City of Toronto

Green Bond Newsletter

2023

TORONTO

Live green Toronto

A message from the Deputy Treasurer

Our 2023 Green Bond Newsletter demonstrates the City's continued commitment to climate action. The City's innovative Green Bonds are funding initiatives across Toronto to reduce greenhouse gas (GHG) emissions and transform Toronto into a low-carbon city.

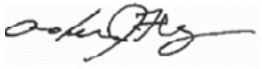
In 2021, Toronto City Council adopted the TransformTO Net Zero Strategy to achieve net zero GHG emissions by 2040. Toronto's target is one of the most ambitious in North America. The City is also committed to integrating Environmental, Social and Governance (ESG) factors throughout the organization as climate action, economic recovery and equity are inextricably connected.

As part of this approach, a climate lens is now applied to all financial decisions. Our climate lens assessment considers the potential impacts of a project on GHG emissions and Toronto's resilience to climate change and extreme weather. City projects, programs, policies and investments must contribute to our strategic priorities, including reducing GHG emissions by 2040 and increasing Toronto's climate resilience.

Despite a challenging fiscal environment, the City's Capital Budget continues to invest in projects to advance the City's climate action goals – mobility, housing, flood protection, parkland and infrastructure – enabled, in part, by the funds raised through our successful Green Bond program. The 2023 10-Year Capital Plan alone includes an additional $2.1 billion towards these sustainable outcomes compared to 2022.

The demand for environmental and socially responsible investment options, such as the City's Green Bonds, remains strong and continues to grow, despite market volatility. Investing in the social and ecological transformation needed is both strategic and financially responsible – a sound investment by any measure.

Sincerely,



Andrew Flynn
Controller and Deputy Treasurer
City of Toronto

To learn more about the City's Green Bond Program, visit:
https://www.toronto.ca/city-government/budget-finances/city-finance/investor-relations/green-debenture-program/

City of Toronto Green Bonds

Assurances

Sustainalytics, an independent sustainability rating firm, reviewed the City of Toronto's Green Bond Framework and provided an assessment of the City's environmental credentials as it relates to the Green Bond Principles.

Alignment with Green Bond principles

Sustainalytics is of the opinion that the City's Green Bond Framework is credible and impactful, and aligns with the four pillars of the Green Bond Principles, 2017.

Impact reporting

The City will use the best available methodologies to select and report on project indicators.

Key features

- Rank *pari passu* with conventional City bonds, payable without preference or priority
- Carry the full faith and credit of the City
- Investors do not assume any project-related risks
- Complies with the City's Green Bond Framework
- City green bonds align with the Green Bond Principles, which promote integrity in the market through transparency, disclosure and reporting

Future issuances

The City plans to have regular green bond issuances, with the next offering expected in 2023.

2018 Green Bond

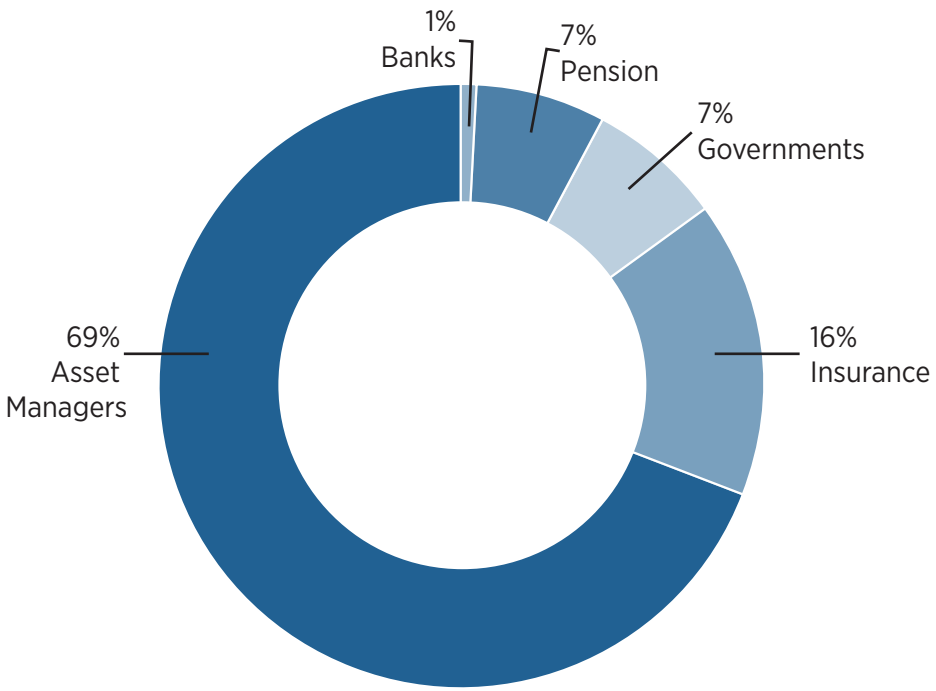
As a part of the City's (AA/Aa1/AA) overall capital borrowing program, the City initiated a Green Bond Program in 2018. Under the Program, net proceeds from bonds are used to fund Council approved capital projects that align with TransformTO, Toronto's Climate Action Strategy.

On July 18, 2018, the City successfully issued a C$300 million green bond. The bond was priced to yield 3.21 per cent with an August 2048 maturity. The offering marked the largest municipal green bond in Canada.

Net proceeds from the 2018 green bond issue are funding eligible projects for sustainable clean transportation, including the purchase of subway cars, the renewal of core and supporting infrastructure of electric rail, building the Scarborough Subway extension, revitalizing Union Station and making Leslie Barns more energy efficient and resilient to climate change.

The issue was over-subscribed with orders from 36 domestic investors.

2018 Investor Type



2019 Green Bond

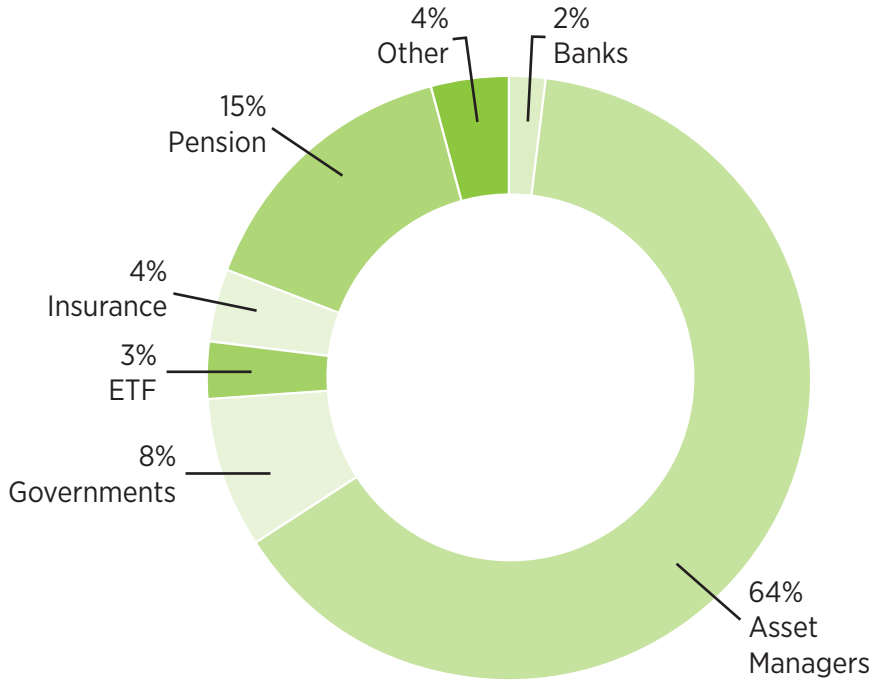
On September 9, 2019, the City successfully issued another C$200 million green bond. The bond was priced to yield 2.646 per cent with a September 2039 maturity.

Net proceeds from the 2019 green bond issuance are funding eligible projects for Toronto Community Housing energy retrofits, energy efficiency projects financed by the Sustainable Energy Plan Financing program, arena lighting retrofits, Port Lands flood protection, cycling infrastructure, renewal of electric rail infrastructure and solar photovoltaic projects.

The issue was over-subscribed with orders from 53 domestic and international investors.

Bonds included in the index are independently evaluated and meet established Green Bond Principles. Indices include the S&P Green Bond, Solactive Green, and Bloomberg Barclays MSCI Green Bond Indices.

2019 Investor Type



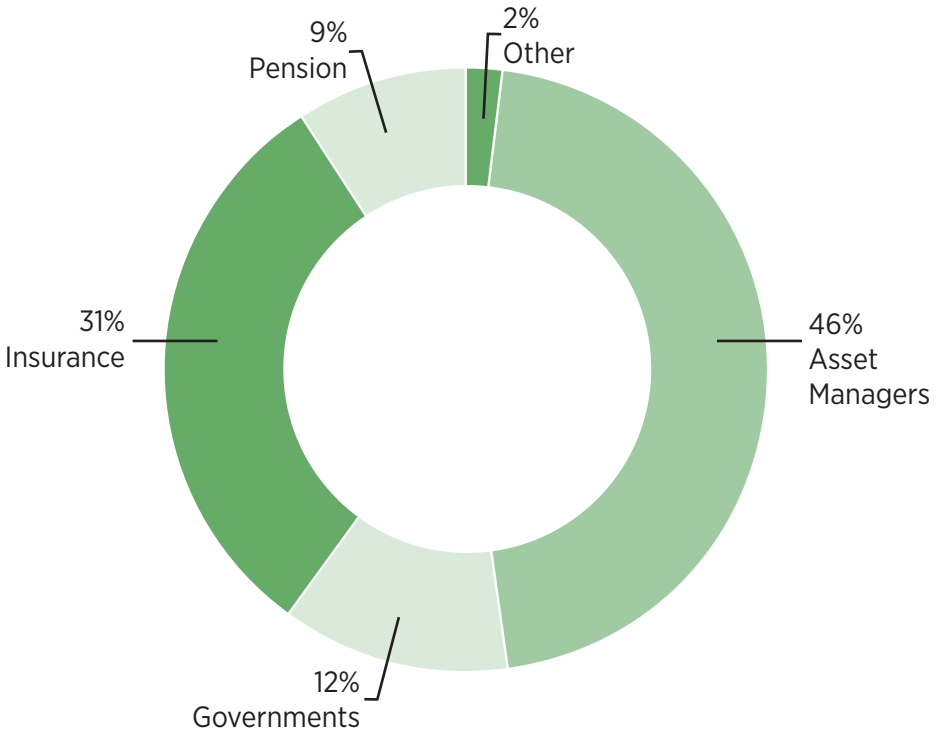
2020 Green Bond

On December 1, 2020, the City successfully issued another C$130 million green bond by re-opening its September 24, 2039 green bond. This additional issue brings the total outstanding to $330 million. The bond was priced to yield 2.14 per cent.

Net proceeds from the 2020 Green Bond issuance are funding eligible projects for Toronto Community Housing energy retrofits, Port Lands flood protection, and renewal of core and supporting electric rail infrastructure.

The issue was over-subscribed with orders from 36 domestic and international investors.

2020 Investor Type



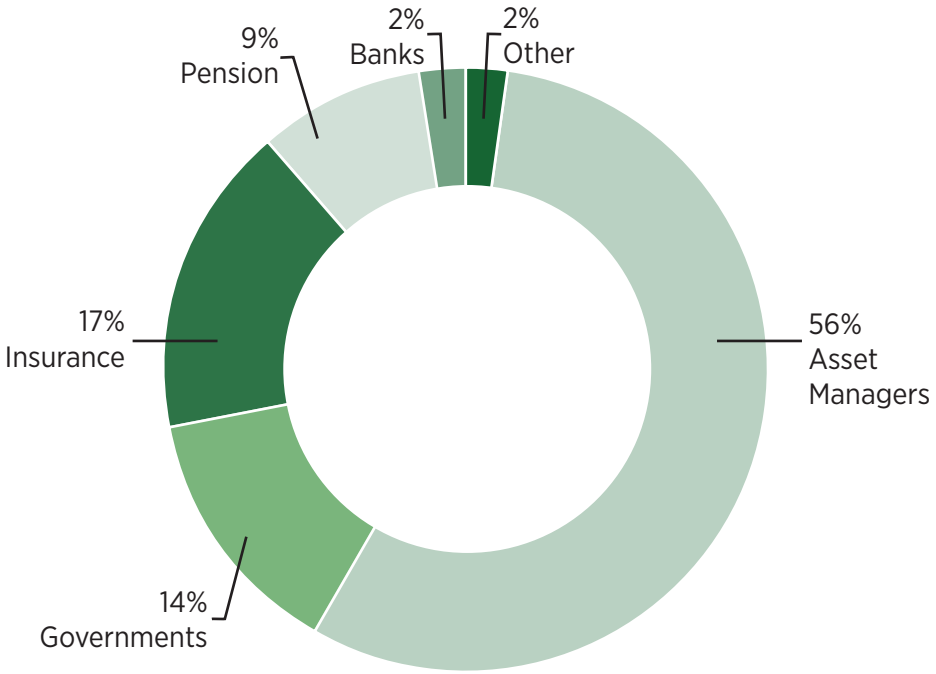
2021 Green Bond

On December 2, 2021, the City successfully issued another C$150 million green bond. The bond was priced to yield 2.238 per cent with a December 21, 2031 maturity.

Net proceeds from the 2021 green bond issuance are funding eligible projects for Toronto Community Housing multi-year retrofits, Port Lands flood protection, Dufferin organics processing facility and TTC purchase of electric buses and renewal of electric rail supporting infrastructure.

The issue was over-subscribed with orders from 29 domestic and international investors.

2021 Investor Type



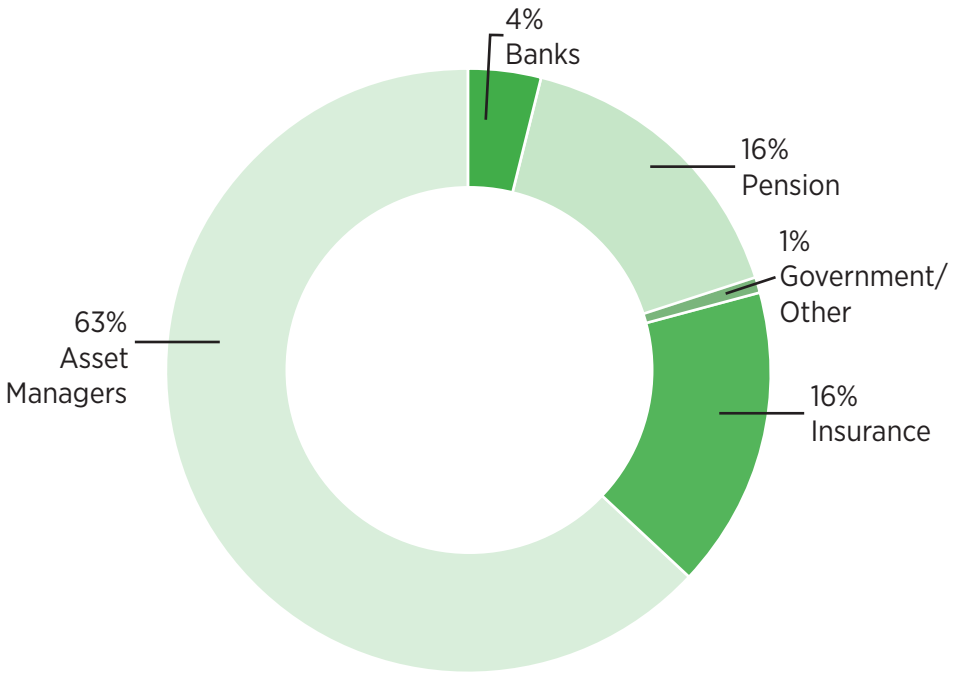
2022 Green Bond

On December 14, 2022, the City successfully issued another C$300 million green bond. The bond was priced to yield 4.419 per cent with a December 14, 2042 maturity.

Net proceeds from the 2022 green bond issuance are funding eligible projects for Port Lands Flood Protection, and sustainable clean transportation including cycling infrastructure, bridges and tunnels, electric and signal systems, subway and surface tracks, and traction power.

The issue was over-subscribed with orders from 32 domestic and international investors.

2022 Investor Type



Use of proceeds – 2018 Green Bond

All bond proceeds have been disbursed for the 2018 green bond. Proceeds from green bonds are assigned to specific projects at the time of issuance and listed in the debenture by-law #1059-2018.

Project name	Total allocation ($000s)	Funds disbursed ($000s)	% disbursed
Sustainable clean transportation			
Supporting infrastructure			
Bridges and tunnels	36,733	36,733	100%
Subway track	42,173	42,173	100%
Leslie Barns LRT maintenance and storage facility	42,000	42,000	100%
Scarborough subway extension	35,099	35,099	100%
Union Station revitalization	117,295	117,295	100%
Fleet			
Purchase of subway cars	26,700	26,700	100%
Total	300,000	300,000	100%

Use of proceeds – 2019 Green Bond

All bond proceeds have been disbursed for the 2019 green bond. Proceeds from green bonds are assigned to specific projects *-*-at the time of issuance and listed in the debenture by-law #1297-2019.

Project name	Total allocation ($000s)	Funds disbursed ($000s)	% disbursed
Sustainable clean transportation			
Supporting infrastructure			
Cycling infrastructure	24,353	24,353	100%
Surface track	4,694	4,694	100%
Energy efficiency retrofits			
Social housing revitalization and retrofit	111,961	111,961	100%
Community energy efficiency projects	14,884	14,884	100%
Climate change adaptation & resilience			
Port Lands flood protection	44,108	44,108	100%
Total	200,000	200,000	100%

Use of proceeds – 2020 Green Bond

All bond proceeds have been disbursed for the 2020 Green Bond. Proceeds from green bonds are assigned to specific projects at the time of issuance and listed in the debenture by-law #449-2020.

Project name	Total allocation ($000s)	Funds disbursed ($000s)	% disbursed
Sustainable clean rransportation			
Subway track	8,773	8,773	100%
Energy efficiency retrofits			
TCHC multi-year retrofit	9,239	9,239	100%
Climate change adaptation & resilience			
Port Lands flood protection	111,988	111,988	100%
Total	130,000	130,000	100%

Use of proceeds – 2021 Green Bond

All bond proceeds have been disbursed for the 2021 green bond. Proceeds from green bonds are assigned to specific projects at the time of issuance and listed in the debenture by-law #1028-2021.

Project name	Total allocation ($000s)	Funds disbursed ($000s)	% disbursed
Sustainable clean transportation			
Purchase of buses	50,807	50,807	100%
Surface track	12,496	12,496	100%
Traction power	18,805	18,805	100%
Bridges and tunnels	20,420	20,420	100%
Energy efficiency retrofits			
TCHC multi-year retrofit	9,200	9,200	100%
Climate change adaptation & resilience			
Port Lands flood protection	5,781	5,781	100%
Pollution prevention and using waste as a resource			
Dufferin SSO facility	32,491	32,491	100%
Total	150,000	150,000	100%

Use of proceeds – 2022 Green Bond

All bond proceeds have been disbursed for the 2022 green bond. Proceeds from green bonds are assigned to specific projects at the time of issuance and listed in the debenture by-law #59-2023.

Project name	Total allocation ($000s)	Funds disbursed ($000s)	% disbursed
Sustainable clean transportation			
Cycling Infrastructure	17,534	17,534	100%
Bridges and Tunnels	24,520	24,520	100%
Electric Systems	16,611	16,611	100%
Signal Systems	24,705	24,705	100%
Subway Track	33,699	33,699	100%
Surface Track	75,318	75,318	100%
Traction Power	35,988	35,988	100%
Climate change adaptation & resilience			
Port Lands flood protection	71,625	71,625	100%
Total	300,000	300,000	100%

TransformTO – Toronto's climate action strategy

TransformTO is the City's ambitious climate action strategy. TransformTO seeks to reduce greenhouse gas (GHG) emissions community-wide and increase climate resilience while improving social equity, health and economic prosperity.

In October 2019, Toronto Council declared a climate emergency, deepening the City's commitment to addressing climate change. In December 2021, Council adopted the TransformTO Net Zero Strategy which revised Toronto's long-term GHG emissions target to achieving net zero emissions by 2040 or sooner.

Achieving net zero emissions will require transformational changes in how we live, work, build, and commute. Everyone will have a role in making Toronto a low-carbon city. To reduce the worst impacts of climate change, TransformTO has set the following goals for 2030.

Home and Buildings

All new homes and buildings will be designed and built to be near zero greenhouse gas emissions

Greenhouse gas emissions from existing buildings will be cut in half, from 2008 levels

Energy

50 per cent of community-wide energy comes from renewable or low-carbon sources

25 per cent of commercial and industrial floor area is connected to low carbon thermal energy sources

Transportation

30 per cent of registered vehicles in Toronto are electric

75 per cent of school/work trips under 5km are walked, biked or by transit

Waste Diversion

70 per cent residential waste diversion from the City of Toronto's waste management system

Identify pathways to more sustainable consumption in City operations and in Toronto's economy

Project eligibility and selection

The selection of eligible projects is the responsibility of the City's Corporate Finance Division in consultation with internal and external experts. Eligible projects are selected in accordance with City guidelines for use of proceeds, which includes financing or re-financing of new and/or existing capital projects that meet the City's environmental objectives, in addition to other criteria described in the City's Green Bond Framework.

Following the identification of eligible projects, the Capital Markets and Environment & Climate divisions verify the suitability of projects by reviewing the expected climate and resilience impacts. After the projects have been verified, the City follows its current debt issuance procedure with the Mayor, or the Mayor's Alternate and the Chief Financial Officer authorizing the issuance of debt. In 2022, eight projects received funding across two of the seven eligible categories. The table presents the program areas that received funding from green bonds since 2018.

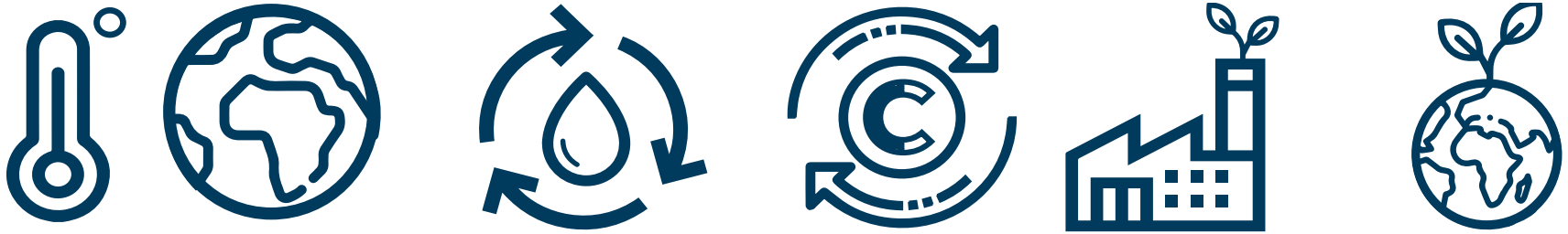
Eligible Categories	2018 issuance	2019 issuance	2020 issuance	2021 issuance	2022 issuance
Sustainable clean transportation	✓	✓	✓	✓	✓
Renewable energy		✓			
Energy efficiency		✓	✓	✓	
Pollution prevention and using waste as a resource				✓	
Sustainable water and wastewater management					
Climate change adaptation and resilience		✓	✓	✓	✓
Eco-efficient and/or circular economy principles integration					
Green buildings					

European Union environmental objectives and sustainable development goals

The City is actively exploring potential improvements for green bond issuance with a particular focus on aligning with the European Union (EU) sustainable finance framework and taxonomy. The EU's framework includes six climate and environmental objectives that guide the identification of sustainable initiatives. While Canada is currently in the early stages of establishing its own sustainable finance framework and taxonomy, progress is being made through the formation of the Taxonomy Technical Experts Group (TTEG). Recognizing the EU framework as an emerging green standard, the Canadian government is considering using a similar framework and taxonomy to advance its work on categorizing sustainable initiatives.

The City is also considering the green bond issuance with the UN's Sustainable Development Goals (SDGs) to amplify their positive impacts and identify direct contributions of a project to specific sustainability targets and objectives. By aligning green bonds with the SDGs, investors can have greater confidence that their investments are supporting projects that address critical global challenges, such as climate change mitigation, clean energy access, sustainable infrastructure and social inclusion, while also promoting transparency and accountability in the use of funds towards sustainable development.

Outlined below is an early comparison of the potential alignment that can be found between City-issued green bond projects with current EU environmental objectives and UNSDGs for the City's 2022 Issuance.



1 Climate change mitigation

2 Climate change adaptation

3 Sustainable use and protection of water and marine resources

4 Transition to a circular economy

5 Polution prevention and control

6 Protection and restoration of biodiversity and ecosystems

2022 Projects	EU Environmental Objectives	Sustainable Development Goals
Surface Track	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control	9, 11
Bridges and Tunnels	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control	9, 11
Subway Track	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control	9, 11
Traction Power	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control	9, 11
Signal System	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control	9, 11
Cycling Infrastructure	1. Climate change mitigation 5. Pollution prevention and control	9, 11
Port Lands Flood Protection	1. Climate change mitigation 2. Climate change adaptation 5. Pollution prevention and control 6. The protection and restoration of biodiversity and ecosystems	11, 15

Sustainable clean transportation

In Toronto's 2020 GHG emissions inventory, 33 per cent of GHG emissions were generated by transportation, with 70 per cent of those emissions attributed to personal vehicles. Investments in core and supporting infrastructure such as public transit and cycling systems will positively contribute to GHG reduction targets while improving the health, economic and social equity outcomes.

2018:
- Union Station revitalization
- Scarborough subway extension
- Leslie Barns
- TTC subway fleet and infrastructure renewal and upgrades

2019:
- Cycling infrastructure
- TTC Infrastructure renewal and upgrades

2020:
- Cycling infrastructure
- TTC Infrastructure renewal and upgrades

2021:
- Purchase of electric buses
- TTC Infrastructure renewal and upgrades

2022:
- Cycling Infrastructure
- TTC Infrastructure renewal and upgrades

Profiles for each of the six program areas are outlined in the subsequent pages.

Expanding cycling infrastructure

Gas and diesel vehicles are a major source of GHG emissions in Toronto. Active transportation and low-carbon transit reduce GHG emissions and benefit health by reducing air pollution and increasing physical activity. Transportation Services is instrumental in delivering projects outlined in the Toronto Cycling Network Plan. This Plan focuses on expanding existing cycling routes, connecting gaps in the network and improving safety for cyclists.

In recent years, there has been a significant expansion of cycling infrastructure in Toronto. Between 2019 and 2021, an additional 65 kilometers of bikeways were installed, with accelerated installations during the pandemic. This expansion represents the largest growth of cycling infrastructure in the City's history. These new cycling routes have facilitated thousands of safe cycling and walking trips, providing essential access to services and promoting mental and physical well-being.

Looking ahead, the cycling network plan's near-term implementation plan aims to complete an additional 100 centerline kilometers from 2022 to 2024. This ambitious goal exceeds previous delivery rates and emphasizes the inclusion of cycle tracks[1] on arterial roadways. By prioritizing the development of safe cycling infrastructure, Toronto is actively encouraging active transportation, reducing reliance on cars and promoting sustainable and healthier ways of commuting. These efforts also contribute to mitigating climate change.

2022 Cycling deliverables (Bikeway Installations in kms):

- 2 km of Multi-use Trails
- 3.9 km of Cycle Tracks (includes bi-directional tracks)
- 5.4 km of Bicycle Lanes (includes buffered and contra-flow)
- 6.5 km of Wayfinding Sharrows.

Additional info about key projects completed in 2022:

- 21.6 km of bikeway upgrades and refreshes (including upgrades from bike lanes to cycle tracks on Davenport Road from Bay Street to Bedford Road, and refreshes to line markings on many ActiveTO projects)
- Completion of several projects, including:
  - York University Cycling Connections project, featuring the City's first protected intersection and floating bus platform.
  - The first phases of the Palmerston-Tecumseth and Bartlett-Havelock-Gladstone cycling connections projects, and the completion of the Woodfield Road-Monarch Park Avenue project, which are neighbourhood greenways that offer parallel routes to major corridors, reduce non-local traffic infiltration and encourage cycling for all ages and abilities.
  - Cycle track extensions on Danforth Avenue, University Avenue and The Esplanade, with separation added in the form of planters or concrete curbs and flex posts.
  - New wayfinding routes that connect people cycling to trails and/or significant bikeway routes on quiet streets, including Brookmere-Elmhurst-Turpin, Highland-Roxborough-Maclennan and Pineway Boulevard.

1 Cycle tracks are separate lanes for bicycles that are adjacent to the roadway but separated from vehicular traffic. Cycle tracks help distinguish the area for cycling from motor vehicle traffic (more than a painted bicycle lane). The tracks create an environment which is safer for cycling.

TTC renewal and upgrades of public electric rail infrastructure

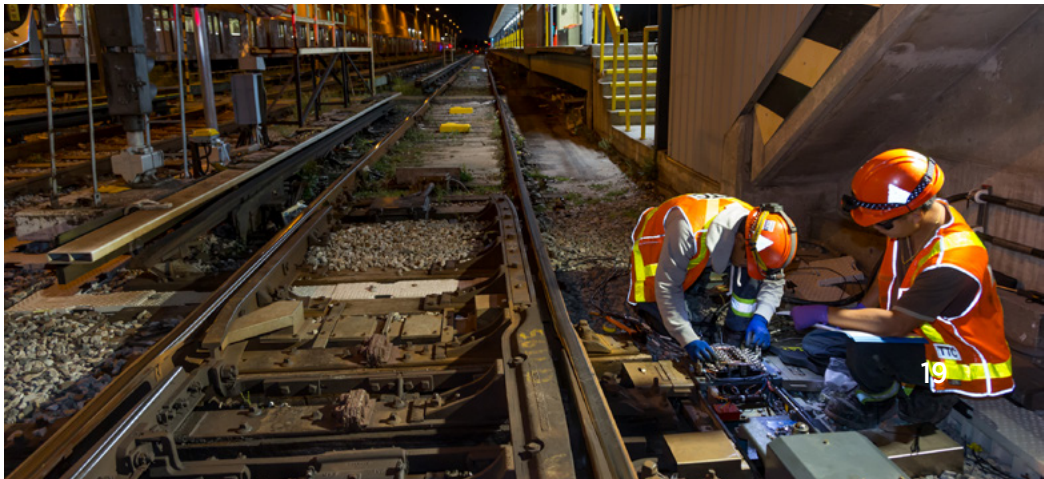
TTC infrastructure renewal and safety improvements

Through ongoing maintenance, technological advancements, and capacity enhancements, the TTC remains committed to providing reliable, efficient, and accessible transit services to meet the evolving needs of Toronto's residents and visitors.

With a focus on accessibility and operational efficiency, the TTC works throughout the year to maintain and improve bridges, tunnels and rail tracks for subways and streetcars. In 2022, the TTC's Track Capital Program has seen the replacement of approximately 17,150 feet of rail, 1,250 ties and 3,200 feet of cover board. Additionally, significant efforts have been made through the Special Trackwork Rehabilitation Program, including six full turnout replacements and thirty-nine major maintenances.

Improving travel time and safety

In 2022, one notable achievement has been the installation and implementation of Automatic Train Control (ATC) schedules, which have enabled faster and safer train operations, resulting in improved travel times. Early results have shown time savings of seven minutes (4 per cent) per round trip during peak periods compared to pre-pandemic travel times in 2019. As the system matures, further time savings are anticipated. The ATC system has also facilitated more frequent train service to meet increasing demand and accommodate future ridership growth. Through the Line 1 Capacity Enhancement Program, additional trains will be introduced, increasing capacity to up to 39,600 passengers per hour per direction, supported by other infrastructure and operational improvements.



Greenhouse gas reductions

Annual emissions avoided by public transit vehicle type*

	2016 eCO_2 reduced* (tonnes)	2019 eCO_2 reduced* (tonnes)	2020 eCO_2 reduced* (tonnes)	2021 eCO_2 reduced* (tonnes)	2022 eCO_2 reduced** (tonnes)	% change or reductions from 2020 to 2021	% change or over baseline
Streetcar	50,500	52,372	24,517	20,423	31,206	53%	-38%
Subway	473,200	543,974	193,429	151,006	269,192	78%	-43%
Total	523,700	596,346	217,946	171,429	300,3985	75%	-43%

* The GHG reductions are estimated by calculating per passenger emissions for each transit vehicle type and comparing it to the emissions from a typical single-occupant passenger vehicle

** 2022 emissions uses the 2021 emissions factor for electricity from Canada's National Inventory Report

Note: A more accurate data source has been used to capture emissions reduced from TTC trips compared to vehicular trips. This table shows updated numbers for previously reported years.

Electric Bus

Climate change adaptation and resilience

The Port Lands is currently home to a variety of industrial, port, film and creative sector businesses. Adjacent to downtown Toronto, intensification pressures have been inhibited by flood risk and soil contamination. Flood management and protection can enhance Toronto's resilience and help mitigate the impact of climate change on the city through the creation of new mixed-use communities, featuring naturalized areas and served by transit.

Port Lands Flood Protection project – 2019, 2020, 2021 and 2022 green bond

Port Lands Flood Protection is an ambitious urban regeneration project. It addresses the vulnerability of the Port Lands, South Riverdale, and Leslieville areas to floodwaters from the Don River during extreme weather events. The project encompasses 23 sub-projects and aims to protect more than 240 hectares of land, while also remediating contaminated areas, constructing new infrastructure and creating a naturalized mouth for the Don River.

Toronto's Port Lands, an underdeveloped downtown waterfront area, has long faced the risk of flooding and contamination. The Port Lands Flood Protection project aims to change that by creating two new outlets for the Don River, diverting floodwaters away from neighborhoods and into the inner harbor. This involves digging a kilometre-long river valley and cleaning up polluted land. In addition to flood protection, the project includes the development of roads, bridges, utilities, public trails and 25 hectares of greenspace and parkland.

The Port Lands Flood Protection project safeguards communities, prevents property damage and ensures the preservation of critical infrastructure during extreme weather events. By mitigating flood risks and remediating contaminated land, the project not only enhances the resilience of the area but also creates opportunities for economic growth and social well-being. It demonstrates the value of proactive measures and comprehensive planning in fostering urban resilience and adapting to climate change.

Construction site

Progress in 2022 includes:

- Partial opening of New Cherry Street south of Commissioners Street, including the Cherry South Bridge
- Opening of Commissioners Street west of old Cherry Street
- Installation of the River Valley and Pedestrian Bridges
- Excavation of Canoe Cove and installation of finishes on the new islands
- River valley excavation complete (with the exception of the 'plugs', small sections of ground separating the river valley from the lake)
- Began excavation of the 'west plug' (the section of ground underneath the old alignment of Cherry Street)
- Continued installation of river finishes in the central river valley
- Began planting in the wetlands and along the riverbanks
- Removal of the south side of the Lake Shore Bridge and construction of new piers
- Began excavation of the sediment and debris management area
- Completion of soil remediation activities; soil is being dispositioned for reuse within the site in accordance with its environmental quality
- Additional assessment of environmental conditions is underway to support the Ministry of Environment, Conservation and Parks permits required for park openings.

Aerial view of the project site

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