

The Corporation of the Town of Pelham Conservation and Demand Management Plan



2024

Table of Contents

Introduction and Background 4

Vision and Declaration of Commitment..... 4

Alignment With Existing Town of Pelham Plans and Policies 5

Goals and Objectives 5

Energy CDM Plan Development 6

Current Energy Consumption and GHG Emissions 7

2019 – 2024 Accomplishments 8

Street Lights Greenhouse Gas Reduction Since 2019..... 9

Looking Ahead to the Next Five Years 9

 Technical Measures 10

Confirmation 10

Appendix A1 11

Appendix A2..... 12

Appendix B1 13

CDM Facts and Figures..... 13

Town of Pelham

Conservation and Demand Management Plan

2024

Introduction and Background

Effective Municipal Energy Management hinges on seamlessly integrating energy-efficient practices into the daily operations of the organization. This involves regular evaluation of energy usage performance and the implementation of strategies to minimize energy wastage while maximizing efficiency. A size, a crucial aspect of any successful energy management scheme involves dedicating staff and resources to consistently enhance energy performance.

Ontario Regulation 507/18 (Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans) mandates broader public sector entities, including the Town of Pelham, to formulate a Conservation and Demand Management (CDM) plan, to be updated every 5 years.

In 2019, the Town of Pelham embraced its inaugural Conservation and Demand Management (CDM) Plan. This 2024 update incorporates fresh energy conservation objectives, existing and proposed conservation measures, findings from the 2019 CDM plan and modifications from the previous plan to align with the new objectives. This CDM Plan will also underpin asset management and annual budgeting processes.

Vision and Declaration of Commitment

The Town of Pelham is dedicated to diminishing its overall energy consumption and the associated greenhouse gas emissions by employing energy and resources judiciously, while maintaining efficient and effective levels of service for the community. Achieving this goal necessitates a concerted endeavor to enhance education, awareness, and comprehension of energy management in the community. This vision can be realized by embedding efficiencies into infrastructure and operations and fostering a culture of energy consciousness.

The Town of Pelham pledges to allocate the requisite resources to formulate and execute this Conservation and Demand Management Plan, as mandated by the *Electricity Act, 1998*, and *Ontario Regulation 507/18*. Council endorses the implementation of the plan while staff will ensure the Goals and Objectives presented herein are monitored and reported upon a continuous basis.

Alignment With Existing Town of Pelham Plans and Policies

The 2024 CDM was developed in conjunction with the following Plans and Policies:

- The Town of Pelham’s Strategic Plan (2023-2027)
- The corporate environmental climate adaptation action items; eco/energy building standards, Electrification of the Fleet and Charging stations, net zero facilities, tree and canopy reforestation, etc.
- The Fixed Asset and Management Plan detailing current and projected asset, cost effective decisions, including requirements and options
- The recreation and cultural master plan for parks, fields, trails and facilities

Goals and Objectives

The Town of Pelham aspires to:

- Foster a conservation-oriented culture within the community;
- Improve the energy efficiency of Town facilities;
- Implement methodologies to diminish energy usage, and mitigate greenhouse gas emissions;
- Enhance the dependability and efficiency of the Town’s equipment, while simultaneously reducing maintenance costs and time commitments.

The following Objectives will help achieve the goals:

- Analyze the 2019 Energy Conservation and Demand Management Plan and update analytics.
- Integrate energy management principles into the Town’s decision-making processes, spanning capital investments, operational planning, budget

allocation, procurement and project design.

- Ensure energy efficiency standards are met across all applicable municipal facilities, actively seeking out avenues for cost savings via energy procurement strategies and leveraging available resources and funding for energy initiatives.
- Annually monitor, analyze and report on energy consumption to ascertain the financial and environment returns on investment in energy-related projects.
- Enhance awareness amongst Council and staff regarding energy efficiency achievements, highlighting successful endeavors and advocacy best practices.
- Explore opportunities for energy generation, prioritizing economically viable options.

Energy CDM Plan Development

The 2019 Energy CDM Plan served as the starting point in the development of this update. This update identifies further measures and activities that aim to establish a comprehensive approach to energy management, implement best practices available in the municipal sector, and continually consult with internal staff and external stakeholders to achieve the Plan's objectives and goals.

Energy Reduction Targets

Original Plan

The 2019 CDM plan generated an absolute energy reduction target by compiling a list of energy efficiency and retrofit opportunities. This was a great initial reduction target, but was imperfect as the many of recommended projects were dated and changes in energy costs and technology impacted the feasibility of some of the initiatives. In addition, using an absolute energy reduction target is problematic when accounting for growth in services. Any additional energy required from expanding services (i.e. parks, recreation, etc.) must be factored into the original target, in effect adjusting the baseline for comparison.

The 2024 CDM Plan – The TRANSITION

Transitioning from an old plan to a new plan involves strategic shifts, adaptability, and forward-thinking. The first step was a thorough assessment of the existing plan, identifying strengths and weaknesses. Recognizing change drivers – whether technological advancements, market dynamics, or emerging trends – sets the stage for innovation. Clear objectives guide the transition, while flexibility ensures adaptability. Effective communication and stakeholder buy-in foster ownership. As the new plan unfolds, monitoring progress and adjusting course will become essential. In this dynamic process, the Town shall utilize intensity-based metrics, aligning energy management with growth and sustainability goals.

New Plan Going Forward

Due to the anticipated growth of services (anticipated between 2% - 3.5% levy growth during each of the next five years) within the Town, intensity-based conservation metrics are going to be generated to track energy management performance.

The intensity metric is calculated using the quantity of total energy input and size of the building (ekWh/m²).

In summary, the transition from absolute targets to intensity-base metrics ensures a more dynamic and adaptable approach to energy conservation.

Current Energy Consumption and GHG Emissions

Total energy consumption in Pelham includes the use of electricity and natural gas. The Town of Pelham's energy is supplied by a number of providers, including:

- Electricity from Niagara Peninsula Energy and Hydro One
- Propane, oil and diesel from local providers
- Natural Gas from Enbridge Gas

Data is obtained from monthly invoices and occasional meter reads to monitor usage and costs.

Appendix A1 is presented to depict the Town’s total energy consumption per year from 2014. This report indicates the improvements that the Town made during the course of the Plan and establishes the benchmark against which the future plans will be measured.

2019 – 2024 Accomplishments

Transportation	<ul style="list-style-type: none"> • Replaced 3 gas operated vehicles with 3 EVs • Installed 1 staff and 6 public EV charging stations • Joined Regional transportation on “Demand” availability for residents
Buildings/Facilities	<ul style="list-style-type: none"> • At the Meridian Community Centre <ul style="list-style-type: none"> a) Installed automated lighting controls turning off lighting that was previously on 24/7 b) Optimized BAS program and controls c) Established cold water ice flooding turning off related gas hot water heaters and reducing compressor run times.
Parks/Fields	<ul style="list-style-type: none"> • Lit Soccer field Centennial East and Baseball field Centennial #2 with LED lighting
Management	<ul style="list-style-type: none"> • Establish a Utility Sustainability Group • Provided weekly energy monitoring of largest energy user, the MCC, with data and charts issued to Councillors and Staff
LED Streetlighting Conversion	<ul style="list-style-type: none"> • Street lighting utility costs were a significant component of the annual corporate kWh and GHG usage.

LED Street Lights Greenhouse Gas and kWh Reduction

ESTIMATED GREEN HOUSE GAS REDUCTION SINCE 2019	
Current Annual Energy Consumption (kWh)	819,817
Projected LED Annual Energy Consumption (kWh)	290,866
Annual kWh Savings	528,951
Estimated Annual GHG Reduction (metric tonnes)	53
GHG Reduction over Luminaire Life of 100,000 hours (metric tonnes)	1,217

Looking Ahead to the Next Five Years:

Energy conservation measures can be categorized as technical, organizational, and behavioural.

1. **Technical Measures:** Implementation of energy-efficient technologies, such as installing heat pumps in municipal facilities.
2. **Organizational Measures:** Establishment of a dedicated “working group” to drive sustainability initiatives hiring a dedicated environmental staff member.
3. **Behavioural Measures:** Execution of targeted campaigns, such as light harvesting, where lights are systematically turned off when offices are vacant.

To ensure accountability and effectiveness, progress and outcomes related to these measures will be rigorously tracked through annual energy reports, as mandated by regulatory guidelines.

The use of the Energy Planning Tool program (EPT), with automated population of electricity and natural gas consumption will provide the Town with accurate and timely kWh data for analysis.

The 5-Year Fixed Asset Management Plan lists energy related projects (Appendix B1), detailing specific technical measures to reduce the Town's total ekWh and GHG emissions.

Technical Measures

The Town will continue its conservation efforts by converting fluorescent and incandescent lighting to LED fixtures in the municipal office, the library, parks and sports areas and in the public works yard.

When procuring new vehicles, the Town will continue to consider GHG emission reductions and energy efficiency when making decisions to purchase, rent or lease.

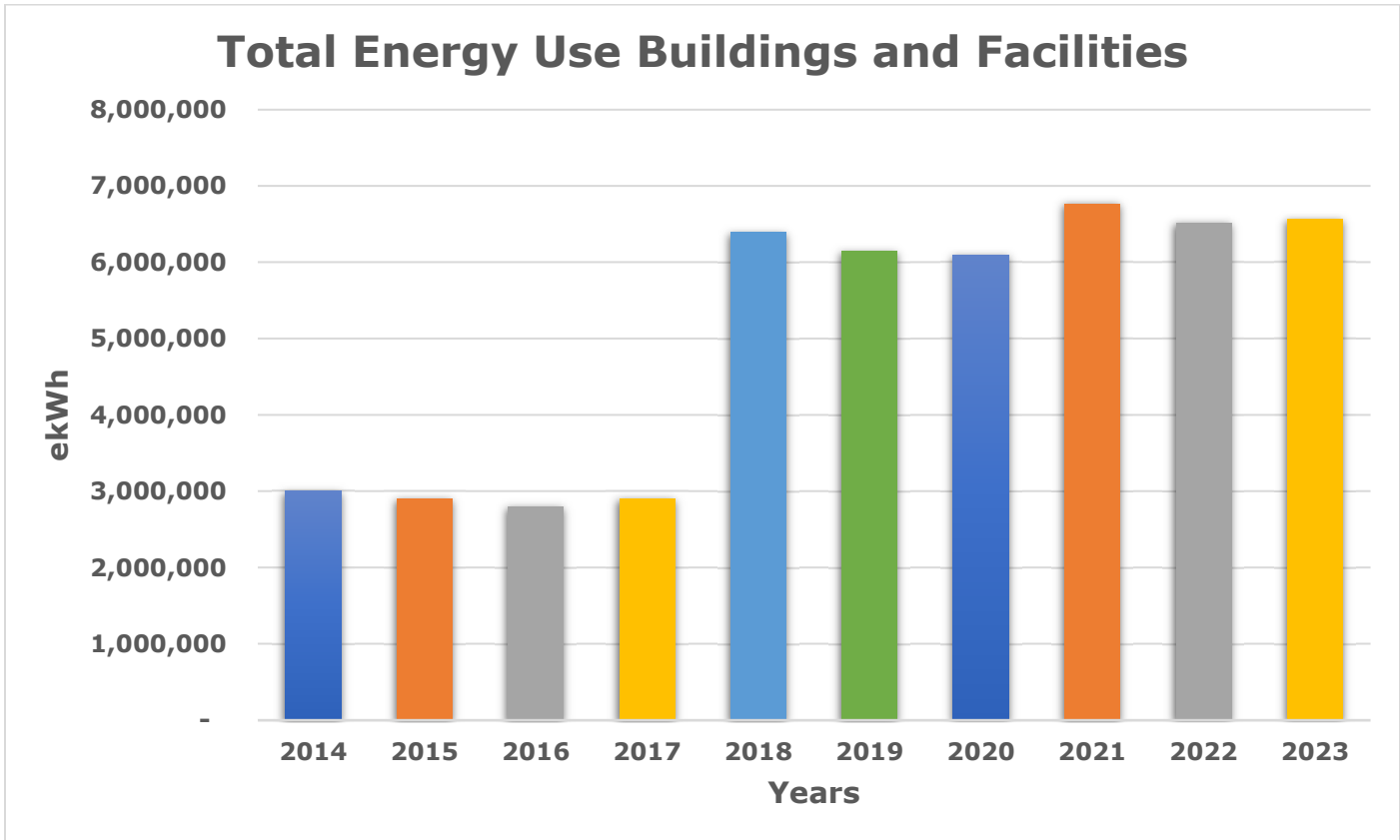
The Town will continue monitoring water department invoices and meter reads to watch for energy and water use anomalies and will ensure water leaks are identified and addressed promptly. As water fixtures are in need of replacement, the Town will endeavor to choose low-flow and low consumption fixtures.

Whenever the opportunity presents, Pelham will investigate electricity generation opportunities, including solar installation, ground source heating and cooling, and wind power generation.

Confirmation

On May 29, 2024, in accordance with Section 6(1)(c)(viii) of *Ontario Regulation 507/18* under the *Electricity Act, 1998*, the Council for the Corporation of the Town of Pelham approved and adopted this Conservation and Demand Management Plan.

Appendix A1



Additional Total Annual Energy Usages

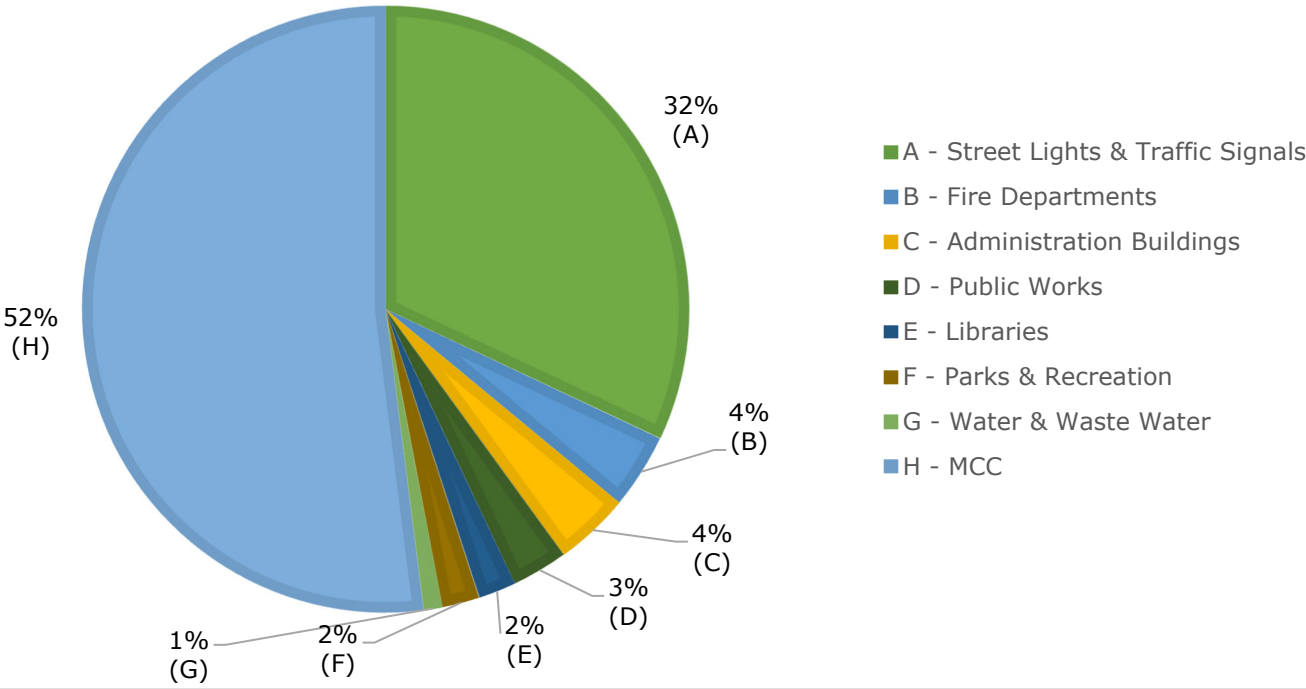
Street Lights and Traffic Signals: 1,052,697 ekWh

Water and Waste Water: 45,022 ekWh

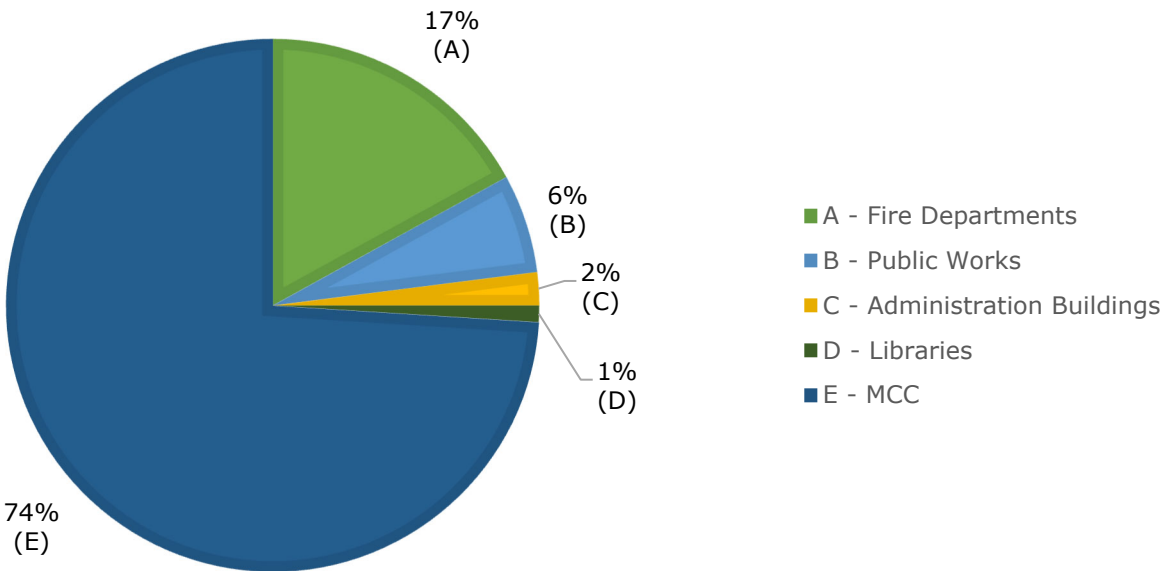
1 kWh = 1 ekWh

Appendix A2

**2022 Electricity Consumption
(kWh)**



**2022 Natural Gas Use
(M3)**



Appendix B1

5-Year Fixed Asset Program Proposed Energy Saving Projects		
Year	Project Description	Est. Annual ekWh Savings
2025	300545 – Municipal Building – Interior lighting upgrades	32,875
	300549 – Fire Station #2 – upgrade lighting to LED	26,233
	300558 – Fire Station #2 – Building Automation System (BAS)	92,040
	301108 – Town Hall – Window Replacement	TBD
	301112 – OPTH – Furnace Replacement	TBD
	500254 – Replace outdoor pool and systems	3,762
2026	300525 – Fire Station #1 – Expansion and Rehabilitation (NEW)	TBD
	301222 – OPTH Floors and Windows	TBD
	500525 – Parks LED light upgrade – Centennial Park Tennis Court	8,060
	500526 – Parks LED light upgrade – Centennial Park Diamond 1	TBD
	500528 – Parks LED light upgrade – Harold Black Park Soccer Field	710
2027	500523 – Parks LED light upgrade – Centennial Park Soccer #1	7,147
	500524 – Parks LED light (NEW) – Centennial Park Pickleball Court	TBD
	500527 – Parks LED light upgrade – Centennial Park Ball Diamond 2	TBD
	500529 – Parks LED light upgrade – Harold Black Park Ball Diamond 1	6,391
	500211 – Design Build – Harold Black Park Diamond 2 Lighting	TBD

CDM Facts and Figures

2019 CDM

4 Buildings made up 83% of the total energy used at the Town (MCC, Town Hall, Pelham Arena, Tice Road Operations Centre) until 2018.

These same buildings made up for 79% of the total GHG emissions associated with municipal facilities.

In 2018, the Town officially opened a (13,378 m²) Recreational Centre called the Meridian Community Centre (MCC) and closed the existing Pelham arena (2,844 m²) more than doubling total energy usage.

In 2018, 6,354,074 ekWh energy was used.

2018 GHG emissions: 677 metric tonnes of CO₂e.

2018 was a transitional year where the Haist Street arena was closed but still continued to use energy and the Meridian Community Centre was opened and started using energy in June.

Significant energy savings initiatives at the Meridian Community Centre and discontinued use of energy at the Haist Street arena resulted in 2018 and 2019 ekWh profiles to be comparable.

2024 CDM

The most significant reduction in GHG occurred because of the 2022-2024 Street Light LED conversion program.

2022 Energy usage was elevated by the use of the MCC as a Regional site for COVID Vaccinations. Both the number of Vaccinations and related HVAC Energy system demands during very warm periods of time were significant.

June 2023 was the official opening of a 217 m² addition to the Town Hall adding to the ekWh total load.

In 2023, 6,565,790 ekWh energy was used.

2023 GHG emissions: 700 metric tonnes of CO₂e.

Streetlights and related energy usage and conservation is reported separately.



Inquires related to this report and requests for alternate formats can be directed to:

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