
2023 CAPITAL BUDGET BRIEFING NOTE

Greenhouse Gas (GHG) Reduction and Climate Resilience Investment Summary

Objective:

- This briefing note presents information on investments proposed in the 2023 Capital Budget and 2024-2032 Capital Plan that supports transforming a significant amount of infrastructure towards reducing GHG emissions and/or increasing climate resilience in Toronto.

Key Points:

- Planned investment in capital projects that support reducing GHG emissions and/or increase climate resilience total \$2.049 billion in 2023 and \$17.623 billion over the 2023-2032 planning period. This reflects total investments, including spending on components of projects that do not reduce GHG emissions and/or increase climate resilience, but are nevertheless necessary to realizing climate positive outcomes of an initiative.
- The ability of Divisions, Agencies and Corporations to thoroughly estimate GHG reductions at the budget project level is limited by several factors including data issues, lack of a consistent baseline projection against expected future GHG reductions, and complex interactions between direct and indirect effects.
- Environment & Climate Division (E&C) staff are leading research, development and consultation on a Carbon Accountability system that would include an annual carbon budget per Council direction ([2021.IE26.16](#), #14) for the 2024 budget cycle.
- [TransformTO: Critical Steps for Net Zero by 2040](#) outlines a carbon budget system that provides information on both the GHG reduction impact and financial implications of City initiatives, including capital projects, aimed at reducing emissions across the community and the corporation to inform improved decision-making.
- Certain existing project specific GHG reduction estimates are highlighted below as an interim step on the way to the Carbon Accountability approach.

- E&C developed a definition and criteria to allow for Divisions, Agencies and Corporations to identify "fossil fuel reliant projects" in their capital budget proposals, starting in the 2024 budget cycle and have requested IT system changes to facilitate data collection for enhanced reporting.
- More details on climate-related investments are provided in *Appendix A: Breakdown of Divisions/Agencies with Climate-Related Investments in the Capital Budget*.

Toronto's GHG Emissions & Targets Outlook:

- Through City Council's adoption of [TransformTO Net Zero Strategy](#) (NZS), the City's sector-based GHG reduction targets, from 1990 levels, are:
 - 30% by 2020
 - 45% by 2025
 - 65% by 2030
 - Net zero by 2040
- To lead by example, City council has targeted an even more ambitious reduction for corporate emissions – 65% below 2008 levels by 2030.
- In 2020, Toronto's community-wide GHG emissions were 14 megatonnes representing a 43% reduction from 1990 levels, exceeding the 2020 target.
- Emissions in Toronto during 2020 were positively impacted by the COVID-19 pandemic, particularly from reductions related to transportation. There is a likelihood that emissions in subsequent years will rebound to pre-pandemic levels as the economy recovers.
- Toronto's 2020 GHG inventory shows the sources of community emissions by sector as buildings (58%), transportation (33%) and waste (9%). The sources of City of Toronto corporate emissions are transportation (40%), social housing (28%), facilities and buildings (18%), wastewater treatment (10%), waste (2%), and other sources (1%).
- Corporate emissions from operating assets like buildings, vehicle fleets including TTC, and related infrastructure represents approximately 5% of total community-wide emissions. Many initiatives proposed in the 2023 Capital Budget will support corporate emissions reduction and climate resilience, albeit for a small subset of total community emissions.
- This underscores the role of residents, business and civil society, and the funding needed from all levels of government, to enable adoption of sustainable practices towards decarbonization which will be a key driver to bringing the other 95% of Toronto's emissions to net-zero.

- City Council has less control and partial/indirect influence over outcomes with respect to the balance of community emissions. For example, investments in bike lanes and electric vehicle chargers are required to enable the adoption of more sustainable commuter options. However, commuters will ultimately decide on changes to their commuting behaviour which can only be partially influenced by the City. Moreover, Toronto's reliance on regional infrastructure, like a carbon free electricity grid, is critical to achieving net-zero but outside the scope of the City's capital program.

Green Debentures & International Organization for Standardization (ISO) Certification

- Growing domestic and international demand for environmentally responsible investment, paired with the adoption of TransformTO, prompted the City of Toronto to launch its Green Debenture Program in 2018.
- Demand from investors for Toronto's debentures has been strong with \$1.08 billion raised by the City through five debt issuances since 2018.
- Past issuances have reaped some of the lowest cost of borrowing¹ the City has been able to achieve in decades by virtue of the environmental benefits inherent in green projects, when compared to conventional bond issuances.
- Global financial markets and regulatory bodies have become increasingly concerned about the risk of false or exaggerated claims of green investments, known as greenwashing.
- To address this concern, the City has pursued ISO certification including ISO 37120 in collaboration with the World Council on City Data (WCCD).
- WCCD is implementing ISO 37120 in more than 100 cities across 35 countries. It includes 104 globally standardized, comparable, and third-party verified KPIs across 19 themes, such as education, energy, climate change and housing.
- As a Foundation City of the WCCD in 2014, Toronto was among the first 20 cities globally to implement ISO 37120, and is the host city for its headquarters.
- The City of Toronto has now received the ISO 37120 Certification at the highest Platinum level for eight consecutive years: 2014-2021.
- The City of Toronto looks forward to continued certification in accordance with international standards to support the City's Sustainable Debenture Program.
- The ISO data will also help the City to track progress on the climate and resilience outcomes, validate our sustainable debenture programs, and embrace the United

¹ City of Toronto News Release (September 13, 2019): [Following 2018 success, City of Toronto issues its second green bond – City of Toronto](#)

Nations' Sustainable Development Goals and UN Making Cities Resilient 2030 Initiative.

Highlights of 2023 Capital Investments by Sector – GHG Emissions Reduction Initiatives:

- Highlights of the most impactful capital projects that will support GHG emissions reductions across the three key sectors – buildings, transportation, and waste – are outlined below. Refer to individual Divisions, Agencies and Corporations for the full list of projects flagged as having components dedicated to reducing GHG emissions in their budget submissions and for further highlights of such projects in their Budget Presentations and/or Budget Notes.

Buildings Sector

- The [Net Zero Carbon Plan](#) provides a roadmap to achieve net zero emissions in existing City-owned buildings (except those owned and operated by Toronto Community Housing Corporation) by 2040, through fuel switching, energy efficiency retrofits and low carbon new builds.
- Implementation of the Net Zero Carbon Plan involves a variety of capital projects that are underway, planned or to be developed across the Divisions, Agencies and Corporations that manage the corporate building stock.
- Significant and sustained annual average capital investment of approximately \$205 million is estimated as necessary to achieve the Plan's objectives.

Corporate Real Estate Management (CREM)

- CREM began to implement the [Net Zero Carbon Plan](#) in 2022, collaborating with City Divisions, Agencies and Corporations to adopt the principles of the plan and the initiatives that lead the City down the path to net zero emissions.
- Investments CREM is making through the 2023 Capital Budget and 2024 to 2032 Capital Plan (including carry forward from 2022) include:
 - Deep energy retrofits through Energy Services Companies (ESCOs) at four municipal facilities, significantly reducing GHG emissions (\$1.8 million 2023 investment; \$8.8 million 2024-2032 investment)
 - Energy conservation, demand management, and building automation systems investments across a variety of City facilities (\$8.3 million 2023 investment; \$52.8 million 2024-2032 investment)

- The ModernTO Workplace Modernization Program, which will rationalize and optimize the use of office space across the City, reducing the City's footprint by investing in modern, efficient building systems and technologies in the City's core civic centres and office facilities (\$26.3 million 2023 investment; \$186.9 million 2024-2032 investment); and
- Delivering new build projects such as the new Fleet garage at 1050 Ellesmere (\$14.3 million 2023 investment; \$21.3 million 2024-2032 million), St. Lawrence Market North (\$34.1 million), the new Etobicoke Civic Centre (\$36.2 million 2023 investment; \$364 million 2024-2032 investment, excluding community centre and library portions), and the reuse and transformation of the Wellington Destructor (\$8.2 million 2023 investment; \$24 million 2024 – 2032) investment to support programs in their efforts to reduce GHG emissions or meet net zero standards.

Paramedic Services

- The Paramedic Services capital budget is contributing to implementation of the Net Zero Carbon Plan through:
 - Net Zero new builds:
 - Multi-function station #2 at 330 Progress Ave: \$17.2 million 2023 investment; \$69.0 million 2024-2032 investment
 - Multi-function station #4 at a future location: \$7.0 million 2024-2032 investment

Parks, Forestry & Recreation (PF&R)

- The PF&R capital budget is contributing to implementation of the Net Zero Carbon Plan through new net zero builds:
 - Northeast Scarborough Community Centre: \$14.3 million 2023 investment; \$52.7 million 2024-2032 investment
 - Western North York Community Centre: \$5.2 million 2023 investment; \$96.5 million 2024-2032 investment
 - Etobicoke Civic Centre Community Centre: \$0.2 million 2023 investment; \$80.5 million 2024-2032 investment
 - Lawrence Heights Community Centre: \$76.7 million 2024-2032 investment
 - Wabash Community Centre: \$0.9 million 2023 investment; \$112.2 million 2024-2032 investment
 - Don Mills Community Recreation Centre: \$0.2 million 2023 investment; \$134.1 million 2024-2032 investment
 - John Innes Community Recreation Centre & Moss Park Revitalization: \$0.3 million 2023 investment; \$71.4 million 2024-2032 investment

Shelter, Support and Housing Administration (SSHA)

- The SSHA capital budget is contributing to implementation of the Net Zero Carbon Plan through:
 - Net Zero new builds:
 - George Street Revitalization project: \$0.00 million 2023 investment; \$30 million 2024-2032 investment.

Toronto Community Housing Corporation (TCHC)

- TCHC has a target of reducing energy consumption in its buildings by 25% by 2028, based on weather normalized energy consumption when compared to a baseline average from 2013 to 2017. TCHC buildings are not covered by the Net Zero Carbon Plan.
- As of the end of 2021, TCHC has reduced annual energy consumption 10.23% from the baseline, resulting in an annual GHG emission reduction of 11.09%, or 20,481 t/CO₂e.²
- The City of Toronto's capital subsidy to TCHC totalling \$1.6 billion over the next ten years contributes (alongside federal subsidies) to projects that include components that will reduce GHG emissions, such as:³
 - Holistic Building Retrofit Program (\$41.7 million in 2023 and \$179 million over 2024-2027): Primarily targeting the deep retrofit of high-rises, this program consolidates many energy conservation measures into a single project to capitalize on energy savings. Buildings under this program will undergo envelope and mechanical systems overhaul resulting in higher performance and significant energy savings. The program will also run several pilot fuel-switching projects.
 - Building envelope (\$42.5 million in 2023 and \$190 million over 2024-2027): Includes exterior restoration work, over-cladding and window replacements.
 - Roofing (\$8 million in 2023 and \$32 million over 2024-2027): Includes roof replacement projects that add insulation to limit heat loss and bolster building performance.

² Note: these figures include adjustments by TCHC to account for COVID-19 impacts and the dynamics of natural gas-fired combined heat and power units displacing consumption of natural gas-fired electricity from the grid.

³ Numbers are projected budget values and subject to adjustment and change.

- In-Suite LED lighting and E Renewable Program (\$3 million in 2023 and \$12 million over 2024-2027): Includes installation of energy efficient LED lights and solar PV equipment.

Transportation Sector

- The [Sustainable City of Toronto Fleets Plan](#) and the TTC's [Green Bus Program](#) provide the approach for the City to transition its fleet vehicles from internal combustion engine vehicles to “zero emission vehicles” (ZEVs) powered by clean energy, such as electricity from a zero-carbon grid.
- Increasing the adoption of ZEVs into Corporate fleets is the pathway to reducing Corporate transportation sector emissions to net zero emissions by 2040.
- Capital spending to maintain and improve the broader transit system and pedestrian and cycling infrastructure helps reduce community emissions by allowing residents the choice to move around Toronto by public transit or active transportation (walking and cycling). This spending contributes toward residents making 75% of school/work trips under 5 km by walking, biking, or transit by 2030 – a key TransformTO goal.

Toronto Transit Commission (TTC)

- The TTC has a target for 20% of its bus fleet to be zero emission vehicles (ZEVs) by 2025-26, 50% by 2030, and 100% by 2040.
- As of 2022, ZEVs represented 3% of the TTC bus fleet
- The total quantity of eBuses that TTC plans to purchase is contingent on the close of the procurement process and Zero Emission Transit Fund application.
- Each eBus would provide an estimated GHG reduction of approximately 1,200 tonnes of CO₂e over their 13-year useful life.
- The TTC's 2023 Capital budget includes \$52.3 million in 2023 and \$308.9 million in 2024-2032 for the planned purchase of eBuses, as well as \$43.8 million in 2023 and \$43.2 million in 2024-2032 for the necessary charging systems.

Fleet Services

- Fleet Services is targeting 20% of its fleet will be ZEVs by 2025, and 50% by 2030.
- As of 2021, ZEVs represented 7% of City-owned vehicles, including TTC, Police, Fire, Paramedics, and other services.
- Fleet Services' capital budget includes \$1.6 million in 2023 and \$66.3 million for 2024-2032 for fleet replacement across Parks, Forestry & Recreation; Purchasing & Materials Management; Municipal Licensing & Standards; Solid Waste Management

Services; Engineering & Construction Services; Transportation Services; Toronto Paramedic Services; Toronto Fire Services; Exhibition Place; Fleet Services; Corporate Real Estate Management; Toronto Water; Shelter, Support & Housing Administration; and Toronto Community Housing Corporation;

- Fleet Services expects that most of the fleet replacement budget will be used to procure ZEVs.
- The expanded City of Toronto corporate EV charging station network is expected to have 300 charge ports available by the end of 2023, and 850 charge ports available by 2025 at more than 100 City locations.
- Fleet Services' capital budget includes \$1.9 million for EV charging infrastructure in 2023 and \$5.5 million over 2024-2031.

Parks, Forestry & Recreation (PF&R)

- PF&R's capital budget includes \$12.3 million in 2023 and \$63.5 million over 2023-2032 for replacement of two of the City's four diesel-powered ferries with electric ferries that can run on clean energy.
 - The operation of a fully electric ferry fleet is estimated to reduce between 2,150-2,800 t of CO_{2e} annually, depending on the number of annual ferry trips made. The ferries will also eliminate diesel fumes which contribute to local air and noise pollution.

Transportation Services

- TransformTO Net Zero Strategy targets that 75% of all school/work trips under 5 km are made by walking, biking, or transit by 2030.
- Transportation Services' capital program encourages walking, cycling and transit use through investing \$931 million over ten years in the growth, renewal and connection of citywide cycling and pedestrian infrastructure and around \$83 million in transit priority infrastructure. This is all underpinned by a further \$141 million capital and \$270 million operating investment over 10 years in Vision Zero road safety improvements and initiatives that support safe movement by those modes.
- Stimulating low- and zero-carbon transportation is critical to the City's net zero strategy yet understanding how individual capital projects influence community-wide GHG emissions is complex, depending in part on the transportation and consumption choices of residents and businesses and technological, economic, and social trends. The Environment and Climate Division is currently procuring energy and emissions modelling tools that, beginning in 2023, will help the City understand more deeply the impact of transportation capital spending on community-wide GHG emissions.

Transit Expansion Division

- The 10-year Capital Plan includes \$1.5 billion for the delivery of five SmartTrack stations, leveraging existing transit infrastructure to expand transit access for Toronto residents travelling within and beyond the city.

Waste

- The City's TransformTO 2030 goals for the waste sector are to: (i) achieve 70% residential waste diversion from the City of Toronto's waste management system and (ii) identify pathways to more sustainable consumption in City of Toronto operations and in Toronto's economy.
- The Corporate TransformTO 2030 goals are to: (i) generate and utilize 1.5 Million gigajoules of energy from biogas, and (ii) reduce approximately 107,700 t CO₂e per year through Organics Processing with Renewable Energy and Landfill Gas Utilization.

Solid Waste Management Services (SWMS)

- Solid Waste Management Services' (SWMS) capital budget contributes to achieving the TransformTO 2030 goals. SWMS is turning the raw biogas produced from processing Green Bin organics and turning it into Renewable Natural Gas (RNG). As per the strategy that was approved by City Council in 2021, the RNG produced will be blended with the natural gas that the City buys to create a lower-carbon fuel blend that will be used by the City. This allows for a reduction in greenhouse gas emissions across the organization.
- Solid Waste Management Services' 10-year Capital Plan includes:
 - \$0.8 million in 2023 and \$134.3 million for 2024-32 for a third Organics Processing Facility (OPF) projected to come on-line in 2028 with estimated GHG reduction of approximately 11,804 tonnes of CO₂e per year.
 - \$4.3 million in 2023 and \$43.3 million for 2024-32 to enable and expand production of RNG at the Dufferin and Disco OPFs. This will result in an estimated GHG reduction of approximately 17,046 tonnes of CO₂e per year when both are fully operational.

- \$5.6 million in 2023 and \$65.5 million for 2024-32 for Landfill Gas Control & Utilization from Green Lane & Keele Valley Landfills. RNG infrastructure to upgrade landfill gas at Green Lane Landfill is projected to begin in 2026. A feasibility study is planned for the closed Keele Valley Landfill. Annual GHG reductions are estimated to be 93,015 t CO₂e once both projects are operational.

Capital Investments to Improve Climate Resilience:

- Impactful planned and underway capital projects that will improve Toronto's climate resilience include:
 - Toronto Water's investments in carrying out the Basement Flooding Protection Program, Wet Weather Flow Master Plan, and stream restoration and erosion control activities;
 - Waterfront Revitalization investments in the Port Lands Flood Protection project;
 - Toronto and Region Conservation Authority's investments in management and control of erosion, watershed improvements and waterfront development work; and
 - Parks, Forestry and Recreation Division's investments in park development, providing new and improved green space for recreational and natural purposes.

Capital Spending on Fossil Fuel Reliant Projects:

- A "fossil fuel reliant project" is defined as a budget project that relies on fossil fuel combustion as an energy source, and as such is expected to decline or phase-out entirely from the City's annual budget by 2040, considering the changes necessary to achieve net zero emissions.
- A project may be flagged as having one or more components that reduce GHGs *and* one or more components that make it fossil fuel reliant with the purpose of tracking expected decline over time in the City's annual budget.
- E&C has developed a definition and criteria to allow for "fossil fuel reliant projects" identification in City capital budget proposals, starting in the 2024 budget cycle, and have requested system changes to facilitate collection.

Process for Information Collection & Review:

- A set of Climate Lens questions have been used to capture climate-related investments in the capital budget process used to inform this briefing note.

- For the 2023 Budget, staff across City Divisions and Agencies were provided with training from the Environment and Climate Division along with a list of objective criteria for determining which projects reduce GHG emissions and/or increase climate resilience, as well as guidance for providing supplementary information on such projects.
- Financial Planning Division provided the data collected and worked with Environment and Climate Division staff who reviewed a portion of the projects flagged against the criteria and guidance and removed a subset of those projects from the totals.

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APPENDIX A: Divisions/Agencies Climate-Related Investments in the 2023 Capital Budget

\$ Thousands	Climate Lens		GHG Only		GHG and Climate Resilience		Climate Resilience Only	
	2023	2023-2032	2023	2023-2032	2023	2023-2032	2023	2023-2032
Tax Supported Programs	1,592,211	11,667,180	747,815	3,176,009	580,076	7,166,798	264,320	1,324,372
Community and Social Services	313,173	4,355,518	13,565	203,720	286,225	4,022,933	13,383	128,865
Children's Services	4,242	43,487	0	0	4,242	43,487	0	0
Economic Development and Culture	2,149	4,699	0	0	2,149	4,699	0	0
Fire Services	4,436	7,210	0	0	4,436	7,210	0	0
Housing Secretariat	6,506	12,823	0	0	6,506	12,823	0	0
Parks, Forestry & Recreation Shelter, Support & Housing	95,298	1,874,950	13,515	200,720	68,400	1,545,365	13,383	128,865
Administration	25,339	692,061	0	0	25,339	692,061	0	0
Toronto Housing Corporation	147,643	1,601,783	0	0	147,643	1,601,783	0	0
Toronto Paramedic Services	27,560	118,505	50	3,000	27,510	115,505	0	0
Infrastructure and Development Services	627,494	3,504,348	408,110	2,144,877	4,923	476,764	214,461	882,707
IDS Transit Expansion	376,277	1,529,390	324,277	1,472,390	0	0	52,000	57,000
Transportation Services	181,217	1,840,735	83,833	672,487	4,923	476,764	92,461	691,484
Waterfront Revitalization Initiative	70,000	134,223	0	0	0	0	70,000	134,223
Corporate Services	248,309	2,148,552	0	0	248,309	2,121,552	0	27,000
Corporate Real Estate Management	133,608	800,517	0	0	133,607	800,516	0	0
Environment & Climate Division	33,302	331,903	0	0	33,302	304,903	0	27,000
Fleet Services	81,400	1,016,133	0	0	81,400	1,016,133	0	0

\$ Thousands	Climate Lens		GHG Only		GHG and Climate Resilience		Climate Resilience Only	
	2023	2023-2032	2023	2023-2032	2023	2023-2032	2023	2023-2032
Tax Supported Programs cont'd Agencies	403,235	1,658,761	326,140	827,412	40,619	545,549	36,476	285,800
Exhibition Place	2,320	6,950	2,320	6,950	0	0	0	0
TO Live	1,908	3,091	0	0	1,908	3,091	0	0
Toronto & Region Conservation Authority	29,408	212,455	0	0	1,976	19,760	27,432	192,695
Toronto Police Service	3,996	99,242	0	0	3,996	99,242	0	0
Toronto Public Library	12,879	314,829	0	0	12,879	314,829	0	0
Toronto Zoo	15,277	96,153	0	0	15,277	96,153	0	0
Toronto Transit Commission	337,447	926,041	323,820	820,462	4,583	12,474	9,044	93,105
Rate Supported Programs	453,441	5,956,025	73,422	1,001,080	42,415	874,208	337,604	4,080,737
Solid Waste Management	14,522	301,171	10,675	253,769	3,847	47,402	0	0
Toronto Water	438,919	5,654,854	62,747	747,311	38,568	826,806	337,604	4,080,737
Grand Total	2,045,652	17,623,205	821,237	4,177,089	622,491	8,041,006	601,924	5,405,109