MANAGEMENT REPORT

Date: October 29, 2025
To: Infrastructure, Transportation and Safety Sub-committee
From: Sadaf Ghalib, Climate Change Programs Manager
Report Number: ITS25-022
Attachments: None

Title: Annual Corporate Greenhouse Gas Emissions – 2024

Objective: To report annually on the City of Stratford's Corporate Greenhouse Gas (GHG) emissions inventory for the year-ending December 31, 2024, and progress toward meeting corporate GHG emission reduction targets.

Background: On October 23, 2023, City Council endorsed the Corporate Energy and Emissions Plan (CEEP), which provides guidance on how the City can accelerate efforts toward decarbonization, operationalize actions to support energy efficiency and achieve the required emission reduction targets to align with provincial and federal objectives.

Goals in the CEEP are aligned with Council's Climate Emergency Declaration of 2020 and subsequent commitment to reducing greenhouse gas (GHG) emissions by 30% from 2017 levels by 2030, 60% by 2040 and achieving near to net–zero emissions by 2050.

Since this declaration, the City has committed to taking action within its municipal operations and aligning decision-making with our energy efficiency goals and climate targets. Staff continue to implement recommendations from CEEP, track and monitor efforts within each department, and document progress toward achieving overarching sustainability goals.

Analysis: Compared to the 2017 baseline year, the City's total GHG emissions for 2024 decreased by approximately 20.75% (equal to 1,053.75 tonnes of carbon dioxide equivalent, or tCO_2e). Annual GHG emissions also decreased by approximately 10% between 2023 and 2024. Total corporate GHG emissions in 2024 were approximately 4,022.65 tCO_2e.

Some external factors influenced this change, including but not limited to stable CO_2 emission factors for natural gas and diesel generation in the province, and a slight increase in the electricity consumption intensity values for Ontario's electricity grid.

Other internal factors included energy efficiency improvements for corporate facilities, ongoing transition of fleet vehicles and equipment to low-carbon options, as well as the availability of more accurate data from historical reporting.

For future years, some impacts are anticipated from variations in seasonal outdoor temperatures that can influence GHG emission outcomes from year to year by causing fluctuations in energy consumption to accommodate occupant thermal comfort. Such variations cannot be determined or predicted in the face of erratic climate events such as more frequent heat waves, intense winter storms and frequent precipitation events.

Measured energy usage and GHG emissions are noted for each asset class below (Table 1) and overall corporate GHG emissions for 2024 are depicted graphically in Figure 1 and 2.

Table 1 Measured Energy and GHG Emissions for Corporate Assets (2024)

Asset Class	Energy Type(s) in Use	Usage/ Generation	2024 GHG Emissions
Buildings (including Municipal Airport)	Electricity Natural Gas	6,294,802 kWh 773,352 cu. m.	283.91 tCO_2e 1,485.61 tCO_2e
Fleet (including Stratford Police Services)	Gasoline Diesel Electricity	189,235 L 500,434 L 4,071 kWh	1,778.30 tCO_2e
Outdoor Lighting (streetlights and traffic lights)	Electricity	7,561,326 kWh	226.83 tCO_2e
Solid Waste	Not applicable	288.82 tonnes	151 tCO_2e
Water and Wastewater	Electricity	3,217,238 kWh	97 tCO_2e

<u>Corporate Energy and Emissions Plan (CEEP) Implementation</u>

- The Climate Action team continued to provide inter-departmental support to staff and ensured that a strategic climate lens informed planning and decision making.
- Monitored the implementation of CEEP recommendations for corporate assets.

- Continued including climate considerations in the annual budget process to quantify energy and emissions impacts of city-wide initiatives including but not limited to projects, plans and procurement components. This evaluation tool has helped interdepartmental staff assess climate impacts for a wide array of projects right from the conception stage and is further intended to support decision making for staff as well as Council.

- Supported interdepartmental initiatives including building energy audits for facilities, the determination of more assets to be included, evaluation of streetlight inventory, assistance on EV charging station initiatives, technical guidance on grant funding applications for fleet transition to hybrid and electric buses and periodic reporting to funding organizations for secured grants.

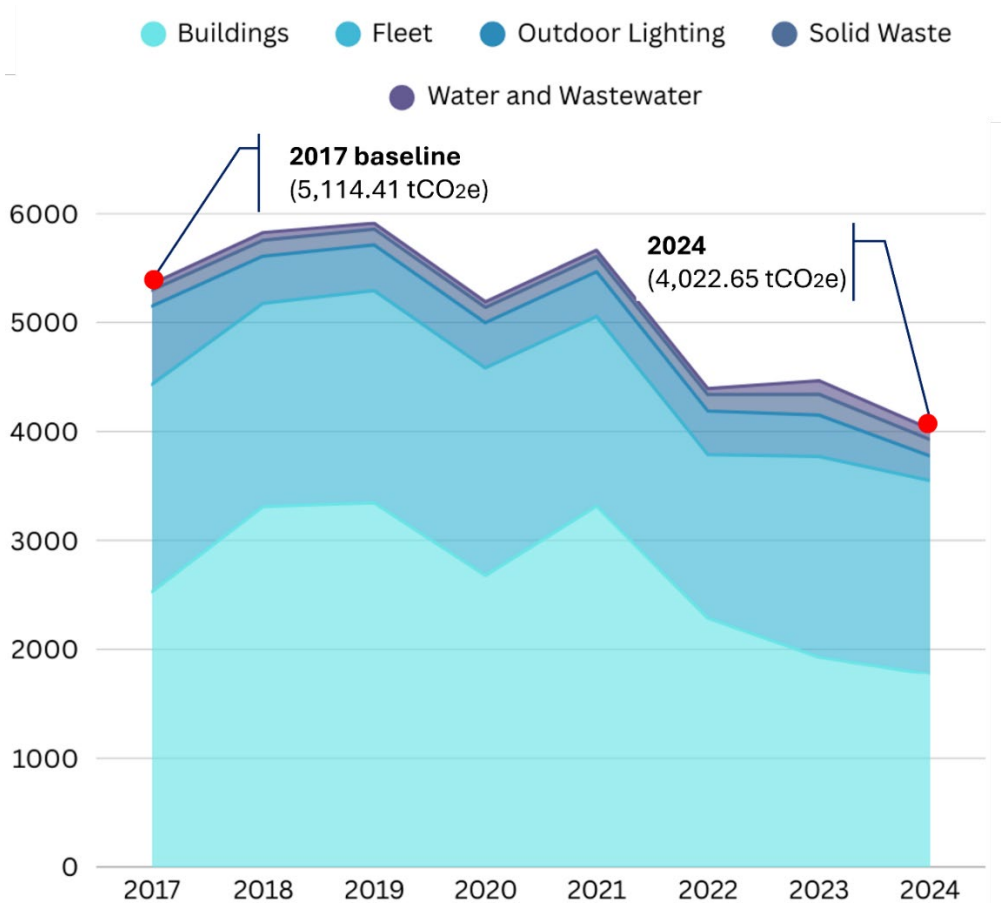

Figure 1 Corporate GHG Emissions Trajectory from 2017 – 2024

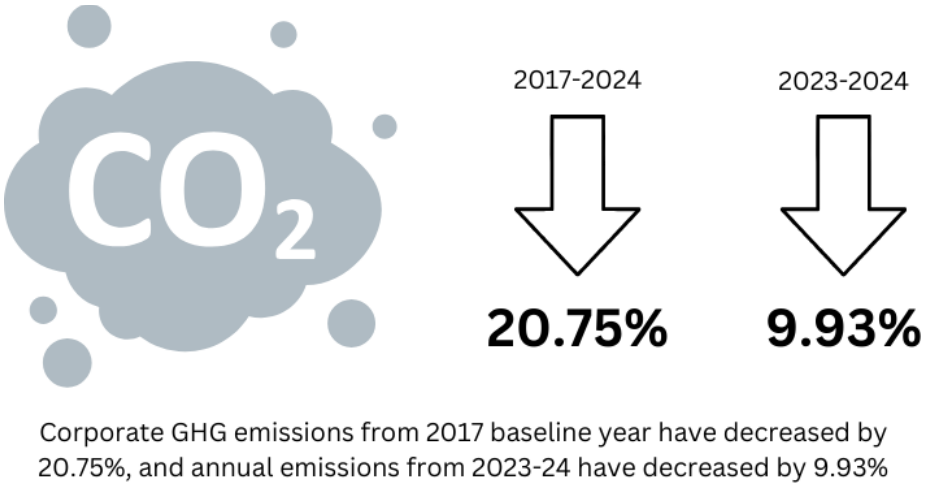

Figure 2 Change in Corporate GHG Emissions since baseline year (2017) and Annual Emissions from 2023-2024

Energy and Emissions Share

Consistent to previous years, a predominant share of energy usage and emissions was driven by buildings and fleet. Corporate emissions from the baseline year (2017) have decreased by 20.75%, and annual emissions from 2023 to 2024 have decreased by 9.93% (see asset class breakdown in Figure 3 below).

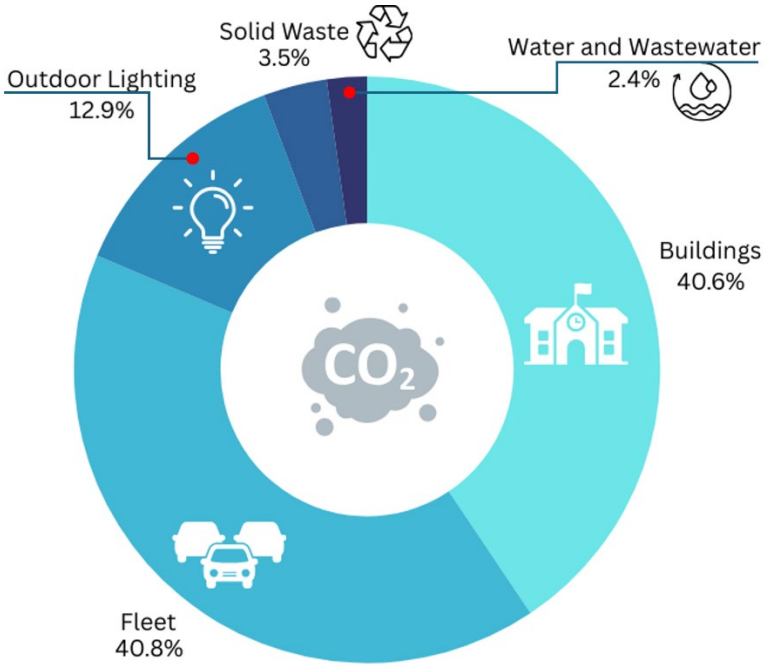

Figure 3 Energy and Emissions Share for each asset class (2024)

While there has been a slight decrease in buildings' emissions due to ongoing basic retrofits to replace aging, or end-of-life components and equipment to efficient options, much deeper retrofits to low-carbon options such as electric powered are needed to drive the energy transition and emissions decrease for the corporate trajectory to be on track for our net-zero targets.

For fleet and equipment, the transition is somewhat steady as several aging models have been upgraded to their hybrid or electric counterparts. While immediate cost savings and emissions reduction can be observed through the fleet asset class, the most impact on emissions is expected through upgrading the entire fleet of light-duty vehicles to electric options, followed by upgrades of medium and heavy-duty fleet to other low carbon options, such as hybrid where feasible.

Overview of Initiatives from Corporate Asset Classes

A high-level overview of initiatives for each asset class is provided below.

Building Asset Class

Through ongoing strategic investments in building retrofits such as efficient mechanical system replacements, envelope improvements and lighting upgrades, corporate buildings attained emission reduction of approximately 8.23% over the past year along with significant operating cost savings. This translates to a decrease in approximately 158.72 tCO_2e of emissions.

Some initiatives undertaken for buildings are noted as follows.

- Seven facilities approved for funding to undergo feasibility studies from Federation of Canadian Municipalities (FCM): Burnside Agriplex, City Hall, City Hall Annex, Dufferin Arena, Police Station, Rotary Complex, and William Allman Memorial Arena. At the time of writing this report, these feasibility studies were underway. Staff have retained consultant support to help identify pathways to retrofit these facilities to low-carbon, high-performance buildings.

- Installation of an electric heating boiler at the William Allman Memorial Arena. The new boiler replaced two existing gas-fired units at the facility. The electric boiler is now the main source for heating, with the two existing gas-fired boilers being the secondary heating source when demand peaks. Prior to this replacement, there were four gas-fired units, two of which were not operational.

- Replacement of the roofing system at the William Allman Memorial Arena. Replacement of the cooling tower for the refrigeration plant at the Dufferin Lions Arena.

- Replacement of a rooftop HVAC unit at City Hall Annex serving the third floor.

- LED lighting retrofit of City Hall (ongoing), Stratford Public Library and Destination Stratford office.
- Replacing the T5 lighting fixtures (ice surface lighting) at the Dufferin Lions Arena with LED lighting fixtures.
- Replacing the obsolete older style LED lighting fixtures (ice surface lighting) at the Rotary Complex (Rink A).
- Replacement of the roofing system at the Administration of Justice Building.

Fleet Asset Class

Ongoing procurement of low carbon options as a replacement for aging conventional internal combustion engine (ICE) vehicles and equipment that have been added to the City's inventory over the past year have resulted in annual fuel cost savings of around 30%, along with notable GHG emission reductions.

Table 2 Corporate Fleet and Equipment

Fuel type	Number of Units (fleet and equipment)	Percentage Breakdown
Gasoline	59	43%
Diesel	51	37%
Propane	6	4%
Hybrid	21	15%
Electric	1	1%

Notable efforts from 2024 are highlighted below.

- Equipment upgrades included small tool transition to battery options and electric articulating boom lift.
- Stratford Police Services (SPS) continues to replace fleet with low carbon options. Out of an inventory comprising 33 vehicles, 18 are gasoline, 1 is diesel powered and 14 are hybrid vehicles. Overall, SPS has completed 42% of their fleet transition to hybrid vehicles, benefiting from operational cost savings and contributing to corporate emissions reductions.
- The Transit Division also initiated significant upgrades to the transit fleet, with two new hybrid buses procured to phase out two aging units.

Outdoor Lighting

There were few LED conversions conducted for outdoor lighting in 2024. Overall, since 2019, 76% of total streetlights (5,777 units) have been converted to LED. Remaining

lights include high-pressure sodium (1,382 units), fluorescent lamps (2 units), incandescent and metal halide lamps (2 units). In 2024, streetlights and traffic lights utilized 7,561,326.9 kWh of electricity, and generated approximately 226.83 tCO_2e at the cost of $1,604,682.

Conversions for some existing lighting options to LEDs are planned for 2026.

Water and Wastewater

The annual energy consumption for 2024 has been measured as 3,217,238 kWh, marking a 2% decrease from the annual consumption in 2023. Generally, energy consumption and associated costs for operations at the Water Pollution Control Plant (WPCP) facility have been consistently increasing over the years, which is primarily due to increased infrastructure needs due to growth leading to increased flow, as well as variable precipitation patterns and snow melt in the region.

- The average demand at the facility in 2024 was 538 kW, representing a 10% increase compared to the 2023 average of 487 kW. The peak demand for the year occurred in July 2024, reaching a maximum of 691 kW.

- In 2024, the verified annual total cost amounted to $460,081, representing a 14.5% increase compared to the 2023 total of $401,578. Notably, energy costs peaked in January 2024, marking the highest expenditure for that category during the year.

- Ontario Clean Water Agency (OCWA) continues to monitor the facility and provide recommendations for potential energy saving programs and initiatives.

Municipal Solid Waste

For the GHG emissions inventory, emissions are determined from the total waste generated in a year, including that which is landfilled, and recycled and composted or diverted from landfill. In 2024, community-wide generated waste was approximately 38,230.86 metric tonnes, of which 67.15% was sent to landfill and 32.85% was diverted to other streams including recycling and composting.

Overall, the city disposed 25,672.65 metric tonnes of waste to the landfill, which is slightly lower (approx. 8.5%) than the amount of waste generated and disposed to landfill in 2023 (29,999.28 tonnes)

Recycled waste generated and disposed to recycling facilities was approximately 12,557.71 metric tonnes, or 32.85% of total waste generated.

While an accurate number cannot be determined for corporate-generated waste, it is estimated that anywhere between 1% to 1.25% of the total waste can be assumed to be generated at municipal facilities and parks, or approximately 288.82 metric tonnes.

This estimate includes waste collection from downtown waste receptacles, parks and other public buildings.

While managing waste generated at all municipal facilities, parks, public spaces and during events can be a challenging metric to track, efforts are underway to increase awareness around waste generation and reduction.

Infrastructure Upgrades

While infrastructure upgrades like installing electric vehicle (EV) charging stations involve upfront costs, they are expected to support the transition to electric vehicles and meet the community's future infrastructure needs as more drivers switch from conventional cars to plug-in hybrids and EVs. In 2024, 7 new EV stations were installed on municipal parking lots.

Staff continue to track usage for the current inventory and explore opportunities for grants and funding. Below are excerpts from the 12-month usage of EV stations in all municipal parking lots for 2024.

Table 3 City's EV Charging Station Session Details for 2024

Period	January 1, 2024, to Dec 31, 2024
Energy deployed	47.42 MWh
Cost incurred (based on electricity cost of 0.18c per kWh)	$8,536.80
GHG savings	49.65 tCO_2e
Gasoline savings	22,530.88 Litres

At the time of writing this report, the City's EV station deployment helped avoid an estimated 178,831 $kgCO_2e$ (carbon emissions or 178.83 tCO_2e), which is equivalent to planting 4,585 trees and letting them grow for 10 years.

Notable efforts from 2024 are highlighted below.

- Through funding provided by Natural Resources Canada (NRCan) and the Zero Emission Vehicle Infrastructure Program (ZEVIP), the City completed the installation of 4 dual port Level 2 EV charging stations and 1 Level 3 EV charging station at Erie Street Parking Lot and 2 dual port L2 EV charging stations at York Street Parking Lot.

- Staff applied to the Province of Ontario's EV ChargeON program for funding to install L3 EV Charging Stations at the Rotary Complex.

- Staff applied to the new intake of NRCan's Zero Emission Vehicle Infrastructure Program (ZEVIP) for funding to install L3 EV Charging Stations at the Rotary Complex.

- Staff continued to collaborate with Festival Hydro Inc. to analyze the feasibility of drawing power from the electric grid to serve current and future demand for both L2 and L3 charging stations.

Climate Lens Across Corporate Initiatives

2024 saw several initiatives that incorporated a climate lens in development and implementation. Highlighted below are some key projects.

- A climate lens was applied for the second year as part of the annual municipal budget process. This continues into the 2026 budget process. This assisted in identifying ongoing energy and cost savings as well as emission reduction opportunities in corporate-wide planning and operations that can have a direct impact on the GHG emission trajectory.

- Endorsement of the Community Climate Action Plan (CCAP) advancing climate action within the community, with clear and tangible actions.

- Update of existing plans and strategies with energy transition and climate action as a key priority. Projects included the 2024 – 2027 Strategic Priorities, and the Official Plan Review.

- Staff applied for a funding opportunity to advance adaptation and resilience-based initiatives through FCM's Local Leadership for Climate Adaptation- Climate Ready Plans and Processes.

Financial Implications:

Not applicable:
There are no direct financial implications to be reported because of this informational report.

Alignment with Strategic Priorities:

Enhance our Infrastructure
This report aligns with this strategic priority as its recommendations promote energy efficient buildings, sustainable transportation options and infrastructure, support the energy transition for the City and community, that is anticipated to significantly drive emission reduction and support sustainable growth.

Alignment with One Planet Principles:

Equity and Local Economy
Creating safe, equitable places to live and work which support local prosperity and international fair trade.

Sustainable Water Using water efficiently, protecting local water resources and reducing flooding and drought.

Travel and Transport
Reducing the need to travel, encouraging walking, cycling and low carbon transport.

Material and Products
Using materials from sustainable sources and promoting products which help people reduce consumption.

Zero Waste
Reducing consumption, reusing and recycling to achieve zero waste and zero pollution.

Zero Carbon Energy
Making buildings and manufacturing energy efficient and supplying all energy with renewables.

Staff Recommendation: THAT the report titled, "Annual Corporate Greenhouse Gas Emissions – 2024" (ITS25-022), be received for information.

Prepared by:	Sadaf Ghalib, Climate Change Programs Manager
Recommended by:	Taylor Crinklaw, Director of Infrastructure Services
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