

Clarington



2025 - 2029

Conservation and Demand Management Plan

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INTRODUCTION

The Municipality of Clarington is a community that forms the eastern boundary of the Greater Toronto Area ("GTA") and is one of eight municipalities located in Durham Region. It is a large Municipality covering an area of approximately 612 square kilometres, with a growing population of over one hundred and ten thousand people. The Municipality has a diverse building inventory, ranging from extensive recreation facilities to aging community halls.

The purpose of this report is to provide an update to the Municipality of Clarington's 2019-2024 Conservation and Demand Management (CDM) Plan and to meet the legislative requirements under O. Reg 25/23: Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans. The Municipality of Clarington is committed to reducing greenhouse gas (GHG) emissions from corporate operations and mitigating our environmental impact.

Over the past five years, the Municipality of Clarington has implemented several of the conservation measures proposed in the 2019-2024 CDM Plan. These measures have reduced energy consumption across our facilities. Using energy tracking software, the Municipality is better able to monitor the impact of the implemented measures and other energy conservation actions.

The Municipality of Clarington is concurrently working on a GHG Reduction Pathway Feasibility Study, which is partially funded by the Federation of Canadian Municipalities' Green Municipal Fund. The study's purpose is to identify potential energy and carbon reduction measures and capital investment timing to supplement the 2025-2029 CDM Plan and plan future conservation initiatives.

Senior Management approved the 2025-2029 CDM Plan on June 20, 2024. Hard copies are available at the Municipal Administrative Centre (MAC) at 40 Temperance Street, Bowmanville. A copy will also be available on the Municipality's website.

GOALS AND OBJECTIVES

The goal of the 2025-2029 CDM Plan is to outline the energy conservation activities for the next five years based on the preliminary findings of the GHG Reduction Pathway Feasibility Study ("the Study").

The Study will provide various GHG reduction pathway scenarios for each facility, including:

- A minimum performance scenario which includes:
 - o A 10-year roadmap that achieves a minimum of 50% reduction of on-site GHG emissions compared against current performance.
 - o A 20-year roadmap that achieves a minimum of 80% reduction of on-site GHG emissions compared to current performance

- A short-term deep retrofit scenario that will achieve an 80% reduction of on-site GHG emissions within the first five years.

ALIGNMENT WITH CORPORATE PLANS

Climate Emergency Declaration

In March 2020, the Municipality of Clarington declared a climate emergency. By declaring a climate emergency, the Municipality acknowledges its role in responding to the impacts of climate change and highlights its commitment to reducing GHG emissions.

Clarington Corporate Climate Action Plan

In March 2021, Council endorsed the Clarington Corporate Climate Action Plan (CCAP) to respond to the risks posed by climate change and establish GHG reduction targets. The CCAP sets targets to reduce GHG emissions corporate-wide by 35% by 2030 and to achieve net zero by 2050, based on 2018 baseline data.

The CCAP includes 116 action items to respond to the risks posed by a changing climate guided by seven goals: Reduce corporate GHG emissions, maintain public and workplace health and safety, minimize risks to buildings and properties, protect ecosystem diversity, minimize disruptions to corporate operations and services, and build community resilience.

Strategic Plan 2024-2027

In December 2023, Council approved Clarington's Strategic Plan 2024-2027. The Strategic Plan is a guiding document that outlines the Municipality's priorities over the next four years. It is organized into three pillars: Lead, Connect, and Grow Responsibly. The third pillar, Grow Responsibly, further enforces the Municipality's goal of being a leader in anticipating and addressing the impacts of climate change.

SITE-WIDE SUMMARY

The site-wide energy use has been calculated and is displayed in Table 1 below. The table illustrates the changes in emissions from the beginning to the end of the previous CDM plan. Due to the COVID-19 pandemic and the resulting facility closures, 2020, 2021, and 2022 cannot be used to compare energy usage or GHG emissions.

Table 1 Summary of site-wide energy consumption over the period of 2018 to 2023.

Fuel Type	2018	2019	2020	2021	2022	2023
Electricity (kWh)	10,356,749	9,788,983	7,656,086	3,482,187	9,238,182	9,825,403
Natural Gas (m3)	1,405,959	1,089,094	1,089,094	1,122,372	1,210,720	1,214,150
Propane (L)	28,526	-	-	-	-	22,743

Fuel Type	2018	2019	2020	2021	2022	2023
Fuel Oil (L)	8,947	-	-	-	-	-

BUILDING PROFILES

This section focuses on specific facilities and provides detailed information on their type of operation, annual energy use, and annual GHG emissions. Like the Site-Wide Summary, the years when facilities were closed due to the COVID-19 pandemic were omitted.

This section also provides an update on the measures identified in the 2019-2024 CDM Plan and newly proposed measures, including estimated cost, annual electricity and/or natural gas savings, and the simple payback in years.

ALAN STRIKE AQUATIC AND SQUASH CENTRE

Address: 49 Liberty Street, Bowmanville, ON

Gross Area (sq. ft): 16,070

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 102

Energy Use and GHG Emissions

Table 2 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Alan Strike Aquatic and Squash Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	431,101	16.4	336,333.1	12.8
Natural Gas (m ³)	159,736	302.1	123,078.0	232.7

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan: One measure was deferred due to a planned Building Condition Assessment, and the other was deleted from the Plan due to incompatibility with the current system.

Table 3 Previous and proposed conservation measures for Alan Strike Aquatic and Squash Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Building Recommissioning	Natural Gas	\$10,000	6,467	2,396	2.9	Deferred
Pool Thermal Blanket	Electricity & Natural Gas	\$15,000	-	5,325	8.6	Deleted
Air Curtains	Electricity & Natural Gas	\$4,000	TBA	1,000	18	Deferred
Hydronic Heating Additive	Natural Gas	\$5,000	-	8,485	3.1	Proposed
Low Flow Water Fixtures	Natural Gas	\$30,000	-	1,853	32.6	Proposed

ANIMAL SERVICES BUILDING

Address: 33 Lake Road, Bowmanville, ON

Gross Area (sq. ft): 5,834

Type of Operation: Administrative offices and related facilities

Average Operational Hours per Week: 47

Energy Use and GHG Emissions

Table 4 Comparison of 2018 and 2023 Energy Use and GHG Emissions of the Animal Services Building.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	85,181	3.2	68,720.0	2.6
Natural Gas (m³)	24,644	46.6	27,990.0	52.9

Previous and Proposed Energy Conservation and Demand Management Measures

Table 5 Previous and proposed conservation measures for the Animal Services Building.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
HVAC Scheduling/Setback	Electricity & Natural Gas	\$1,500	2,616	1,506	2.3	Complete
LED Lighting Upgrades	Electricity	\$15,000	12,532	-	6.4	Proposed

BOWMANVILLE INDOOR SOCCER

Address: 2375 Baseline Road, Bowmanville, ON

Gross Area (sq. ft): 28,482

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 112

Energy Use and GHG Emissions

Table 6 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Bowmanville Indoor Soccer.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	165,234	6.3	178,240.1	6.8
Natural Gas (m³)	60,510	114.4	50,593.0	95.7

Previous and Proposed Energy Conservation and Demand Management Measures

The Bowmanville Indoor Soccer Centre is undergoing a major renovation. As a result, the measures included in the 2019-2024 CDM Plan have been deferred, and no newly proposed measures have been identified as part of this plan. Energy-efficient measures will be implemented during construction.

Table 7 Previous and proposed conservation measures for Bowmanville Indoor Soccer.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Upgrade Metal Halide Lamps (Soccer Pitches)	Electricity	\$20,790	15,941	-	10.1	Deferred
Upgrade High-Pressure Sodium Lights (Parking Lot)	Electricity	\$10,620	6,091	-	13.5	Deferred
HVAC Scheduling/Setback	Electricity & Natural Gas	\$15,000	6,157	4,631	8.2	Deferred
Install Air Curtains	Electricity & Natural Gas	\$2,000	TBA	500	17.9	Deferred

BUILDING & PROPERTY SERVICES BUILDING

Address: 33 Lake Road, Bowmanville, ON

Gross Area (sq. ft): 1,300

Type of Operation: Storage facilities where equipment or vehicles are maintained, repaired or stored

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 8 Comparison of 2018 and 2023 Energy Use and GHG Emissions of the Building and Property Services Building.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	4,518	0.2	5,826.0	0.2
Natural Gas (m³)	2,574	4.9	2,853.0	5.4

Previous and Proposed Energy Conservation and Demand Management Measures

The measures for this building have been included under the Animal Services Building profile.

COMMUNITY RESOURCE CENTRE

Address: 132 Church Street, Bowmanville, ON

Gross Area (sq. ft): 15,000

Type of Operation: Lease to John Howard Society Youth Centre and meeting space

Average Operational Hours per Week: 50

Energy Use and GHG Emissions

Table 9 Comparison of 2018 and 2023 Energy Use and GHG Emissions of the Community Resource Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	90,533	3.4	5,826.0	0.2
Natural Gas (m³)	20,587	38.9	2,853.0	5.4

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2023 CDM Plan. HVAC Scheduling/Setback was deferred due to a planned system replacement in 2027.

Table 10 Previous and proposed conservation measures for the Community Resource Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
HVAC Scheduling/Setback	Electricity & Natural Gas	\$5,000	4,074	2,059	5.3	Deferred
LED Upgrade - Fixture	Electricity	\$12,000	3,009	-	6.0	Proposed

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
Hydronic Heating Additive	Natural Gas	\$7,300	-	1,557	6.0	Proposed

COURTICE COMMUNITY COMPLEX

Address: 2950 Courtice Road, Courtice, ON

Gross Area (sq. ft): 53,000

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 106

Energy Use and GHG Emissions

Table 11 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Courtice Community Complex.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	1,232,700	46.8	838,785.3	31.9
Natural Gas (m³)	73,531	139.0	82,309.0	155.6

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan - the Pool Liquid Thermal Blanket was deleted from the Plan due to incompatibility with the current system. Building Recommissioning was deferred due to a planned Building Condition Assessment and the Air Curtains installation due to budget restrictions.

Table 12 Previous and proposed conservation measures for Courtice Community Complex.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
Lighting Retrofits	Electricity	\$53,000	126,531	-	3.4	Complete
Lighting Controls	Electricity	\$14,000	24,600	-	4.6	Complete
Pool Liquid Thermal Blanket	Natural Gas	\$5,000	-	16,236	4.2	Deleted
Pump Variable Frequency Drive (VFD)	Electricity	\$25,000	3,000	-	6.8	Complete
Building Recommissioning	Electricity & Natural Gas	\$15,000	30,818	1,838	3.5	Deferred
Install Air Curtains	Natural Gas	\$4,000	-	1,000	18.3	Deferred
Hydronic Heating Additive	Natural Gas	\$7,300	-	2,309	4.0	Proposed

DARLINGTON SPORTS CENTRE

Address: 2276 Taunton Road, Hampton, ON

Gross Area (sq. ft): 32,900

Type of Operation: Indoor Ice Rink

Average Operational Hours per Week: 102

Energy Use and GHG Emissions

Table 13 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Darlington Sports Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	461,254	17.5	597,457.3	22.7
Natural Gas (m³)	63,473	120.0	52,807.0	99.9

Previous and Proposed Energy Conservation and Demand Management Measures

Table 14 Previous and proposed conservation measures for Darlington Sports Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Retrofits	Electricity	\$98,700	16,000	-	47.7	Complete
LED Upgrade – Fixtures	Electricity	\$15,500	9,928	-	7.2	Proposed
BAS Install	Electricity and Natural Gas	\$33,000	47,229	5,343	2.6	Proposed

DIANE HAMRE RECREATION COMPLEX

Address: 1780 Rudell Road, Newcastle, ON

Gross Area (sq. ft): 61,900

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 101

Energy Use and GHG Emissions

Table 15 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Diane Hamre Recreation Complex.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	1,445,267	54.9	1,468,589.0	55.8
Natural Gas (m³)	239,775	453.4	193,711.0	366.3

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan - the Waste Heat Recovery System was deleted due to a planned replacement of the filtration system, and the Pool Liquid Thermal Blanket was deleted due to incompatibility with the current system. The Air Curtain installation has been deferred due to budget restrictions.

Table 16 Previous and proposed conservation measures for Diane Hamre Recreation Complex.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Pool Liquid Thermal Blanket	Natural Gas	\$10,000	-	11,989	3.8	Deleted
Waste Heat Recovery on Filtration System	Natural Gas	\$20,000	-	3,000	30.5	Deleted
Install Air Curtains	Electricity & Natural Gas	\$4,000	3,613	599	0	Deferred
LED Upgrade - Fixtures	Electricity	\$21,000	16,910	-	6.1	Proposed
Hydronic Heating Additive	Natural Gas	\$14,900	-	11,626	2.5	Proposed

FIRE STATION #1

Address: 2430 Highway 2, Bowmanville, ON

Gross Area (sq. ft): 12,000

Type of Operation: Fire Station and associated offices and facilities

Average Operational Hours per Week: 168

Energy Use and GHG Emissions

Table 17 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Fire Station #1.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	165,496	6.3	128,167.4	4.9
Natural Gas (m³)	31,511	59.6	22,934.0	43.4

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan. The HVAC Scheduling/Setback was deferred due to a planned renovation. Measures will be implemented as part of the renovation.

Table 18 Previous and proposed conservation measures for Fire Station #1.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Retrofits	Electricity	\$7,200	8,600	-	6.8	Ongoing
HVAC Scheduling/ Setback	Electricity & Natural Gas	\$2,000	2,782	1,286	3.2	Deferred
LED Upgrade - Fixtures	Electricity	\$10,000	24,882	-	2.0	Proposed
Low Flow Water Fixtures	Natural Gas	\$16,000	-	483	11.0	Proposed

FIRE STATION #2

Address: 3333 Highway 2, Newcastle, ON

Gross Area (sq. ft): 12,486

Type of Operation: Fire Station and associated offices and facilities

Average Operational Hours per Week: 168

Energy Use and GHG Emissions

Table 19 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Fire Station #2.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	274,872	10.4	230,580.0	8.8
Natural Gas (m³)	62,876	118.9	28,357.0	53.6

Previous and Proposed Energy Conservation and Demand Management Measures

Table 20 Previous and proposed conservation measures for Fire Station #2.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Retrofits	Electricity	\$37,458	27,487	-	11.0	Planned
HVAC Scheduling/Setback	Electricity & Natural Gas	\$2,000	9,162	2,704	1.2	Planned
NG Pulse Meter	Electricity & Natural Gas	N/A	TBA	TBA	0	Deleted
LED Upgrade - Fixtures	Electricity	\$11,500	26,659	-	1.1	Proposed
Hydronic Heating Additive	Natural Gas	\$1,500	-	403	4.2	Proposed

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
BAS Install	Electricity and Natural Gas	\$32,500	8,241	1,987	6.3	Proposed
Low Flow Water Fixtures	Electricity	\$14,250	1,694	-	14.8	Proposed

FIRE STATION #3

Address: 5708 Main Street, Orono, ON

Gross Area (sq. ft): 6,762

Type of Operation: Fire Station and associated offices and facilities

Average Operational Hours per Week: 168

Energy Use and GHG Emissions

Table 21 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Fire Station #3.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	91,674	3.5	29,058.1	1.1
Natural Gas (m³)	-	-	6,744.0	12.8

Previous and Proposed Energy Conservation and Demand Management Measures

Table 22 Previous and proposed conservation measures for Fire Station #3.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
Programmable Thermostat	Electricity	\$750	5,348	-	0.6	Complete
Replace Electric Boiler	Electricity & Natural Gas	\$65,000	44,564	(6,171)	8.1	Complete
LED Upgrade - Fixtures	Electricity	\$13,500	4,744	-	12.2	Proposed
LED Upgrade - Controls	Electricity	\$15,250	5,349	-	12.2	Proposed
Hydronic Heating Additive	Natural Gas	\$3,200	-	618	7.9	Proposed

FIRE STATION #4

Address: 2611 Trulls Road, Courtice, ON

Gross Area (sq. ft): 9,000

Type of Operation: Fire Station and associated offices and facilities

Average Operational Hours per Week: 168

Energy Use and GHG Emissions

Table 23 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Fire Station #4.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	175,175	6.7	137,845.8	5.2
Natural Gas (m ³)	21,337	40.3	16,655.0	31.5

Previous and Proposed Energy Conservation and Demand Management Measures

Table 24 Previous and proposed conservation measures for Fire Station #4.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Condensing Unit Heater Upgrade	Natural Gas	\$11,000	-	215	10.2	Proposed
Low Flow Water Fixtures	Natural Gas	\$14,200	-	2,900	0.9	Proposed

FIRE STATION #5

Address: 2354 Concession Road 8, Haydon, ON

Gross Area (sq. ft): 4,211

Type of Operation: Fire Station and associated offices and facilities

Average Operational Hours per Week: 168

Energy Use and GHG Emissions

Table 25 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Fire Station #5.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	16,344	0.6	14,491.3	0.6
Natural Gas (m ³)	13,727	26.0	-	-
Propane (L)	-	-	3,765.9	5.8

Previous and Proposed Energy Conservation and Demand Management Measures

Table 26 Previous and proposed conservation measures for Fire Station #5.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
LED Upgrade - Fixtures	Electricity	\$7,500	463	-	35.7	Proposed
LED Upgrade - Controls	Electricity	\$8,900	613	-	32.9	Proposed
Low Flow Water Fixtures	Electricity	\$5,100	1,124	-	14.1	Proposed

GARNET B. RICKARD RECREATION COMPLEX

Address: 2440 Highway 2, Bowmanville, ON

Gross Area (sq. ft): 88,586

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 126

Energy Use and GHG Emissions

Table 27 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Garnet B Rickard Recreation Complex.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	1,536,433	58.4	179,942	340.3
Natural Gas (m³)	1,593,761.4	60.6	174,182.0	329.4

Previous and Proposed Energy Conservation and Demand Management Measures

Table 28 Previous and proposed conservation measures for Garnet B Rickard Recreation Complex.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m³)	Simple Payback (years)	Status
Rink Lighting Upgrade	Electricity	\$57,800	73,000	-	6.2	Planned
Install Air Curtains	Electricity & Natural Gas	\$20,000	3,841	3,599	18.3	Complete
Lighting Retrofits	Electricity	\$14,450	18,250	-	6.4	Planned
Hydronic Heating Additive	Natural Gas	\$2,600	-	3,786	1.3	Proposed

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
VFD(s) - Brine Pumps	Electricity	\$33,500	24,538	-	8.0	Proposed

HAMPTON HALL

Address: 5360 Old Scugog Road, Hampton, ON

Gross Area (sq. ft): 3,059

Type of Operation: Community Centre

Average Operational Hours per Week: 20

Energy Use and GHG Emissions

Table 29 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Hampton Hall.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	17,961	0.7	14,786.7	0.6
Natural Gas (m³)	7,823	14.8	8,076.0	15.3

Previous and Proposed Energy Conservation and Demand Management Measures

Table 30 Previous and proposed conservation measures for Hampton Hall.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Retrofits	Electricity	\$9,177	1,769	-	41.8	Complete
LED Upgrade - Fixtures	Electricity	\$,900	863	-	23.7	Proposed
LED Upgrade - Controls	Electricity	\$9,900	1,065	-	23.9	Proposed
Low Flow Water Fixtures	Electricity	\$15,700	54	-	>50	Proposed
Programmable Thermostats	Natural Gas	\$850	-	376	4.4	Proposed
Hydronic Heating Additive	Natural Gas	\$1,500	-	618	4.9	Proposed

HAMPTON OPERATIONS DEPOT

Address: 2320 Taunton Road, Hampton, ON

Gross Area (sq. ft): 14,812

Type of Operation: Storage facilities where equipment or vehicles are maintained, repaired or stored

Average Operational Hours per Week: 37.5

Energy Use and GHG Emissions

Table 31 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Hampton Operations Depot.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	247,600	9.4	162,067.8	6.2
Natural Gas (m³)	24,567	46.5	24,358.0	46.1

Previous and Proposed Energy Conservation and Demand Management Measures

Table 32 Previous and proposed conservation measures for Hampton Operations Depot.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Upgrades	Electricity	\$22,642	15,456	-	12.0	Complete
LED Upgrade - Fixtures	Electricity	\$33,600	20,681	-	5.4	Proposed
LED Upgrade - Controls	Electricity	\$38,100	22,192	-	5.6	Proposed
Intelligent Parking Outlets	Electricity	\$5,000	672	-	18.7	Proposed
Programmable Thermostats	Natural Gas	\$8,300	-	1,101	10.9	Proposed

KENDAL COMMUNITY CENTRE

Address: 6742 Newtonville Road, Orono, ON

Gross Area (sq. ft): 9,495

Type of Operation: Community Centre

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 33 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Kendal Community Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	23,946	0.9	32,742.0	1.2
Fuel Oil (L)	8,947.0	24.5		

Previous and Proposed Energy Conservation and Demand Management Measures

Table 34 Previous and proposed conservation measures for Kendal Community Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual	Est. Annual	Simple Payback (years)	Status
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			Savings (kWh)	Savings (m ³)		
LED Upgrade - Fixtures and Controls	Electricity	\$22,652	15,161	-	6.6	Proposed
Piping Insulation - DHW	Electricity	\$693	6,512	-	1	Proposed

MUNICIPAL ADMINISTRATIVE CENTRE

Address: 40 Temperance Street, Bowmanville, ON

Gross Area (sq. ft): 88,000

Type of Operation: Administrative offices and related facilities, including municipal council chambers

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 35 Comparison of 2018 and 2023 Energy Use and GHG Emissions of the Municipal Administrative Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	1,199,920	45.6	1,187,950.2	45.1
Natural Gas (m³)	111,071	210.0	82,406.0	155.8

Previous and Proposed Energy Conservation and Demand Management Measures

Table 36 Previous and proposed conservation measures for the Municipal Administrative Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
LED Upgrade - Fixtures and Controls	Electricity	\$80,000	56,694	-	5.5	Ongoing
Hydronic Heating Additive	Natural Gas	\$15,500		6,900	3.2	Proposed

NEWCASTLE BRANCH LIBRARY

Address: 150 King Avenue East, Newcastle, ON

Gross Area (sq. ft): 9,710

Type of Operation: Library

Average Operational Hours per Week: 60

Energy Use and GHG Emissions

Table 37 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Newcastle Branch Library.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	186,241	7.1	184,800.0	7.0
Natural Gas (m³)	16,871	31.9	10,798.0	20.4

Previous and Proposed Energy Conservation and Demand Management Measures

Table 38 Previous and proposed conservation measures for Newcastle Branch Library.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
HVAC Scheduling/Setback	Electricity & Natural Gas	\$10,000	6,208	1,350	9.1	Complete
LED Upgrade - Fixture	Electricity	\$32,250	56,412	-	3.0	Proposed

ORONO LIBRARY

Address: 127 Church Street, Orono, ON

Gross Area (sq. ft): 3,958

Type of Operation: Library

Average Operational Hours per Week: 36

Energy Use and GHG Emissions

Table 39 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Orono Library.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	13,805	0.5	14,825.6	0.6
Natural Gas (m³)	18,677	35.3	8,505.0	16.1

Previous and Proposed Energy Conservation and Demand Management Measures

Table 40 Previous and proposed conservation measures for Orono Library.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
HVAC Scheduling/Setback	Natural Gas	\$750	-	587	5.9	Complete
Insulate Hot Water Piping	Natural Gas	\$1,180	-	580	10.3	Proposed

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
LED Upgrade - Fixture	Electricity	\$8,015	2,624	-	16.8	Proposed
LED Upgrade - Controls	Electricity	\$10,350	3,007	-	18.4	Proposed
Hydronic Heating Additive	Natural Gas	\$2,700		430	9.9	Proposed

ORONO OPERATIONS DEPOT

Address: 13585 Taunton Road, Clarington, ON

Gross Area (sq. ft): 5,122

Type of Operation: Storage facilities where equipment or vehicles are maintained, repaired or stored

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 41 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Orono Operations Depot.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	55,240	2.1	51,960.0	2.0
Propane (L)	17,082	26.3	11,862	18.3

Previous and Proposed Energy Conservation and Demand Management Measures

Table 42 Previous and proposed conservation measures for Orono Operations Depot.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
LED Upgrade - Fixtures and Controls	Electricity	\$8,500	1,706	-	13.8	Proposed
Programmable Thermostats	Electricity	\$3,300	778	-	12.2	Proposed

SARAH JANE WILLIAMS HERITAGE CENTRE

Address: 62 Temperance Street, Bowmanville, ON

Gross Area (sq. ft): 12,392

Type of Operation: Cultural Facility

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 43 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Sarah Jane Williams Heritage Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	99,516	3.8	80,821.1	3.1
Natural Gas (m ³)	-	-	18,392.0	34.8

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan. Motion Sensor Lighting Controls were deferred until lighting retrofits can be completed.

Table 44 Previous and proposed conservation measures for Sarah Jane Williams Heritage Centre.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Motion Sensors Lighting Controls	Electricity	\$1,800	4,896	-	3.0	Deferred
Existing building commissioning (EBCx)	Electricity and Natural Gas	\$11,400	5,781	2,121	6.2	Proposed
Hydronic heating additive	Natural Gas	\$6,200	-	1,530	6.3	Proposed

SOUTH COURTICE ARENA

Address: 1595 Prestonvale Road, Courtice, ON

Gross Area (sq. ft): 77,000

Type of Operation: Indoor Recreation Facility

Average Operational Hours per Week: 126

Energy Use and GHG Emissions

Table 45 Comparison of 2018 and 2023 Energy Use and GHG Emissions of South Courtice Arena.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	2,219,040	84.3	2,268,402.0	86.2
Natural Gas (m ³)	269,460	509.5	248,580.0	470.1

Previous and Proposed Energy Conservation and Demand Management Measures

The following table highlights the status of the measures from the 2019-2024 CDM Plan. The Building Recommissioning was deferred due to a planned Building Condition Assessment, and the Lighting Retrofits were deferred due to budget restrictions.

Table 46 Previous and proposed conservation measures for South Courtice Arena.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Building Recommissioning	Electricity & Natural Gas	\$15,000	33,175	4,042	3.0	Deferred
Lighting Retrofits	Electricity	\$24,000	42,500	-	4.5	Deferred
Hydronic Heating Additive	Natural Gas	\$13,100	-	8,834	1.9	Proposed
VFD - Pumps	Electricity	\$23,100	30,534	-	3.1	Proposed

181 LIBERTY (FORMERLY TOURISM CENTRE)

Address: 181 Liberty Street S, Bowmanville, ON

Gross Area (sq. ft): 1,097

Type of Operation: Administrative offices and related facilities **Average**

Operational Hours per Week: 45

Energy Use and GHG Emissions

Table 47 Comparison of 2018 and 2023 Energy Use and GHG Emissions of 181 Liberty.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	20,574	0.8	6,921.0	0.3
Natural Gas (m³)	3,267	6.2	2,993.0	5.7

Previous and Proposed Energy Conservation and Demand Management Measures

Table 48 Previous and proposed conservation measures for 181 Liberty.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Programmable Thermostat	Electricity	\$460	288	-	13.1	Complete
Lighting Upgrades	Electricity	\$3,291	728	-	36.4	Complete
LED Upgrade - Fixture	Electricity	\$4,000	1,143		15.2	Proposed

VISUAL ARTS CENTRE

Address: 143 Simpson Avenue, Bowmanville, ON

Gross Area (sq. ft): 7,920

Type of Operation: Art Gallery

Average Operational Hours per Week: 51

Energy Use and GHG Emissions

Table 49 Comparison of 2018 and 2023 Energy Use and GHG Emissions of the Visual Arts Centre.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	55,006	2.1	32,749.0	1.2

Previous and Proposed Energy Conservation and Demand Management Measures

Table 50 Previous and proposed conservation measures for the Visual Arts Centre.

	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
Lighting Upgrades	Electricity	\$2,850	2,592	-	8.9	Complete
Window Upgrades	Electricity	\$9,600	1,079	647	8.1	Planned
LED Upgrade - Fixture	Electricity	\$6,500	2,930	-	11.1	Proposed
Existing building commissioning (EBCx)	Electricity and Natural Gas	\$7,300	2,186	1,289	5.6	Proposed
Piping insulation	Natural Gas	\$1,400	-	537	3.7	Proposed

YARD 42 DEPOT

Address: 178 Clarke Townline, Bowmanville, ON

Gross Area (sq. ft): 5,208

Type of Operation: Storage facilities where equipment or vehicles are maintained, repaired or stored

Average Operational Hours per Week: 40

Energy Use and GHG Emissions

Table 51 Comparison of 2018 and 2023 Energy Use and GHG Emissions of Yard 42 Depot.

	2018 Energy Use	2018 GHG Emissions (tCO _{2e})	2023 Energy Use	2023 GHG Emissions (tCO _{2e})
Electricity (kWh)	42,118	1.6	46,886.0	1.8
Propane (L)	11,444	17.6	7,115	10.9

Previous and Proposed Energy Conservation and Demand Management Measures

Table 52 Previous and proposed conservation measures for Yard 42 Depot.

Proposed Measure	Impacted Utility	Est. Cost	Est. Annual Savings (kWh)	Est. Annual Savings (m ³)	Simple Payback (years)	Status
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LED Upgrade - Fixture	Electricity	\$8,300	14,097	-	1.9	Proposed
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ORGANIZATIONAL CONSERVATION MEASURES

This Section examines the organizational conservation measures that have been completed and planned. Energy efficiency and conservation can be improved through various organizational efforts, such as policy and process standards, behavioral changes driven by education and awareness, as well as technological advancements with equipment and automation. Implementing these measures can lead to significant reductions in energy consumption, cost savings, and a smaller environmental footprint for the Municipality.

Completed Organizational Measures

- **Energy Software:** The Municipality has purchased a subscription for energy tracking and auditing software. The software allows the Municipality to input use and cost data from utility bills to better understand energy use and the impact of energy conservation measures at the building level and across the Municipality.
- **Green Fleet and Equipment Policy:** In December 2023, Council approved the Municipality's Green Fleet and Equipment Policy. The Policy is a required course of action to guide staff on how to proactively plan for and prioritize low or zero-emissions Fleet and Equipment purchases to reduce greenhouse gas (GHG) emissions in the Municipality.
- **Climate Reserve Funds:** As part of the 2024 Capital Budget, Council approved two new Reserve Funds related to climate action. The first is a Climate Action Plan Reserve Fund aimed at funding initiatives identified in the Corporate Climate Action Plan. The second is a Climate Resilience Reserve Fund which will provide a source of funding to respond to climate emergencies and to enhance the resilience of capital infrastructure. These Reserve Funds will help advance climate action in the Municipality.

Proposed/Ongoing Organizational Measures

- **Staff Education Sessions:** These sessions are aimed at educating and raising awareness on the Municipality's impact on climate change and ways to mitigate the impact as well as address the risks associated with a changing climate. The sessions also provide a mechanism for staff to engage and provide input on climate action initiatives. To date, two Staff Education Sessions have been held and were focused on Municipal buildings. Future session topics include sustainable procurement and transportation.
- **Sustainable Procurement Policy:** The Municipality is working on a Sustainable Procurement Policy to help guide the purchase of goods and services to ensure they are aligned with Municipal goals and values. The minimum guidelines will

ensure that energy efficiency and life cycle planning is incorporated into all purchasing decisions.

- **Sustainable and Resilient Design Guide (“S&R Design Guide”)**: This Guide will apply to all facility renovations, retrofits and expansions, as well as new construction. It considers not only GHG emission reductions, but also asset resilience, circular economy, water efficiency and quality, and ecology. By following the Guide, the Municipality further bolsters its commitment to the targets set out in the CCAP to be a net-zero corporation by 2050.

CONCLUSION

The Municipality of Clarington is committed to reducing its energy consumption and GHG emissions as demonstrated in the Corporate Climate Action Plan (CCAP) and the identified reduction targets. With the completion of the GHG Reduction Pathway Study, the Municipality will have a path forward to ensure targets from the CCAP are met and its impact on the environment is minimized. By prioritizing a healthy and resilient environment in the 2024-27 Strategic Plan, the Municipality continues to reinforce its dedication to advancing climate action in Clarington for both the corporation and the community.