



**Municipality of Bluewater
Energy Conservation and Demand Management Plan
2019-2023**

Introduction

This Plan was developed to meet the requirements of O. Reg 507/18 Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans (CDM Plan). The Municipality is required to develop a CDM Plan and update it every five years. This Plan was approved by Council on June 17th, 2019.

This Plan is meant to provide a place from which to start to develop a vision, programs and processes to formally address energy initiatives. While the Municipality of Bluewater will continuously improve the Plan on an annual basis, this Plan is meant to represent 2019-2023 at which time a thorough review will be required for a subsequent five-year Plan. The Plan will be seen as a living document. In addition to energy conservation, the Energy Conservation and Demand Management Plan supports our Strategic Plan, Asset Management Plan and Procurement Policy.

This Plan includes a summary of the Municipality's annual energy consumption and greenhouse gas emissions for the operations and a description of previous, current and proposed measures for conservation and their forecasted results. These measures can be viewed in Appendices A and B.

Declaration of Commitment

The Corporation of the Municipality of Bluewater will develop and implement an Energy Conservation and Demand Management Plan that will reduce the energy consumption and its related environmental impact wherever it is cost effective to do so.

Vision

The Municipality will strive to reduce the total energy consumption and mitigate costs through the wise use of energy. This will involve a collaborative effort involving all municipal departments to increase the education, awareness and understanding of energy management within the Municipality.

Policy

The Municipality of Bluewater will continue to face rising energy costs on aging infrastructure which will need to be maintained to continue to deliver services. The generation and use of energy also contributes to climate change through greenhouse gas (GHG) emissions. The

development of a comprehensive energy conservation and demand management Plan will ensure that energy efficiency is a key consideration in the Municipality's maintenance and renewal actions.

Objective

The creation of a culture of conservation within the Municipality will serve to reduce energy consumption and greenhouse gas emissions. Technology changes, coupled with behavioural changes made by staff and facility users, will move the Municipality toward the goal of reducing energy consumption and decreasing the demand for energy.

Goals

- To provide the guidance and leadership necessary for the adoption of a culture of energy conservation and sustainability.
- To continuously improve the energy efficiency of the Municipality's buildings, infrastructure and energy management processes in order to reduce the associated greenhouse gas emissions, energy consumption and operational costs.
- To implement energy audits on all municipal buildings within the next five years.
- To maximize fiscal resources through directed energy saving initiatives.
- To set an energy conservation target that will see the Municipality reduce its energy consumption by a predetermined amount over five years.
- To support Ontario's Long-Term Energy Plan.
- To work with other Broader Public Sector organizations to better manage energy use across our community.
- To raise awareness of the importance of energy management and to encourage energy management within each staff member's role.

Target

The Municipality will use its 2017 data as a benchmark for measuring a target of energy reduction of 0.5% per year between 2019 and 2023 which represents a total decrease of 2.5% over the five-year period.

Senior Management will review the proposed energy conservation measures during annual budget discussions. The proposed measures may change as technology is improved in the future or if the priorities of Municipal Council are altered.

Stakeholders

The internal stakeholders include Council, Senior Management and Staff. A relevant up-to-date energy conservation and demand management Plan with a clear vision, goals, targets and objectives will clearly communicate the Municipality's commitment to improving energy efficiencies.

External stakeholders including the Province, communities, citizens and community groups will require timely regular reports and information to maintain awareness of energy use. This information will encourage the Municipality to be accountable in its energy conservation commitment.

Municipal Energy Situation

While the Municipality has always managed its energy consumption, O. Reg 507/18 has required an increase in municipal energy management. Current practices will need to be enhanced and new approaches developed. A comprehensive program for collecting and analyzing monthly energy billing information will need to be developed. This effort will produce an energy cost and consumption database that will be used for monitoring excessive variations, targeting facility evaluations and highlighting areas for improved conservation. It should be noted that a previous Conservation and Demand Management Plan did not exist for the Municipality although data and consumption rates have been recorded and reported historically.

Tracking Energy Consumption and Savings

Annual energy reporting is required under the regulation and allows the Municipality to understand how energy is used in our buildings, identify potential energy conservation opportunities and track progress on energy conservation efforts.

Renewable Energy

While the Municipality does not currently utilize renewable energy systems, it will continue to investigate the potential of these systems in future initiatives and projects.

Consideration of Energy Efficiency for all Projects

The Municipality will consider all energy efficiencies where cost effective when completing projects and future capital expenditures. It is important that energy efficiency is considered at the outset of any new initiative.

Typical projects include major capital replacements of chillers, boilers, and roofs. Other energy reducing initiatives include improving lighting, HVAC, building automated controls and any other energy consuming devices.

Incentive Funding

To ensure that the Municipality will take advantage of all funding and grant opportunities related to energy efficient projects, staff will liaise with representatives from local utility providers. Municipal staff will pursue suitable funding opportunities as projects arise and will report the potential cost savings associated with successful applications to Council.

Energy Leader

The Municipality does not designate leadership and overall responsibility for corporate energy management to any one person. Rather, multiple departments within the Municipality will use a team approach supported by the Chief Administrative Officer, Clerk and Manager of Finance. The collection of energy consumption data, facility review and staff communication will be delegated to appropriate Managers. Consideration for budget decisions and staff availability will require a coordinated effort to identify the energy leader for any one project.

Communications Programs

A staff training Plan will be developed as part of the energy management Plan to build on past energy conservation practices. A community awareness campaign will involve community groups and social media coverage of energy conservation initiatives undertaken by the Municipality and other members of the community. All staff will carry out their duties while being aware of their energy use and will work towards a culture of conservation as modelled by Senior Management.

Asset Management

Energy mitigation approaches, such as reduced energy consumption, can be a significant decision driver when replacing new assets or rehabilitating existing assets. As such, the Energy Conservation and Demand Management Plan will be integrated with the Asset Management Plan and Procurement Policy.

Summary

The Municipality of Bluewater's Energy Conservation and Demand Management Plan will assist the Municipality in meeting energy related goals. These goals will need to be established annually through Council's approval of the Municipality's budget. The Municipality is a consumer of energy 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 Municipality's energy usage and introducing energy awareness programs to staff.

Appendix A

Previous and Current Energy Conservation Initiatives

The previous projects have been identified as having occurred in the last two years or are currently occurring.

- Lighting retrofit of the Zurich arena ice surface
- Dashwood street light replacement
- Installation of electric vehicle charging station in Bayfield
- Staff attended LAS workshop
- Use of office blinds to reduce cooling of office due to sunlight
- Staff shutting powering off computer monitors in the evenings
- Refrigerators in community centres being powered off when not in use
- Installation of motion sensor or building automation systems, (BAS) lighting in some community centres
- Zurich Water Plant retrofit of low and high lift Plant processes
- Zurich Wastewater Lagoons aeration upgrade

Appendix B

Proposed Energy Conservation Initiatives

Energy conservation projects can be categorized as technical, organizational, or behavioural. These projects will be evaluated using an internal rate of return, along with simple payback. In addition, more costly conservation projects will be bundled with more cost-effective ones to level their development.

Implementation of the proposed projects depends on:

- Funding allocated by council;
- Incentives from the Independent Electricity System Operator and/or natural gas utilities;
- Availability of qualified staff; and
- Retaining a qualified contractor to implement the initiative.

Progress on projects will be monitored using the annual energy reports prepared under the regulation.

Technical projects will include:

- Lighting retrofit of the Bayfield Pier
- Lighting retrofit of the Hensall Complex exterior lighting
- Lighting retrofit of the Zurich Complex exterior lighting
- Lighting retrofit of the Varna Complex parking lot lights
- Municipality wide street light replacement program
- Replacing HVAC systems according to Asset Management Plan
- Replacing Zurich Main Street soft starter in pumphouse
- Install LED lighting north sewage pumping station and south sewage pumping station, main sewage pumping station, Bayfield Lagoon, Zurich well pump house, and Hensall Lagoon
- Insulating water heating piping at all waste water facilities

Organizational measures will include:

- Incorporate lifecycle costing of assets when purchasing is related to building systems, such as lighting, and office equipment
- Power monitoring at all waste water facilities
- Implement a temperature set point procedure for all buildings
- Establish a Green Team with representation from core function areas such as public works, facilities, and finance. The team will meet quarterly to review existing energy conservation initiatives and develop new initiatives to be reviewed by the Senior Management Team.
- Adopt a train the trainer program where staff on the Green Team attend Energy Management Workshops.

Behavioural measures include

- Review building automation systems every month to ensure temperature and lighting settings and schedules are at optimum efficiency.

- Encourage staff to shut off lights whenever possible.
- Continue to open blinds in winter to capture solar heat and closed in the summer months to reduce cooling requirements.

Appendix C

2019 CDM Plan Update Requirements

Section 6 of the regulation lists the requirements for the 2019 CDM and future Plan updates, which includes:

- Information on the public agency's annual energy consumption during the last year for which complete information is available for a full year (2017).
- The public agency's goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy.
- The public agency's actual results.
- The public agency's current and proposed measures under its energy conservation and demand management Plan.
- The revised forecast of the expected results of the current and proposed measures.
- Cost and saving estimates for its proposed measures.
- The estimated length of time the public agency's energy conservation and demand management measures will be in place.
- A description of any proposed changes to be made to assist the public agency in reaching any targets it has established or forecasts it has made.
- A description of any renewable energy generation facility operated by the public agency and the amount of energy produced on an annual basis by the facility.
- A description of:
 - o The ground source energy harnessed, if any, by ground source heat pump technology operated by the public agency.
 - o The solar energy harnessed, if any, by thermal air technology or thermal water technology operated by the public agency.
 - o The proposed Plan, if any, to operate heat pump technology, thermal air technology or thermal water technology in the future.
- Confirmation that the energy conservation and demand management Plan has been approved by the public agency's senior management.
- The CDM Plan has been made publicly available by:
 - o Publishing it on the public agency's website (if there is one).
 - o Publishing it on the public agency's intranet site (if there is one).
 - o Making it available to the public in printed form at the head office. CDM Updates need to be published on or before July 1, 2019 and on or before every fifth anniversary thereafter. The next update is required by July 1, 2024

Appendix D

2017	Electricity		Natural Gas			
Facility Name	Quantity (kWh)	Cost	Quantity	Unit	Cost	GHG Emissions (kg)
Hensall Sign	417.97	\$ 484.10				100.00
Hay Township Hall	4,706.32	\$ 1,098.80	3,542.32	m ³	\$ 1,207.95	1,800.00
Arena Sentinal Lights	2,796.00	\$ 473.02				700.00
Hensall Fire Hall	13,864.49	\$ 2,607.14	2,877.95	m ³	\$ 1,081.16	3,900.00
Hensall Heritage Hall	10,290.65	\$ 1,977.62				2,500.00
Hensall Parkette	12.47	\$ 418.18				-
Hensall Pavillion	6,577.85	\$ 1,272.49				1,600.00
Hensall Library	19,777.89	\$ 3,458.64	13,618.01	m ³	\$ 3,282.02	7,300.00
Municipal Office-14 Mill Ave.	32,149.84	\$ 5,615.63	2,346.65	m ³	\$ 958.77	8,200.00
Richmond Street North Water Tower	3,166.51	\$ 881.61				800.00
Richmond Street Southwest Sewage Station	37,576.00	\$ 6,183.34				9,100.00
York Street Pump House	14,910.78	\$ 2,696.55				3,600.00
Zurich Ball Lights	3,908.26	\$ 901.55				900.00
Zurich Conrad Drive Pumping Station	4,154.74	\$ 1,032.87	52.63	m ³	\$ 290.42	1,000.00
Zurich Fire Hall	9,796.12	\$ 1,847.44	3,340.72	m ³	\$ 1,225.01	3,000.00

Zurich Former Library	28,848.99	\$ 4,799.16	2,343.58	m ³	\$ 970.23	7,400.00
Zurich New Library	9,884.14	\$ 1,977.68	3,803.05	m ³	\$ 1,285.28	3,100.00
Zurich Ball Diamond	1,924.53	\$ 674.53				500.00
Zurich-Wtr Highlift Pumping Station & All Wells	172,688.34	\$ 26,436.02				41,600.00
Zurich Main Sewage Pumping Station	43,891.24	\$ 7,173.76				10,600.00
Dashwood street lights	11,059.00	\$ 2,164.41				2,700.00
Hensall Arena	385,322.88	\$ 70,692.41	36,843.26	m ³	\$ 10,476.38	99,800.00
Hensall Christmas Lights	889.00	\$ 156.65				200.00
Hensall street lights	106,548.00	\$ 18,697.49				25,700.00
Zurich Christmas lights	995.00	\$ 173.05				200.00
Zurich street lights	97,293.00	\$ 17,154.97				23,400.00
26 The Square-Clan Gregor Square	13,847.88	\$ 3,321.40				3,300.00
Harbour Lights	1,680.16	\$ 747.07				400.00
Bachand St.	912.00	\$ 381.04				200.00
Bayfield (Former) Library	3,081.49	\$ 979.17	1,772.65	m ³	\$ 821.67	1,100.00
Bayfield Ball Park	2,803.91	\$ 863.00				700.00
Bayfield Community Center	183,680.00	\$ 46,239.25	12,427.97	m ³	\$ 3,923.57	46,600.00
Bayfield Fire Department	12,871.31	\$ 2,864.30	4,827.49	m ³	\$ 1,649.84	4,000.00

Bayfield Old Municipal Office - AKA Lions Bldg.	5,380.33	\$ 1,272.11	4,106.39		\$ 1,393.90	2,100.00
Bayfield New Library /Post Office	39,194.37	\$ 8,681.74	1,101.33	m ³	\$ 599.10	9,700.00
Bayfield street lights	143,592.00	\$ 34,655.92				34,600.00
Bayfield Roads Shed	10,858.68	\$ 2,622.70	2,187.76	m ³	\$ 917.74	3,000.00
Bayview sentinel light	3,648.00	\$ 1,412.44				900.00
Bayview Subdivision lights	4,560.00	\$ 1,081.48				1,100.00
Brucefield Fire Department	9,558.67	\$ 2,205.32	5,442.15	m ³	\$ 1,835.21	3,300.00
Brucefield street lights	25,476.00	\$ 6,057.81				6,100.00
Danceland Water Station	35,560.05	\$ 6,768.34				8,600.00
Dinsley Terrace lights	4,848.00	\$ 1,212.12				1,200.00
Bayfield Harbour Sewage Pumping Station	25,513.37	\$ 5,389.62				6,100.00
Harbour Lights-Tuyll, Victoria, BFLD Conc.	3,792.00	\$ 565.01				900.00
Hay Roads Shed	34,876.31	\$ 7,842.61	10,762.01	m ³	\$ 3,200.05	10,400.00
Kippen street lights	8,856.00	\$ 2,062.32				2,100.00
Lakewood sentinel light	3,024.00	\$ 1,611.35				700.00
Luther Miller Drain - Hay Township Office	2,268.83	\$ 844.10				500.00

Bayfield Main Sewage Pumping Station	184,200.00	\$ 39,002.87				44,400.00
Bayfield Lagoons and Sewage Treatment Plan	54,201.81	\$ 11,514.40				13,100.00
Hensall Lagoon	41,227.35	\$ 7,558.37				9,900.00
Hensall Landfill	24,360.00	\$ 7,331.73				5,900.00
Stanley Complex/ Council Chambers	2,851.74	\$ 949.00	19,986.36	m ³	\$ 6,304.25	4,400.00
Stanley Pavillion - 2 accounts	1,236.70	\$ 603.76				300.00
Stanley (Varna) Roads Shed	76,062.73	\$ 14,456.64				18,300.00
Bayfield Southend Sewage Pumping Station	61,049.55	\$ 12,340.27				14,700.00
Varna street lights	10,944.00	\$ 2,560.37				2,600.00
Varna Well & Pumphouse	5,933.45	\$ 376.68				1,400.00
Zurich Arena and Community Center	423,720.00	\$ 74,459.52	46,010.26	m ³	\$ 14,235.85	110,800.00
Zurich arena shed 0 conc 0 lot	117.37	\$ 340.28				-
Zurich Lagoons	125,520.00	\$ 28,573.24				30,300.00