Appendix A – GHG Reduction Actions in the 2025 Staff Prepared Budget

Introduction

This appendix provides detail on the estimated emissions reduction impact of specific City-led greenhouse gas (GHG) reduction actions (projects and programs). Specifically, a table is provided for each GHG reduction action that shows the 2025 capital and operating budget amounts associated with the action, and the estimated GHG reduction in 2025 (where feasible). Certain GHG reduction actions also have specific notes below the table to ensure clarity around information presented in the table. Where it is not currently possible to estimate the emission reduction impact for 2025, it is recognized that more data or effort will be required to estimate these potential GHG reductions in future.

The sections below are organized consistent with how emissions are tracked in the City's annual Sector-Based GHG Inventory. GHG reduction actions are sorted according to the sector in which their primary emission reduction effect occurs:

- Community buildings,
- Community transportation,
- Corporate buildings,
- Corporate transportation, or
- Community/Corporate waste.

Each sector has its own section. Each section begins with a statement of the TransformTO goals relevant to that sector and information on actual emissions for that sector from the City's most recent Sector-Based GHG Inventory.

COMMUNITY EMISSIONS

The TransformTO Net Zero Strategy identified Toronto's GHG reduction targets from 1990 levels as:

- 45 per cent by 2025,
- 65 per cent by 2030, and
- net zero by 2040.

In 2022, Toronto's community-wide greenhouse gas (GHG) emissions were **15.5 megatonnes (MT) of carbon dioxide equivalent (CO_2e)**, a seven per cent increase over the 14.8 MT CO_2e emitted in 2021. Emissions were **37 per cent** less than 1990 levels.

Unlike corporate emissions, the City of Toronto has indirect influence over community emissions. Investments in programs, projects and infrastructure are in place to help households and businesses reduce emissions, but utilization of these investments depends on uptake by the community. Community emissions may also be influenced through by-laws that regulate emission sources.

COMMUNITY BUILDINGS

The TransformTO Net Zero Strategy identified the following 2030 goals for community 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.
- 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.

In 2022, emissions from residential, commercial, and industrial buildings accounted for approximately **8.7 MT** of the city's total inventory, making buildings the largest source of emissions at roughly **56 per cent** of community-wide emissions.

The largest single source of community-wide emissions is from natural gas heating in residential buildings, accounting for 29% of community-wide emissions in 2022.

ACTION: *Better Buildings Navigation & Support Services*

Description: Consulting support for building owners, operators, and property managers navigating the process of improving the energy efficiency of their buildings and reducing greenhouse gas emissions.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Better Buildings Navigation & Support Services	Buildings	Environment & Climate	-	-	0.15	N/A

GHG Impact Commentary

- Educational and support service programs are important parts of any city's climate action plan but are not suitable for a program-specific, quantified GHG reduction estimate.

***ACTION**: Eco-Roof Incentive Program*

Description: Financial support provided by the City to incentivize the installation of green roofs and cool roofs - known together as 'eco-roofs' - on Toronto homes and buildings.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Eco-Roof Incentive Program	Buildings	Environment & Climate	-	-	0.41[1]	37

GHG Impact Commentary

- Estimate is based on the best available data and methodology, using the average of historic annual reductions for the program (2021-2023).

***ACTION:** Green Roof By-law*

Description: By-law setting out a graduated green roof requirement (20-60% of the Available Roof Space) for new development or additions that are greater than 2,000 m² in gross floor area.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO2e)
Green Roof By-law	Buildings	City Planning	-	-	0.08	-

GHG Reduction Commentary

- No estimate for 2024 emissions reductions due to lack of necessary data.

[1] The operating amount for Eco-Roof Incentive Program only reflects staff FTE salaries. Further amounts have been dedicated to disbursing incentives. Please see the Environment, Climate & Forestry Division's budget for further details.

ACTION: *Energy Retrofit Loan Program*

Description: Financing for the incremental part of energy efficiency measures and renewable energy projects to achieve full decarbonization of existing buildings in the city (except single family homes).

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Energy Retrofit Loan Program	Buildings	Environment & Climate	-	110.00	0.26	59

GHG Reduction Commentary

- The emission reduction for 2025 is estimated based on recent performance of the loan program, however actual reductions will depend on the specific projects that are funded. Two projects are expected to be funded in 2025. Future funding of projects will be prioritized based on GHG reductions.

ACTION*: High-Rise Retrofit Improvement Support Program (HI-RIS)*

Description: Low-cost financing available for owners of residential apartment buildings built before 1990 of three or more storeys to make improvements that reduce energy and water consumption.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
High-Rise Retrofit Improvement Support Program (HI-RIS)	Buildings	Housing Secretariat	5.81	16.38	-	148

GHG Reduction Commentary

- The GHG reductions are estimated based on the energy savings anticipated from measures analyzed in energy audits of buildings to be retrofitted. The estimate presumes building retrofit projects will be completed in 2025 and should be

considered as the upper bound of the potential GHG reduction once projects are complete.

ACTION: *Home Energy Loan Program (HELP)*

Description: Low-interest loan program providing up to $125,000 for homeowners to cover the cost of home energy improvements (low rise residential housing). For 2025, a new HELP stream focused on modest income homeowners has been added alongside a bulk procurement initiative for solar panels and heat pumps. Finally, HELP also has a capacity building function that helps homeowners understand and act on the need to make homes more energy efficient with fewer GHG emissions.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Home Energy Loan Program (HELP)	Buildings	Environment & Climate	7.90*	39.80*	0.17	349

GHG Reduction Commentary

- Emission reduction estimate is specific to the loan program. The capacity building function of HELP will lead indirectly to further, unquantifiable GHG reductions. Estimate for the loan program is based on average per building reductions reported by current program users, multiplied by expected number of buildings in the loan program in 2025. This methodology can be revised in future if data shows the range of reductions per building and the average changing over time.

ACTION: *Toronto Green Standard (TGS) – Community*

Description: Sets GHG and other performance requirements for new private developments, enforced via site-plan approval. Version 4 of the TGS consists of Tiers 1-3, with Tier 1 currently being a mandatory requirement of the planning process and Tiers 2 ("High Performance" level) and 3 ("Near Zero Emissions" level) incentivized via Development Charge Refund Program. Council will consider whether to update TGS to version 5, with updated energy and emissions performance measures, in Q4 2025.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Toronto Green Standard - Community	Buildings	City Planning, Housing Secretariat, Environment & Climate	52.76	411.36	0.48	31,583

*This table does not include capital spending which City Planning invests to support TGS Tier 2 DC Refund Program, a major contribution in raising the bar in reducing GHG emissions for new development.

GHG Reduction Commentary

- Estimate based on projecting forward a 5-year trailing average. Emission reductions are based on the difference between GHG values from energy modelling for the proposed new developments and the same values for equivalent reference buildings built to Ontario Building Code minimum standards. 2024 estimate reduced to 31,583 t CO_2e to reflect expected reductions in application volume.

***ACTION**: Building Emission Performance Standards (BEPS) (in-development)*

Description: Mandatory BEPS are planned to apply to some buildings in Toronto, beginning with the largest buildings. The BEPS will set appropriate emissions limits so that Toronto businesses and residents have reasonable, achievable pathways to make improvements to their buildings over time.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Building Emission Performance Standards (BEPS)	Buildings	Environment & Climate	-*	-*	-**	N/A

*Capital impacts are expected with by-law implementation and are yet to be defined.
**No net operating budget impact, full funded via contribution from reserves/reserve funds

GHG Reduction Commentary

- No GHG reductions for 2025 were estimated because the BEPS are still in-development and planned to phase-in in future years.

***ACTION:** Enabler - Community Buildings*

Description: This action includes various activities funded through the capital and/or operating budget that are important enablers of action to reduce GHG emissions in the buildings sector but may not have a direct or immediate impact (e.g., policy work, feasibility studies, education).

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Enabler-Community Buildings	Buildings	Various	13.10	20.05	-	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

COMMUNITY TRANSPORTATION

The TransformTO Net Zero Strategy identified the following 2030 goals for community transportation:

- 30 per cent of registered vehicles in Toronto are electric.
- 75 per cent of school/work trips under 5km are walked, bicycled or by transit.

Transportation sector emissions continued to be the second largest source of GHG emissions in Toronto, accounting for **35 per cent** of community-wide emissions in 2022. This is an increase in share from 33 per cent in 2020.

These emissions were mostly attributable to gasoline used in passenger cars and trucks, accounting for 26 per cent of community-wide emissions in 2022.

ACTION: *Bike Share Toronto*

Description: City-wide bike share system offering paid access to over 10,000 bikes at over 1,000 stations across Toronto.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** ($t CO_2e$)
Bike Share Toronto	Transportation	Toronto Parking Authority	12.12	31.17	-	1,706

GHG Reduction Commentary

- Estimate is based on the difference between emissions to run the Bike Share Toronto program (electricity needs of e-bikes and vehicles to move the shared bikes to stations around the city) and the emissions equivalent of the number of expected 2025 bike share trips if taken via the current mode share of transportation (private vehicles, public transit, or active transportation).

ACTION: *Complete Streets*

Description: Capital projects implementing the Complete Streets design guidelines to make Toronto's streets and roads more accessible and safer for active transportation.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Complete Streets projects	Transportation	Transportation Services	95.30*	1,188.5*	-	N/A

*Figures reflect the full cost of capital projects that have been tagged as Complete Streets projects. Transportation Services has estimated a proportion of the right of way for such projects that is solely devoted to motor vehicles versus sidewalk or street space used for active transportation. The proportion dedicated to Complete Streets is currently estimated at $887 million for the total ten-year plan. This provides a methodology for determining the percentage of the projects that relates to GHG reductions.

GHG Reduction Commentary

- No category-wide estimation methodology could be used based on the broad variety of capital projects and lack of data about how the complete streets projects underway affect transportation mode share. In general, complete streets support GHG reduction by increasing right of way for pedestrians, cyclists, and potentially transit vehicles.

ACTION: *Cycling Network Plan*

Description: Ongoing capital projects to build out and renew cycling network bikeways (near-term implementation plan covers 2022-2024, long-term plan to 2030).

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Cycling Network Plan	Transportation	Transportation Services	45.00	277.20	-	N/A

GHG Reduction Commentary

- As a result of recent Provincial legislation that has only recently come into effect, the City of Toronto will require time to discuss next steps with the Province and to assess the impacts on the City's cycling infrastructure as well as the associated delivery plan for cycling for the coming years.

ACTION: *Smart Commute*

Description: Educational program promoting sustainable commuting (e.g., carpooling, cycling, and public transit) and providing tools and resources for businesses and individuals.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Smart Commute	Transportation	Environment & Climate	-	-	1.49	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

ACTION: *Transit expansion projects*

Description: Capital funding supporting the build out of SmartTrack Stations Program.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.)
Transit expansion projects	Transportation	Transit Expansion	132.82	772.19	-	-

GHG Reduction Commentary

- No estimate for 2025 emission reductions because stations are not anticipated to be in operation until 2029.
- GO Expansion will shift over 145,000 cars off the road each day leading to significant GHG reductions. By 2055, Metrolinx expects this will amount to cumulative reductions of 7.3 MT of CO_2e.

***ACTION**: Enabler - Community Transportation*

Description: This action includes various activities funded through the capital and/or operating budget that are important enablers of action to reduce GHG emissions in the transportation sector but may not have a direct or immediate impact (e.g., policy work, feasibility studies, education).

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** ($t CO_2e$)
Enabler - Community Transportation	Transportation	Various	151.24	525.50	-	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

CORPORATE EMISSIONS

The TransformTO Net Zero Strategy set a goal for the City of Toronto's corporate GHG emissions to be reduced by 65 per cent over 2008 levels by 2030.

In 2022, corporate emissions were **0.83 MT**, which was about **five per cent of Toronto's community-wide emissions**. The City's corporate emissions increased by four per cent from 2021 but remained a stable share of community-wide emissions between 2021 and 2022.

The City of Toronto's corporate (or local government) emissions are calculated based on the energy used in all municipal buildings (offices, community recreation centres, Toronto Community Housing Corporation (TCHC) housing), vehicle fleets including Toronto Transit Commission (TTC) transit vehicles, waste, water supply, and treatment, as well as streetlights.

Buildings accounted for 37 per cent, the largest source of corporate emissions, followed by transportation emissions at 32 per cent and water & wastewater emissions accounting for 27 per cent, and lastly waste emissions at 4 per cent.

CORPORATE BUILDINGS

In 2022 corporate buildings emissions were **0.31 MT**, which is about **37 per cent** of total corporate emissions. Natural gas consumption used primarily for space heating facilities including THCH housing, comprised approximately 36 per cent of all corporate emissions, four per cent higher than in 2021 and accounted for the largest single source of emissions.

ACTION: *Workplace Modernization Program*

Description: Plan to reduce the City's office footprint from 55 to 15 locations, reducing the City office floor area by 1 million square feet or 33 percent.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Workplace Modernization Program	Buildings	Corporate Real Estate Management	16.67	190.91	-	263

GHG Reduction Commentary

- Estimate based on emission reductions due to optimization of the City's office portfolio.

ACTION: *Net Zero Carbon Plan - Toronto Green Standard (TGS) - Corporate*
Description: GHG and other performance requirements for new City Agency, Corporation and Division-owned building developments and additions greater than 100m^2. TGS for Corporate buildings requires Net Zero Emissions (Tier 3) and an embodied emissions cap.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Net Zero Carbon Plan- Toronto Green Standard (TGS) - Corporate	Buildings	Children's Services, Corporate Real Estate Management, Fire Services, Parks, Forestry & Recreation, Toronto & Region Conservation Authority, Toronto Paramedic Services, Toronto Police Services, Toronto Public Library, Toronto Zoo	371.65*	3,658.61*	0.10	0-83**

*Figures reflect the full cost of capital projects that have been tagged as relating to a TGS Net Zero Corporate new building. CREM advises the incremental cost of work to make a new building net zero is generally 15% of total project cost, depending on building type.
**Range reflects the fact that emission reductions for Corporate buildings approved under TGS Net Zero Emissions standard begin only once buildings are occupied and producing operational emissions from energy consumption. The top end of the range (83 t CO_2e) indicates estimated emission reductions if all 3 approved Corporate Net Zero Emissions buildings are completed and occupied in 2025, though it is unlikely that more than one building will be occupied as of 2025.

GHG Reduction Commentary

- Estimate based on the difference between GHG and energy intensity values from energy modelling for the proposed new developments and the same values for equivalent reference buildings built to Ontario Building Code minimum standards.
- There are 3 projects expected to be completed in 2025 that have implemented Net Zero Emissions (Tier 3) for new corporate developments, with an estimated annual GHG reductions of 83 t CO_2e.

- There are a total of 9 Corporate buildings approved under TGS Net Zero Emissions standard. The expected occupancy date for these buildings ranges from 2025 to 2029, with an estimated annual GHG reduction of 1,142 t CO_2e once operational.

ACTION: *Net Zero Carbon Plan - Renewable Natural Gas (RNG) Utilization - Buildings*

Description: Displacement of a portion of fossil natural gas consumption in Corporate buildings by consumption of renewable natural gas (RNG) produced at City-operated anaerobic digesters.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Net Zero Carbon Plan - Renewable Natural Gas (RNG) Utilization	Buildings	Corporate Real Estate Management, Environment & Climate, Solid Waste Management	-	-	4.11	8,393

GHG Reduction Commentary

- Estimate based on the difference between the emissions of combusting RNG, which produces only biogenic CO_2 emissions that do not contribute to climate change, and the emissions of an equivalent amount of fossil natural gas for heating Corporate buildings.
- Further reductions can be realized in future due to the City's work to expand the Disco Road Organics Processing Facility and make improvements to the Dufferin Organics Processing facility, which will both result in increased RNG production.

ACTION: *Net Zero Carbon Plan - Fuel switching + Efficiency retrofits*

Description: Implementation of fuel switching from natural gas to clean electricity and efficiency retrofits at Corporate buildings.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Net Zero Carbon Plan (Fuel switching + Efficiency retrofits)	Buildings	Children's Services, City Planning, Corporate Real Estate Management, Environment & Climate, Fire Services, Parks, Forestry & Recreation, Toronto & Region Conservation Authority, Toronto Housing Corporation, Toronto Paramedic Services, Toronto Police Service, Toronto Public Library, Toronto Shelter and Support Services, Toronto Zoo	49.46*	744.40*	-	0-606*

*Figures reflect the full cost of capital projects that have been tagged as containing one or more components related to fuel switching and/or efficiency retrofits. CREM advises the incremental cost of fuel switching and energy efficiency work to make existing buildings net zero is generally 15%, depending on building type, on top of the figures reported above which generally cover baseline SOGR work.
**CREM can provide figures on expected emission reductions (tonne/$) among Corporate buildings. These figures are derived from the incremental costs, above the cost of SOGR, for emission reduction actions analyzed in the Net Zero Carbon Plan.

GHG Reduction Commentary

- The estimate for 2025 emissions reductions is based on available data. Processes for pre- and post-project analysis and data collection for fuel switching and efficiency retrofit projects are evolving under the Net Zero Carbon Plan.

- This action also includes projects that will be implementing on-site renewables and storage at Corporate buildings.
- There are an additional 11 projects, as highlighted by the Carbon Prioritization process, with an expected annual GHG reduction 24,452 t CO_2e, in future years.

ACTION: *Net Zero Carbon Plan - Training and Education*
Description: Training and Education at City-owned buildings to move toward a uniform, portfolio-wide process for maintaining efficient building operations and achieving incremental efficiency improvements.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Net Zero Carbon Plan (Training and Education)	Buildings	Corporate Real Estate Management, Economic Development & Culture	-	-	0.03	N/A

GHG Reduction Commentary

- Educational and training programs are an important action under the Net Zero Carbon Plan but do not directly produce emission reductions, rather they support emission reductions in the Plan's other aspects such as fuel switching and efficiency retrofits.

ACTION: *Sustainable Energy Plan Financing*

Description: Program to provide financing at the City's cost of borrowing to invest in energy efficiency, renewable energy, and emission reduction projects for new construction (primarily in buildings) in support of TransformTO.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Sustainable Energy Plan Financing	Buildings	Environment & Climate	14.25	131.02	0.14	309*

GHG Reduction Commentary

- The estimate provided represents the Waterfront Neighbourhood Centre project completed. There are two other 2020-2022 projects are underway, yet to be completed. These include the Emergency Medical Services (EMS) Headquarters and Solar PV projects. Future GHG reduction estimates once projects are complete will be an additional 534 t CO_2e.

ACTION: *TCHC - Energy Efficiency Action Plan*

Description: Capital projects to achieve 25% reduction in energy consumption in Toronto Community Housing Corporation (TCHC) buildings by 2028.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
TCHC - Energy Efficiency Action Plan	Buildings	Toronto Housing Corporation	198.37	1,501.61	-	3,840

GHG Reduction Commentary

- Estimate is based on aggregated emission savings reported in Level 2 energy audits, energy models and detailed engineering studies for TCHC capital projects, and comparison to similar projects.

***ACTION**: Enabler - Corporate Buildings*

Description: This action includes various activities funded through the capital and/or operating budget that are important enablers of action to reduce GHG emissions in the buildings sector but may not have a direct or immediate impact (e.g., policy work, feasibility studies, education).

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Enabler-Corporate Buildings	Buildings	Various	12.60	190.92	-	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

CORPORATE TRANSPORTATION

In 2022, corporate transportation emissions were **0.26 MT**, which is about **32 per cent** of total corporate emissions. Within transportation, diesel and biodiesel emissions accounted for about 83 per cent of corporate transportation emissions, while gasoline emissions represented approximately 13 per cent.

ACTION: *Sustainable City Fleets*

Description: Corporate-wide plan to reduce emissions from Corporate fleet vehicles 65% below 2008 levels by 2030 and to net zero by 2040, primarily through fuel switching to biodiesel and procurement of zero emission vehicles to replace internal combustion engine vehicles.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** ($t CO_2e$)
Sustainable City Fleets	Transportation	Fleet Services, Parks, Forestry & Recreation, Toronto Paramedic Services, Toronto Parking Authority, Toronto Police Services, Toronto Water, Toronto Transit Commission	160.13	2,212.59	1.77	8,318

GHG Reduction Commentary

- Estimate based on the difference between the emissions of the new zero emission and low-carbon (biodiesel) fleet vehicles and the emissions of comparable internal combustion engine fleet vehicles completing the same kilometers.
- The 2025 GHG reduction estimate includes the inclusion of the Fleet Transition to ZEV and Addressing Aging Backlog projects, as identified through the Carbon Budget Prioritization Process.

ACTION: *Renewable Natural Gas (RNG) Utilization - Transportation*

Description: Displacement of a portion of compressed fossil natural gas consumption in Corporate fleet vehicles by consumption of renewable natural gas (RNG) produced at City-operated anaerobic digesters.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Renewable Natural Gas (RNG) Utilization - Transportation	Transportation	Fleet Services, Environment & Climate, Solid Waste Management	-	-	0.26	534

GHG Reduction Commentary

- Estimate based on the difference between the emissions of combusting RNG, which produces only biogenic CO_2 emissions that do not contribute to climate change, and the emissions of an equivalent amount of compressed fossil natural gas for powering Corporate fleet vehicles.

- Further reductions can be realized in future due to the City's work to expand the Disco Road Organics Processing Facility and make improvements to the Dufferin Organics Processing facility, which will both result in increased RNG production.

***ACTION**: Enabler - Corporate Transportation*

Description: This action includes various activities funded through the capital and/or operating budget that are important enablers of action to reduce GHG emissions in the transportation sector but may not have a direct or immediate impact (e.g., policy work, feasibility studies, education.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Enabler - Corporate Transportation	Transportation	Fleet Services, Toronto Water, Transportation Services, Toronto Transit Commission	-	-	-	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

***ACTION:** Green Bus Program*

Description: Procurement of fully electric and diesel hybrid-electric buses to transition the Toronto Transit Commission bus fleet toward net zero emissions. Only fully electric buses are being procured, with the TTC on track to transition its bus fleet to fully zero-emissions by 2037. Also includes procurement of new gasoline Wheel-Trans buses to replace diesel buses.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Green Bus Program	Transportation	Toronto Transit Commission	549.32	694.02	-	65,200

GHG Reduction Commentary

- Estimate based on annual average of the 10-year cumulative GHG emission difference between Green Bus fleet vehicles and diesel bus fleet vehicles completing the same kilometers. Actual annual emission reductions will be larger in future years as a result of rising share of Green Bus fleet vehicles.

COMMUNITY / CORPORATE WASTE

The TransformTO Net Zero Strategy set a goal that by 2030, 70 per cent residential waste diversion from the City of Toronto's waste management system.

In 2022, waste sector emissions, primarily from landfills, were **1.4 MT**, the third largest source at roughly **9 per cent** of community-wide emissions. This remained stable compared to 2021. In 2022, corporate water & wastewater emissions were 0.23 MT, while waste emissions were 0.03 MT, which combined is about 31 per cent of total corporate emissions.

ACTION: *Green Bin Organics Program*

Description: Service collecting and diverting organic material from approximately 460,000 houses and more than half of apartment and condo buildings as well as schools and City-owned buildings.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Green Bin Organics Program	Waste	Solid Waste Management Services	3.59	186.30	34.95	19,695

GHG Reduction Commentary

- Estimate based on the difference between emissions if organics collected by the City were sent to landfill instead of being processed at City-owned or contracted anaerobic digesters. 19,695 t CO_2e represents the annualized reduction over a 30-year period (reflecting the decay period of organics in landfill) between the organics and landfill scenario. Further annualized reductions of 1,867 t CO_2e have been estimated for future years, as the City is working to expand the Disco Road Organics Processing Facility, which will enable it to process all collected organics at City-owned anaerobic digesters instead of sending a portion to contractors, and will be making process improvements at the Dufferin Organics Processing Facility.

***ACTION**: Enabler - Community & Corporate Waste*

Description: This action includes various activities funded through the capital and/or operating budget that are important enablers of action to reduce GHG emissions in the waste sector but may not have a direct or immediate impact (e.g., policy work, feasibility studies, education).

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Enabler-Community & Corporate Waste	Waste	Solid Waste Management Services, Toronto Water	5.00	13.76	5.33	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.

***ACTION**: Yard Waste Program*

Description: Service collecting yard wase material from approximately 460,000 houses and more than half of apartment and condo buildings and diverting it from landfill.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Yard Waste Program	Waste	Solid Waste Management Services	-	-	16.87	19,103

GHG Reduction Commentary

- Estimate based on the difference between emissions if yard waste collected by the City was sent to landfill instead of being sent to third-party contractors for aerobic composting. 19,103 t CO_2e represents the annualized reduction over a 30-year period (reflecting the decay period of yard waste in landfill) between the yard waste and landfill scenario.

***ACTION**: Biogas gas capture for beneficial use (RNG) and reduced methane flaring*

Description: This action involves capital and operating projects that support emission reduction from reduced flaring at the Organics Processing Facilities.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Biogas gas capture for beneficial use (RNG) and reduced methane flaring	Waste	Solid Waste Management Services	0.02	0.06	2.42	418

GHG Reduction Commentary

- The GHG reduction estimate results from a reduction of methane flaring at the Dufferin and Disco organics processing facilities as part of the process of upgrading biogas into renewable natural gas (RNG).
- The RNG produced by City facilities is currently purchased by the City and used to displace consumption of fossil natural gas in Corporate buildings and Corporate fleet vehicles. Note: Estimated emission reductions due to this displacement are reported in the Corporate Buildings and Corporate Transportation sectors.

***ACTION:** Energy Optimization Plan*

Description: Load shifting and energy efficiency techniques for water treatment and supply system.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Energy Optimization Plan	Buildings	Toronto Water	4.20	15.04	-	81

GHG Reduction Commentary

- GHG reduction estimate based on anticipated reductions to grid electricity consumption due to Energy Optimization Plan projects.

ACTION: *Wastewater treatment facilities - Service rehab and upgrades*

Description: Process changes or equipment changes, including energy efficiency projects at wastewater facilities that reduce GHG emissions.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Wastewater treatment facilities - Service rehab and upgrades	Buildings	Toronto Water	20.07	392.02	0.04	N/A

GHG Reduction Commentary

- Estimated GHG reductions of 3,391 t CO_2e per year starting in 2028.

ACTION: *Pelletizer Facility*

Description: This action involves capital projects to support pelletizer facility to run on digester gas.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Pelletizer Facility	Buildings	Toronto Water	3.33	314.48	-	N/A

GHG Reduction Commentary

- The new pelletizer facility will be able to run on digester gas once commissioned and will displace approximately 50% of current natural gas consumption.
- Annual GHG emissions are expected to decrease by 5,800 t CO_2e starting in 2033 (approx. 50 percent reduction compared to base case).

ACTION: *Island Photovoltaic system*

Description: Capital projects to support the installation of solar panels and a Battery Energy Storage System (BESS).

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Island Photovoltaic system	Buildings	Toronto Water	0.07	22.05	-	N/A

GHG Reduction Commentary

- The annual GHG reductions are estimated to be approximately 168 t CO_2e starting in 2030. The capital projects are still in design and estimates may be refined pending completion of design and operation of project.

ACTION: *Fluidized bed incinerator*

Description: This action involves replacing old multiple hearth furnaces with fluidized bed incinerator (FBI) technology.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Fluidized bed incinerator	Buildings	Toronto Water	21.33	164.98	-	N/A

GHG Reduction Commentary

- The fluidized bed incinerator (FBI) project involves moving from existing antiquated multiple hearth furnace technology to new FBI technology which will remove a significant amount of GHG emissions.
- This alternative will reduce annual GHG emissions by 4,800 t CO_2e at Highland Creek Wastewater Treatment Plant (HCTP) starting in 2028, representing approximately 72% reduction compared to base case.

ACTION: *Heat recovery from fluidized bed incinerator and other upgrades*

Description: Capital project to support heat recovery from the fluidized bed incinerator (FBI) and a 4 MW Thermal Oil Economizer (TOE) system, cutting 50% of non-process heating needs.

GHG reduction action	**Emissions Sector**	**Responsible**	**Capital** ($ millions)		**Operating** ($ millions)	**Emissions**
			2025 Capital Budget	**Capital Plan 2025 - 2034**	**2025 Operating Budget**	**2025 GHG Reduction (est.)** (t CO_2e)
Heat recovery from fluidized bed incinerator and other upgrades	Buildings	Toronto Water	0.67	47.54	-	N/A

GHG Reduction Commentary

- This project includes additional heat recovery from the FBI as well as other upgrades to achieve a beneficial use designation for the process.
- This project will reduce annual GHG emissions by 4,200 t CO_2e at HCTP starting in 2033, representing approximately 50% reduction compared to base case.

CROSS-SECTOR

ACTION: *Enabler – TransformTO*

Description: This action includes various activities funded through the operating budget that are important enablers of action to support the implementation of the TransformTO Net Zero Strategy and reduce GHG emissions across the City but may not have a direct or immediately measurable impact. Important examples include planning and design work for a new facility to produce renewable natural gas (RNG) from landfill gas at the City's Greenlane landfill, provide supports for emission reductions in the buildings sector, as well as cross-sector policy work, public consultation, and education.

GHG reduction action	Emissions Sector	Responsible	Capital ($ millions)		Operating ($ millions)	Emissions
			2025 Capital Budget	Capital Plan 2025 - 2034	2025 Operating Budget	2025 GHG Reduction (est.) (t CO_2e)
Enabler – TransformTO	-	Corporate Real Estate Management, Economic Development & Culture, Solid Waste Management Services	0.50	2.25	13.79	N/A

GHG Reduction Commentary

- Enabler actions are important parts of any city's climate action plan but are not suitable for quantified GHG reduction estimates.