Appendix C:
Bike Share Toronto Four-Year Growth Plan Report

September 2022

Four-year Growth Plan (2022–2025)

Bike Share Toronto

Toronto Parking Authority

Acknowledgements

Bike Share Toronto's Four-year Growth Plan represents a collaborative effort from Toronto Parking Authority staff, partners and members of the public and we acknowledge their contribution towards the development of this plan.

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Executive Summary

Introduction

The purpose of this document is to guide station planning for the Bike Share Toronto network as part of the Toronto Parking Authority's (TPA) annual capital expansion from 2022 to 2025. As outlined in the plan, accelerating bike share's growth is a key corporate priority.

Designed to improve mobility options for Torontonians, the program has seen tremendous success and growth since its inception, and that trend continues. Record ridership, growth in annual memberships, and increased popularity of e-bikes demonstrate the high level of service bike share customers have come to expect. Those indicators also affirm that the need for expanding bike share's service area to address key service gaps has never been greater, or more urgent.

Development of The Four-year Growth Plan addresses these needs and directs a course that focuses on providing customers with more connections to higher-order transit and assisting with first/last-mile travel, in other words, getting riders from Point A to Point B seamlessly.

The plan also focuses on how bike sharing relates to, and interconnects with other City programs including the TransformTO Net Zero Climate Action Strategy, city transit projects, cycling infrastructure projects, and multimodal mobility in general.

Information specific to other components of the TPA's strategic plan for the Bike Share Toronto system such as operations, maintenance, and pricing are not included in this document.

Background

Since 2011, Bike Share Toronto has provided a sustainable, convenient, and affordable system of bike sharing to residents and visitors in the City of Toronto. Whether it is part of an everyday routine or a casual trip, Bike Share Toronto is an important part of the city's transportation network that provides a reliable and easy-to-use service.

The **2016 Feasibility Study For The Expansion Of Bike Share Toronto** provided the framework for system expansion to 2020. One of its key objectives centred around building a bike share system, primarily in Toronto's downtown core that could be sustained. The new four-year growth plan addresses the next phases of the system's growth. It accepts and goes far beyond the feasibility of bike sharing, to accessibility, equity, and convenience.

Methodology

Decision-making for the plan was informed by Bike Share Toronto's planning objectives of ridership, equity, first/last-mile transit integration, accessibility, and revenue. These objectives were developed into key inputs for the various phases of the development process.

Spatial Analysis

To lay the foundation for the future growth of Bike Share Toronto, the Toronto Parking Authority carried out an in-depth spatial analysis process using data from Bike Share Toronto, City of Toronto, and other available sources which studied demand, first/last-mile usage, equity, and future alignment. The spatial analysis process was developed to strategically identify and inform where the system should be implemented as part of the growth plan.

Stakeholder Consultation

A key part of the development process involved stakeholder workshops organized for Bike Share Toronto partners including many City of Toronto departments, the Toronto Transit Commission (TTC), Metrolinx, and other public and private institutions.

Three public consultation events were undertaken to inform the public about the plan, collect user feedback and present the proposed system expansion. Bike share users were invited to participate in a survey to capture information on trip behaviour, challenges and barriers, and perspectives on upcoming station expansion.

Building on findings from the survey, two user workshops were held to solicit greater context on key results. Workshop discussion topics included bike share trip purpose, barriers to using bike share, trip length and pass type preferences, and potential use of e-bikes. Workshop outputs helped to validate and inform spatial analysis and stakeholder engagement findings.

Conclusion

The Four-year Growth Plan will see the system expand from 625 stations and 7,165 bikes to over 1,000 stations and 10,000 bikes by 2025. The plan will broaden the system's coverage area into all 25 wards of Toronto, prioritizing neighbourhoods where residents have the greatest need for access to affordable mobility options.

It presents a proposed implementation schedule that will guide the expansion process, aligning implementation to strategically serve neighbourhoods and coordinate with planned projects where bike share stations can be integrated.

The expansion will contribute towards achieving the City's TransformTO Net Zero Climate Action Strategy target of 75% of all work and school trips under 5 km being made by walking, cycling, and transit by 2030.

The system will also be expanded along many of the corridors where new cycling infrastructure is being built as part of the City's Near-Term Implementation of the Cycling Network Plan.

Bike Share Toronto will grow as an integral part of the City's growth, aligned with the stated mission of its owner and operator, the Toronto Parking Authority – "to create a seamless customer experience that delivers on choice, ease, and speed through the city." Its growth will be propelled by the TPA's vision to become the world's best provider of sustainable parking, bike share and last-mile mobility experiences for our customers, our partners, and our city. The Four-Year Growth Plan sets Bike Share Toronto on that path.

The Four-year Growth Plan will see the system expand from 625 stations and 7,165 bikes to over **1,000 stations and 10,000 bikes**

1 Background

1.1 TPA Mission and Vision

Bike Share Toronto is owned and operated by the Toronto Parking Authority (TPA), North America's largest municipally-owned operator of parking with over 18,000 on-street and 40,000 off-street parking spaces at 307 locations. The TPA is an agency of the City of Toronto and is fully self-sustained through rate-supported operating and capital budgets. Eighty-five percent of the TPA's annual net operating income is returned to the City and the remaining 15% is used to fund long term, multi-year capital budget plans including the Bike Share Toronto program. TPA's mission and vision are:

Mission

Create a seamless customer experience that delivers on choice, ease, and speed through the city.

Vision

To become the world's best provider of sustainable parking, bike share and last mile mobility experiences for our customers, our partners, and our city.

1.2 What is Bike Share Toronto?

Bike Share Toronto is a public bike share system that operates in the City of Toronto, year-round, 24 hours a day, 7 days a week. The system consists of a fleet of traditional and pedal assist electric bikes (e-bikes) that are available for use on a short-term basis. Bicycles can be rented and returned to any docking station located in the city.

The bike share system launched in May 2011 with a network of 80 stations and 1,000 bicycles located primarily in the downtown core. Management of the system was transferred to the TPA in 2014 and rebranded as Bike Share Toronto. The bike share system serves as an extension of the city's transportation network, providing broader multi-modal connectivity and first/last-mile travel options.

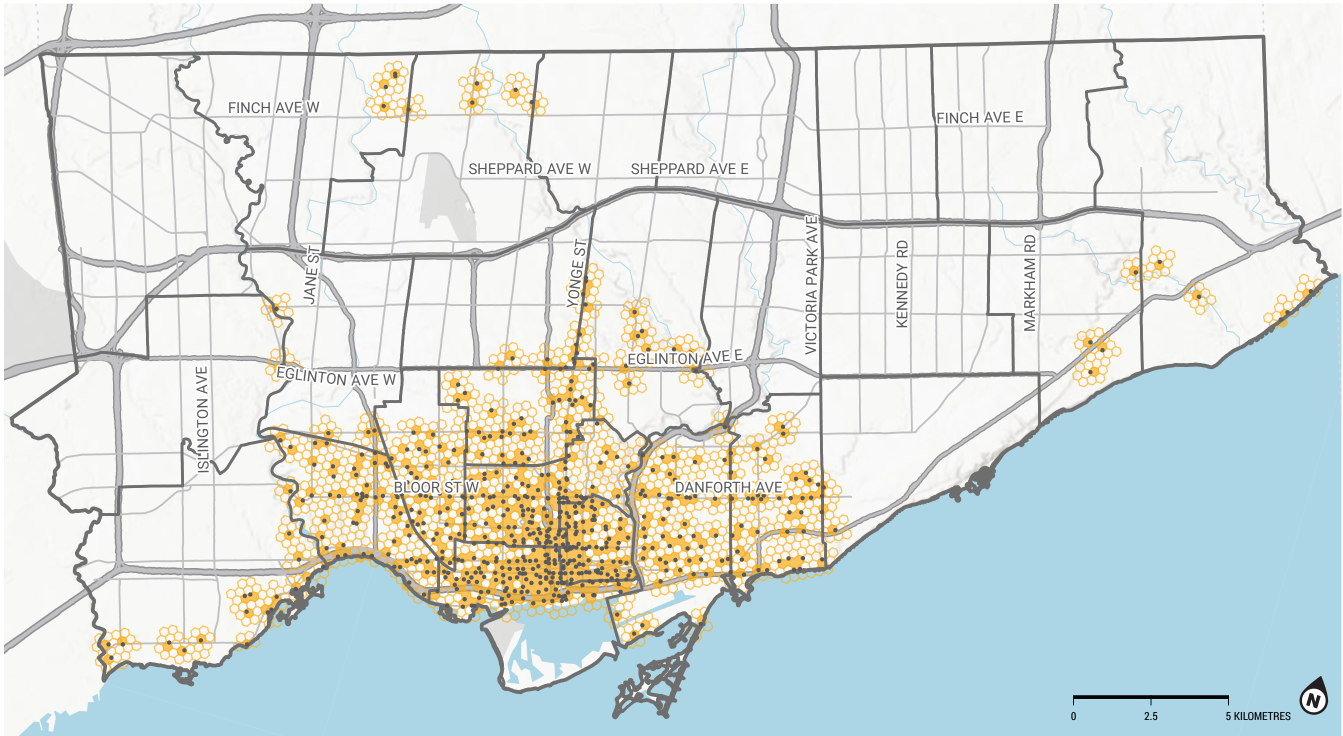
Bike Share Toronto caters to both one-time / casual users as well as regular users who purchase annual memberships. Casual users can also access the system by purchasing a pass at a station kiosk, through the mobile app, or on the Bike Share Toronto website.

Bike Share Toronto's mandate is to be an integral part of Toronto's transportation landscape as a sustainable, affordable, and convenient way for residents to travel and explore the city

1.3 Current State of Bike Share Toronto

Currently, the Bike Share Toronto system is primarily concentrated in and around the downtown and central areas of the city. The system has two satellite service areas in North York and Scarborough. The system has 625 stations and 7,165 bikes, which include 525 pedal-assist e-bikes. The use of the system has grown significantly in recent years, with a 516% increase in customers and 328% increase in trips taken since 2016. In 2021, over 3.5 million trips were taken using the system.

The current system was expanded following completion of the previous growth plan (Feasibility Study for the Expansion of Bike Share Toronto, 2016), which directed the expansion of the system from the initial system size of 80 stations and 1,000 bikes to its current size. The previous plan focused expansion to areas with high ridership potential.



Current Station Locations

Bike Share Toronto Four-year Growth Plan

Bike Share Toronto System

- Current Bike Share Station (Point)
- Current Bike Share Station
- Current Bike Share Service Area
- Wards

Figure 1. Map of current Bike Share Toronto system stations and service area

1.4 About this Plan

The Four-year Growth Plan outlines Bike Share Toronto's plans for system expansion over the next four years (2022 to 2025). The plan will direct where 375 stations will be added to the system, with an additional 3,150 bikes. Once the plan is fully implemented, the system will have at least 1,000 stations and 10,000 bikes (including 2,000 e-bikes). The development of the plan included spatial analysis as well as public and stakeholder consultation to inform decision-making on where new stations should be located.

Goals and Planning Objectives

The key goal of the Four-year Growth Plan is for **the system to have a station in all of Toronto's 25 wards by 2024**. Bike Share Toronto developed planning objectives to direct how decisions are made in order to provide a great system. The planning objectives are (in no specific order):

Ridership
Enabling the highest number of potential trips

Revenue
Understanding and considering the revenue potential of stations

Accessibility
Minimizing geographic and topographic barriers to use the system

First/Last-mile
Enhancing connectivity with regional and local public transit services

Equity
Providing equitable access to communities across the city

Equity in the Four-year Growth Plan

As a result of the current geographic distribution of the system, there is limited bike share service to areas that have been historically underserved by social infrastructure as well as areas where there are high proportions of vulnerable populations and low access to services. Accessible and affordable transportation options can benefit surrounding communities by reducing geographic and financial barriers to public services and employment opportunities. The Four-year Growth Plan will guide strategic expansion of the bike share system into the City's **Neighbourhood Improvement Areas (NIA)** to ensure there are opportunities for all residents to access bike share across all neighbourhoods.

More details on how equity was assessed and integrated into Four-year Growth Plan are outlined in the **Equity** Priority Input section.

Revenue in the Four Year-Growth Plan

Critical to the success of the bike share program is ensuring future stations are located in areas of the city that generate revenue to support operational expenditures. Attracting new users, both casual and annual, is important to growing ridership and revenue for the system. Network expansions of the system must consider the **local demand and ridership potential** for both of these user groups when proposing new station locations. Since the price per ride of a casual user are higher than annual members, areas that attract casual trips are particularly important for revenue. Historically, areas that attract casual trips are also the most popular areas in the system for ridership. The Four-year Growth Plan considers ridership and revenue as key inputs in the analysis of new station expansion.

E-bikes and E-stations

In recent years, e-bikes have been introduced into many bike share systems across the world. E-bikes have the potential to assist people in travelling further and faster by bike with less effort, particularly when travelling uphill. The maximum speed of an e-bike is 25 km/h and the electric motor within the bike is initiated when a user begins to pedal.

In 2020, Bike Share Toronto launched an e-bike pilot program with 300 e-bikes and 3 e-bike charging stations (e-stations) that are capable of charging e-bikes. Following the popularity of e-bikes among users, the TPA has committed to growing Bike Share Toronto's fleet of e-bikes and installing more e-stations as part of ongoing annual capital expansion. Though the bike share system mostly consists of conventional bikes and solar-powered stations, there are some operational and planning factors to consider as e-bikes and e-stations are added to the fleet.

E-bike Operations in Toronto

- E-bikes and non-electric (conventional) bikes may be docked at any station in the system
- E-bikes can only be charged at e-stations – solar-powered stations do not provide enough power
- Conventional pedal bikes can still be docked at e-stations, similarly, e-bikes can still be docked at solar-powered stations, however, the batteries on e-bikes will not charge
- E-stations must be connected directly to a power source, which requires construction and access to an electrical connection
- Increasing the number and availability of e-bikes does not exclusively depend on installing more e-stations and other e-bike charging strategies may be tested and implemented in the future

E-station Planning

- Best practices from other bike share markets with larger e-bike fleets have shown that an e-bike fleet can be recharged by organic redistribution of bikes when 15-20% of the station network are e-stations
- E-stations do not need to be equally distributed geographically across the network but rather located based on ridership
- E-stations should be installed in locations that have high ridership, which would increase the likelihood of e-bikes circulating through the station and recharging for others to use
- The optimal locations should not be overly popular that bikes are continuously docked and undocked, providing insufficient times for e-bikes to charge at the e-station

The TPA is purchasing new e-stations every year and working with municipal partners to establish power connections to stations, as well as testing operational strategies to optimize battery charging on e-bikes. As part of the next four year of capital expansion, the existing network of solar-powered stations will be evaluated to identify location with optimal ridership to feasibly support e-bikes and e-stations.

Spatial Analysis

A key element of the Four-year Growth Plan was the spatial analysis process. The analysis used data made available by Bike Share Toronto, the City of Toronto, and other available sources. The analysis looked at the existing system and developed the following priority input layers:

Demand

Where bike share trips were taken in 2019 and 2021[1], modelled across Toronto based on land use and destination intensity, and data derived from Toronto's travel demand model to predict where there is high ridership and revenue potential

First/Last-mile

Where bike share could enhance public transit by filling gaps in transit coverage and support transit riders as a time-saving alternative to walking to or from transit nodes

Equity

Where bike share can prioritize access to the system for equity-deserving populations

Future Alignment

Where projected population and employment will be located, as well as new cycling facilities, and transit stations

The priority input layers were based on the planning objectives and used as key inputs to identify where the system should expand. Additional analysis took revenue performance and potential of stations and operational challenges into account by examining patterns of where stations were empty or full.

The **Spatial Analysis** section of the plan provides detailed information on the spatial analysis process and outputs.

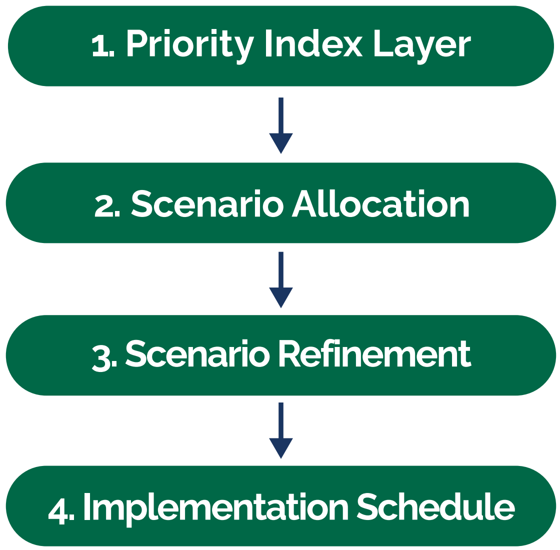


Figure 2. Spatial analysis process

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1 Data from 2020 was not included in this analysis as ridership patterns were severely impacted by COVID-19.

Public and Stakeholder Consultation

A key component of the Four-year Growth Plan was to engage with municipal partners, stakeholders and members of the public to better understand how the bike share system could be expanded and enhanced over the next four years. To gather feedback, a number of engagement events were undertaken with stakeholders and the public.

The following is a summary of the consultation and engagement strategy deployed for the Four-year Growth Plan. Additional details are contained in **Appendix A: Engagement Summary Report**.

Stakeholder Workshops

The TPA works closely with many City of Toronto departments, the Toronto Transit Commission (TTC), Metrolinx, and other public and private institutions and stakeholders to implement and maintain the existing system. Strengthening the relationship between the TPA and these stakeholders is paramount to effectively installing the number of new stations planned over the next four years and implementing e-stations. To further build the relationship with stakeholders, focused stakeholder workshops were undertaken during the plan development.

The list of stakeholders on the following page were invited to attend the workshops, however, not all chose to participate in one or both rounds of workshops.

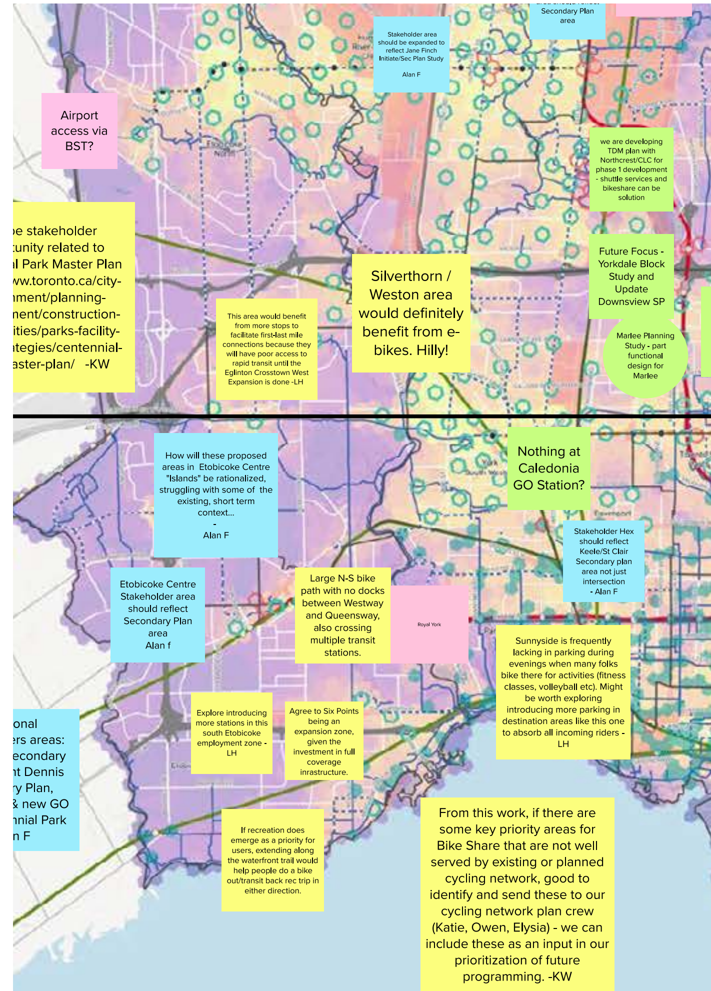

Figure 3. Stakeholder comments on an interactive board

City Departments and Agencies

- City Planning
- Transportation Services
- Parks Forestry and Recreation (PFR)
- Infrastructure and Development Services
- Social Development, Finance & Administration
- Economic Development & Culture
- Corporate Real Estate Management (CREM)
- CreateTO
- WaterfrontTO

Transit Partners

- Metrolinx (Stations Planning)
- Metrolinx (Sponsor Office)
- Metrolinx (Project Planning)
- Metrolinx (Rapid Transit Planning)
- Metrolinx (Transportation Policy)
- TTC (Strategy and Foresight)
- TTC (System Accessibility)
- TTC (Racial Equity Office)
- TTC (Transit Systems Planning

Other Public Institutions (outside of City of Toronto)

- Toronto Catholic District School Board (TCDSB)
- Toronto District School Board (TDSB)
- University of Toronto
- University of Toronto Scarborough
- York University/Glendon Campus
- Centennial College
- Seneca College
- Canada Lands Company
- North York General Hospital
- Toronto and Region Conservation Authority (TRCA)
- Toronto Public Library
- Parks Canada
- Infrastructure Ontario
- Toronto Zoo
- Toronto Community Housing Corporation (TCHC)

Private Partners

- Toronto Association of Business Improvement Areas (TABIA)
- Business Improvement Areas

Other

- Private developers and commercial property owners
- Point A (Smart Commute)
- Toronto Hydro
- Business Associations
- BILD Toronto

The first set of stakeholder workshops was held in April and May 2022. The purpose of these workshops was to introduce the plan to stakeholders and gather feedback on challenges, opportunities and anticipated roles respective stakeholders may have in the implementation of the Four-year Growth Plan.

The second set of stakeholder workshops was held in July 2022. The purpose of these workshops was to present the spatial analysis outputs and a draft station allocated map for the proposed system expansion. Stakeholders were asked to provide feedback on the draft station allocation map and to identify additional opportunities for stations based on their upcoming projects.

A summary of the feedback collected from both rounds of workshops is contained in **Appendix A: Engagement Summary Report**. The feedback from these sessions informed the proposed stations areas and implementation schedule for the Four-year Growth Plan. In addition to identifying recommended areas for system expansion, stakeholders identified site-specific opportunities for future stations, recommendations to support the implementation of this plan, as well as actions to support future growth plans and bike share service improvements.

Public Consultation

Three public consultation events were undertaken to inform the public about the plan, collect user feedback and present the proposed system expansion. These include an online survey, bike share user workshops, and a public information session. A summary of the feedback that was collected from public consultation is included in **Appendix A: Engagement Summary Report**.

Survey

Bike share users were invited to participate in a survey to capture information on trip behaviour, challenges and barriers, and perspectives on upcoming station expansion. The survey contained 21 questions and was promoted through two Bike Share Toronto newsletters on May 10 and June 8. Upon close, the survey received 177 responses.

User Workshops

Building on findings from the survey, two user workshops were held to solicit greater context on key results. Participants were selected from survey respondents who indicated they would be willing to attend a focus group session. The one-hour user workshops were held virtually on July 15 and July 16. Workshop discussion topics included bike share trip purpose, barriers to using bike share, trip length and pass type preferences, and potential use of e-bikes. Workshop outputs helped to validate and inform spatial analysis and stakeholder engagement findings for the Four-year Growth Plan.

Public Information Session

On August 8, a public information session was held virtually to share information about the upcoming expansion. The session was promoted through Bike Share Toronto media channels and had 87 participants. A presentation was given on the study purpose, methodology, and the areas under consideration for expansion. Questions from participants included:

- How is Bike Share considering equity when they plan and install new stations?
- Any plans to integrate with PRESTO?
- Why would bike share not go 100% electric?
- Is the expansion aligned with the City's cycling infrastructure plans?

In addition to understand the opportunities and challenges for bike share expansion, feedback collected through stakeholder and public engagement helped to shape the Four-year Growth Plan, particularly by validating the output of the spatial analysis. It was important that the Four-year Growth Plan be informed by both quantitative and qualitative information to ensure the recommendations for system expansion reflect community needs and how people want to use bike share in their respective areas.

8
stakeholder meetings

80+
public information session attendees

4
stakeholder groups

22
user workshop attendees

50+
stakeholders invited

177
user survey responses

1.5 Informing the Growth Plan

The Four-year Growth Plan builds upon the success of previous expansion to the Bike Share Toronto system. It also strives to identify opportunities for bike share to support and enhance other transportation infrastructure, such as expansions of the cycling and transit networks. To understand upcoming changes to transportation in Toronto, a selection of key documents was reviewed to identify considerations for bike share expansion. The following sections summarize plans, projects, and initiatives that inform or impact bike share system expansion over the next four years.

Feasibility Study for the Expansion of Bike Share Toronto (2016)

The 2016 Feasibility Study guided the expansion of the Bike Share Toronto system from a service area of 12.4 km^2, with 80 stations and 1,000 bikes to an additional 500 stations and 5,000 bikes over a five-year period. The study recommended that approximately 90% of the new stations be located to expand bike share into new areas and 10% of stations allocated to increase station density within the existing service area. The study prioritized expansion in areas with high ridership potential that were identified through a spatial analysis model. The model considered areas that had the “least risk” for expansion, for both a contiguous expansion of the service area as well as locations for new satellite service areas. A density guide of 4.0 to 6.5 stations per km^2 was established to support station siting and system expansion.

Key Considerations for the Four-year Growth Plan

The Feasibility Study guided the expansion of the system from operating primarily in the Toronto’s downtown core to extend beyond the city’s inner-urban neighbourhoods, including satellite service areas in Scarborough and North York. The study provides a strong basis for the benefits of bike share and how to expand the system’s coverage from a ridership-focused objective. Ridership potential remains a priority in the Four-year Growth Plan but it will not be as heavily weighted. Additional variables, such as equity and near-term infrastructure projects, will be incorporated into the Four-year Growth Plan to produce a comprehensive expansion plan that addresses the evolving priorities of the Bike Share Toronto system.

Feasibility Study for the Expansion of Bike Share Toronto (2016)

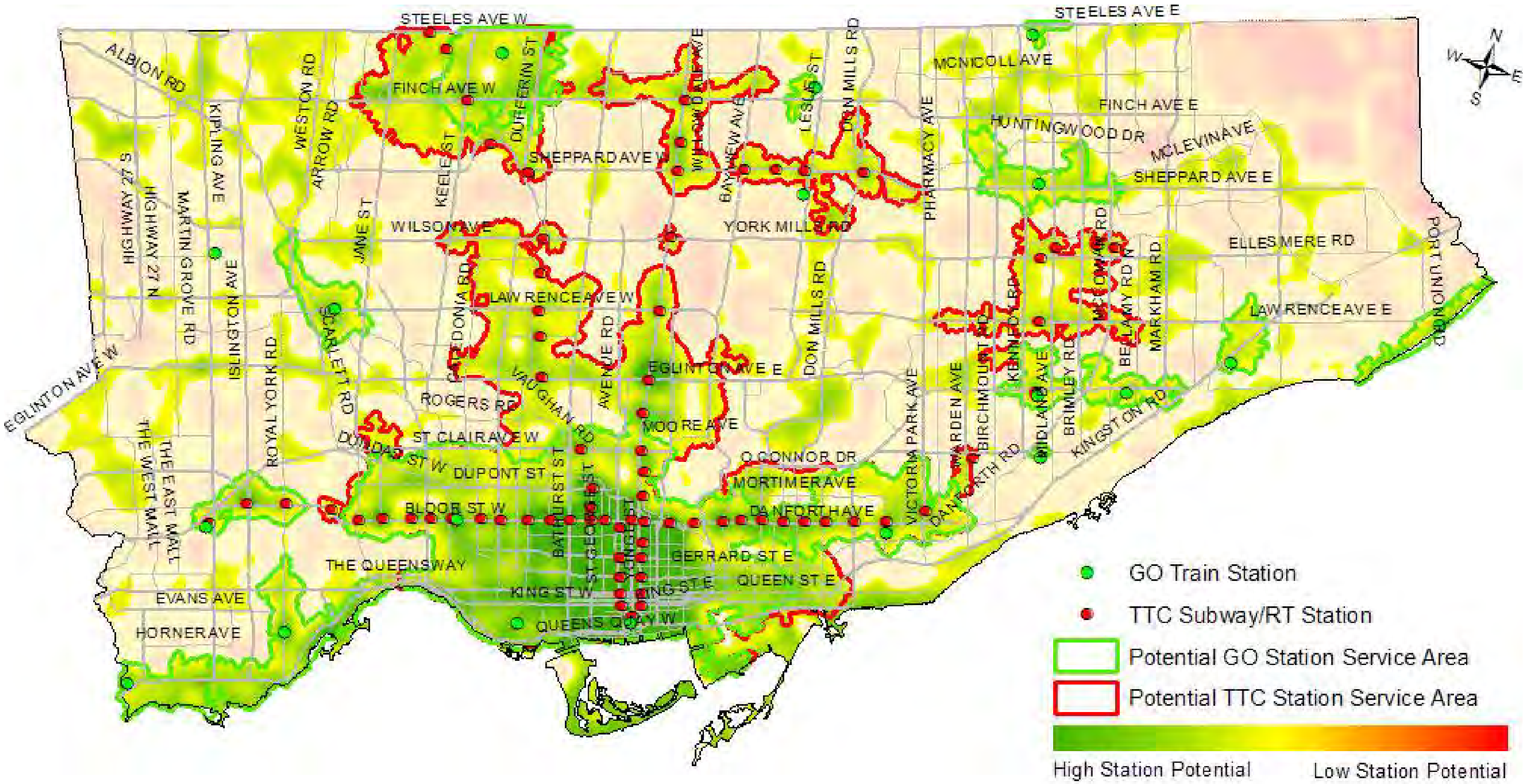

Figure 4. Proposed expansion areas from the Feasibility Study for the Expansion of Bike Share Toronto (2016)

TransformTO

The TransformTO Net Zero Strategy is a City Council approved document that outlines a pathway to achieve net zero greenhouse gas (GHG) emissions community-wide by 2040. Currently 36% of GHG emissions in Toronto are generated by transportation, with the majority of those emissions attributed to personal vehicles. The strategy outlines transportation-related targets for 2030 which include that 75% of school/work trips under 5 km are walked, biked or by transit. Under this target, action 8 includes expanding bike share at or near TTC stations. The strategy identifies that this action would have health, equity, resilience, and prosperity benefits. The strategy mentions the need for bike share stations along roadways and at destinations across the city to improve the access and convenience of cycling, as well as the potential benefits to electrifying station and expanding the e-bike fleet.

Key Considerations for the Four-year Growth Plan

The expansion of Bike Share Toronto system is part of the strategy to reduce GHG emissions in Toronto and to achieve net zero GHG emissions community-wide by 2040. An action item in the strategy is to expand the bike share system at or near TTC subway stations, to improve access to transit and support longer trips. The strategy also notes the importance of electrifying stations to support a fleet of e-bikes in the system.

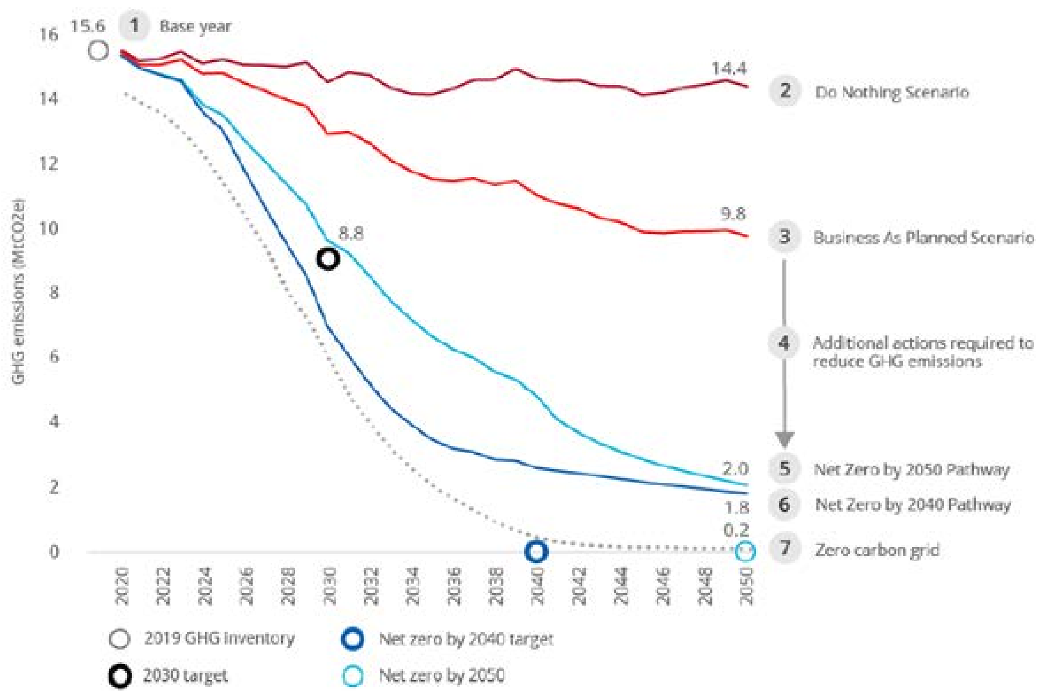

Figure 5. Overview of the net zero modelling process (TransformTO, 2021)