

Corporate Energy Report 2024

April 2025



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1. Introduction

The purpose of this report is to track the progress in annual savings of electricity and natural gas consumption from top energy consuming Town of Ajax (Town) facilities between 2023 and 2024.

The Town has demonstrated its leadership in corporate sustainability by implementing several energy reduction projects, including the construction of LEED (Leadership in Energy and Environmental Design) facilities, solar photovoltaic, solar thermal, and geothermal systems, as well as various facility energy upgrades. The Town has also committed to continuous energy management through updating and implementing energy and conservation demand management plans every five years. Additionally, the Town has installed Electric Vehicle (EV) charging stations, completed streetlighting light emitting diode (LED) conversion, and acquired a fleet of green vehicles to reduce energy consumption and greenhouse gas (GHG) emissions.

In 2019, the Town of Ajax Council deemed climate change an emergency and passed a resolution to set new corporate GHG emission reduction targets in 2021 that comprises of short-, mid-, and long-term targets (below 2019 levels) including:

- 20% GHG emission reduction by 2025,
- 40% GHG emission reductions by 2030,
- 100% GHG emission reductions by 2050.

The Town's second Annual Corporate Energy Report aligns with the mandated targets and outlines the Town's energy efficiency initiatives, ongoing energy management, achievements from 2024, and progress towards GHG emissions reductions targets.

2. Corporate Energy 2024

2.1 Corporate Energy Consumption 2024

The Town owns and operates 48 buildings including administrative buildings, community centers, libraries, recreation buildings, and fire stations. These buildings consume significant energy to maintain service delivery standards and meet community needs. Additionally, the Town offers natural retreat to its residents by maintaining parks, playgrounds, trails, and conservation areas. The energy sources to power the Town buildings, outdoor lighting, and street lighting include grid-supplied electricity from Elexicon Energy and natural gas from Enbridge for heating purposes.

2.1.1 Town's Portfolio of Buildings

The corporate energy consumption for 2024 in comparison to 2023 (Table 1) has been developed using RETScreen Expert software (RETScreen) to create energy models, along with electricity and natural gas bill analysis for the top 20 energy consuming Town buildings. The remaining buildings from the Town portfolio have not been considered for this report due to intermittent building usage and lower energy consumption due to smaller facility size.

Buildings	2023		2024	
	Electricity (kWh)	Natural Gas (ekWh)	Electricity (kWh)	Natural Gas (ekWh)
Ajax Community Centre	4,158,830	4,360,832	4,190,999	4,782,128
Audley Recreation Centre	2,261,993	2,396,064	2,130,447	2,074,361
McLean Community Centre	1,107,187	1,714,314	1,422,993	2,131,624
Ajax Townhall	791,047	1,016,940	823,519	944,352
Operations Centre	683,588	825,863	703,643	604,806
Fire Station 1 (formerly HQ)	369,255	372,323	355,267	362,832
Main Library	277,373	261,114	287,256	237,329
Village Arena & Seniors	185,498	189,568	161,663	186,975
Fire Station 2	180,965	228,561	132,110	248,743
St Andrews Centre	151,604	342,183	171,356	319,248
Fire Station 3 (formerly Station 1)	123,704	234,141	111,237	214,585
St Francis Centre	105,638	253,632	102,926	261,879
Rotary Park Pavilion	85,436	131,731	92,821	89,964
Quaker Meeting House	85,135	1,158	80,362	935
Ajax Memorial Pool	59,661	60,323	51,777	143,921
Carruthers Marsh Pavilion	54,547	-	49,381	-
Greenwood Discovery Pavilion	37,914	-	40,126	-
Hartrick House	27,725	78,497	27,288	79,538
Satellite Washrooms	27,439	36,687	28,140	15,644
Village Library Branch	2,317	32,861	2,375	27,090

Table 1: The top 20 energy consuming Town of Ajax facilities.

RETScreen Expert is a Clean Energy Management Software platform from Natural Resources Canada (NRCan) which identifies and evaluates initiatives related to energy efficiency, renewable energy, and the actual energy performance of buildings. This comprehensive software platform has the capability to download weather data for any

specific location and this feature has been utilized for utility bill analysis of the Town buildings to determine the impact of weather changes on energy use in 2024.

In 2024, the combined energy consumption of Town buildings from electricity and natural gas is **23,691,640 kWh** (Figure 1) with natural gas accounting for 53.7% of the total and electricity for 46.3%. This is approximately 1.6% more than the annual energy consumption in 2023 and is equivalent to 377,521 kWh. However, in comparison to the baseline year of 2019, which is a typical year for the Town's municipal operations before the pandemic, **an overall energy savings of 16.1%** has been observed (Figure 1). This is mainly due to implementation of various capital energy efficiency projects as identified in the Long-Range Capital Forecast (LCRF), non-operation of Village Arena & Community Centre due to lower uptake since the pandemic, and the leasing of Mill St. Community Centre to a tenant towards the end of 2021.

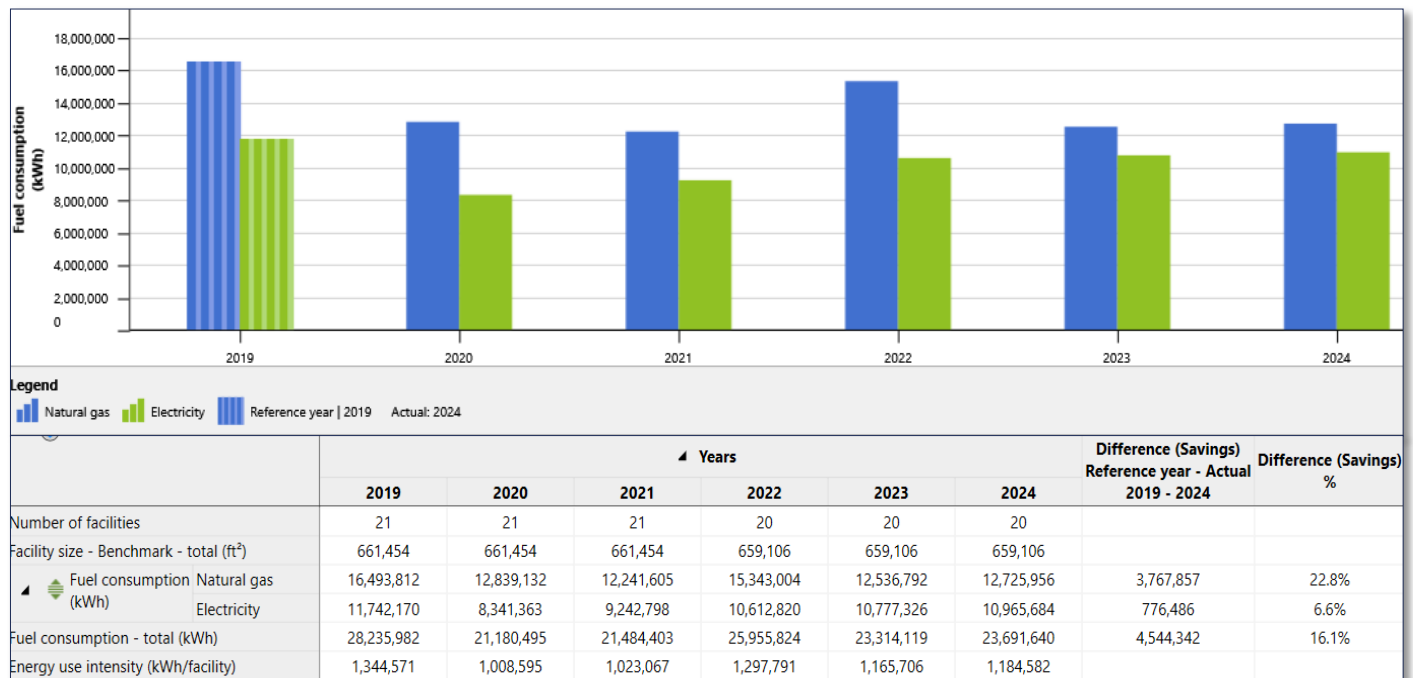


Figure 1: The natural gas and electricity consumption of Town buildings from baseline year 2019 to 2024, generated using RETScreen.

A detailed comparison of annual building electricity consumption in 2024 and 2023 is shown in Figure 2, which was simulated using RETScreen to rank the Town buildings in order of their electricity consumption. The percentage increase or decrease in electricity for each building has been listed in Figure 2 with a negative sign (-) in the "Difference (Savings) %" column indicating an increase in electricity consumption from 2023 to 2024.

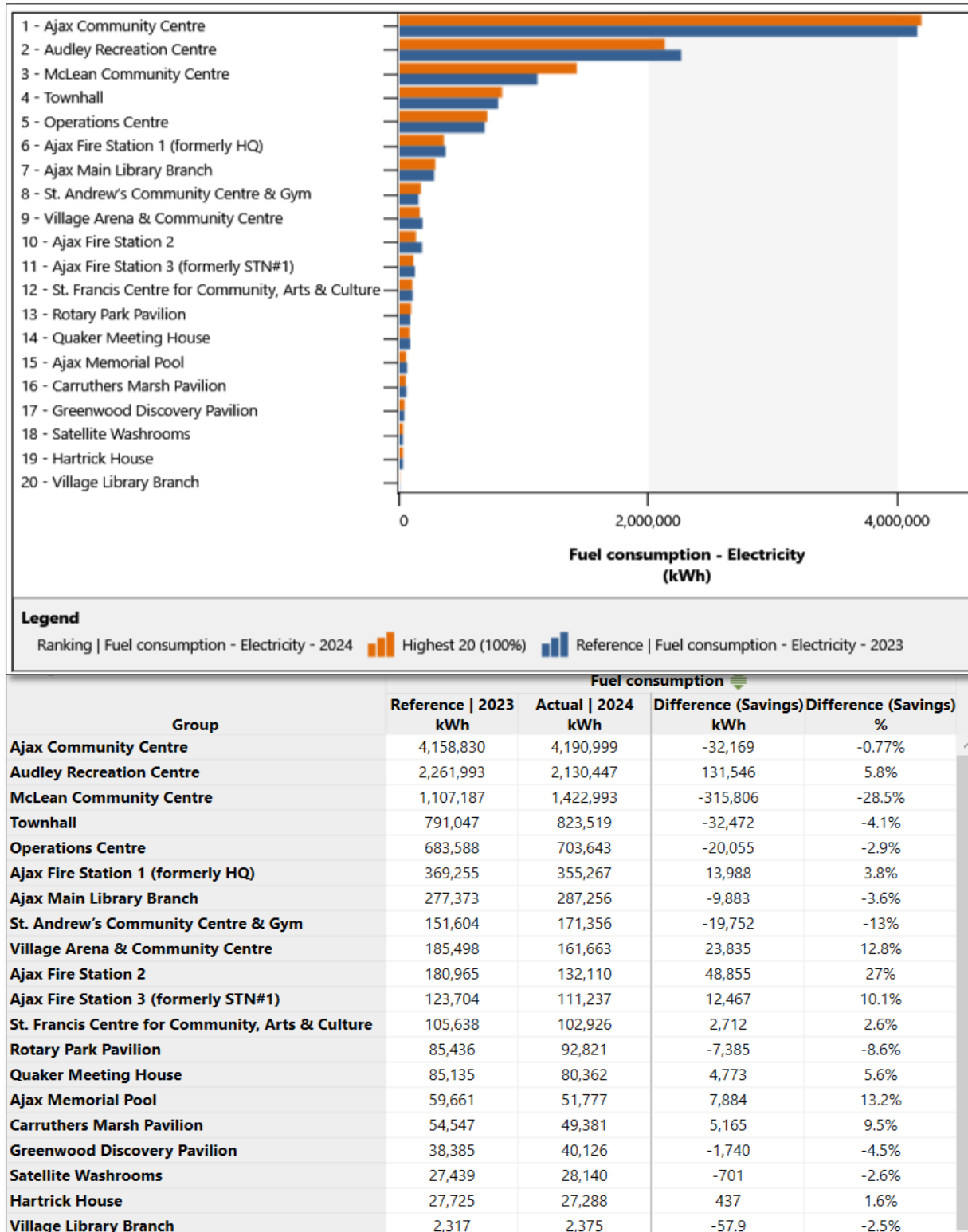


Figure 2: Town buildings ranked based on electricity consumption in 2024 as compared to 2023, generated using RETScreen.

McLean Community Center shows a 28.5% increase in electricity consumption in 2024 mainly due to the swimming pool being non-operational from March to July 2023 during the swimming pool filtration system upgrade. Similarly, Fire Station 2 shows a 27% savings in electricity which is due to the renovations in the facility for most of 2024. It is anticipated that energy consumption for this facility will increase in 2025 due to the increase in size of the heating and cooling equipment to cater the needs of the occupants' post renovation.

Overall, an increase in electricity consumption of 188,358 kWh has been observed in 2024. This may be due to various factors such as hotter summer temperatures in 2024 as compared to 2023, COVID-19 impacts on facility usage and recreational programming which resumed to normalcy around mid 2023 leading to 2024 being a typical year of operations after 2019, and a lack of major energy saving upgrades or retrofits in 2024.

The Town buildings have also been ranked based on their annual natural gas consumption in 2024 compared to the previous year and has been simulated using RETScreen (Figure 3). The percentage increase or decrease in natural gas consumed for each building for 2024 has also been shown in Figure 3 with a negative sign (-) in the "Difference (Savings) %" column indicating an increase in natural gas consumption from 2023 to 2024. An annual increase of natural gas consumption by 139% (equivalent to 7,866 m³) has been observed in Ajax Memorial Pool for 2024 as compared to 2023. This may be due to increased usage of the pool during the hottest days in the summer months and the usage of natural gas radiant heaters to prevent freezing of the water pumping system during the colder winter in December 2024. Also, due to non-operation of the swimming pool from March to July 2023 at McLean Community Center, a 24.3% increase has been observed in natural gas consumption in 2024. On the contrary, due to continuous energy monitoring, the Operations Centre has saved nearly 21,000 m³ of natural gas by reducing the dependency on the natural gas boilers and efficiently using the geothermal heat pump system for heating the building, leading to 26.8% reduction of natural gas consumption in 2024.

In general, the consumption of natural gas in 2024 increased by 17,900 m³ which is equivalent to a 1.5% increase in annual natural gas consumed as compared to 2023. The reason for this might be attributed to a colder winter, increased summer pool usage compared to 2023, and no major energy-saving capital upgrades taking place in 2024. Additionally, post COVID-19, major upgrades such as the pool filtration system at McLean Community Center was carried out which resulted in lower natural gas consumption in 2023 as opposed to typical operations in 2024.

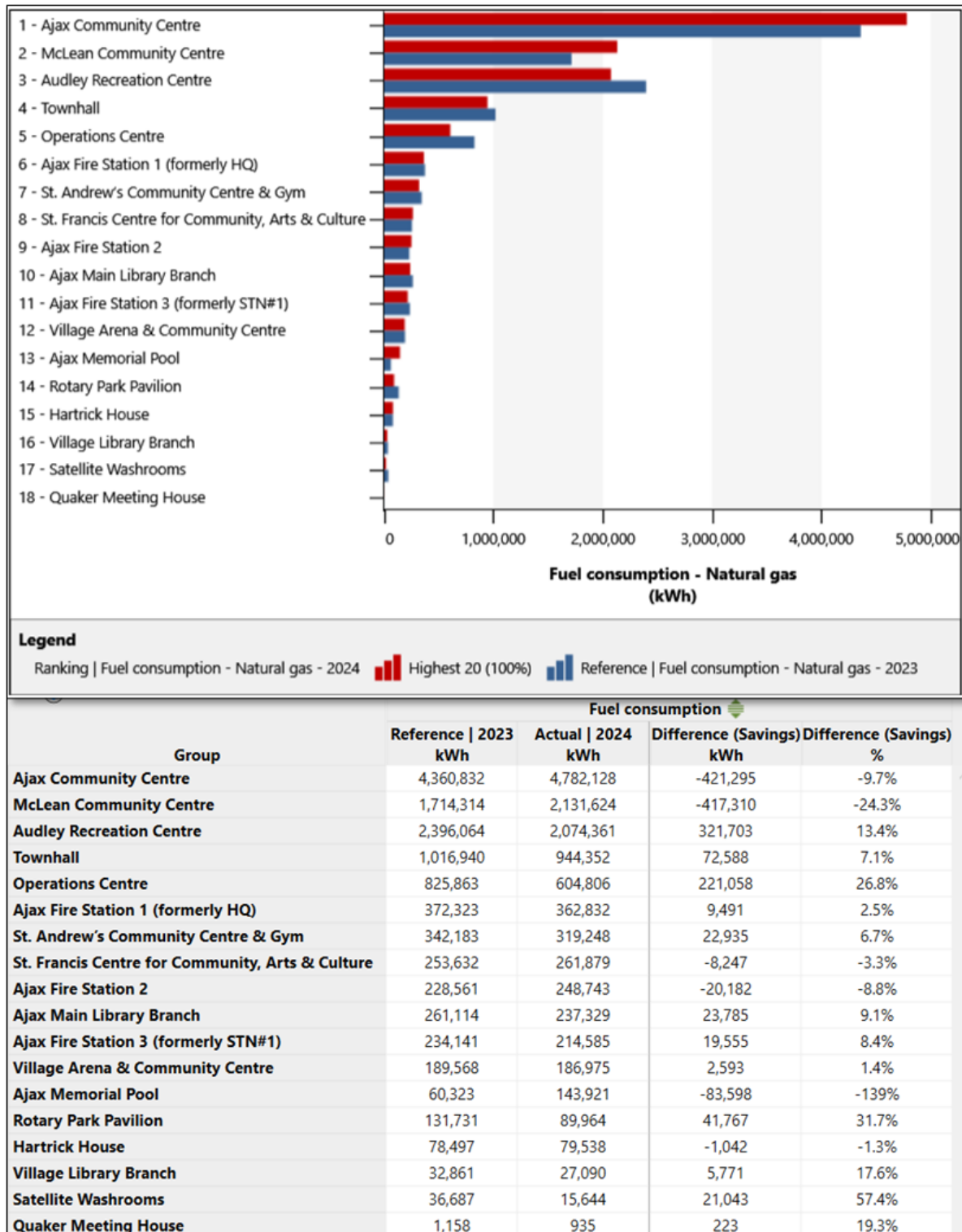


Figure 3: Town buildings ranked based on natural gas consumption in 2024 as compared to 2023, generated using RETScreen.

2.1.2 Streetlighting

As of January 2025, The Town owns and operates 10,813 streetlighting installations powered by Elexicon Energy. In 2019, the conventional streetlighting installations were upgraded to energy efficient LED lighting with new installations being mandated to be LED. In 2024, 47 new LED streetlights were installed in new development areas across the Town and the annual electricity consumption was 4,287,245 kWh. Due to the LED upgrades from 2019 onwards, there has been electricity savings of 1,088,307 kWh (Figure 4), equivalent to a 20.2% reduction in electricity consumed in 2024 as compared to 2019 and associated cost reductions of nearly \$137,567 or 15%.

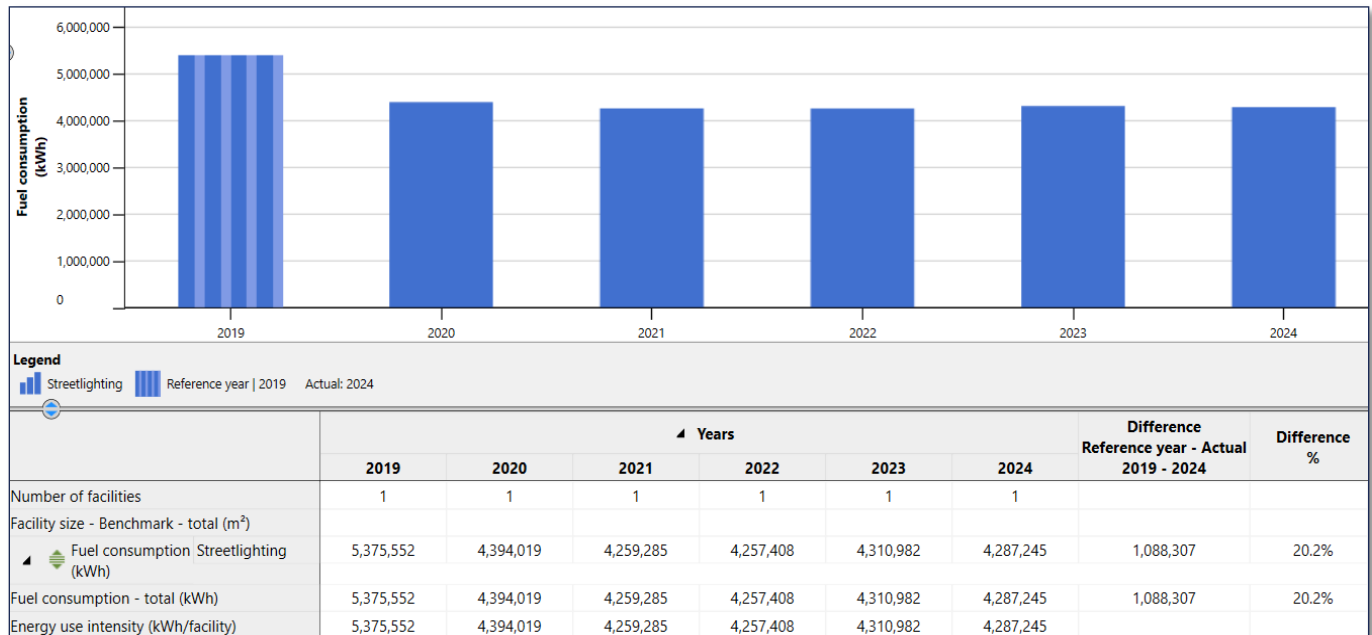


Figure 4: The fuel consumption and savings of Ajax streetlights, generated from RETScreen Expert software.

2.1.3 Sports and Parks Lighting

The Town operates various soccer fields and baseball diamonds along with parks lighting which are powered by Elexicon Energy. The 2024 annual electricity consumption for this category was 256,760 kWh (Figure 5) with 87% of the electricity being consumed by the baseball diamond lighting located at Audley Sportsplex, Applecroft Ballpark, Hermitage Park Baseball and Cedar Park Baseball. The savings recorded in 2024 is 1.3% and is mainly due to non-operation of Greenwood Conservation Area's lighting, as compared to 2019.

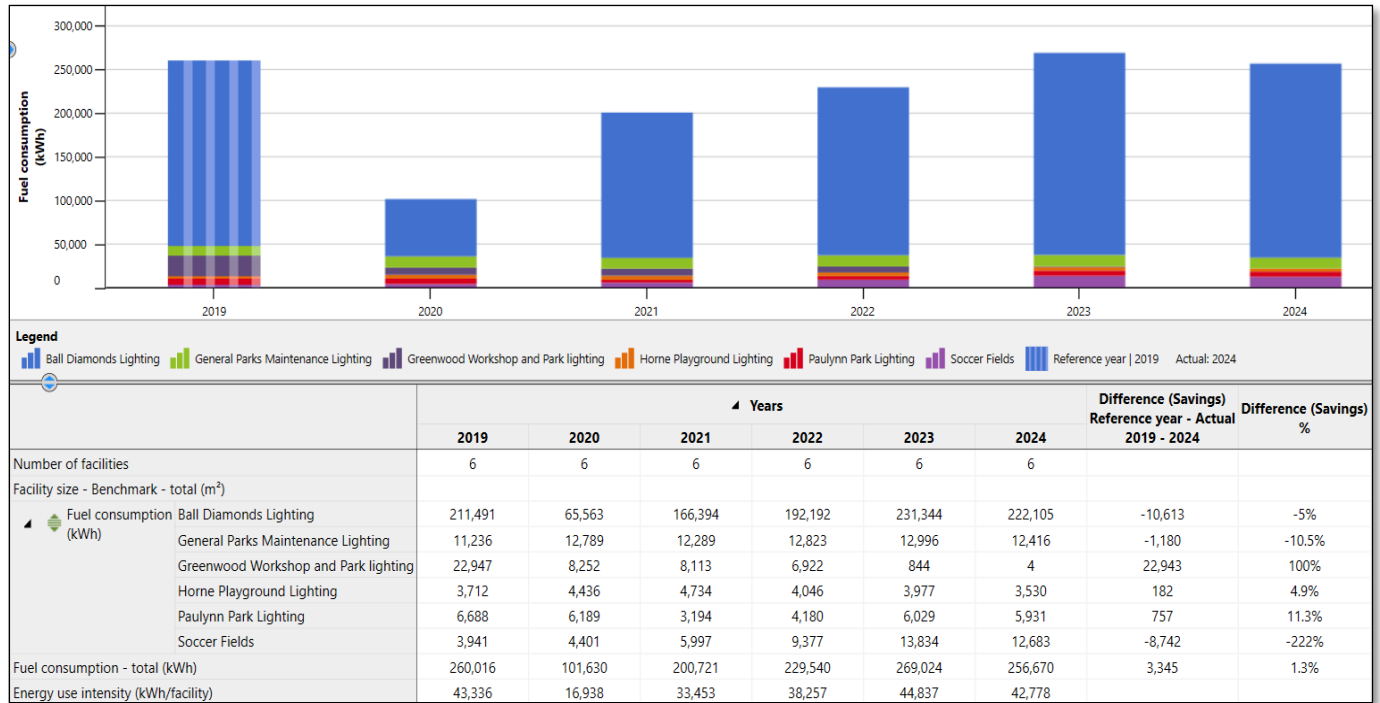


Figure 5: The electricity consumption and savings from Ajax sports and parks lighting, generated using RETScreen Expert software.

2.2 Corporate GHG Emissions Reductions 2024

The utility bill analysis using RETScreen Software for the above-mentioned Town portfolio of buildings, streetlighting, sports and parks lighting have resulted in total GHG emissions reductions of **18.9 tonnes CO₂e** (carbon dioxide equivalent) in 2024 as compared to 2023. This translates to a reduction of **456 tonnes CO₂e** or **13.3%** below 2019 levels (Figure 6) ensuring that the Town is making progress towards achieving the short-term goal of 20% GHG reduction below 2019 levels by the end of 2025. This is a direct consequence of Ontario electricity grid increasing its fossil fuel-based energy sources to generate electricity in 2024 due to planned refurbishment of clean power generating nuclear stations across the province. The grid emissions factors are expected to increase over the next few years because of this fossil fuel switching trend to meet the growing electricity demand in the province. As a result, it will have a direct impact on the Town's GHG emissions but can be mitigated through strategic energy management and energy conservation.

The Town conducted an analysis of GHG emissions from corporate operations in 2018. In this analysis, the Town's electricity and natural gas consumption in facilities were found to be the largest contributors of GHG emissions, followed by diesel fuel consumption, outdoor lighting, and gasoline consumption. A detailed GHG inventory from all these sources is currently underway as part of the Corporate Net Zero Emissions Plan (CNZEP).

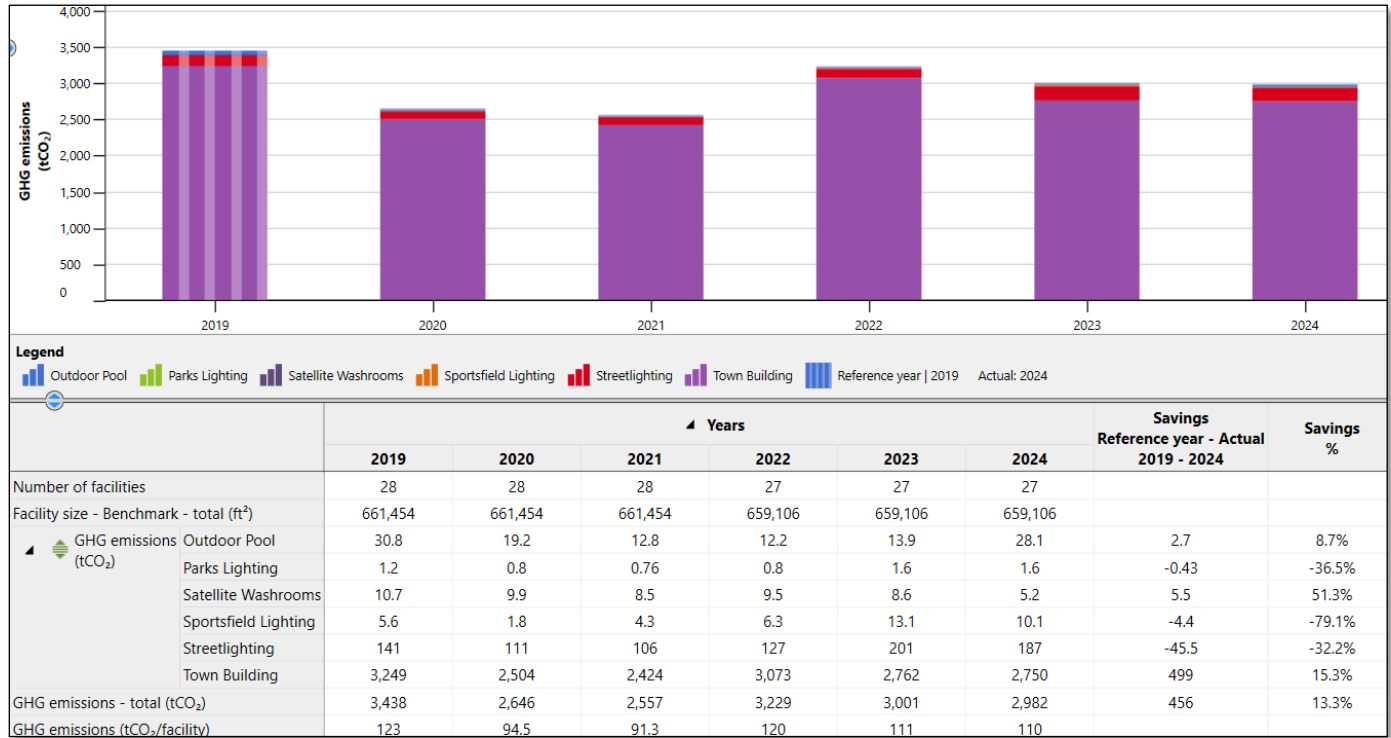


Figure 6: GHG emissions and savings from Town buildings, streetlighting, and sports and parks lighting generated from RETScreen Expert software.

2.3 Corporate Energy Costs 2024

The utility bill analysis using RETScreen Software for building electricity and natural gas consumption and electricity at streetlighting and sports and parks lighting have resulted in overall savings of **\$55,629**, or 1.9%, in 2024 as compared to 2023. This is mainly due to the reduction in 2024 streetlighting electricity consumption by 23,736 kWh. In 2024, the electricity costs for operation and maintenance of streetlighting was \$788,710 (highest) followed by Ajax Community Centre at \$608,809 (Figure 7). Similarly, natural gas cost for operation and maintenance of Ajax Community Centre was \$162,790 in 2024, followed by McLean Community Centre at \$72,901 and Audley Recreation Centre at \$70,951 (Figure 8).

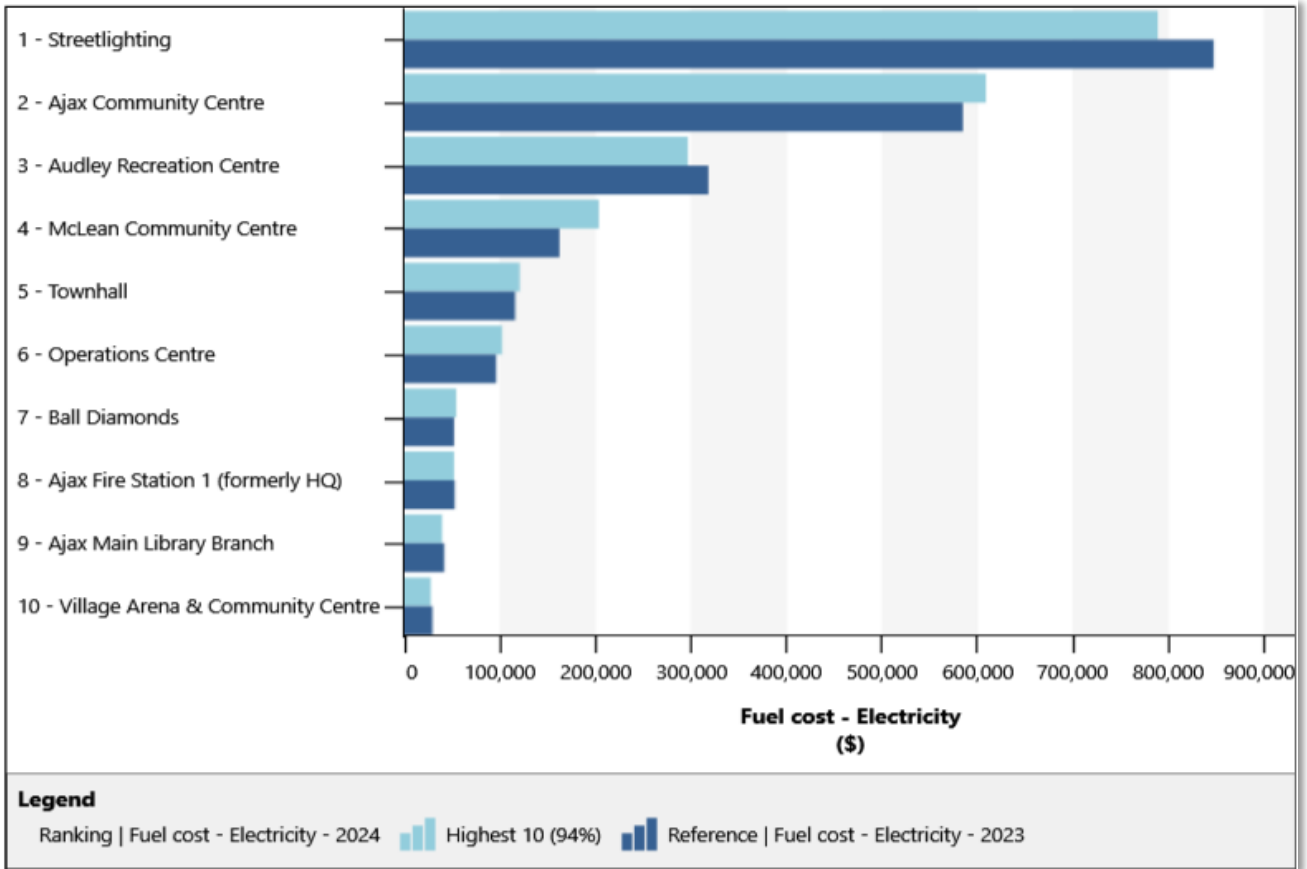


Figure 7: Electricity costs 2023 vs 2024 from Town buildings, streetlighting, and sports and parks lighting generated using RETScreen Expert software.

Overall, in comparison with the baseline year of 2019, the total energy cost shows a reduction of **over \$280,000 or 8.8%** in 2024 (Figure 9). This is mainly due to the implementation of capital energy efficiency projects and increasing operational efficiency through continuous energy management thereby highlighting the need to invest in low carbon solutions every year to reap cost benefits, GHG reductions, and improve corporate assets to maintain service delivery standards to Ajax residents.

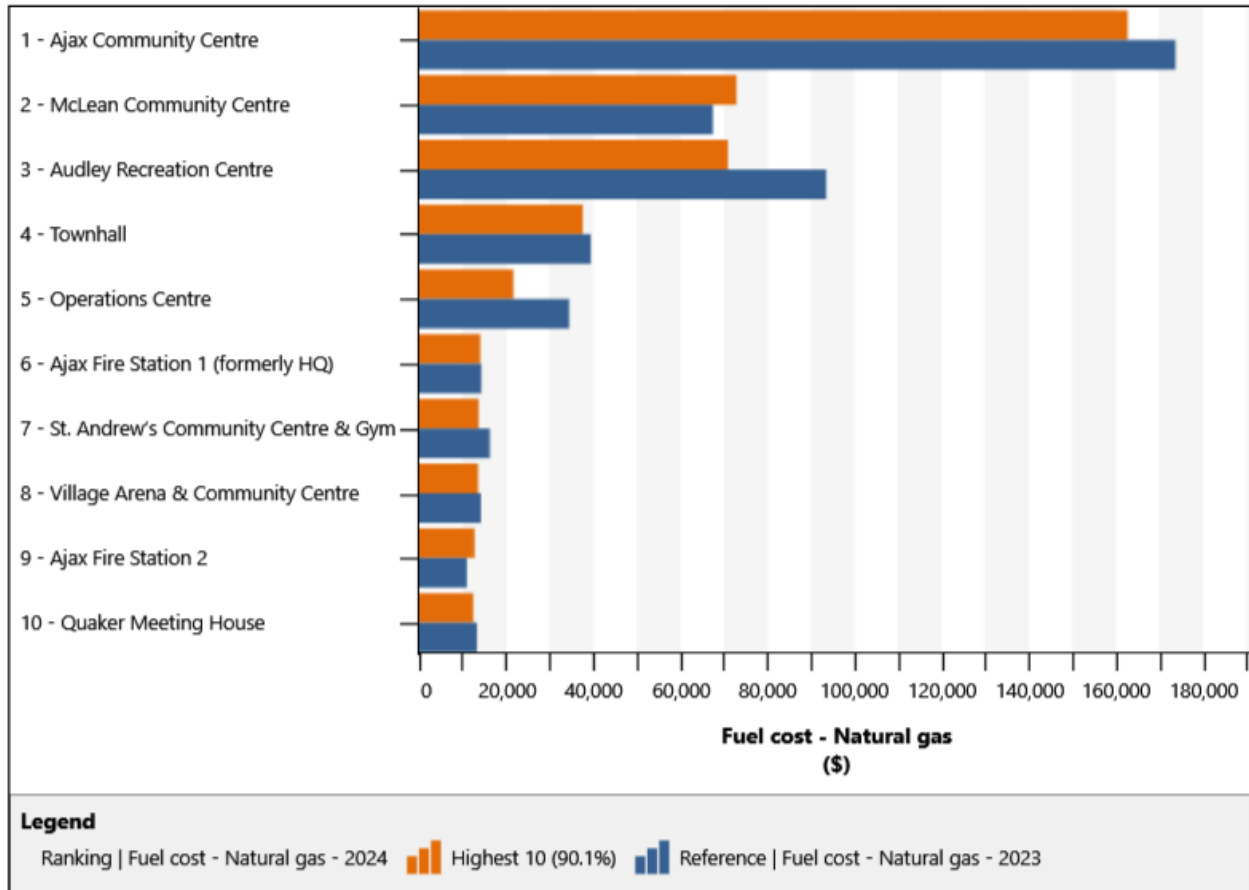


Figure 8: Natural costs 2023 vs 2024 from Town buildings generated using RETScreen Expert software.

2.4 Renewable Energy Generation 2024

The Photovoltaic systems installed at the Operations Centre (100kW) and Greenwood Pavilion (2kW) uses solar panels to collect energy from the sun which is subsequently converted to alternating current as useful electricity and sold to the grid. These systems offset approximately **6.6 tonnes CO₂e** of GHG emissions annually generating a revenue of nearly **\$90,000**. Additionally, since 2015, these systems have avoided GHG emissions of **42 tonnes CO₂e** while generating a revenue of over **\$930,000** for the Town.

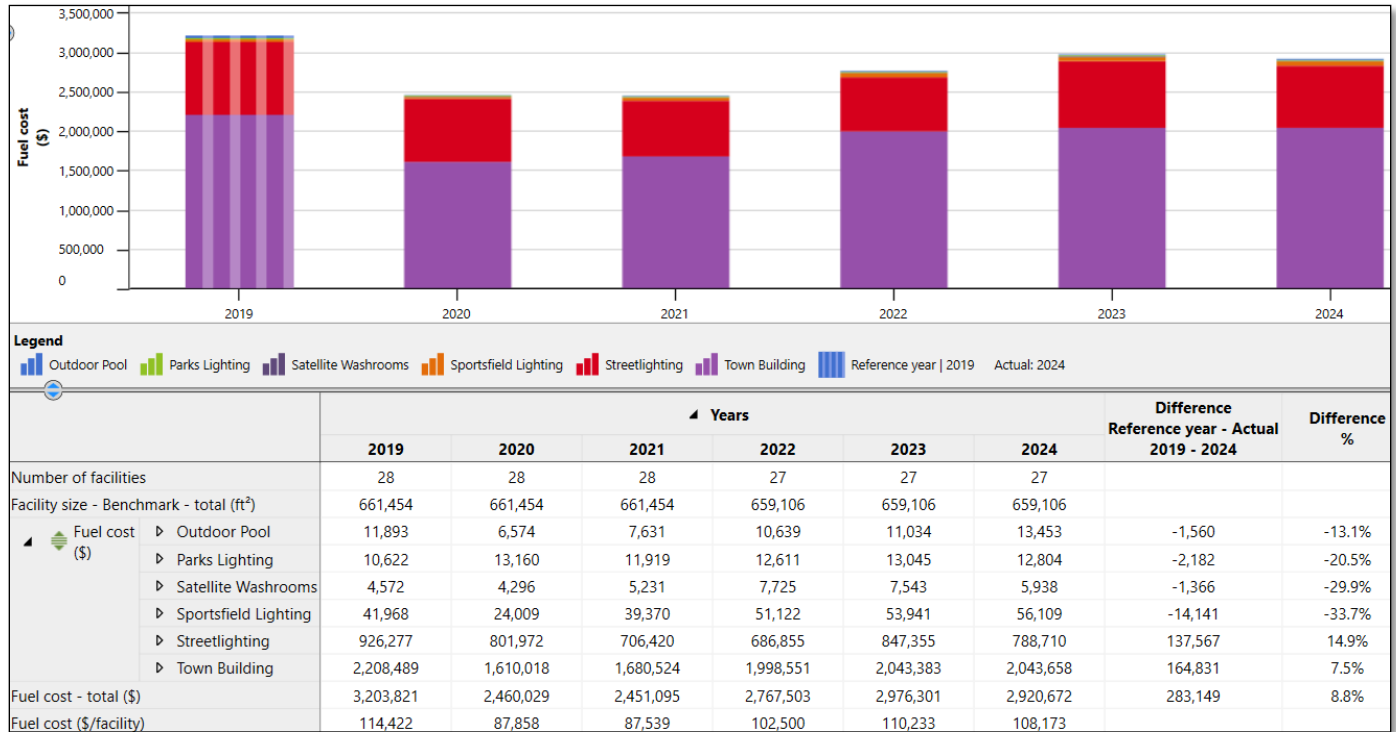


Figure 9: Energy cost savings from Town buildings, streetlighting, and sports and parks lighting generated from RETScreen Expert software.

2.5 Electric Vehicle Charging Stations 2024

The Town owns and operates 20 Electric Vehicle (EV) charging stations across various facilities including Ajax Community Centre, McLean Community Centre, Audley Recreation Centre, Ajax Townhall, and Operations Centre. The EV charging stations usage has almost doubled with over 2000 charging sessions in 2024 and 100% utilization of all the stations in comparison with 2023. The usage of the EV charging stations has contributed to reductions of 21,100 kilograms CO₂e in 2024 with over **62,400 kilograms CO₂e** savings since installation in 2018, equivalent to saving 26,583 litres of gasoline from being consumed.

2.6 Achievements in 2024

The major achievements of 2024 have been described below.

2.6.1 Durham Greener Buildings Awards

In November 2024, The Town of Ajax was recognized for its best energy performing buildings and proactive approach to energy efficiency in Durham Region by the [Durham Greener Buildings Program](#) (DGB). DGB is a benchmarking and disclosure program developed by the Region of Durham in partnership with [Windfall Ecology Centre](#). DGB is

part of the Region's [Community Energy Plan](#), and a key strategy to reduce greenhouse gas emissions and response to Durham Regional Council's [climate emergency declaration](#).

The Town won the following [awards](#) at this event:

- Best Energy Performing Large Community Meeting Centre Award — Ajax Community Centre
- Best Energy Performing Library - Ajax Main Branch Library
- Best Energy Performing Operations Facility Award - Ajax Operations Centre
- Climate Leadership Award – For EnergyCAP CarbonHub
- Best Data Quality Award

2.6.2 Corporate Energy Team

The Corporate Energy Team was formed in early 2024 to help inform the Corporate Net-Zero Emissions Plan (CNZEP) and to ensure the goals of the CNZEP are met after the plan has been established. Key staff from Facilities, Building Maintenance, Finance, Strategic Initiatives, Purchasing, and Technology & Innovation Services participate on this team. The team meets on a quarterly basis to discuss energy consumption, ongoing operational efficiency, and the Town's energy saving initiatives to promote energy conservation within its facilities.

2.6.3 Corporate Energy Management Workshop

The Corporate Energy Management Workshop was held in May 2024 at Audley Recreation Centre and was attended by 35 staff members from across all departments. The objective of this workshop was to provide an overview of energy management fundamentals, including the financial analysis of energy bills, and to identify potential energy saving initiatives at Audley Recreation Centre. The delivery of this workshop was carried out by industry experts and staff from the Association of Municipalities of Ontario. This workshop has helped in building relationships with the facility operators and bring about collaboration amongst staff.

2.6.4 Ajax Energy Management Strategy

In 2024, the [Ajax Energy Management Strategy 2024 – 2029](#) (Strategy) was developed in accordance with Ontario regulation (O Reg. 25/23) to update the Town's [2019 Energy Conservation and Demand Management Plan](#). This Strategy was established using a performance-based energy management approach (Figure 11). As part of this approach, major building categories will be identified from the Town portfolio of buildings and energy data sets will be benchmarked with comparable buildings to identify energy performance, establish energy efficiency targets, and reduce GHG emissions with a focus on the following aspects:

- Long-term planning through the establishment of a Corporate Net-Zero Emissions Plan

- Strategic energy management through energy conservation
- Capacity building of Town staff through continuous engagement and training
- Establishment of energy monitoring and tracking systems



Figure 10: The Ajax Management Strategy utilizes a performance-based energy management approach.

3. Corporate Energy Goals in 2025

3.1 Corporate Net Zero Emissions Plan

In support of Council mandated targets of GHG reductions, the Town is currently developing a Corporate Net-Zero Emissions Plan (CNZEP) which will be a comprehensive and actionable strategy that defines the pathway to achieve net zero by 2050 with a focus on:

- **Energy & Emissions reduction** - Achieve net zero emissions through deep energy retrofits on existing assets and design and procure new assets that are net zero ready.
- **Cost Management** - Implement cost-effective solutions to reduce GHG emissions and enhance capital efficiency by ensuring that identified low carbon solutions align with the regular capital renewal schedules.
- **Enhance Asset Quality, Comfort, Health, and Resilience** - Create an environment that is comfortable, healthy, and resilient for all building users.

- **Improve Staff Capacity** - Increase internal communication, awareness, and staff capacity to allow better monitoring, planning, construction, retrofitting, operations, and maintenance of net zero projects.

This action plan is being developed in collaboration with Town staff by applying a holistic lens for effectively designing, sizing, or selecting the mechanical system upgrades to support energy savings and emissions reductions. Additionally, the measures in the action plan will be determined based on capital costs, operating costs, energy savings, and GHG reductions while ensuring occupant comfort, health, and safety.

Through the CNZEP, a detailed GHG inventory will also be developed for Town assets including municipal buildings, fleet, streetlighting, and outdoor lighting. This inventory will include analysis of a range of energy and GHG metrics including annual energy consumption and greenhouse gas emissions, utility costs, energy use intensity, and GHG intensity to develop the 2024 GHG inventory for Town assets.

3.2 Energy Management Software

Through the Ajax Energy Management Strategy, an automated and integrated energy management software system, known as EnergyCAP (Figure 12), has been implemented in February 2025. This platform captures utility bills directly from the vendors and enables staff to view bills as soon as they are available from the vendors. This avoids frequent delays and common errors associated with paper bill deliveries and tracking. This system will help facility managers detect anomalies in the bills and achieve operational savings instantly through more efficient energy monitoring and tracking.

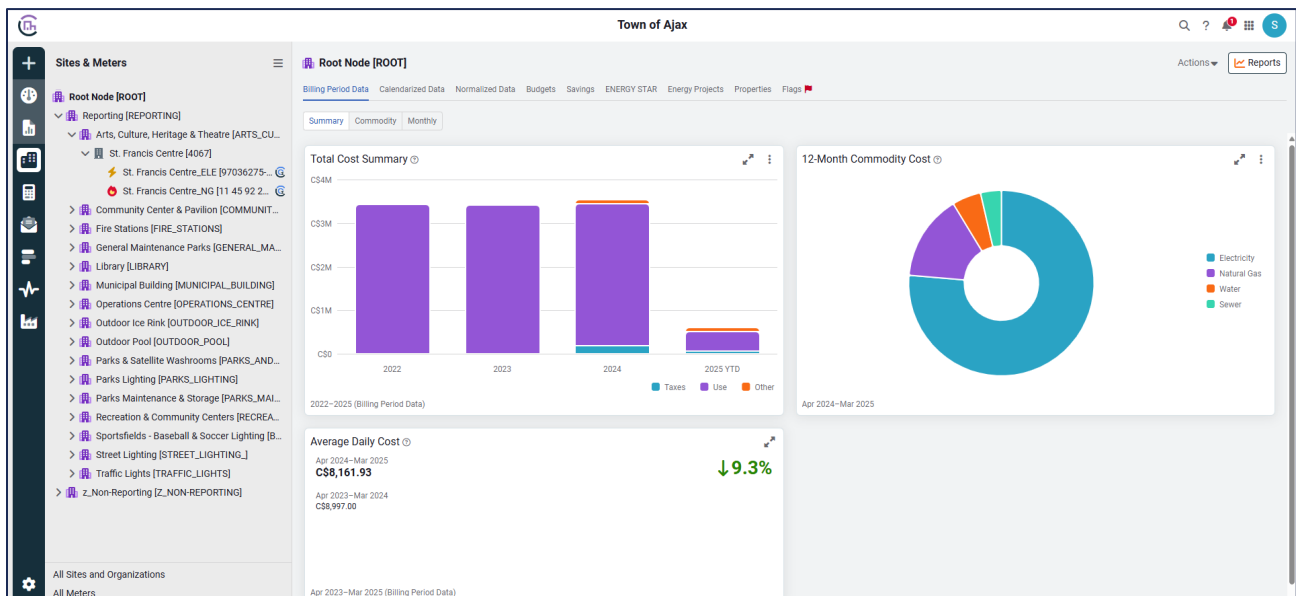


Figure 11: A dashboard of Town of Ajax buildings with electricity and natural gas utility billing information in EnergyCAP.

An additional feature of EnergyCAP is known as CarbonHub, which is an online dashboard (Figure 13) that showcases the Scope 1, 2, and 3 GHG emissions based on the Town's energy consumption from corporate operations. CarbonHub provides a visualization of the GHG emissions impact and helps in monitoring decarbonization targets, while identifying carbon reduction opportunities within the Town. It will facilitate and support behavioural change to conserve energy, reduce GHG emissions, and increase operational efficiency. It will also serve as a platform to keep key internal and external stakeholders informed on the progress of achieving the Town's corporate GHG emissions reduction targets.

3.3 Training for Operational Efficiency in Recreation Centres

Four half-day training sessions focused on pool operations, arena operations, and building automation systems will be conducted in March 2025 with the objective of improving staff engagement for energy waste reduction and energy efficiency improvement focussed on the Ajax Community Centre. This directly aligns with the performance-based energy management approach as highlighted in the Ajax Energy Management Strategy which focuses on identifying and implementing energy conservation measures through improved staff engagement and training. Through this training, the Town is eligible for a training incentive through the SaveONEnergy Program, offered by the Independent Electricity System Operator (IESO), of up to 75% of the program costs.

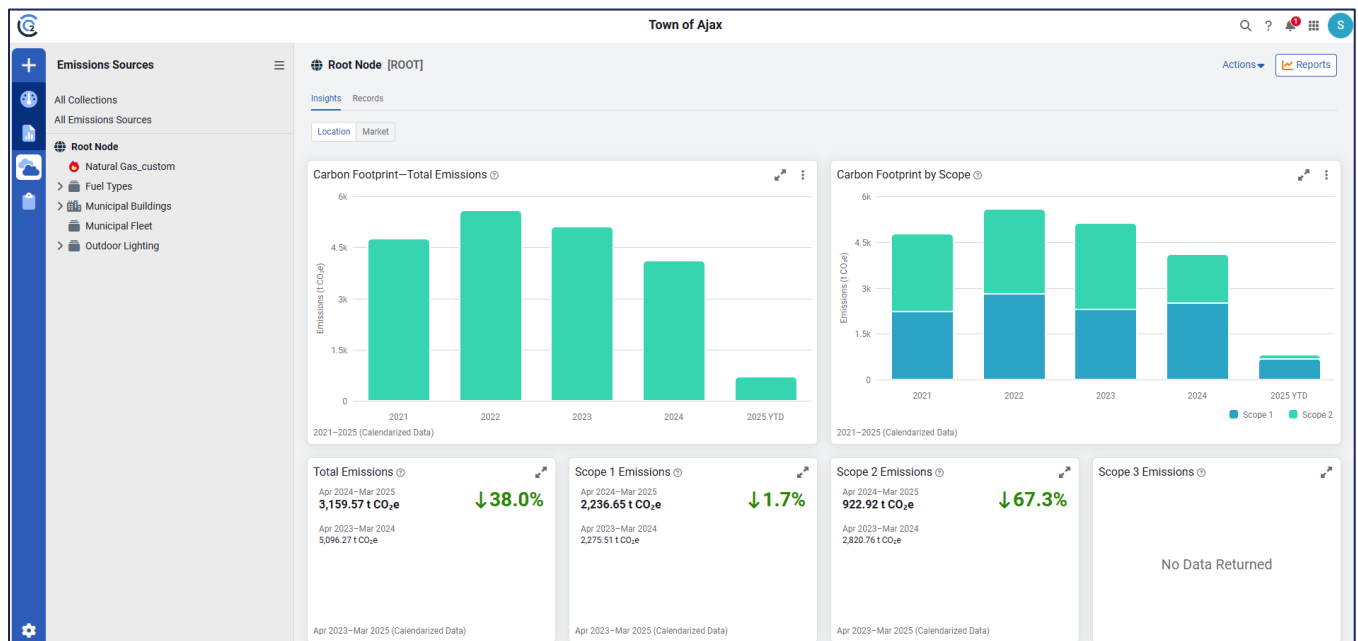


Figure 12: A dashboard of Town of Ajax buildings with electricity and natural gas utility billing information in EnergyCAP.

3.4 TOA Battle of the Buildings Competition

The Town of Ajax is aiming to achieve at least 20% GHG emissions reductions from its corporate operations as compared to 2019 levels by end of 2025. With 2025 being a crucial year to achieve this target, and since there are no major energy efficiency upgrades planned for 2025, operational energy efficiency will have to be enhanced in the Town's buildings.

To promote energy savings in 2025, Battle of the Buildings Competition is being explored. This is an energy saving competition among Town owned and operated buildings to challenge facility users to cumulatively reduce electricity and natural gas consumption by at least 10% and maintain those savings year-round. This competition is anticipated to launch in June 2025 with the utility data analysis period from June 1st, 2025, and will run until December 31st, 2025. The intent of this competition is to inspire, educate, and motivate facility users to:

- Raise awareness, and take ownership, of each facility's utility consumption and associated costs.
- Engage and educate staff and residents on their environmental impact at public facilities.
- Identify and implement low-cost/no-cost operational improvements.
- Share operational best practices among similar facilities.
- Recognize and reward individuals that take the initiative towards continuous improvement.
- Promote cost savings by decreasing energy consumption and GHG emissions.

4. Conclusion

The Town has been a sustainability leader in implementing various energy efficiency initiatives which is evident through the GHG emissions reductions of 13.3% in 2024 from Town buildings, streetlighting, and sports and park lighting. In addition, the development of a comprehensive Corporate Net Zero Emissions Plan will help identify the pathway for improving building performance and reducing GHG emissions from municipal operations, as well as improving air quality, increasing local renewable energy production, and increasing thermal comfort. Furthermore, promoting low-cost solutions such as Battle of the Buildings will help in creating energy champions across various departments in the Town, increase collaboration among staff, boost energy savings and cost savings which will help in meeting the short-term target of 20% by 2025.