TORONTO

STAFF REPORT

ACTION REQUIRED

Cycling Network Plan Update

Date: June 13, 2019
To: Infrastructure and Environment Committee
From: General Manager, Transportation Services
Wards: All

SUMMARY

The purpose of this report is to provide an update on the implementation progress for the City's Cycling Network Plan, establish a priority framework for Major City-Wide Cycling Routes, and share next steps for effective implementation of proposed cycling infrastructure. The Cycling Network Plan, alongside the draft Official Plan cycling policies currently under review, present a strong vision for improving cycling across the city.

More people are riding bicycles in Toronto than ever before, especially where new or improved cycling infrastructure has been provided. In some Toronto neighbourhoods, the cycling mode share is now over 20%. Demand for safe, connected cycling routes throughout the city is on the rise, and recent polls demonstrate the majority of residents support protected bike lanes.

This report provides information requested by City Council as part of a two year review of the Ten Year Cycling Network Plan (2016), including status, changes to project timing, and recommendations for the initiation of major studies. This updated Cycling Network Plan also reflects enhanced analyses and lessons from implementation challenges to date.

Moving forward, the Cycling Network Plan will consist of two components: a near-term capital implementation program for cycling infrastructure (currently 2019 to 2021), and an overall proposed network (currently 2022+).

The Cycling Network Plan Update maintains the originally established goals of **Connect**, **Grow**, and **Renew**, with newly articulated objectives and measures that correspond to each of the three overarching goals, providing additional clarity and indicators for evaluating success. The Cycling Network Plan Update also helps achieve a key proposed cycling policy objective in the City's Official Plan of bringing all Toronto

residents within one kilometre (km) of a designated cycling route, as well as the TransformTO long-term goal that 75% of trips under 5 km are walked or cycled by 2050.

The review process undertaken for the Update has incorporated the City's Equity Lens Tool and demonstrates a stronger commitment to reducing inequities experienced by Toronto's vulnerable populations. The Update has also strengthened the Plan's focus on safety, with more detailed analyses of collisions, and more connections and initiatives linked to the Vision Zero Road Safety Plan.

As part of the work undertaken for the Update, a new map illustrating Toronto's Major City-Wide Cycling Routes has been developed to communicate the significant projects completed, underway, and proposed, which serve as the backbone of the cycling network.

From 2016 to 2018, over 100 km of existing cycling routes received upgrades and enhancements to improve safety, and approximately 60 km of new cycling infrastructure was installed:

- 15 lane km of cycle tracks
- 18 lane km of bike lanes
- 13 lane km of shared lane pavement markings
- 12 centreline km of multi-use trails

Over the next three years (2019 to 2021), over 120 km of new cycling infrastructure is planned, with additional upgrades to existing infrastructure through the Vision Zero Road Safety Plan. Additionally, over 70 km of routes will be studied within the near-term (2019 - 2021) for potential implementation.

RECOMMENDATIONS

The General Manger, Transportation Services recommends that:

1. City Council endorse the Cycling Network Plan as outlined in this report and mapped as the proposed cycling network and near-term cycling implementation program (2019 - 2021) in Attachments 1 and 4 as the framework for bringing forward cycling infrastructure projects for subsequent Council approval.

2. City Council authorize the General Manager, Transportation Services, to undertake the feasibility analysis, detailed design, and public consultation required to deliver cycling infrastructure projects contained in the near-term implementation program (2019 - 2021).

3. City Council authorize the General Manager, Transportation Services, to initiate the near-term studies of the Major City-Wide Cycling Routes as outlined in this report and mapped in Attachment 2, and to bring forward the findings of these studies and recommendations regarding future implementation at the appropriate time.

4. City Council direct the General Manager, Transportation Services to consider, as part of the annual capital and operating budget process, the capital funding required to implement the near-term cycling implementation program (2019 - 2021) at a rate of $16 million dollars annually, as well as the operating budget required to fund the maintenance costs of newly constructed cycling infrastructure.

FINANCIAL IMPACT

Capital Plan
The estimated cost to implement the near-term program is approximately $48 million over the 2019 – 2021 period, consistent with the previously approved $16 million per year scenario from the Ten Year Cycling Network Plan (2016). The capital funding required to implement the cycling initiatives in 2019 and 2020 has been identified and is fully funded within the 2019 to 2028 Capital Budget.

The capital funding required to implement the 2021 cycling initiatives is expected to be approximately $16 million, which is partially funded in the currently approved Ten Year Capital Plan. Transportation Services would seek Council approval to fund the remaining costs as part of the 2020-2029 Capital Budget & Plan submission.

In order to more effectively deliver the capital budget for cycling infrastructure, Transportation Services will require increased capacity in the areas of capital program planning (2 FTE) and public consultation (1 FTE). New staff resources would be entirely focused on the capital program planning and public consultation delivery of the capital projects identified in the Cycling Network Plan and the positions are proposed to be fully funded from the Capital Budget. Transportation Services would seek Council approval to fund these positions as part of the 2020-2029 Capital Budget & Plan submission.

Operating Impact
The cycling infrastructure proposed in the Cycling Network Plan will require ongoing maintenance once installed. This maintenance service will include winter snow clearing and street sweeping at a level similar to the adjacent roadway (including enhanced winter maintenance on some routes). Additional operating costs for the maintenance of new cycling infrastructure will be identified as part of the reporting on specific cycling infrastructure proposed for installation. The operating budget impact of these capital investments would need to be considered as part of the 2020 Operating Budget submission for Transportation Services and future operating budget submissions.

Strategy for Funding Eglinton Connects Streetscape and Cycle Track
As part of the Eglinton Crosstown LRT project and Eglinton Connects planning policies, cycling facilities are planned along Eglinton Avenue between Weston Road and Kennedy Road. The Eglinton Connects Environmental Assessment completed in 2014, estimated that the planned streetscape and cycle track would cost approximately $150 million. This is a high-level estimate and is being refined through the design process currently underway. Funding for this capital work is currently identified as unfunded in the 2019 to 2028 Capital Budget.

The City currently has $2.5 million, funded through the Federal Public Transit Infrastructure Fund (50% City funded, 50% Federal funded) to advance design and project cost estimates of the streetscape and cycle tracks along Eglinton Ave between the Crosstown Light Rail Transit (LRT) underground station frontages as well as for a 600 m multi-use trail along Eglinton Ave from Jane St to Pearen Park (by Weston Rd).

Additional funding is required for the construction of the streetscape and cycle tracks along Eglinton Ave to commence after the LRT construction is substantially completed (2022). A funding strategy will be identified for Council's consideration as part of a future Capital Budget process. The elements of this funding strategy would include opportunities to bundle these improvements with other scheduled road projects, the reconstruction of some block faces or cash-in-lieu for this streetscape work as part of adjacent development projects, the allocation of Section 37 funds, contributions from Business Improvement Areas, and seeking infrastructure funding from other orders of government.

EQUITY IMPACT STATEMENT

The City of Toronto's Equity Lens Tool has been used to assess the Cycling Network Plan for potential impacts on equity-seeking groups and vulnerable residents of Toronto. An equity lens will continue to be employed throughout all phases of the development and delivery of the Cycling Network Plan, including the annual programming of the implementation schedule, and the public consultation process for each cycling project.

Designing and building integrated cycling connections in neighbourhoods with vulnerable populations, such as persons with low income, women, youth, and racialized groups, has the potential to improve access to public transit, city services and spaces, economic development opportunities, food, health services, and recreation. A well-developed, targeted plan is necessary in order to achieve these potential positive impacts and improve the quality of life in equity-seeking neighbourhoods.

When transportation infrastructure is not properly integrated and does not meet the needs of the users, it has the potential to contribute to unintended, negative consequences and impacts on equity-seeking groups. The experience of riding a bicycle varies greatly by neighbourhood and by community, and can be a very different experience in the suburban environment compared to the urban city centre. Cycling can also be a disproportionately negative experience for racialized communities as a result of feelings of discrimination and lack of personal safety due, in part, to the very different infrastructure, planning and design standards historically common in suburban neighbourhoods where more racialized groups live (1). These inadvertent, adverse impacts of cycling infrastructure can be mitigated through meaningful engagement with equity-seeking groups, by designing infrastructure with, not for, the community, and by incorporating additional measures to address access to existing and planned infrastructure.Streets that are good for cycling have a number of inherent co-benefits for

1 Stein, S. (2011). Bike Lanes and Gentrification. Planners Network Magazine, No. 188;
Andersen, M. & M. L. Hall (2015). Building Equity: Race, ethnicity, class, and protected bike lanes - An idea book for fairer cities. PeopleForBikes and Alliance for Walking & Cycling.

neighbourhoods, such as slowing speeding motor vehicles, improving air quality, enabling more active travel for health benefits, and increasing street activity, which can all lead to improved neighbourhood safety and security (2). With the rising costs of transportation and the increased vulnerability of many road users, a safe network for active transportation is especially important for equity-seeking groups and neighbourhoods.

DECISION HISTORY

On June 7, 2016, the Ten Year Cycling Network Plan was adopted, in principle, with amendments by City Council.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PW13.11)

As part of its decision, City Council requested the General Manager, Transportation Services to undertake a review of the Ten Year Cycling Network Plan in two years, with a report back to Public Works and Infrastructure Committee, regarding implementation progress and a review of project timing, funding levels and recommendations for the initiation of additional Major Corridor Studies including a strategy for funding and implementation of the Eglinton Crosstown bikeway.

On February 28, 2017, the Complete Streets Guidelines were presented to the Public Works and Infrastructure Committee for information. The Complete Streets Guidelines, with their emphasis on safety of the most vulnerable - including those who walk and cycle - are an important tool for the implementation of the Cycling Network Plan.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.PW19.3).

On April 26, 2017, City Council adopted a recommendation to direct Transportation Services, in consultation with Cycling Infrastructure and Programs staff, to study and report back on possibilities for installing new bike lanes on Lawrence Avenue West, from Dufferin Street to Marlee Avenue, as part of the Ten Year Cycling Network Plan.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.NY21.35)

On February 12, 2018, City Council adopted a number of requested items as part of the 2018 Capital and Operating Budget process, including the following items related to the Ten Year Cycling Network Plan
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.EX31.2):

- City Council direct the General Manager, Transportation Services to report to the Public Works and Infrastructure Committee in early 2019 on the resources necessary to accelerate the 10 year cycling plan to be completed by the end of 2022.

2 W. Marshall, N. Ferenchak, & B. Janson. (2018). Why are Bike-Friendly Cities Safer for all Road Users? Mountain-Plains Consortium, University of Colorado Denver. MPC 18-351;
H. Le, R. Buehler, & S. Hankey. (2018). Correlates of the Built Environment and Active Travel: Evidence from 20 US Metropolitan Areas. Environmental Health Perspectives; 126(7). DOI: 10.1289/EHP3389;
A. Glazener & H. Khreis. (2019). Transforming Out Cities: Best Practices Towards Clean Air and Active Transportation. Current Environmental Health Reports. 6. 10.1007/s40572-019-0228-1.

- City Council direct the General Manager, Transportation Services to work with Parks, Forestry and Recreation and the Toronto and Region Conservation Authority to assess the timing of the Brimley Road South path project as part of the 2018 Cycling Network Plan review.

- City Council direct the General Manager, Transportation Services to continue discussions with Parks, Forestry and Recreation and the Toronto and Region Conservation Authority to evaluate potential connections and bridges between the Centennial College Progress Campus and Military Trail Road as part of the 2018 Cycling Network Plan review and update the Ward Councillors on the progress of the evaluation.

On April 11, 2018, the Public Works and Infrastructure Committee referred the report Moving Forward: An Action Plan to Improve Safety and Opportunities for Pedestrians and Cyclists in Ward 11 to the General Manager, Transportation Services to consider the recommendations from the Ward 11 Pedestrian Safety and Cycling Committee and report back as appropriate for approval where required.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PW28.12)

On May 22, 2018, City Council directed the General Manager, Transportation Services, to review the opportunity for a cycling facility on Lawrence Avenue West as identified in the Lawrence-Allen Secondary Plan, and to report back to the Public Works and Infrastructure Committee as part of the review of the Ten Year Cycling Network Plan.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.NY30.12)

On May 22, 2018, City Council adopted TOcore: Downtown Official Plan Amendment. The Downtown Plan and supporting Mobility Strategy include policies and actions that continue to direct the development of a long-term cycling network in the Downtown and to better prioritize sustainable transportation modes on Downtown streets.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PG29.4)

On July 23, 2018, for the Midtown in Focus Final Report, City Council requested the Chief Planner and Executive Director, City Planning, the General Manager, Transportation Services, and the Toronto Transit Commission to study multi-modal access between Midtown and Downtown, including identifying north-south corridors for improved surface transit priority routes and for dedicated cycling facilities, and bring forward recommended additions to the Midtown cycling network, including the feasibility, timing and cost of dedicated cycling facilities, as part of the 10 Year Cycling Network Plan update.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PG31.7)

On April 4, 2019, Planning and Housing Committee endorsed draft updated Official Plan transportation policies, including an updated cycling policy framework, and directed the Chief Planner and Executive Director, City Planning to consult with the public and stakeholders on the policies, to report back with recommended policies to Committee and Council in July 2019.
(http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.PH4.4)

BACKGROUND

The Cycling Network Plan is situated within an extensive active transportation policy context at both the provincial and municipal levels.

A Place to Grow

The Growth Plan for the Greater Golden Horseshoe (2019), approved under the Provincial A Place to Grow Act (2019), seeks to manage growth in a way that supports complete, healthy, sustainable communities, and emphasizes in its vision that transit and active transportation will be practical elements of our urban transportation systems.

The following policy provides specific direction for expanding the cycling network:

- 3.2.3 - Municipalities will ensure that active transportation networks are comprehensive and integrated into transportation planning to provide: (a) safe, comfortable travel for pedestrians, bicyclists, and other users of active transportation; and (b) continuous linkages between strategic growth areas, adjacent neighbourhoods, major trip generators, and transit stations, including dedicated lane space for bicyclists on the major street network, or other safe and convenient alternatives.

CycleON

Ontario's Cycling Strategy, #CycleON, is a 20-year vision to have cycling recognized as a respected and valued mode of transportation in Ontario. It includes five strategic directions to guide action by the government and partners across Ontario:

1. Design healthy, active and prosperous communities
2. Improve cycling infrastructure
3. Make highways and streets safer
4. Promote cycling awareness and behavioural shifts
5. Increase cycling tourism opportunities

As part of improving cycling infrastructure, the strategy outlines a number of ways the Province will work with municipalities, including investments in new infrastructure for commuting and recreational cycling routes, investments in bicycle parking, and inclusion of cycling infrastructure in provincial highway construction projects.

Metrolinx 2041 Regional Transportation Plan and Cycling Network

The 2041 Regional Transportation Plan (RTP) envisions a sustainable transportation system that provides safe, convenient and reliable connections, and supports a high quality of life, a prosperous and competitive economy, and a protected environment. The Plan highlights the need to increase the active transportation share of trips to GO stations ("first-and-last mile" travel) in order to accommodate the anticipated growth in ridership.

Strategy 4 of the RTP is to integrate transportation and land use. It includes the development of a regional cycling network, and contains specific actions to advance

active and sustainable school travel, with the goal of 60% of students walking or cycling to school by 2041.

The RTP's corresponding Cycling Network Study identifies cycling routes across the Greater Toronto and Hamilton Area that are regionally significant corridors (those that support cycling to rapid transit stations; cross municipal boundaries; link urban growth centres; or facilitate cycling long distances). The Regional Cycling Network aligns well with the Major City-Wide Cycling Routes identified in the Cycling Network Plan Update, with overlapping corridors such as Bloor - Danforth, Waterfront Trail, Eglinton Avenue, and the Finch Hydro Corridor / Avenue.

City of Toronto Official Plan

The Official Plan speaks to making cycling, along with walking and transit, increasingly attractive relative to car use. It directs that policies, programs, and infrastructure be introduced to create a safe, comfortable, bicycle-friendly environment to encourage people of all ages to cycle for everyday transportation and enjoyment.

The recent Official Plan Review of Transportation Policies includes new text to establish a cycling policy framework, revised text that strengthens the existing policies to promote cycling, and a key objective to bring all Toronto residents within one kilometre of a designated cycling route. The new text includes policies that focus on ways to expand the cycling network, enhance the convenience and attractiveness of the cycling network, make cycling a safer travel mode, and provide convenient high-quality short-term and long-term bicycle parking facilities at key locations throughout the city. These policies provide a vision and framework for the Cycling Network Plan and the way in which it contributes to improved mobility for residents in Toronto.

TransformTO

Toronto is experiencing an increase in extreme weather events associated with climate change. The City of Toronto’s Council-approved climate action strategy, TransformTO (2017), outlines a set of long-term, low-carbon goals and strategies to reduce local greenhouse gas emissions. The strategy includes the following ambitious targets:

- Reduction of Toronto’s greenhouse gas emissions by 80% from 1990 levels by 2050; and
- By 2050, 100% of vehicles in Toronto will use low-carbon energy; 75% of trips under 5 km will be walked or cycled.

Investments in cycling infrastructure are critical to enabling the level of active transportation necessary to realize Toronto's vision of a low-carbon community. One of the largest potential areas of co-benefit from climate action are the health benefits that can be realized through improved air quality and physical fitness levels achieved by shifting modes to active transportation.

Complete Streets Guidelines

The City of Toronto's Complete Streets Guidelines emphasize that streets are for people, place-making, and prosperity: they should be safe and accessible, they should

give people choices and connected networks, and they should promote healthy and active living.

Through the Complete Streets design process, space is allocated based on a variety of inputs including project objectives and constraints, local context, city-wide priorities and public engagement. The Complete Streets design process helps improve conditions for cycling in Toronto by ensuring that cycling infrastructure is fundamentally considered as part of the design process for all streets and that bicycle-friendly design priorities are applied depending on a street's context and characteristics.

Vision Zero Road Safety Plan

Toronto's Vision Zero Road Safety Plan (2017 - 2021) is a pledge to improve safety across our city using a data-driven and targeted approach, focusing on locations where improvements are most needed. The City is committed to Vision Zero and its fundamental message: fatalities and serious injuries on our roads are preventable, and we must strive to reduce traffic-related deaths and injuries to ZERO.

Staff have developed Vision Zero 2.0*:* the first major update to the Vision Zero Road Safety Plan. Vision Zero 2.0 proposes a set of key initiatives and infrastructure improvements, including cycling infrastructure, to achieve meaningful reductions in serious injury and fatal collisions in the next five years (2020-2024)*.*

Toronto Strong Neighbourhoods Strategy

The Toronto Strong Neighbourhoods Strategy (TSNS) 2020 is the City of Toronto's action plan for ensuring that each of our 140 neighbourhoods can succeed and thrive. TSNS 2020 supports healthy communities across Toronto by partnering with residents, community agencies and businesses to invest in people, services, programs and facilities in 31 identified Neighbourhood Improvement Areas (NIAs).

The 31 NIAs were recommended by staff based on their Equity Score, and approved by Council. Neighbourhoods with scores lower than the Neighbourhood Equity Benchmark of 42.89 were considered to be facing serious inequities that require immediate action.

The Equity Score is based on five key areas:

- Economic opportunities (e.g. income levels and quality job opportunities);
- Social development (e.g. education and literacy, and access to social, recreation and cultural services);
- Participation in decision-making (e.g. voting in elections and working with neighbours to make plans and priorities);
- Healthy lives (e.g. medical care, disabilities and illnesses that residents live with, and the number of years that residents live in good health); and
- Physical surroundings (e.g. access to transportation, parks and green spaces, public meeting spaces, and air quality).

Health Benefits of Cycling

Evidence demonstrates that it is beneficial for health to design transportation networks and public spaces that make active transportation, such as cycling, a safe choice. Health benefits associated with increased active transportation include reduced risk of obesity, type 2 diabetes, cardiovascular disease, and some types of cancer. The overall risk of all-cause mortality is also reduced when people increase the amount of physical activity in their daily routine. As well, vehicle transportation is associated with emissions of air pollutants, greenhouse gases, and noise. Design that encourages a shift away from vehicles to active transportation also helps mitigate these impacts.

Cycling is a means to improve health and quality of life in Toronto. In 2012, Toronto Public Health completed an analysis outlined in *Road to Health: Improving Walking and Cycling in Toronto*, and found that 2006 levels of cycling in Toronto were estimated to prevent about 50 deaths per year. With increases in cycling this number is also expected to increase.

COMMENTS

This section of the report provides detailed information about cycling ridership and infrastructure in Toronto, the status of Major City-Wide Cycling Routes, the process and analysis for the Update, implementation challenges and improvements, and the restructuring of the Plan's timelines.

Toronto is a Cycling City

Each year in Toronto, the number of people riding bicycles grows. Many are riding to work or school, some are riding for errands and short trips, and others are riding recreationally. In the 2016 Canadian Census (3), some neighbourhoods in downtown Toronto revealed over 20% cycling mode share, with several neighbourhoods outside the core also very high at around 10%.

Demand for cycling in Toronto remains relatively high during winter months, with counts on key routes showing that approximately 20% of people cycling in Toronto continue to cycle in the winter.

Streets where protected cycling infrastructure is installed see exponential growth in the number of people travelling them by bicycle. In September 2013, the average 8-hour cyclist count on Richmond St W and Adelaide St W was 400. In September 2018, the average 8-hour count was 4,780; an increase of 1,095%.

Data from Bike Share Toronto reveal an upsurge in bike rides taken, with the initial increase following their first system expansion in June 2016. In three years, their ridership has grown to almost 2 million annual rides. This is a 251% growth from the average ridership between 2011 and 2015.

3 Statistics Canada, 2016. Data tables, 2016 Census. Journey to Work.

Bike Share Toronto membership has also increased since the phased expansion began. From 2011 to 2015 there was an average of 4,200 annual members. From 2015 to 2018, the membership base grew to over 15,000, a 257% increase in three years. Additionally, over the same time period, casual pass subscriptions (24 hours, 3-day, single trip) increased by 256%.

A complimentary trend can be seen with the rise of the bike delivery economy, such as bike couriers, food delivery services, and last-mile deliveries from distribution hubs via cycling. In dense urban areas like Toronto, bicycles, tricycles, and cargo cycles are becoming increasingly common modes for goods movement, and an important tool for improving the efficiency of deliveries (4).

Recent public opinion polls suggest the majority of Torontonians, including those who drive, walk and take public transit, support implementing more cycling infrastructure, even where these changes may reduce space for cars (5,6).

Not every area of Toronto feels like a cycling city yet. The lower cycling mode share among Toronto residents outside of downtown largely mirrors lower coverage of cycling infrastructure. Many communities, such as those included in the Toronto Strong Neighbourhoods Strategy, have generally received less investment in infrastructure in the past. Residents, agencies, and the City are working to reverse this trend. Cycling-related programs and Bike Hubs have been expanding into new areas, such as the Scarborough Cycles Bike Hubs and CultureLink's Bike Host mentorship program for newcomers. Supporting and expanding community-led initiatives to encourage cycling alongside investments in active transportation infrastructure will help Toronto become a more equitable cycling city.

Goals and Objectives

One of the primary ways the City of Toronto supports cycling is by planning, installing, and maintaining on-street cycling infrastructure and off-road multi-use trails. To coordinate the planning and delivery of cycling routes, the City developed the Ten Year Cycling Network Plan (2016) and the Bikeway Trails Implementation Plan (2012) which have served as the City's roadmap for cycling infrastructure investment.

The Cycling Network Plan Update maintains the Ten Year Plan's established goals of **Connect**, **Grow**, and **Renew**, with newly articulated objectives and measures that correspond to the overarching goals, providing additional clarity and indicators for evaluating success. The Cycling Network Plan Update also helps achieve a key proposed cycling policy objective in the City's Official Plan of bringing all Toronto residents within one kilometre (km) of a designated cycling route, as well as the TransformTO goal that 75% of trips under 5 km are walked or cycled by 2050.

4 Lee, J. 2019. Modernizing urban freight deliveries with cargo cycles. Pembina Institute. https://www.pembina.org/reports/cargo-bikes-v4-online.pdf
5 Ekos, 2018. Public Attitudes to Bicycle Lanes in Toronto. (Sample size: n = 801).
6 Angus Reid Forum, 2017. Road Safety and Bicycle Lane Poll. (Sample size: n = 802).

Goal	Objectives
Connect gaps in the network, and people to places	Connect between and to existing cycling infrastructure
	Connect to transit stations
	Connect to parks and natural areas, and to destinations serving daily needs
	Connect across barriers (such as highways and ravines)
Grow the cycling network into new parts of the city	Expand the network outside the downtown core
	Serve areas with latent cycling demand where infrastructure is lacking
	Expand the network in Neighbourhood Improvement Areas
Renew the existing cycling network routes where there are opportunities to improve quality	Upgrade existing cycling infrastructure for safety and comfort
	Upgrade infrastructure for convenience and clarity (such as wayfinding improvements)
	Improve cycling routes to schools and community hubs

Implementation Progress

Alongside the increase in people riding bicycles, the cycling network in Toronto continues to grow. From 2016 to 2018, approximately 60 km of new cycling infrastructure was installed, including:

- 15 lane km of cycle tracks (such as Lake Shore Blvd W and Woodbine Ave);
- 18 lane km of bike lanes (such as Renforth Dr and Grenoble Dr);
- 13 lane km of shared lane pavement markings (such as the neighbourhood wayfinding sharrows from Lake Shore Blvd cycle track to the Waterfront Trail); and
- 12 centreline km of multi-use trails (such as Keele St north of Sheppard and the Gatineau Trail from Victoria Park Ave to Eglinton Ave).

In addition, from 2016 to 2018, over 100 km of cycling routes were upgraded and enhanced, and bicycle signals were installed at nine locations. Many of the enhancements were along Vision Zero corridors identified in 2018 for improvements such as the addition of green pavement markings in conflict areas, intersection improvements, wider painted buffers, and physical separation.

Significant projects to **Connect** the network completed since 2016 include:

- Gatineau Trail from Victoria Park Ave to Eglinton Ave,

- Etobicoke Creek Trail North and at Sherway,
- Bayview multi-use trail and Chorley switchback both connecting to Evergreen Brickworks and three trail systems (the Don Valley, Beltline trail, and Rosedale Valley trail), and
- Lake Shore Blvd W cycle track, which closed a key gap in the Waterfront Trail in the location where there was a cyclist fatality.

Significant projects to **Grow** the network in new areas include:
- Woodbine Avenue cycle track,
- Renforth Dr bicycle lane,
- York University and Downsview Neighbourhood Connections, and
- Thorncliffe and Flemingdon Park Neighbourhood Connections.

Substantial work to **Renew** (upgrade and refresh) existing routes through collision analysis, bringing up to current standards and coordination with resurfacing and reconstruction projects was also undertaken, including state of good repair and enhancements to over 50 lane km of on-street cycling infrastructure such as Royal York Rd, Strachan Ave, Gerrard St E, Lower Sherbourne St, Prince Edward Viaduct, River St, Bayview Ave, Dundas St E, and Greenwood Ave.

Key intersection improvements completed to improve safety and connectivity include Bathurst St and Adelaide St, Dufferin St and Waterloo Ave, Woodbine Ave and O'Connor Dr, and Peter St / Soho St and Queen St W (to be finalized summer 2019).

Other notable achievements include the installation of the Bloor St W cycle track pilot, and subsequent Council approval to make the pilot permanent, as well as the Council approval for the pilot projects on Richmond St, Simcoe St, and Adelaide St to become permanent.

Implementation Outcomes

Growth in cycling infrastructure since the approval of the 2016 Plan has expanded the reach of the cycling network to serve more people. Since 2016, the proportion of people and places of employment within close proximity (250 m and 500 m) to a cycling route has increased by approximately 4% city-wide and 9% for people within Neighbourhood Improvement Areas. In terms of the Official Plan goal, 87.2% of residents are now within one kilometre of a cycling route. The table below uses population data from the 2016 Census and employment data from the 2016 Toronto Employment Survey.

Cycling Network Coverage			
	2015	2018	Percentage Increase
Percentage of population and employment within 250m of a cycling route in Context 1 and within 500m in Context 2	53.6%	55.7%	4%
Percentage of population and employment in NIAs within 250 m of a cycling route in Context 1 and 500m in Context 2	50.6%	55.2%	9%
Percentage of population and employment within 1 km of a cycling route	86.7%	87.2%	0.6%

Context 1 refers to the central area of Toronto, with high existing cycling mode share, high density of population, employment, and destinations, and a built-out environment with a tighter grid network and narrow street rights-of-way. Context 2 refers to the areas beyond central Toronto, with lower existing cycling mode share, and – in most but not all locations - low density of population, employment, and destinations, and more boulevard space. This delineation is explained further in Attachment 6 and illustrated in the maps of Attachment 7.

Multiple data sources provide information about the proportion of people cycling in Toronto. The most recent results from the Transportation Tomorrow Survey and Canadian Census are from 2016, outlined in the table below.

	2011	2016
Cycling mode share of all trips* (TTS)	1.9%	2.7%
Commuter cycling mode share (Census)	2.2%	2.7%
Bike to school mode share (TTS)	1.5%	2.2%

*TTS trips do not include trips by active modes for non-work / school purposes

Neighbourhood Examples of High Cycling Mode Share in Toronto (2016 Census)				
Neighbourhood (Context 1)	2016		Neighbourhood (Context 2)	2016
Cabbagetown	34%		New Toronto	11%
Bloor-Spadina	33%		Silverthorn	10%
Roncesvalles	29%		York University	9%
Parkdale	27%		West Hill	7%
Gerrard-Coxwell	26%		Agincourt	6%

An indicator of progress tracked by the City is the growth in ridership on routes with protected cycling infrastructure installed. Counts of people cycling before and after demonstrate significant increases in the number of people travelling by bicycle. These counts represent total daily averages and 8-hour counts taken over the course of approximately two weeks at a time.

Route	Before Count	After Count	Percentage Increase
Adelaide / Richmond (Bathurst to University)	400 (Sept / Oct 2013)	4,780 (Sept / Oct 2018)	1,095%
Adelaide / Richmond (University to Parliament)	330 (Sept / Oct 2013)	2,730 (Sept / Oct 2018)	727%
Sherbourne St	1,080 (June 2011)	2,763 (July 2015)	156%
Bloor St W	3,309 (June 2016)	4,925 (June 2017)	49%

Improved cycling infrastructure makes cycling safer and improves health by encouraging more people to cycle. This means not only expanding cycling infrastructure, but where possible, incorporating infrastructure that provides physical separation from motor vehicle traffic to reduce injury risk and severity.

From the three year period prior to the Cycling Network Plan to the first three years of the Plan, the numbers and rates of people seriously injured and killed while riding have substantially decreased. The City of Toronto will continue to prioritize the safety of vulnerable road users and strive to reduce traffic-related deaths and injuries to zero.

Cycling Safety City-Wide	Average over 2013-2015	Average over 2016-2018	Percentage Decrease
Number of Cyclist Fatalities	3.7	3.0	19%
Number of Cyclists Seriously Injured	49.7	40.3	19%
Rate of Cyclist Fatalities per 100,000 resident population	0.14	0.11	21%
Rate of Cyclists Seriously Injured per 100,000 resident population	1.8	1.5	17%

Individual corridors where cycling infrastructure was installed demonstrate an even greater improvement in safety:

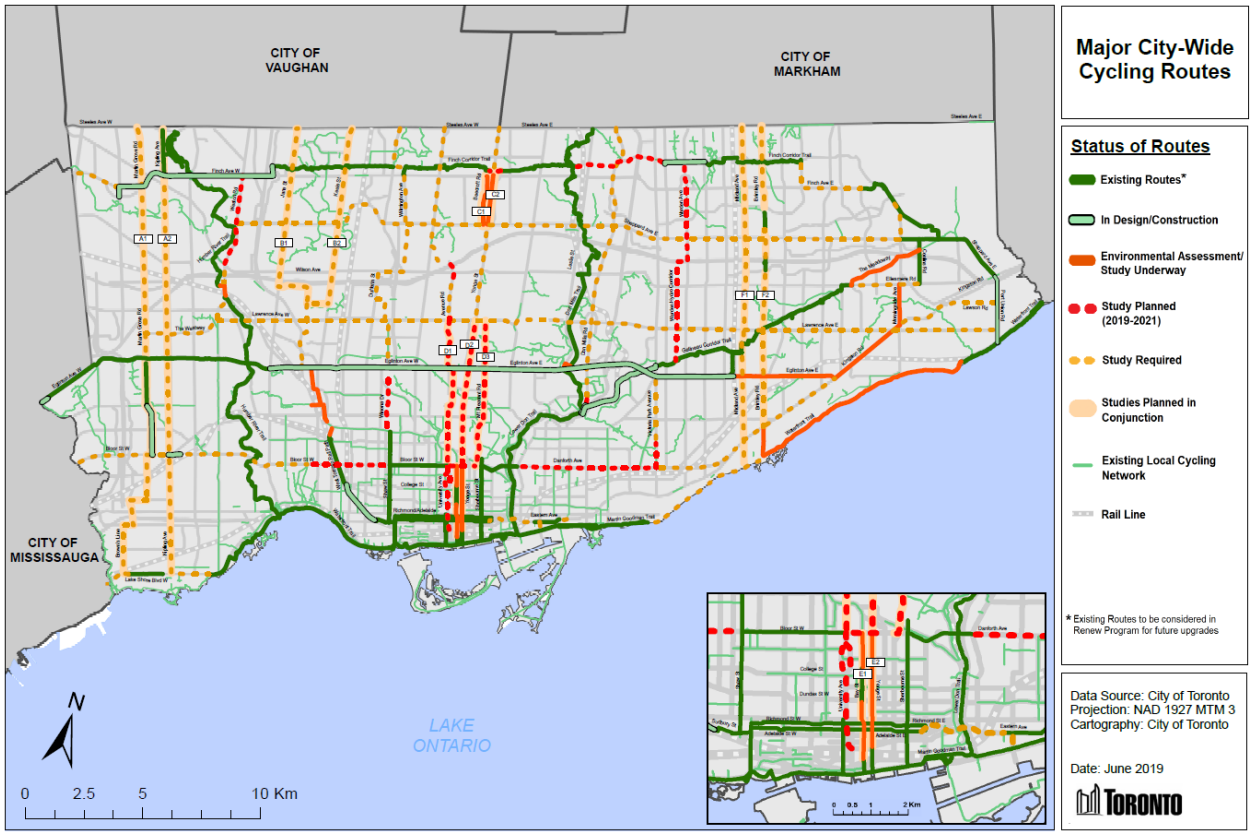
- After installation of the cycle tracks on Richmond Street and Adelaide Street, the rate of cyclist collisions decreased by 73%, based on annual collisions per 1000 average daily weekday cyclists in good weather.
- Based on before and after conflict analysis conducted along the Bloor Street West cycle tracks at Clinton Ave, Walmer Rd, and Bedford Rd, the number of conflicts between people cycling and people driving decreased by 61%.

Major City-Wide Cycling Routes

There are a number of significant corridors that cross Toronto from east to west and north to south, where high order cycling infrastructure has been installed, or is being designed, and planned.

These Major City-Wide Cycling Routes support a connected system across the Greater Toronto Area by linking with other cycling routes in neighbouring municipalities. These cycling routes complement those identified in broader Provincial and City Plans including the Metrolinx Regional Cycling Network Plan and TOcore.

To illustrate what is complete, underway, and proposed of the Major City-Wide Cycling Routes, a new map has been developed as part of this Update, shown here and included in Attachment 2.



In June 2016, when the Ten Year Cycling Network Plan was approved in principle, there were eight major corridors identified as presenting opportunities for city-wide cycling connections. For these major corridors, it was recognized that each would require a comprehensive study to properly assess impacts and consult stakeholders.

Council approved three of the corridor segments for study as part of the Network Plan, for which review was already underway:

- REimagining Yonge Street Environmental Assessment (from Sheppard Ave to the Finch Hydro Corridor)
  - This project is evaluating opportunities to improve the streetscape and public realm for all users (pedestrians, cyclists, transit and vehicles) along Yonge St, including an option for cycle tracks on Beecroft Rd
  - In March, 2018, City Council postponed consideration and requested further analysis and a report back to Council is planned for fall 2019.
- Yonge TOmorrow Environmental Assessment (from Queen St to College / Carlton St)
  - This project is evaluating opportunities to increase pedestrian space and improve the way people move through and experience Yonge St.
  - The first public event on this study was held May 9, 2019 and a preliminary report to Infrastructure and Environment Committee is planned for fall 2019.
- Bloor-Dupont Study (from Keele St to Sherbourne St) will be informed by the following:
  - Bloor Street Bike Lane Pilot Project (Shaw St to Avenue Rd) was approved as permanent by Council in November 2017 and design of permanent cycle tracks

is currently underway to be constructed over 2019-2020 in conjunction with watermain, streetscape improvements and road resurfacing.
    - Bloor East Streetscape Improvement Plan (St. Paul's Square to Parliament St) has been expanded to include the reconstruction of Bloor Street East as well as opportunities to improve the streetscape and cycling infrastructure.

As part of the Update to the Cycling Network Plan, the major corridors were reviewed and prioritized based on the analysis results, as well as on previous Council commitments, recently completed Avenue Studies, and planned capital works. The following corridors are proposed for study in the near-term program (2019-2021):

- Danforth Avenue Planning and Complete Streets Study (Broadview Ave to Victoria Park Ave)
    - Launching in summer 2019, through a collaboration between Transportation Services, City Planning, and Economic Development and Culture, this project will evaluate opportunities for a complete streets design. Implementation proposed for 2021.
- Bloor Street West (Shaw St to High Park Ave)
    - Launching in fall 2019, this project will involve planning, design, and public consultation for an extension of the Bloor St West cycle tracks to High Park, with implementation proposed for 2020 or 2021.
- Bloor Street East (Church St to Sherbourne St)
    - As a next step from the Bloor Street East Streetscape Improvement Plan, an Environmental Assessment for this project will be initiated in early 2020. Road reconstruction is planned in 2022.
- Warden Avenue / Warden Hydro Corridor (Gatineau Hydro Corridor to Finch Hydro Corridor)
    - This project will involve planning, design and consultation for a boulevard level cycling facility. Study proposed to start in 2021.
- Yonge St / Avenue Rd / Mount Pleasant Rd
    - These three Major Streets, identified in City Planning's Midtown in Focus Yonge-Eglinton Secondary Plan and Transportation Assessment, are proposed to be examined to assess the feasibility of an optimal corridor(s) for dedicated (physically-separated) cycling infrastructure. Street segments and phases of study would be confirmed when the terms of reference and scope of the study are proposed to be initiated in 2021.
- University Avenue / Queen's Park Crescent (Bloor St W to Front St W)
    - In July 2018, City Council enacted a by-law to adopt the Downtown Plan through Official Plan Amendment (OPA) 406 (7). Map 41-12 of the Plan defines Priority Cycling Routes, with University Avenue and Queen's Park Circle identified as a corridor requiring study. Alongside OPA 406, Council adopted the Downtown Mobility Strategy (8) and a Downtown Parks and Public Realm Plan (9), and directed staff to consider the potential to prioritize the redesign of University Avenue in the development of the Parks and Public Realm Implementation Strategy. A "pre-feasibility" study for University Avenue is scheduled to be

7 http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PG29.4.
8 http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PG29.6
9 http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PG29.5

initiated by City Planning in 2020 and will include an examination of cycling infrastructure.

The remaining corridors of the Major City-Wide Cycling Routes proposed for future study will be brought forward into the near-term program on an annual basis, subject to the following criteria:

- Priority ranking based on results of the cycling analysis;
- Geographic distribution;
- Coordination with other planned major capital works; and
- Complexity of study needs, funding and resource requirements.

The type of study needed for each corridor may take different forms for different streets depending on the corridor's complexity of current and future uses. Some routes may include analysis of parallel streets to confirm the most feasible alignment of the route. All studies will be undertaken with a Complete Streets and Vision Zero approach.

These major corridors will become part of the backbone of the cycling network. Several Major City-Wide Cycling Routes are partially or substantially complete, and provide opportunities for neighbourhood cycling routes to be implemented to connect with them:

- Eglinton Avenue
  - A multi-use trail exists from Rakely Ct to Jane St (10 km).
  - A multi-use trail will be built from Jane St to Pearen Park in 2019 (600 m).
  - The gap between Rakely Ct and Etobicoke Creek Trail will also be completed in 2019 with a multi-use trail (300 m).
  - As part of the Eglinton Crosstown Light Rail Transit project, cycling infrastructure is planned between Weston Rd and Kennedy Rd (19 km); design and construction in front of nine underground stations (Keelesdale, Fairbank, Cedarvale, Forest Hill, Chaplin, Avenue, Eglinton, Mt Pleasant and Leaside) as well as between Yonge St and Avenue Rd is being delivered by Metrolinx, paid for by the City. Detailed design is underway. Construction of the streetscape and cycle tracks led by the City for the mid-block segments and at Laird, Oakwood and Caledonia stations (mined stations not being built by Metrolinx) will commence after the LRT construction is completed.
  - As part of the Eglinton West LRT project, from Mount Dennis Station to Renforth Station (9 km), opportunities for improvements to the existing multi-use trail will be considered. The Planning and Streetscape Study is currently underway.
- Finch Avenue
  - A multi-use trail, with a few breaks, exists from Norfinch Dr to Pineway Blvd (15 km), and from Birchmount Rd to Middlefield Rd (5 km).
  - Cycling infrastructure is currently being designed as part of the Finch West LRT construction from Keele St to Highway 27 (10 km).
  - New multi-use trail sections of the Finch Trail (in the Finch Hydro Corridor) are planned for construction in the near-term, including Birchmount Rd to Pharmacy Ave (1.7 km) followed by Pharmacy Ave to Pineway Blvd (4 km).
- West Toronto Railpath
  - A multi-use trail exists from Dundas St W to Cariboo Ave (just north of Dupont St) along the rail corridor (2 km).

    - Detailed design is underway for the 2 km extension of the West Toronto Railpath from Dundas St W / Sterling Rd to Sudbury St / Abell St.
- Don Trail
    - A multi-use trail exists from Lake Shore Blvd to Steeles Ave with several gaps (Lower Don Trail, Don Trail, Don Mills Trail) (20 km).
    - The multi-use trail construction of the extensions to the East Don Trail is comprised of three phases. Construction of Phases 1 and 2 is underway (expected completion 2020), with the design and schedule of Phase 3 to be initiated by 2021. The study for Phase 3 was included in the completed Environmental Assessment.
    - Phase 1 Lower Don Trail northeast to Bermondsey Rd, over Taylor Massey Creek along east bank of Don River (3.1 km), includes four bridges and one tunnel.
    - Phase 2 East Don Trail north of Wynford Heights Cres southeast to Elvaston Dr (1.4 km), includes three bridges.
    - Phase 3 Eglinton Ave E south to Gatineau Hydro Corridor (500m).
- Gatineau Corridor
    - A multi-use trail exists from Eglinton Ave E to Ellesmere Ave, with an on-street connection around Midland Ave (10 km).
    - The multi-use trail construction of the extensions of the Gatineau Corridor consists of two phases. Phase 1 was completed in 2018, and Phase 2 construction is expected in 2022 following the completion of the Eglinton Crosstown LRT.
    - Phase 1 Victoria Park Ave southwest to Eglinton Ave E (600 m); includes signalized crossing of Victoria Park Ave.
    - Phase 2 Eglinton Ave E southwest to Bermondsey Rd; includes signalized crossing of Eglinton Ave E (800 m).
    - In 2018, The Meadoway Class Environmental Assessment commenced to complete the 16 km link between Rouge National Urban Park and downtown Toronto. The Class EA is focusing on three incomplete sections of the hydro corridor, where no multi-use trail currently exists. The Toronto and Region Conversation Authority (TRCA) is the lead project proponent, and the City of Toronto is a co-proponent.
- Humber Trail
    - A multi-use trail exists, with an on-street section and gap, from the Waterfront Trail to Steeles Ave W (25 km).
    - The feasibility study of the Mid-Humber Gap is currently underway; with an Environmental Assessment planned in 2020 (600 m).
- Martin Goodman / Waterfront Trail
    - The Martin Goodman Trail (MGT) is part of the larger Great Lakes Waterfront Trail, and stretches over 20 km from Toronto's western to eastern beaches.
    - The Scarborough Waterfront Project, led by TRCA, will create a system of greenspaces along the Lake Ontario shoreline between Bluffer's Park and East Point Park / Highland Creek, including a multi-use trail (10 km). The Ministry of Environment, Conservation and Parks (MECP) has completed their Ministry Review of the Final EA, and recently closed the public comment period. A decision is anticipated by late Summer 2019.

The network of Major City-Wide Routes consists of approximately 800 km (with trails counted as centreline km, and routes along streets in lane km). Approximately 225 km (28%) of the Major City-Wide Routes are in place today, with another 70 km currently in design or construction, almost 45 km with an Environmental Assessment or study underway, and another 70 km planned for study in the near-term (2019-2021).

The target completion year for all of the Major City-Wide Routes is 2041, with an interim goal of reaching 60% (480 km) by 2030.

Ten Year Cycling Network Plan Review Process

The Ten Year Cycling Network Plan, approved in principle in June 2016, was the culmination of significant research, analysis, and extensive public consultation. The Cycling Network Plan Update builds on the work of the Ten Year Plan, with:

- Updated data sources;
- A strengthened focus on safety and equity; and
- A revised approach to short-term programming and longer-term planning that better reflects the nature of capital coordination, development planning, and challenging feasibility assessments.

The review process included stakeholder engagement and internal collaboration, as well as the City's Equity Lens Tool, which informed enhancements to the cycling impact analysis and improvements to consultation and implementation processes.

Stakeholder Engagement

The Ten Year Cycling Network Plan (2016) was developed with extensive public consultation and stakeholder engagement, including a public survey with 10,500+ respondents, digital draft map with 7,000 respondents, eight public drop in events, 12 workshops, six bike rides, and 90,000+ trips collected by the Cycling App.

In the public survey, when asked to choose the top three priorities for evaluating cycling projects out of eight criteria, safety, network connectivity and network coverage were the most popular.

Given the extent of the public consultation for the Plan's development, the scope of the stakeholder engagement process for the Update was targeted to staff and community stakeholders, including an initiative with Neighbourhood Improvement Areas (NIAs), and feedback from local Councillors.

From January to June 2019, Transportation Services staff attended 15 Neighbourhood Planning Tables, representing the 31 Neighbourhood Improvement Areas from the Toronto Strong Neighbourhoods Strategy. In total, there were over 400 participants at these Tables, where Transportation Services staff provided background on the Cycling Network Plan and the update underway, and coordinated a mapping activity for input on key access destinations in neighbourhoods, and learned about neighbourhood-specific barriers to cycling. Further details about the Neighbourhood Planning Table engagement are shared in Attachment 5.

Enhanced Methodology

Proposed routes, including those identified in the 2001 Bike Plan and area Secondary Plans that have not yet been built, were analyzed with enhanced methodology so as to incorporate the most recent data available, and a strengthened focus on safety and equity.

Attachment 6 provides further details on the following cycling analysis categories and their enhancements:

- Current cycling demand - measuring existing rates of bicycle use;
- Potential cycling demand - measuring where people are making short trips (under 5 km) by car or transit, or long walking trips (over 1 km);
- Trip generators - identifying key places serving daily needs;
- Connectivity - identifying routes that close gaps in the existing network;
- Network coverage - identifying parts of the city that currently lack a cycling network;
- Barrier crossings - identifying routes that help people get across barriers, such as highways, rivers, railways;
- Transit access - identifying routes that would facilitate people travelling from their homes to transit stations, outside of the downtown core;
- Safety - identifying where vehicle-bicycle collisions have occurred; and
- Equity - identifying routes serving Neighbourhood Improvement Areas.

The cycling analysis for the Update included data from the 2016 Transportation Tomorrow Survey (TTS) and finer granularity of current and potential cycling trip trajectories. The level of detail available through the updated analyses will lead to more reliable, evidence-based decision-making, and will better inform network priorities moving forward.

A Vision Zero Lens on Cycling Infrastructure

The City of Toronto, with the commitment of partners such as the Toronto Police Service, aims to eliminate fatalities and serious injuries on city streets and to create a safe and healthy city.

People who cycle are one of six emphasis areas identified in the Vision Zero Road Safety Plan, determined through collision data analysis, public engagement and Council direction. Aggressive and distracted driving has been identified as another emphasis area that impacts the safety of those cycling and needs to be addressed

The Vision Zero Road Safety Plan identifies the following countermeasures to make Toronto's streets safer for cycling:

- Intersection safety improvements, including the installation of bicycle crossing signals;
- Enhancements to the automated detection of cyclists at high cyclist volume intersections;
- Reductions to posted speed limits for those street locations identified in the Road Safety Plan report;
- Speed enforcement measures in construction zones; and

- An expansion of the "Watch Your Speed" Program to include the use of permanent speed display signs in school zones.

The staff report on Vision Zero 2.0, the update to the Vision Zero Road Safety Plan, identifies a set of additional measures, such as a comprehensive speed management strategy, road design improvements, and solutions for addressing high-risk mid-block crossings. All of these initiatives can directly and positively impact cycling safety.

An Equity Lens on Cycling Infrastructure

The Cycling Network Plan Update has used the City of Toronto's Equity Lens Tool, developed by the People, Equity and Human Rights Division, to identify, analyze and discuss potential impacts on equity-seeking groups and vulnerable residents of Toronto. The application of an equity lens on the Update is a starting point for Transportation Services; an equity lens will continue to be employed throughout all phases of the Cycling Network Plan, including the annual programming of the implementation schedule, and the public consultation process for each cycling project.

During the engagement activities with the Toronto Strong Neighbourhoods' Planning Tables, residents identified a number of barriers to cycling in their communities:

- Lack of access to bicycles / affordability;
- Lack of safe places to keep bicycles;
- Lack of safe cycling routes;
- Poor lighting of streets, sidewalks, intersections, and trails;
- Nighttime closure of public parks;
- Vehicles parking in bike lanes;
- Challenging topography;
- Physical barriers (train tracks, highways, ravines);
- Volume, speed and behaviour of drivers;
- Challenges of cycling as a family; and
- Lack of knowledge and experience for riding on-street.

Some of these barriers can be addressed by Transportation Services through the expansion of safe cycling infrastructure, with attention to related barriers such as lighting, intersection safety, and bicycle parking.

Other barriers are beyond the scope of Transportation Services alone, but could be addressed with the help of other City Divisions, and local agencies. Bike Hubs, such as Scarborough Cycles, provide affordable or no-cost opportunities for residents to learn bike skills, bike maintenance, and are sometimes able to provide bicycles to program participants. There are some existing examples of cross-divisional and community collaboration, such as the Tower Renewal Program, which is providing funding through Solid Waste Management Services to build new bicycle repair hubs. Expanding partnerships with existing and new bike hubs and other local organizations will better position cycling infrastructure projects and their uptake by local residents.

A related concern raised by stakeholders is the challenge of separately funded and implemented initiatives by different City Divisions. For example, the installation of

cycling infrastructure in the absence of projects to improve housing, transit, park access, and security may not be welcomed by communities where these other pressures are of a higher priority. Transportation staff are committed to and are working towards improving cross-divisional coordination and collaboration.

In discussions with stakeholders, concerns were raised regarding the City's approach to public consultations. In many communities, such as those in Neighbourhood Improvement Areas, it is difficult for residents to attend consultation events, such as Open Houses. Challenges included learning about events and receiving materials in a timely manner, travelling to the event, and finding time within one's schedule to attend the event, especially with children and shift work. Staff are committed to taking steps to ensure there is more involvement from local communities in the planning and hosting of consultation events, and to attend existing community events; that is, to go where people already are rather than only initiating stand-alone events. There have been some examples of Transportation Services and the Public Consultation Unit undertaking these kinds of partnerships and creative, flexible approaches, such as the hiring of local residents as community animators for the Bike Flemingdon Thorncliffe consultation.

Partnerships and collaborations, which enable and empower local residents to shape the engagement and design of projects will be further developed, enhanced and expanded as the Cycling Network Plan is implemented.

Feasibility Analysis

The cycling analysis categories outlined in the methodology section of this report indicate ideal corridors based on the value they bring to the cycling network, but they do not represent what is feasible or what impacts and necessary trade-offs would be on any particular street. The scores serve as the preliminary prioritization of projects, which must then be assessed for feasibility before they are programmed.

A project's feasibility depends on several factors that include, but are not limited to:

- Appropriate bikeway type (bike lane, cycle track, boulevard trail) and their corresponding design requirements;
- Curb to curb widths and right-of-way widths at mid-block locations and at intersections;
- Number of vehicle lanes;
- Speed and volume of vehicles;
- Presence and utilization of parking and loading zones (3hr street parking, on-street paid parking, residential permit parking, or various types of loading zones);
- Presence of utility poles, trees, and infrastructure in the boulevard;
- Topography;
- Property ownership;
- Pavement quality, potential road work, and capital coordination; and
- Cost of installation.

Very few proposed projects have no impacts to the existing street. When a project is assessed for feasibility, the potential trade-offs are documented, and prepared for public consultation and Council approval. While some cycling routes are physically infeasible based on irreversible space constraints and unalterable external factors, others have

the potential to be installed, but would result in significant impacts and trade-offs that may not be acceptable to staff, Councillors, or residents.

Implementation Challenges and Improvements

The Ten Year Cycling Network Plan (2016) proposed approximately 560 (directional) lane km of bike lanes or cycle tracks, 55 centreline km of multi-use trails, and 380 (directional) lane km of shared lanes through neighbourhood streets. On-street infrastructure lengths are reported in lane kilometres to account for one-way infrastructure and streets with varied bikeway types, and in centreline kilometres for multi-use trails.

Since the approval of the Ten Year Cycling Network Plan in 2016, approximately 7 percent of the proposed kilometres of cycling infrastructure has been installed. This rate of implementation reflects that projects take time to move through the design and approval process and need to be coordinated, and often bundled, with other work at least three years out to minimize disruption.

Key challenges to implementation have included the need for early coordination with the capital works program in order to bundle project delivery with state-of-good repair work, a re-prioritization of projects as a result of new funding from other orders of government, issues with project feasibility and impacts, addressing issues that arise post-implementation, and the ten-year timeframe of the plan itself. Proposed improvements include a three year near-term implementation program, an annual prioritization process with feasibility analysis, and a neighbourhood clustering approach to delivery. These challenges and strategies for improvement are summarized below.

Three Years Needed to Coordinate and Bundle Projects with Capital Program

A number of projects originally planned for the early years of the Ten Year Plan were scheduled to match road work timelines (reconstructions and resurfacings). At the time the Plan was approved in June 2016, there was, in some cases, not enough time for the public consultations and approvals to change the scope of the road work happening in 2017 and 2018.

In other cases, the road work was deferred, with the cycling projects included in deferral, such as Mount Pleasant Rd (St. Clair Ave to Beltline); Bloor St E (Church St to Sherbourne St), and Port Union Rd.

New Funding from Other Orders of Government Shifted Priorities

New funding opportunities through the Federal Public Transit Infrastructure Fund (PTIF) and Ontario Municipal Commuter Cycling fund (OMCC) arose in 2016 and 2017 after the proposed Ten Year Plan was developed, which changed the priority and opportunity timing of many projects. In order to advance qualifying projects, several others were deferred, including:

- The Westway - Martin Grove Rd - Lawrence Ave W - St. Phillips Rd;
- Bellamy Rd;
- Donlands Ave.

Projects that were advanced include the Finch Trail from Birchmount Rd to Pharmacy Ave and the East Don Trail, with significant resources also directed to the design of Eglinton Connects and the West Toronto Railpath Extension (both PTIF projects), and the Finch West LRT.

Feasibility Challenges

Some projects proposed in 2017 and 2018 were deemed feasible during the high level analysis of the Plan, but more detailed analyses proved them much more technically challenging than anticipated. Examples include:

- Lansdowne Ave from Queen St to Rideau Ave, where the two lane cross-section would require full removal of highly utilized permit parking;
- College St from Lansdowne Ave to Brock Ave, where removal of traffic lanes or significant amounts of parking would be required;
- Dovercourt Rd, which has high traffic volumes, is too narrow for cycling infrastructure within its southern portion, and would require significant parking removal within its northern portion.

These challenging routes have been maintained in the overall proposed network, and will be reviewed for implementation in the future when the barriers to implementation can be overcome or mitigated.

Addressing Issues that Arise Post-Implementation

In a few cases, concerns were raised by the community after implementation of the project that required additional site investigations, counts and traffic analysis, community meetings, or reports to modify the cycling infrastructure that was installed. An example of this is the Woodbine cycle crack project, which involved extensive consultation prior to Council approval in October 2016. Based on bike counts before (2016) and after (2018) the installation of this cycle track, the number of people cycling on Woodbine Avenue more than doubled. Following installation in 2017, community feedback led to minor modifications to the design which have since been implemented.

While this work can lead to changes that are responsive to the community's feedback, it takes staff time and resources away from the delivery of other projects. Even with the most extensive consultation and post-implementation modifications, some groups of residents will have differing opinions and may be unsatisfied with the results of the broader community's input and the final design.

Proposed Cycling Network and 2019-2021 Near-Term Implementation

The timeframe of the Ten Year Cycling Network Plan proved challenging from two perspectives:

- The ten year timeline of cycling projects extended beyond the road program and coordination schedule, and led to mismatches with proposed cycling projects, and promises of delivery years that could not be kept;
- At the same time, the ten year timeline meant longer-term Secondary Plan routes could not be included in the Plan, and made it difficult to program new valuable

routes that were not identified in the Plan, but where opportunities emerged in the near-term.

The revised approach of a more flexible, longer term plan with a detailed, near-term capital program is designed to adapt to the realities of infrastructure planning and coordination. Moving forward, the Cycling Network Plan consists of two components:

- A near-term capital implementation program for cycling infrastructure (currently 2019 to 2021);
- A proposed network, for which feasibility analyses and timelines have not yet been confirmed (currently 2022+).

This approach is consistent with the management of the state of good repair program, which has its final review of scope and timing at the three year mark. The program forecasts out to five years, but years four and five undergo significant changes in the lead up to the final review stage, and are therefore unreliable for committing to specific delivery years.

Transportation Services staff will review the capital implementation program annually to bring forward the next year's projects from the proposed network, based on priorities identified through the enhanced cycling analysis, capital coordination opportunities (road resurfacing and reconstruction), a neighbourhood clustering approach, equitable and geographic distribution, as well as the technical feasibility of the proposed bikeway type. This process is explained further in Attachment 8, and will take place each year in advance of the road program's final scope review to ensure bundling opportunities and timelines are not missed.

The originally identified routes of the Ten Year Cycling Network Plan have either been installed, programmed in 2019 to 2021, or maintained as part of the proposed cycling network. In a few distinct cases, a route has been removed from the proposed network because it has been confirmed to be physically infeasible, or a preferred parallel alternative has been confirmed. These special cases are included in Attachment 9.

Routes programmed for 2019 to 2021 have undergone a feasibility analysis to confirm what is required to install the proposed bikeway type (for 2021, at a high level only, with further feasibility analysis currently underway). If the infrastructure cannot fit in the existing roadway, the necessary impacts have been articulated and considered feasible by staff, such as the removal of a vehicle lane or parking, or the reconstruction of the boulevard or road. These impacts will be discussed with local Councillors and included in public consultations and stakeholder engagement events to confirm support. For 2019 and many 2020 projects, work has already begun on project design, and consultation has already started or is planned. Work will begin soon on major projects in 2021, as well.

Many of the routes in the overall proposed cycling network have not yet undergone a feasibility review. They are included in the network because the cycling analysis demonstrates value, but assessing every route's technical feasibility at this stage is not possible. In some cases, immediately parallel routes score well, and so both are shown on the map to capture both possibilities. In these cases, further analysis and consultation will confirm the preferred alignment(s).

The routes in the cycling Renew program (existing cycling infrastructure to be upgraded through measures such as separation, paint enhancement and bringing existing infrastructure up to current standards), will be coordinated and funded through Vision Zero 2.0. The selection of routes for each year will primarily be based on identifying unsafe locations through collision analysis, bringing up to current standards, as well as coordination with resurfacing and reconstruction projects.

Neighbourhood Clustering Approach

The neighbourhood clustering approach is an important strategy for streamlining reporting and approval requirements, as well as improving connectivity of routes. Where appropriate, Transportation Services staff will seek to coordinate the programming of neighbourhood routes together, with joint consultation events, reports to Council, and construction. A recent example is the York University Downsview project, which has over 10 streets across the two neighbourhoods jointly proposed; many of these routes were implemented in 2018, with construction and installation continuing in 2019.

Implementation Process and Capital Coordination

There are many steps between the programming of a cycling route to its installation, with varying levels of complexity and length of time depending on the infrastructure type and potential impacts. The initial phase of each project involves the collection of background data, including vehicle volumes and speeds, cyclist and pedestrian counts, reviewing existing by-laws, visiting the project site and documenting street measurements and characteristics, and identifying stakeholders.

Cycling Routes on Quiet Streets
If the proposed cycling route is on a quiet, neighbourhood street where wayfinding sharrows are the extent of the changes to the road and there are no impacts, the implementation process involves plan development, consultation with the local Councillor, and public notification prior to implementation. The process typically takes approximately four to six months.

If road modifications, such as traffic calming or traffic diversion are involved, which would impact residents and the street network, additional time is required for analysis, traffic modelling, parking surveys, and public consultation. These measures add another several months to the process. If a route requires the addition of a new traffic signal to facilitate a safe crossing of a major road, the installation may be delayed to wait for the signal, which can add six to 12 months.

Bike Lanes and Cycle Tracks
The installation of bike lanes will typically require, at minimum, the removal of parking spaces or vehicle lanes. For these projects, traffic analysis, parking surveys, and public consultation events are required. Depending on the length and complexity of the project, there may be multiple options under review and more than one consultation event.

When there are any impacts to parking, vehicle lanes, or changes to by-laws, a report must be written and presented to the Infrastructure and Environment Committee and Council for approval. The process to plan, design, consult and seek approval for a bike

lane can take a year or more. After approval, construction notices are distributed in neighbourhoods, followed by installation of infrastructure, and subsequent inspection.

If the installation of bike lanes or cycle tracks requires the removal of one or more vehicle lanes that would result in a permanent reduction in the road's capacity, a Municipal Class Environmental Assessment (EA) may be required. The analysis and consultation involved in an EA adds a substantial amount of time to the process due to additional reporting and approval requirements.

Capital Coordination
For cycling projects delivered through the Major Capital Infrastructure Coordination (MCIC) process, such as road reconstruction, preliminary details and project scoping must be identified three years in advance in order to be considered as part of the scope of the project. These major projects require analysis, consultation, and design to be started and underway two years in advance of the planned construction in order to be included in the delivery contracts. Though the timelines are challenging due to the volume of in-year work, the efforts required to assess the technical feasibility of projects several years in advance can provide greater opportunities for providing separated cycling infrastructure through the relocation of catch basins and curbs and adding grade separation. This type of civil construction required for separated infrastructure can then be achieved more efficiently and cost effectively by bundling cycling infrastructure projects with road reconstructions

The timing of major projects is reviewed and adjusted regularly, and projects are shifted from year to year based on a variety of changing resources and priorities. The coordinated cycling projects also need to shift accordingly to match bundled road and water projects. Changes to the major project schedule may result in changes to the target delivery year of a cycling project in order to achieve the aforementioned efficiencies.

The new scheduling framework of the near-term cycling implementation program and overall proposed network will minimize the frequency of changes to the cycling program, but not fully eliminate the possibility of delays.

In order to better plan and predict road reconstruction projects, improvements have been made to the collection and reliability of pavement condition data through automated data collection and increased frequency of inspections. The road rehabilitation project scope is further refined through the completion of geotechnical investigations coupled with pavement design reports. In cases where other right of way improvements, such as cycling or pedestrian infrastructure, are being considered in addition to the road rehabilitation, a functional design of the proposed improvement is also completed to inform a complete scope of work for the entire right of way and thus improve the ability to deliver bundled improvements that are consistent with the City's Complete Streets approach.

Council Requests and Specific Project Implementation

A variety of City Council decisions have included requests related to the cycling network, which were evaluated in this Update and addressed in detail in Attachment 10:

- Eglinton Connects Streetscape and Cycle Track Plan Funding
- Lawrence Avenue West
- Brimley Road South Path Project
- Connecting Centennial College Progress Campus and Military Trail Road
- Moving Forward: An Action Plan to Improve Safety and Opportunities for Pedestrians and Cyclists (Current Ward 5, Previously Ward 11)
- Midtown in Focus
- TOcore Downtown Plan & Mobility Strategy

Accelerating the Plan to 2022

City Council requested that Transportation Services report back on what would be necessary to complete the original routes of the Ten Year Cycling Network Plan (2016) by 2022, to align with the end of the current term of Council.

There are a number of ways that implementation could be accelerated through additional resources, but even with these kinds of additions, the capacity within the field of construction contractors and consulting firms, as well as the required consultations and timelines for coordination with other capital work are significant limiting factors.

If these issues were not limiting factors, an increase to the budget of at least $15.5 million more per year for 2019-2022 would be required (based on the original, preliminary cost estimates of the remaining projects). New staff and resourcing would need to be approved and hired. It is anticipated that at least 10 additional new full-time staff would be needed to manage the planning and design of these projects within Transportation Services, and the Public Consultation Unit and Engineering & Construction Services (ECS) would require additional staff capacity to deliver this work as well.

Cycling routes require detailed feasibility analyses to confirm what is possible on any given street, and what the impacts or trade-offs would be. Many streets would require significant parking removals or vehicle lane reductions, or the removal of many trees and utility pole relocations in the boulevard. Such impacts do not necessarily prevent the project from moving forward, but they do extend the analysis required, and for permit parking, involve polling residents. To implement all projects by 2022 would require the elimination of public consultation, or at minimum, a new approach such as short, online surveys only. Consulting with local residents and the broader community is an integral part of each cycling project, and could not be done meaningfully or effectively with a shortened timeline.

A number of the new cycling projects would require major construction. Capital coordination processes require a three year window to ensure coordination with other capital works, and ECS would require adequate time to complete geotechnical investigations, surveys, detailed design, tendering and construction. The delivery of major cycling infrastructure construction projects could not be facilitated by ECS in this

shortened timeline. It would also mean a lack of coordination with other planned capital works on major roadways, with more disruption to residents.

All new designated cycling infrastructure requires Council approval for by-law regulation for the amendments to traffic and parking regulations. To accelerate the implementation of infrastructure within 2019-2022, all cycling routes as detailed in the Ten Year Plan would need pre-approval from Council with delegated authority to staff to implement required by-law changes without reporting back on each project individually.

While some projects could potentially benefit from accelerated implementation through increases to capital budget and staff resources, the specific goal of completing all routes of the Ten Year Cycling Network Plan by 2022 is unattainable.

Going Forward

The City of Toronto will continue to **Grow**, **Connect**, and **Renew** the cycling network, guided by the Cycling Network Plan. Despite many challenges, substantial progress has been made to expand and upgrade cycling infrastructure in the city. As the designs of significant city-wide projects advance to implementation, the high quality backbone of Toronto's cycling network will start to take shape, and local connections throughout neighbourhoods will support and extend the network's reach.

On-Street Bikeway Design Guidelines

Transportation Services will be finalizing On-Street Bikeway Design Guidelines in 2019. The overarching principles of the guidelines are to prioritize safety and accessibility within design and make cycling a comfortable experience for all ages and abilities.

The Ontario Traffic Manual Book 18 focuses on the design of cycling infrastructure. Toronto's guidelines will be generally consistent with Book 18, but with a greater focus on highly used and constrained urban environments. Book 18 has a province-wide focus, and includes a broader range of environments, such as rural roads that are not applicable to the Toronto setting. Toronto's guidelines will be the primary source for on-street bikeway design, and complement Book 18, Toronto's Complete Streets Guidelines and Toronto's Multi-Use Trail Design Guidelines (2015).

These guidelines are intended for practitioners involved in the development of cycling infrastructure in Toronto, and will also be helpful for key stakeholders who have a special interest in understanding the process and rationale for the various design strategies.

The guidelines will support the design and delivery of projects included in this Cycling Network Plan Update and are intended to lead to better design outcomes, consistency in design and more efficiency in cycling facility selection and design implementation.

Reporting Back in 2023

Transportation Services staff will prepare an update on the progress of the Cycling Network Plan in early 2023. The update will provide information about completed

infrastructure to date, the status of major projects and studies, the near-term implementation program (which will be 2023 to 2026 at that time), and any changes to the overall proposed cycling network.

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ATTACHMENTS

Attachment 1 - Map of Proposed Cycling Network by Analysis Scores
Attachment 2 - Map of Major City-Wide Cycling Routes
Attachment 3 - Map and Table of Cycling Infrastructure Completed 2016 - 2018
Attachment 4 - Maps of Near-Term Implementation Program 2019 - 2021
Attachment 5 - Stakeholder Engagement Summary
Attachment 6 - Analysis Methodology and Enhancements
Attachment 7 - Maps of Cycling Analysis Results by Category
Attachment 8 - Project Selection Process Summary
Attachment 9 - Routes Removed from Proposed Network
Attachment 10 - Project-specific Council Request Responses