

Highlights of Toronto's Climate Programs to Date

1. Toronto's financial commitments to climate change action

- The 2021 Capital Budget identified 439 capital projects through a "Climate Lens" questionnaire.
- \$611.3 million was spent on capital projects that contained components which had impacts on GHG reduction or climate resilience.
- The 2021-2030 Capital Plan for these projects is \$4.8 billion.
 - TTC projects are not included in these numbers. Many TTC projects would apply within their 10-year Capital Plan that totals \$11.907 billion, which includes \$1.576 billion alone for vehicles such as buses, streetcars and subway cars, including the acquisition of electric buses.
- To date, Toronto has issued \$630 million in Green Bonds which have financed a range of key climate projects targeting mitigation and resilience activities such as extending subway lines and expanding the local cycling network, to energy retrofits in social housing and flood protection projects.

2. Collaboration with federal and provincial governments:

Achieving Toronto's GHG reduction goals requires the commitment, collaboration and mutual support of all levels of government. Achieving the goals of TransformTO will require continued investments from the provincial and federal governments.

a. Policy

Recent policy developments that move us closer to the goals of TransformTO include:

- The federal *Canadian Net Zero Emissions Accountability Act*, which harmonizes Canada's national long-term GHG reduction target with Toronto's and enshrines it in law. This law sets the context for transparent and accountable national planning to reduce GHG emissions using existing tools including carbon pricing and regulations, as well as subsidies and funding to key partners.
- The federal government announced a mandatory target for at least 50% of new light-duty cars and passenger truck sales to be zero-emission by 2030 and 100% by 2035. Following the recent federal election the government is indicating it will move quickly on establishing a national zero emissions vehicle mandate via regulations.¹

¹ Aidan Chamandy, "[Liberals plan to implement two key climate policies without bills](#)" *iPolitics* (Oct 15, 2021).

- Prime Minister Trudeau announced a goal of establishing a net-zero emissions electricity grid for Canada by 2035 at COP26.
- The Supreme Court of Canada ruled the federal carbon pricing law (the *Greenhouse Gas Pollution Pricing Act*) is constitutional as applied in Ontario and other provinces. The benchmark federal carbon price will rise \$15 per year from 2023-2030, reaching \$170 per tonne of CO₂, and influencing behaviour toward low-carbon choices throughout Toronto's economy.

b. Funding

The City continues to leverage funding from the federal and provincial governments to advance the transit and mobility goals of TransformTO, including:

- \$4.9 billion allocation from the federal Investing in Canada Plan - Public Transit Infrastructure Stream (earmarked for City Council's priority transit expansion projects being SmartTrack Stations Program, Bloor-Yonge Capacity Improvements Project, Line 2 East Extension and Ontario Line).
- \$166.6 million received for 2020 from the federal gas tax (for public transit with focus on fleet replacement and state of good repair projects).
- \$185.2 million allocation for 2020/21 from the provincial gas tax (for public transit expenditures above the City's baseline spending).
- \$25.6 million received from the prior Ontario Municipal Commuter Cycling program in 2017/18, which has continued to be spent on Council-approved active transportation including the Ten Year Cycling Network Plan across 2020/21.

Under the federal Disaster Mitigation and Adaptation Fund the City has had funding approved for five projects supported by Parks, Forestry & Recreation; Transportation Services; and Toronto Water. Each project addresses the federal climate lens around enhancing climate resilience and/or emission reduction:

- Fairbank-Silverthorn Trunk Storm Sewer System (\$73.2M Fed / \$133.49M City)
- Midtown Toronto Relief Storm Sewer (\$37.16M Fed / \$82.84M City)
- Tree Canopy and Waterfront Shoreline (\$11.98M Fed / \$17.98M City)
- Toronto Culvert Rehabilitation (\$8.7M Fed / \$13.1M City)
- Jane Street Bridge Crossing (\$19M Fed / \$28.5M City)

Finally, the City of Toronto and other GTA municipalities are benefitting from their partnership with The Atmospheric Fund (TAF) and the Federation of Canadian Municipalities (FCM) as part of Low Carbon Cities Canada (LC3).

- In 2020, TAF received \$40 million from the FCM to invest in low carbon projects and further accelerate and commercialize carbon reduction through partnerships in the Greater Toronto and Hamilton Area.
- In 2020, the City was successful in its application to the FCM's Community Energy Financing program. The City was awarded up to \$9.71 million in loans, and up to \$4.85 million in grants, to support the growth and enhancement of HELP.

In 2021, City Council authorized acceptance of loans up to \$11,746,300 and grants up to \$1,761,900 via FCM's Green Municipal Fund to start the "Taking Action on Tower Renewal Program", to finance eligible retrofit projects in high rise buildings.

3. Highlights of TransformTO Related Projects, Plans and Strategies from 2016-2021

Notable achievements on TransformTO implementation include:

BUILDINGS

[Toronto Green Standard](#)

Version 4 of the Toronto Green Standard (TGS) was approved by City Council in July 2021 ([2021.PH25.17](#)), following version 3 which came into effect in 2018. Each update to TGS advances requirements for building energy efficiency, greenhouse gas reduction and electric vehicle charging, and introduces tracking of embodied emissions in building materials used in construction. It addresses resilience through enhanced green infrastructure to manage storm water runoff, reduce urban heat island impacts and promote biodiversity, including extensive and higher performance green roofs, bio swales, rain gardens, native pollinator species plantings and a new requirement for "green streets" (roads or streets that incorporate green infrastructure). The TGS is a critical component of the City's efforts to achieve zero emissions buildings by 2030 and meet 2050 city-wide GHG reduction targets. For more than 10 years, it has served as a market transformation tool both locally and provincially, resulting in quality building projects that has resulted in 169,000 tonnes of avoided carbon dioxide (CO_{2e}) emissions annually.

[Net Zero Existing Buildings Strategy](#)

In July 2021, Toronto City Council approved the Net Zero Existing Buildings Strategy (ExB Strategy) ([2021.IE23.1](#)) to decarbonize all existing residential, commercial and institutional buildings within the next 30 years in the city of Toronto. The goals of the ExB Strategy are to achieve deep emissions reductions across the existing building sector, support home and building owners and the building industry in making the transition to low-carbon while realizing multiple economic, social equity, resilience and health co-benefits.

[Net Zero Carbon Plan](#)

In July 2021, City Council adopted the Net Zero Carbon Plan ([2021.IE23.2](#)) which will reduce emissions from more than 2,500 City-owned buildings (approximately 9.5 million square meters) by at least 80 per cent by 2040. The Net Zero Carbon Plan provides a road map to achieve net zero emissions in City buildings, first and foremost through changes to facility utilities consumption. It offers seven initiatives to reach this goal, including fuel switching and efficiency retrofits, lower-carbon new builds, strategic divestment, on-site renewables and storage, training and education, enhanced use of building performance data and carbon offsets and off-site renewables. The Plan focuses on making the right investments into City buildings in order to meet the targets set by City Council.

[Green Will Initiative](#)

Green Will Initiative ([2020.BU16.2](#), approving [EED 2020 Budget Notes](#)) supports building owners in building their own internal energy management practices and capabilities to empower them to realize GHG emission reduction opportunities. By 2020, the program has grown to include 11 major building portfolios across Toronto representing over 4,500 buildings and 320 million sq. ft. Within this group, energy managers and building operators participate in GWI's collaboration events for knowledge sharing to drive best practices, innovation and strategic alignments between building owners along with group training.

[High-rise Retrofit Improvement Support Program \(Hi-RIS\)](#)

The City has continued to offer the Hi-RIS program which to date has committed approximately \$10.1 million in retrofit financing to 16 rental apartment buildings with a combined 2,300 units, through a Local Improvement Charge. As a result, buildings participating in this program have achieved an estimated greenhouse gas emissions reduction of 3,500 tonnes of CO2 equivalent and completed housing quality improvements for almost 5,000 residents across the City. Almost half of all projects were located in Neighbourhood Improvement Areas or non-profit buildings positively affecting housing quality for about 2,200 residents who live in parts of the city identified as needing additional supports (see [Report for Action](#) re 2021.EX21.2).

[Taking Action on Tower Renewal](#) – *New Residential Energy Retrofit Program*

In February 2021, City Council approved receipt from FCM of loans up to \$11,746,3000 and grants up to \$1,761,900. These funds will help to establish a new program – "Taking Action on Tower Renewal" ([2021.EX21.2](#)). The Taking Action on Tower Renewal Program will provide a combination of financing and grants to eligible property owners to complete retrofits increasing energy efficiency and reducing greenhouse gas emissions while maintaining affordability and improving tenant comfort. This program uses the Local Improvement Charge mechanism to advance retrofit actions in Toronto's multi-residential rental housing stock. It will encourage early voluntary action helping buildings to meet energy and emissions reductions targets, and related actions, being recommended in the City's Net Zero Existing Buildings Strategy. Taking Action on Tower Renewal advances many City priorities including addressing climate change, improving rental housing quality and maintaining the affordable rental housing stock. Through this

program, the City is directly enabling the long term investment required to maintain this crucial building stock and implementing key actions in the HousingTO Action Plan 2020-2030 and the Poverty Reduction Strategy.

[Home Energy Loan Program](#)

The City has continued to offer its Home Energy Loan Program (HELP) ([2013.EX33.22](#) and [2017.PE18.4](#)) – since the advent of TransformTO, with financing of up to \$75,000 to homeowners to cover the cost of home energy efficiency improvements, through a Local Improvement Charge (LIC) mechanism. As of July 2021, HELP has issued \$ 5.7 million in loans, and supported over 236 retrofits across Toronto. HELP staff have engaged and provided guidance to more than 32 municipalities and territories exploring similar LIC programs. In 2020, the City was successful in its application to the Federation of Canadian Municipalities' Community Energy Financing (CEF) program. The City was awarded up to \$9.71 million in loans, and up to \$4.85 million in grants, to support the growth and enhancement of HELP ([2021.IE24.9](#)). Staff are working to finalize agreements with FCM and finalize program design for the enhanced HELP.

[BetterHomesTO](#)

In late 2019 the City of Toronto launched BetterHomesTO ([2019.IE6.5](#)), a multi-partner program that aims to help homeowners make their homes more energy efficient. BetterHomesTO offers a comprehensive online resource where Toronto homeowners can find information, tools and resources to help them learn about and undertake home energy retrofits and access all the programs, rebates and incentives offered by the City and its partners. This includes access to HELP, the City's Home Energy Loan Program, which offers financing of up to up to \$75,000 to cover the cover the cost of home energy efficiency improvements. In 2020, City staff trained more than 97 residents and community leaders through Home Efficiency Animator Training, a two-day training session led by Humber College; held 5 sessions of the two-hour Home Efficiency Retrofit Orientation (HERO) in partnership with Humber College and Enbridge Gas, to educate over 120 Toronto area-homeowners and residents on energy-efficient and net zero upgrades for single-family homes; developed tool-kits in 10 major languages; provided virtual presentations to more than 1,000 Toronto residents; and launched a 12-week webinar series with Clean Air Partnership, addressing various topics including energy efficiency, retrofit technologies, and pathways to net zero homes.

[Toronto Community Housing Passive House Pilot at Alexandra Park](#)

Toronto Community Housing Corporation (TCHC), is currently revitalizing the Alexandra Park community and is seeking to construct a pilot project consisting of 21 townhome units that will be Passive House certified. Passive House is an international construction standard that is focused on very high energy efficiency and rates of fresh air ventilation, in service of occupant comfort and resiliency. Passive House projects have reported heating and cooling energy savings of up to 90% compared to a typical building, and up to 75% compared to conventional new builds. Design began in early 2020. Lessons learned from the pilot project will be incorporated into the TCHC Design Guideline and Construction Specification for application to future construction projects undertaken by or on behalf of TCHC.

ENERGY

[Sewer Wastewater Energy Transfer Project](#)

In 2019 ([2019.IE7.10](#)), City Council authorized the implementation and monitoring of two wastewater energy transfer pilot projects with Noventa Energy Partners Inc, with Council modifying the authorization in 2020 (see [Staff Report](#) and [MM24.20](#)). Noventa Energy Partners, City of Toronto and University Health Network worked to deliver the \$38 million project, funded in part by the Government of Canada and financed by Vancity Community Investment Bank. This project will supply 1.8 billion kilowatt-hour of low-carbon thermal energy (or approximately 90% of Toronto Western Hospital's heating and cooling requirements) from raw wastewater to the hospital for the next 30 years. The project will also reduce the hospital's CO₂ emissions by 250,000 tonnes – the equivalent of taking over 1,800 cars off the road yearly. This project is the largest raw wastewater energy transfer project in the world. Starting in early 2022, the City will process other applications for projects that would similarly access the sewer to use thermal energy to displace the use of fossil fuels as an energy source in buildings. This project not only has significant emissions reduction but also improves the resilience.

[Creative Energy's Mirvish Village District Energy System](#)

Redevelopment of the Honest Ed's department store at Bathurst Street and Bloor Street will see the creation of nearly one million square feet of purpose-built rental housing and retail space. Currently under construction, the Westbank Corporation development will be supplied with low-carbon heating and cooling through a thermal energy network where waste heat is heat recovered from the process of electricity generation. By making use of a combined heat and power (CHP) plant, the entire development will be supplied with low-carbon waste heat recovered from the CHP unit, and a reliable, resilient power source. For a typical natural gas power plant, heat is generated as a by-product of the electricity, and is allowed to escape into the atmosphere. In this development with CHP, most of the heat will be captured and used for space/water heating, making use of the heat by-product and significantly lowering the demand for conventionally generated heat. Creative Energy, a district energy company that has provided heating to Downtown Vancouver for over 50 years, is representative of an emerging actor in Toronto: the energy developer. Under this innovative arrangement, energy developers cover the capital costs of low-carbon heating and cooling and see a return on investment over time through a contract with the unit owners. The Energy Developer's capital costs are eventually recovered, and they are also able to earn a return, while the unit owners pay the same or less on their monthly utility bills. This project marks an important milestone for Toronto as it will be the first new district energy system delivered entirely by an energy developer.

Building Resilience into our Emergency Services

In 2019, the City of Toronto completed its first solar PV energy storage project on Toronto Paramedic Services' EMS station 46. The building's roof and south-facing wall have been outfitted with a 10 kilowatt (kW) solar PV system, coupled with two 13.5 kilowatt-hour (kWh) Tesla Powerwall batteries. The energy generated by the installation

is used to power the building's demand or charge the batteries, with extra generation fed back into the grid for an electricity credit. The system offsets 39% of the site's electricity costs and is expected to provide indefinite emergency back-up power. The added component of resiliency becomes crucial in ensuring the continuity of City services and infrastructure as the incidence of extreme weather events increases as a consequence of climate change. The City plans to scale this solution to other facilities, including the Waterfront Neighbourhood Centre, and transition its dependency on expensive fossil fuel-powered generators for backup.

TRANSPORTATION

[Active TO: Cycling Network Expansion](#)

Throughout 2020, the City of Toronto's Transportation Services Division introduced a variety of COVID-19 response programs ([2020.CC21.20](#)) in consultation with the Medical Officer of Health to accommodate the need for residents to be outside of their homes while physical distancing. In 2020, ActiveTO consisted of three main programs: Major Road Closures, Quiet Streets, and Cycling Network Expansion. This set of programs supported thousands of safe cycling and walking trips to essential services and recreation for mental and physical health. In 2020, the ActiveTO cycling projects coupled with Transportation Services' permanent on-street cycling network and trail projects represents the largest, single year increase in new bikeways in the City of Toronto's history which includes approximately 33 kilometres of new bikeways, for a total of approximately 61 kilometres of cycling lanes. ActiveTO was extended with some modifications in 2021 ([2020.IE20.12](#)).

[Electric Vehicle Strategy](#)

Toronto's first Electric Vehicle (EV) Strategy ([IE11.17](#)) was approved by City Council on January 29, 2020. It identifies actions that need to be taken so the city of Toronto is prepared for the global shift towards electric mobility and to ensure Toronto achieves a key TransformTO goal: 100% of transportation uses zero-carbon energy sources by 2050.

[TTC electric buses](#)

In 2020 the Toronto Transit Commission (TTC) announced that it is operating the largest fleet of battery electric buses (eBuses) in North America. The milestone comes as the TTC's third new electric bus model is now road ready and starting to go into service. To date the TTC eBuses fleet has accumulated 2.2 million+ in-service kilometers, provided over 110,000 in-service hours, and avoided 2.8 million kilograms of CO2 emissions.

WASTE

Digester Gas Usage at Wastewater Plants

The City is responding to the TransformTO leadership goal that 1.5 million gigajoules of energy to be generated from biogas by 2030 ([2017.PE19.4](#)). Biogas is a renewable

energy source that can reduce overall greenhouse gas emissions. Biogas converts methane, a potent greenhouse gas, into a safer form with lower environmental impacts. Biogas generation recovers waste materials that would otherwise go to landfills, reduces fossil fuel reliance and saves money, energy and material by treating the waste on-site. Three of the City's four wastewater treatment plants have on-site digesters used for sludge processing. This process reduces the volume of biosolids in wastewater, while also producing biogas. Biogas usage displaces natural gas and fuel usage, both of which contribute to GHG emissions. The City has initiatives underway aimed at optimizing the production and usage of biogas at these facilities.

[Green Bin Organic Waste into Renewable Natural Gas](#)

Given its history of delivering Green Bin Organics service to a broad single-family and multi-residential customer base, and the scope of materials collected in the Green Bin Organics program, the City has become a global leader in municipal organics collection processing. Since the early 2000s, the City has been leveraging its Green Bin Organics program to deliver regenerative outcomes from waste management operations by creating compost that returns the nutrients of food and organic waste to the soil. Now, the City, in collaboration with Enbridge Gas Inc., has invested in new infrastructure that will transform the biogas produced from processing Toronto's Green Bin organic waste into Renewable Natural Gas (RNG). The City began producing RNG in summer 2021, and, as per the strategy [\(2020.IE14.7\)](#) approved by City Council, the RNG will be blended with the natural gas that the City buys to create a low-carbon fuel blend. The fuel will be used to power City vehicles and heat City-owned facilities, allowing for greenhouse gas emission reductions across the organization to help achieve TransformTO targets. Toronto is a leader in long-term investment in closed-loop infrastructure to maximize resource recovery and decarbonize operations. In 2018, the City's Dufferin RNG project received the Energy Vision Leadership Award for its contribution to reducing global dependence on fossil fuel.

[Working Towards a Circular Economy](#)

The City of Toronto has completed a milestone project in its efforts to transition towards a circular economy [\(2016.PW14.2\)](#). The [Baselining for a Circular Toronto](#) research project is one of the first circular city scans completed by a Canadian city and articulates the challenges and opportunities in transitioning to a circular economy based on Toronto's current state of circularity. The project was completed in three phases:

- In Phase 1, a Landscape Analysis assessed the current state of circularity in Toronto and identified three sectors with high potential for circular economy interventions.
- In Phase 2, Material Flow Analysis was used to model the material consumption and disposal in Toronto's waste management, construction, and food system sectors. A Business as Usual analysis projected future consumption and disposal rates in these sectors to 2030.
- Phase 3 concluded the project by reflecting on key findings, proposing circular economy goals and indicators, and identifying key stakeholders and high level next steps for the City's circular transition.

The [Baselining for a Circular Toronto](#) project will provide the foundation for a Circular Economy Road Map for Toronto, including the establishment of firm circular economy targets, performance measures, and partnership opportunities to achieve a resilient, inclusive, green and prosperous future. The City is aiming to begin work on its Circular Economy Road Map in 2022.

ENGAGEMENT

[Get Growing Toronto](#)

Get Growing Toronto ([2017.PE19.4](#)) provides information, education and resources to help residents and community groups create productive food gardens in backyards, on balconies, and in schools across Toronto. In winter 2020, Live Green Toronto partnered with six neighbourhood organizations to deliver 12 container/balcony food gardening workshops. Two workshops were hosted in each of six Neighbourhood Improvement Areas: East Scarborough, San Romanoway, Thorncliffe, Lotherton, Rexdale, and St. James Town. The workshops encouraged residents to grow their own food to help address multiple City priorities including: increasing food security and access, revitalizing tower communities and reducing the greenhouse gas emissions that come from transporting food. In total, there were 181 participants over 11 workshops. In 2021, efforts were furthered by enrolling 25 residents from NIAs in a digital, expert-led container gardening workshop and launching a monthly Get Growing e-newsletter to continue to support past participants.

[Neighbourhood Climate Action Champions](#)

The Neighbourhood Climate Action Champions ([2017.PE19.4](#)) program aims to cultivate local neighbourhood leaders to inspire climate action in communities across the city. Champions encourage residents to reduce their carbon footprint by developing neighbourhood-focused climate action projects that support the values and needs of their community. Through these actions, the program hopes to reduce harmful greenhouse gas emissions, educate and engage the public on climate change and climate action, and advance the principles, priorities and actions of TransformTO. In 2020, a diverse group of 25 local volunteers with city-wide representation were recruited into the program.

[Climate Action Fund](#)

Through the Climate Action Fund, the City supports community-led projects, activities and events that reduce the emissions that contribute to climate change. In 2020, the program invested a total of \$200,000 in 18 projects across 12 community clusters. Projects engaged vulnerable residents - youth, isolated seniors and diverse linguistic communities in low-income areas, with a focus on climate action and COVID response and recovery. Over 400 community agencies were engaged with this program in 2020.

The CAF is directly linked to protecting low-income residents and contributing to advancing social equity and prosperity.

Climate Lens Education and Action in Neighbourhoods

In 2020, the City partnered with the Centre for Connected Communities to develop and deliver Climate Lens Education and Action in Neighbourhoods (CLEAN) ([2017.PE19.4](#)). CLEAN is designed to engage racialized people, newcomers, and residents with low incomes living in suburban/urban vertical communities in climate mitigation strategies. Throughout 2020, seven online learning and discussion sessions were held with local champions who were provided with tools/support to co-create plans, leverage community physical/social infrastructure and unite in a common aim to reduce GHG emissions. CLEAN participants were also provided with a micro-grant to test tools and approaches to engage marginalized/racialized residents in locally-relevant climate action initiatives, engaging more than 120 community leaders. CLEAN contributes to the advancement of social equity, protecting low-income residents, skills development, neighbourhood and resident prosperity and supporting poverty reduction.

Climate Lens in City decision-making

To support progress towards a net zero carbon target, the City is currently developing a cross-corporate Climate Lens program ([2019.MM10.3](#)) and has already integrated climate indicators and questions in the annual budget process to track climate spending. The Climate Lens program will provide resources, tools and support to empower City staff to undertake GHG and climate risk assessments of projects, programs and policies. This will allow project managers and decision-makers across the City government to better integrate relevant climate-related information into decisions, which must all become net zero aligned decisions going forward. The Climate Lens program will be administered primarily through an internal website (the “Climate Hub”) planned to launch in 2022.