, which led to Toronto Public Health to launch four active transportation demonstration/pilot projects.[v] One of the identified communities for study is the Cliffside community, based on its previously-identified need for and support of active transportation. [vi] TPH has retained a private urban planning consultancy to carry out a neighbourhood-level community engagement process on the subject of active transportation in Cliffside, with consultation events scheduled to happen in November of 2013. These engagement processes are efforts to build local awareness of the benefits of and opportunities for active transportation while sharing information on challenges, opportunities, and community vision in the Cliffside community[vii].

Timeline

2007
- Problem identified- community in need of renewal, avenue in need of intensification

March 2008
- Objectives identified - City Council approves planning study

June - August 2008
- Public consultations held on Kingston Road zoning and right of way changes
- Active Transportation noted in consultations as lacking and being important

September 2008
- Conceptual design options created - design charette held with public
- Public-supported options include widened sidewalks and dedicated bike lanes

October 2008
- Detailed analysis of options completed
- Public open house held
- Meeting with local businesses held

November 2008
- Functional design completed, including dedicated bike lanes
- Council approval granted to study

April 2012
- Toronto Board of Health adopted the *Road to Health: Improving Walking and Cycling in Toronto* report

July 2013
- Toronto Board of Health receives report on Active Transportation demonstration projects, initiates community engagement project to take place in Cliffside

Lessons

Public support for active transportation can add it to the agenda outside of the political process. While changes to the right of way were not a primary focus of the avenue study undertaken for Kingston Road, the role of bike lanes and widened sidewalks were frequently raised by the public in the consultation and charette process. This helped to bring active transportation into the final design.

Low-visibility active transportation infrastructure such as bicycle parking zoning requirements can be implemented without great controversy. While much discussion during the planning process was focused on building size and shape, land use, and streetscape design, other elements of supporting active transportation were included at a zoning level with little discussion or controversy. For example, minimum provisions for bicycle parking and the standards associated with it were included in a new zoning bylaw for the area, supporting active transportation in every new development

Adoption of a plan, even after much consultation, is no guarantee of its implementation. The Kingston Road study of the Cliffside community was approved by the Scarborough Community Council and adopted by Toronto City Council, and the zoning changes were enacted. Actions were recommended in the report, such as the reconstruction of the streetscape, changes to the right of way, improvements to street furniture, and upgrades to public transit, but funds have not been allocated and reconstruction has not begun.

Delays in implementing planned physical interventions for active transportation infrastructure do not indicate failure to do so. Rather, the diverse range of involved parties – from developers to community groups – can influence the likelihood of action. Past studies and plans can act as supporting evidence to better evaluate the requirements of potential interventions and build community support in future engagement efforts.

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