



# **ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN**

**2014 - 2019**

## **Table of Contents**

Background – Current Energy Concerns & Challenges.....	3
Background – Ontario Regulation 397/11 .....	3
Validity Period of Energy Plan .....	4
Municipality of West Perth – Vision and Goals .....	4
Energy Plan ‘Vision’, ‘Goals’ and ‘Objectives’ .....	5
Summary of Municipal Facilities which are subject to Ontario Reg. 397/11 .....	6
Energy Sources Consumed – Types & Total – 2012 .....	7
Energy Sources Consumed – Total Per Facility – 2012 .....	8
Greenhouse Gas (GHG) & Energy Intensity – 2012 .....	9
Measures to Implement / Applicable Cost & Energy Savings from Measures .....	10
Renewable Energy Generation Facilities/Amount of Energy Produced.....	12
Renewable Energy Technologies Employed by the Municipality.....	12
Review and Reporting .....	13

## **Background – Current Energy Concerns & Challenges**

Concerns and challenges surrounding energy consumption, especially with regard to climate change and air pollution are well documented. Since 1990, Ontario's greenhouse gas emissions have increased 14%. The Government of Ontario estimates that 75% of Ontario's greenhouse gas emissions are associated with the consumption of fossil fuels for energy purposes. Increased smog and air pollution are also connected to the consumption of energy. Ontario's electricity generation is the Province's second largest source of sulphur dioxide and the third largest source of nitrogen oxides. These pollutants can cause irreparable harm to human health.

At the same time, it is more evident that fossil fuels are becoming unreliable as their financial accessibility lessens and their environmental impacts worsen. This has resulted in the promotion of renewable energy generation, which comes with an additional expense. Energy costs are also anticipated to increase as Ontario's existing energy infrastructure is taken off-line or refurbished. Coming off of the lows of the 2009 recession, national electricity and natural gas prices are 27% and 21% greater, respectively, than they were at the start of the decade. It is not anticipated that this upward trend will be altered in the short to medium future.

## **Background – Ontario Regulation 397/11**

Given the types of concerns and challenges, the Province of Ontario passed the *Green Energy Act, 2009 (GEA)*. Under the GEA, the Province also passed Ontario Regulation 397/11, which was published on August 25, 2011.

There are two parts to the Ontario Regulation 397/11 requirements. In broad terms, these requirements are as follows :

- 1) A listing of the annual Energy Consumption, Greenhouse Gas Emissions and Energy Intensity for each of the public agency's facilities. The first listing is due by July 1, 2013 for the 2011 calendar year, and is due annually thereafter;
- 2) A description of previous, current and proposed measures for reducing the public agency's energy consumption and a forecast of expected results. The first description is due July 1, 2014, and is due every five years thereafter.

This "*Energy Conservation and Demand Management Plan*" (hereinafter called "*Energy Plan*") fulfills the second requirement for the Municipality under Ontario Regulation 397/11. The *Energy Plan* includes the monitoring and reporting requirements, as well as progressive and attainable actions to help improve the energy conservation performance of Municipality, over a five year planning horizon.

## **Validity Period of the Energy Plan**

The *Energy Plan* was approved by West Perth Municipal Council at its **June 23, 2014** Regular Council Meeting.

The Validity Period of the *Energy Plan* is **July 1, 2014 to June 30, 2019**. The Municipality is committed to following the direction of this *Energy Plan*, and will take the necessary steps to ensure the *Energy Plan's* success through review and development.

## **Municipality of West Perth - Vision and Goals**

The Municipality of West Perth already has a number of formative plans that set the overall direction for the Municipality. In particular, this *Energy Plan* is guided by the Mission Statement and Vision contained in the Municipality's "***Corporate Strategic Plan: 2012 - 2017***".

### ***Mission Statement:***

"To provide opportunities for growth and business development while maintaining a comfortable lifestyle and a balance of service for taxes."

### ***Vision:***

"West Perth is a thriving, caring community that offers diverse opportunities to live, work, and play."

Additionally, while 'energy management' is not directly identified in the Municipality's "***Corporate Strategic Plan: 2012 - 2017***", Goal #3 of the Plan is to, "***explore innovative strategies to deliver efficient, accountable and relevant public services***", to which energy management can certainly be deemed to be an integral component.

## **Energy Plan ‘Vision’, ‘Goals’ and ‘Objectives’**

Successful energy management depends on the integration of energy efficient practices into the “business as usual” conduct of the organization. In doing so, the Municipality is committed to undertaking measures to increase energy efficiency as a means of limiting the production of Greenhouse Gas (GHG) emissions and Energy Intensity.

Given this, the **Vision** of the *Energy Plan* is as follows:

***“We will continually strive to reduce our total energy consumption and associated carbon footprint through wise and efficient use of energy and resources, while still maintaining an efficient and effective level of service for the residents of our Community and the general public.”***

The **Goals** of the *Energy Plan* are as follows:

- 1) To create a culture of conservation;
- 2) To improve the energy efficiency of our facilities by utilizing best practices to reduce our operating costs, energy consumption and greenhouse gas emissions;
- 3) To maximize fiscal resources through direct and indirect energy savings.

The **Objectives** of the *Energy Plan* are as follows:

- 1) Improve the Municipality’s understanding of energy consumption;
- 2) Increase staff awareness and motivate staff to use energy more efficiently;
- 3) To improve the energy efficiency of our facilities through normal practices and low-cost opportunities:
  - a. Continue regular maintenance practices which involve energy efficiency;
  - b. Considering more energy efficient versions/models when replacing capital equipment.
- 4) An total overall reduction in the designated energy sources consumed for the designated municipal facilities of **3%** (combined) by December 31, 2018, as compared to the 2012 baseline;
- 5) An total overall reduction in Greenhouse Gas (GHG) emissions (KG) and energy intensity (ekWh per sq.ft & ml) for the designated municipal facilities of **3%** (combined) by December 31, 2018 , as compared to the 2012 baseline.

**Summary of Municipal Facilities which are subject to  
Ontario Reg. 397/11**

The Municipality of West Perth has twenty-one (21) facilities that are designated under the requirements of Ontario Regulation 397/11. The facilities, including their respective address and operation type, are as follows:

<b><u>Common Facility Name</u></b>	<b><u>Address</u></b>	<b><u>Operation Type</u></b>
West Perth Municipal Office	169 St. David Street, Mitchell	Administrative Office, including Council Chambers
West Perth Fire Hall	169 St. David Street, Mitchell	Fire Station
West Perth Public Library	105 St. Andrews Street, Mitchell	Public Library
OPP/ Water Building	132 St. George Street, Mitchell	Police Station
Mitchell Arena/ Community Centre	185 Wellington Street, Mitchell	Indoor Recreational Facility
Mitchell Lions Pool Bathhouse	19 Blenheim Street, Mitchell	Indoor Recreational Facility
Brodhagen Community Centre	6708 Perth Line 44, Brodhagen	Community Centre
Dublin Pavilion	7015 Helen Street, Dublin	Community Centre
Fullarton Hall	5692 Perth Line 20, Fullarton	Community Centre
Former Logan Office	6082 Perth Line 44, Bornholm	Administrative Office
Logan Operations Centre	6082 Perth Line 44, Bornholm	Equipment/Vehicle Storage Facility
Hibbert Operations Centre	3276 Perth Road 180, Staffa	Equipment/Vehicle Storage Facility
Fullarton Operations Centre	5692 Perth Line 20, Fullarton	Equipment/Vehicle Storage Facility
Mitchell Operations Centre	50 Arthur Street, Mitchell	Equipment/Vehicle Storage Facility
Water Treatment 1, 2, 3 (Wells #1 and #2)	132 St. George Street, Mitchell	Water Treatment Facility
Well #3	100 St. George Street, Mitchell	Water Pumping Facility
Water Treatment and Well #4	48 Arthur Street, Mitchell	Water Treatment Facility
Water Booster/ Standpipe Building	87 Arthur Street, Mitchell	Water Pumping Facility
Mitchell Wastewater Treatment Plant	5949 Frank Street, Mitchell	Sewage Treatment Facility
Herbert Street Pumping Station	79 Herbert Street, Mitchell	Sewage Pumping Facility
James Street Pumping Station	130 James Street, Mitchell	Sewage Pumping Facility

## Energy Sources Consumed – Types & Total – 2012

Ontario Reg. 397/11 requires the tracking of certain types of energy sources consumed, for each designated facility. Using 2012 as a baseline, information regarding the types of energy sources consumed by the Municipality, is as follows:

<u>Type of Energy Source</u>	<u>Consumed by Municipality?</u>	<u>Energy Source Supplier</u>	<u>Unit of Measurement</u>	<u>Total Amount of Energy Source Consumed</u>
Water	Yes	Municipality of West Perth – Mitchell Water System	Mega Litres (ML)	<b>1,178.21 (ML)</b>  (Ont. Reg. 397/11 requires the tracking of Water/ Sewage Treatment and Pumping facilities <u>only</u> )
Electricity (Hydro)	Yes	Erie Thames Powerlines  Hydro One	Kilowatts (kWh)	<b>3,049,272.6 (kWh)</b>
Natural Gas	Yes	Union Gas	Cubic Metres (m3)	<b>98,538.69 (m3)</b>
Propane	Yes	Hensall and District Co-op  Sparlings Propane	Litres (L)	<b>45,924.30 (L)</b>
Fuel Oil (#1 & #2)	No	N/A	Litres (L)	N/A
Fuel Oil (#4 & #6)	No	N/A	Litres (L)	N/A
Coal	No	N/A	Metric Tonnes (MT)	N/A
Wood	No	N/A	Metric Tonnes (MT)	N/A
District Heating	No	N/A	Giga Joules (GJ)	N/A
District Cooling	No	N/A	Giga Joules (GJ)	N/A

## Energy Sources Consumed – Total Per Facility – 2012

Using 2012 as a baseline, information regarding the total energy sources consumed by the Municipality, per each designated facility, is as follows:

<u>Common Facility Name</u>	<u>Water</u>		<u>Electricity (Hydro)</u>		<u>Natural Gas</u>		<u>Propane</u>	
	<b>ML</b>	<b>%</b>	<b>kWh</b>	<b>%</b>	<b>M3</b>	<b>%</b>	<b>L</b>	<b>%</b>
West Perth Municipal Office	N/A	0	84,358.73	2.8	18,802.50	<b><u>19</u></b>	N/A	0
West Perth Fire Hall	N/A	0	28,119.56	0.9	6,267.50	6.4	N/A	0
West Perth Public Library	N/A	0	31,407.68	1.0	2,625.95	2.7	N/A	0
OPP/ Water Building	N/A	0	82,098.73	2.7	N/A	0	N/A	0
Mitchell Arena/ Community Centre	N/A	0	409,543.2	<b><u>13</u></b>	56,938.00	<b><u>58</u></b>	N/A	0
Mitchell Lions Pool Bathhouse	N/A	0	40,564.69	1.3	777.13	0.8	N/A	0
Brodhagen Community Centre	N/A	0	68,982.00	2.3	N/A	0	1,606.00	3.5
Dublin Pavilion	N/A	0	15,149.49	0.5	N/A	0	1,981.40	4.3
Fullarton Hall	N/A	0	19,068.00	0.6	N/A	0	N/A	0
Former Logan Office	N/A	0	16,131.33	0.5	N/A	0	N/A	0
Logan Operations Centre	N/A	0	32,262.67	1.0	N/A	0	13,707.50	<b><u>30</u></b>
Hibbert Operations Centre	N/A	0	15,098.00	0.5	N/A	0	13,221.10	<b><u>29</u></b>
Fullarton Operations Centre	N/A	0	23,049.00	0.8	N/A	0	15,408.30	<b><u>33</u></b>
Mitchell Operations Centre	N/A	0	39,394.82	1.3	10,471.77	<b><u>11</u></b>	N/A	0
Water Treatment 1, 2, 3 (Wells #1 and #2)	378.8997	<b><u>32</u></b>	149,498.50	<b><u>5.0</u></b>	N/A	0	N/A	0
Well #3	383.2575	<b><u>32</u></b>	80,242.92	2.6	N/A	0	N/A	0
Water Treatment and Well #4	413.804	<b><u>35</u></b>	172,031.70	<b><u>5.6</u></b>	N/A	0	N/A	0
Water Booster/ Standpipe Building	0.00001	0	36,235.14	1.2	N/A	0	N/A	0
Mitchell Wastewater Treatment Plant	1.1706	0.1	1,507,265.0	<b><u>49</u></b>	2,115.84	2.1	N/A	0
Herbert Street Pumping Station	0.722727	0.1	122,035.30	4.0	0	0	N/A	0
James Street Pumping Station	0.363807	0.1	76,736.17	2.5	540.00	0.5	N/A	0
<b>TOTAL</b>	<b>1,178.21</b>	<b>100</b>	<b>3,049,272.6</b>	<b>100</b>	<b>98,538.69</b>	<b>100</b>	<b>45,924.30</b>	<b>100</b>



## Greenhouse Gas (GHG) Emissions & Energy Intensity – 2012

Ontario Reg. 397/11 requires the tracking of Greenhouse Gas (GHG) emissions and Energy Intensity, for each designated facility. Using 2012 as a baseline, information regarding GHG and Energy Intensity, is as follows:

<u>Common Facility Name</u>	<u>Total Floor Area (sq./ft.)</u>	<u>GHG Emissions</u>		<u>Energy Intensity</u>			
		(KG)	%	ekWh/sq.ft	%	ekWh/ML	%
West Perth Municipal Office	18,654.00	43,650.37	<u>7.9</u>	15.23	7.9	N/A	0
West Perth Fire Hall	4,823.00	14,550.12	2.6	19.64	<u>10.1</u>	N/A	0
West Perth Public Library	6,394.00	7,981.08	1.4	9.23	4.8	N/A	0
OPP/ Water Building	6,608.00	7,884.76	1.4	12.42	6.4	N/A	0
Mitchell Arena/ Community Centre	41,432.00	146,981.05	<u>27</u>	24.50	<u>12.7</u>	N/A	0
Mitchell Lions Pool Bathhouse	3,948.00	5,365.09	1.0	12.37	6.4	N/A	0
Brodhagen Community Centre	7,880.00	9,099.85	1.6	10.19	5.3	N/A	0
Dublin Pavilion	4,134.00	4,508.26	0.8	7.03	3.6	N/A	0
Fullarton Hall	3,080.00	1,831.29	0.3	6.19	3.2	N/A	0
Former Logan Office	4,692.00	1,549.25	0.3	3.43	1.8	N/A	0
Logan Operations Centre	6,710.00	24,221.54	4.4	19.17	<u>9.9</u>	N/A	0
Hibbert Operations Centre	5,616.00	21,823.51	4.0	19.24	<u>9.9</u>	N/A	0
Fullarton Operations Centre	5,392.00	25,957.57	4.7	24.36	<u>12.6</u>	N/A	0
Mitchell Operations Centre	14,350.00	23,581.69	4.3	10.5	5.4	N/A	0
Water Treatment 1, 2, 3 (Wells #1 and #2)	3,000.00	14,357.83	2.6	N/A	0	394.56	0.2
Well #3	169.00	7,706.53	1.4	N/A	0	209.37	0.1
Water Treatment and Well #4	1,296.00	16,521.92	3.0	N/A	0	415.73	0.2
Water Booster/ Standpipe Building	780.00	3,480.02	0.6	N/A	0	N/A	0
Mitchell Wastewater Treatment Plant	2,070.00	148,757.99	<u>27</u>	N/A	0	1,306,744.2	<u>77</u>
Herbert Street Pumping Station	598.00	11,720.27	2.1	N/A	0	168,853.94	<u>9.9</u>
James Street Pumping Station	2,496.00	8,390.68	1.5	N/A	0	226,700.34	<u>13</u>
<b>TOTAL</b>	<b>144,122.0</b>	<b>549,920.66</b>	<b>100</b>	<b>193.55</b>	<b>100</b>	<b>1,703,318.0</b>	<b>100</b>

**Measures to Implement / Applicable Cost & Energy Savings  
from Measures**

The Municipality hopes to achieve its energy conversation goals and objectives by implementing the following measures:

<b><u>Type</u></b>	<b><u>Objective</u></b>	<b><u>Action</u></b>	<b><u>Saving Estimates (Cost/Energy) – as Applicable</u></b>	<b><u>Owner</u></b>	<b><u>Target Date</u></b>
Program	Awareness	Publish the Energy Plan on the Municipality's website	Expected annual energy savings = 1%	CAO	Summer 2014
Program	Awareness	Add Energy Awareness to SLT Meetings		CAO	Summer 2014 – Ongoing
Program	Awareness	Make use of visual displays to demonstrate the importance of Energy Conservation		CAO	Fall 2014
Process	Awareness	Provide an Annual Report to Council (public document) with information on year-over-year energy consumption and energy conservation measures implemented		CAO	Summer 2015 (and annually, each summer thereafter)
Process	Procurement	Incorporate "Life Cycle Costing" into procurement process: <i>Life Cycle Cost = Initial Cost + (Annual Costs X Project Life X Discount Factor)</i>	While initial costs may be higher, energy/ operating savings may be found in the long term	Senior Management	Summer 2014 – Ongoing
Process	Procurement	Consider more energy efficient versions/models when replacing capital equipment	Depends on the product purchased	Senior Management/ Facility Managers	Summer 2014 - Ongoing

**Measures to Implement / Applicable Cost & Energy Savings**  
**from Measures – Continued**

<b><u>Type</u></b>	<b><u>Objective</u></b>	<b><u>Action</u></b>	<b><u>Saving Estimates (Cost/Energy) - as Applicable</u></b>	<b><u>Owner</u></b>	<b><u>Target Date</u></b>
Process	Energy Efficiency	Turn off all electronic office equipment which is not required to be in use during non-working hours	Expected annual energy savings = 1%	All Staff	Summer 2014 - Ongoing
Process	Energy Efficiency	Continue routine building envelope maintenance for facilities – caulking, weather stripping etc.	Expected annual energy savings = 1% (per facility)	Facility Managers	Ongoing
Project	Energy Efficiency	Upgrade lighting in Operations Garages	Expected annual savings = \$1,000 (approx. \$250 per Operations Garage)	Operations Manager	Spring/ Summer 2014
Project	Energy Efficiency	New Blowers at WWTP	Expected annual energy savings = 1%	Operations Manager	Completed Summer 2013
Project	Energy Efficiency	Upgrade lighting in Arena	Expected annual savings = \$1,000	Arena Manager	Summer 2014
Project	Energy Efficiency	Install 'Soft-Start' Compressor at Arena	Expected annual energy savings = 1%	Arena Manager	Summer 2014
Project	Energy Efficiency	Replace HVAC/Boiler Systems in Arena	Expected annual savings = \$1,000	Arena Manager	Summer 2014
Project	Energy Efficiency	Insulate Community Centre	Expected annual energy savings = 1%	Arena Manager	Summer 2015
Project	Energy Efficiency	Install Programmable Thermostat's in facilities	Expected annual savings = \$75 (per facility)	Facility Managers	Ongoing
Project	Energy Efficiency	Install Motion Sensors for lights in facilities	Expected annual energy savings (per facility) = 1%	Facility Managers	Ongoing
Project	Energy Efficiency	Replace all non-'Energy Star' fridges	Expected annual savings (per fridge) = \$120	Facility Managers	Ongoing
Project	Energy Efficiency	Replace Toilets at Library (to low-flow)	Expected annual savings = \$75	Head Librarian	Fall 2014

## Renewable Energy Generation Facilities / Amount of Energy Produced

Ontario Regulation 397/11 requires designated organizations to describe and report on the type(s) of Energy Generation Facilities operated by the designated organization, and the amount of energy produced on an annual basis.

<u>Energy Generation Facility - Type</u>	<u>Address</u>	<u>Description</u>	<u>Amount of Energy Produced</u>
Solar Panel	5949 Frank Street, Mitchell	Ground mounted 'tracker' style Solar Panel, installed Fall of 2013.	16,000 kWh Annually

## Renewable Energy Technologies Employed by the Municipality

Ontario Regulation 397/11 requires designated organizations to describe the type(s) of Renewable Energy Technologies employed by the designated organization, as well as the proposed plan, if any, to operate any Renewable Energy Technologies in the future.

At present, the following Renewable Energy Technologies are employed:

<u>Renewable Energy Technology - Type</u>	<u>Address</u>	<u>Description</u>
Ground Source Heating/Cooling System	<b>Former Logan Office</b> 6082 Perth Line 44, Bornholm	System was installed in the Summer of 1992, providing both heating and cooling to the facility. Supplementary Hydro heating to the facility is in place.
Ground Source Heating/Cooling System	<b>Brodhagen Community Centre</b> 6708 Perth Line 44, Brodhagen	System was installed in the Fall of 2008, providing both heating and cooling to the facility. Supplementary Propane heating to the facility is in place.
Solar Heating System	<b>Mitchell Lions Pool Bathhouse</b> 19 Blenheim Street, Mitchell	System was installed in the Spring of 2010, heating the pool water. Supplementary Natural Gas heating of the pool water is in place.

As of the implementation date of this *Energy Plan*, there are no proposed/ future plans to operate other heat pump technologies, thermal air technologies or thermal water technologies.

## **Review and Reporting**

Energy reporting requirements under the GEA, Ontario Regulation 397/11 and other pertinent Provincial legislation, are factored into our reporting procedures.

In addition to the annual reporting requirements under the legislation, an annual “Energy Report” will be generated by the CAO to apprise Municipal Council and the public of the progress made towards the Municipality’s Energy Goals and Objectives. In preparing the Report, an update shall be provided on the following items for the designated facilities, for the previous year:

- 1) Total Energy Consumption - per energy source, including energy savings (if any);
- 2) Energy Intensity:
  - a. Total GHG Emissions, including savings (if any);
  - b. As applicable, Total Energy Intensity (ekWh/sq.ft), including savings (if any);
  - c. As applicable, Total Energy Intensity (ekWh/ML), including savings (if any);
- 3) List of energy saving Measures implemented over the previous 12 months.

As part of the annual Energy Report process, the Municipality will also review and evaluate the *Energy Plan*, revising it where necessary.