



EDWARDSBURGH CARDINAL

The Township of Edwardsburgh Cardinal

ENERGY CONSERVATION AND DEMAND

MANAGEMENT PLAN

2024 – 2029

Township of Edwardsburgh Cardinal

Subject: Energy Conservation and Demand Management Plan 2024 – 2029

Type: Administrative

Authority: Manager of Recreation and Facilities

Effective Date: July 1st, 2024

Table of Contents

1	Overview	3
2	Purpose	3
3	Background.....	3
4	Goals and Objectives.....	4
4.1	Energy Efficiency, Conservation and Cost Recovery	4
4.2	Energy Awareness and Culture.....	4
4.3	Provincial Policy.....	4
4.4	Reduction Target	4
5	Energy Consumption and Emissions	4
6	Future Energy Conservation Measures.....	5
7	Incentive Funding.....	5
8	Asset Management	6
9	Summary	6
	Appendix A: Energy Consumption and Emissions Summary (2023).....	7
	Appendix B: Completed Energy Consumption Projects from previous 2019-23 CDM Plan	8
	Appendix C: Proposed Energy Conservation Measures for 2024-2029.....	11
	Appendix D: Required Facilities, O. Reg. 25/23	13

1 Overview

The Township of Edwardsburgh Cardinal's Energy Conservation Plan provides a brief background and summary of the requirements relating to Ontario Regulation 25/23 *Energy Conservation and Demand Management Plans*. Results from the completion of the Ministry of Energy's Energy Consumption Template are included as an energy consumption benchmark (Appendix A). In addition, completed energy reduction projects from the Township's previous energy plan (2019-2023) can be found in Appendix B, while a list of new energy reduction projects to implement over the next five years (2024-2029) can be found in Appendix C.

2 Purpose

The Energy Conservation and Demand Management Plan aims to provide a basis for the Township of Edwardsburgh Cardinal to implement improvements to its infrastructure and operations that reduce energy and water use, their associated costs, as well as environmental effects of the Township's activities.

3 Background

Ontario Regulation 25/23 was established to help municipalities better understand their energy usage, develop conservation plans to guide energy savings and demonstrate leadership in conservation.

The Township of Edwardsburgh Cardinal's Energy Conservation Plan was developed to meet the requirements of O. Reg 25/23. The purpose of this Plan is to develop projects to formally address energy management initiatives. The Township of Edwardsburgh Cardinal has been committed to energy conservation for many years in order to reduce energy consumption, decrease operating costs and to set an example for the community as to why conservation is important. It is the intention of the municipality to further develop the Energy Conservation Plan and enhance the municipality's commitments as projects develop through Council's approval and as the Township's aging infrastructure requires rehabilitation and/or replacement. Similar to the Township's previous 2019 Energy Conservation and Demand Management Plan, this five year plan is valid from 2024-2029, at which time a thorough review process will be required for a subsequent five year plan.

The Township of Edwardsburgh Cardinal has thirteen (13) facilities that are identified as reportable under O. Reg 25/23. These include water and wastewater facilities, recreation and administration facilities, parks and public works garages, as well as fire stations, just to name a few. A list of the required facilities that municipalities are to include in their annual energy consumption report can be found in Appendix D. The energy reduction projects found in Appendix C will be included in the annual Council budget discussions over the five-year term of this Plan in an attempt to reduce the municipality's energy consumption from the 2023 baseline values (Appendix A).

4 Goals and Objectives

4.1 Energy Efficiency, Conservation and Cost Recovery

- To improve energy efficiency within Township run facilities, reduce greenhouse gas emissions and energy consumption in day-to-day operations and extend the lifecycle of Township owned assets, where possible
- To maximize fiscal resources through direct and indirect energy cost avoidance and recovery
- To increase conservation knowledge and mindfulness among staff through education and utilizing best practices

4.2 Energy Awareness and Culture

- To demonstrate leadership and awareness within the Township of Edwardsburgh Cardinal community by creating a culture of conservation and sustainability
- To increase the comfort and safety of the staff and citizens of the community while using Township facilities

4.3 Provincial Policy

To support powering Ontario's Growth – Ontario's Plan for a Clean Energy Future To support reducing electricity demand through Ontario's energy efficiency programs, also known as Conservation and Demand Management (CDM)

4.4 Reduction Target

The Township of Edwardsburgh Cardinal is aiming to reduce energy consumption within its facilities by 1-5% between 2024 and the end of 2029. This target is based on past reductions achieved and planned measures with estimated energy reductions.

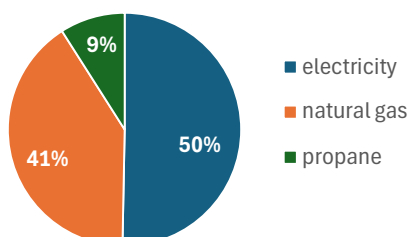
5 Energy Consumption and Emissions

The Township's energy consumption and emissions summary based on 2023 electricity, natural gas and oil/propane data, can be found in Appendix A - Energy Consumption and Emissions Summary (2023). A requirement of O. Reg 25/23 involves municipalities reporting electricity and natural gas consumption as well as emissions to the Ministry of Energy on an annual basis. A pie graph of the consumption for all facilities is shown below and the figures are a percentage of the number ¹Joules for each fuel type divided by the total of number Joules. Electricity

¹ A Joule is defined as Watt-second. A Watt is the amount of energy that an electrical device (such as a light) is burning per second that it's running, thus a 10W (LED) bulb is burns 10 Joules energy every second.

consumption in 2023 was 2,028,857 kWh. Natural gas and propane were 5,625,052 kBtus and 1,237,836 kBtus respectively.

Energy Use Breakdown
by Fuel Type 2023



Fuel Type in Gigajoules		
electricity	natural gas	propane
7,304	5,906	1,312

The completion of the energy consumption projects from the Township’s 2023 Energy Conservation and Demand Management Plan has built the foundation for successful energy management practices. The completed projects from the previous Energy Plan can be found in Appendix B.

6 Future Energy Conservation Measures

The implementation of proposed energy conservation measures throughout Township-owned infrastructure will continue to promote successful conservation practices. These proposed measures will support the Township’s target

Council will review the proposed energy conservation measures during annual budget discussions. These proposed measures may change as technology is improved, or the priorities of Council are altered.

7 Incentive Funding

To ensure that the Township of Edwardsburgh Cardinal will take advantage of all funding and grant opportunities related to energy efficient projects, the Town will liaise with representatives from local utility providers. Township staff and utility representatives are in a unique position to review current and future process improvements, program implementations and projects that can meet future funding requirements. As funding opportunities arise that are suitable for specific energy conservation projects, Township staff will report to Council and clearly outline the cost savings associated with a successful application.

8 Asset Management

Asset Management planning takes into consideration the potential impacts of climate change and any actions that may be required to address vulnerabilities that may be caused by climate change to the Township's infrastructure assets. This involves any adaptation opportunities that could arise from climate-driven vulnerabilities, as well as mitigation opportunities such as greenhouse gas emission reduction targets. In addition, mitigation approaches, such as reduced energy consumption, can be a significant decision driver when replacing new assets or rehabilitating existing assets.

The Township of Edwardsburgh Cardinal's contribution to climate change through greenhouse gas emissions will be mitigated in accordance with local reduction targets, financial capacity and stakeholder support. In addition, climate change will be considered as part of the Township's risk analysis within its asset management plan. Awareness of infrastructure risks will enable the municipality to balance the potential cost of climate change vulnerabilities with the cost of proactively reducing or eliminating these vulnerabilities before they occur.

9 Summary

The Township of Edwardsburgh Cardinal's Energy Conservation and Demand Management Plan will assist the Township in meeting energy related goals. These goals will need to be established annually through Council's approval of the municipality's budget. The Township of Edwardsburgh Cardinal is a large energy user and has significant energy expenditures. This Energy Conservation Plan can help reduce energy usage and costs by implementing effective energy reduction strategies, managing energy retrofits, monitoring and tracking the Township's energy usage and introducing energy awareness programs to staff.

Appendix A: Energy Consumption and Emissions Summary (2023)

Property Name	Year Ending	Address 1	Postal Code	Property GFA - Self-Reported (ft ²)	Weekly Operating Hours	Electricity Use - Grid Purchase (kWh)	Natural Gas Use (therms)	Propane Use (kBtu)	Total (Location-Based) GHG Emissions (Metric Tons CO ₂ e)
Ingredion Centre	2023-12-31	4050 Dishaw Street	K0E 1E0	36,155	168.0	835,482	17,685	-	117
Fire Station 2: Cardinal	2023-12-31	4035 Dishaw Street	K0E 1E0	11,194	151.0	18,766	833	-	5
Spencerville Arena	2023-12-31	22 Sloan Street	K0E 1E0	11,194	168.0	419,801	-	-	12
Wastewater Treatment Plant	2023-12-31	4000 John Street	K0E 1X0	10,000	168.0	426,152	25,885	-	149
Water Treatment Plant	2023-12-31	87 Legion Way	K0E 1E0	8,500	168.0	129,766	5,996	-	35
Public Works Depot: Dishaw	2023-12-31	4035 Dishaw Street	K0E 1E0	1,076	45.0	25,863	3,841	-	21
Spencerville Library	2023-12-31	5 Henderson Street	K0E1E0	3,487	14.0	7,703	-	95,647	6
Cardinal Library	2023-12-31	618 King's Highway 2	K0E 1E0	3,110	17.92	20,955	743	-	5
Public Works Depot: Pittston	2023-12-31	4145 Shanly Road	K0E 1E0	5,468	40.0	31,219	-	349,669	23
Town Hall	2023-12-31	18 Centre Street	K0E 1X0	4,316	45.0	50,103	-	412,349	28
Johnstown Community Centre	2023-12-31	24 Sutton Drive	K0E 1T1	2,604	7.0	19,652	1,268	-	7
Fire Station 1: Spencerville	2023-12-31	6055 County Road 21	K0E 1X0	8,525	161.0	43,396	-	380,172	26

Appendix B: Completed Energy Consumption Projects from previous 2019-23 CDM Plan

	Proposed Initiatives	Facility Address	Detailed Description	Costs (\$)	Annual Savings (\$)	Energy Savings (kWh)	Year Completed
1	Spencerville Arena New LED Arena Lights	22 Sloan Street Spencerville	Installed new LED lights to replace the induction Lighting that was in the facility but needed to be replaced because the induction lights were no longer available for replacement parts even though they'd only be in use for 8 years	30,000	4,200	19,000	2019
2	Spencerville Arena Replacement of Arena Dehumidifier	22 Sloan Street Spencerville	Replaced aging unit with a new unit	36,900	670	3,000	2021
3	Spencerville Arena	22 Sloan Street	Replace Chiller	99,000	6,700	30,000	2019
4	Ingredion Centre New LED arena lights	4050 Dishaw Street	Installed new LED lights to replace the induction Lighting that was in the facility but needed to be replaced because the induction lights	25,000	4,000	20,000	2019

	Proposed Initiatives	Facility Address	Detailed Description	Costs (\$)	Annual Savings (\$)	Energy Savings (kWh)	Year Completed
5	Townhall Installation of interior LED lighting	18 Centre Street	Installed new LED lighting	3,000	1,800	8,000	2021
6	Cardinal Firehall Installation of interior LED lighting	4035 Dishaw Street	Installed new LED lighting	4,000	1,600	8,000	2022
7	Spencerville Firehall Installation of interior LED lighting	County Road 44	Installation of interior LED lighting	4,000	220	1,000	2023
8	Install new Furnace	24 Sutton Drive, Johnstown	Install 2 variable Speed Airflow ECM units to replace aging equipment.	10,912	500 per unit	4,000	2024 Completed
9	Install new 3 ton A/C unit	24 Sutton drive Johnstown	Installed new 3 ton A/C unit to replace one of the old ones	6,575	330	1500	2024 Completed

	Proposed Initiatives	Facility Address	Detailed Description	Costs (\$)	Annual Savings (\$)	Energy Savings (kWh)	Year Completed
10	Upgrade Office lights	18 Centre Street Spencerville	Replaced T8 lights in the main office and back 3 offices with LED 2X4 banks system	3,078	N/A	N/A	2024 Completed
11	Overhaul 50 hp compressor	22 Sloan Street (Spencerville arena)	Over hauling of the 50 hp compressor based on hours of usage	12,309	N/A	N/A	2024 Completed

Appendix C: Proposed Energy Conservation Measures for 2024-2029

	Proposed Initiatives	Facility Address	Detailed Description	Annual Savings	Plan Year
1	Waste Water Installation of Interior LED Lighting	4000 John Street Cardinal	Replaced 14 interior light fixtures to LED. Interior replacement on going for 2024-2029	5000 kWh/year	2024-2029
2	Packaged Rooftop Unit	22 Sloan Street Spencerville	Investigate the retrofit of RTUs with the latest advanced control strategies can result in significant energy (up to 35%) and cost (up to 38%) savings from reductions fan, cooling and heating energy use ²	Up to 35% energy savings and 38% cost savings	2024-2029
3	Rooftop Solar PV	Johnston Community Centre	Investigate the feasibility of a rooftop system pending interconnection requirements from the local distribution company	10 to 12 year payback pending capacity (size) of system and structural requirements	2024-2029
2	Library Cardinal Library	5 Henderson Street 618 King Highway	Beyond 2029, consider a heating and cooling retrofit of library to replace existing furnace to reduce GHG emissions and to replace air	Up to \$2,000 can saved pending the size and application	>2029

² New Buildings Institute: https://newbuildings.org/wp-content/uploads/2015/11/NBI_RTUPrimer.pdf

	Proposed Initiatives	Facility Address	Detailed Description	Annual Savings	Plan Year
			conditioning units—if cost effective--with energy efficient heat pumps ³	of the heat pump	
3	Town Hall	18 Centre Street Spencerville	Beyond 2029, consider heating retrofit of Hall to replace existing furnace with heat pumps that can heat the building more efficiently with reduced GHG emissions. A heat pump is also capable of cooling the Hall as well, if required ³		>2029

³ <https://climateinstitute.ca/reports/heat-pumps-canada/> This document is for heat pumps used in homes and apartment, however, the use case is related to the size of the heat pump and these sizes are available for these building typologies.

Appendix D: Required Facilities, O. Reg. 25/23

Column 1 Item	Column 2 Type of public agency	Column 3 Operation
1.	Municipality	<ol style="list-style-type: none"> Administrative offices and related facilities, including municipal council chambers. Public libraries. Cultural facilities, indoor recreational facilities and community centres, including art galleries, performing art facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports. Ambulance stations and associated offices and facilities. Fire stations and associated offices and facilities. Police stations and associated offices and facilities. Storage facilities where equipment or vehicles are maintained, repaired or stored. Buildings or facilities related to the treatment of water or sewage. Parking garages.
2.	Municipal service board	<ol style="list-style-type: none"> Buildings or facilities related to the treatment of water or sewage.
3.	Post-secondary educational institution	<ol style="list-style-type: none"> Administrative offices and related facilities. Classrooms and related facilities. Laboratories. Student residences that have more than three storeys or a building area of more than 600 square metres. Student recreational facilities and athletic facilities. Libraries. Parking garages.
4.	School board	<ol style="list-style-type: none"> Schools. Administrative offices and related facilities. Parking garages.
5.	Public hospital	<ol style="list-style-type: none"> Facilities used for hospital purposes. Administrative offices and related facilities.