Energy Conservation and Demand Management Plan 2026-2031

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1.0 Introduction

The purpose of this Energy Conservation and Demand Management (ECDM) Plan is to establish a transparent, five-year framework (2026–2031) to guide the Town of Whitby (Town) in tracking corporate energy use, managing energy demand, and reducing greenhouse gas (GHG) emissions. The Plan supports implementation of the Zero Carbon Whitby framework while advancing the Town's long-term sustainability and climate objectives.

The Zero Carbon Whitby Plan, endorsed by Council in March 2021, has served as the Town's corporate energy management framework and, from July 2021 to 2026, functioned as the Town's ECDM Plan in alignment with the requirements of *Ontario Regulation 25/23: Broader Public Sector – Energy Reporting and Conservation and Demand Management Plans*, which requires municipalities to prepare an ECDM Plan every five years.

Achieving deep GHG emissions reductions from corporate operations is as much about organizational transformation as it is about technical solutions. In pursuing decarbonization, municipalities must navigate a range of challenges, including differing risk appetites, evolving political leadership, and operational, financial, contractual, policy, and legal constraints. In response, the Town is committed to embedding climate considerations into corporate decision-making processes and ensuring that staff across the organization have the awareness, training, tools, and accountability required to implement low-carbon, life-cycle-based solutions and resilient infrastructure technologies.

A key consideration in energy efficiency and demand management planning is Whitby's projected population growth and the resulting need for new municipal infrastructure. With careful planning and early integration of climate considerations, new facilities and assets can be designed to be zero-emissions from the outset and, in some cases, contribute to reducing emissions across existing operations. Managing growth in this way is essential to maintaining progress toward the Town's long-term emissions reduction targets.

Reducing corporate GHG emissions also represents a strategic opportunity. Low- and zero-emissions solutions often deliver lower long-term operating costs stimulate innovation and local economic activity, improve working conditions in municipal facilities, and strengthen the Town's leadership and brand as a forward-thinking, climate-responsible municipality.

At this time, rather than advancing a full update to the Zero Carbon Whitby Plan, the Town is continuing to proceed with the existing Plan and the high-level direction it provides, while prioritizing the technical work needed to refine the pathway to net-zero. Specifically, the Town is undertaking a Deep Energy Feasibility Pathway Study for seven of its highest-emitting facilities, as per American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Level 3 energy audit standards, to confirm project feasibility, sequencing, enabling requirements (such as electrical capacity), and

associated costs. The findings from this work will directly inform the next phase of implementation under the Zero Carbon Whitby framework and this ECDM Plan.

This ECDM Plan does not replace the Zero Carbon Whitby Plan. Instead, it serves as the Town's required five-year Energy Conservation and Demand Management update under provincial regulation, providing a focused implementation and reporting framework that operates in parallel with Zero Carbon Whitby. Together, these documents ensure continuity in corporate climate direction while strengthening the technical, organizational, and operational foundation needed to advance implementation over the 2026–2031 period.

1.1 Background and Corporate Climate Action Context

In June 2019, Town Council declared a Climate Emergency, joining nearly 2,000 jurisdictions across 34 countries in recognizing the urgent need to address climate change. This declaration committed the Town to embedding climate considerations into corporate decision making and accelerating efforts to reduce GHG emissions from municipal operations.

In response, the Town has developed and implemented a series of interconnected plans, policies, and initiatives to guide corporate climate mitigation and energy management (Figure 1). Central among these is Zero Carbon Whitby, endorsed by Council in March 2021, which serves as the Town's Corporate Climate Action and Energy Management framework.

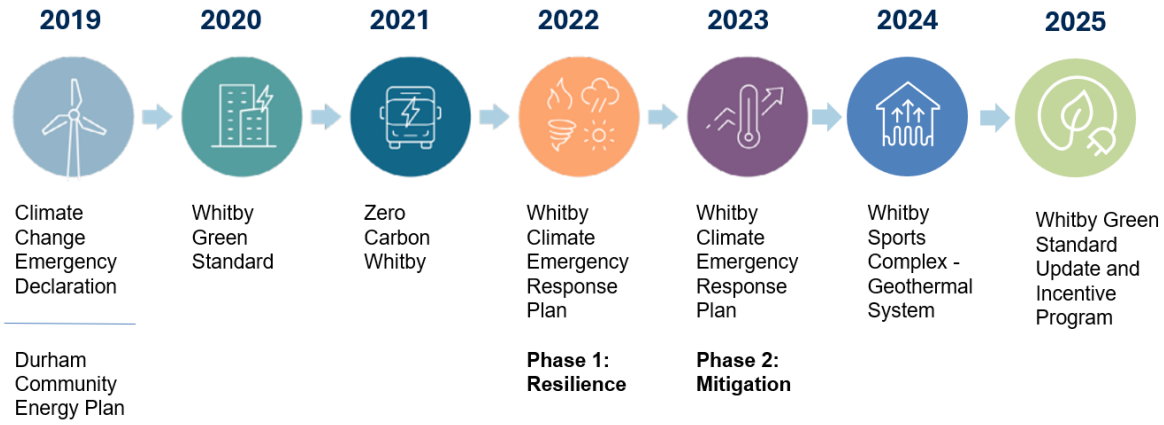

Figure 1. The plans developed and actions implemented in response to the Council's declaration of a Climate Emergency

1.1.1 Zero Carbon Whitby Plan

Unlike a traditional action plan, Zero Carbon Whitby was intentionally developed as a framework for implementing low carbon decision-making across the organization, rather than a prescriptive list of projects. The framework establishes the scale of emissions reductions required from the Town's corporate operations to support global GHG reduction targets and introduces governance, carbon budgeting, and planning mechanisms that enable implementation over time. This approach empowers staff to

identify and implement actions from the bottom up by aligning capital and operating budgets with GHG reduction targets and integrating climate considerations into routine municipal decision-making.

Zero Carbon Whitby is guided by the following principles, aligned with the principles which govern the strategic planning process.

- Incorporate a long-term perspective: Mitigating climate change requires consideration of the long-term, specifically to avoid locking in activities or systems that generate GHG emissions and will therefore need to be retrofit or undone in the future.
- Establish linkages to broad organizational goals: The imperative to address climate change overlaps with many other organizational priorities. The process underlying Zero Carbon Whitby aims to align these objectives.
- Focus decisions on results and outcomes: The impacts of decisions on GHG emissions have historically been opaque. The Town's process aims to ensure that the path to GHG emissions is clear and that results will be transparent to inform future decisions.
- Involve and promote effective communications with stakeholders: Reducing GHG emissions requires new ideas from different people, and a whole organization approach.
- Promote program efficiency and effectiveness: Resources are constrained, and the municipality has, by necessity, to be concerned with the most effective actions.

Zero Carbon Whitby establishes a Carbon Reduction Framework that guides GHG emissions management across all municipal operations over multiple years. Using a science based methodology, the Plan derives the Town's fair share of the remaining global carbon budget and defines the emissions reductions required to align with limiting global temperature increase to 1.5°C. This target aligns with the Region of Durham's GHG reduction target for its operations. Under this trajectory, the Town's carbon budget totals 62,563 tCO2e between 2022 and 2045, as illustrated in Figure 2 below.

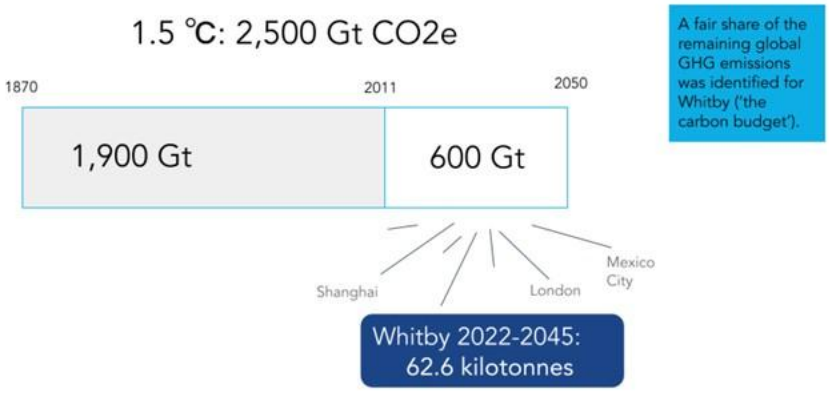

Figure 2. The Town's share of the remaining global GHG emissions budget, 2022-2045

The GHG emissions trajectory is shown in Figure 4, capturing emissions for all of the Town's corporate operations. The Business as Usual (BAU) trajectory is a projection of emissions if the Town adds planned facilities to account for growth using current energy and emissions performance of buildings and fleet. The pink line ("Identified Measures") reflects the trajectory of measures identified in energy audits completed by the Town. The blue line represents annual targets towards 2045, whereas the green line represents these annual targets in four-year bundles to align with the Town's business planning timeline.

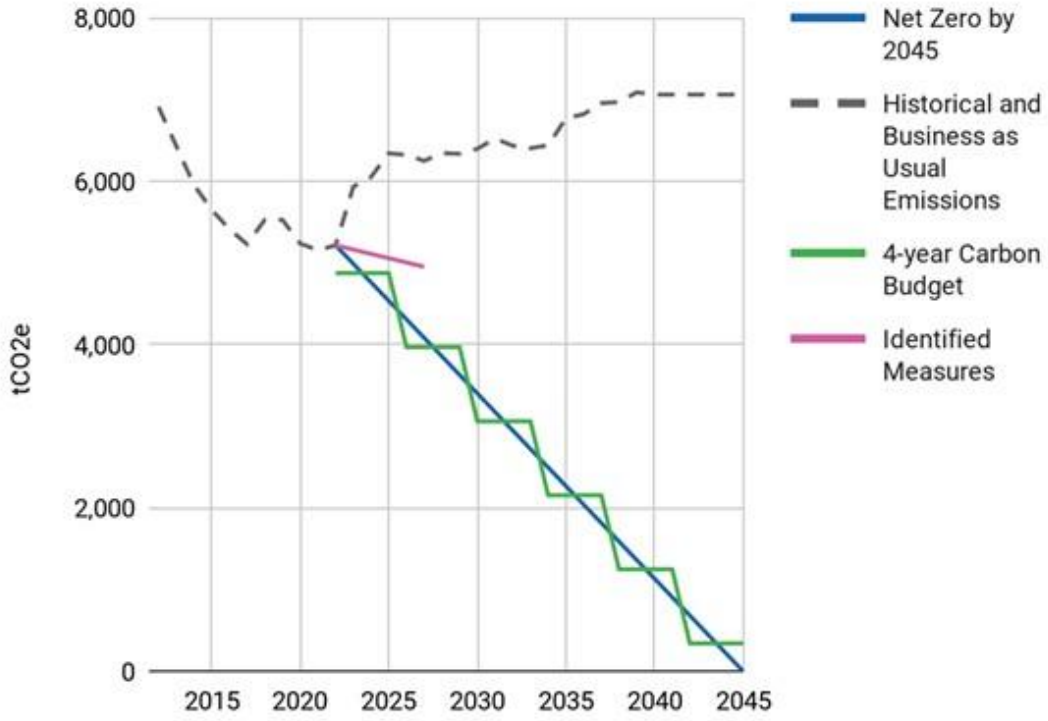

Figure 3. Emission target trajectory for corporate emissions, 2020-2045

The Plan recommends that the Town adopt a target that aims to reduce corporate carbon emissions to net-zero by the year 2045, while also setting four-year reduction targets consistent with this trajectory. Examining emissions in four-year increments also helps align emissions reduction measures with capital and operations planning and incorporate new technologies and solutions. This method is consistent with the absolute reduction targets method, an approach widely adopted in the private sector, and with targets set by other levels of government.

Figure 4 describes key metrics for GHG emissions trajectory, including GHG emissions in 2019, cumulative emissions (the "carbon budget"), a 2030 target and a net-zero target by 2045. The annual reduction of 4.3% is an indicator of the consistent effort to reduce emissions; in reality some years will achieve greater reductions, and other years less reductions.

Emissions in 2019	5,525 tCO2e
Cumulative emissions from 2022 to 2045 ("carbon budget")	62,563 tCO2e
Emissions in 2030	3,400 tCO2e
% emissions reductions by 2030 (relative to 2019)	38%
Year net zero is achieved	2045
Annual percent reduction in emissions (relative to 2019)	4.3%

Figure 4. Key numbers for a net-zero-by-2045 target for corporate emissions.

1.1.2 Zero Carbon Whitby Costing Study

As a first step toward implementing the Zero Carbon Whitby Plan, the Town completed the Zero Carbon Whitby Costing Study in 2022. Completion of this Study was a key recommendation of the Zero Carbon Whitby Plan and provided the technical and financial detail required to move from high-level targets to actionable implementation planning.

Zero Carbon Whitby identifies Town's 2019 corporate GHG emissions baseline as **5,525 tCO_2e**. Based on this baseline, the Town's short-, medium-, and long-term reduction targets were set as:

- **20% reduction by 2025 (1,105 tCO_2e)**
- **40% reduction by 2030 (2,210 tCO_2e)**
- **100% reduction by 2045 (5,525 tCO_2e)**

These targets reflect the Town's contribution to global climate action and provide a clear long-term direction for corporate operations.

A defining feature of Zero Carbon Whitby is the integration of GHG emissions into the municipal budget and decision making process. As Council considers capital investments, information is provided on whether proposed projects will result in a net increase or decrease in corporate emissions and how they affect progress toward the Town's 2025, 2030, and 2045 targets. This ensures climate impacts are considered alongside financial, service delivery, and asset management considerations.

The Costing Study establishes a detailed pathway for the Town to remain within its allocated carbon budget and achieve net zero corporate emissions by 2045. It identifies a phased schedule of projects and associated incremental funding requirements, optimized to align with the Town's existing capital budget and asset management plans. The Study also provides guidance on the creation and use of a Zero Carbon Revolving Reserve Fund as the primary financing mechanism for implementation.

The estimated incremental cost of implementing the Zero Carbon Whitby pathway between 2022 and 2045 is $63.7 million. Over the same period, the Study estimates $75.3 million in total savings and avoided costs, primarily from reduced energy consumption, avoided carbon pricing impacts, and operational efficiencies.

The Study proposes that these incremental costs could be fully funded through a Zero Carbon Revolving Reserve Fund, seeded with an initial $34.8 million, and replenished over time using realized savings from energy reductions, avoided carbon costs, and select capital projects. This approach supports long-term financial sustainability while minimizing impacts on the tax base.

Council endorsed the Zero Carbon Whitby Costing Study in September 2022, affirming the Town's commitment to the framework, emissions reduction targets, and implementation approach set out in Zero Carbon Whitby. As part of this endorsement, Council also approved the Zero Carbon Revolving Reserve Fund Policy and authorized the establishment of the Zero Carbon Revolving Reserve Fund, as recommended in the Study, to support the long-term financing and implementation of corporate decarbonization initiatives.

1.2 Provincial Energy Reporting and Planning Requirements

Ontario Regulation 397/11, enacted under the *Green Energy Act* in 2009, established the Province's initial framework to support energy conservation and emissions reduction across the broader public sector. The regulation requires public agencies, including municipalities, to annually report and publicly post their energy consumption and associated GHG emissions.

In 2018, Ontario Regulation 397/11 was updated and replaced by Ontario Regulation 507/18 under the *Electricity Act*. The regulation was further revised in 2023 as Ontario Regulation 25/23. Under the current regulation, municipalities are required to establish goals and objectives for conserving energy and reducing consumption, and to develop, maintain, and update an Energy Conservation and Demand Management (CDM) Plan every five years.

For the Town, the requirements of the previous CDM planning period (2021–2025) were fulfilled through the Zero Carbon Whitby Plan, which served as both the Town's corporate climate framework and its Energy Conservation and Demand Management Plan for that period. This updated ECDM Plan summarizes energy and GHG reduction initiatives implemented during that time and outlines the Town's planned approach to continued energy conservation and demand management for the 2026–2031 period.

In accordance with Ontario Regulation 25/23, this ECDM Plan will be approved by Council resolution, publicly posted on the Town's website, and submitted to the Ministry of Energy, Northern Development and Mines by July 1, 2026.

1.3 Overview of Municipal Facilities

The Town's facilities can be categorized into the following groups: administrative, emergency services, community centres, libraries, recreation centres, and other. The 22 facilities listed in **Error! Reference source not found.** below represent the primary energy consuming assets that the conservation and demand management plan will focus on.

Table 1. List of Primary Corporate Facilities

Facility Type		Facility Description
Administrative	Town Hall	- Whitby Municipal Building
Administrative	Libraries	- Whitby Library Main Branch
Administrative	Heritage Buildings	- Whitby Centennial Building
Services	Fire halls Operations Centre Animal Control	- Fire Hall #1 - Fire Hall #2 - Fire Hall #3 - Fire Hall #4 - Fire Hall #5 (Headquarters) - Fire Hall #6[1] - Whitby Operations Centre - Animal Control
Community Centres	Community Centres	- Ashburn Community Centre - Brooklin Community Centre - Brooklin Community Centre and Library - Heydenshore Pavillion - Lynde House Museum55+ Activity Centre - Spencer Community Centre
Recreation Centres	Arenas	- Iroquois Park Sports Centre - McKinney Centre - Luther Vipond Memorial Arena - Fieldgate Sports Complex[2]
Recreation Centres	Recreation Centres	- Civic Recreation Complex
Other	Marina	- Port Whitby Marina

[1] Anticipated to be constructed by 2027.
[2] Anticipated to be constructed by mid-2026.

2.0 Reporting

2.1 Energy and Greenhouse Gas Emissions

2.1.1 Annual Energy Consumption Trends

From 2021 to 2025, total energy consumption across the Town's corporate facilities remained within a relatively consistent range; however, the overall trend is not flat. As shown in Figure 5, total facility energy use was lowest in 2021 and increased in subsequent years, with 2024 and 2025 representing the highest consumption levels within the 2021–2025 period. While annual energy consumption in 2025 remains below the 2019 baseline, the upward trend indicates a return toward more typical operating conditions following the early years of the reporting period.

Overall, when comparing 2025 to the 2019 baseline year, total corporate facility energy consumption has decreased by approximately 9%, equivalent to roughly 2,700,000 ekWh. This reduction reflects the combined influence of energy efficiency improvements, operational changes, and early decarbonization measures implemented under Zero Carbon Whitby.

This pattern is important for interpreting progress. The five-year reporting window includes years affected by the COVID19 pandemic, during which facility use, occupancy, and operating schedules were atypical. As a result, energy consumption trends during this period reflect both changes in operational conditions and underlying energy performance. The gradual increase observed after 2021 should therefore be understood as a normalization of facility use rather than a reversal of efficiency gains.

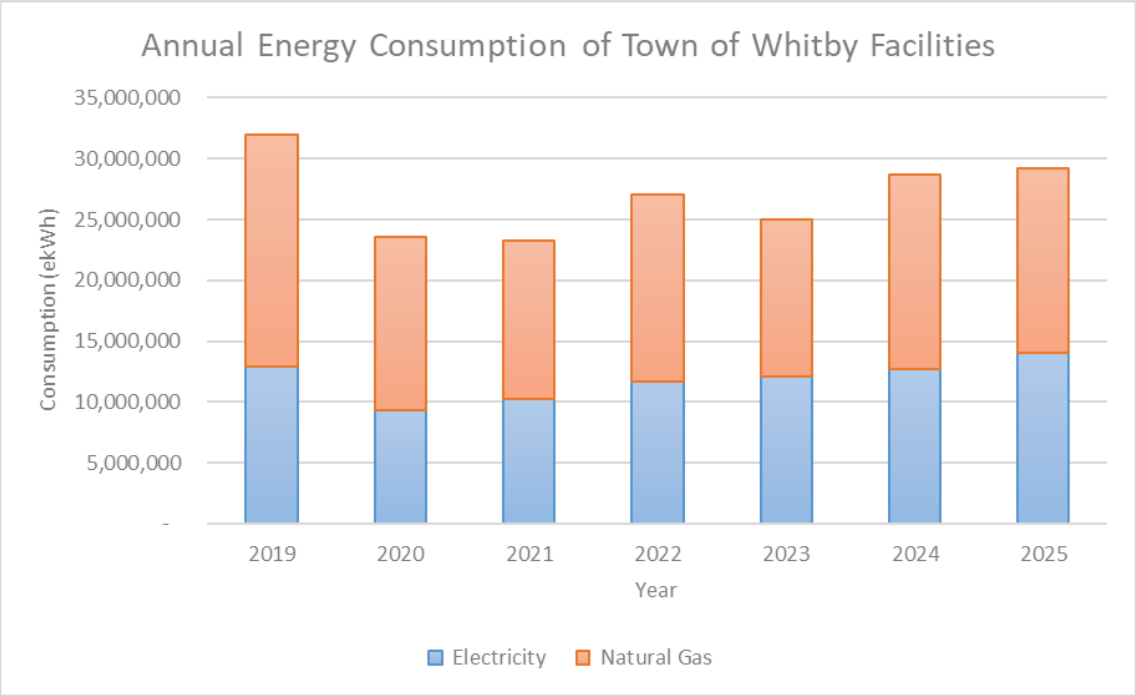

Figure 5. Annual Energy Consumption of Corporate Facilities

Electricity and Natural Gas Contributions (Fuel Mix)

Figure 5 also highlights a gradual shift in the balance between electricity and natural gas over the period. Electricity consumption increases incrementally across the years shown, while natural gas remains a significant component of total energy use throughout the period. This split is important because the Town's decarbonization pathway includes both:

1. Reducing total energy demand through efficiency and demand management, and
2. Reducing GHG emissions by shifting end uses away from natural gas where feasible.

As electrification measures are implemented—such as replacing fossil fuel based heating equipment with heat pumps—electricity consumption is expected to increase, even as natural gas consumption declines. For this reason, energy use (kWh) trends must be interpreted alongside GHG emissions results, which are reported separately in Section 2.1.2, to provide a complete picture of progress.

2025 Energy Consumption Snapshot

To provide additional context for recent performance, Figure 6 summarizes corporate energy consumption by facility type in 2025. Recreation Centres represent the Town's most energy intensive facilities and therefore the largest opportunities for both energy and GHG emissions reductions. In 2025, Recreation Centres consumed approximately 21,000,000 ekWh, accounting for roughly 73% of the Town's total corporate energy consumption.

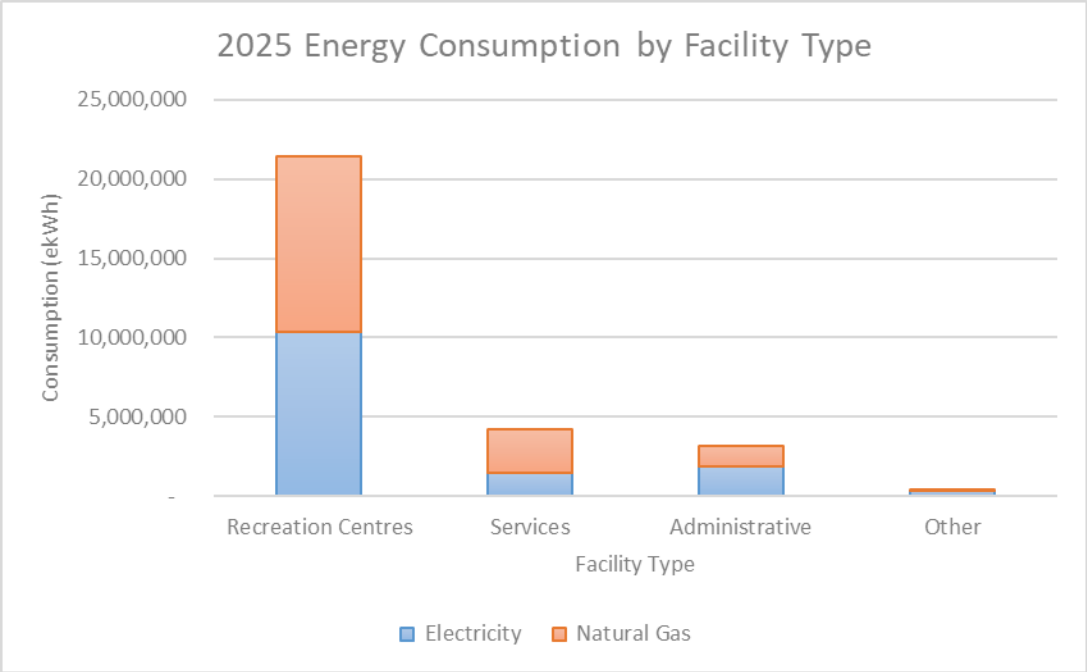

Figure 6. 2025 Annual Energy Consumption by Facility Type

Figure 7 presents the breakdown of total corporate energy consumption by commodity for 2025. Electricity and natural gas accounted for approximately 48% and 52%, respectively, of total energy use across corporate facilities. The even split between natural gas and electricity consumption underscores the importance of continued electrification efforts, alongside efficiency measures, to reduce reliance on natural gas and achieve sustained emissions reductions.

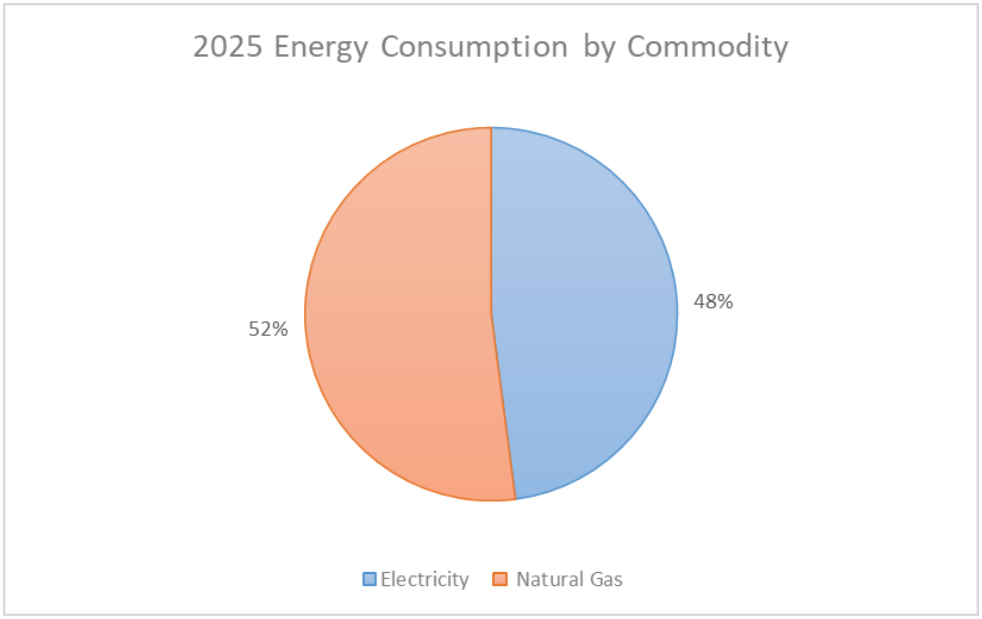

Figure 7. 2025 Annual Energy Use by Commodity

Why Major Energy Reductions Are Not Yet Reflected

Implementation of substantive energy conservation measures listed in the Zero Carbon Costing Study did not begin until 2023. Early actions during this period focused primarily on lower cost operational improvements and smaller asset renewal projects, rather than deep energy retrofits across major facilities. As a result, large, measurable reductions in annual facility energy consumption are not expected to appear immediately in the early years of the reporting window.

In parallel, a significant portion of effort during the period has been directed toward planning and feasibility work required to enable deeper reductions—particularly for the Town's highest emitting facilities. This includes major studies and audit work intended to confirm feasibility, sequencing, enabling requirements (including electrical capacity), and costing for future deep retrofits. These foundational steps are necessary to unlock the scale of energy and emissions reductions required for 2030 and beyond.

What This Trend Means for the 2026–2031 ECDM Period

The 2021–2025 trend reinforces the need for the 2026–2031 ECDM period to focus on two complementary priorities:

- Operational and low-cost efficiency improvements (to reduce avoidable energy use and manage demand), and
- Delivery of deeper retrofits and fuel-switching projects (to achieve step changes in performance at the Town's highest consuming and highest emitting facilities).

This sequencing is consistent with the Town's approach of using near term actions to build momentum while technical studies and design work are completed to support larger capital interventions in later years.

2.1.2 Corporate GHG Emissions Trends

While energy consumption is a useful indicator of overall facility demand, corporate GHG emissions are more directly influenced by the Town's reliance on natural gas, as emissions are closely linked to combustion-based heating loads. Accordingly, many Zero Carbon Whitby projects prioritize fuel switching and natural gas reduction strategies, recognizing that electrification can reduce emissions even where electricity consumption increases.

This distinction is important when interpreting progress. Measures such as heat pump installations or electrified equipment can shift energy demand from natural gas to electricity, which may increase electricity use while lowering GHG emissions because on-site fossil fuel combustion is reduced. For this reason, the Town tracks both energy (Section 2.1.1) and GHG emissions (this section) to provide a complete picture of performance.

Annual Corporate GHG Emissions Performance (Utility-Based Emissions)

In 2025, the Town's total utility-related GHG emissions were 735 tCO_2e lower than in 2019, representing a 19% reduction (**Appendix D**). Figure 8 below shows the shift in GHG emissions through 2019 to 2025.

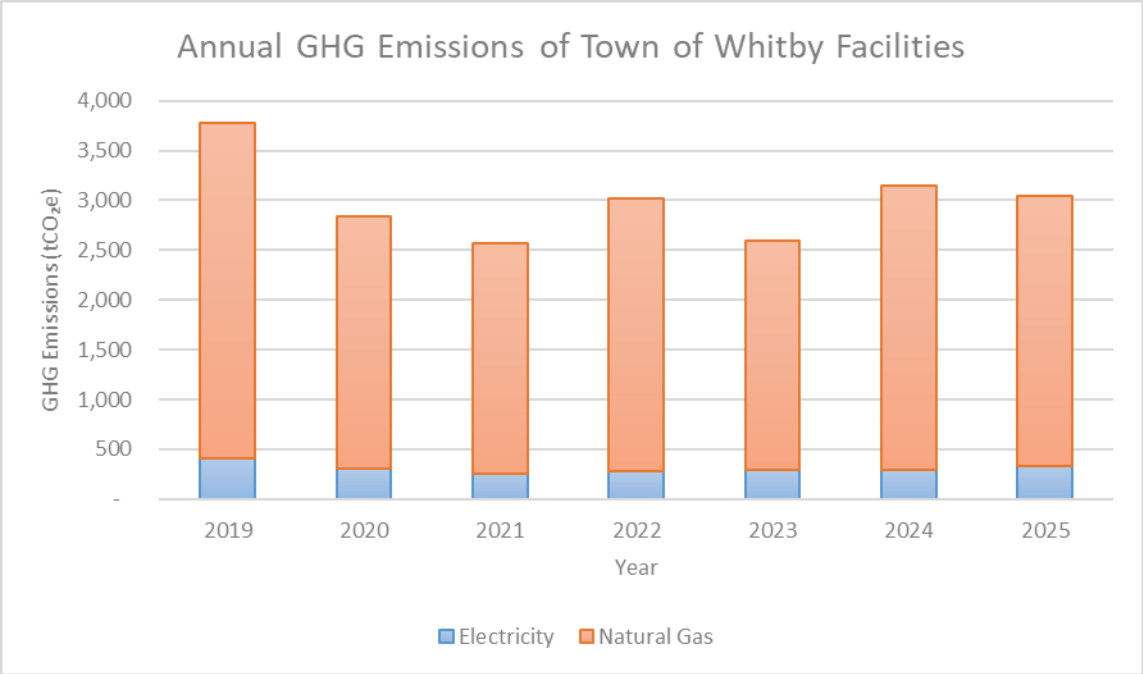

Figure 8. Annual GHG emissions of Corporate Facilities

2.2 Completed Projects

Across 2023 (Table 2), 2024 (Table 3), and 2025 (Table 4), implemented Zero Carbon Whitby projects delivered 610.5 tCO_2e in corporate GHG emissions reductions, as summarized in Table 5. These reductions reflect emissions savings from projects that have reached completion and are actively delivering results, including fuel switching initiatives, deep equipment upgrades, lighting retrofits, and building system improvements across corporate facilities.

While the completed projects delivered 610.5 tCO_2e in gross emissions reductions over this period, the net reduction of 564.1 tCO_2e accounts for fleet related emissions increases that occurred concurrently. Reporting net reductions provides a more accurate representation of overall corporate emissions performance and ensures transparency in tracking progress toward the Town's climate commitments.

Although the Town did not fully achieve the ambitious 2025 target, the results to date demonstrate meaningful progress and confirm that completed Zero Carbon Whitby projects are delivering substantial emissions reductions. Importantly, the majority of reductions achieved to date occurred in 2025, driven largely by high impact projects such as the transition of the Civic Recreation Complex's combined heat and power system to backup operation. Together, these outcomes provide a strong foundation for advancing larger scale retrofits and accelerating emissions reductions in support of the 2030 target of a 40% reduction.

Table 2. 2023 Completed Zero Carbon Whitby Projects

Facility	Projects	GHG Emission Savings (tCO2e) *Annualized over a calendar year
Brooklin Community Centre and Library	Recommissioning of building automation system (BAS) in order to improve energy efficiency	5.4
Brooklin Community Centre and Library	Refining of Roof Top Units (RTU) schedule	1.7
Civic Recreation Complex	Variable Frequency Drives (VFDs) on filter pumps in order to make the operation of the pumps more efficient	0.8
Civic Recreation Complex	RTU replacement to heat pump	5.2
Civic Recreation Complex	Gas furnace replacement to heat pump	5.9
Iroquois Park Sports Complex	Pad 2 and 5 lighting upgrades (LED lighting)	4.1
Port Whitby Marina	Exterior lighting upgrade (LED lighting)	1.2
Whitby Central Library	Gas furnace replacement (fireplace replaced with LED screen)	4.0
117 King Street (Rental Property)	Oil furnace replacement to a heat pump	5.0
Whitby Municipal Building	Submeter Installation	5.0
Fire Hall #3	Gas furnace replacement to heat pump	5.9

McKinney Centre	Pilot RealICE Cold water flooding system installation	54.9
Total		**99.1**

Table 3. 2024 Completed Zero Carbon Whitby Projects

Facility	Projects	GHG Emission Savings (tCO2e) *Annualized over a calendar year
Lynde House	Furnace replaced with Heat Pump	2.6
Total		**2.6**

Table 4. 2025 Completed Zero Carbon Whitby Projects

Facility	Projects	GHG Emission Savings (tCO2e) *Annualized over a calendar year
Centennial Building	LED Lighting Upgrade	1.2
Civic Recreation Complex	Transition CHP to a backup heating system	454.4
Civic Recreation Complex	LED Lighting Upgrade & Occupancy Sensors	6.4
Civic Recreation Complex	Site Lighting Conversion and Bollard Lights	5.9
Iroquois Park Sports Complex	LED Lighting Upgrade	0.6
Spencer Community Centre	LED Lighting Upgrade	0.1

Whitby Station Gallery	Boiler Replacement	4.3
Fire Hall #4	Air Source Heat Pump (ASHP) Installation and Electric Furnace Installation	8.6
Marina	ASHP Installation and Boiler Replacement	20.5
Fire Hall #2	Window Replacement	1.2
Fire Hall #3	ASHP Installation	5.6
Total		**508.8**

Table 5. Total Gross GHG Emission Savings from Completed Zero Carbon Whitby Projects

Year	Total GHG Emission Savings (tCO2e) *Annualized over a calendar year
2023	99.1
2024	2.6
2025	508.8
Total	**610.5**

Utility-Based vs. Project-Based Emissions Reductions

Utility-based emissions are a useful indicator of overall corporate performance; however, they are influenced by factors that are not directly tied to specific projects. These include year-to-year variations in weather (e.g., colder winters increasing heating demand), changes in facility usage and occupancy, and shifts in the carbon intensity of Ontario's electricity grid. As a result, utility-based emissions can improve or potentially worsen from year to year even when the pace of project implementation remains unchanged.

By contrast, the gross 610.5 tCO_2e emissions reduction reported through Zero Carbon Whitby project-based savings from 2023 to 2025 isolates the measured impact of completed projects and accounts for fleet-related emissions increases occurring over the same period. The difference between the gross project-based reduction (610.5 tCO_2e) and the larger utility-based reduction (735 tCO_2e) is expected. Utility-based emissions reflect all consumption-related changes since 2019, including

external influences, while project-based savings isolate the quantified impact of planned retrofits and initiatives.

Together, these metrics show that while project implementation is progressing steadily toward the 2025 target, broader consumption patterns over the same period have also contributed additional reductions. For this reason, continued implementation of Zero Carbon Whitby projects remains essential to achieving and sustaining emissions reductions over the long term—particularly as weather conditions continue to fluctuate and the carbon intensity of the electricity grid may increase over time.

2.3 Proposed Zero Carbon Whitby Projects and Savings Estimates

To achieve the Town's 2030 corporate GHG reduction target of 40% relative to the 2019 baseline, the Town is advancing a coordinated portfolio of decarbonization initiatives to be implemented between 2026 and 2031. These initiatives focus on electrification, energy efficiency, deep energy retrofits, and net-zero new construction, and are designed to deliver meaningful emissions reductions while strengthening the Town's long-term capacity to meet its 2045 net-zero goal.

A central component of this work is the advancement of deep energy retrofit planning and design. Beginning in 2026, the Town will undertake ASHRAE Level 3 energy audits at seven of its highest GHG-emitting facilities (excluding the Iroquois Park Sports Centre). These audits will confirm technical feasibility, identify energy conservation measures, refine cost estimates, and establish implementation sequencing. The resulting findings will form the framework for carbon reduction across these buildings and guide capital decision-making beyond 2030.

In parallel, the Town's largest energy-consuming and highest-emitting facility, the Iroquois Park Sports Centre, will undergo its own targeted Deep Energy Retrofit initiative. This work focuses on fuel switching away from natural gas, improved ventilation and heat recovery, and comprehensive building performance upgrades. While design and analysis work will begin in 2026, the majority of emissions reductions from these deep retrofit measures are expected to be realized between 2027 and 2030, with anticipated reductions of approximately 450 tCO_2e annually. Given the scale of this facility, these projects will play a critical role in achieving the Town's medium-term emissions reduction targets.

The Town is also committed to ensuring that new municipal facilities are designed and constructed to net-zero emissions standards wherever feasible. This approach is deliberate and preventative: by delivering new buildings that operate without on-site fossil fuel combustion, the Town avoids increasing its future emissions reduction burden and eliminates the need for costly retrofits later in the asset lifecycle. Planned net-zero facilities for the Community, Animal and Enforcement Building and Fire Hall #6 demonstrate this commitment and ensure that growth in municipal infrastructure does not undermine long-term climate objectives. Emissions savings associated with new construction are calculated based on the net reduction achieved as older, less efficient facilities are taken offline.

Additional near-term projects include a high-efficiency tube heater retrofit for the vehicle bays at the Whitby Operations Centre, which will reduce energy consumption and improve operational efficiency in a high-use operational facility.

Collectively, the proposed investments of approximately $35 million are expected to deliver more than 510.6 tCO_2e in annual GHG emissions reductions, with the majority of savings attributable to deep retrofit and electrification measures at Iroquois Park Sports Centre (Table 6). The projects listed in Table 6 have been approved by Council and represent a critical early implementation phase of Zero Carbon Whitby, prioritizing high-impact facilities and measures that deliver substantial emissions reductions while establishing the technical and operational foundation for future phases of decarbonization.

Together, this integrated portfolio of planning, retrofits, and net-zero new construction ensures the Town remains on a steady, achievable pathway toward its 2030 and 2045 targets, while supporting a resilient, low-carbon municipal building portfolio that delivers long-term service reliability and financial sustainability.

Table 6. Approved 2026 to 2031 Zero Carbon Whitby Projects

Facility	Approved Projects	Cost Estimates	GHG Emission Savings (tCO2e) *Annualized over a calendar year
Iroquois Park Sports Centre	Ice resurfacing hot water boiler - ASHP	$240,000	71.2
Iroquois Park Sports Centre	Domestic Hot Water Boiler Replacement with – Water Source Heat Pump	$400,000	28.0
Iroquois Park Sports Centre	Envelope Air Sealing – Rink 1, 2, and pool	$345,000	30.4
Iroquois Park Sports Centre	Furnace Replacement with Hydronic Air Handler	$115,000	15.2
Iroquois Park Sports Centre	Hot Water boiler replacement with water source heat pump	$400,000	59.2
Iroquois Park Sports Centre	Low-flow shower heads and timer optimization	$ 80,000	15.2
Iroquois Park Sports Centre	Pool Area - Replace RTUs with ASHP - Natural Gas Backup	$240,000	15.2
Iroquois Park Sports Centre	Pool Cover	$330,000	8.8
Iroquois Park Sports Centre	Pool water boiler replacement with water source heat pump	$480,000	19.2
Iroquois Park Sports Centre	Pool water waste heat recovery system	$38,000	14.4
Iroquois Park Sports Centre	Restaurant & office area - Replace RTUs with ASHP - Natural Gas Backup	$630,000	24.8

Iroquois Park Sports Centre	Rink 1 and 2 - Replace RTUs with ASHP - Natural Gas Backup	$780,000	69.6
Iroquois Park Sports Centre	West Arenas - Change Room Ventilation Air Heat Recovery	$380,000	6.4
Iroquois Park Sports Centre	West Arenas – Replace NG Infrared heaters with Electric	$240,000	1.6
Iroquois Park Sports Centre	West Arenas – Replace RTUs with ASHP - Natural Gas Backup	$1,500,000	80.8
Whitby Operations Centre	Replace Tube Heaters with high efficiency models	$ 350,000	17
55+ Community Centre	Lighting Upgrades	$ 500,000	18.7
55+ Community Centre	Envelope Upgrades	N/A	18.7
55+ Community Centre	HVAC Upgrades	N/A	18.7
55+ Community Centre	Replace natural gas boilers with ASHP	N/A	18.7
Community, Animal and Enforcement Building	Construction of New Net-Zero Facility to replace an existing facility	$15,876,500[3]	14.9[4]
Fire Hall #6	Construction of New Net-Zero Facility	$ 11,700,000[5]	N/A

3 Cost estimates represent the full construction cost of the new net-zero facility. These figures do not isolate or quantify the incremental cost of incorporating net-zero design elements relative to a conventional building construction.

4 GHG emissions savings are attributable to the decommissioning of the existing Animal and Enforcement Building and its replacement with a net-zero facility, resulting in the elimination of ongoing operational emissions.

5 Cost estimates represent the full construction cost of the new net-zero facility. These figures do not isolate or quantify the incremental cost of incorporating net-zero design elements relative to a conventional building construction.

7 Pathways Projects	Conduct ASHRAE Level 3 Energy Audits to develop a strategy/pathway to GHG emissions reductions	$ 350,000	N/A
Total		**$34,974,500**	**510.6**

2.4 Implementation of Renewable Energy

This section outlines the Town's progress to date and planned next steps related to the implementation of renewable energy systems across municipal facilities.

2.4.1 Current Renewable Energy Systems

The Town currently has one operational renewable energy system: a rooftop solar photovoltaic (PV) array located at the Civic Recreation Complex.

In 2025, the Civic Recreation Complex solar PV array generated 11,085 kWh of electricity, generating $6,851 in revenue through the Town's net-metering arrangement[6]. This locally generated renewable energy supports the Town's corporate GHG reduction goals while also providing long-term operational cost savings.

Figure 9 illustrates the annual solar electricity generation at the Civic Recreation Complex between 2021 and 2025. The solar PV array was installed partway through 2021; as a result, electricity generation for that year reflects a partial year of operation, which accounts for the lower annual generation shown.

[6] This array was installed as part of the microFIT program that operates under a 20-year contract with the Independent Electricity System Operator (IESO). This program takes the electricity generated by these panels and measures it by a separate meter in order to sell it back to the grid at guaranteed, predetermined rates.

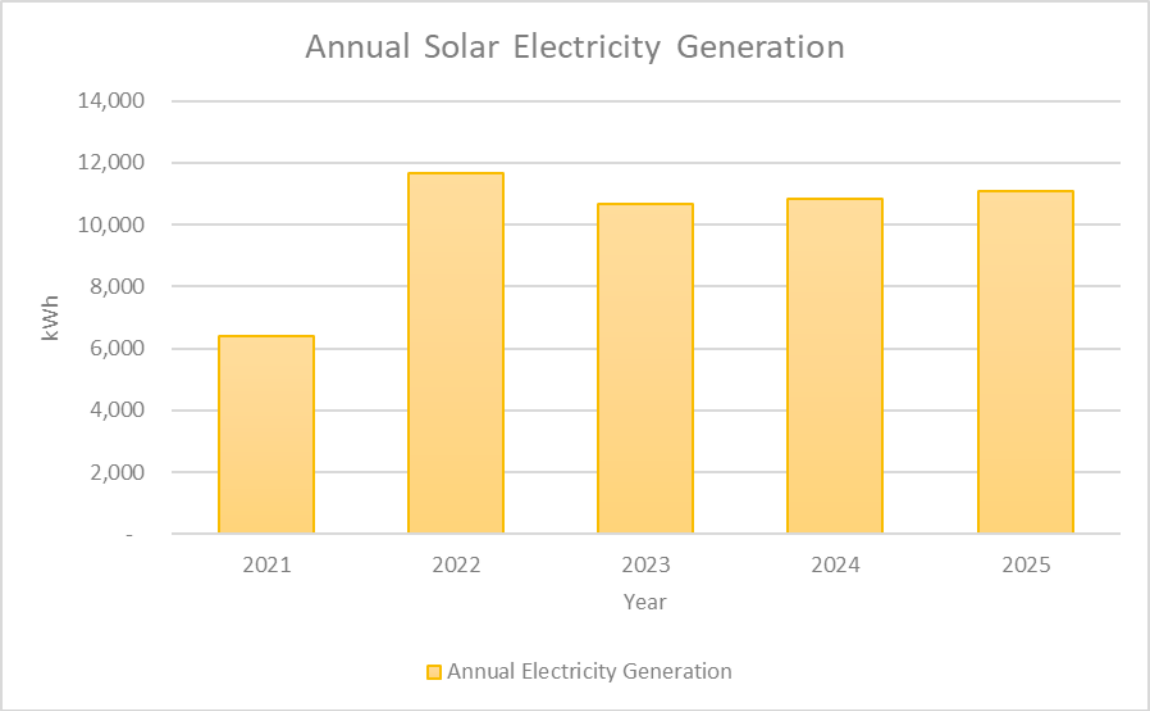

Figure 9. Civic Recreation Complex Annual Solar Electricity Generation (2021-2025)

2.4.2 Future Renewable Energy Systems

The Fieldgate Sports Complex, anticipated to be completed in 2026, will incorporate a 300 kW rooftop solar photovoltaic (PV) array installed on the arena roofs, with the potential for future expansion on the pool roof. Once operational, the solar PV system is expected to generate approximately 340,000 kWh of electricity annually, significantly increasing the Town's onsite renewable electricity generation and reducing reliance on grid supplied power.

In addition to solar generation, the Fieldgate Sports Complex will be serviced by a geothermal district energy system to meet the facility's heating and cooling requirements. Together, these systems will reduce the facility's operational GHG emissions and support the Town's broader transition toward low carbon municipal buildings.

Whitby Fire Hall #5 (Fire Headquarters) will also be evaluated for a potential rooftop solar PV installation. This evaluation will be undertaken following completion of a roof condition assessment to confirm the structure's ability to safely support a solar array and to determine overall technical feasibility.

2.5 Submetering

Submetering has been installed at the Iroquois Park Sports Centre, McKinney Centre, and Whitby Municipal Building (Town Hall) to enable real time monitoring of electricity

consumption at the equipment and system level, providing detailed insight into energy use patterns and consumption trends at each facility.

As new facilities are developed, submetering will be incorporated at the design stage where feasible. The Fieldgate Sports Complex, currently under construction, will include submetering to support performance monitoring from the outset. These submeters will be used to track energy consumption, assess the effectiveness of energy efficiency initiatives, and support ongoing energy management across corporate facilities.

3.0 Fleet Electrification

In alignment with the direction set out in Zero Carbon Whitby, the Town is advancing the gradual electrification of its corporate fleet as a key pathway to reducing transportation related GHG emissions. Corporate fleet emissions represent a significant and ongoing source of emissions within municipal operations and transitioning to low and zero emission vehicles is a critical component of achieving both the Town's 2025 and 2030 climate targets.

3.1 Current State (2025)

As of 2025, the Town's corporate fleet includes 16 plug-in hybrid electric vehicles (PHEVs), supported by 24 electric vehicle (EV) charging stations located at corporate facilities. Of these charging stations, nine are dedicated to corporate fleet use, including one Level 3 DC fast charger, which enables faster charging and improves operational flexibility for fleet vehicles with higher utilization requirements.

Throughout 2025, corporate PHEVs utilized EV charging infrastructure 1,099 times, consuming 15,515 kWh of electricity. This shift from gasoline to electricity resulted in an estimated 16.2 tCO_2e in avoided emissions, representing emissions that would have been generated had these vehicles continued to rely on conventional fuel. These avoided emissions are reported separately from facility-based emissions reductions and fleet growth impacts because they reflect emissions avoided by charging vehicles with electricity instead of using gasoline, rather than a reduction in emissions from existing Town operations already included in the corporate GHG inventory. This distinction supports transparent and accurate reporting while demonstrating the tangible climate benefits of fleet electrification and its role in maintaining operational reliability.

Figure 10 illustrates the monthly greenhouse gas (GHG) emissions avoided through corporate fleet electrification in 2025.

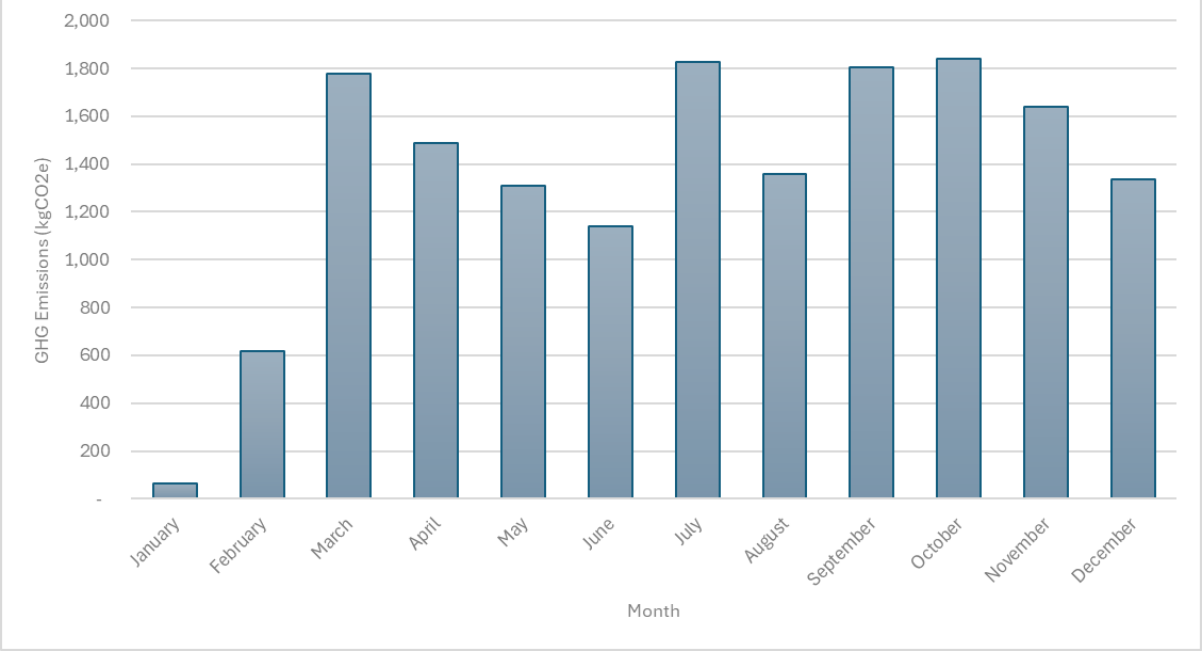

Figure 10. Fleet Vehicles Monthly GHG Emissions Avoidance (2025)

3.2 Future State (2026 to 2031)

Consistent with Zero Carbon Whitby, it is the Town's goal that new light duty- fleet[7] vehicle purchases be electric wherever operationally feasible[8]. As part of this transition, in 2026 the Town plans to purchase two electric pickup trucks.

Planning for the Transition: Fleet Electrification Study (2026)

To support a scalable and well sequenced transition, the Town will initiate a Fleet Electrification Study in 2026. This study will provide a comprehensive roadmap for transitioning the corporate fleet over time and will assess:

- Fleet composition and vehicle replacement cycles
- Suitability of electric vehicles across different operational needs
- Charging infrastructure requirements, including location, capacity, and phasing
- Electrical capacity and grid readiness at corporate facilities
- Capital and operating cost implications
- Implementation timelines aligned with emissions reduction targets

[7] Light-duty fleet vehicles are defined as passenger vehicles, vans, SUVs, and light-duty pickup trucks with a gross vehicle weight rating of 3,856 kg (8,500 lbs) or less, consistent with Transport Canada classifications.

[8] An example where electric is not suitable is a pickup truck equipped with a front-mounted snow plow because the added weight, high energy demand, cold-weather operation, and extended duty cycles significantly reduce driving range and can exceed current electric vehicle performance and reliability limits for critical winter operations.

The study will ensure that fleet electrification is planned in a way that is operationally feasible, cost effective, and supported by adequate infrastructure, while minimizing service disruptions and maximizing emissions reductions.

Together, the Town's existing fleet electrification efforts, planned vehicle purchases, and forthcoming Fleet Electrification Study establish a strong foundation for accelerating emissions reductions from corporate transportation. This phased and evidence based approach will support continued progress toward the Town's 2030 target of a 40% reduction in corporate GHG emissions, while ensuring that fleet operations remain reliable and responsive to service needs.

4.0 Conclusion

The Town remains firmly committed to improving energy efficiency and reducing GHG emissions in alignment with its declared Climate Emergency and the long-term direction set out in Zero Carbon Whitby. This ECDM Plan provides a transparent and structured five year framework (2026–2031) that builds on the progress achieved to date while strengthening the technical, organizational, and financial foundations required to deliver deeper emissions reductions in the years ahead.

As demonstrated throughout this Plan, the Town has made measurable progress through the implementation of completed projects across municipal facilities and fleet operations, delivering real and verifiable emissions reductions. At the same time, the Town has deliberately invested in planning, analysis, and feasibility work, recognizing that achieving transformational reductions requires more than incremental improvements. These foundational efforts, including deep energy audits, pathway studies, fleet electrification planning, and renewable energy integration, are essential to unlocking the scale of change required to meet the Town's 2030 target of a 40% reduction and its net-zero-by-2045 goal.

A defining strength of the Town's approach is the integration of climate considerations into routine corporate decision making. Through carbon budgeting, lifecycle based analysis, and alignment with capital and operational planning, the Town ensures that energy and emissions impacts are considered alongside service delivery, asset management, and financial sustainability. This approach fosters accountability, transparency, and consistency across departments, while enabling staff to identify and advance low carbon solutions as part of their day-to-day work.

The 2026–2031 ECDM period represents a critical transition from early implementation and enabling work toward the delivery of larger scale retrofits, electrification, and net zero new construction. Planned investments in renewable energy systems, submetering, fleet electrification, and deep energy retrofits position the Town to accelerate emissions reductions while managing growth and maintaining reliable municipal services.

Energy conservation and decarbonization are not onetime initiatives but ongoing organizational commitments. By embedding sustainability and climate considerations at every stage of planning, design, procurement, and operations, the Town continues to foster a culture of collaboration and shared responsibility across departments and with

external partners. This whole organization approach is essential to navigating uncertainty, adapting to evolving technologies and policies, and sustaining momentum over the long term.

Together, Zero Carbon Whitby and this ECDM Plan ensure continuity in corporate climate direction while providing a clear and compliant framework to guide action over the next five years. Through disciplined planning, strategic investment, and continued collaboration, the Town is well positioned to advance toward its zero carbon future while delivering lasting value for residents, staff, and the community.