



**ENERGY CONSERVATION AND DEMAND
MANAGEMENT PLAN**

2020-2024

Energy Conservation and Demand Management Planning

The purpose of the Municipality of North Middlesex's Energy Conservation and Demand Management Plan is to promote good stewardship of our environment and community resources. In keeping with our core values efficiency and financial responsibility the North Middlesex Energy Management program will reduce operating costs and enable the municipality to provide improved returns when spending taxpayer's dollars.

Energy Management Plan Process and Development

The EMP is meant to serve as a basis for energy and utility-related decisions in the coming years. The main goal is to outline the strategies for implementing improvements to facilities and operations that reduce energy costs and affect positive environmental changes.

Energy efficiency is something that should be actively pursued and can result in a number of benefits. By utilizing less energy, there will be a smaller environmental impact through a reduction in the release of greenhouse gases, which contribute to global warming. In addition to this there is also the financial impact from purchasing less energy, which results in cost savings.

The Municipality of North Middlesex has 26 facilities (in addition to street lighting) that are identified as reportable under O. Reg 507/18. These include water and waste water facilities, recreation and administration facilities, parks and public works garages, as well as community and medical centres, 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 2017 baseline values (Appendix A).

Past Energy Management Activities

North Middlesex has been very active and aware of energy and sustainability initiatives.

The five-year Energy Management Plan represented in this report provides an excellent opportunity to both reflect upon past successes and develop plans for future initiatives.

Ontario regulation 507/18 requires public agencies to provide information on their annual energy consumption in addition to a Conservation and Demand Management Plan. The prior year's records will provide a baseline of energy usage to compare with results from future conservation efforts.

It is important to point out, that the Municipality of North Middlesex has been active in pursuing energy efficiency in 2012 and years prior. Florescent lighting has been changed to more energy efficient styles in most municipal facilities.

Behavioural and Cultural Initiatives

The Municipality of North Middlesex has always been cognizant of the need to conserve energy. Lists of the types of actions that have led to tangible, but difficult to quantify savings are as follows:

- Staff routinely turn off lights in unused areas;
- Efforts are made to consider energy use in all aspects of day-to-day operations; and
- Municipal Council has played a lead role by clearly demonstrating its interest in innovation, energy efficiency, and maximizing the use of energy resources.

Present Energy Initiatives

The Ontario Regulation 507/18 focuses on heated or cooled municipal facilities and, therefore, does not include consideration of measures related to outdoor lighting. Most municipalities are tackling the challenge of streetlights. North Middlesex in the current plan includes a major investment for the replacement of all metal-halide baseball lights. This initiative alone will reduce the electrical costs of the Municipal baseball field lighting by approximately 40%. The projected saving will represent significant financial savings including energy savings and maintenance costs.

Goals for future Energy Management

North Middlesex has set a five-year target of a 5% energy reduction, to be achieved through an annual reduction goal of a 1%. North Middlesex intends to monitor the progress of technology and continuously evaluate new opportunities. Capital funds are limited and, each project will require council approval based upon detailed costing and analysis of the pay-back period. Our proposed goals are as follows:

- Promote sustainability and energy conservation throughout the Municipality;
- Increase staff awareness and mindfulness through education and utilizing best practices;
- To improve energy efficiency within Municipal facilities, reduce greenhouse gas emissions and energy consumption in day-to-day operations and extend the lifecycle of Municipal assets, where possible;
- To maximize fiscal resources through direct and indirect energy cost avoidance;

Proposed Measures

The Municipality's energy consumption benchmark, based on 2017 electricity, natural gas and greenhouse gas emission data, can be found in Appendix A. A requirement of O. Reg 507/18 involves municipalities reporting electricity and natural gas consumption to the Ministry of Energy on an annual basis. Municipalities report energy and natural

gas usage two years prior to the current year (i.e., the report for 2017 energy consumption was submitted in 2019).

The completion of the energy consumption projects from the Municipality's 2014 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.

The implementation of proposed energy conservation measures throughout Municipal-owned infrastructure will continue to promote successful conservation practices. The Municipality of North Middlesex is aiming to reduce its energy consumption within its facilities by 1-5% between 2020 and the end of 2024. The proposed energy conservation measures to support the Municipality in achieving this target can be found in Appendix C.

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.

- Replacement of metal-halide baseball lights with high-efficiency LED lighting
- Reducing flood water temperature by 30 degrees Fahrenheit
- Replacement of old appliances in various recreational facilities with more energy efficient appliances (as needed)
- Investigate green energy opportunities to improve efficiency and lower carbon foot print (such as solar, wind or geothermal power)
- Replacement of old plumbing fixtures with low-flow energy efficient fixtures (as needed)
- An energy conservation culture will be encouraged throughout the Municipality's operations

Cost & Savings Estimates for Proposed Measures

While the Municipality is planning to reduce its energy consumption, it does not anticipate any cost savings due to projected energy cost increases during the next five years. Energy cost increases should be netted out by conservation efforts.

Timeline

- Ongoing efforts to conserve energy
- Yearly (June) Review results from previous year
- Yearly (June) Promote energy conservation to staff
- Yearly (June) Review Energy savings ideas from staff
- Yearly (June) Investigate Green Energy opportunities
- As needed record any retrofitting efforts

Renewable Energy Operated by North Middlesex and Future Plans

The Municipality of North Middlesex currently does not operate any renewable energy generation facilities.

North Middlesex currently does not harness either ground or solar source energy. North Middlesex will actively investigate these alternatives for future consideration where they are feasible.

Plan Approval

The Municipality of North Middlesex Council and Staff is committed to energy conservation and demand management. This plan was adopted by Council at the July 17, 2019 Council meeting.

Energy Conservation Plan Public Availability

North Middlesex's Energy Plan will be made available on the Municipal website, www.northmiddlesex.on.ca

Physical copies will be made available at the municipal office located at 229 Parkhill Main Street for the public.

Conclusion

The Municipality of North Middlesex's Energy Conservation and Demand Management Plan will assist the Municipality in meeting energy related goals and contributing to the overall reduction in greenhouse gas emissions created. These goals will need to be established annually through Council's approval of the municipality's budget. The Municipality of North Middlesex 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 Municipality's energy usage and introducing energy awareness programs to staff.

Appendix A: Energy Consumption Benchmark (2017)

	Electricity	Natural Gas/Propane	Sqft	Annual Flow(ML)	GHG Emissions (KG)	Energy Intensity (ekWh)
Parkhill Reservoir	173,057.500	-	-	522.840	2,993.549	330.995
Victoria Street Sewage	30,095.790	-	-	212.303	520.897	141.758
Kerwood Rd Pump	52,263.450	-	-	162.902	904.053	320.828
Lieury Rd. Pump	26,528.000	-	-	117.266	458.881	226.220
Ailsa Craig Fire Station	15,859.410	2,689.750	2,992.000	-	5,359.650	14.855
Ailsa Craig Library	30,460.930	2,033.920	4,125.000	-	4,372.297	12.625
Ailsa Craig Recreation Centre	67,700.000	14,208.820	11,500.000	-	28,034.650	19.018
Ailsa Craig Sewage Treatment Plant	810,000.000	-	-	255.707	14,011.380	3,167.688
Ailsa Craig Works Shop	3,299.637	2,277.370	2,389.000	-	4,362.734	11.512
Lieury Water Shop	14,120.460	8,691.500	3,584.000	-	13,637.720	20.989
McGillivray Community Centre	5,221.940	-	1,728.000	-	90.329	3.022
McGillivray Works Department	75,971.440	21,377.700	6,146.000	-	34,256.850	36.816
Municipal Office	163,906.900	24,791.940	11,562.000	-	49,707.570	36.965
North Middlesex Arena	458,030.000	45,490.290	45,856.000	-	93,928.170	20.531
North Middlesex Community Centre	25,008.560	12,473.260	10,020.000	-	24,014.880	15.726
Parkhill Fire Station	12,776.420	5,842.740	4,100.000	-	11,267.450	18.264
Parkhill Library	6,041.910	3,958.880	2,688.000	-	7,589.278	17.900
Parkhill Works Shop	20,219.570	4,333.270	4,109.000	-	8,542.355	16.129
West Williams Community Centre	9,908.329	9,950.340	4,335.000	-	18,983.780	26.680
Parkhill Medical Centre	10,224.970	1,384.520	2,240.000	-	2,794.482	11.134
New Ontario Rd Pump	9,565.712	-	-	56.394	165.468	169.623
Elginfield Rd Streetlight	2,448.000	-	1.000	-	42.346	2,448.000
Bear Creek Pump	13,982.140	-	-	46.720	241.863	299.275
Clandeboyne Streetlights	2,160.000	-	1.000	-	37.364	2,160.000
Parkhill Street Lights	44,053.000	-	50.000	-	762.029	881.060
McLeod Street Ball Diamonds	17,239.360	-	151,159.000	-	298.207	0.114

Appendix B:
Completed Energy Consumption Projects from previous 2014 CDM Plan

Facility	Measure	Estimated Savings (kWh)/year	Completion Date
North Middlesex Arena	Installed LED lighting in arena	40,000	2015
	Install LED lighting throughout facility	30,000	2016
	New Condensor	10,000	2017
Ailsa Craig Recreation Centre	Installed LED lighting throughout the facility	5,000	2016
	Installed new HVAC system	500	2015
	Upgraded refrigerators	1,000	2015
North Middlesex Community Centre	Installed LED lighting throughout the facility	5,000	2016
	Installed new HVAC system	500	2015
	Upgraded refrigerators	1,000	2015
Library	Installed LED lighting throughout the facility	5,000	2016

Appendix C:
Proposed Energy Conservation Measures for 2019-2024

Facility	Measure	Estimated Cost	Estimated Energy Savings (kWh)/year	Target Date
Arena	Reducing flood water temperature by 30 degrees fahrenheit	\$ -	30,000	Sep-19
	Install floating head pressures in compressor room	\$ 15,000.00	1,000	2021
	Install glycol cooling loop	\$ 20,000.00	1,000	2020
	Install Smart Thermostats	\$ 350.00	500	2020
	Installing waterless urinals	\$ 13,000.00	400	2021
Parkhill Sports Fields	Install LED lights to replace metal halides	\$ 132,000.00	7,000	2020
Ailsa Craig Community Park	Install LED lights to replace metal halides	\$ 66,000.00	3,500	2020
Ailsa Craig Recreation Centre	Install Smart Thermostat	\$ 350.00	500	2020
	Install Waterless Urinals	\$ 3,000.00	100	2020
Lieury Ball Diamond	Install LED lights to replace metal halides	\$ 66,000.00	3,500	2020
North Middlesex Community Centre	Install smart thermostat	\$ 350.00	500	2020
	Install waterless urinals	\$ 3,000.00	100	2021

Appendix D: Required facility reporting

Column 1 Item	Column 2 Type of public agency	Column 3 Operation
1.	Municipality	<ul style="list-style-type: none"> 1. Administrative offices and related facilities, including municipal council chambers. 2. Public libraries. 3. Cultural facilities, indoor recreational facilities and community centres, including art galleries, performing arts facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports. 4. Ambulance stations and associated offices and facilities. 5. Fire stations and associated offices and facilities. 6. Police stations and associated offices and facilities. 7. Storage facilities where equipment or vehicles are maintained, repaired or stored. 8. Buildings or facilities related to the treatment of water or sewage. 9. Parking garages.
2.	Municipal service board	<ul style="list-style-type: none"> 1. Buildings or facilities related to the treatment of water or sewage.
3.	Post-secondary educational institution	<ul style="list-style-type: none"> 1. Administrative offices and related facilities. 2. Classrooms and related facilities. 3. Laboratories. 4. Student residences that have more than three storeys or a building area of more than 600 square metres. 5. Student recreational facilities and athletic facilities. 6. Libraries. 7. Parking garages.
4.	School board	<ul style="list-style-type: none"> 1. Schools. 2. Administrative offices and related facilities. 3. Parking garages.
5.	Public hospital	<ul style="list-style-type: none"> 1. Facilities used for hospital purposes. 2. Administrative offices and related facilities.