

Asset Class	2017 GHG Emissions (tCO₂e)	2022 GHG Emissions (tCO₂e)
Water and Wastewater	57.18	55
Municipal Airport	50.5	50.40
Total	5,114.41	4,153.90
		Or 18% reduction from 2017 baseline

Section 5: Energy Performance

Facilities

Civic buildings used for service delivery of approved City services include 20 major facilities which are powered by a mix of hydropower and natural gas (Table 5). The corporate GHG inventory includes all City-owned facilities. Some facilities leased to third parties are considered Scope 3 for the purpose of this study and were excluded from this analysis.

Building emissions resulting from electricity and natural gas consumption account for approximately 42% of the City’s total GHG emissions. A majority of this energy usage is as a result of on-site combustion of natural gas for space heating followed by electricity consumption.

Although electricity consumption is not responsible for most emissions, it is imperative that the City recognize the importance of energy efficiency as a way to reduce operational and equipment maintenance costs. Savings through energy efficiency retrofits can further fund fuel switching efforts, which in turn will continue to contribute to the City’s energy conservation and management efforts.

Table 4 Buildings Total Energy Consumption and Emissions, 2022

Asset Class-Buildings	Natural Gas Consumption (cu. m.)	Electricity Consumption (kWh)	GHG Emissions (tCO _{2e})
Total Energy Consumption	247,877	56,374,670	2038.10

The Rotary Complex and Burnside Agriplex are the most significant consumers of energy and generate the highest quantity of annual GHG emissions; closely followed by William Allman Arena, Dufferin Arena, City Hall, City Hall Annex and the Police Station. Based on this analysis and with an intention to tackle most energy intensive facilities to achieve maximum impact, the City has prioritized projects and deep energy retrofits for these facilities within its short to medium term operational budget.

Table 5 Buildings – 2022 Breakdown of Energy Consumption and Emissions

Building	Natural Gas Consumption (cu. m.)	Electricity Consumption (kWh)	GHG Emissions (tCO ₂ e)	Area (sq. ft.)
Agriplex	24,397	566,381	62.73	54,282
Avondale Cemetery	7,875	4,391	15.25	5,535
Anne Hathaway Daycare Centre	3,934	46,295	8.85	??
Boathouse Information Centre	3,120	28,554	6.79	335
Annex Building	9,125	332,146	26.83	26,054
City Hall	20,296	446,107	51.48	23,400
Community Services/Parks Office	11,771	14,586	23.02	3,064
Dufferin Arena	10,636	360,458	30.52	35,000
Fire Station #1	3,021	55,366	6.96	7,292
Fire Station #2	2,815	29,887	6.64	4,832
Lions Pool	17,122	40,160	34.74	
Police Station	8,198	432,310	27.85	28,800
Public Works Garage	14,298	89,427	29.97	??
Public Library	8,540	221,483	22.61	17,202
Queens Park Snack Bar	1,368.36	15,346	0.43	7,275
Rotary Complex	61,415	2,098,034	176.72	132,533
Social Services Housing 230, Britannia St	6,250	62,452	13.75	??
Tourism Alliance	3,882	23,225	8.11	5,610
Transit Garage	8,320	130,565	19.64	12,640
William Allman Arena	29,813	728,152	77.66	38,610
Totals	255,206	5,878,718	654.85	

* Note 1: Facilities in **bold** are the largest GHG emitters.

Appendix A provides a high-level list of intended actions to be implemented to address energy management for these facilities.

Corporate Fleet and Equipment

Vehicle and equipment fleet (termed collectively as “fleet”) includes all motorized vehicles and equipment operated by the City. Corporate fleet predominantly consists of light, medium and heavy-duty vehicles. Emissions from fleet are the second largest source of GHG emissions after buildings, representing approximately 36% of the City’s total emissions. In 2022, the City’s vehicles emitted 1,500.23 tCO₂e (Table 6). These emissions were primarily from the use of diesel and gasoline.

Table 6 Fleet – Energy Consumption and Emissions, 2017

Fleet – by Sector	Gasoline Consumption (L)	Diesel Consumption (L)	GHG Emissions (tCO₂e)
Community Services, Water Engineering, Public Works	180,088.40	328,368.80	1,296.03
Police	88,398.23	-	204.20
Total	268,486.63	328,368.80	1,500.23

Notes: GHG emissions from fleet controlled by the City’s external partners are not counted toward the corporate inventory as these emissions are not in direct sphere of influence of the City.

Emissions from fleet use (along with facility energy use, equipment use and outdoor lighting) at the municipal airport have been accounted for within the Airport section.

Appendix B provides a high-level list of intended ongoing and planned initiatives to address energy management for corporate fleet.

Outdoor Lighting

The majority of energy consumed in this asset class is related to streetlights and traffic lights. Other lighting assets include ornamental lighting, lighting used for parks, arenas, and sports fields. The emissions inventory for this asset class in 2017 amounted to 719.75 tCO₂e (Table 7). Most lighting accounts are metered which provide actual electrical consumption. For those assets billed under flat-rates, consumption is estimated (e.g., overhead street lighting, traffic signals).

All traffic signals and streetlights are well into the process of being converted to LED lights from high pressure sodium (HPS) and metal halide. Upgrades to outdoor lighting within the municipal airport are also planned.

Table 7 Outdoor Lighting – Energy Consumption and Emissions, 2022

Energy type	Energy Consumption (kWh)	GHG Emissions (tCO ₂ e)
Electricity	2,879,039	380
Traffic	26,776	0.75

Solid Waste

The City of Stratford owns and operates the City’s Landfill under the Ministry of Environment (MOE) Certificate of Approval No. A150101. The landfill receives non-hazardous waste generated within the city from residential, industrial, commercial, and institutional (ICI) sectors. The site has provisions for composting (leaf and yard waste), processing construction waste (concrete crushing and recycling) and accommodates a recycling depot for plastic, glass, cardboard, textiles, electronic waste, and batteries. Most recyclables received are segregated and transported off-site for processing.

In 2022, the city generated 60,153.62 tonnes of solid waste materials; this amount includes waste from all waste streams including but not limited to: general waste, recyclable material (concrete asphalt, cardboard, metal), organic (food scraps, leaf and yard waste), electronic waste and hazardous waste (contaminated soil, asbestos). Out of this total, approximately 21,618.09 tonnes were diverted from the landfill through recycling and other diversion programs.

Recognizing that municipal facilities are public facilities (Scope 3), and all waste generated is not necessarily through the organization, it is challenging to isolate the quantity of waste produced. Estimates were used for the purpose of this data collection. It is estimated that municipal waste accounted for approximately 0.75% of total waste, or 451 tonnes. Resultant emissions from municipal waste in 2022 equaled 160 tCO₂e.

Table 8 Solid Waste – Comparison of GHG Emissions Generation from Municipal Solid Waste

Year	Waste Generation (tonnes)	GHG Emissions (tCO ₂ e)
2022	451	160

Water and Wastewater

The majority of the energy consumed in the asset class of water and wastewater is a result of motors that drive water sanitary and storm sewer pumps. City assets include 11 sanitary pumping station, 1 stormwater pumping station, 11 water production wells

and 1 water pollution control plant. Energy is primarily derived from hydropower, or electricity and is therefore relatively low in emissions.

Recent available data suggests that water and wastewater asset class generated 3,281,900 kWh (11,814.84 GJ) of electricity in 2023, resulting in 91.89 tCO_{2e} of emissions (Table 9).

Table 9 Water and Wastewater – Energy Consumption and Emissions, 2022 and 2023

Year	Energy type	Energy Consumption (kWh)	GHG Emissions (tCO _{2e})
2022	Electricity	2,753,548.40	77.10
2023	Electricity	3,281,900.00	91.89

The Stratford Water Pollution Control Plant (WPCP) is located at 701 West Gore Street in Stratford, Ontario and is owned by the City of Stratford and operated by the Ontario Clean Water Agency (OCWA). The facility is a wastewater treatment plant consisting of a raw sewage lift station, influent works, primary settling, aeration, secondary clarification, tertiary filtration, and ultraviolet light disinfection. The process residual is anaerobically digested. The effluent discharge is received by Avon River.

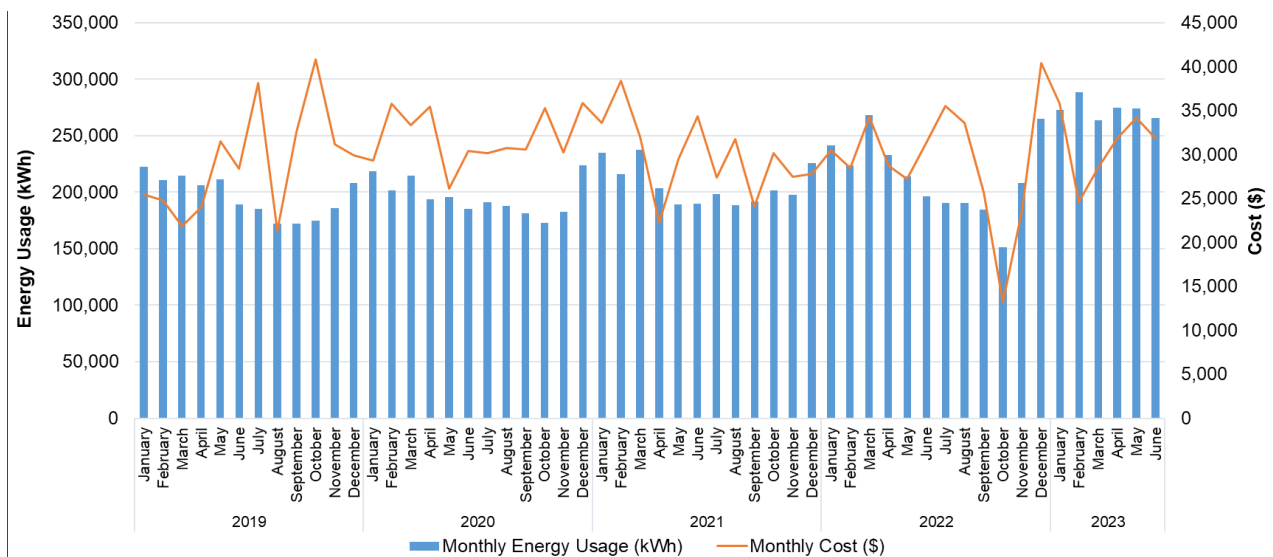


Figure 2 Monthly Energy Cost and Energy Consumption for Stratford WPCP (2019-Q2 2023)

Notes:

- Observing the flow patterns for 2023, Q2 flow has been reduced by about 5%, while the Q1 flow has not had significant variations. Historically, Q2 has flow increase likely due to increased winter precipitation and associated snow melt in the region.
- The total electricity usage for Q1 and Q2 of 2023 accounted to 824,514 kWh and 813,413 kWh respectively indicating 12.4% & 26.4% increase in energy consumption compared to 2022. Quarterly electricity usage is significantly higher during the first two quarters of 2023 in comparison to previous years. The possible reason for this change may be attributed to capital upgrades and an increase in seasonal precipitation.
- The maximum recorded electrical demand for the quarters of 2022 had increased for Q2 by 10.7% while it decreased for Q1 by 7%.
- For the energy cost, there has been a significant increase in cost by around 10% for Q2, while the cost for Q1 lowered by about 4.6%. This increase in cost can be attributed to the increase in energy consumption of Q2 of 2023.

Section 6: Ongoing and Future Planning

The City's energy conservation initiatives will be guided by the goal of positioning Stratford as a leading municipality in energy management practices. This will include the evaluation of the City's energy consumption and demands, and introduce concepts such as energy mapping, to evaluate conservation opportunities and implement an ongoing energy management program for the City.

Key focus areas are planned to include:

- New facility construction, including design and procurement (e.g., energy efficient design, evaluating integrated renewable energy opportunities, low energy, and low carbon equipment alternatives).
- Facility retrofits, retro-commissioning and re-commissioning (e.g., targeting facilities with high energy intensities and poorly operating systems to improve operations).
- Efficient asset procurement, including fleet and equipment (e.g., incorporating energy and climate considerations into procurement decisions).
- Pro-active maintenance and cleaning of assets, to ensure efficient operations and longer lifespans (e.g., preventative maintenance programs to ensure asset operations and durability is optimized).
- Staff and operator training, education, and awareness (e.g., incorporating sustainability and energy management in current and future staff responsibilities, staff awareness and training of energy conservation opportunities).
- Funding opportunities to enhance project viability (e.g., grant and incentive sources, developing internal funding mechanisms).

While identified energy conservation measures will be applied across the organization, buildings and fleet asset classes offer substantial opportunity to accelerate energy efficiency while impacting the emissions trajectory. Some ongoing and planned initiatives are listed in Appendix A.

Recognizing that the City of Stratford consumes a significant amount of energy, this plan will be used to guide the reduction of energy and to help in the implementation of impactful strategies, retrofit management, as well as monitoring and tracking consumption patterns. Future energy plans and goals will be considered on a regular basis. The goals need to be annually established along with the Council's approval of the municipal budget.

Appendix A

Buildings Roadmap

Table 3 Buildings Roadmap for major facility retrofits

Facility	2021 GHG emissions from NG use (tCO ₂ e)	GHG reduction expected through deep retrofit	Budget Implications	Proposed timeline	Cumulative emissions (tCO ₂ e)
Rotary Complex and Agriplex	651.11	390.67	\$1m-\$3m	2023-25	390.67
William Allman Arena	96.68	58.01	\$500,000-\$750,000	2024	448.68
City Hall	106.84	64.10	\$1.5m-\$1.7m	2025	512.78
Dufferin Arena	46.37	27.82	\$800,000-\$1m	2026	540.60
Public Works	62.44	37.47	\$600,000-\$1.2m	2027	578.07
Police Station	54.58	32.75	\$2m-\$2.75m	2026	610.52
Transit Office	47.93	28.76	\$500,000-\$800,000	2027	639.28
Public Library	43.99	26.39	\$1.5m-\$1.7m	2029	665.67
Annex Building	41.89	25.13	\$900,000-\$1.65m	2028	690.80
Airport Terminal	36.77	22.06	\$1.5m-\$1.75m	2029	712.86
Lions Pool	32.89	19.73	\$800,000-\$1m	2030	732.59

Note that avoided emissions by 2030 through deep retrofits (60% reductions with respect to baseline) = 732.59 tCO₂e

Table 4 Recommended for Future Upgrades (timeline TBC) subject to Energy Audits (Level 1, 2)

Grand Trunk Community Hub	N/A	Likely near-zero	To be determined	2030 & beyond	Unknown
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		operational emissions			
Community Services	12.6	8.5	\$250,000 to \$400,000	2030 & beyond	N/A
Tourism Alliance	20.44	12.26	\$50,000 - \$80,000	2030	744.85
Fire Station #1	12.22	7.33	\$50,000 - \$100,000	2027	757.07
Fire Station #2	15.12	9.07	\$50,000 - \$100,000	2028	766.14
Avondale Cemetery	8.93	5.35	~\$300,000	2030	771.50
Youth Focus Centre	7.84	4.70	~\$300,000	2031	776.19
Boathouse Information Centre	6.24	3.74	~\$300,000	2032	780
Queens Park Snack Bar	2.63	1.58	~\$300,000	2032	781.6

Emissions in 2022 are calculated on the basis of Ontario’s energy supply mix, that may vary in the future. Estimates can be provided for future year’s emissions, and a more accurate picture can be provided at a later time.

Recommended buildings for deep retrofit (extensive overhaul of mechanical systems, HVAC, occupancy controls, building envelope, fenestration, lighting as identified per building). See in order of upgrade. Emissions reduction owing to deep retrofits have been considered based on an estimate of 60% emissions savings. Should there be more emissions savings (more than 60%), the emissions saved will be higher and we will be in a comfortable position in terms of targets.

Note that based on financial costing studies and energy audits, selected buildings may need to be decommissioned to be replaced by higher performance buildings, and that may impact emissions significantly. Emissions for such a scenario cannot be estimated at this time.

Planned Energy Conservation Measures (2023 onward)

There are a number of energy conservation measures (ECMs) across facilities owned and operated by the City. Preliminary audits (Level 1 walkthroughs) indicated low or no cost measures to improve building performance and reduce operating costs. This section describes the ECMs which are planned to be implemented from onwards of 2023.

Feasibility studies and energy audits are underway for some facilities, including Rotary Complex, Agriplex, William Allman Memorial Arena, Dufferin Lions Arena, Administration of Justice/Police Building, City Hall and City Hall Annex. These studies are anticipated to evaluate various ECMs and estimate their energy savings and implementation costs for retrofits.

For all other City facilities, Level 1 walkthroughs were conducted, and energy efficiency measures identified to be included in 5-year Capital Plan. Some projects identified were relatively short-term while some are ongoing.

Table 5 Planned and Ongoing Energy Conservation Measures

Facility Name	Current or Identified Measures	Timeline
City Hall Annex Building	<ul style="list-style-type: none"> • Feasibility study including ASHRAE Level 1 and 2 energy audits, financial analysis • Completed HVAC replacement to upgrade end-of-life unit • Low-flow water fixtures and fittings • Building envelope improvements (insulation, airtightness, vapor barriers) • High-performance window upgrade 	HVAC replacement complete in 2024; Ongoing upgrades as per capital plan
Burnside Agriplex	<ul style="list-style-type: none"> • Feasibility Study including ASHRAE Level 1 and 2 energy audits, financial analysis • Building envelope retrofit • Roofing repairs and upgrades • Upgrade Mechanical system 	Ongoing upgrades as per capital plan
Avondale Cemetary	<ul style="list-style-type: none"> • Building envelope improvements including insulation and weatherstripping • Ongoing Interior LED retrofits • Low-flow water fixtures and fittings • HVAC Makeup AHUs • Roof upgrades • LED upgrades at the Cemetery garage have been completed, also installed are occupancy sensors 	Ongoing upgrades as per capital plan

	<ul style="list-style-type: none"> • Potential upgrades to hybrid/electric for furnace and water heater. 	
City Hall	<ul style="list-style-type: none"> • Feasibility Study including ASHRAE Level 1 and 2 energy audits, financial analysis • Building automation elements such as occupancy sensors • Building envelope retrofit including insulation, airtightness, vapor barriers • Upgrade HVAC system: AHUs, Condensers, Chiller System, Fan Coil Units • Interior LED lighting replacements • Washroom upgrades 	Ongoing upgrades as per capital plan
Dufferin Arena	<ul style="list-style-type: none"> • Feasibility Study including ASHRAE Level 1 and 2 energy audits, financial analysis • Refrigeration System • HVAC system • Smart Hub for ice plant • Roofing repairs and upgrade (EPDM) • Domestic Hot Water Boilers 	Ongoing upgrades as per capital plan
Fire Station #1	<ul style="list-style-type: none"> • Interior LED retrofits • Building envelope upgrades to high performance windows • HVAC upgraded to an energy efficient unit • Opportunity to install a building automation system, including thermostats for temperature control • Backup generator has the potential to be upgraded to a natural gas-powered unit 	Ongoing upgrades as per capital plan
Fire Station #2	<ul style="list-style-type: none"> • Interior LED retrofits • Building envelope upgrades to high performance windows • HVAC upgraded to an energy efficient unit • Exterior lights to be upgraded to LED lighting 	Ongoing upgrades as per capital plan
Police Station	<ul style="list-style-type: none"> • Feasibility study including ASHRAE Level 1 and 2 energy audits, financial analysis, opportunity to develop new facility, subject to Council direction • Roof Replacement • Building envelope improvements: insulation, airtightness, vapor barriers • HVAC system: Make up AHUs, Heat Pump, Variable Volume Fan 	Ongoing upgrades as per capital plan

Public Works Yard	<ul style="list-style-type: none"> • Energy audits (Level 1,2) required • Building envelope improvements including insulation and weatherstripping • HVAC system • Roofing repairs and upgrade (EPDM) 	Ongoing upgrades as per capital plan
Public Library	<ul style="list-style-type: none"> • Ongoing Interior LED retrofits • Low-flow water fixtures and fittings • HVAC Makeup AHUs • Heating Boilers • Roofing upgrade • Window replacements to high performance options, opportunity to upgrade building envelope with weatherstripping and insulation upgrades • Auditorium lighting has been upgraded to LED lighting • Other LED upgrades planned for the library, to be conducted in phases • Water heating equipment (rental) is powered by electricity • Staff washroom has been upgraded to have LED lighting, occupancy sensors • Exterior lighting has been upgraded to LED lighting • HVAC replacement planned for 2027 at the end of life cycle of current equipment; planned to be hybrid and more efficient unit 	Ongoing upgrades as per capital plan
Rotary Complex	<ul style="list-style-type: none"> • Ongoing interior LED lighting retrofits • Feasibility study including ASHRAE Level 1 and 2 energy audits, financial analysis • Programmable thermostats • Upgrade Refrigeration System • Upgrade HVAC system • Install Smart Hub for ice plant • Roofing repairs and upgrade (EPDM) • Replace Domestic Hot Water Boilers 	Ongoing upgrades as per capital plan
Social Services Housing 230, Britannia St	Not applicable. This facility is built to passive house standards.	N/A
Tourism Alliance	<ul style="list-style-type: none"> • Ongoing Interior LED retrofit including occupancy sensors, expected to be initiated in 2024 and 2025 	Ongoing upgrades as per capital plan

	<ul style="list-style-type: none"> • Building envelope improvements including upgrading windows to energy efficient options (triple-glazed) at time of replacement. • Opportunity to install occupancy sensors in public areas, and energy efficient (energy star rated) appliances • Opportunity to install a Building Automation System (BAS) • HVAC replacement to electric option at the end of life cycle of current equipment deemed for replacement 	
Transit Garage	<ul style="list-style-type: none"> • Opportunity to upgrade facility based on bus fleet electrification plan from 2026 onward • Installation of charging infrastructure and vehicle storage • Investigate infrastructure upgrades for an electrified fleet. • LED upgrades throughout facility have been completed • Bus storage area has undergone LED lighting upgrade 	Ongoing upgrades as per capital plan
William Allman Arena	<ul style="list-style-type: none"> • Feasibility study including ASHRAE Level 1 and 2 energy audits, financial analysis • Roof Replacement • Exterior and interior LED Lighting retrofit • Building Automation such as lighting controls and occupancy sensors • HVAC equipment & distribution system • Exterior Insulation and Finish System (EIFS) • Domestic Hot Water Heater • Upgrade Ice Resurfacer to all-electric option • Washroom upgrades • Refrigeration Distribution System 	Ongoing upgrades as per capital plan
Lions Pool (seasonal facility- 3 months)	<ul style="list-style-type: none"> • Recently completed interior and exterior lighting upgrades to LED lights • LED upgrades in mechanical room • Planned upgrade to domestic hot water heater, boiler for pool at the end-of-life cycle, exhaust upgrade to electric (or low-carbon) options instead of conventional fossil fuel options • Opportunity to upgrade windows to high-performance options • Opportunity to upgrade washrooms with low-flow fixtures and faucets (water-sense 	Ongoing upgrades as per capital plan

	<p>labelled), install occupancy sensors in washrooms</p> <ul style="list-style-type: none"> • Planned upgrade for pool pump in 2025 • No heating and cooling requirements in this facility as it is seasonal • Ongoing building envelope enhancements including external brick cladding 	
Boathouse Information Centre (seasonal facility)	<ul style="list-style-type: none"> • Planned replacement of air conditioner in 2024, replace to efficient options • Interior lighting to LED options • Opportunity to upgrade natural gas furnace to more efficient options, including consideration of an electric option • Electric panel upgraded in 2023 • Occupancy sensors installed, thermostat has a set schedule • Recently installed waterproofing membrane as building envelope improvement 	Ongoing upgrades as per capital plan
Community Services – Parks Office	<ul style="list-style-type: none"> • Planned projects to undertake such as interior and exterior LED lighting upgrades, HVAC replacement, water heater upgrade, washroom upgrades to include water efficient fixtures and faucets. 	Ongoing upgrades as per capital plan
SERC Washrooms (seasonal facility- 6 months)	<ul style="list-style-type: none"> • Consists of outdoor lighting including sports field and pathway lighting • Opportunity to retrofit lighting to LED options including those in mechanical room, to save on resultant energy and costs • Opportunity to upgrade washroom and water heater upgrades at the end-of-life replacement • Opportunity to install water-saving irrigation system for the playing field 	Ongoing upgrades as per capital plan
Upper Queen’s Park and bandshell washrooms (seasonal facility- 6 months)	<ul style="list-style-type: none"> • Opportunity to replace lighting to LED options, occupancy sensors and pump • Two port L2 EV charging station installed in the parking area • Opportunity to upgrade washroom and water heater upgrades at the end-of-life replacement 	Ongoing upgrades as per capital plan
Splash Pad Facility , baseball diamond and washrooms	<ul style="list-style-type: none"> • Opportunity to upgrade plumbing and washroom fixtures • Opportunity to upgrade interior and exterior lighting to LEDs and install occupancy sensors 	Ongoing upgrades as per capital plan

(seasonal facility)		
Anne Hathaway Daycare Centre	<ul style="list-style-type: none"> • Opportunity to replace lighting to LED options, occupancy sensors and pump • Building envelope improvements including weatherstripping, window upgrades and insulation upgrades also planned • Washroom upgrades • Opportunity to install efficient system for the splash pad 	Ongoing upgrades as per capital plan

In 2022, a benchmarking analysis was completed for the four most energy intensive facilities to understand their electricity use intensity (EUI) and greenhouse gas intensity (GHGI) and compares them to similar facilities in the largest municipalities in southwestern Ontario. This benchmarking analysis is expected to help determine which facilities are performing poorly compared to similar facilities in other Ontario municipalities.

Subject to other planned studies and budget approvals, the City will keep this analysis in consideration when determining which facilities to prioritize for ECM implementation.

Appendix B

Fleet Roadmap

Fleet Replacement	Unit Cost (approx.)	Fuel Source	Estimated GHG emissions (tCO ₂ e)	Proposed timeline	Cumulative Emissions (tCO ₂ e) ~8 years
Option A: Mid-Size All Wheel Drive SUV-Hybrid, OR	\$50,000	Gasoline (~30% fuel efficient)	For 8 vehicles: 12 tCO ₂ e/yr 140 tCO ₂ e/12 years	2023-2024	93 tCO ₂ e
Option B: Mid-Size All Wheel Drive SUV-Plug-in Hybrid, OR	\$50,000	Gasoline (~30% fuel efficient)	For 8 vehicles: 12 tCO ₂ e/yr 140 tCO ₂ e/12 years	2023-2024	93 tCO ₂ e
Option C: Mid-Size All Wheel Drive SUV- All Electric	\$70,000	Hydro	For 8 vehicles: 0.09 tCO ₂ /yr 0.77 tCO ₂ e/12 years	2023-2024	6.23 tCO ₂ e
Pick-up Hybrid x 4	\$65,000	Gasoline (~30% fuel efficient)	For 4 vehicles: 5.82 tCO ₂ e/yr 17.46 tCO ₂ /12 years	2023-2024	46.56 tCO ₂ e
Service Van (1 Ton) x 1	\$80,000	Gasoline only	For 1 Van: 7.4 tCO ₂ e/yr	2023-2024	59.20 tCO ₂ e

			88.8 tCO2e/yr		
Service Van (3/4 Ton) x 1	\$80,000	Gasoline only	For 1 Van: 6.93 tCO2e/yr 83.16 tCO2/yr	2023-2024	55.44 tCO2e

Note: Assumptions include service life of 12 years, fuel usage of 3000L per year and approximately 2000 kWh usage annual for EVs.