

CORPORATE NET-ZERO STRATEGY

General Committee Presentation

Date: April 2, 2025



Objectives of Today's Presentation

- Solicit support from General Committee for endorsement of the Plan
- Provide an overview and highlights of the Plan
- Discuss the implementation framework and next steps

Background

- 2018: Council directed staff to develop a Community Energy and Greenhouse Gas (GHG) Reduction Plan
- 2019: Council Declares a climate emergency directing staff to investigate the development of a corporate net zero strategy
- 2022: Council endorses “Inspiring Climate Action in Barrie” a community wide plan to reduce GHG emissions
- 2022: Establishment of Climate Change Coordinator position
- 2025: Presentation of Corporate Net Zero Strategy

What does net-zero mean?

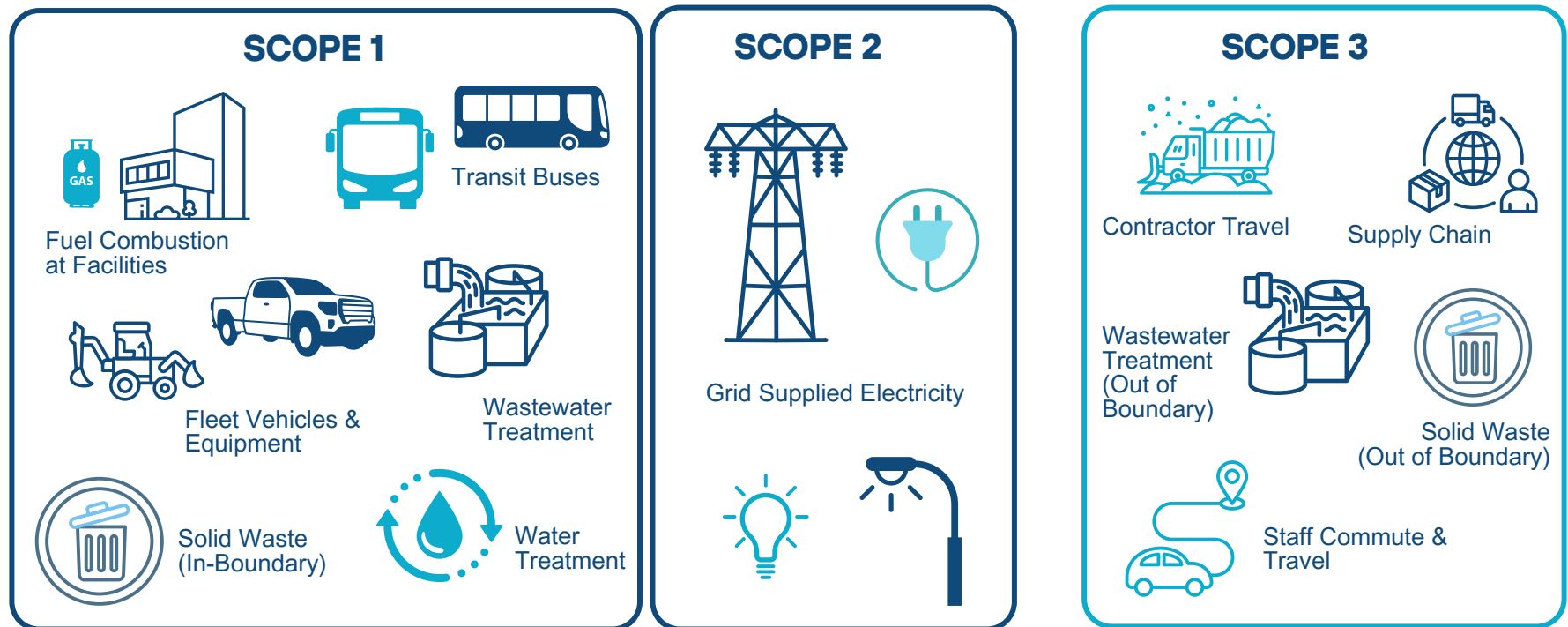
‘Net-zero emissions’ means balancing GHG emissions to zero by reducing as much as possible first, then removing the remaining emissions from the atmosphere.

What is a corporate net zero plan?

- Targets climate mitigation action.
- Accounts for GHG emissions whereby the City has direct operational control.
- Follows established accounting protocols utilized by the municipal sector (Partners for Climate Protection and Global Protocol for Community-Scale Greenhouse Gas Inventories).
- Include Scope 1 & Scope 2 emission sources.

Emissions sources?

- **Scope 1:** on-site fossil fuel combustion, such as natural gas, biogas, and propane (facilities) diesel and gasoline (vehicles).
- **Scope 2:** emissions associated with generation of electricity outside the City's boundary



Developing the Plan:

An asset management framework, focusing on transitioning to low-carbon alternatives as assets reach the end of their useful life.

STEP 1

Identify all energy consuming assets

STEP 2

Investigate business-as-usual and low carbon replacement options

STEP 3

Conduct life-cycle evaluations

STEP 4

Roll-up and combine all evaluations

STEP 5

Map out annual energy, GHG emissions, utility cost and incremental capital cost from 2025 - 2050

Developing the Plan:

External Consultation

- Net Zero Building Audits (9)
(Nov 2022 – Sept 2023)
- Portfolio Renewable Energy
Analysis (Dec 2022 – April
2023)
- Transit Electrical Servicing
Analysis (July 2024 – Sept
2024)

Internal Activities

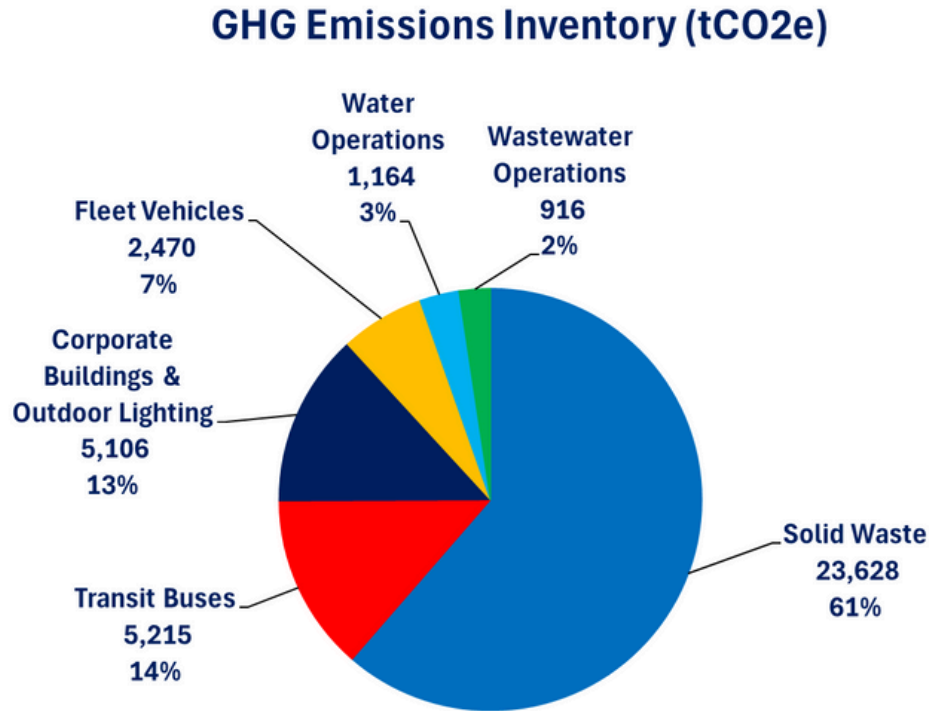
- Net Zero Building Audits (26)
(Oct 2023 – Sept 2024)
- Internal Stakeholder
Meetings
- Fleet & Transit Vehicle
Lifecycle Analysis
- Energy and GHG modelling
- Plan writing and design

Developing the Plan:

Plan guidelines, boundaries and assumption methodology:

- Technological Feasibility
- Best practices
- Regulatory Constraints
- Data-Driven Approach – Assumptions and projections sourced from existing datasets, regulatory bodies, government entities
- Strategic Documentation – Informed by master plans, facility condition assessments, and capital planning documents

Baseline inventory:



38,500

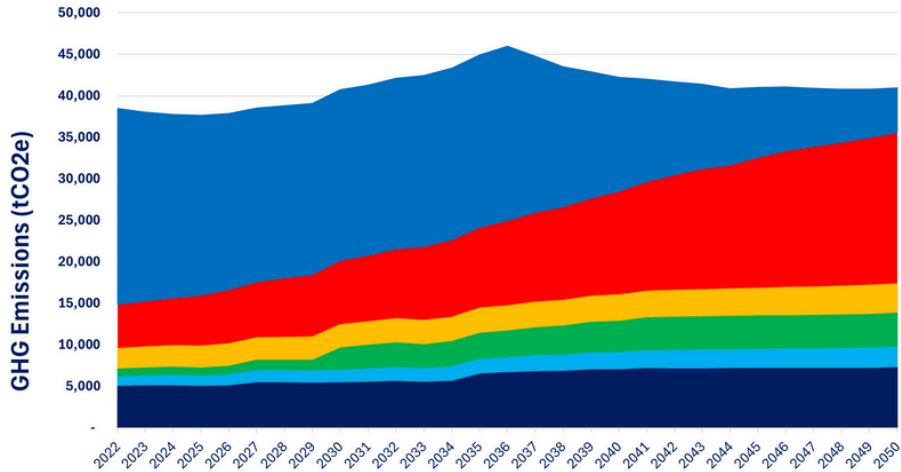
Tonnes GHG
Emissions CO2e



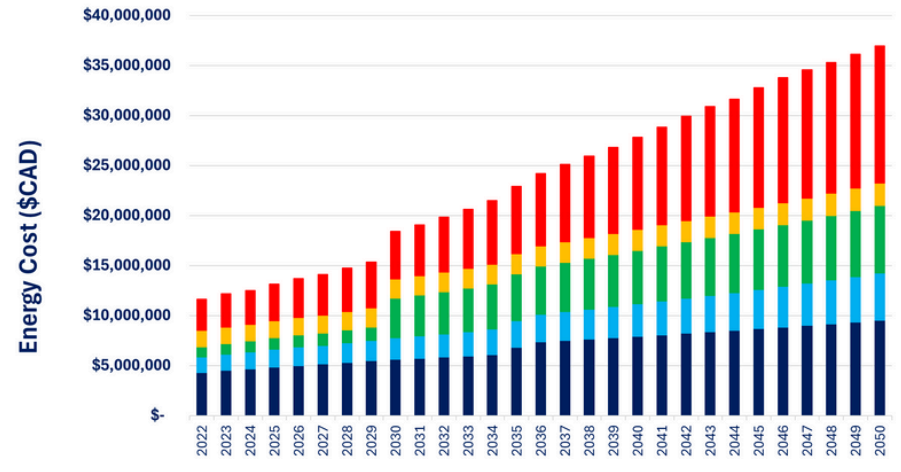
- NZO utilizes 2022 as the baseline year, a simply a reference point for reduction.
- City's emissions were 38,500 tonnes of CO2e GHG emissions, for context, that is roughly 4% of community emissions.
- The largest source of these emissions comes from solid waste deposited at the Barrie Landfill, as it includes solid waste from the community.

Business-as-Usual Pathway (BAU)

Business-as-Usual GHG Emission Pathway



Business-as-Usual Pathway Energy Cost



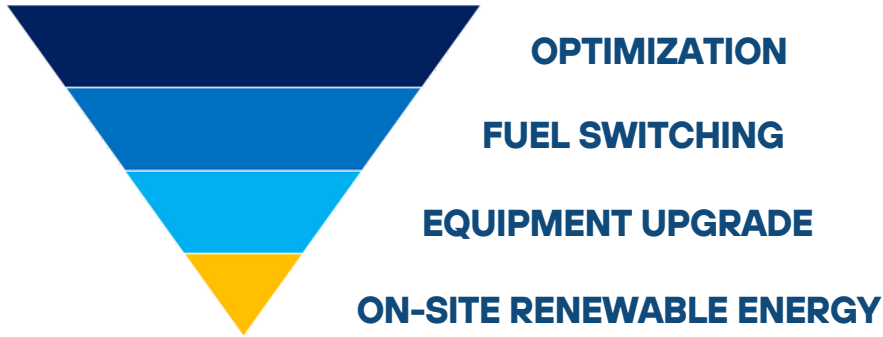
- Solid Waste
- Transit Buses
- Fleet Vehicles
- Wastewater Operations
- Water Operations
- Corporate Buildings

Percent change from baseline at 2050

Operational Group	GHG (tCO2e)	Energy Expenditure
Solid Waste	-77%	NA
Transit Buses	248%	339%
Fleet Vehicles	41%	37%
Wastewater Operations	344%	567%
Water Operations	116%	201%
Corporate Buildings	44%	122%
Total	6%	217%

Approach to Net-Zero

Operational Group Strategies



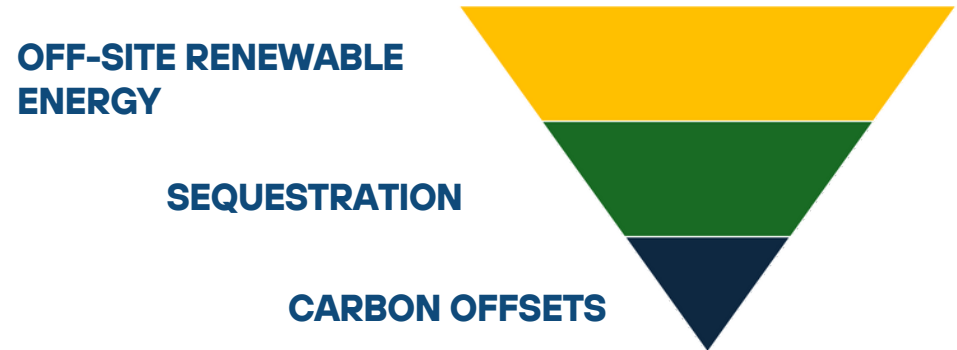
OPTIMIZATION: Ensuring current systems and processes are running at their greatest efficiency.

FUEL SWITCHING: Replacing high-emission energy sources with lower-emission alternatives

EQUIPMENT UPGRADES: Upgrading equipment involves replacing outdated models with energy-efficient alternatives at the end of their life.

ON-SITE RENEWABLE ENERGY: Generating on-site renewable energy at City-owned facilities involves installing rooftop solar panels where possible and using biogas captured at the landfill and wastewater facility.

Corporate-Wide Strategies



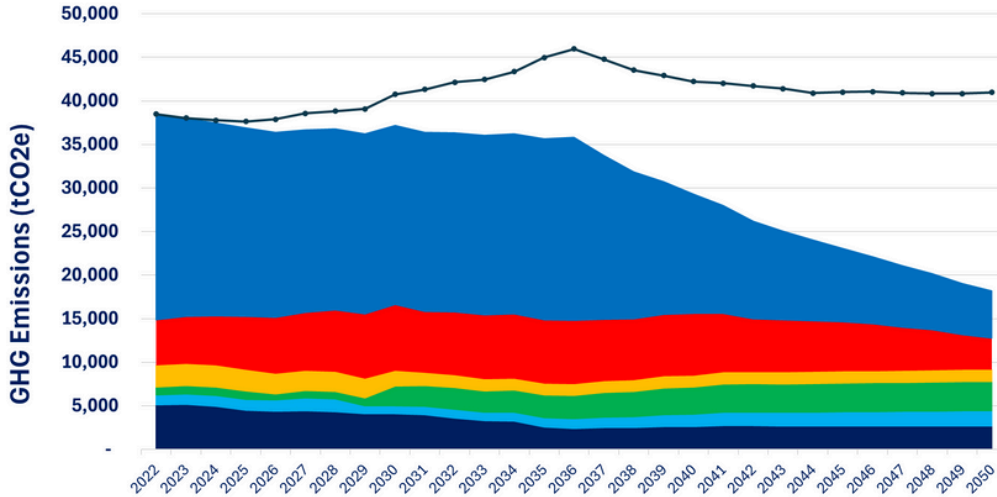
OFF-SITE RENEWABLE ENERGY: Generating offsite renewable energy involves installing a large, ground-mounted solar PV field to offset remaining grid electricity.

SEQUESTRATION: Enhancing natural assets and planting trees on City-owned properties to increase carbon sequestered (carbon captured) from the atmosphere through plant photosynthesis.

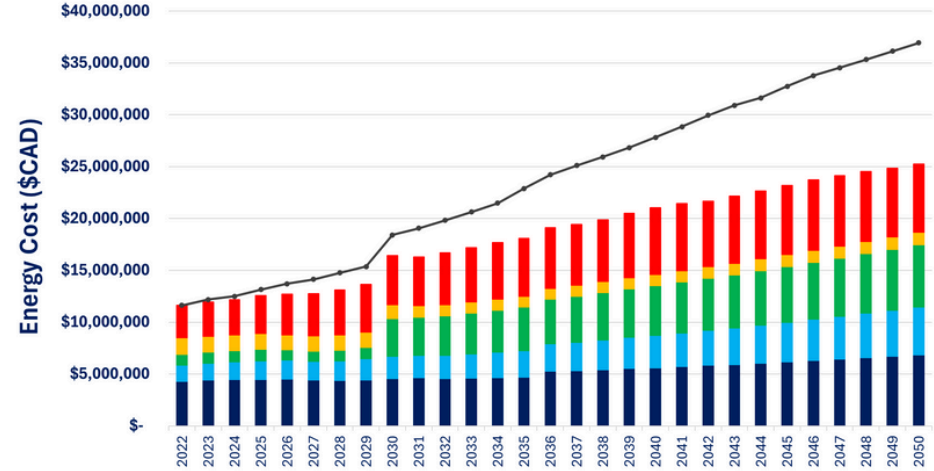
CARBON OFFSETS: Purchasing emission offset credits from other governments or entities to offset the City's remaining emissions by investing in activities that create carbon sinks elsewhere.

Net-Zero Pathway (NZ0)

Net-Zero Pathway GHG Emissions



Net-Zero Pathway Energy Cost



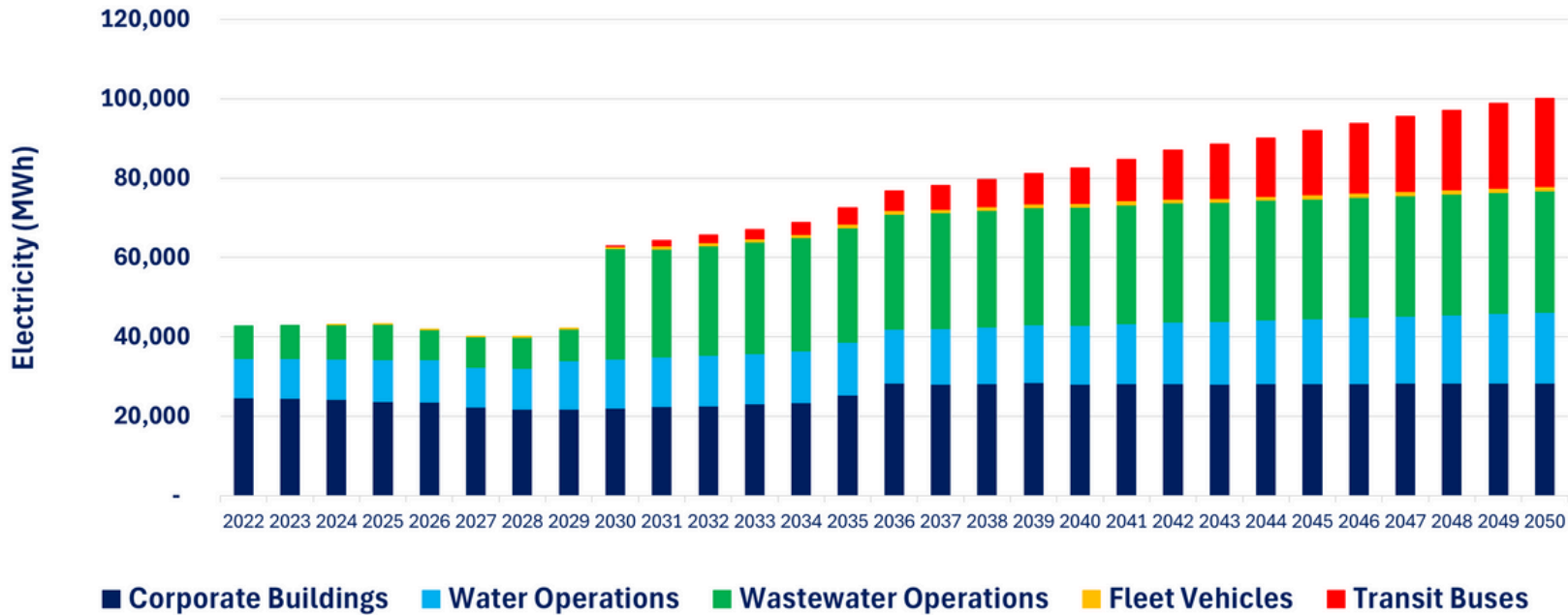
- BAU
- Solid Waste
- Transit Buses
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- Corporate Buildings

Percent change from baseline at 2050

Operational Group	GHG (tCO ₂ e)	Energy Expenditure
BAU	6%	217%
Solid Waste	-77%	NA
Transit Buses	-30%	111%
Fleet Vehicles	-45%	-28%
Wastewater Operations	264%	493%
Water Operations	51%	196%
Corporate Buildings	-47%	59%
Total	-53%	117%

Net-Zero Pathway

Remaining Electricity Required (MWh)



100,500 MWh

Electricity need by
by 2050

GHG Emissions (tCO₂e)

	2030	2050
Remaining Emissions (NZ0 Pathway)	37,000	18,000
Remaining Emissions (NZ0 Pathway with Offsite RE)	33,000	9000

Closing Remarks

The Net Zero Strategy:

- Utilizes as asset management renewal framework
- Represents a snapshot of a potential low carbon future
- Serves as a mechanism to institutionalize climate mitigation action within the corporation
- Ensures action is systematic, data driven, founded in best practices

Staff Reports Recommendations:

- Evaluate low carbon alternatives for all GHG emitting assets
- Requesting Council endorse low carbon action that generates a positive life cycle payback (renewal / new / renewable assets)
- Replace existing fleet vehicles with EV equivalents at end of life

THANK YOU

Questions?

