

Durham Region 2020 Regional Cycling Plan Update (RCPU)

Phase 1 Report

RCPU Overview & Foundations



The Regional Cycling Plan Update (RCPU) is being developed during a global health pandemic (COVID-19). As people are encouraged by all levels of government and public health officials to practise physical distancing and limit non-essential travel, we are mindful of the potential impacts this could have to the study process.

Over the course of the study, the Region will continue to engage with partners and residents to ensure your voice is heard and that the outcomes of the RCPU reflect the community's needs and interests. As the public health context continues to evolve, appropriate public engagement opportunities will be made available during the remainder of the study.

Table of Contents

- Chapter 1 – Introduction..... 1**
 - 1.1 RCPU Scope and Schedule.....2
 - 1.2 Community Needs and Interest.....3
 - 1.3 RCPU Vision and Goals9
- Chapter 2 – Primary Cycling Network..... 10**
 - 2.1 The Durham Region Primary Cycling Network (PNC)..... 11
 - 2.2 Updating the Primary Cycling Network (PCN)..... 13
 - 2.3 Primary Cycling Network Considerations 14
 - 2.3.1 Types of Cyclists..... 15
 - 2.3.2 Cycling Demand..... 17
 - 2.3.3 Conflict Points & Barriers 21
- Chapter 3 – RCPU Foundations 23**
 - 3.1 Foundation #1. Cycling Policies 24
 - 3.1.1 Policy Effectiveness Evaluation 27
 - 3.1.2 Policy Trends & Recommendations..... 31
 - 3.2 Foundations #2. Best Practices..... 36
 - 3.2.1 Best Practices Approach and Summary 37
 - 3.2.2 Best Practices in the Durham Context 54
 - 3.3 Foundation #3: Stakeholder Interviews..... 57
 - 3.3.1 Trends & Recommendations 59
 - 3.4 Phase 1 Report Conclusions and Next Steps 69

List of Figures

Figure 1. RCPU scope and schedule	2
Figure 2. Stakeholder input on RCPU vision.....	7
Figure 3. Progression of the PCN since 2012	12
Figure 4. PCN decision making process	13
Figure 5. Documented cycling routes in Durham Region by Strava 1 of 3	17
Figure 6. Documented cycling routes in Durham Region by Strava 2 of 3	18
Figure 7. Documented cycling routes in Durham Region by Strava 3 of 3	19
Figure 8. Overview of Strava user and trip data	20
Figure 9. PCN barriers and conflict points	22
Figure 10. Summary of applicable provincial, regional and local policies within Durham Region.....	25
Figure 11. Overview of cycling related policy trends for consideration by Durham Region	31

List of Tables

Table 1. RCPU Phase 1 engagement spectrum.....	3
Table 2. Overview of the RCPU goals and rationale for implementation	9
Table 3. Overview of cyclist types.....	16
Table 4. Summary of relevant best practices from comparable municipalities related to the RCPU goals	38

Chapter 1

Introduction

Much has changed since Durham Regional Council adopted its Regional Cycling Plan in 2012. The way in which active transportation and cycling is planned, designed, encouraged and implemented has evolved to be more audience focused, context considerate and integrated. In addition to the practice area changes, in 2017 Durham Region approved and is now in the process of implementing their Transportation Master Plan (TMP), which incorporated and, in some locations, refined the Primary Cycling Network (PCN) and identified short and long-term phasing of proposed routes.

Cycling plays an important role in achieving the Region's goal to promote healthy community design and prioritize efficient travel choices. As seen in the Region's TMP, "achieving greater levels of active transportation is essential to addressing a number of strategic goals of the Region from promoting healthy neighbourhoods to addressing climate change." Eight years have passed since 2012 and it is time to revisit the Regional Cycling Plan to establish a renewed vision and blueprint for cycling in Durham Region and its area municipal partners and stakeholders.

The Regional Cycling Plan Update (RCPU) will be a flexible functional master plan that reflects community values, strategic directions, stakeholder needs, opportunities and challenges, the growth of the Region and emerging trends in the area of cycling planning and design. The development of the RCPU is being completed using a three-phase process. This report documents the process and outcomes from Phase 1, which provides a comprehensive review of existing policies, best practices, facility design and stakeholder interests. This report will be one of two which will form the technical documentation for the project process.

1.1 RCPU Scope and Schedule

The Region of Durham in partnership with WSP Canada Group Limited and Share the Road Cycling Coalition initiated the RCPU in December 2019 and is scheduled to be completed by the Spring of 2021. During this time, the consultant team will work with Regional staff and partners to undertake the three-phase study process informed by an extensive community engagement.

The RCPU builds upon the successes and lessons learned from the 2012 RCP and the 2017 TMP. Best practices from comparable municipalities, cycling design guidelines, and cycling trends have been reviewed which will inform the development of RCPU recommendations (in Phase 2). These recommendations will help inform new or revised regional policies, programs, infrastructure improvements, strategies and implementation with the goal of improving cycling region-wide in the next 15+ years.

Figure 1 provides an overview of the RCPU scope and the tasks which have been completed as part of Phase 1. This report documents the process and the outcomes and is the first of two which will make-up the detailed RCPU report.

In addition to the Phase 1 and 2 reports, a set of goal-specific brochures will be developed at the end of the project which will form part of a comprehensive education and outreach strategy for the Region. Together, these documents will be used as tools to facilitate the implementation of the Regional Cycling Plan Update by Regional staff as well as its partners.

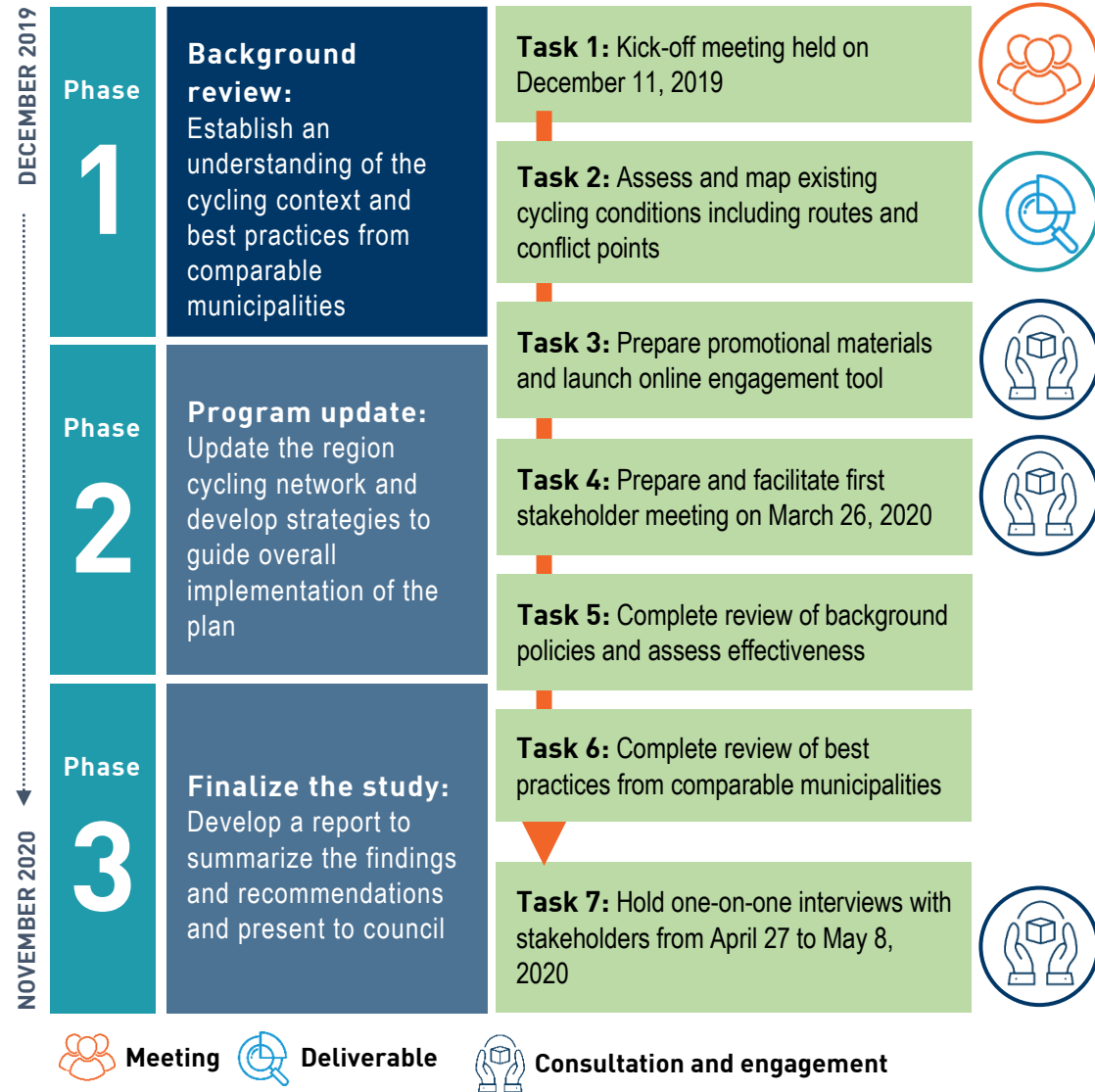


Figure 1. RCPU scope and schedule

1.2 Community Needs and Interest

Meaningful consultation is essential to establishing a cycling plan that is based on community support. An engagement plan that informs key milestones ensures that the outcomes reflect the values and needs of decision makers, staff, stakeholders, interest groups and residents. The following audiences will be engaged:

Regional staff: those who work for Durham Region and have direct role in the implementation of the RCPU.

Regional council: those who sit on Council and are ultimately responsible for approval of the RCPU.

Local area municipal staff: those who work for the Region’s local area municipalities and have a direct role in cycling.

Committee members: those who sit on the Durham Active Transportation Committee (DATC) and have a role in enhancing and promoting cycling in Durham Region.

Agencies and interest groups: those that are part of external groups or agencies and provide ancillary support.

Members of the public: those who work, live and play within Durham Region and have a personal interest in cycling.

A robust consultation program was developed identifying engagement objectives and engagement tactics based on the audience interests. **Table 1** summarizes the engagement tactics undertaken in phase 1 and the intended audiences for each activity. The input collected during phase 1 provides an understanding of the community’s needs and interests and will help identify preliminary recommendations for consideration by the Region.

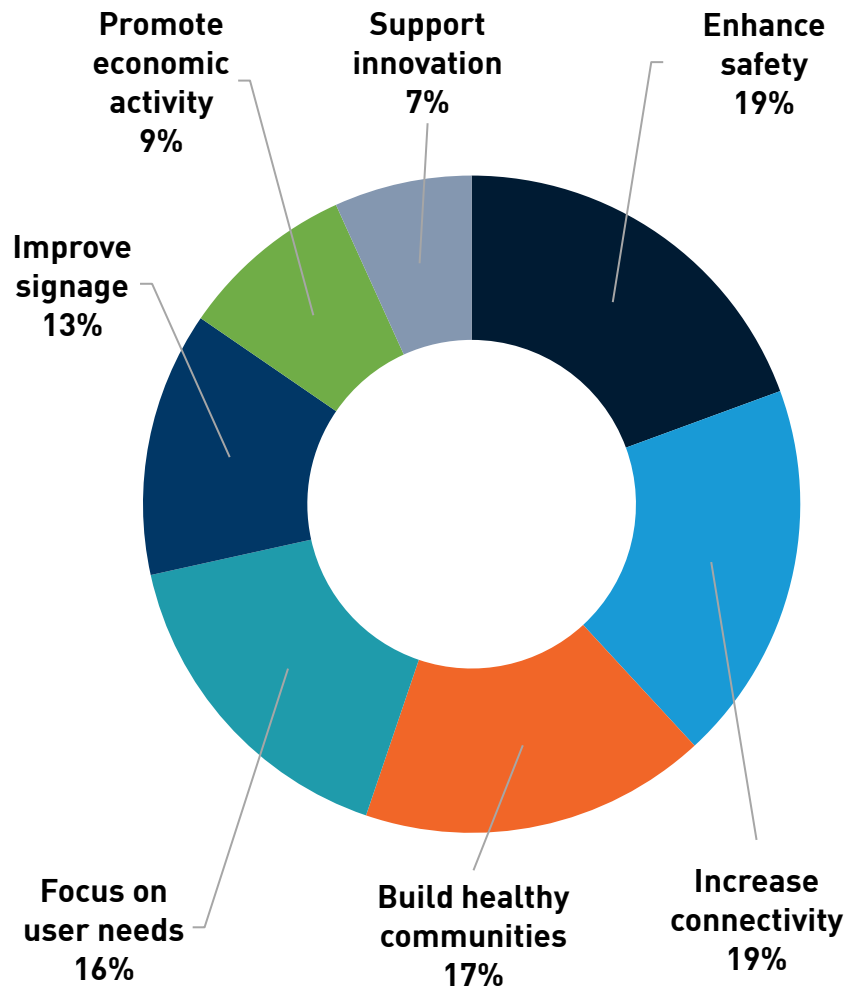
	Online Engagement	Stakeholder workshop	Stakeholder interviews
Regional staff		✓	
Regional council		✓	
Local area municipalities		✓	✓
Committee members		✓	
interest groups	✓	✓	✓
Members of public	✓		

Table 1. RCPU phase 1 engagement spectrum

A preliminary online engagement tool was developed and launched in the early stages of the project (February 2020). The intent of the tool was to gather input from members of the public and stakeholders on foundational aspects of the RCPU including the existing and future cycling network, values and principles and cycling facility and programming design. A substantial number of responses were provided for a total of 494 responses were provided. A detailed overview of the responses from the interactive online survey is provided on the following pages. Findings from stakeholder interviews are provided in **section 3.4**.

Online Interactive Tool

Question #1: What do you think are the top RCPU priorities?



1,757 Responses provided

A preliminary set of regional cycling plan principles were identified for prioritization. These represent either planning, design or implementation areas of focus which have emerged since the development of the 2012 RCP. Participants were asked to rank their top five priorities out of the eight options provided. Based on the survey results, the top five cycling priorities that should be addressed in the RCPU are:

- Enhance safety (19%)
- Increase connectivity (19%)
- Build healthy communities (17%)
- Focus on user needs (16%)
- Improve signage (13%)

In addition to these findings, participants were encouraged to provide additional comments for each priority. A number of the comments indicated the need for a greater emphasis on safety in including but not limited to: improving driver and cyclist education; increasing frequency of maintenance practices; preference for off-road and separated facilities in specific locations; and interest to engage cyclists in the future design of cycling facilities to better understand user needs and wants.

The findings from this question will be used to shape the development of route evaluation criteria as part of the process to refine the cycling network, inform proposed policy improvements and identify priorities within the RCPU implementation strategy.

Online Interactive Tool

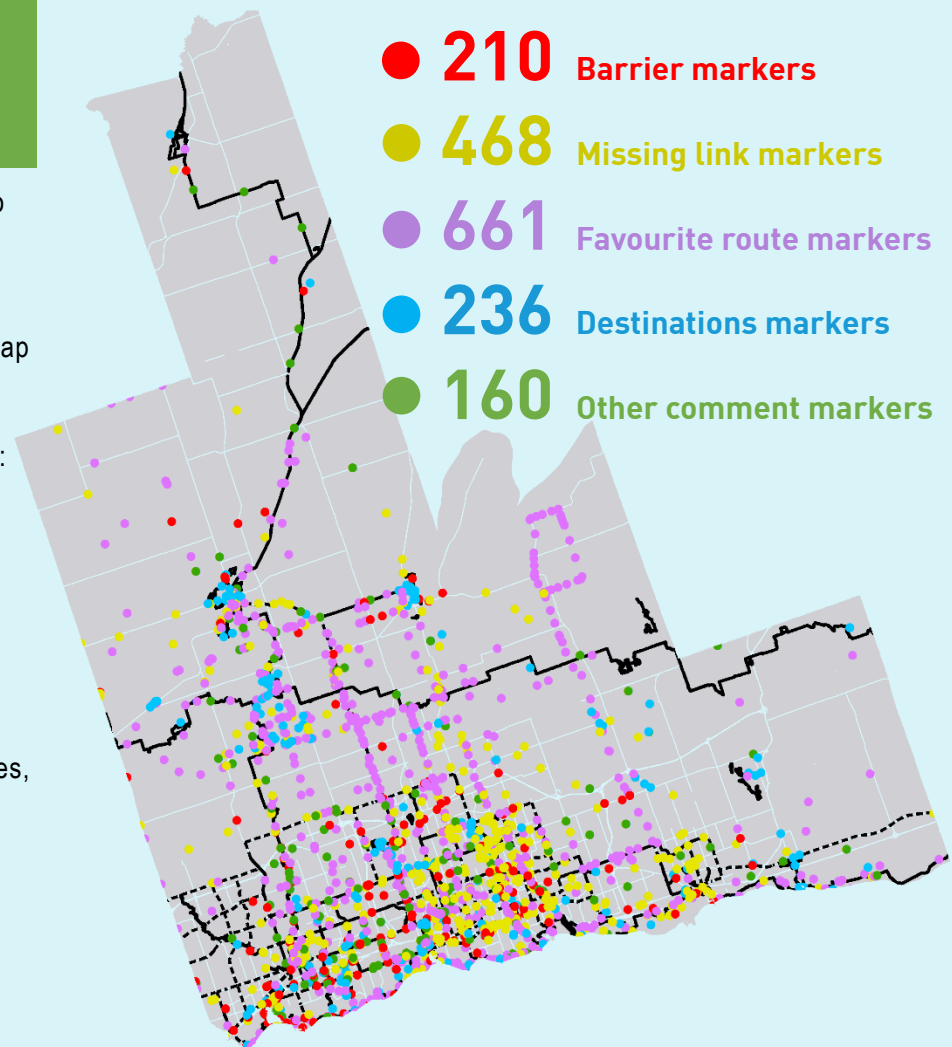
Question #2: Where can cycling be improved in the region?

1,735 Responses provided

Participants were asked to utilize an interactive map with “drop pins” to identify locations where there are existing cycling barriers; missing cycling links; favourite cycling routes; major or minor destinations; and other comments regarding their cycling experience within Durham Region. Individuals were encouraged to add as many “pins” onto the map as they wanted to, answer questions and add comments to clarify the location where possible. A significant number of comments were documented using this tool. The comments indicated a strong need for:

- Improve crossings at highways and intersections;
- Improve road conditions;
- Need for more signage to guide cyclists;
- Need to enhance connections to existing routes;
- Routes should make people on bikes feel safe and comfortable;
- Waterfront Trail is a popular route among participants;
- High interest for paved and separated facilities;
- People on bikes like to connect to the waterfront, community centres, schools, restaurants and other facilities for active recreation; and,
- A number of new routes and extension of existing routes were identified.

The findings from this question will be used to supplement the information gathered on high demand cycling routes and will also be a key consideration to refining the primary cycling network.



Online Interactive Tool

Question #3: What are your preferred cycling facilities and events?

Level of interest	Urban facilities	Rural facilities	Events
Neutral	 Signed bike route	 Signed bike route	 How to classes
Like	 Urban shoulder	 Paved shoulder	 Group rides
	 Bike lane	 Buffered paved shoulder	 Bike valet
Strongly like	 In-boulevard path	 Off-road trail	 Cycling events
	 Separated bike lane		 Touring routes

5,207 Responses provided

Cycling facility design is a topic that results in a significant amount and range of opinion. What feels comfortable to an individual cyclist depends on their cyclist type, trip type, etc. (see [section 3.2](#) for more details). Participants were asked to indicate their level of interest for different cycling facilities in urban and rural areas, as well as potential cycling events and promotional initiatives. The following is a summary of key themes:

- There is strong support for separated bike facilities and providing separate spaces for cyclists and pedestrians, particularly in urban areas;
- Increased maintenance including removal of debris from on-road facilities including bike lanes and urban shoulders;
- Preference for wider paved shoulders in rural areas;
- Need for enhanced design and placement of signs in high visibility areas (urban and rural);
- High support for bike safety at events;
- A number of participants expressed interest in the need to create / provide affordable cycling events; and,
- Existing interest / usage in touring routes along tourist areas and the waterfront.

The findings will be used to review the existing cycling infrastructure as well as determine future infrastructure recommendations and will also help to inform the education and outreach strategy in Phase 2 of the project.

Stakeholder Workshop

On March 26, 2020 the first stakeholder workshop was held to inform the RCPU. A wide range of stakeholders were invited with a focus on local interest groups and government agencies including the following organizations:

- Durham Region
- Area municipalities
- Durham Active Transportation Committee
- Durham Region Police
- School Boards
- Post-secondary institutions
- Student Transportation Services of Central Ontario
- Ministry of Transportation Ontario
- Metrolinx
- Ontario Trails Council
- Transportation Options
- Ontario Cycling Association
- Waterfront Regeneration Trust

The workshop was held using a web-based video conferencing format allowing the team to engage with stakeholders through a presentation, followed by an interactive set of activities including real-time polling, question and answer as well as interactive mapping.

The purpose of the presentation was to provide stakeholders with an overview of the RCPU scope and study process while the interactive activities were used to identify considerations for the RCPU vision and goals and to identify cycling challenges, opportunities, trends and strategies to be addressed in the RCPU.

To inform the development of the RCPU vision and goals, stakeholders were asked to use the real-time polling tool Menti to identify key words associated with the future of cycling in Durham Region. **Figure 2** displays the input (key words) provided by stakeholders. This feedback has been used to shape the RCPU vision statement presented in **section 1.5**.



Figure 2. Stakeholder input on RCPU vision

Stakeholder Workshop: Cycling Trends and Strategies

A virtual roundtable discussion was facilitated to gather stakeholder input on two key topics:

Cycling opportunities and challenges that have emerged since the 2012 RCP or 2017 TMP

Cycling opportunities and challenges were identified using an interactive map which was presented illustrating the existing and previously proposed primary cycling network (PCN). Stakeholders were asked to provide their comments via the “chat” function or as a mark-up to the mapping. Three key themes emerged:



Enhance connections and continuity of cycling routes / facilities between municipalities



Improve and implement cycling infrastructure that connects to regionally / provincially significant trail and route systems



Leverage work completed by local municipalities to enhance cycling connectivity and address areas of conflict

Emerging cycling trends, topics and strategies that could be addressed in the RCPU

In Phase 2, 4-6 cycling specific strategies will be developed to support the planning, design and implementation of the RCPU. The topics have yet to be determined. The workshop was used to start identifying potential topics for these strategies based on the needs and interests of stakeholders. The following topics emerged from the discussion:

- Intersection and crossing treatments
- End of trip facilities
- Re-allocation of existing road space to implement bike facilities
- Emergence of mobility options including e-scooters and e-bikes
- Mitigation of environmental impacts
- Cycling tourism and signage / wayfinding
- Data collection
- Quick wins for implementation
- Inter-municipal continuity of facilities
- Cost-sharing options for local area municipalities
- Potential funding sources

A number of the topics noted above pertain to funding and implementation consideration. These topics will be addressed through the financial strategy and implementation strategy developed in Phase 2. They will be developed in addition to the 4-6 cycling strategies.

1.3 RCPU Vision and Goals

A key component of any master plan is the development of a long-term vision. The RCPU vision reflects the Region’s aspirations for cycling as well as its history. It has been shaped by input received from stakeholders including the DATC, local area municipal staff, and representatives from local agencies and organizations during the first stakeholder workshop.

The RCPU vision is:

“**The Region of Durham, in partnership with its area municipalities, supports the planning, design, implementation and promotion of a connected, safe and accessible region-wide primary cycling network. The network accommodates people of all ages and abilities while considering the unique trip types and preferences of those who live, work and play within the Region.**”

The vision statement clearly articulates the future for cycling in Durham Region but does not provide the road-map for how to achieve it. Master plan goals help to articulate the vision in a way that can be further refined by master plan recommendations. **Table 2** outlines the five RCPU goals which build upon cycling goals identified in the TMP and other strategic planning documents adopted by the Region.

These goals are the foundation upon which the master plan is being developed starting with the tasks completed within Phase 1 of the work plan and extending to the proposed recommendations identified in Phase 2. Final documentation will be shaped around these goals as will the strategies to facilitate implantation.

RCPU Goals	Support strategic directions at the regional level	Integrating new cycling trends and lessons learned	Establishing support for coordination between upper and lower tier	Alignment with accepted design guidelines and standards	Establishing public buy-in to determine local priorities and needs
What is this?	Municipal directions and adopted statements that reflect the values and priorities of Durham Region and its area municipalities	Topics and knowledge derived from past experiences that could be integrated into the plan	On-going coordination between the region and its local areas municipalities and key partners to implement strategic recommendations	Nationally and provincially accepted design standards, and guidelines that should be applied when planning and designing cycling infrastructure	A sense of support and commitment to the outcomes of the project based on a comprehensive and meaningful engagement strategy
Where is this articulated?	Planning policy documents or in more visionary strategic plans	Lessons learned are identified from best practices and locally through communications media (print, online) to visualize cycling trends	Implementation strategies to clearly outline roles and responsibilities as well as processes to facilitate implementation	Master plans, engineering guidelines / standards / drawings as well as provincially accepted guidelines and standards	In-person events, online engagement tools, social media, hard print materials
Who will use this?	Regional staff, members of council and committee representatives	Regional staff and area municipalities	Regional staff, area municipalities and members of council	Regional staff, municipal staff, technical agencies and interest groups	Members of the public, stakeholders, local groups and organizations, businesses
When is this used?	When annual budgets are being established to rationalize expenditures that support the Region’s strategic directions	In annual reports to council to document progress of the RCPU implementation	On-going basis to ensure coordination between the region and its local area municipalities	During the planning and design stages of a project to ensure consistency with guidelines and standards	To complete master plans consistent with phases 1 and 2 of the municipal class environment assessment process
Why is this relevant to Durham Region?	To ensure all Regional initiatives help achieve one or more of the Region’s strategic directions	To identify and measure how cycling changes over time due to ongoing efforts of the Region and its partners	To facilitate and establish a long-lasting relationship between the Region and its partners and to built trust and collaboration	To ensure cycling design is founded upon the most up to date engineering standards and planning guidelines	To provide meaningful options for people to provide their input on proposed infrastructure / projects that directly impact them

Table 2. Overview of the RCPU goals and rationale for implementation

Chapter 2

Primary Cycling Network

Durham Region's primary cycling network (PCN) was originally envisioned as part of the 2012 Regional Cycling Plan and was further refined through the 2017 Transportation Master Plan (TMP). It is the Region's blueprint and guide for the planning, design and implementation of cycling infrastructure.

Based on input received through the stakeholder interviews the PCN has provided a significant amount of guidance to Regional and area municipal staff on where and when to implement cycling infrastructure throughout the Region. That said, there are still some limitations associated with the PCN as it relates to the integration of local and regional networks, consistency and continuity of cycling infrastructure and alignment with more recent design guidelines, consideration for a range of cyclist types and experiences and the management and design of major cycling infrastructure.

The overall goal of the RCPU is an extensive review of the PCN to ensure that existing routes and facilities at the local level are reflected, new design trends are considered where appropriate and short and long-term priorities are revisited to ensure consistency with capital programs and stakeholder needs and interests.

Chapter 3 provides an overview of the process and assumptions that have been applied to update the Region's cycling network. Details on the outcomes network development process and each step as well as design guidelines and supportive design enhancements are documented in the RCPU phase 2 report.

2.1 The Durham Region Primary Cycling Network (PCN)

Durham Region approved the Region's current cycling plan in 2012, which identified a long-term cycling network made up of three components:

- Primary cycling network
- Regional trail network
- Secondary cycling network

In 2017, the Region's Transportation Master Plan (TMP) was adopted which updated the primary cycling network to reflect a more comprehensive set of existing facilities, add a few additional routes, and identify more strategic short and long-term priorities.

Map 1 illustrates the current PCN. A more detailed overview of the current primary cycling network is provided on the following page. This includes routes / facilities that are existing, routes that have been implemented since completion of the 2017 TMP as well as previously planned routes identified for implementation in the short- and long-term horizons. **Appendix A** contains mapping of the PCN for each of the local area municipalities.

This project is an update to both policy documents with a focus on the cycling infrastructure that makes up the primary cycling network to establish a continuous and connected network of cycling infrastructure linking the Region's major communities, areas of interest and employment, natural and cultural destinations and to accommodate a wider range of cyclists for day to day trips in a safe and comfortable manner.

The PCN is not being recreated; the PCN is being revisited from a 2020 cycling perspective to reflect the RCP goals and community priorities and needs. Though jurisdiction is not a concern from a user perspective, there needs to be some consideration for the coordination and collaboration that is needed at the regional and local level to facilitate the implementation of a Region-wide cycling network. It is also important to note that the RCP is a cycling master plan and will not be addressing or revisiting off-road trail connections. The PCN will be designed to connect to the regional trail network and secondary or local cycling networks.

With this understanding, the RCP PCN will be reviewed in the context of three components – an integration of the original 2012 network and the 2017 TMP:

Existing Routes

- Existing routes that are located along the primary cycling network.

Short Term Routes

- Routes proposed in the 2012 RCP and the 2017 TMP for implementation in a ten-year horizon.

Long Term Routes

- Routes proposed in the 2012 RCP and the 2017 TMP for implementation beyond the first ten years.

An overview of the approach that will be used to review and update these elements of the PCN is provided in **section 2.2**.

2012 PCN

22.0 km
Existing Routes

218.6 km
Proposed Routes

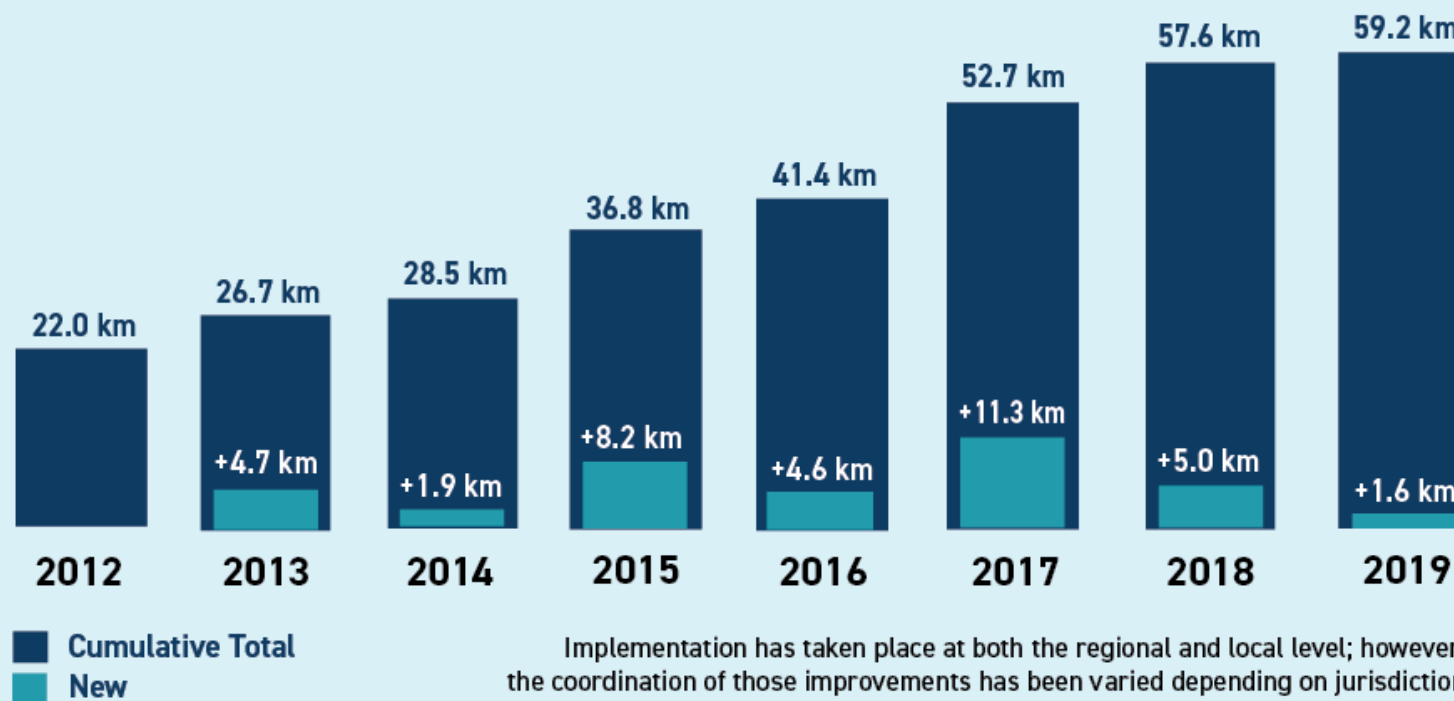


2019 PCN

59.2 km
Existing Routes

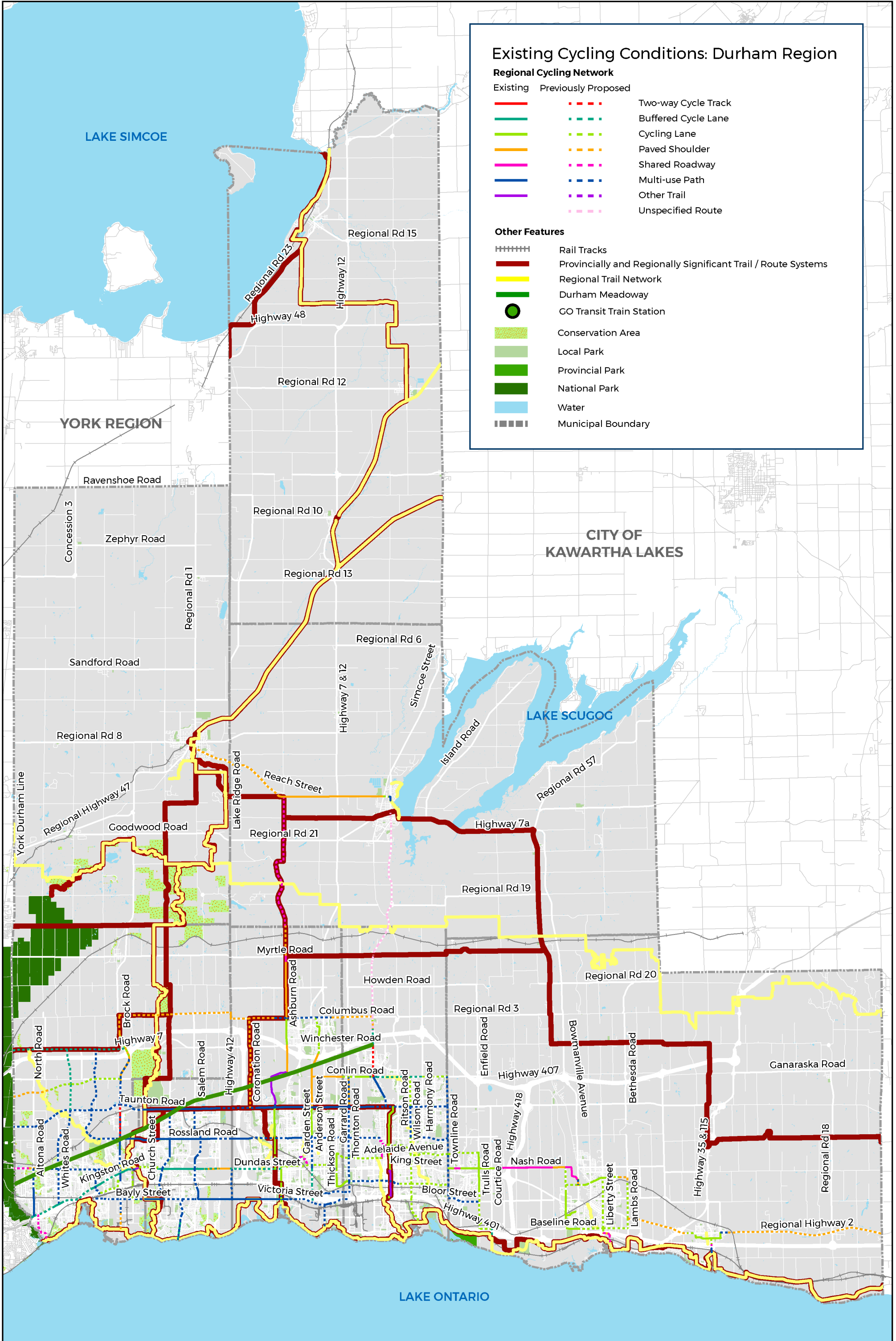
167.8 km
Proposed Routes

Only includes regional roads on the primary cycling network as this is the only information available.



Implementation has taken place at both the regional and local level; however, the coordination of those improvements has been varied depending on jurisdiction and type of cycling facility.

Figure 3. Progression of the PCN since 2012



Existing Cycling Conditions: Durham Region

Regional Cycling Network

Existing	Previously Proposed	
		Two-way Cycle Track
		Buffered Cycle Lane
		Cycling Lane
		Paved Shoulder
		Shared Roadway
		Multi-use Path
		Other Trail
		Unspecified Route

Other Features

	Rail Tracks
	Provincially and Regionally Significant Trail / Route Systems
	Regional Trail Network
	Durham Meadoway
	GO Transit Train Station
	Conservation Area
	Local Park
	Provincial Park
	National Park
	Water
	Municipal Boundary

2.2 Updating the Primary Cycling Network (PCN)

The process used to update the PCN reflects the priorities, interest and input generated from regional and area municipal staff as well as key partners and stakeholders. As noted above, the process focuses on three components, the existing network and the short- and long-term PCN connections. Figure 4 illustrates the decision-making process that will be used to update the primary cycling network for Durham Region.



Figure 4. PCN decision making process

2.3 Primary Cycling Network Considerations

The RCPN is more than routes and lines on a map. The Plan will contain recommendations to enhance the overall cycling experience and culture of cycling in Durham by identifying strategic infrastructure improvements, tools to guide implementation of cycling improvements in the short and long-term by Durham Region and its partners.

As noted in **section 2.2**, the PCN will be reviewed and revisited to ensure that it reflects the current cycling conditions and new cycling trends found within Durham Region and throughout Ontario and Canada. Phase 1 of the RCPN was used to identify some of these trends to help inform the PCN update and revisions in Phase 2.

As part of Phase 1, three types of background information relating to the overall cycling experience with Durham Region were collected and reviewed. This included information on:

Cycling Types

Includes the different categories of cyclists, which are described by their behaviours and preferences. This information will be used to better understand the existing and anticipated users of the cycling network in order to determine new route locations, design preferences and enhancements that need to be made. It is important to note that this network is not meant to be a one-size-fits-all approach. It is being developed with the intent of providing a range of route and facility alternatives for different cyclist types and trip purposes.

Cycling Demand

Includes the routes that are currently being used by avid cyclists within Durham Region as documented through the voluntary information gathering tool Strava Metro. This information will be used to determine if there are any missing links or additional infill projects that need to be integrated into the PCN or designed to accommodate anticipated or existing users.

Cycling Barriers

Includes physical barriers that prevent cyclists from engaging in a continuous and connected trip. This information is critical to understanding where additional design enhancements may need to be made to ensure that the cycling experience is perceived to be safe and comfortable by both existing as well as potential riders.

A summary of the outcomes of this research is provided on the following pages. This information is meant to be supplemented by the additional research and investigation that was completed and is documented in chapter 3.0 of the Phase 1 report as well as the engagement activities which will be undertaken in the remaining phase of the project.

2.3.1 Types of Cyclists

Not all cyclists are made the same, combining different modes of travel and considering different factors when deciding whether to take a trip by bike such as the weather, the destination, the time of day and the purpose of the ride. Cyclists are people on bikes! Cyclists are also pedestrians, car users, transit users and typically do not prescribe to one specific mode. The reasons why an individual chooses to cycle can vary significantly including for travel, fitness and physical activity, fun and recreation, as a means for socialization and to run errands.

A user-focused approach should be used in the planning and design of cycling infrastructure to ensure anyone, regardless of their age, skill level, trip purpose, or physical abilities, can feel comfortable and safe when biking. There is no one size fits all to a cycling network which is why it is critical to have a more detailed understanding of not only the different types of cyclists but their riding preferences.

In 2006 research from the City of Portland ([click here](#)) concluded that there were four categories of cyclists, each defined by user experience and comfort level. Since this time, there have been many guidelines, standards, articles and academic papers which have provided further investigation and assessment into cyclist types and behaviours. We understand now that four categories is not enough to fully define cycling usage and uses.

Most recently, there have been intentional efforts to define the different types of potential cyclists based on needs and preferences. Research from the European Cyclists' Federation ([click here](#)) identifies five different types of cyclists which are defined now not only by their level of comfort but some of the wider experience considerations noted previously.

Everyday Cyclist

Someone trying to get to work or school by taking a direct route, or wishing to continue cycling undisturbed, and wanting to stop as rarely as possible.

Sport Cyclist

Someone cycling for sport, including mountain bikers, road racers and others - they tend to cycle in laps or groups for long distances moving very quickly which can lead to conflict with all other road users.

Recreational Cyclist

Someone cycling for the enjoyment of being on their bike and with others, stopping commonly for food, coffee or at other attractions.

Attentive Cyclist

Someone who wants to be able to cycle safely, understands the traffic rules well and also wants to follow them - they want good sign posting and clear intersections.

Vulnerable Cyclist

Someone who wants a low traffic / peaceful cycling environment, where they are not passed by other traffic and even other cyclists - they include children, elderly and mobility-assisted users.

Additional information regarding the typical design considerations associated with each type of cyclists are provided in **Table 3**.


Cyclist Type	Road Speed	Road Volume	Route Context	Route Type	Route Example in Durham
Everyday Cyclist	Moderate	Moderate	Regional	On-road	
Sport Cyclist	Moderate to high	Moderate to high	Regional Local	On-road Off-road	
Recreational Cyclist	Low to moderate	Low to moderate	Regional Local	On-road Off-road	
Attentive Cyclist	Moderate	Moderate	Regional Local	On-road Off-road	
Vulnerable Cyclist	Low	Low	Local	On-road Off-road	

Table 3. Overview of cyclist types

The approach applied in the 2012 RCP reflected the original four types of cyclists as identified in the original Portland study. The RCP will reflect current best practices and research to be more consistent with cyclists’ needs and preference identified in the table above. Providing opportunities for all types of cyclists will have the greatest benefit to the Region as a whole. The information will be used as a “layer” in the network development process including a review of existing facilities to meet cyclist needs as well as the design of future routes.

2.3.2 Cycling Demand

An understanding of the location and frequency of existing cycling trips can be a valuable tool to inform the refinement, identification and prioritization of infrastructure improvements. Information regarding current interest and demand helps to better understand not only the location of cycling trips that are currently being taken but also the time of day, duration, length and to some level of detail areas of conflict or concern.

Strava is a website and mobile application that allows users to track their cycling activity using GPS technologies. Strava data was acquired by the Region and reviewed to understand current cycling activity and demand in Durham Region. Using the data collected, a spatial representation is generated (also referred to as heat mapping) based on volume and frequency of routes travelled. It is important to note that Strava is typically marketed and used by those who are biking (or engaging in active forms of travel and recreation) for sport, fitness purposes and / or long-distance touring trips. Additionally, Strava's user base is skewed toward upper-income earners and adults which produce a data sampling bias.

Figure 5 illustrates the existing “popular” cycling routes based on data collected from Strava between April 2018 and May 2020. Strava data will be used to understand where people are currently biking in Durham Region and identify potential gaps within the primary cycling network where infill projects could improve network connectivity or where existing routes may need to be enhanced to accommodate existing demand and travel patterns. This information will be supplemented with other information such as input gathered through engagement and other datasets to understand the habits and preferences of different cyclist types. **Figure 6** and **Figure 7** provide a more detailed look at the various areas within Durham Region that have high cycling activity as well as key features that could be perceived as major destinations and trip generators.

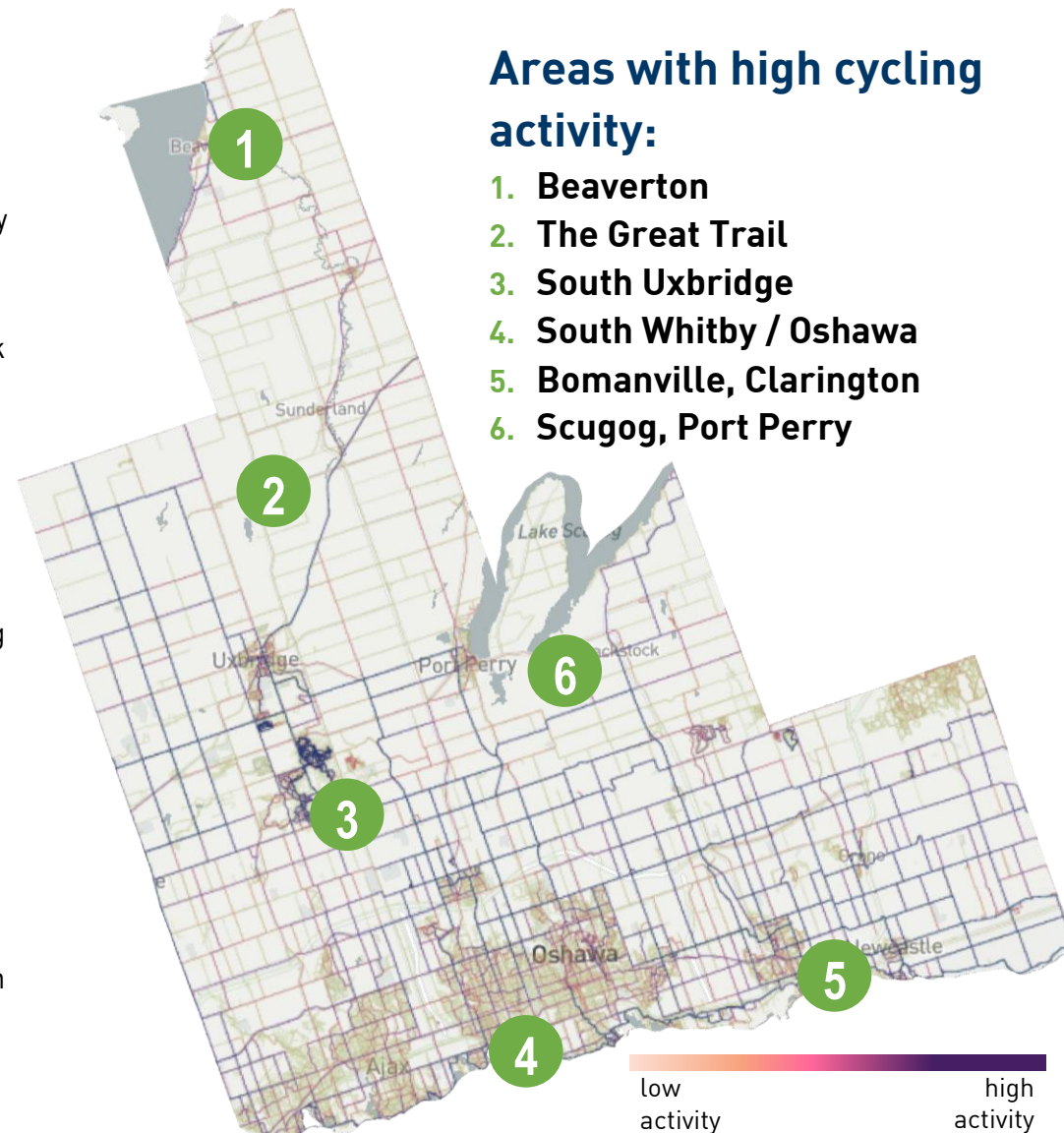


Figure 5. Documented cycling routes in Durham Region by Strava 1 of 3

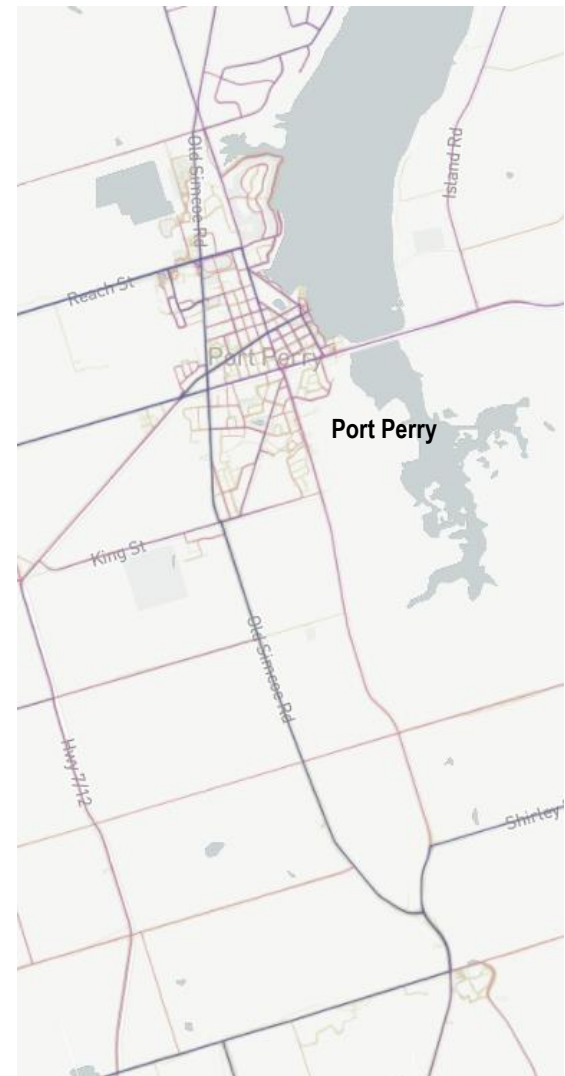
Figure 6. Documented cycling routes in Durham Region by Strava 2 of 3



4. South Whitby, Oshawa



5. Bowmanville, Clarington



6. Port Perry, Scugog

Figure 7. Documented cycling routes in Durham Region by Strava 3 of 3

In addition to documented cycling routes presented above, information collected from Strava provides a visualization of the trip characteristics including trip type, user type and user demographics. A summary of this data is presented below along with some high-level interpretations of the data. As noted above, please note that the information presented is representative of voluntary documentation of cycling trips by existing Strava users.

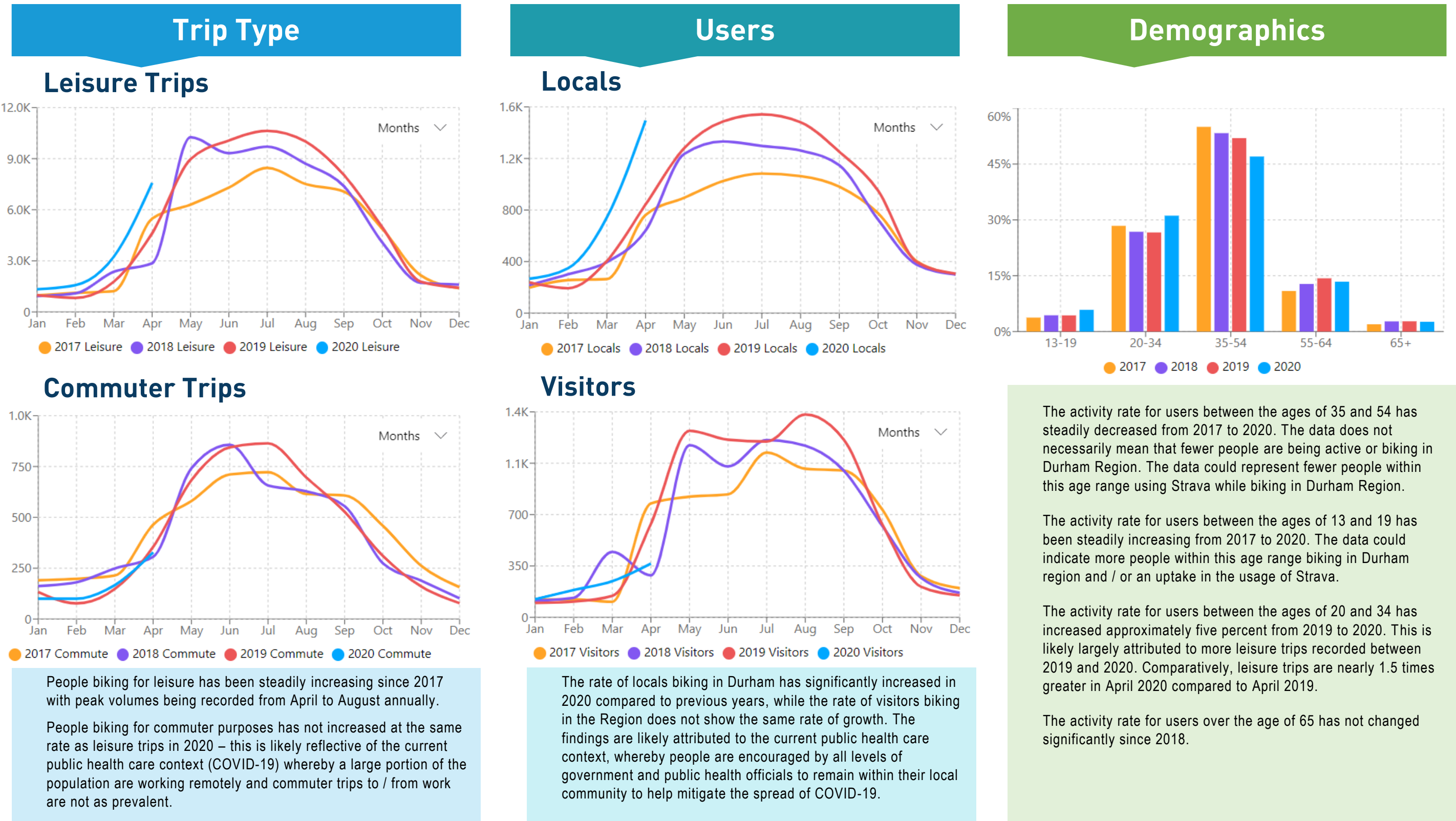


Figure 8. Overview of Strava user and trip data

2.3.3 Conflict Points & Barriers

A robust cycling network should consist of a continuous and connected set of routes and facilities that provide cyclists of all ages and abilities with a safe and comfortable environment with limited potential points of conflict. Due to the recreational and commuter nature of cycling trips and the location of our cycling networks, it is at times impossible to avoid all potential physical barriers. If these locations are not designed in a way that mitigates conflict or improves safety and experience, they have the potential to cause injury or prevent some individuals from cycling altogether.

While not identified in the planning phase, conflict points and barriers can create challenges to the implementation of new routes. In Phase 1 of the RCPU project, common physical barriers were identified and mapped throughout Durham Region. These barriers include a range of on- and off-road conditions like signalized intersections, intersection geometric design or large physical barriers, such as lakes and rivers that require engineering solutions to permit cycling across.

A total of six types of physical barriers were identified within Durham Region – consistent with a study which was completed by the Ministry of Transportation Ontario in 2015. A description of these barriers is provided and a map illustrating their locations within Durham Region is provided in **Figure 9**. The information is not meant to be used as a recommendation for infrastructure or design improvements but as a reference for the network development process to understand where cycling enhancements may be needed or if alternate routing may need to be explored to avoid high risk barriers.

Freeway Crossings

400-series highway crossings, interchanges, on-ramps, and off-ramps that permit very high speeds and incur high volumes of motor vehicle traffic.

Arterials and Collectors

Intersection crossings at major streets that permit high speeds and incur high volumes of motor vehicle traffic.

Railway Crossings

At-grade crossings of active railway tracks that may pose a hazard to cyclists by trains and also cyclists' crossing angle to the tracks as the can catch bike tires.

Unsignalized Trail Crossings

Midblock crossings of off-road multi-use trails.





Watercourse Crossings

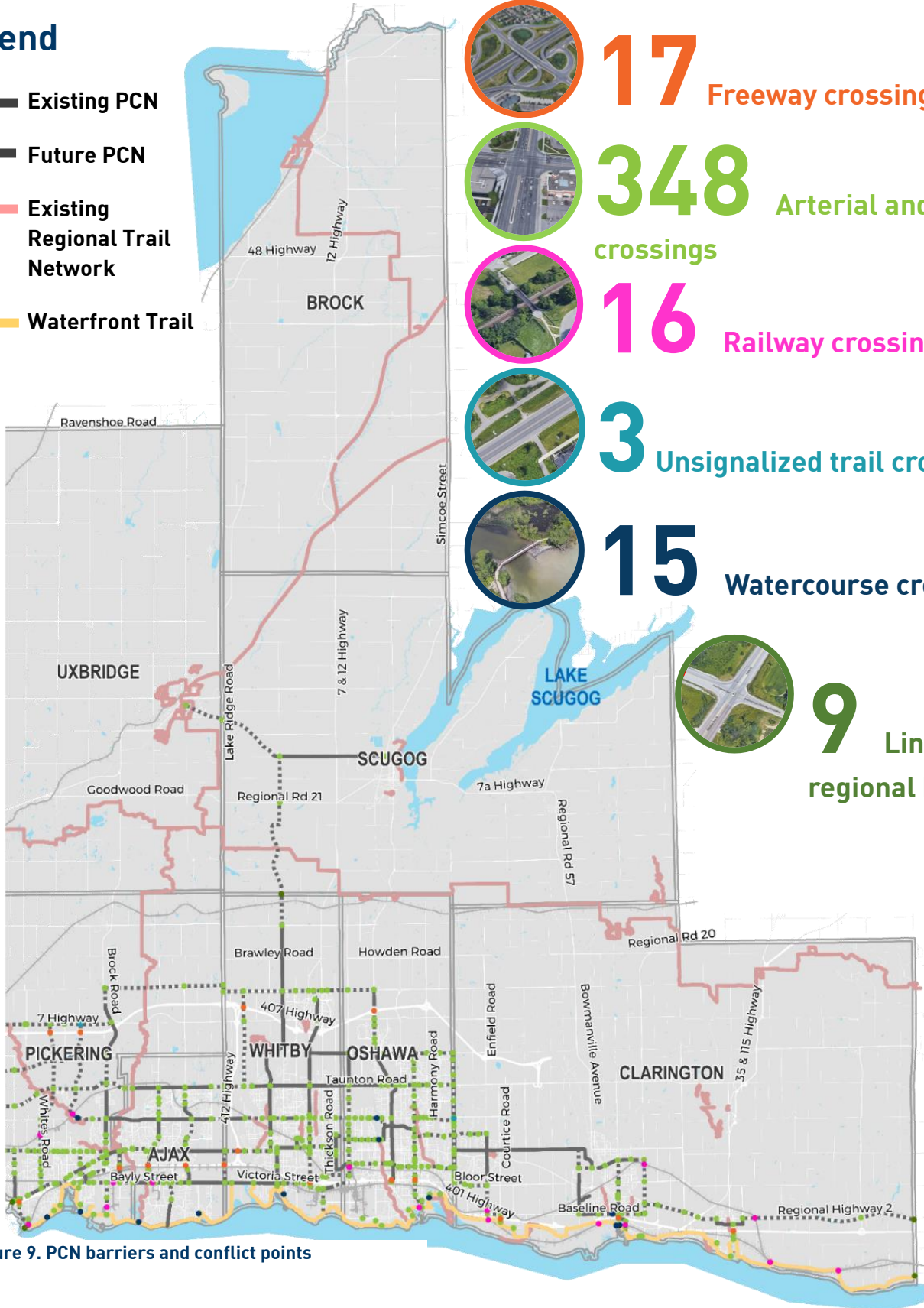
On- and off-road crossings of rivers, creeks, ponds, and lakes that may require construction of a new bridge or modifications to an existing bridge due to constrained roadway conditions that present conflicts between cyclists and motor vehicles.

Linkages at Regional Boundaries

Regional boundaries with a cycling facility on one side that does not continue into the neighbouring municipality.

Legend

-  Existing PCN
-  Future PCN
-  Existing Regional Trail Network
-  Waterfront Trail



17 Freeway crossings



348 Arterial and collector crossings



16 Railway crossings



3 Unsignalized trail crossings



15 Watercourse crossings



9 Linkages at regional boundaries

Figure 9. PCN barriers and conflict points

Chapter 3

RCPU Foundations

There are a number of considerations that go into the development or the update of a comprehensive cycling master plan. In addition to the infrastructure recommendations identified through the network development process, a master plan must also consider and integrate a range of planning and design principles as well as best practices and lessons learned from comparable municipalities.

Phase 1 of a master plan is meant to establish a strong foundation of understanding from which to develop and identify preliminary recommendations for consideration, review, refinement and prioritization in Phase 2. As noted above, the Durham RCPU is being developed to reflect the updated processes, considerations and trends related to cycling within Canada, Ontario and the GTHA as well as a user focused and driven strategy.

Within Phase 1 of the RCPU process, three core master plan foundations were researched and reviewed in detail including planning policies and policy trends, best practices and lessons learned from comparable municipalities at the federal, provincial, and local level as well as the opinions, interests and experiences of regional and local municipal staff as well as regional partners and stakeholders. The findings are presented in Chapter 3 and provide the foundation upon which preliminary cycling recommendations are being developed.

3.1 Foundation #1. Cycling Policies

Policies are the planning tools used by staff and decision makers to influence where and how a community grows. Policies are the foundation upon which all communities are developed and designed and are the mechanism by which planning directions can be decided upon and enacted. Each municipality is required to adopt and adhere to a structure of planning policies, including high-level visionary policies, topic specific strategies, prescriptive guidelines and standards. Within the province of Ontario there are upper and lower tier municipalities which function within a unique policy structure based on jurisdiction. The Region of Durham is an upper tier municipality which means that it has in place policies that pertain to lands and infrastructure under their jurisdiction. It also has lower tier municipalities who have their own context specific planning policy documents. These municipalities are also required, in some cases, to adhere to the policies that are adopted by the Region.

The Regional Cycling Plan is one of multiple planning policy tools that help guide decision making, design and investment with respect to cycling in Durham Region. It is a functional master plan which provides a comprehensive long-term plan of action and is part of a tiered approach to policies from provincial statutes to land-use controls. Each tier of policy has a different purpose. The following is a more detailed description of the different policy types and their application within the Durham Region context. It is important to note that within this policy structure, provincial and regional policies have the most direct and significant influence on the content of the plan and its implementation, whereas local plans and policies of the area municipalities will be informed by the RCPU. Durham Region is required to function within the Ontario based planning policy structure which utilizes six policy tiers. They are described and illustrated to the right.

Provincial Statutes	<ul style="list-style-type: none"> - A legislated document which must be enacted without interpretation - Statutes are to be enacted through provincial policies
Provincial Policies	<ul style="list-style-type: none"> - Statutory documents outlining actionable and implementing policy - Policies can be interpreted based on the condition and context
Official Plans & Secondary Plans	<ul style="list-style-type: none"> - A statutory document required by the Planning Act and Provincial Policy Statement: <ul style="list-style-type: none"> o Makes the public aware of general land use planning policies o Makes sure growth is coordinated and meets community needs o Demonstrates how land will be used o Helps decide allocation of various municipal services o Provides a framework for zoning by-laws to set standards o Provides a way to evaluate and settle conflicting land uses o Demonstrates Council's commitment to growth
Functional Master Plans	<ul style="list-style-type: none"> - Provides a comprehensive long-term plan of action for key municipal servicing issues - No statutory impact without reinforcement from the Official Plan - Sometimes, additional more 'topic-specific' master plans are developed to provide further clarification on high-level service topics (e.g. Active Transportation Plan, Walkability Strategy)
Land Use Controls	<ul style="list-style-type: none"> - How the Official Plan is implemented, monitored and enforced - All recommendations that trigger the use of these tools will need to ensure consistency with the Official Plan - All municipalities are required to have a Zoning- By-law and other land-use control documents

Within Durham Region, the policies and plans that are considered applicable to the cycling conversation are highlighted below. Each document identified below has different weighting and purpose as it relates to cycling, ranging from strategic or supporting documents (i.e., support cycling through land use and development) to implementation (i.e., design standards or incorporating cycling into site design and development).



Figure 10. summary of applicable provincial, regional and local policies within Durham Region

Each of the policies noted above has a unique influence and application for the Durham context. An overview of the application considerations and policy influences has been provided on the following page. For the purposes of the Regional Cycling Plan Update, the Regional plans and policies are the primary focus for policy review and consideration. Only regional policies have been reviewed in detail and evaluated to help understand the effectiveness of each and to support the preliminary recommendations of this report. A more detailed description of the approach and the outcomes is provided in **section 3.2.3**.

Provincial

- Land use patterns shall be based on densities and mix of land uses which support active transportation (PPS, 2020)
- Promotes densities for new housing which support the use of active transportation where it exists or is planned to be developed (PPS, 2020)
- Planning of public streets to facilitate active transportation and community connectivity (PPS, 2020)
- Transit and active transportation as practical elements of the urban transportation system (2019 Growth Plan)
- Compact built form and intensification go together with more effective active transportation (2019 Growth Plan)
- Expand convenient access to a range of transportation options, including safe, comfortable, and convenient use of active transportation (2019 Growth Plan)
- A comprehensive and continuous active transportation network will offer a viable alternative to the private automobile (2019 Growth Plan)
- Technical and legislative requirements are outlined in the Accessibility for Ontarians with Disabilities Act built environment guidelines and O.Reg.239/02

Regional

- Active transportation and transit routes will link Urban Growth Centres, Regional Centres, and Waterfront Places along supportive corridors (Regional Official Plan)
- Encourages people-oriented and active transportation supportive Urban Areas (Regional Official Plan)
- Strengthens bond between land use and transportation (Durham TMP)
- Aims to make walking and cycling more practical and attractive and promoting sustainable travel choices (Durham TMP)
- Key actions to accelerate the implementation of the Regional Cycling Plan (Durham TMP)
- Establishes actions to reduce collisions and severity of cyclist collisions (Durham Vision Zero)
- Contemplates a program to develop a connected and balanced mobility system for all modes of transportation, with a priority on active transportation (Climate Change Local Action Plan)

Local

- As area municipalities undertake updates to these documents, the Region should continue to provide insight (e.g., as a commenting authority) from a regional perspective on cycling through land use controls, such as site plan control
- Wherever possible, the Region and area municipalities should work cooperatively in establishing linkages to finer grain local cycling and active transportation infrastructure to further promote and extend the accessibility of active transportation modes
- Area municipalities should consider the Regional Cycling Plan in updates to their respective plans and policies

3.1.1 Policy Effectiveness Evaluation

Policies are the most powerful tool to create meaningful and long-term planning changes. As such, it is important to ensure that the policy reflects the priorities and directions of the community and key stakeholders. A key term search is a well-known policy review tool used to determine the effectiveness of policy documents and to determine if there is a need for improvement. A key term search starts with the identification of a hierarchy of terms in three categories:

- **Primary terms** – those that are considered critical for influence;
- **Secondary terms** – those that are considered necessary but not critical; and
- **Tertiary terms** – nice to have terms that could already be captured through primary and secondary terms and typically more high-level.

The intent of the policy effectiveness evaluation is to identify and prioritize the frequency of the primary terms to understand where improvements can be made, while the secondary and tertiary terms reflect broader supportive cycling goals and should be considered generally through policy updates and improvements.

To the bottom are the terms that were selected followed a summary of the outcomes of the evaluation.

Primary

Cycling
Bike
Trails
Bike Lanes
Accessibility
First Mile
Last Mile
Commuting
Connectivity

Key term evaluations are not meant to be a scientific method of assessment but one approach to align existing policy with planning trends and priorities to inform future updates and amendments.

Secondary

Non-Motorized
Multi-Modal
Complete Streets
Transportation System
Transit
Attractive
Tourism
Economic Development
Climate
Active Transportation
Recreation
Equity
Compact Form
Mixed Use
Sustainable
Safety
Comfort

Tertiary

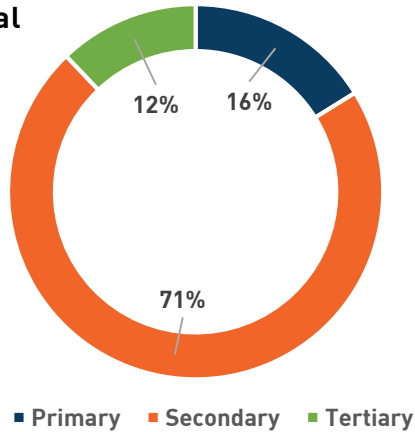
Health
Environment
Economy
Social

Regional Official Plan

Adopted: 1991, municipal comprehensive review currently underway

204

key term references



Key considerations:

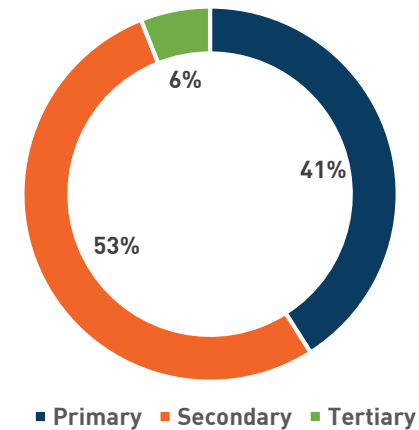
- The Durham Regional Official Plan is used by each of the area municipalities and contains specific land use planning policies to manage patterns of growth across Durham, including Region-wide intensification and density targets for development.

Transportation Master Plan

Endorsed by Regional Council in 2017

930

key term references



Key considerations:

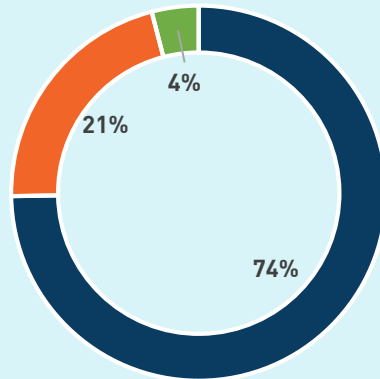
- The Durham Region TMP establishes policies, programs, and infrastructure plans needed to meet the Region's transportation needs to 2031.
- The Durham TMP sets out the regional road network, and plans for more transit service, and cycling and walking opportunities.
- The Master Plan contains the highest number of key terms, both primary and secondary, which reflect its prominence in influencing the Regional Cycling Plan.

Regional Cycling Plan

Endorsed by Regional Council in 2012

306

key term references



Key considerations: ■ Primary ■ Secondary ■ Tertiary

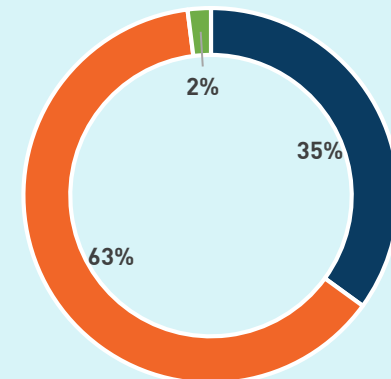
- The Durham Regional Cycling Plan outlines the Region’s vision for cycling, strategies to improve connectivity, and communications tactics.
- The Plan delineates the Primary and Secondary Cycling and Regional Trail networks.
- The Plan contains the highest percentage of primary key terms, which reflects its direct influence on cycling within Durham Region.

Strategic Road Safety Action Plan

Approved by Regional Council in 2014

43

key term references



Key considerations: ■ Primary ■ Secondary

- The intent of the Strategic Road Safety Action Plan is to achieve a future where there are “zero people killed or injured across all modes of transportation”.
- The Plan outlines 8 areas of emphasis to help reduce fatal and injury collisions by 10% by 2023.
- The Plan contains a high proportion of secondary key terms which reflect the strategic nature of the document.

Climate Change Action Plan

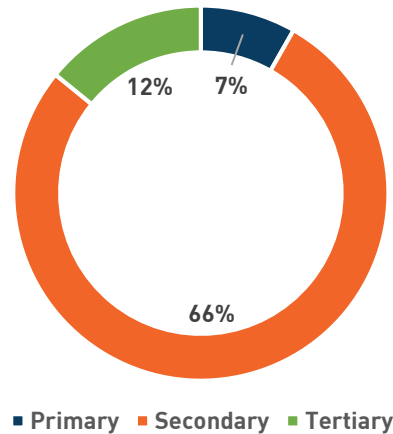
Endorsed by Regional Council in 2016

106

key term references

Key considerations:

- The Climate Change Action Plan constitutes the Region's response to the risks posed to infrastructure, health, and the economy as a result of climate change.
- The Plan highlights several objectives and proposed programs aimed at improving the sustainability of the Region, all while maintaining its livability.
- The Plan contains a high proportion of secondary key terms, which reflects the documents' support for the long-term resiliency of the Region.



High-level conclusions from the policy evaluation...

- The Official Plan contains a number of policies across various themes which can influence the implementation and use of cycling networks. An Official Plan is a municipality's guiding planning document. Strengthening policies in the Official Plan is critical to ensuring that cycling is accounted for during the development application review process. There should be the **flexible yet clear guidance on the cycling priorities** balancing motherhood statements with clear direction on the location of cycling improvements through alignment with the RCPU.
- The Durham TMP sets out the comprehensive transportation recommendations across the Region and has more influence on the implementation of cycling infrastructure. The TMP is the most influential planning document related to cycling with the exception of the cycling plan. The TMP establishes mode share targets for the various land use planning areas of Durham (e.g., Urban Growth Centre, Built-up Areas, Greenfield) which **seek to increase the proportion of residents who cycle**. The RCPU is the opportunity for greater clarification on how to achieve these targets.
- The Strategic Road Safety Action Plan and the Community Climate Change Local Action Plan provide support for the Regional Cycling Plan and **establish a basis from which to update the RCP** to reflect Vision Zero and climate change but are more strategic planning documents as opposed to policies which means that their roles in the planning structure is different than that of the OP and the TMP.

3.1.2 Policy Trends & Recommendations

As demonstrated above, planning policy is a mechanism by which change can be made to the way a community grows. The Region is utilizing the outcomes of the key term assessment to inform future updates to the Regional policies evaluated. As the Region pursues the development of new policy or review and amends existing policy, there should also be consideration for cycling related planning trends and practices. Policy trends refers to a topic which has emerged because of a socio-demographic shift that has occurred over a significant amount of time.

Some specific cycling trends were identified through the RCPU and others were identified based on best practices and lessons learned from other jurisdictions. An initial overview of these trends and planning policy tools and considerations is presented on the following pages. They will be investigated and documented in a more Durham-specific light during Phase 2 of the project. As Regional plans and policies are reviewed and updated overtime, the Regional Cycling Plan should be consulted to inform relevant updates and ensure its integration into the Region's planning and decision-making processes. The high-level concepts discussed in this section should be realized across all tiers of policy.

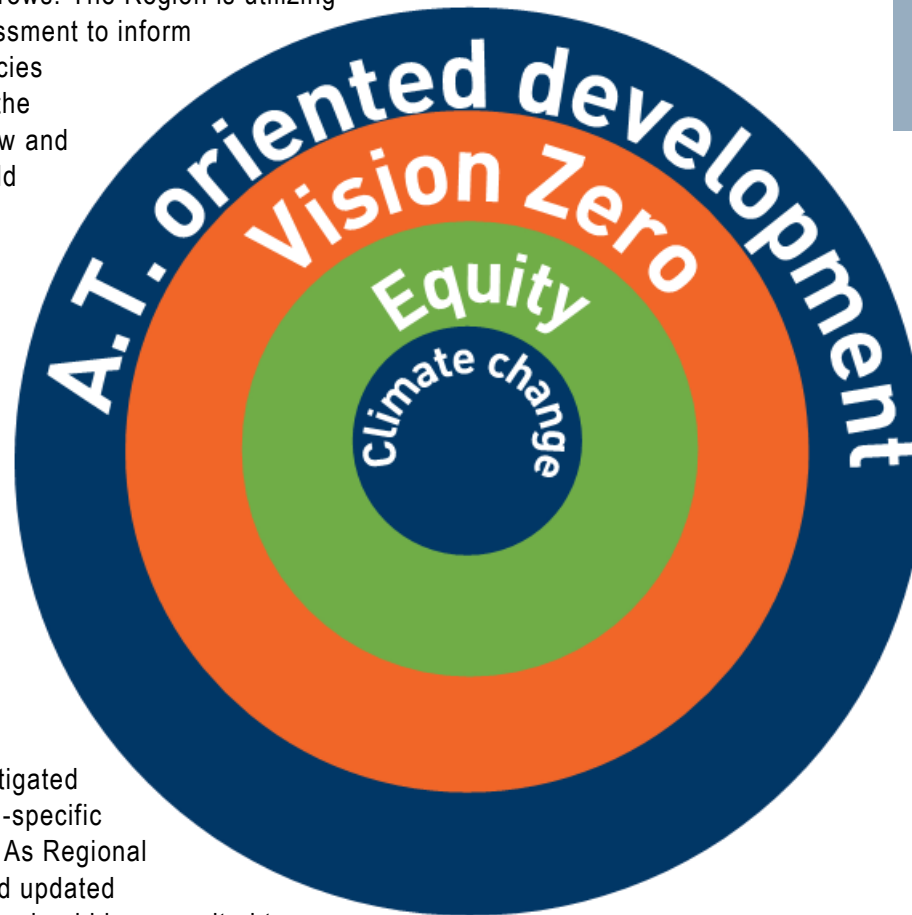


Figure 11. Overview of cycling related policy trends for consideration by Durham Region

Active transportation-oriented development maximizes the amount of residential, commercial, employment, and recreational space which can be accessed by alternative modes of transport, including cycling, walking, and transit.

Strategic Road Safety Action Plan, Vision Zero is a road safety concept that originated in Sweden in 1997 that works to achieve no loss of life because of a motor vehicle collision.

Climate change is defined as a change in global or regional climate patterns, largely attributed to increased levels of atmospheric carbon dioxide produced by fossil fuels.

Health, economic, or social equity is reached when individuals in a community have the fair opportunity to reach their fullest health potential. It involves reducing barriers, addressing environmental factors, and being integrated into decision making and planning.

Climate Change

Climate change and cycling...

- The design and implementation of infrastructure should consider the anticipated short- and long-term impacts of climate change
- Mitigation as well as adaptation measures are the ethical and social responsibility of staff and decision makers in response to anticipated trends and community impacts from a health and sustainability perspective
- Replacing car trips with bike trips has demonstrated a potentially dramatic impact on greenhouse gas emissions that is only elevated by the addition of increased multi-modal trips by other sustainable modes
- Auto-centric transportation infrastructure including sprawl consumes significant amounts of land and requires longer distance trips with less potential for the use of cycling or sustainable transportation
- Low income and marginalized communities are considered more vulnerable to climate change due to the lack of social and physical infrastructure

Policy Tools:

- Include policy targets to increase sustainable mode choice in master plans such as the Transportation Master Plan
- Reference and provide cycling policy considerations within regional planning policy and strategies, such as the Official Plan and Durham Community Climate Adaptation Plan
- Use development applications (e.g., Draft Plans of Subdivision) to evolve built form patterns which support cycling and reduce reliance on single-occupancy vehicles
- Consider opportunities to promote mixed-use development
- Ensure cycling investments benefit those in lower income and marginalized communities
- Determine climate vulnerabilities as they relate to transportation infrastructure
- Improve existing infrastructure and invest in higher quality infrastructure where possible at the time of reinvestment or replacement
- Provide enhanced education for regional staff, including planners and engineers regarding climate change and its future impacts on development and infrastructure planning

Health and Social Equity

Equity and cycling...

- Cycling has a significant impact on an individual's physical health but can also contribute to a greater sense of belonging and improvements to overall mental health
- While the need is greater for alternative transportation modes there are still barriers for individuals without access to the infrastructure or tools needed to facilitate those trips leading to more physical and social isolation
- Lack of access to services and jobs is common for disadvantaged and marginalized communities causing a high likelihood of long-distance trips and travel which presents challenges and barriers to cycling and other active modes
- Cycling facilities are less often co-located in the same area as affordable housing, resulting in lower cycling access and lower healthy community design
- Cycling is often associated with social deprivation and cyclists are often disregarded due to their perceived social impacts on municipal resources

Policy Tools:

- Policy directions should be built with robust community input and goals, which engage disadvantaged and marginalized communities
- There should be a focus on housing and transportation policy options and design alternatives
- Transportation network planning should look beyond traditional measures of density and incorporate considerations to connect disadvantaged communities
- Health equity gaps in existing and future policy should be monitored over time
- The Region should endeavour to coordinate and learn from others and build upon best practices and lessons learned
- Critical planning principles such as mixed-use development, compact neighbourhoods, connectivity, safe active transportation networks, environmental preservation, accessibility, and affordable housing should be reflected in policy
- There should be specific consideration of vulnerable user groups when developing land use and transportation plans
- Specific consideration should be given to the Region's priority neighbourhoods (identified by the Health Department) to ensure equitable options and opportunities for travel modes including cycling

Vision Zero & Safety

Vision Zero and cycling...

- Collisions between motorized vehicles and other road users is primarily caused by turning movements at intersections or stopping points are the most common types of collisions that are documented
- The road and transportation system must be designed and engineered to protect users including the use of physical and spatial separation where possible
- Educational information in addition to infrastructure improvements is critical to generating a greater understanding of how to safely interact in different spaces and how to make safe transportation decisions
- The built environment influences both the perceived and real sense of safety including but not limited to the proximity to and interactions between infrastructure and adjacent land use types

Policy Tools:

- Durham Region standards and tools, such as the Design and Construction Specifications for Regional Services, should be updated to reflect best practices for road design and cycling facilities as they relate to Vision Zero
- Safety should be built in as a criterion in modelling and assessment tools. This can be achieved in collaboration with public health staff
- Policies should be established to effectively monitor infrastructure investment under the Vision Zero program to understand their impact
- Principles of Crime Prevention Through Environmental Design (CPTED) can be integrated into land use plans and controls to improve safety, especially for pedestrians and cyclists
- Urban design policies and guidelines can work to reflect healthy community design standards
- Safety metrics and collision data are important tools to assess progress of cycling goals. It is important to ensure that information is gathered to understand the trends that are experienced over time and to monitor and adapt planning documents as needed

A.T. oriented development

A.T.O.D and cycling...

- A reasonable walking trip is considered 1km or less while a reasonable cycling trip is 5km or less meaning that an active community should be designed around those travel distance assumptions where possible;
- Land use plans should be prepared with full consideration for and integration of the recommendations found in transportation plans to ensure consistency in design and application;
- Cycling and walking infrastructure should be meaningfully integrated with rapid and conventional transit networks including linkages between routes as well as supportive amenities to encourage multi-modal trips;
- The need for longer distance trips can be minimized through mixed-use development by maximizing the potential for short travel times between day to day activities. This can also be reduced through a greater emphasis on live-work spaces as well as work from home policies; and,
- Higher classification roads (e.g., highways) should be designed to accommodate active transportation modes and should include spatial or physical separation to increase the overall sense of comfort of users.

Policy Tools:

- Through the ongoing Municipal Comprehensive Review of the Region of Durham's Official Plan, opportunities to introduce cycling-supportive policies and mix of land uses can be explored.
- Through the next Durham Region Transit Service Strategy review, consideration should be made for establishing meaningful connections between transit and cycling and walking, particularly as it relates to first and last mile trips to and from transit stops.
- Cycling facilities, including appropriate intersection design treatments, will be contemplated through the RCPU to ensure that regional roads minimize barriers to safe, alternative transportation options.
- Regional road access policies can be reviewed to minimize conflicts between vehicles and active transportation users.
- End of trip cycling facilities can be installed at major transit terminals or stations, such as bike parking or repair stations.

3.2 Foundations #2. Best Practices

Understanding the lessons learned and experiences from those that have achieved successes can help identify recommendations. Best practices are defined as procedures that are accepted or prescribed as being correct or based on current knowledge. Although it is important to understand that a tool or tactic works may work in one municipality but not in another, a best practices scan can be an effective means of identifying an initial set of accepted procedures from which more context-specific recommendations can be developed.

The Durham Active Transportation Committee has already undertaken an initial review of some comparable municipal best practices. A number of municipalities were selected from both a comparability perspective – upper tier municipalities of a similar scope and scape e.g. Peel and York Region in Ontario, as well as municipalities with a more aspirational set of examples e.g. Edmonton, Alberta. Building upon this initial investigation, as part of the RCPU development process, a more in-depth assessment was completed through an online information scan, additional research and an online survey.

Nine comparable municipalities in Ontario and Western Canada were identified and confirmed as the sample from which the best practices review would be completed. Of these nine municipalities, six are upper-tier municipalities in Ontario with comparable population size, climate, and transportation landscape to Durham Region. The remaining municipalities are from lower-tier municipalities in Western Canada and were reviewed in response to direction from Regional Staff.

The following is an overview and description of the municipalities selected as well as a summary of the results from the investigation. The information gathered through this exercise will be used to inform the identification of topic specific strategies as well as recommendations in phase 2 of the project.

Within Ontario

- York Region
- Halton Region
- Peel Region
- County of Essex
- City of Mississauga
- Niagara Region

Outside Ontario

- City of Surrey, British Columbia
- District of North Vancouver, British Columbia
- City of Edmonton, Alberta

3.2.1 Best Practices Approach and Summary

To properly understand approaches to cycling planning and implementation, each municipality's cycling master plan (or nearest equivalent) was reviewed and analyzed. The master plan review and investigation were supplemented by an online survey which was distributed to municipal contacts for additional detail and clarification. The structure of the investigation focused on asking questions that reflected common master plan content and themes as well as the five RCPU goals presented in chapter 1.0. The questions posed are presented to the right.

While each municipality outlines implementation strategies, they differ in their network implementation approaches and priorities. The municipalities and their respective cycling or active transportation master plans reflect unique strategies to solve context-specific problems. Although no two plans are the same, many of the plans reviewed exhibit similar cycling objectives and strategies to implement their proposed cycling network and supporting programs. It should be noted that the two-tiered municipalities in particular share similar approaches, which is expected due to their comparable scope, responsibilities, and scale.

The consultant team has prepared **Table 4** that summarizes key findings based on the project goals from the initial research. They reflect master plan elements that have been adopted or are proposed for adoption by each of the municipalities reviewed. The colour in the table corresponds with colour of each goal. The details of the process are documented following the summary table.

Goal #1: Align with Accepted Design Guidelines

- Facility selection process
- Facility recommendation and rationale
- Design considerations and guidelines

Goal #2: Integrate New Cycling Trends

- Performance measures and monitoring

Goal #3: Establish Support for Coordination

- Maintenance and operations
- Funding sources
- Phasing strategies
- Costing

Goal #4: Support Strategic Directions

- Cycling planning policies
- Performance measures and monitoring
- Implementation strategies

Goal #5: Establish Public Buy-in

- Outreach strategy

Table 4. Summary of relevant best practices from comparable municipalities related to the RCPU goals

ATMP/CMP Elements	Upper-Tier Municipalities				Lower-Tier Municipalities				
	York Region	Halton Region	Peel Region	Niagara Region	County of Essex	City of Mississauga	City of Surrey	District of North Vancouver	City of Edmonton
Signage Standards	✓	✓		✓	✓			✓	✓
Data collection strategy		✓	✓	✓	✓	✓	✓	✓	✓
Equity focus in network development			✓						
Assessment of conflict points and barriers	✓	✓	✓	✓	✓	✓	✓	✓	✓
Integration with cycling networks of neighboring jurisdictions	✓	✓		✓			✓	✓	
Support for pilot projects		✓	✓		✓	✓	✓		
Winter maintenance strategy	✓	✓	✓		✓	✓	✓		✓
Funding sources and strategies	✓	✓	✓	✓	✓	✓	✓		✓
Costing of proposed network by facility type	✓	✓	✓		✓	✓			
Links ATMP/CMP goals to broader sustainability objectives	✓	✓	✓	✓		✓	✓	✓	
Policy and bylaw strategies to improve cycling implementation	✓	✓	✓		✓	✓			✓
Cycle tourism as an action item or goal	✓	✓	✓	✓	✓	✓			
Addressing political opposition to cycling				✓					
Use of action-orientated language	✓	✓	✓	✓	✓	✓		✓	✓

York Region

Overview

Cycling network planning and development within York Region is currently guided by the York Region Transportation Master Plan, which was adopted in 2016. The document sets forth a 25-year outlook for York Region that is defined by progressive strategies to reduce traffic congestion, improve connections with neighbouring municipalities, and increase the modal split of public transit and active transportation.

The Region has identified five long-term objectives to improve its transportation network by 2041 with corresponding policy areas, network plans, funding opportunities, implementation and phasing strategies, and key performance indicators for future updates to the TMP.

Objective 3 describes the Region's approach to "integrate active transportation in urban areas" that is directly related to improving cycling behaviour, perception, and infrastructure.

Objectives 2 and 5 describe the Region's approaches to constructing multi-modal corridors and supporting first- and last-mile trips respectively. These two objectives also indirectly effect the feasibility of the Region's cycling strategy.

The development of the TMP's objectives and action plan involved extensive consultation with stakeholders, the public, and regional staff. It should be noted that it is the York Region's intention to review the TMP's effectiveness every 5 years. The following section describes objectives, action plans, and strategies related to cycling in the TMP document.

Goal #1: Align Design Guidelines

Three on-road cycling facility type categories are identified by the TMP: shared, dedicated, and separated. Shared facilities include roadways where motorists and people cycling share the same road space. Dedicated facilities provide dedicated space on the roadway for people cycling using pavement markings (e.g. conventional or buffered bike lanes). Separated facilities provide space for cycling that is physically separated from motor vehicle traffic (e.g. physically separated bike lanes, cycle tracks, in-boulevard multi-use paths). These facility type categories are broad and encompass a range of facility types that may be refined and selected during the facility design process. The selection of the facility type categories for each roadway was accomplished by applying the facility selection guidance in Ontario Traffic Manual (OTM) Book 18: Cycling Facilities. It is recommended by the TMP that practitioners apply this guidance when designing facilities in the York Region. The Region is in the process of developing its own guidelines for the planning and design of cycling infrastructure on its roadways.

The TMP does not include performance measures but it identifies a plan to develop a framework to evaluate the implementation progress and outcomes of the TMP's action items. It is the desire of the Region to ensure that this framework include performance indicators that also supports the long-term objectives in the York Region Official Plan (2010). The TMP lists numerous performance indicators that may be considered as part of the framework. Each potential indicator is described by what it means and how it can be measured, ensuring that only measurable indicators are included. Providing a clear metric for each indicator improves the feasibility of developing the proposed framework. It should be noted that the TMP is unclear as to whether one indicator may be weighted more heavily than another.

Sample potential performance indicators related to cycling infrastructure and programs include:

Cycling Facility Supply (lane kilometres of cycle tracks, bicycle lanes, paved shoulders, and multi-use paths and trails)

Bicycle usage (bicycle counts on dedicated facilities)

Percentage of population within 2 km of a major cycling route (spatial analysis of cycling network to residential units and population profile)

Goal #2: Integrate Cycling Trends

There are no clear cycling trends identified in the planning of the TMP. There are some cycling trends captured by the TMP's objectives and recommended actions. These include a desire to improve first- and last-mile connections and the development of multi-modal corridors, which the Region calls 'Great Streets.' Both reflect cycling trends adopted by other comparable municipalities in Canada and address the idea of cycling's interconnectedness with other modes in the transportation landscape.

Goal #3: Support for Coordination

Coordination is a key component of implementing cycling action items described in the TMP. The York Region is a two-tiered regional municipality comprised of nine local municipality and a key part of the Greater Toronto Area. The TMP notes that Regional Staff must consult and coordinate regularly with local municipalities, neighbouring regions, local and regional transit agencies, and the Province of Ontario to implement projects on roadways that share jurisdiction. Local municipalities are particularly important in planning, implementing, and maintaining cycling infrastructure that connects or makes part of the regional cycling network.

The Region has established two key municipal partnership programs that are cost-sharing initiatives

to assist local municipalities implement projects that improve the pedestrian and cycling realm in the York Region. It should be noted that these programs began nearly a decade before the TMP was adopted in 2016 and were included in the document due to their growing success.

The Region has noted that the programs have and will continue to support the implementation of the regional cycling network and improve its relationship with the local municipalities. The municipal partnership programs described by the TMP include:

Municipal Streetscape Partnership Program – The York Region commits \$1,000,000 per year to support local municipalities design and construct new streetscape improvement projects on regional roads. Local municipalities are required to maintain and rehabilitate these improvements following installation. 32 projects were implemented through this program between 2006 and 2016.

Pedestrian/Cycling Municipal Partnership Program – York Region commits \$500,000 per year to fund 50 percent of the design and construction cost of locally-initiated pedestrian and cycling infrastructure projects. Local municipalities are required to maintain and rehabilitate these improvements following installation. 33 projects were implemented through this program between 2007 and 2016.

The Region funds capital projects through "a combination of development charges, tax levies, and funding from other levels of government." Operation and maintenance costs for infrastructure is funded through operating revenues and tax levies. The TMP notes that York Region may need to re-evaluate its funding sources as the cost and volume of capital projects continue to increase.

The TMP identifies potential funding sources that may become available to York Region if changes to provincial legislation were to occur. These potential funding sources include:

- Land Transfer Tax
- Land Value Capture
- Road Pricing
- Sales Taxes
- Vehicle Licensing/Registration Fees
- Parking Related Charges

As stated in the TMP, York Region plans to implement its proposed network by 2041. Although long-term phasing is not specified, the TMP does identify priority routes that are scheduled for short-term implementation within 10 years (2016-2026). These short-term projects form the 'Strategic Cycling Network' are designed to act as a spine that connects to key destinations and corridors. The Strategic Cycling Network includes scheduled road reconstruction projects, regional off-road multi-use trails that cross local municipal boundaries, and key corridor links that connect the network to important destinations (e.g. transit hubs, regional centres). The estimated cost to implement the proposed network by 2041, including the 10-year Strategic Cycling Network, is \$126,000,000.

Goal #4: Strategic Directions

The TMP proposes policies to achieve each of its five core objectives. Although it is unclear as to when or where these policies will be developed, their adoption is intended to support the design, implementation, and maintenance of the TMP's recommendations. Key policy recommendations for cycling include facility design and implementation strategies as well as a particular focus on exploring opportunities to strengthen the relationship between York Region and its nine-local municipality. As a two-tiered regional municipality, the York Region recognizes the complexity of its jurisdiction when implementing capital works projects. York Region aims to provide clarity on responsibilities of cycling facilities once they're constructing, recognizes that the status quo is unclear. At the time of the TMPs adoption, the construction and maintenance of boulevard facilities on regional roads (e.g. cycle tracks, multi-use paths, sidewalks) where the responsibility of the local municipality while the construction and maintenance of roadway elements within the curb were the responsibility of the Region. This produced confusion and inconsistent maintenance and design of the Region's in-boulevard cycling facilities. Through the development of new policy, the TMP identifies a plan to transition the responsibility of construction and maintenance of boulevard facilities on regional roads to the Region. These policy strategies will improve the ability for the Region to develop, monitor, and maintain a cohesive cycling network and reduce the financial burden for its local municipalities.

York Region's implementation plan identifies specific action items for each objective and a proposed timeframe (priority), lead department, necessary partners (external stakeholders), level of effort estimate, and resources estimate. The TMP prefaces the implementation plan with a note that collaboration with local municipalities and transportation agencies is paramount to the success of most of its recommended action items. Furthermore, the TMP expresses the Region's desire to accelerate the development of short-term cycling infrastructure projects if it is possible to do so.

Goal #5: Establish Public Buy-in

During the development of the TMP, online consultation found that residents do not perceive cycling as a viable transportation option within York Region. Educational and promotional strategies may assist the Region in changing this perception. Although the TMP does not go into detail about these proposed promotional strategies, it is noted that York Region strives to improve awareness of cycling safety. The Region plans to partner with local agencies, including York Region Public Health and advocacy groups, to assist in delivering an outreach strategy. It is important to ensure that this outreach strategy reaches a wide audience that reflects the diversity within the York Region.

Halton Region

Overview

As one of Canada's fastest growing municipalities, Halton Region has promoted cycling as a strategy to address future transportation demand more sustainably. The Region's cycling strategy is described by The Halton Region Active Transportation Master Plan (ATMP), which was adopted in 2015. The document lists a series of initiatives and associated targets within a 15-year horizon (2015-2031). This includes a goal of 5% active transportation mode share in the PM peak period by 2031 from a rate of only 2% in 2011.

Goal #1: Align Design Guidelines

Through its Active Transportation Master Plan, Halton Region maintains direct responsibility for implementing segments of its cycling network built along regional roads. Facilities found within the boundaries of its local municipalities however, are to be built and paid for them respectively. However, guidance pertaining to their general design and facility selection are reliant on guidelines and frameworks prescribed the Region.

Design guidance is administered through an Active Transportation Working Group established by the Region with representatives from all local municipalities. To inform the facility selection for candidate cycling network expansions, Halton Region relies on the OTM Book 18's 3-Step Facility Type Selection Process. Accordingly, each selection begins with an assessment of a roadway's existing traffic volume to determine the feasibility of implementing an on-road facility. This is then followed by a more detailed look at site specific conditions, culminating with a documented rationale for the facility type eventually chosen. The Region will report on the progress made in implementing its cycling network and the achievement of its objectives on an annual basis. To fulfill the vision outlined within its ATMP, Halton Region evaluated 4 different implementation strategies. Each strategy was defined by the extent of initiatives proposed; both educational and promotional programming (Tier 1 initiatives) and new facility builds (Tier 2 initiatives), and the involvement of local actors to deliver them. This ranged from a strategy of only relying on measures already planned ("do nothing") to integrating all new possible measures considered. Overall, the evaluation awarded building active transportation facilities on all regional roads, along with local roads and regional trails of significance, as the optimal approach.

Goal #2: Integrate Cycling Trends

To meet its mode share target, Halton Region has striven to tailor the design of its cycling network to its geographic context. Doing so has prompted the implementation of selective cycling facilities and infrastructure considerations. Notable examples include retrofitting highway on / off ramps to feature jug-handle ramp crossings and improved cycling connections to regional transit hubs to support first- and last-mile trips. Halton Region has also piloted various facilities within its local municipalities to identify precedents that could improve safety of its cycling network. Examples of which include: two-stage left-turn bike boxes, bicycle detected traffic signals and automatic bike counters. This piloted approach has not only enhanced the quality of the Region's cycling network but enabled the incorporation of new innovations in cycling facility design. In addition to it providing a source of mobility, Halton Region has also leveraged cycling as a potential source of tourism.

This approach not only increases the economic return on related investments but opens additionally funding sources from higher government. Notables examples include the Ontario By Bike and Waterfront Regeneration Trusts, two provincial cycle-tourism funds.

Goal #3: Support for Coordination

To forecast facility implementation costs, Halton Region uses a benchmarked per kilometer cost for each facility based on typical costs for key facility design elements, including: the choice of surface material, degree of separation, signage requirements, and pavement markings. Halton Region's cycling network is primarily implemented through Halton Region's Roads Capital Program. This includes nearly \$86 million or 76% of total costs. The remaining breakdown of costs related to the AT network are then covered through the Region's Road Resurfacing Program (\$ 16 M or 14%) and standalone Active Transportation Projects (\$ 11 M or 10%).

The Region also relies on the sponsorship from the Province of Ontario and the Government of Canada. Notable examples include available shares of the provincial and federal governments' gas tax and the Federation of Canadian Municipalities' Green Municipal Fund. While the Region funds the design and construction of new cycling facilities located along regional roads, those built on local roadways are the responsibility of their respective local municipalities. As for the continued operations of cycling facilities, the Region and its local municipalities remain responsible for the maintenance of facilities on regional roads and local roads, respectively. Maintenance service levels regarding these activities are informed by the Province's Minimum Maintenance Standards (MTO Regulation 239/02). Recognizing that cyclists have a lower tolerance to defective operating facilities, Halton Region has prescribed maintenance standards for cycling facilities above those required for all transportation infrastructure.

Goal #4: Strategic Directions

Overall, the Region's approach to cycling has been multifaceted, consisting of investment into new supportive infrastructure, policies and programs. The ATMP establishes a vision of promoting cycling as an alternative transportation mode to link communities and improve the mobility of all residents year-round. While the Region's ATMP serves as the primary reference for cycling efforts, the document complements the directives of other policies.

Most notable are the Halton Transportation Master Plan and recent Halton Regional Official Plan Amendment (ROPA) 38, which further sanction efforts to increasing cycle mode share. Halton Region has used its bylaw schedule to strengthen the enforcement and facility provisions of its cycling network. Specifically, the Region has adopted new bylaws which: require motorists to yield at school crossings, authorize speed reductions and increase penalties for dooring and passing of cyclists within less than 1 meter. These bylaw changes have also been coordinated within the schedules of Halton Region's local municipalities. This coordination, for instance, was essential in permitting contra-flow bicycle lanes within urbanized areas across the region.

To better tailor its cycling network to the needs of the community, Halton Region has routinely sought clarification on which facility types are permitted under the governing Ontario Highway Traffic Act. This includes clarifying whether the Region is authorized to install "crossrides" for cycling crossings and designate rural paved shoulders as a default space for cycling. To oversee the development and subsequent implementation of its cycling network, the Region has relied on two different technical advisory committees. This includes an Active Transportation Advisory Committee (ATAC) which aided in the development of Halton Hill's Active Transportation Network. The ATAC is composed of members of its own regional council, and the councils of its local municipalities. Additionally, the Region has established a Technical Agencies Committee (TAC) to consult agencies at both the local and regional level who would be impacted by the proposed ATMP. Feedback received by these bodies has informed the Region's final cycling network.

Goal #5: Establish Public Buy-in

Halton Region has identified a range of initiatives to support public buy-in and subsequent adoption of cycling. Initiatives range from educational and promotional to enforcement. One example is the Drive Safe (Safe Awareness For Everyone) campaign, where the Region partners with its respective police force and local school boards to inform all road users (including cyclists) about proper and safe practices. Additionally, Halton Region has also partnered with local workplaces to encourage commuting by active transportation. This includes hosting cycling safety workshops, offering bicycle kits and organizing annual promotional events such as: Bike to Work Day and Clean Air Commute.

To maximize its engagement with local citizens over cycling related events, the Region has utilized available digital tools. This includes routinely updating its website to create a digital map and trip planning tool for cyclists. The Region also actively consulted the Indigenous communities, including Curve Lake First Nations, Mississaugas of Scugog Island and of the New Credit First Nations among other nearby indigenous communities.



Peel Region, Ontario

Overview

As a rapidly developing two-tier municipality, Peel Region has promoted cycling as a defining strategy to grow sustainably. Although each of its local municipalities have their own cycling plans, the Region is responsible for coordinating their direction and efforts towards one cohesive Regional Cycling Network. While the Region's cycling strategy is addressed through multiple plans, the authoritative document is the Region's Active Transportation Implementation Plan. The document details the Region's implementation approach for the next 5 years (2018-2022), as part of the Region's longer-range Sustainable Transportation Strategy.

Goal #1: Align Design Guidelines

As a trusted reference, the Region applies the Ontario Traffic Manual Book 18: Cycling Facilities when designing on-road cycling infrastructure on Regional roads. The design of cycling infrastructure on local roads is left to the respective municipalities in coordination with the Region's Sustainable Transportation Group.

To ensure their success, Peel Region measures the performance of all active transportation investments based on their operational performance and degree of sustained benefit. Like all implementation schemes, the extent of performance criteria is quite comprehensive, covering a wide range of factors. For cycling specifically, notable examples include: ridership along newly installed cycling facilities, utilization of end-of-trip facilities at key travel destinations and market research gauging attitudes and opinions towards cycling.

Goal #2: Integrate Cycling Trends

Peel Region has striven to support cycling in an innovative manner that readily adapts to current trends in behavior. One example is its use Strava - a mobile application that allows users to track their outdoor physical activity and upload it online, which can be used to inform future planning decisions. By analyzing spatial data generated in Strava, Peel Region can develop a more accurate sense of how and where people cycling are travelling within its jurisdiction. This information can then be used to identify popular travel corridors that may serve as candidates for new or improved cycling infrastructure. Furthermore, it may also assist the Region in evaluating the effectiveness of recent cycling investments, by demonstrated their use.

Goal #3: Support for Coordination

A successful cycling network must not only be well planned and implemented but also properly maintained to ensure a good level of service among users year-round. To inform its level of service for on-road cycling facilities, Peel Region relies on the provincial Minimum Maintenance Standards. Seasonal maintenance activities performed by the Region include snow clearance, street sweeping and vegetation removal. For winter-related maintenance, the Region only assumes responsibility for regional cycling facilities, while providing financial sponsorship to municipalities for the snow clearance of local facilities. This includes funding towards the acquisition of necessary fleet and equipment. Through its own active transportation office, Peel Region fully funds all regional cycling projects while assuming roughly 50% of costs for local projects, most of which comes from the department's program budget, which is subject to annual approval by Regional Council. Despite this funding model, the Region has recently considered modifying its development charges scheme to recoup

50% of these costs. The Region is also in the process of streamlining its approval and funding process for municipal cycling projects to expedite their implementation.

Goal #4: Strategic Directions

Peel Region has specific goals related to the development of its cycling network to achieve greater cycling mode share, including the following: providing comfortable and continuous cycling facilities, improving the year-round maintenance of cycling facilities, expanding bicycle parking and end-of-trip facilities and promoting cycling across the region. Peel Region has assisted its local municipalities with funding, designing, and constructing cycling facilities to help achieve a connected regional cycling network. These efforts are administered by the Region's own active transportation office, the Sustainable Transportation Group. An example of this approach is seen within the management of its regional Significant Trail System, which is funded by the Region but collectively managed by its local municipalities.

Uniquely, Peel Region has explored using a DIY approach to sponsoring the development of its cycling network by providing additional funding for smaller scale ad-hoc initiatives. One example of this is the Region's Community Bike Rack Program. The program offers grant funding to implement end-of trip cycling facilities on public and private properties where these facilities are otherwise unavailable. Peel Region also encourages its municipalities to support cycling by applying supportive transportation demand management principles when adopting local policy. This includes adopting zoning bylaws that more effectively manage motor vehicle parking supply and modifying their site plan approval process to increase requirements for cycling supportive features. Finally, Peel Region has also partnered with other key stakeholders to broaden the scale of cycling supportive features and policy. One notable example is the regional transit authority, Metrolinx, who they've

partnered with to ensure cycling end-of-trip facilities are provided at key transit locations. This has the mutual benefit of increasing the Region's supply of bicycle parking, while servicing first- and last-mile trips linked to regional transit services.

Goal #5: Establish Public Buy-in

Peel Region has sponsored a variety of programs and initiatives involving the promotion, education and enforcement of desired cycling behavior, all of which are administered through a designated "cycling ambassador", appointed by the Region's AT office. Key in the Region's approach to public engagement are strong partnerships among various local stakeholders, who offer a broader platform to engage residents. This includes conventional examples such as local school boards and local police forces and interest groups specific to the community, which include faith groups and non-profits.

To encourage cycling adoption among youth, for instance, the Region sponsors cycling workshops within public schools in partnership with its local school boards. Furthermore, through a "training the trainer" approach, these workshops are taught by teachers directly, enabling higher levels of engagement among student participants.

Other similar initiatives brought out from this partnership include, bike to school rack program initiatives and annual "Bike to School Week". To administer this initiative among other informational campaigns, the Region has also setup the community run 'Peel Safe & Active Routes to School Committee".

County of Essex, Ontario

Overview

Located in Ontario's southwest, the County of Essex has taken considerable action to support cycling in its jurisdiction, supported by its County Wide Active Transportation Strategy (CWATS). This document outlines the County's active transportation strategy and was originally adopted in 2012 but is currently in the process of being updated. Though applicable to all modes of active transportation, the plan offers extensive guidance on the planning and design of cycling supportive facilities and programs. Most pertinent are sections 5, 6 and 7 of the report which detail the proposed active transportation network, network design's toolbox, and the plan's implementation, respectively.

Goal #1: Align Design Guidelines

To ensure consistent and effective design for all new cycling facilities, the County of Essex prescribes guidelines for practitioners to apply that are informed by leading industry references, including the Transportation Association of Canada (TAC). The guidelines address both "minimum recommended" conditions for situations in which an acceptable yet minimal degree of safety and level of service can be provided based on the expectation of lower level of use, and "preferred" conditions for facilities that will serve a broader range of uses and a greater number of facility users. Further detail on what these guidelines include can be found in CWATS's Network Toolbox. Detail is also given on items of public safety, local/provincial jurisdiction requirements, building codes and local bylaws. It should be noted that these guidelines are not intended to replace engineering expertise but provide support in designing cycling infrastructure.

Goal #2: Integrate Cycling Trends

Public consultation helps the County of Essex ensure that emerging cycling trends are reflected in new projects. New trends are considered for adoption in the County by the Inter-Municipal Active Transportation Advisory Committee, composed of members from a wide range of public bodies, including local governments and community groups. The Committee's broad oversight ensures that the cycling network is readily adapted to reflect changing circumstances. Though the committee reviews projects based on their compliance with the county-wide goals, equal consideration is given to adaption to the local context.

Goal #3: Support for Coordination

The County of Essex recognizes that the success of its cycling network is dependent on both routine maintenance and proper funding. While the Municipality defers to the Minimum Maintenance Standards, maintenance practices are also managed based on their forecasted annual costs. This includes an estimated cost per kilometer of \$5,000 to \$9,000 for on-road facilities and \$4,000 to \$5,000 for off-road facilities. Another defining feature of County's approach to maintenance is the priority to make its facilities accessible all year-round. As an added long-term project, the County recommends streets be designed with additional space to store cleared snow without blocking on-street

facilities. The cost of all recommended facilities is forecasted within a 20-year horizon. The funding source depends on context and significance within the County's approved cycling network. County projects, such as paved shoulders or signed routes along county roads, would be paid entirely by the County. Local projects in urban areas would be funded by the local municipalities unless a project possesses significant regional network connectivity and costs would be split with the County. Finally, the County of Essex also leverages the capital works coordination opportunities to minimize the cost of implementing cycling infrastructure. This is done primarily through phasing projects in coordination with other road and utilities work, whereby reducing costs through greater economies of scale and less redundancy. The County has also developed an implementation framework to ensure the timely delivery of all projects. Adapted from OTM Book 18, the framework consists of 5 steps. All projects under this framework are scheduled based on their priority, which is determined by a variety of factors. This includes their captive and forecasted usage, input raised by the advisory committee, coordination with other road projects, and improvements to network connectivity.

Goal #4: Strategic Directions

Foundational to the County of Essex's approach to cycling is a clearly defined vision that is divided into a series of measurable objectives. The County is a two-tiered municipality that strives to ensure a consistent county-wide cycling network that still addresses the needs and contexts of its comprising localities. CWATS recommends that the implementation of new cycling infrastructure and programs be assigned to the local governmental actors and agencies responsible for their delivery. Following this model, local municipalities may choose to develop their own local cycling plans and strategies. The County, however, remains responsible for harmonizing these local plans under a consistent set of facility design guidelines, implementation frameworks and regional network plan. Key to applying this collaborative approach Inter-Municipal Active Transportation Advisory Committee. The Committee is tasked with routinely ensuring that all cycling projects implemented by local municipalities are aligned with county-wide objectives. This guarantees the approach to designing local routes remain consistent and that future design updates are based on emerging trends in cycling behavior. Through this structure, the County ensures it's cycling network remains contextually appropriate while minimizing administrative inefficiencies.

Goal #5: Establish Public Buy-in

In addition to an implementation strategy, the County of Essex outlines a detailed strategy to secure public support and awareness behind cycling projects. Leveraging partnerships with local agencies to broadly distribute promotional and educational cycling materials and information. Notable examples include the local public health authority, police force and school boards, who support regional cycling campaigns and Bike to Work Week.

Another key aspect of the County's outreach strategy is Community-Based Social Marketing (CBSM). Applying principles of transportation demand management, CBSM attempts to change individual behaviors and attitudes. Strategies include raising awareness, seeking a commitment among participants, identifying and addressing barriers to cycling and providing incentives to encourage people to cycle.

Niagara Region, Ontario

Overview

Niagara Region strives to promote cycling and create a high-quality regional cycling network using the Niagara Region Transportation Master Plan (TMP) as its guiding document. The TMP builds upon the recommendations and proposed cycling network in the former Niagara Region Bikeways Master Plan, approved by Regional Council in 2005. Cycling projects described by the TMP are scheduled for long-term completion by 2041. In support of the TMP, the Niagara Region Transportation Master Plan Strategic Cycling Network Development Technical Paper is a supplementary technical document that details the framework to implement the proposed cycling network.

Goal #1: Align Design Guidelines

The Region of Niagara's framework to cycling network design and facility selection is captured by appended reports to the TMP. The framework establishes implementation priorities by scoring all candidate cycling projects based on a balanced consideration of five factors. This includes network connectivity, proximity to suitable density, potential demand (for shorter cycling trips), access to key destinations and navigation around barriers. To provide more specific details on the design of new cycling facilities within public rights-of-way, the Region is developing its own complete streets design manual.

Goal #2: Integrate Cycling Trends

Niagara Region has adopted an approach to planning for cycling that incorporates emerging trends of cycling behavior. In 2015, the Region hosted its first active transportation summit where it identified three key strategic priorities for active transportation. This includes ensuring consistent wayfinding, engaging with school to increase active transportation programs, and developing a complete streets approach to street design. Niagara Region has also acknowledged the potential disruption of new emerging technologies on transportation planning practices. For cycling specifically, this includes the role of bike share schemes as a mobility solution for first- and last-mile trips from transit services. Finally, the Region has also tailored its transportation planning approach to be more accommodative to the needs of its aging population. Recognizing that this demographic faces greater mobility challenges; the Region has committed to designing cycling facilities for all ages and abilities.

Goal #3: Support for Coordination

To implement its regional cycling network, Niagara Region financially assists its local municipalities in the delivery of their local cycling facilities. This is delivered through the region's Bicycle Facilities Grant for Regional Bikeways Network Facilities on Local Roads program. Funding is only available to projects identified within the Region's proposed cycling network, as determined by the Niagara Region's Active Transportation Sub-Committee. As of 2013, the fund was capped at \$200,000 annually. It has been recommended that this cap be increased to \$1 million annually. This funding is primarily generated through property taxes as well as development charges. The Region has considered exploring alternative funding sources, including from land transfer taxes, road pricing, and parking levies. The Region also applied for funding schemes offered by the Province of Ontario and the

Government of Canada. Supplementary to funding cycling projects directly, the Region offers sponsorship to roadway design and construction projects that include elements of complete streets. Specific examples include wide, high-quality pedestrian facilities and dynamic, low impact streetscaping in the boulevard. To ensure all investments are prudent and cost-effective, all cycling projects are routinely evaluated on a variety of performance metrics. This includes indicators of the facility's usage as well as changes to cycling mode share.

Goal #4: Strategic Directions

One foundational goal of the TMP is to increase Niagara Region's sustainable transportation mode share, which includes cycling. Efforts to support this goal include the Region's growing consideration for complete streets design and transportation demand management principles within future roadway planning. While it had been implementing its cycling network through its Capital Road Program, the Region has since recognized that this is too incremental. The result has been a cycling network that was too fragmented for region-wide travel. Through the adoption of the TMP, Niagara Region now utilizes additional mechanisms to implement its proposed cycling network. This includes additional funding to assist its local municipalities in implementing cycling facilities as stand-alone projects. The TMP has also re-prioritized the implementation horizon of different cycling facilities as part of a new strategic cycling network. Under this new approach, features of the cycling network are now identified as either existing (facilities since implemented), planned capital investments (scheduled within planned road work) or key infill corridors (links and gaps that improve connectivity). The TMP also recommends a series of policies to modify future transportation and land development decisions in support of the cycling network. Niagara Region's approach to implementing its cycling networks relies on strong partnerships with its local

municipalities. This includes delegating responsibilities over the planning, sponsorship and delivery of projects identified in its proposed regional cycling network. The Region remains responsible for outlining the prioritization of different cycling facilities, providing financial support, and prescribing related signage and wayfinding standards. Local municipalities are responsible for delivering these projects, using the guidance and support offered by the Region. To administer this structure, the Region has appointed its own Active Transportation Sub-committee. The sub-committee was established under the existing Regional Transportation Advisory Committee and advises on matters related to active transportation, including cycling projects.

Goal #5: Establish Public Buy-in

In an effort improve cycling mode share, the TMP establishes an approach to create strong public buy-in within the Region. While not overly prescriptive, the Region's TMP envisions an approach that includes strategies related to education, enforcement, promotion, and evaluation. Most of these strategies are to be administered through the Region's Active Transportation Sub-committee. Outcomes of public consultation during TMP developed are detailed within a separate public consultation report.

City of Mississauga, Ontario

Overview

As one of Canada's largest municipalities, the City of Mississauga has taken decisive action to promote cycling locally. While geographically vast and auto-centric, the municipality has shown considerable potential to support cycling with its mode share having nearly doubled from 0.3% to 0.6% of all trips from 2008 to 2018. Particularly relevant to which is the City's most recent Cycling Master Plan, adopted in 2018, which outlines both its cycling vision and associated approach.

Goal #1: Align Design Guidelines

As per its Cycling Master Plan, the City of Mississauga recommends that the design and placement of end-of-trip facilities be informed by a separate set of guidelines. This includes the City's Urban Design Guidelines, which mandate the implementation of supporting cycling facilities as a condition for approving new developments. In addition to specifying design guidelines, Mississauga lays out a 5-stage project implementation process in delivering the various components of its proposed cycling network. While somewhat iterative, these steps are ordered as follows: conducting a background review, drafting a preliminary design, finalizing a detailed design, acquiring funding, and administering the project through its construction to post implementation. All steps involve a high level of input and oversight from stakeholders, both internal (relevant city departments) and external (private agencies and members of the public). To inform an appropriate facility selection for each candidate network expansion, the City lays out a comprehensive set of considerations and metrics. Samples of which include population and density (census tract data), connectivity (address gaps within the existing network), network coverage, level of comfort, trip generators, cycling potential and safety. Uniquely, the City's various bike facility types are not strictly classified by just their physical properties but temporal ones as well. This includes time-based applications of stop controls or other signals. Finally, to evaluate the success of its cycling projects, the city of Mississauga also provides a list of performance metrics for a variety of criteria, each of which is tied to one of the four key objectives of the Master Cycling Plan and defined by a respective scale of measurement.

Goal #2: Integrate Cycling Trends

The City of Mississauga routinely monitors trends in cyclist behavior to ensure its related policies and practices remain relevant. Evidence of this is the City's use of mobile applications to gather and disseminate information related to cycling in Mississauga. The application 'Pingstreet' allows users to input their cycling trip origins and destinations as well as routings. The data from this application provides the City with a better understanding of active cycling behavior and where new cycling facilities may be warranted to accommodate existing demand. For example, following an increased observance of winter cycling (including users of "fat tire" bikes), the City has enhanced winter maintenance of its cycling facilities.

Goal #3: Support for Coordination

To ensure their routine operation, the City of Mississauga has identified a variety of funding sources to sponsor cycling initiatives. Most significant are two of the City's departmental budgets, including that of Transportation and Works

which funds projects within road rights-of-way (ROWS). Another is the budget of its Community Services department, which funds facilities within parkland and natural areas. When applicable, the City also utilizes funding from various third parties, such as the Region of Peel, the Province of Ontario and the Government of Canada. As an additional financial measure, the City of Mississauga also coordinates the construction of new cycling facilities with road rehabilitation and capital works scheduled within its Roads Service Area Capital Plan. Harmonizing these activities can often control expenditures by eliminating construction redundancies and the need for costly traffic closures. In addition to ensuring their proper funding, the City of Mississauga also prescribes routine maintenance programs for its cycling network, including a program that identifies specific maintenance practices for certain cycling facilities based on their level of service and priority within the network. The City of Mississauga also seeks to establish an operation of readily clearing snow from its cycling network, with priority given to high demand corridors.

Goal #4: Strategic Directions

To inform its approach to cycling, the City of Mississauga has established a vision statement that is put into action through a series of goals. These goals include improving the safety for cyclists, building a connected, convenient and comfortable cycling network, increasing the number of cycling trips and fostering a culture of cycling. While the Master Cycling Plan serves as the primary reference for cycling efforts, the City's Official Plan, Strategic Plan and Climate Strategy are also important in supporting the Master Cycling Plan's objective of achieving greater cycling adoption. Through its recent declaration of a Vision Zero framework to traffic planning, the City has also committed itself to eliminating all traffic fatalities through, in part, providing a safe and comfortable city-wide cycling network. The City's efforts to promote cycling through its Parking Master Plan and Implementation Strategy also support more effective management of the city-wide parking supply to encourage alternative transportation, including cycling. Bicycle parking rates have been included in the City's Zoning bylaw, and the City's Urban Design Guidelines have been modified to include bicycle parking guidelines. As an additional recommendation, the City has also sought approval from the Province of Ontario to pilot facility designs not yet explicitly approved under the Highway Traffic Act. This includes bicycle crossings at mid blocks and roundabouts given their applicability within the City's current road network.

Goal #5: Establish Public Buy-in

To ensure broad public awareness and subsequent adoption of cycling initiatives, the City of Mississauga employs a variety of promotional initiatives and programs. To administer these initiatives and programs, the City leverages both its office of active transportation and cycling advisory committee, with considerable assistance from Region of Peel staff and other local organizations. The extent of these efforts can be classified among one of three categories including educational programs dedicated to encouraging safe cycling practice, encouragement initiatives to incentivize more people to cycle, and enforcement campaigns to ensure cyclists and cycling facilities are used lawfully. A distinguishing characteristic of the City's approach is its reliance on crowdsourcing to both disseminate and acquire cycling information among its public. Using the Pingstreet mobile application, the City not only invites its residents to share their feedback but engages them within the planning process, fostering a greater sense of ownership over the cycling network.

City of Surrey, British Columbia

Overview

The City of Surrey Cycling Plan (2012) is the authoritative resource on cycling network planning and development in the City of Surrey, British Columbia. The document sets forth a long-term vision for cycling infrastructure and programs in the City. Recommendations within the Cycling Plan aim to improve the safety and convenience of cycling for residents in Surrey. The plan builds upon the City of Surrey's Transportation Strategic Plan (2008) that identified cycling as a key component of achieving transportation objectives related to "safety, health, accessibility, sustainability, environmental protection, and develop a successful Surrey economy." The Cycling Plan describes policies and strategies to improve network connectivity, end-of-trip facilities, maintenance and the promotion of cycling to residents. The development of the plan included online and in-person consultation with members of the public and internal and external stakeholders. The following section describes key elements of this document.

Goal #1: Align Design Guidelines

The City of Surrey applies the Transportation Association of Canada's (TAC) Bikeway Traffic Control Guidelines when designing and constructing cycling facilities. It should be noted that the Cycling Plan was developed in 2012, prior to the release of the British Columbia Active Transportation Design Guide (2019), and the City may apply different guidance today. The Cycling Plan recommends that cycling facilities be included into standard drawings and the City of Surrey Design Criteria Manual. It also recommends that the City explore the development of signage design guidance that improves wayfinding within the cycling network, as well as guidance on the design of temporary facilities when cycling corridors are closed due to construction.

Goal #2: Integrate Cycling Trends

During the development of the Cycling Plan, the City performed a spatial analysis of its existing cycling network, road network, land-use, demographic profiles and topography to understand challenges and opportunities to people cycling. Topography is a particularly interesting factor to include as it is a key consideration to the "interested but concerned" cycling demographic. Compared to driving or walking, cycling uphill can be exhausting and cycling routes that require a significant incline may deter even experienced cyclists. This is a challenge for municipalities with hilly topography and it is an important question to consider when developing a new network. The Cycling Plan recognizes how topography influences route selection for people cycling. The document notes that the direction and severity of slopes on the cycling network should be identified in future promotional cycling route maps that are printed or posted online.

Goal #3: Support for Coordination

The Cycling Plan notes the importance of coordination with internal and external partners to deliver cycling projects in Surrey. It proposes combining more cycling projects with pedestrian and transit divisions to reduce capital costs and levy funding opportunities. The City also recommends supporting the delivery of major cycling projects that connect to regional transit nodes that are managed by TransLink, the regional transportation agency in Metro Vancouver. The Cycling Plan notes that consultation revealed that residents desire improved links to end-of-trip facilities at regional transit stations. The City has noted that it will advocate for the implementation of a 'bike station' at regional transit hubs and incentivize bike shops and other amenities to open nearby.

The objective is to establish a park and ride program that encourages cycling for the first- and last-mile instead of driving. Coordination with other City departments and TransLink is integral to the success of this initiative. One of the key objectives of the Cycling Plan is to 'enhance maintenance programs for cycling facilities.' The City's ongoing practices includes reviewing cycling routes four times per year to identify key elements in need of repair, such as pot holes. Winter maintenance is not included in the existing practices because Surrey does not receive significant snowfall accumulation. The Cycling Plan proposes new strategies to improve the quality of cycling facilities such as requiring construction sites to clear debris and sediment that crosses into adjacent cycling facilities.

The City also proposes increasing street sweeping on priority bike routes to improve the level of service to people cycling. Although final phasing and costing are not included in the Cycling Plan, the City does identify sources of funding to assist with implementing action items in the plan. At the time of the Cycling Plan's adoption, the City's cycling fund accounted for 3% of the capital transportation budget. To extend these funds, cycling staff have and will continue to partner with pedestrian and transit projects to reduce capital costs of designing and constructing new infrastructure.

The City has received funding on select projects with the RCMP, the Insurance Corporation of British Columbia (ICBC), TransLink, the Province of British Columbia, and the Government of Canada through funding programs and grants. It is noted that the Province has provided funding programs such as Local Motion and the Cycling Infrastructure Partnership Program (CIPP) to support municipalities implementing cycling infrastructure and programs. TransLink provides a cost-sharing initiative called the Bicycle Infrastructure Capital Cost Sharing (BICCS) Program to City of Surrey and other municipalities in Metro Vancouver. Where cycling projects cross adjacent jurisdictions, cost-sharing initiatives have been applied to reduce the cost for both parties.

Goal #4: Strategic Directions

Policy integration with the Transportation Strategic Plan (TSP) was a key component in the development of the Cycling Plan. The City identifies key connections between these two documents using a table that links action items from the Cycling Plan to key principles in the TSP. It is important to the City that these documents reflect shared priorities to ensure that cycling infrastructure and programs work together to support broader transportation objectives. An objective of the Cycling Plan is to integrate cycling into other municipal plans and documents as well. The intent is to promote cycling internally, highlighting its relationship with other divisions and departments within the City. One example includes the addition of cycling facilities and end-of-trip facilities into the sustainability checklists for new developments. Another example includes partnering with other City divisions to ensure that cycling is considered in the development of new design guidelines, standards, policies, and municipal documents.

By promoting cycling to multiple internal divisions, the City of Surrey will be able to improve the priority and relevance of cycling projects among municipal staff. The Cycling Plan identifies six key performance indicators to measure the “availability of and accessibility to cycling in Surrey.” The indicators were selected because they are manageable and measurable, providing clear connection to key objectives throughout the plan. The indicators cover the implementation of infrastructure, end-of-trip facilities, demographic profiles of people cycling, mode share, and outreach programs. It should be noted that the City continues to measure cycling volume using cycling counts and will explore new ways to apply this data collection method. This includes reevaluating locations and times of bicycle counts to measure bike volume at its peak.

Goal #5: Establish Public Buy-in

The Cycling Plan identifies several outreach strategies to encourage residents to bike. This includes action items to improve public awareness of new cycling projects using promotional campaigns and updating the City’s cycling webpage. It also recommends developing promotional videos about the cycling network and newly completed routes for conferences and public meetings. The City participates in annual cycling campaigns such as Bike to Work Week and Bike Month to encourage commuter cycling.

The Cycling Plan also notes that improving cycling safety is a priority to the City and has identified several education strategies. Action items include developing education campaigns for people about rules of the road as they relate to cycling, and campaigns that help motorists understand how to share the roadway with cyclists. There is also interest in creating an outreach strategy to encourage the “Interested but Concerned” cycling demographic to bike on local cycling routes. The City partners with the RCMP, BIAs, and local school boards to implement these outreach strategies. Additionally, the City offers a Safe and Active School Program that provides funding on cycling safety courses for elementary school children within the City. It also works with school boards and BIAs to provide more bicycle parking.

District of North Vancouver, British Columbia

Overview

To increase its adoption of cycling, the District of North Vancouver has taken decisive action to implement supportive programs and infrastructure. Cycling network implementation plans and programs are described in the District of North Vancouver Bicycle Master Plan, originally adopted in 2012. The plan was jointly applied within District of North Vancouver and its neighboring municipality, the City of North Vancouver. All initiatives listed within the Plan are envisioned over a 10-year horizon. Given the plan's limitations and the top-down governance structure of the Vancouver Region, selective plans adopted by North Vancouver's upper-tier agencies were also reviewed. This includes Translink's Regional Cycling Strategy Implementation Plan and the Regional Cycling Strategy for Metro Vancouver.

Goal #1: Align Design Guidelines

To inform the design of its cycling facilities, the District of North Vancouver defers to guidelines prescribed by the Transportation Association of Canada (TAC). The District also considers emerging practices in bicycle facility design to ensure its approach remains robust and readily innovative. To guide the development of its cycling network, the District of North Vancouver relies on a 5 stage-process. The steps include mapping existing conditions, identifying problem areas, prioritizing locations based on public input, modifying routes based on public input and preparing a final cycling network.

Recognizing the dynamism of cycling trends and behaviour in its jurisdiction, the District routinely evaluates its network through a two-phased evaluation process. This includes a preliminary phase of re-identifying priorities for the District's cycling network and reevaluating the merit of each expansion project accordingly. Following the evaluation process, the District assesses the project's merit using a matrix combining qualitative and quantitative suitability criteria. Based on the suitability score output, all projects are identified as "low" and "high" priority and scheduled for implementation accordingly.

Goal #2: Integrate Cycling Trends

To understand cycling trends and behaviour within its jurisdiction, the District of North Vancouver administers a comprehensive bicycling monitoring scheme. It involves measuring traffic along all cycling facilities during both peak- and off-seasons, to enable more complete comparisons in the future. Supplementary to these counts, the District cross-references applicable data provided by Translink and the national census. Key trends monitored include cycling mode share for short trips (less than 8 km) and the number of municipal-wide accidents involving cyclists. Another notable performance metric is cyclist satisfaction that is collected through an online survey administered at regular intervals. To inform better planning practices, Metro Vancouver has adopted a gendered lens to evaluating its cycling network. This includes examining the portion of cycling trips made by women, within individual municipalities such as the District of North Vancouver. Furthermore, Metro Vancouver monitors the percentage of population within close access to cycling facilities deemed comfortable for users.

Goal #3: Support for Coordination

A carry-over from the preceding 2006 Master Cycling Plan was that the implementation of all cycling projects was determined based on implementation costs. Costing relied on a multitude of considerations including "order-of-magnitude" estimates, predicted municipal funding levels and cost-sharing opportunities. Recognizing that many of these predictors were no longer accurate during the development of the 2012 update, cost analysis now occurs on a rolling annual basis. This new approach to reviewing capital plans has been applied to the budgets of both the City and the District of North Vancouver. Ownership over the funding of cycling projects isn't clearly specified in either the Bicycle Master Plan or Regional Cycling Strategy for Metro Vancouver. Metro Vancouver's Bike Implementation Plan, however, does list both Metro Vancouver and Translink as key financial sponsors of cycling initiatives in the municipalities under its purview, which includes the District of North Vancouver.

The Cycling Plan notes that through the consultation process residents expressed a desire improve links to and end-of-trip facilities at regional transit stations. The City has noted that it will advocate for the implementation of a 'bike station' at regional transit hubs and incentivize bike shops and other amenities to open nearby. The objective is to establish a park and ride program that encourages cycling for the first- and last-mile instead of driving. Coordination with other City departments and TransLink is integral to the success of this initiative. One of the key objectives of the Cycling Plan is to 'enhance maintenance programs for cycling facilities.'

The City's ongoing practices includes reviewing cycling routes four times per year to identify key elements in need of repair, such as pot holes. Winter maintenance is not included in the existing practices because the City does not receive significant snowfall accumulation. The Cycling Plan proposes new strategies to improve the quality of cycling facilities such as requiring construction sites to clear debris and sediment that crosses into adjacent cycling facilities. The City also proposes increasing street sweeping on priority bike routes to improve the level of service to people cycling.

Although final phasing and costing are not included in the Cycling Plan, the City does identify sources of funding to assist with implementing action items in the plan. At the time of the Cycling Plan's adoption, the City's cycling fund accounted for 3% of the capital transportation budget. To extend these funds, cycling staff have and will continue to partner with pedestrian and transit projects to reduce capital costs of designing and constructing new infrastructure. The City has received funding on select projects with the RCMP, the Insurance Corporation of British Columbia (ICBC), TransLink, the Province of British Columbia, and the Government of Canada through funding programs and grants. It is noted that the Province has provided funding programs such as Local Motion and the Cycling Infrastructure Partnership Program (CIPP) to support municipalities implementing cycling infrastructure and programs. TransLink offers a cost-sharing initiative called the Bicycle Infrastructure Capital Cost Sharing (BICCS) Program to municipalities in Metro Vancouver. Where cycling projects cross adjacent jurisdictions, cost-sharing initiatives have been applied to reduce the cost for both parties.

Goal #4: Strategic Directions

A key goal of adopting the North Vancouver Bicycle Master Plan was to apply an approach that reflects evolving transportation priorities, such as inter-municipal travel. The document builds upon the guidance of the proceeding Bicycle Master Plan, implemented in 2006. The new Bicycle Master Plan articulates a vision of creating a network of on-road cycling facilities which offer connections to nearby municipalities and transit services. Other defining principles of its proposed cycling network include seamless integration between on- and off-road cycling facilities, accommodations for a wide range of bike types and users, access to key destinations, and effective crossing treatments.

It should be noted that the Bicycle Master Plan does not include prescriptive guidance or planning for off-road trail systems as part of its proposed cycling network due to concerns over their reliability and safety for cyclists.

Supplementary to building out its prescribed cycling network, the District of North Vancouver also seeks to make all streets more cycling friendly. Although beyond its jurisdictional powers, the District of North Vancouver has also advocated that its current zoning bylaw be updated to require additional provisions for bike parking for new developments.

Goal #5: Establish Public Buy-in

To achieve the public buy-in necessary to improve cycling mode share, the District of North Vancouver hosts a variety of promotional and education initiatives. These initiatives are not only targeted at existing and interested cyclists but motorists as well, to help promote safe interactions between the modes. Metro Vancouver also supports a variety of cycling education programs that are implemented in North Vancouver. These programs are delivered through Metro Vancouver's sponsorship of local cycling organizations like HUB Cycling, Better Environmentally Sound Transportation, Hub for Active School Travel, and Pedal Energy Development Alternatives. Through these partnerships, the District of North Vancouver hosts a collection of streetwise courses, newcomer bike host programs and bike lessons for youth in school.

City of Edmonton, Alberta

Overview

As Alberta's provincial capital, the City of Edmonton has taken considerable action to lead by example in the planning and implementation of cycling infrastructure. Foundational among these efforts is the Edmonton Bicycle Transportation Plan, which prescribes a series of programs, decision-making frameworks and a proposed cycling network to achieve its cycling vision. Though originally adopted in 2009, the document is currently under review with the scheduled release of its update for 2020.

Goal #1: Align Design Guidelines

Facility type selection is determined by the route's classification as part of either the connector or city-wide systems. Each classification has its own facility selection criteria and range of potential facility types. Shared facilities, such as advisory bike lanes and sharrows, are typically preferred within the connector system. Physically separated cycle tracks and in-boulevard facilities are generally preferred within the city-wide system. The City of Edmonton has prescribed its own design and construction standards related to cycling infrastructure, which are based on those adopted by the Transportation Association of Canada (TAC). This includes standards related to pavement markings, catch basin and grating design, hand railing heights and the design of on-road cycling facilities. Given the Edmonton's cold, snowy winters, a range of seasonal maintenance practices are also prescribed to enable cycling year-round. This includes snow clearing and storage of both the City's connector and city-wide cycling network with a protocol to prioritize higher trafficked routes. Regarding seasonal maintenance practices, the City schedules the routine maintenance of other related hazards within cycling

facilities such as gravel or sand pileups, overhanging vegetation and potholes.

Goal #2: Integrate Cycling Trends

The Edmonton Bicycle Transportation Plan is in the process of being updated to reflect changes in cycling behavior across the city. The City of Edmonton tailors its route selection process to its unique geographic landscape. This includes prioritizing cycling facilities along corridors with flatter terrain and ensuring access across notable bottlenecks, such as bridges. Although the City doesn't specify an exact framework for evaluating the success of implemented cycling facilities, its bike plan recommends the creation of various data tools to identify progressive cycling trends. Examples of potential data collection tools include an annually administered Bicycle User Survey, Household Transportation Surveys, and automatic bike counters along key cycling corridors.

Goal #3: Support for Coordination

To ensure the sustained operation of its cycling network, the City of Edmonton relies on a variety of funding sources and schemes. The most notable funding source identified is the City's annual budget, specifically that of its transportation department. Additionally, the City recommends leveraging new developments to finance new nearby cycling infrastructure projects, including on- and off-street facilities. Other funding sources listed in the Plan include local improvement programs, neighborhood rehabilitation programs, corporate sponsorships, and available grants from the Province of Alberta and the Government of Canada. To schedule the implementation of its proposed cycling network, every cycling facility is categorized in one of three sequential phases of

implementation. The first two phases include short- and mid-term projects which are envisioned within a horizon of 1 - 5 years and 5 - 10 years, respectively. All projects involving portions of the network with major constraints that may require coordination with other levels of government are then classified as Phase 3, which have no definitive timeline for implementation.

Goal #4: Strategic Directions

As part of its vision for cycling, the City of Edmonton lists a variety of principles and priorities. This includes a commitment to providing a cycling network that is functional, comprehensive and appealing to a range of ages and abilities. To develop its cycling vision, the City relies on a series of route selection criteria to evaluate each candidate expansion of its existing network. Notable examples include ensuring visibility within the broader transportation system, access and connectivity to notable destinations across Edmonton and providing a high level of service and comfort to people cycling. Additionally, the City also provides a network principle of equal geographic distribution that aspires to establish a cycling network that is within a 1.6 km distance of all residents. As an underlying planning framework, the City of Edmonton conceptualizes its cycling network as two systems: a city-wide system and a connector system. The city-wide system serves as the network's backbone, comprised of longer, higher trafficked routes that provide direct access between key travel destinations. Alternatively, the connector system consists of more localized, circuitous facilities that possess broader coverage and feed into the city-wide network. Each system has its own respective planning considerations, and the framework enables practitioners to better tailor facilities to their individual contexts. Facilities built along neighborhood

streets, for example, are classified as part of the connector system to ensure greater consideration of their surrounding environment.

One notable legislative effort coordinated through the City's Cycling Master Plan is a modification to an existing bylaw. The bylaw now requires the implementation of end-of-trip cycling facilities (such as bike parking) as a condition to providing permits for new and renovated developments. The City of Edmonton also strives to ensure consistent legislation regarding cycling without a helmet among its neighboring municipalities. Finally, the City has advocated that the Province of Alberta modify its Highway Traffic Act to prohibit the opening of a car door when obstructing a cyclist's path of travel to protect cyclists from potential "dooring".

Goal #5: Establish Public Buy-in

To establish public support and cycling adoption, the City of Edmonton relies on an extensive set of programs and initiatives. These programs are informed by and delivered through strategic partnerships with local institutions and cycling support groups. This includes local school boards and local police force, which facilitate City sponsored bike-to-school workshops and improved enforcement of cycling facilities, respectively. To coordinate this effort among others that promote cycling within the local community, the City relies on a recurrent Bike Ambassador Program that is comprised of enthusiastic volunteers. The City also sponsors annual festivals and events that celebrate cycling, such as Bike Month, Bike to Work Week and the local Bikeology Festival.

The following is a summary of the key outcomes for each of the municipalities that were reviewed and some applicable best practices for consideration by Durham Region.

York Region

The York Region Transportation Master Plan (2016) provides a flexible blueprint to the implementation of a regional cycling network. Although the final network is planned for completion by 2041, the TMP identifies priority projects that should be accelerated for short-term implementation in the first ten years. Prioritization of the 'Strategic Cycling Network' will serve as a spine for future corridors, permitting residents to travel on key corridors to important destinations. As a two-tiered municipality, York Region recognizes that the implementation of its network relies heavily on coordination and consultation with its local municipalities. The TMP identifies policy changes that may improve collaboration between these parties and ensure that cycling infrastructure is properly maintained once it is implemented. The Region has also created municipal partner programs that incentivizes its local municipalities to design and construct cycling facilities on regional roads. These strategies may be applicable in other two-tiered municipalities to encourage partnership between the different levels of government.

Halton Region

Halton Region provides a valuable precedent within the planning and implementation of cycling infrastructure and programs. One key takeaway of the municipality's approach is its use of municipal bylaws to strategically support aspects of its cycling vision. This includes prohibiting dooring and improper passing of cyclists as well as enabling the implementation of contra-flow bicycle lanes in urban areas. Notably, bylaws were not only implemented by the Region but among its comprising local municipalities. Another key takeaway is the Region's role in piloting new cycling facilities within its local municipalities. Pilot projects allow new innovative facilities otherwise too legislatively prohibitive for local municipalities to be implemented as part of the evolving regional cycling network. Halton Region's consultation of nearby indigenous communities in developing its ATMP is another notable measure, as a laudable effort in our commitment to proper truth and reconciliation.

Peel Region

Overall, Peel Region provides valuable insights that can serve to inform the development of Durham Region's approach to cycling planning. Most noteworthy of the case study is its approach of funding small-scale cycling initiatives, supplementary to annual budgeted allocation. This strategy ensures a more robust delivery of cycling infrastructure consisting of both a central network and wide range of supportive amenities. The use of a DIY approach may also yield greater public-buy-in, as a more participatory approach to implementing the Region's planned cycling infrastructure. Another take away of this case study is its consideration of crowd-sourced mobile data within its approach to planning and evaluating cycling facilities. Using apps like Strava are not only more cost efficient but offer a greater understanding of evolving cycling travel trends and behaviors.

County of Essex

The County of Essex offers several valuable lessons in the planning and implementation of cycling facilities and programs. One noteworthy component is the County's commitment to reviewing its cycling implementation strategy on an annual basis. The resultant benefit is greater adaptability to unanticipated trends in cyclist's behavior. This includes the emergence of new modes of micro-mobility and other emerging technologies. Equally notable is the County's use of Community-Based Social Marketing (CBSM) to increase its public's buy-in of cycling programs. This represents a far more methodical approach to initiatives promotional of cycling that are more likely to optimize their success rate. Finally, the County's use of estimated per kilometer cost metrics for different cycling facilities offers a measurable and fiscally responsible approach to planning new facilities.

Niagara Region

Overall, Niagara Region provides a noteworthy case study for achieving meaningful connectivity within the planning of a regional cycling network. The Region's approach to constructing cycling facilities through standalone projects and as part of its road capital program offers a valuable implementation strategy to other municipalities. Another notable aspect of Niagara Region's approach is its consideration for emerging technologies in micro-mobility.

City of Mississauga

The City of Mississauga provides a useful precedent to inform cycling planning and implementation activities. One notable takeaway is the City's versatile usage of a mobile application to both inform and disseminate information about its cycling network. Given the widespread digitization of information, the City's strategy serves as a valuable approach to maximize engagement and monitor current trends. Another notable aspect of Mississauga's approach is that it advocates for permission to implement new cycling facilities through the Ontario Highway Traffic Act. Though specifically for mid-block crossings, this example is a reminder of a municipality's ability to request the adoption of novel approaches to cycling infrastructure that better suit their contexts.

City of Surrey, British Columbia

The City of Surrey Cycling Plan establishes a clear direction for cycling infrastructure and programs that work to support other municipal plans and documents. Action items within the Cycling Plan support broader transportation objectives in the City's Transportation Strategic Plan and identify other municipal documents where cycling elements should be added. This includes the addition of cycling facilities into the City's roadway design standards and supporting guidelines. The City intends to be more collaborative internally and with external partners and neighbouring jurisdictions. The Cycling Plan recognizes that the education is key to encouraging residents to bike on the cycling network and do so safely. The City has and will continue to support local school boards to educate students on safe cycling through the Safe and Active School Programs. Future promotional campaigns on new capital works projects and cycling program will remind residents of Surrey expanding cycling network. The Cycling Plan identifies measurable performance indicators that may be used to monitor the success of an implemented action items, which may be of use in future updates to the plan.

District of North Vancouver, British Columbia

Overall the District of North Vancouver is a useful case study involving approaches to cycling planning and implementation. While not administered by the District directly, reporting on the gendered makeup of its cyclists offers a more detailed insight on how cycling is being adopted and how it should be improved. Similarly, the District's evaluation of its cycling facilities based on comfort and quantitative metrics offers a holistic explanation on how to increase cycling adoption. Finally, the District's decision to exclude trail systems from its proposed cycling network demonstrates a more nuanced approach to active transportation planning that better distinguishes the facility needs of pedestrians and cyclists. It should be noted that this approach may not be feasible for other municipalities whose cycling networks may offer limited access, connectivity and coverage without the inclusion of off-road trails.

City of Edmonton, Alberta

The City of Edmonton offers useful precedent to inform cycling planning and implementation. One noteworthy aspect is the City's conceptualization of its cycling network as two separate systems: a connector system and a city-wide system. The City's approach offers a robust framework where individual cycling facilities are tailored to conditions of their local context while still supporting an overarching cycling network. Another key takeaway of Edmonton's approach is its use of separate legislative tools that support the implementation of its cycling network. This includes modifying its zoning bylaw to require end-of-trip cycling facilities within new developments and advocating for new provincial legislation against dooring. Finally, the City of Edmonton notably sets a measurable target to evaluate the coverage of its cycling network, with a goal of ensuring all residents are within 1.6km of a cycling facility

3.2.2 Best Practices in the Durham Context

A significant amount of information has been generated from the best practices scan and review. While the information is helpful, it is important to ensure that the critical information is consolidated and preliminary recommendations are identified. 10 preliminary best practice-based recommendations have been identified for Durham Region. These recommendations provide insightful strategies to improve the planning, design, implementation, monitoring, and promotion of the regional cycling master plan. While each recommendation is summarized below, additional information is provided in the community profile of each municipality as indicated.

Cost Sharing Structure

Best Practice Location:

York Region and County of Essex, Ontario

To ensure components of the cycling network are properly funded and subsequently implemented, it is recommended that Durham Region explore the development of cost-sharing partnership programs with its local municipalities. This may include funding pools accessible to local municipalities for the design and construction of new cycling facilities, especially on strategic segments of the regional cycling network. For example, the York Region offers a cost-sharing program to local municipalities whereby the Region may provide up to 50% of the design and construction costs for new cycling infrastructure led by local municipalities on regional roads.

Prioritized Implementation

Best Practice Location:

York Region, Ontario

To accelerate the provision of key cycling routes, it is recommended that Durham Region explore the development of a 'strategic cycling network' that identifies essential on-road and off-road connections within the municipality that are phased for short-term implementation. This phasing approach ensures that the long-term build-out of the cycling network commences with, rather than strives to achieve, a high degree of coverage and connectivity.

Regional Pilots of New Infrastructure

Best Practice Location:

Halton Region, Ontario

To encourage implementation of innovative design solutions and new facilities in local cycling networks, it is recommended that Durham Region consider piloting new cycling facility designs that may be suitable for implementation by its local municipalities. This sets precedence for local municipalities to implement similar designs that may have been otherwise too expensive or politically contentious to implement alone. As a result, the regional cycling network can incorporate a wider range of facility types that improve its overall connectivity and comfort for users.

Regional Funding of Programming

Best Practice Location:

Peel Region

To enable a more robust extent of cycling supportive programs, it is recommended that Durham Region consider dedicating ongoing funding towards educational and promotional outreach programs organized by external partners (e.g. school boards, advocacy groups). Both financial commitments as well as time spent by regional staff as a commitment of partnership can have equal impacts.

Utilizing CBSM for Outreach

Best Practice Location:

County of Essex

To design a more effective public outreach strategy, it is recommended that Durham Region consider applying the Community Based Social Marketing (CBSM) approach. Relying on principles of behavioral science, a CBSM approach involves initiatives that shift behaviors rather than accommodate existing ones.

Accordingly, they should involve a pairing of both incentives and disincentives and solicit a commitment from the public to secure their engagement. For cycling, CBSM strategies may involve offering rebates to those who cycle to work, raising fees on motor vehicle parking, and inviting commuters to commit to bike to work once every month.

Crowd Sourcing Data for Evaluation

Best Practice Location:

City of Mississauga

As a requisite of improved planning practice, it is recommended that Durham Region leverage crowd-sourced data to both plan and evaluate cycling facilities.

This includes the analysis of crowd-sourced cycling trip data collected by private entities, such as Strava, that offer a more accurate and cost-effective means of assessing current cycling trends compared to bike counts alone.

Stand alone Cycling Projects

Best Practice Location:

Niagara Region

To provide key linkages within the proposed cycling network, it is recommended that Durham Region explore the feasibility of implementing important on-road cycling routes in advance of capital works projects. Although coordination is a cost-effective strategy for implementing most new cycling infrastructure, capital works projects scheduled in the long-term may defer the construction of important cycling routes that could attract new cyclists and improve safety. This requires identifying priority routes that warrant advancement of capital works programs. The Region may also choose to design interim facility designs, such as physically separated bike lanes, that do not require resurfacing or construction that can be upgraded in alignment with scheduled roadway reconstruction in the future.

Collaboration with internal stakeholders

Best Practice Location:

City of Surrey

To promote cycling more holistically, it is recommended that Durham Region engage with internal stakeholders to improve the adoption of cycling supportive strategies in other areas outside of transportation. Engaging with other departments and divisions ensure that cyclists are considered in the development of programs and policies throughout the region. For example, the City of Surrey proposes the addition of bike parking and other end-of-trip facilities be included in the checklist for new development applications.

The information gathered as part of the best practices review will be reviewed and considered by key stakeholders and staff and a strengths, weaknesses, opportunities and threats review will be completed to determine their applicability within the RCPU.

Should all of these strategies be recommended for implementation, the timeline would be reviewed and confirmed based on available budget and staff availability. This also applies to external stakeholders including local area municipalities, school board representatives, other technical agencies and interest groups. Buy-in is needed and necessary to ensure that these strategies are viable prior to implementation and that there is clarity around roles and responsibilities, timeline and approach.

Within Phase 2 many of these strategies will be reviewed and considered as part of the RCPU implementation plan and the supportive strategies including but not limited to funding strategies, phasing and infrastructure priorities, programming and outreach and partnerships / collaboration.

These are the alternatives from which preferred options will be selected.

3.3 Foundation #3: Stakeholder Interviews

The third foundation of the RCPU is likely the most important. A set of interviews with critical stakeholders were hosted by the consultant team with Regional, Municipal and external stakeholders. Hearing about the experiences of the individuals who have worked with the previous regional cycling plan and in some cases helped to develop and implement the 2012 RCP is foundational to understanding why it should be improved and how it can be enhanced to become a more effective tool for decision makers, staff and stakeholders. The intent of the interviews was to gain a stronger understanding of the successes, challenges and opportunities associated with both the 2012 RCP as well as the 2020 RCPU. More specifically, the interviews were held to:

- Gain a clear understanding of how those most familiar and most impacted by the original RCP are making use of that document
- Identify new and emerging best practices easily replicable across Durham Region
- Highlight where the Region and local partners have displayed leadership
- Identify priority gaps within the original RCP
- Identify preferred outcomes and solutions to address gaps within the RCPU.

The project team worked together with Regional staff to develop a long list of potential stakeholders to contact. Following the development of the long list, the project team developed a confidential shortlist of stakeholders to contact. Stakeholders were contacted via email and provided the option to participate in a video or telephone interview, or to complete an online survey that contained the same questions as the interviews. In total, 14 interviews were completed with a total of 20 stakeholders, and 3 online responses were received. All responses were kept confidential to ensure that responses were candid and honest. Regardless of a stakeholders' area of expertise or what department, municipality or stakeholder group they represented, each interviewee was asked every question throughout the course of the interview in the same order. Interviewers only asked additional questions to seek clarification. Notes were kept during each interview, and all interviews were recorded for accuracy. All interviewees were sent the notes from their interview in written form in order for them to review and provide any additionally clarifying remarks.

Questions asked of stakeholders...

1. How would you describe your agency's involvement with the 2012 Regional Cycling Plan? How was the 2012 RCP Helpful in your community? What aspects could be improved for your agency?
2. What type of implementation supports have been extended to your agency because of the 2012 RCP? What types of supports would you like to see in the RCP Update?
3. What new projects, policies or plans have come into force in your community since the 2012 RCP? How can the RCP Update best integrate with those projects?
4. In your mind, what should be the priority for the RCP Update at the regional level? What about within your municipality?
5. Do you have any examples of best practices in terms of planning, infrastructure design, program delivery or policy implementation that you feel would be beneficial to incorporate into the RCP Update?
6. In terms of Active Transportation in Durham Region, where has the Region provided clear examples of leadership and best practices since 2012? Where have local municipalities or other stakeholders provided that leadership?
7. What types of tools do you believe are necessary to ensure a successful RCP Update? Who should take the lead on developing those tools?
8. What would you say was the most successful element of the 2012 RCP? How can we strengthen that in the RCP Update?
9. If you had to choose one single "ingredient" that was either missing or underdeveloped in the 2012 RCP, what would that be? How can the Region best address that deficiency in this update?
10. Is there anything you would like to add for the consideration of the RCPU?

All interviewees were assured that responses would be held in confidence, and that all identifying remarks would be removed. Interview notes have been maintained by the project team but will not be shared with Regional Staff or external stakeholders without the express consent of the interviewee, and the redaction and removal of any and all identifying information.

3.3.1 Trends & Recommendations

The interviews yielded a large amount of important information. For the purpose of this summary, we will present the results of the interviews as a traditional SWOT Analysis – Strengths, Weaknesses, Opportunities and Threats to future successes, along with subsequent recommendations that should be considered as the RCPU moves forward. A high-level summary of the key themes is provided below.

Strengths

- Creation of DATC
- Collaboration between Durham region and the local area municipalities
- Funding support from external agencies and supports
- Implementation and use of the paved shoulder policy

Weaknesses

- Lack of dedicated funding for stand alone cycling projects
- Emphasis on long-term projects which may not come to fruition
- Lack of consistent branding for cycling throughout the Region

Opportunities

- Provide cost-sharing program to coordinate finances between the Region and local area municipalities
- Identify signature projects for investment
- Enhance public and stakeholder communication and education

Threats

- The prevalence and location of major barriers e.g. provincial highways
- Jurisdictional challenges and the continuity of cycling routes
- Inconsistent facility design application throughout the Region including Regional roads and local municipal roads
- Lack of clarity in direction may lead to varying interpretation at a staff level, resulting in inconsistent approaches

The input gathered from the interviews will help to shape the selection of the cycling specific strategies in Phase 2.

A detailed overview of the input received is provided on the following page.

Strengths

Interviewees were generally fairly positive in their assessment of the Region's recent initiatives to support cycling. The interviews showed that the original RCP was being utilized across Durham Region, and that some of the more recent developments spearheaded by the Region are having a positive impact. Strengths that were identified and that could also be improved in the RCPU include:

- The creation of the Durham Region Active Transportation Committee and its use as a region-wide platform for conversations about active transportation issues. The growing sense of collaboration that is emerging from this committee is positioning Durham Region and its local municipal partners well to ensure that the RCP Update is implemented effectively once it is approved.
- The Regional Funding Formula has resulted in some successes in the construction of new on and off-road cycling infrastructure. The Region's new paved shoulder policy is also an example of an area where Regional leadership is resulting in a higher level of safety for people on bikes as they travel throughout Durham Region.
- The network as identified in the original RCP has ensured that whenever a road on the RCP comes up for capital works, cycling and active transportation are taken into consideration and funds are made available to ensure the successful implementation.
- The creation of the network in the 2012 RCP resulted in support from higher levels of government, including funding support through the Ontario Municipal Commuter Cycling Program (OMCC).
- The Short-Term Cycling component of the PNC, which was identified in the Transportation Master Plan Update, provides an effective starting point for this update and should be funded to ensure the creation of a complete network in the near term.
- The nascent Cycle Durham Communications Strategy is showing promise and should be expanded to provide more communications resources to local municipal partners.
- Smart Commute Programs have been effective at encouraging behaviour change, particularly within workplaces. The Smart Commute program has provided a good "foot in the door" for new encouragement and education efforts, more behaviour change within the Region through expanded programs should be pursued.
- Durham Region's Vision Zero Strategy has been a success, even in its early stages. This broad-reaching Strategy features many areas that focus on cycling safety and should be connected to the overall goals of the RCP Update.
- Integration of cycling into Durham Transit – the installation of secure bike parking at popular Durham Regional Transit stops has helped to facilitate additional multi-modal connectivity in the Region. This serves as an example for further integration with both DRT and GO Transit all across Durham Region.

Weaknesses

The primary weakness identified by multiple stakeholders over the course of the interviews was the lack of dedicated funding to complete standalone cycling projects across the Region. The implementation process, which has been focused on adding infrastructure when roads are widened in the Region, has resulted in relatively good numbers of new lane kilometres of cycling infrastructure being constructed, but the connectivity of those assets is lacking by virtue of the capital priorities that have been advanced.

“It needs to be OK to build something for people on bikes in Durham independent of the needs of cars. Right now, we only build cycling infrastructure if we’re widening or rebuilding a road or if there is money from someone else. We haven’t done an exclusive cycling infrastructure project in Durham Region yet. It doesn’t have to be a huge amount, but we need to be able to do infill or infrastructure projects.” (Regional)

The lack of connectivity and the Region’s inability to close gaps by completing standalone projects, notwithstanding the projects funded through the OMCC, was identified by nearly every stakeholder as a weakness in the original RCP that has resulted in lower uptake of cycling in Durham.

In addition to the lack of resources to connect infrastructure, several stakeholders also identified the long timelines for implementation for a complete, robust network as a weakness when it comes to the 2012 RCP.

The plan was described by one stakeholder as a “back-end loaded plan”, referencing the relatively large number of projects that were identified to be completed in the long-term timeframe, resulting in a fractious, incomplete network for a long period of time within the Region. The creation of the PCN within the TMP seems to be a step towards recognizing both this weakness and the weakness identified above and shows a recognition of the importance of a connected network to maximize the value of the Region’s cycling investments.

“We need a clear implementation plan that lays out a 5-year program to get the big network gaps filled. Those gaps are the things causing our network to not be used as well – so we need that implementation plan that is held to fairly tightly.” (Municipal)

Another key concern identified by several regional and municipal stakeholders is the perception that the 2012 RCP served as a ceiling in terms of what the cycling network in Durham Region could look like rather than the floor, and that the ceiling was sometimes being lowered as projects were found not to be feasible or cost-effective, without considerations being made for identifying, funding and implementing alternative routes. Several stakeholders identified instances where sections of road were identified as being constrained, so new cycling infrastructure was not added, but while it seemed like projects could be removed from the RCP when there was good cause to do so (cost, property constraints etc.), adding projects for an equally good cause was seen as all but impossible.

“We find that the RCP has been used as a tool for saying “no” a few times – we have come to the Region with projects on Regional Roads, and we are told that if the project isn’t on the RCP, we’re told they don’t have support.” (Municipal)

In particular, several of the municipal stakeholders expressed dismay about instances where a corridor was deemed “unsuitable” for new cycling infrastructure, so the cycling infrastructure along that corridor simply ends with no provision for safety. In some instances, detours were identified to take people on bikes around the hazardous area, but those routes often fell on municipal roads, and there was no additional support provided to municipalities who were now responsible for implementing infrastructure that helps to create the Primary Cycling Network. Stakeholders identified the need for the RCP Update to have an element of flexibility built into it to ensure that cycling is considered in all projects moving forward, especially when sections have to be removed from the original plan.

“We can’t let perfect be the enemy of the good. We should be trying to do something for people on bikes in every project.” (Regional)

The original RCP’s failure to adequately integrate the on-road cycling network with the Region’s existing and planned off-road trails was identified by several stakeholders as an additional weakness to the plan. When it comes to creating a connected network of cycling infrastructure, particularly one that caters to an “All Ages and Abilities” audience, the importance of high-quality off-road trails is difficult to overstate.

While trails alone will not create the type of network that will facilitate commuting and utilitarian cycling, trails can serve as an important connection, especially when paired with high quality on-road cycling infrastructure. The RCP Update should consider how the Regions on and off-road cycling infrastructure can be better connected to form a more cohesive, effective cycling network.

- The lack of a consistent “brand” for cycling in Durham Region was identified by several stakeholders as a weakness of the original RCP. While the Region has been making progress towards remedying that situation with its Cycle Durham brand and strategy, many stakeholder still did not feel connected to those efforts. There was a desire to see the Cycle Durham Brand made more potent by engaging in a wayfinding and signage strategy to align all of the routes within Durham Region under one visual identity and also by creating a more robust communications and social marketing campaign around the Cycle Durham brand.
- Several stakeholders felt that the original RCP and its implementation did not place enough focus and emphasis on major trip generators within Durham Region.

“We should be looking at how we can do more around the GO Stations and around the Ontario Tech University campuses – those are the strongest potential uses.” (Regional)

As the Region moves forward with the implementation of its PCN, there should be an explicit focus on creating All Ages and Abilities cycling infrastructure that connects the areas immediately adjacent to major trip generators like transit hubs, post-secondary institutions, commercial areas, schools and major employment centres to help facilitate more multi-modal transportation.

Opportunities

The interviews provided several examples of areas where the RCP Update can improve upon the original RCP and help to create a stronger culture of cycling within Durham Region. By thoughtfully engaging with these opportunities, Durham Region can position themselves as a leader in regional support for active transportation and cycling in Ontario. The following is a detailed overview of some of the opportunities that emerged through the interview sessions.

Physical Infrastructure and Network Development Opportunities

The Region requires a review the funding formula for projects along Regional Roads. Most stakeholders, whether they represented municipalities, regional departments or external stakeholders, identified the funding formula as a significant barrier to implementation of high-quality cycling infrastructure along Regional roads. Since the 2012 RCP, the design standards for cycling infrastructure have evolved substantially in Ontario. While an on-road bike lane may have been considered an appropriate treatment in 2012 for a regional road with higher speeds and vehicular volumes, it is now recognized that on most regional roads an element of physical separation is required to encourage cycling. That shift towards a higher level of protection often comes in the form of multi-use trails in the boulevard adjacent to the roadway, which moves the burden of paying for the infrastructure away from the Region and (partially) onto the local municipalities. Moving forward, it is strongly recommended that the Region take full responsibility for implementing new cycling infrastructure identified on the RCP along all regional roads. This eliminates the risk that a project will not be able to be completed due to lack of local

capacity and displays leadership on the Region's behalf. It should be noted that such a change would also bring Durham Region in line with the practices of other GTHA Regional Municipalities, including Peel, Halton and York Regions, where the full cost of implementation of cycling infrastructure along Regional Roads is borne by the Region, regardless of whether that infrastructure falls on the road surface or above the curb within the right of way.

Building on the previous point, the Region should also consider the implications of creating a network that is "jurisdictionally agnostic".

We also need an updated cost sharing program and consistent standards and policies to look to the region to set the standards. The user doesn't understand or care whose jurisdiction a road is – if the standards change when they cross an urban boundary, that's frustrating. "(Stakeholder)

To build a network that is truly regional in scope and scale, Durham Region may need to rely on municipal partners to develop new cycling infrastructure, particularly in areas where regional roads are constrained, or where other barriers exist to implementing safe infrastructure on a regional facility. When this is the case, the Region should consider incentivizing the construction of safe cycling infrastructure by providing a cost-sharing program for municipal cycling infrastructure that forms part of the Regional Cycling Network.

While this represents a significant shift in how existing projects have been funded, it also displays leadership and has the potential to help get the Region's short-term cycling network constructed in a much shorter time frame. Ensure that all projects that are funded through this partnership meet or exceed the design standards laid out by the Region to ensure that the regional cycling network is truly an all ages and abilities network.

“The RCP should base its network on what makes the most sense, not necessarily which roads are owned by the Region. So, we would like you to bring that non-jurisdictional view to the plan.” Regional Stakeholder

One of the opportunities presented by both reviewing the funding model and providing additional support for local municipal projects that align with the Region's vision is the creation of a signature cycling project.

“A signature project can give communities something to rally behind. They give people a real goal to work towards and get a lot of public attention. It's a good news story, builds partnerships and brings new stakeholders to the table. “(Regional)

As the RCP moves towards implementation, consider identifying a signature project or route that can help to rally support and show the impact of the RCP Update. Accelerate the implementation of this route by dedicating funding towards standalone projects and municipal partnerships that can help to ensure its completion in the short term.

The RCP can also serve as an opportunity to reset the Region's Transportation priorities, especially in the existing built-up urban environments. Several municipal stakeholders identified the challenges associated with implementing cycling infrastructure on regional roads in corridors where the right of way is too constrained to facilitate road widening. In those instances, the perception was that cycling infrastructure wouldn't even be considered, because new cycling infrastructure is only being added when roads are being widened during their reconstructions.

In some situations, especially in built up urban environments where the potential demand for cycling is strongest, the Region should be receptive to the idea of repurposing road space to create safe space for people cycling. The requirement that a road be widened in order for cycling infrastructure to be added makes sense in many of the rapidly growing, low-density areas of Durham Region, but it is a significant barrier to the development of an effective cycling network in some of the Region's denser urban areas.

As was mentioned in the “weaknesses” section, a lack of effective integration between active transportation and public transit was seen by many stakeholders as a missed opportunity in the implementation of the original RCP. With most of the parking lots at GO rail Stations in Durham Region already at capacity, there is an urgent need to rethink how residents are getting to those higher order transit hubs. By creating safe infrastructure to help people walk or bike to the GO Stations and to Durham Regional Transit hubs, the Region can help to alleviate parking demand, boost ridership on those key transit links and reduce auto dependency in the Region. These infrastructure investments should be a chief priority for the Region to help create a more multimodal region.

Developing a stronger suite of Asset Management and Life Cycle Costing tools for cycling and active transportation infrastructure may help to increase political and financial support for these investments. Consider including those elements within the RCP Update.

Social Infrastructure Development Opportunities

The remaining opportunities all follow from the general concept, as expressed by one local stakeholder, that “This plan needs to be more than just a network development tool.” Many stakeholders identified the need to focus on “the promotion and education side – the ‘soft side’ of the cycling plan,” as the RCP Update is developed. “The original plan only focused on engineering” (Regional Stakeholder). A theme that emerged from many of the interviews was the need to centre this plan on the people it aims to serve. Of course, the first step in that process is clearly defining and identifying the audience for the plan.

“The original plan wasn’t centred on people. Whether its Olympians wondering where they can train or kindergarteners looking for a place to learn to ride, we didn’t centre that plan on people. We need to centre the update on our users.” (Stakeholder)

Those sentiments were echoed by another local stakeholder who emphasized that the RCPU should

“Show more diverse representation and imagery of cycling as a utilitarian transportation choice used by all types of people – a lot of people here still view cycling as an expensive sport or recreational activity, not a form of transport, which is why I think it doesn’t get taken as seriously a lot of the time.” (Stakeholder)

Stakeholders felt that the needs of many key demographics – particularly children, seniors and new Canadians, were not explicitly discussed in the original RCP, which resulted in infrastructure and programs that did not cater to them or make them feel that cycling was “for” them. As the RCP Update moves forward, it is important for the Plan to clearly identify who it aims to serve and develop tactics to engage them both in the development of the plan, and in the implementation of the various aspects of it.

An emerging best practice in the development of cycling plans is a more explicit focus on behaviour change programs. Most stakeholders interviewed identified the expansion of behaviour change programs as a key opportunity for improvement in Durham Region. In particular, stakeholders identified the need for the Region to develop a more robust suite of tools and tactics that can be deployed and adapted by local municipalities, and the need for the Region to have a strategy in place to fund some of the activities undertaken by their partners and external stakeholders.

“The subsequent campaign following up – the ongoing promotion and engagement of the plan with the public at large – celebrating achievements, continuing implementation and engagement, is something that is very important to the success of the update. The new plan should have an ongoing engagement strategy embedded within it.” (Local)

Stakeholders identified the need for a more deliberate strategy to engage a more diverse set of communities within Durham Region. While local stakeholders expressed a desire to bring more events and promotions to lower-income communities, communities with a high proportion of new Canadians and more, they also identified a lack of resources internally to be able to create the necessary tools to bring those programs to life. The Region could play a leadership role by creating the necessary elements for community events, including creating Bike Rodeo “toolkits” which local municipalities could sign out, developing guidelines around community rides, providing additional supports for events like Bike To Work Day across the Region and establishing a small scale community grants program to help local organizations to deliver cycling related programs to their communities.

One of the opportunities that arose in virtually all interviews was the opportunity presented by enhancing communication about the RCP Update – both internally with stakeholders and externally to the general public. There was a sense among interviewees that the development and implementation of the original RCP was largely done by the Region itself, with very little outreach or input from their stakeholders. While there has been more collaboration and communication in recent years, stakeholders still expressed a desire to see stronger communication efforts by the Region to

connect the objectives of the RCP Update with the broader goals of local municipalities and the general public. The Region should consider the creation of a communications plan for the RCPU once it is completed, focused both on communicating with key stakeholders and enhancing communication with residents.

The RCPU should have a more explicit focus on connecting with schools in Durham Region. Regional routes around schools should be prioritized for safe infrastructure, Active and Safe Routes to School Programs should be expanded across the Region, and a bike parking partnership program should be struck with the school boards to make safe, secure bike and scooter parking more readily available on school sites. School board stakeholders identified growing congestion as a major concern around their school sites, highlighting the need for aggressive interventions to begin shifting travel behaviours for students in the Region. Data collection was identified as another opportunity for the Region of Durham. In recent years, a higher number of stakeholders have begun collecting data about cycling uptake, cycling safety and more. Consider consolidating that information into one central dashboard, providing local stakeholders with guidelines for collecting and reporting data, and then communicate those results each year to enhance transparency regarding the success of the Region’s cycling programs.

Further on the topic of communications and transparency, the Region should clearly outline the priorities as part of the 5-year short-term cycling network implementation and report annually on the progress being made. The Region should aspire to provide full transparency regarding the completion of each aspect of the short-term plan and provide updates and information if there are unexpected delays or changes to the plan. This type of reporting will help members of the public to gain a better understanding of the overall goals of the RCP Update, and will contextualize the Region's investments in the broader context of developing a cycling network across the Region. All of the opportunities identified in this section would be most effectively addressed by the creation of a dedicated cycling staff position (or, ideally, a team of staff) within the Regional corporate structure.

Stakeholders identified the divide between Planning and Works as a barrier to implementation in some instances – the siloing that exists means that sometimes projects are not being done in coordination, which could be avoided by having a cycling team that is responsible for liaising with both Planning and works staff to ensure effective implementation. This team would also provide benefit to local stakeholders, some of whom expressed confusion about who they are supposed to talk to at the Region to help move a cycling project forward.

*“It’s not clear who “owns” the issue of cycling – managing it, promoting it, planning it and building the infrastructure. Improvement and clarification of a governance structure, including a Regional Cycling Coordinator to bring this plan to fruition and oversee it, would be one of the most impactful things we could do.”
(Regional)*

Threats

Two consistent threats to success emerged – pinch points and jurisdictional challenges. These took three general forms – barriers, infrastructure ownership and the impacts of previous decisions. These are explored below.

The impact of barriers resulting from provincial highways (400 series highways) was a theme that emerged in most interviews. The lack of safe cycling infrastructure on bridges spanning the 400 series highways creates networks that are discontinuous and disconnected, often separating many of the residential areas from the key destinations like GO Transit stations or commercial areas. These point gaps have a high cost associated with remedying them, and many projects may not come up for reconstruction or rehabilitation for a decade or more. These barriers are built in to the landscape of Durham Region and prevent the development of a continuous and connected system.

Other jurisdictional challenges relate to the way that infrastructure ownership is structured throughout Durham Region. While this chapter has already explored many of the concerns identified with the funding formula and the jurisdictional challenges associated with building multi-use paths on regional roads, another area that was identified by several stakeholders as a challenge was regional ownership of all signalized intersections.

Many existing pieces of infrastructure have been constructed without any intersection treatments, resulting in a network with the majority of collisions occurring where there are no accommodations for people cycling.

While this update will include more detailed guidance in terms of safe infrastructure design for people on bikes, there will also be a need to revisit past infrastructure choices to retrofit intersections to make them safer for people on bikes. The other threat that was identified by stakeholders throughout the course of the interviews was the impact of previous decisions on the Region's ability to develop a connected and safe cycling network. Several examples were provided with the most frequent one being the Highway 2 corridor, which was seen as a piece of cycling infrastructure that does not conform with current design standards that will be used and applied to update the Region's PCN. In order to ensure that the Region's network accommodates a wider cross section of Durham residents, there may be a need to retrofit existing corridors to a higher standard. The strategy to date has been to undertake a project once and do it right. Retrofitting these corridors would represent a fairly significant shift in that focus, so it may require a considerable amount of effort to advocate for these changes.

In general, interviewees saw the original RCP as a strong foundation, especially regarding development of the cycling network within Durham. The advent of multi-use paths along regional roads as an emerging standard in Durham provides a higher level of safety and comfort for people cycling, but the lack of continuous routes means that those pathways aren't being used to their fullest extent. Moving forward, stakeholders hoped that the RCP Update would be an opportunity to refocus on some of the "soft" elements of building a bicycle friendly region and to build a higher degree of connectivity in the regional cycling network. Stakeholders identified myriad ways that the RCPU can adapt and respond to the emerging trends and demands within Durham Region, which will serve as a foundational set of ideas for the development of this update.

3.4 Phase 1 Report Conclusions and Next Steps

The information contained within this chapter is meant to be used as the foundation upon which strategies, recommendations, policies and initiatives are identified, reviewed, confirmed and prioritized in Phase 2 of the RCPU project. In effect, this chapter is more of a project record and comprehensive documentation of the process and outcomes of considerable research and engagement beyond that of a typical master plan.

The outcomes of Phase 1 demonstrate the value and importance of understanding:

- The opportunities and limitations associated with the most critical planning and decision-making tool i.e. policies;
- The preliminary best practice recommendations related to the RCPU project goals from comparable as well as aspirational municipalities found throughout Canada; and
- The strengths, opportunities, weaknesses and threats associated with cycling within Durham Region based on the opinions, interests and experiences of local and regional partners.

The recommendations that have emerged from this component of the RCPU assignment include:

- The information gathered through the best practices assessment as well as the stakeholder interviews will be reviewed and used to identify 4 – 6 cycling specific strategy topics for development in Phase 2;
- The emerging policy trends will continue to be expanded and policy recommendations will be identified, reviewed, confirmed

and integrated into policy discussions at the regional and provincial level;

- The Region will continue to be a key partner in local policy discussions as initiated by the local area municipalities and information contained within this document will be used to inform policy enhancements or commentary; and
- The team will continue to engage with key stakeholders during phase 2 to integrate the opinions and interests while confirming the content of the RCPU.

The next steps for Phase 2 of the project will cover the following topics and include the following deliverables:

- Review and confirm the content of the Phase 1 report based on input from staff, the DATC and key stakeholders;
- Initiate additional public outreach and engagement with residents to highlight initial outcomes of the project and gather additional input on the cycling strategies;
- Proceed with the selection of cycling strategy topics and initiate investigation and documentation as well as additional engagement from key stakeholders; and
- Move forward with the update to the primary cycling network, including the review and consideration of the existing cycling routes, short-term PCN, and the long-term PCN.