City of Toronto

Green Bond Newsletter

August 2019

TORONTO

Live green Toronto

A Message from Chief Financial Officer and Treasurer

Welcome to the City of Toronto's first-ever Green Bond newsletter, an important resource for information on the City's Green Bond program.

The climate crisis is real and the City of Toronto, as Canada's largest city and sixth largest government, has a responsibility to lead and take action to address this global threat.

How will we do that? By investing in projects that are financially and environmentally sustainable.

With a 10-year capital budget of $40.6 billion, opportunities for the City to make a difference are myriad, and they're before us now.

In 2018, the City issued its first $300 million Green Bond. Toronto is one of the first municipalities in Canada to do so. The net proceeds are being used exclusively to finance city-building projects that mitigate, and build resilience to, the effects of climate change.

With an increasing number of investors looking for environmentally and socially responsible investment opportunities, the City is excited to be a leader in the public sector and to partner with industry to make real change and reduce our carbon footprint.

Engaging with the capital markets through green bond offerings is a new venture, and an important tool that will help the City deliver tangible and sustainable outcomes, financially and environmentally. Sound public policy, today, requires both.

Global cities like Toronto must be accountable for efforts to reduce greenhouse gas emissions. Increased public trust and confidence in government, through leadership and ground-breaking initiatives like this, will exponentially increase market trust that investing in public infrastructure is the right thing to do.

I encourage you to learn more about the City's TransformTO Climate Action Strategy and Green Debenture Program.

Heather Taylor
Chief Financial Officer and Treasurer
City of Toronto

City of Toronto Green Debentures

Key Features

- Rank pari passu with conventional City of Toronto bonds, payable without preference or priority
- Carry the full faith and credit of the City of Toronto
- Investors do not assume any project-related risks
- Comply with City's Green Debenture Framework

City of Toronto Green Bonds align with the Green Bond Principles, which promote integrity in the market through transparency, disclosure and reporting.

SUSTAINALYTICS
SECOND-PARTY OPINION
2019

Assurances

Sustainalytics, an independent sustainability rating firm, was engaged to review Toronto's Green Debenture Framework and provide an assessment of the City's environmental credentials as it relates to Green Bond Principles.

Alignment with Green Bond Principles

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

Impact Reporting

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

Future Issuances

The City of Toronto is committed to being a regular green debenture issuer, with the next offering expected in 2019.

Toronto's Climate Leadership

By mobilizing funds to scale-up climate action, the City of Toronto's Green Bond program will support the city's transition to a low-carbon city.

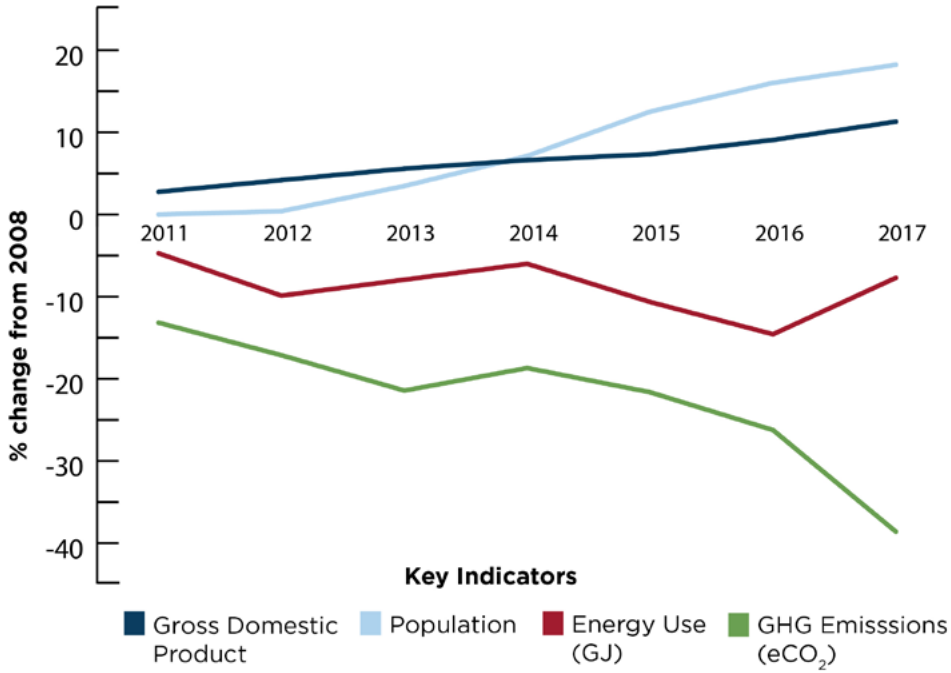
TransformTO is the City's strategy to reduce greenhouse gas emissions and achieve a low-carbon, healthy, equitable, prosperous and resilient future. Adopted unanimously by Toronto City Council in 2017, the strategy targets a 65 per cent reduction in carbon emissions by 2030, and 80 per cent by 2050.

Toronto's community-wide greenhouse gas emissions are 44 per cent lower than they were in 1990. This result, achieved while Toronto's population and economy continued to grow, reflects cumulative action by all orders of government including the City of Toronto, and a significant response by the community and private sector.

With community-wide emissions at about 15 mega tonnes, achieving net zero emissions will require bold and robust policies, programs and significant investment.

In 2019, Toronto was one of 43 cities to receive an 'A' grade from CDP (formerly the Carbon Disclosure Project) for its leadership in managing, measuring and reducing emissions and adapting to climate-related risks.

Energy, GHG Emissions & Economic Indicators (% Change from 2008)



City of Toronto Green Bonds raise capital to support environmental sustainability, with a focus on initiatives that reduce greenhouse gas emissions and improve resilience to climate change

Eligible Projects

- Renewable energy production and distribution
- Energy efficiency
- Pollution prevention and control and utilizing waste as a resource
- Sustainable clean transportation
- Sustainable water and wastewater management
- Climate change adaptation and resilience
- Eco-efficient and/or circular economy principles integration
- Green buildings

Toronto's Climate Goals

100%
of new buildings are near zero GHG emissions by 2030

100%
of existing buildings are retrofitted by 2050

75%
of energy comes from renewable or low-carbon sources by 2050

30%
of total floor space uses low-carbon thermal energy by 2050

100%
of transportation uses low or zero carbon energy by 2050

75%
of trips under 5km are walked or biked by 2050

95%
of waste is diverted in all sectors by 2050

2018 Green Bond

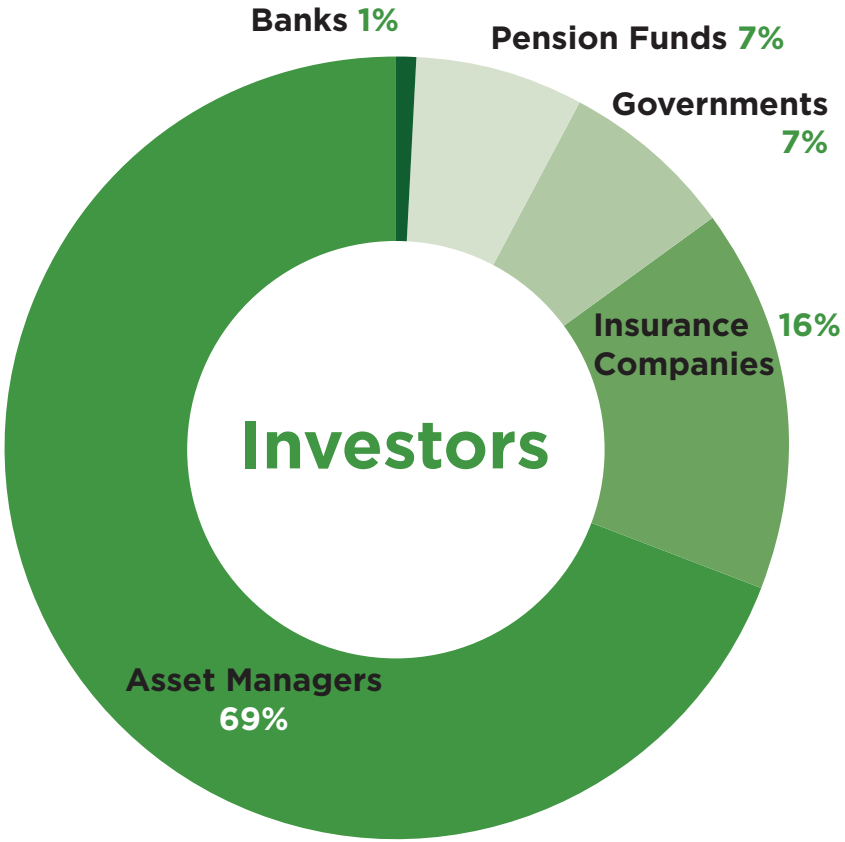
As a part of the City of Toronto's (AA/Aa1/AA) overall capital borrowing program, the City initiated a Green Bond Program in 2018. Under the Program, net proceeds from bonds will fund Council approved capital projects that align with the City's TransformTO Climate Action Strategy.

On July 18, 2018, the City issued a C$300 million Green Bond, priced to yield 3.213 per cent with an August 2048 maturity. The offering marked the City's first-ever green issue and the largest municipal Green Bond in Canada.

Capital raised by the 2018 Green Bond will fund sustainable clean transportation projects, including the purchase of subway cars, the Union Station Revitalization, the renewal of electric rail infrastructure, the Scarborough Subway extension, and the Leslie Barns Light Rail Transit Maintenance and Storage Facility.

With orders from 36 investors, the issue was over-subscribed. Ninety-five per cent of the capital was raised from impact investors with green mandates and/or signatories of the United Nation Principles for Responsible Investment.

Indicies: S&P Green Bond, Solactive Green, and Bloomberg Barclays MSCI Green Bond.



Use of Proceeds

Ninety-five per cent of 2018 bond proceeds have been disbursed. The City's Green Debenture By-law (#1059-2018) ensures that all funds are tracked and allocated to approved, eligible projects.

Sustainable Clean Transportation Projects	Bond Proceeds ($000s)	Funds Disbursed ($000s)	To Be Disbursed ($000s)
Fleet			
Purchase of Subway Cars	26,700	12,344	14,356
Infrastructure			
Bridges and Tunnels (Subway)	36,733	36,733	-
Subway Track	42,173	42,173	-
Leslie Barns LRT Maintenance and Storage Facility	42,000	42,000	-
Scarborough Subway Extension	35,099	35,099	-
Union Station Revitalization	117,295	117,295	-
Total	300,000	285,644	14,356

Sustainable Clean Transportation

Project Profiles

Union Station Revitalization

Union Station, one of Toronto's most iconic buildings and Canada's busiest, multi-modal transportation hub, is being restored to better serve the quarter million people that pass through it every day.

The revitalization will double pedestrian capacity, renovate important heritage elements, and modernize the building to create a major destination for dining, shopping, and community gathering.

Union Station's revitalization is a multi-year project, with completion targeted for 2020.

Aspects of the revitalization currently underway include the restoration of the Great Hall, the VIA Concourse, the new Bay Concourse and lower retail level.

A glass moat located on Front St. and York and Bay will provide commuters with shelter from the elements when accessing Union Stations from street level and the TTC.

When complete, the Bay Concourse will have:

- tripled in size
- improved platform access with accessible connection to PATH through the TTC
- connections to new retail level
- a new customer service counter, PRESTO and ticket vending machines
- more departure boards and new entrances to the street level

Environmental & Energy Features

Solar Hot Water

A solar hot water heating system installed in the office portion of Union Station will produce enough hot water to meet 30 to 80 per cent of the building's daily usage, displacing natural gas use and related greenhouse gas emissions.

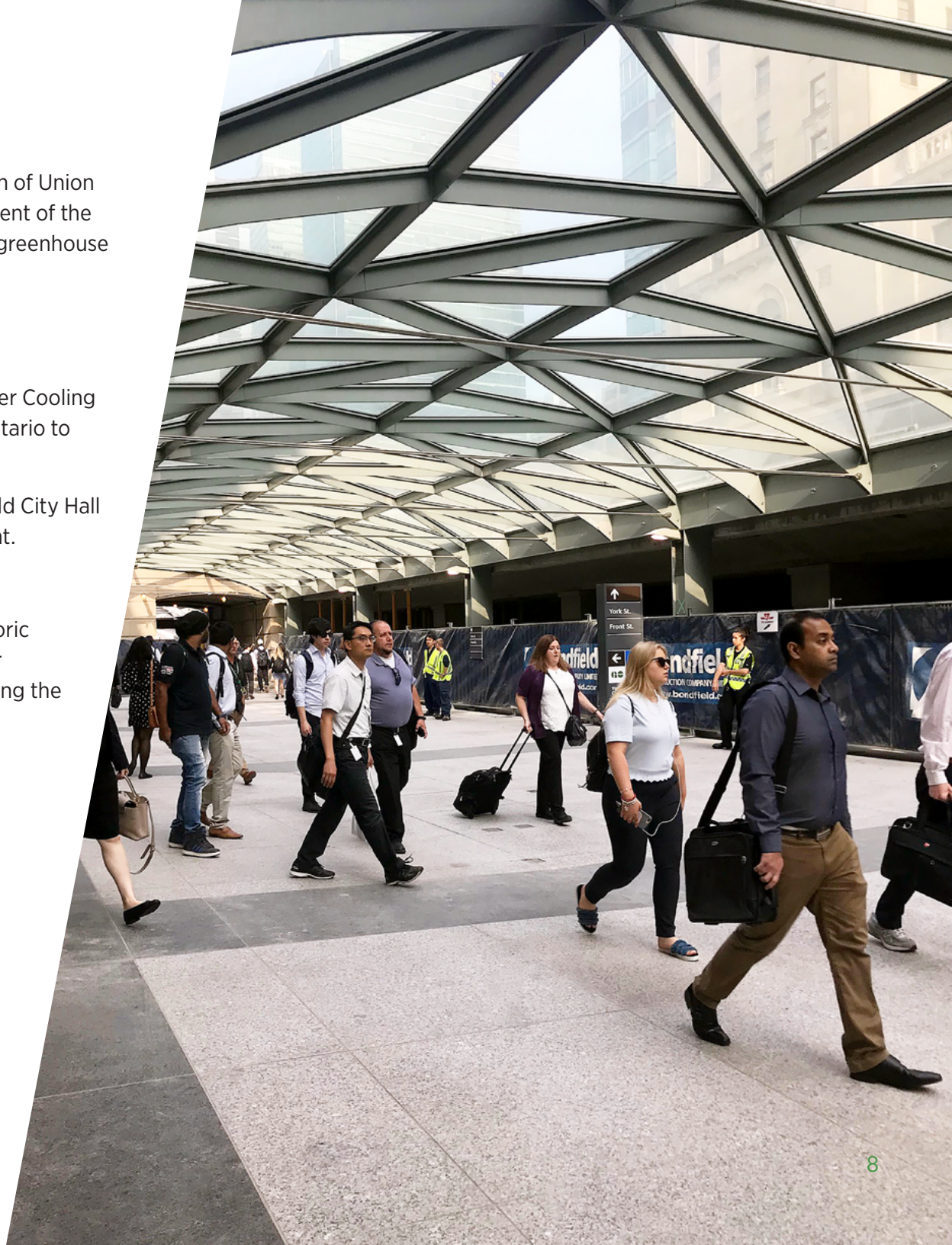
Deep Lake Water Cooling

Several chillers that previously cooled the station have been decommissioned and replaced with Enwave's Deep Lake Water Cooling system. The system uses naturally chilled water from Lake Ontario to provide air conditioning to Union Station.

Similar systems already in place at City Hall, Metro Hall and Old City Hall reduce energy use and related emissions by about 90 per cent.

Building Automation System

Upgraded building automation systems will optimize the historic building's performance by automating heating, ventilation, air conditioning, refrigeration, and lighting control systems, making the building more energy efficient and less costly to operate.



Greenhouse Gas Reductions*

Year	Electricity (kg eCO_2)	Natural Gas (kg eCO_2)	Steam (kg eCO_2)	Chilled Water (kg eCO_2)	Total (kg eCO_2)	GHG Intensity (kg eCO_2/m^2)
2010 (baseline)	2,301,495	-	3,021,323	-	5,322,818	75
2018	287,469	776,042	2,703,698	102,802	3,870,012	32

*The methodology used to estimate greenhouse gas reductions involves aggregating the impact of the individual energy efficient technologies installed in the facility.

Transit Fleet and Related Infrastructure

The Toronto Transit Commission's (TTC) expansive network of routes as well as its vehicle fleet reduces Toronto's transportation-related greenhouse gas emissions in several ways. Primarily, these reductions arise from the TTC's ongoing procurement of a fuel-efficient transit fleet and use of low-carbon fuels to power transit vehicles.

In addition to these direct impacts, other benefits have been linked to the existence of higher order transit in urban neighbourhoods. For example, the presence of transit enables denser land-use patterns that promote shorter trips, more walking and cycling, and reduced automobile use resulting in improved local air quality, increased physical activity and healthier lifestyles, and personal financial savings.

Scarborough Subway Extension

The Scarborough Subway Extension project is in the design and due diligence phase to determine the project scope and subway alignment. The City is currently engaged in discussions with the Province of Ontario on governance and funding contributions.

The future Scarborough Centre Station will have various sustainable design features, such as:

- energy and water efficiency measures, a green roof, low-emission vehicle parking, bird-friendly glazing, and native plantings
- infrastructure to support future bus fleet conversion to electric vehicles
- on-street bicycle lanes and bicycle storage amenities.

Leslie Barns Streetcar Maintenance & Storage Facility

Located at the corner of Lake Shore Boulevard and Leslie Street, the Leslie Barns is a six-acre maintenance and storage facility that supports the majority of the TTC's fleet of streetcars.

Environmental & Energy Features

Energy Efficiency & Sustainable Design

Constructed to the Toronto Green Standard, the facility includes several unique and sustainable design features, including:

- window glazing to maximize daylighting
- high-efficiency heating and ventilation equipment combined with heat recovery
- low-flow plumbing fixtures
- bird-friendly windows

Storm Water Management & Resilience

- 1,700 square metre storm water pond helps to manage onsite storm water runoff
- large cool and green roof reduces energy use and urban heat, manages storm water runoff, and improves air quality
- back-up power system to support essential operations in the event of a power outage

Streetscape & Active Transportation

- streetscape improvements include tree plantings, multi-use paths, and seating areas create a more pedestrian-friendly environment
- secure on-site bike storage and connections to the Martin Goodman Trail support cycling

Greenhouse Gas Reductions*

Annual Emissions Avoided by Vehicle Type (tonnes eCO_2)

Vehicle Type	2016 eCO_2 Reduced (tonnes)	2017 eCO_2 Reduced (tonnes)	2018 eCO_2 Reduced (tonnes)
Low Floor Light Rail Vehicle	4,907	9,503	14,442
Canadian Light Rail Vehicle	44,632	37,748	22,004
Articulate Light Rail Vehicle	11,524	11,201	4,928
Scarborough Rapid Transit	14,142	19,771	21,556
Toronto Rocket	235,938	233,047	327,274
Toronto Designed	154,517	153,966	206,201
Total	465,660	465,236	596,404

*The greenhouse gas 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. This analysis uses the 2016 emissions factor for electricity.

Learn more about the City's Green Debenture Program

City of Toronto Contacts

Randy LeClair
Director, Capital Markets
Corporate Finance
100 Queen Street West
East Tower, 7th Floor
Toronto, Ontario M5H 2N2
416-397-4054
Randy.LeClair@toronto.ca

Betsy Yeung
Manager, Investments
Corporate Finance
100 Queen Street West
East Tower, 7th Floor
Toronto, Ontario, M5H 2N2
416-392-6302
Betsy.Yeung@toronto.ca

Marco Iacampo
Program Manager
Environment & Energy
55 John Street
2nd Floor
Toronto, Ontario, M5V 3C6
416- 392-6063
Marco.Iacampo@toronto.ca