



ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

Prepared for:

TOWNSHIP OF TUDOR CASHEL

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1.0 INTRODUCTION

1.1 BACKGROUND

Evergreen Energy Solutions (Evergreen) was retained by the Township of Tudor Cashel (Township) to provide its Energy Conservation and Demand Management Plan as required by Ontario Regulation 397/11 – *Energy Conservation and Demand Management Plans* (O.Reg. 397/11 – Appendix A).

As part of the *Green Energy Act 2009*, O.Reg. 397/11 came in to force on January 1, 2012. The regulation applies to all public agencies in Ontario, including municipalities and municipal service boards responsible for the treatment or pumping of water or sewage.

The Ontario Provincial Government requires public agencies to better understand and manage their energy consumption. The purposes of the regulation is for public agencies to report annually on energy use and greenhouse gas (GHG) emissions for buildings and facilities in which the agency conducts its operations from, that are heated or cooled or are related to the treatment or pumping of water or sewage.

In addition to the energy usage reporting, the public agencies are required to develop five (5) year energy conservation plans, published online and commencing July 1, 2014.

1.2 PURPOSE AND SCOPE

The purpose of this plan is to document the Provincial requirements related to the energy conservation and management of the Township's facilities, inclusive of the following scope:

- Review of the Township's energy use and GHG emissions in the year 2011 for buildings and facilities in which the agency conducts its operations from, that are heated or cooled or are related to the treatment or pumping of water or sewage. The Township entered the 2011 and 2012 data into the Ontario Ministry of Energy's (MOE) form entitled "Energy Consumption and GHG Emissions Template".
- Inspect all of the Township's buildings covered under the plan and describe past and current energy conservation measures carried out within and around the facilities.
- Review and propose future measures to conserve and manage the Township's energy consumption throughout its operations, including the cost and savings estimates for the improvements.

2.0 METHODOLOGY

2.1 SITE REVIEWS

On May 7, 2014, a Professional Engineer (P.Eng.) from Evergreen completed energy surveys at the Township's buildings and facilities applicable to the legislation.

2.2 FACILITY ENERGY CONSUMPTION REVIEW (2011)

On July 1, 2013, the regulation required public agencies to publish their energy usage for the year 2011 on a MOE prescribed form - "Energy Consumption and GHG Emissions Template". Therefore, the Township collated the 2011 electricity, heating oil, and propane consumption data for all the required buildings and facilities and listed the energy usage on a building by building, fuel type by fuel type, basis. The information was prepared on the "Energy Consumption and GHG Emissions Template" and submitted to MOE and made available to the public through the Township's website and printed form in the Municipal Office. This reporting procedure was repeated in 2014 for the Year 2012.

2.3 DATA ASSESSMENT AND COMPLIANCE REPORTING

The reporting requirements of the regulation are self-explanatory, and are included in this report. As required by the regulation for the MOE prescribed form, the heating oil and propane consumption was converted into equivalent kiloWatt hours (ekWh). The regulation also required the publishing of:

- *GHG emissions in kg CO₂e/yr* - GHG emissions in kilograms of equivalent carbon dioxide per year.
- *Energy Intensity in ekWh/gsf* - Equivalent kiloWatt hours per gross square footage of building.

With all the above information available, the data was entered into the MOE's "Energy Consumption and GHG Emissions Template" and is available on the Township's website and printed form in the Municipal Office.

2.4 ANNUAL COMPLIANCE REPORTING SCHEDULE

The following schedule highlights the dates that the Township shall submit to the Minister (of Energy), publish on its website and intranet, if it has either or both, and make available in printed form at its head office all of the information that is required to be published in relation to O.Reg. 397/11.

Schedule 1 - Annual Compliance Reporting Requirements

Compliance Item	Due Date
Energy Consumption and GHG Emissions Template for Year 2011	July 1, 2013
Energy Consumption and GHG Emissions Template for Year 2012	July 1, 2014
Energy Conservation and Demand Management Plan (Initial)	July 1, 2014
Energy Consumption and GHG Emissions Template for Year 2013	July 1, 2015
Energy Consumption and GHG Emissions Template for Year 2014	July 1, 2016
Energy Consumption and GHG Emissions Template for Year 2015	July 1, 2017
Energy Consumption and GHG Emissions Template for Year 2016	July 1, 2018
Energy Consumption and GHG Emissions Template for Year 2017	July 1, 2019
A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand for energy	July 1, 2019 and by every fifth anniversary thereafter
A revised forecast of the expected results of the current and proposed measures	July 1, 2019 and by every fifth anniversary thereafter
A report of the actual results achieved	July 1, 2019 and by every fifth anniversary thereafter
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 per O.Reg. 397/11, s. 6 (3).	July 1, 2019 and by every fifth anniversary thereafter

3.0 ENERGY CONSERVATION AND DEMAND MANAGEMENT

The Township is committed to managing and reducing the energy consumption across its facilities and operations. The plan includes proactive monitoring of energy usage and forward-thinking facility renovations and building service equipment upgrades. A summary of the above measures, goals, and objectives are to be published in this energy Conservation and Demand Management plan (CDM).

3.1 CURRENT ENERGY CONSUMPTION AND GHG EMISSIONS

The Township's energy consumption and GHG emissions for 2011 and 2012 are available on the Township's website and printed form in the Municipal Office.

3.2 ENERGY CONSERVATION AND DEMAND MANAGEMENT MEASURES

Energy surveys are investigations of site energy use aimed at identifying measures for cost savings, energy savings and reductions in GHG emissions. They provide the information required to make decisions on which are the most cost-effective energy conservation measures to implement.

3.2.1 GOALS AND OBJECTIVES FOR ENERGY MANAGEMENT

This CDM has identified a number of goals and objectives for the Township. These are presented in Schedule 2 below.

Schedule 2 - Energy Conservation and Demand Management Goals and Objectives

Goals		Objectives
1	Reduce energy consumption and GHG emissions in the Township-owned and operated facilities	Set up an energy baseline, using the average energy consumption over a three year period, with the aim of reducing energy consumption by a minimum of 5% by 2019
2	Promote employee and community energy conservation when using the Township owned and operated facilities	Provide training and guidance to Municipal staff and facility end users to conserve energy, explaining the benefits both financially and environmentally to the community
3	Monitor, measure and manage energy consumption in the Township owned and operated facilities	You need to measure to manage. Appoint a staff member to monitor and report on a monthly basis the energy usage across the Township, compared with the baseline and previous year
4	Explore the usage of alternative and renewable energy	Carry out studies on the feasibility of installing alternative and renewable energy in the Township owned and operated facilities and rolling out pilot schemes on the outcome of the studies
5	Promote energy efficiency in Township owned and operated facilities	Township Senior Management lead by example in their approach to energy conservation and management and purchasing.
6	Secure funding to implement energy efficiency savings	Prior to budgeting and implementing an energy conservation measure, check and secure funding available for a Township on local, provincial and federal levels

3.2.2 PAST AND CURRENT MEASURES FOR ENERGY MANAGEMENT

The Township’s past and current measures for energy management are included in Appendix B.

3.2.3 PROPOSED MEASURES FOR ENERGY MANAGEMENT

The Township’s proposed measures for energy management are included in Appendix B.

3.2.4 ECONOMIC REVIEW OF PROPOSED ENERGY MANAGEMENT MEASURES

The Township, like most other public agencies, has budget constraints that need to be taken into consideration during the planning of its facilities’ future. Therefore, the Township would take into account

the proposed energy conservation measures and their estimated payback (i.e. return on capital investment for upgrades/improvements, determined based resultant on operational cost savings) periods during its current and future budget reviews. In tandem, the Township would also be monitoring funding sources available to Municipalities at the time of any project planning, to allow certain energy improvements to be implemented and assist in reducing the payback.

Based on the findings of our review, cost estimates have been prepared relative to the Township's proposed energy conservation measures within its facilities, and are included in Appendix B. The cost estimate should be considered accurate to within +/- 25% of indicated values.

3.2.5 RENEWABLE ENERGY

The Township is open to considering renewable and/or sustainable energy projects for its facilities or as stand-alone projects.

3.2.6 PREFERRED ENERGY TECHNOLOGIES

O.Reg. 397/11 sets out the Province's preferred energy sources for public agencies to take into consideration during the replacement of mechanical and electrical equipment. These energy sources are listed below.

3.2.6.1 GROUND SOURCE TECHNOLOGY

Ground source heat pump technology harnesses energy from below the ground to provide heating in the winter and cooling in summer.

The Township would consider ground source heat pump technology during the initial design stages of all planned heating, ventilation and air conditioning (HVAC) system installations.

3.2.6.2 SOLAR THERMAL TECHNOLOGY

Solar thermal technology is split into two (2) parts:

- thermal air technology uses solar energy to heat and ventilate indoor spaces, and
- thermal water technology uses solar energy to heat domestic hot water.

The Township would consider solar thermal technology during the initial design stages of all planned heating, ventilation and air conditioning (HVAC) or domestic hot water system installations.

3.2.6.3 HEAT PUMP TECHNOLOGY

Heat pump technology comes in two main forms of units, the ground source type mentioned previously in this section and the air source type that draws heat from the outside air during the heating season and rejects heat outside during the summer cooling season.

3.3 SUPPORT FOR PLAN

It is a requirement of O.Reg. 397/11 s.6 (1) (viii) that the public agency's senior management provide confirmation that it approves the energy conservation and demand management plan. The Township's support for this plan is attached in Appendix C of this report.

4.0 SUMMARY AND RECOMMENDATIONS

O.Reg. 397/11 requirements for public agencies has highlighted to the Township the importance and benefits of energy management and reducing consumption. The adage commonly used in the energy management world “you can’t manage what you don’t measure”, used to apply to the Township, like many others, in regards to measuring and monitoring the energy consumption from its facilities.

4.1 SUMMARY OF CURRENT PLAN

This CDM consists of:

- Good recordkeeping on energy consumption and costs, on a site by site basis.
- Internal and external low energy retrofit programs.
- Future potential use of renewable energy technologies.
- Water conservation measures.
- Exchanging end of service life appliances with new Energy Star replacements.
- Exchanging end of service life office equipment with new Energy Star replacements.

4.2 RECOMMENDATIONS

The following recommendations are provided on a higher planning level for consideration by the Township:

1. The Township should designate staff to monitor and managed energy consumption across its operations, including the reviewing of the utility bills on a monthly basis and compare them to the energy usage of the same period from the previous three years’ data. This would identify excessive energy consumption in a particular building.
2. The Township should take into account the proposed energy conservation measures and their estimated payback periods during its current and future budget allocations to ensure the success and continuity of the new energy conservation and demand management plan.
3. In 2011, the Township’s Municipal Office facility had the third highest energy intensity per square foot of building per year, when compared to sixteen (16) other local municipal offices. The office will be one of the facilities the Township prioritises in ensuring the energy conservation measures reduce consumption at this building.

4. Regular planned maintenance on the Township's mechanical and electrical equipment, by experienced licensed technicians, is imperative to ensure the plant operating at its highest efficiency and in a safe working mode.
5. Implement energy conservation measures, commencing those that have very good payback periods and evaluate the measures' performance to established goals.
6. Designate staff on a monthly basis to review energy conservation grants and incentives available to Municipalities from utility companies, and the provincial and federal governments and where possible secure funding for the planned projects.
7. The Township should encourage and train its stakeholders and facility users to help the Township in its goals to reduce energy consumption.

5.0 CLOSING

Evergreen Energy Solutions has prepared this report in accordance with the requirements of Ontario Regulation 397/11, the terms of reference provided by the Township, and standard industry practice.

We trust you find this submission in order and of benefit in the Township's energy conservation and demand management planning needs.

All respectfully submitted by,

EVERGREEN ENERGY SOLUTIONS LTD



Martin Cox, P.Eng., CEng.
Senior Project Engineer



Tyler H. Peters, P.Eng.
Project Director

APPENDIX A

Ontario Regulation 397/11

Energy Conservation and Demand Management Plans

Green Energy Act, 2009

ONTARIO REGULATION 397/11

ENERGY CONSERVATION AND DEMAND MANAGEMENT PLANS

Consolidation Period: From January 1, 2012 to the [e-Laws currency date](#).

No amendments.

This is the English version of a bilingual regulation.

Definitions

1. In this Regulation,

“municipal service board” means,

- (a) a municipal service board or joint municipal service board established or continued under the *Municipal Act, 2001*,
- (b) a city board or joint city board established or continued under the *City of Toronto Act, 2006*, or
- (c) a joint board established in accordance with a transfer order made under the *Municipal Water and Sewage Transfer Act, 1997*; (“commission de services municipaux”)

“post-secondary educational institution” means a university in Ontario, a college of applied arts and technology in Ontario or another post-secondary educational institution in Ontario, if the university, college or institution receives an annual operating grant; (“établissement d’enseignement postsecondaire”)

“public hospital” means,

- (a) a hospital within the meaning of the *Public Hospitals Act*, or
- (b) the University of Ottawa Heart Institute/Institut de cardiologie de l’Université d’Ottawa; (“hôpital public”)

“school board” means a board within the meaning of the *Education Act*. (“conseil scolaire”) O. Reg. 397/11, s. 1.

Application

2. Sections 4, 5 and 6 apply only to public agencies prescribed by section 3. O. Reg. 397/11, s. 2.

Public agencies

3. The following are prescribed as public agencies for the purposes of the Act:

1. Every municipality.
2. Every municipal service board.

3. Every post-secondary educational institution.
4. Every public hospital.
5. Every school board. O. Reg. 397/11, s. 3.

Energy conservation and demand management plans

4. (1) A public agency shall prepare, publish, make available to the public and implement energy conservation and demand management plans or joint plans in accordance with sections 6 and 7 of the Act and with this Regulation. O. Reg. 397/11, s. 4 (1).

(2) An energy conservation and demand management plan is composed of two parts as follows:

1. A summary of the public agency's annual energy consumption and greenhouse gas emissions for its operations.
2. A description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the public agency's operations and for managing the public agency's demand for energy, including a forecast of the expected results of current and proposed measures. O. Reg. 397/11, s. 4 (2).

Summary of annual energy consumption and greenhouse gas emissions

5. (1) Subject to subsection (2), a summary of the public agency's annual energy consumption and greenhouse gas emissions must include a list of the energy consumption and greenhouse gas emissions for the year with respect to each of the public agency's operations that are set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs and that are conducted in buildings or facilities the public agency owns or leases that,

- (a) are heated or cooled and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption; or
- (b) are related to the treatment or pumping of water or sewage, whether or not the building or facility is heated or cooled, and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption. O. Reg. 397/11, s. 5 (1).

(2) If only part of a building or facility where an operation is conducted is heated or cooled, the public agency's summary referred to in subsection (1) must only include energy consumption and greenhouse gas emissions for the part of the building or facility where the operation is conducted that is heated or cooled. O. Reg. 397/11, s. 5 (2).

(3) The public agency's summary referred to in subsection (1) must be prepared using the form entitled "Energy Consumption and Greenhouse Gas Emissions Template"

that is available from the Ministry and must include the following information and calculations for each of the public agency's operations:

1. The address at which the operation is conducted.
2. The type of operation.
3. The total floor area of the indoor space in which the operation is conducted.
4. A description of the days and hours in the year during which the operation is conducted and, if the operation is conducted on a seasonal basis, the period or periods during the year when it is conducted.
5. The types of energy purchased for the year and consumed in connection with the operation.
6. The total amount of each type of energy purchased for the year and consumed in connection with the operation.
7. The total amount of greenhouse gas emissions for the year with respect to each type of energy purchased and consumed in connection with the operation.
8. The greenhouse gas emissions and energy consumption for the year from conducting the operation, calculating,
 - i. the annual mega watt hours per mega litre of water treated and distributed, if the operation is a water works,
 - ii. the annual mega watt hours per mega litre of sewage treated and distributed, if the operation is a sewage works, or
 - iii. per unit of floor space of the building or facility in which the operation is conducted, in any other case. O. Reg. 397/11, s. 5 (3).

(4) If a public agency conducts, in the same building or facility, more than one operation set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs, it shall make a reasonable allocation of the amount of energy purchased and consumed for the year among each of those operations. O. Reg. 397/11, s. 5 (4).

(5) In preparing its annual Energy Consumption and Greenhouse Gas Emission Template, a public agency may exclude its energy consumption and greenhouse gas emissions relating to its temporary use of an emergency or back-up generator in order to continue operations. O. Reg. 397/11, s. 5 (5).

(6) On or before July 1, 2013, every public agency shall submit to the Minister, publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office the public agency's Energy Consumption and Greenhouse Gas Emission Template for operations conducted in 2011. O. Reg. 397/11, s. 5 (6).

(7) On or before July 1 of each year after 2013, every public agency shall submit to the Minister, publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office the public agency's Energy Consumption and Greenhouse Gas Emission Template for operations conducted in the year following the year to which the last annual Template related. O. Reg. 397/11, s. 5 (7).

(8) The following information, if applicable, must also be submitted, published and made available to the public with every Energy Consumption and Greenhouse Gas Emission Template:

1. If the operation is a school operated by a school board,
 - i. the number of classrooms in temporary accommodations at the school during the year, and
 - ii. whether there is an indoor swimming pool in the school.
2. If the public agency is a public hospital, whether a facility operated by the public hospital is a chronic or acute care facility, or both. O. Reg. 397/11, s. 5 (8).

Energy conservation and demand management measures

6. (1) On or before July 1, 2014, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office,

- (a) the information referred to in subsection 6 (5) of the Act with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs;
- (b) the information referred to in paragraph 2 of subsection 4 (2) of this Regulation with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs; and
- (c) the following information:
 - (i) information on the public agency's annual energy consumption during the last year for which complete information is available for a full year,
 - (ii) the public agency's goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy,
 - (iii) the public agency's proposed measures under its energy conservation and demand management plan,
 - (iv) cost and saving estimates for its proposed measures,

- (v) 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,
- (vi) a description of,
 - (A) the ground source energy harnessed, if any, by ground source heat pump technology operated by the public agency,
 - (B) the solar energy harnessed, if any, by thermal air technology or thermal water technology operated by the public agency, and
 - (C) the proposed plan, if any, to operate heat pump technology, thermal air technology or thermal water technology in the future,
- (vii) the estimated length of time the public agency's energy conservation and demand management measures will be in place, and
- (viii) confirmation that the energy conservation and demand management plan has been approved by the public agency's senior management. O. Reg. 397/11, s. 6 (1).

(2) In addition to publishing and making available the required information with respect to the operations mentioned in clauses (1) (a) and (b), a public agency may also publish information with respect to any other operation that it conducts. O. Reg. 397/11, s. 6 (2).

(3) On or before July 1, 2019 and on or before every fifth anniversary thereafter, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office all of the information that is required to be published and made available under subsection (1), the Energy Consumption and Greenhouse Gas Emission Template that is required to be submitted and published on or before July 1 of that year and the following information:

1. A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand for energy.
2. A revised forecast of the expected results of the current and proposed measures.
3. A report of the actual results achieved.
4. 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. O. Reg. 397/11, s. 6 (3).

(4) If a public agency initiated energy conservation measures or energy demand management measures before July 1, 2014, the public agency may also include in its first plan information on the results of those measures. O. Reg. 397/11, s. 6 (4).

7. Omitted (provides for coming into force of provisions of this Regulation). O. Reg. 397/11, s. 7.

TABLE 1

Column 1	Column 2	Column 3
Item	Type of public agency	Operation
1.	Municipality	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 or pumping of water or sewage.
		9. Parking garages.
2.	Municipal service board	1. Buildings or facilities related to the treatment or pumping of water or sewage.
3.	Post-secondary educational institution	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	1. Schools.
		2. Administrative offices and related facilities.
		3. Parking garages.
5.	Public hospital	1. Facilities used for hospital purposes.
		2. Administrative offices and related facilities.

O. Reg. 397/11, Table 1

APPENDIX B

Facility Energy Conservation and Demand Management Measure Summary



Site: Municipal Office
Address: 371 Weslemkoon Lake Road
 Gilmour, Ontario

Built: Circa 1950

Area of Building (SF): 4630

Primary Use: Municipal Office/Community Centre: with a library opened eight (8) hours a week

Primary Heating System: Oil-Fired Forced Air System

Air Conditioning: Central Forced Air System

Energy Conservation and Demand Management Measure Summary							
Measure Summary		Past	Current	Proposed			
Measure Type	Description			Priority	Capital	Savings (Annual)	Simple ROI (Years)
1.0 Grounds					\$300	\$75	4
1.01	Energy Efficient Outdoor Lighting With Control Sensors	No	Yes	3	\$300	\$75	4
2.0 Building Envelope					\$250	\$40	7
2.01	Doors and Windows	Yes	Yes	2	\$250	\$40	7
2.02	Attic/Building Insulation	Partial		TBD	TBD	TBD	
3.0 Heating, Ventilation, Air Conditioning (HVAC) and Domestic Hot Water					\$580	\$465	2
3.01	Install Programmable Thermostats on HVAC Systems	Yes, Manual Thermostat	Continuing	2	\$330	\$400	1
3.02	Heat Recovery Ventilation System	No	No	3	TBD	TBD	TBD
3.03	Programmable Timer on the Domestic Hot Water Tank	No	No	2	\$150	\$75	2
3.04	Insulate Pipework on the Domestic Hot Water Service	No	No	2	\$100	\$10	10
4.0 Electrical					\$5,180	\$1,385	4
4.01	Replace Existing Light System With an Energy Efficient Lighting System	No	No	2	\$4,400	\$1,250	4
4.02	Replace Existing Manual Lighting Control System With Occupancy Sensor	No	No	2	\$300	\$30	10
4.03	Install Energy Efficient Emergency Exit Signs	No	No	4	\$450	\$75	6
5.0 Renewable Energy							
5.01	Renewable Energy Generation facility Operated by the Township, such as Solar Photovoltaic (PV)	No	No				
5.02	Ground Source Heat Pump (GSHP) and Air Source Heat Pump (ASHP) Systems (Heating & Cooling)	No	No				
5.03	Solar Thermal Air Technology (Space Heating)	No	No				
5.04	Solar Thermal Water Technology (Domestic Hot Water Heating System)	No	No				
6.0 Water Conservation							
6.01	Low-Flow Toilets	No	Commenced		NA	NA	NA
7.0 Energy Efficient Appliances/Office Equipment							
7.01	Energy Star Rated Appliances	Commenced	Continuing		TBD	TBD	TBD
7.02	Energy Star Rated Office Equipment	Commenced	Continuing		TBD	TBD	TBD
Estimated Totals					\$6,280	\$1,955	4



Site: Municipal Works Garage
Address: 593 Weslemkoon Lake Road
Gilmour, Ontario

Built: Circa 1950, with addition circa 1960

Area of Building (SF): 5600

Primary Use: Truck Service Garage

Primary Heating System: Oil-Fired Forced Air System

Energy Conservation and Demand Management Measure Summary

Measure Summary		Past	Current	Proposed				
Measure Type	Description			Priority	Capital	Savings (Annual)	Simple ROI (Years)	
1.0 Grounds						\$400	\$80	5
1.01	Energy Efficient Outdoor Lighting With Control Sensors	No	No	Replace existing non LED outdoor lighting with energy efficient lighting with control sensors	2	\$400	\$80	5
2.0 Building Envelope						\$550	\$550	1
2.01	Doors and Windows	Yes	No	The weatherstripping on the entrance doors and windows appear to be in fair condition	4	TBD	TBD	TBD
2.02	Garage Doors	Yes	No	Replace weatherstripping on the bottom of the garage doors	2	\$400	\$50	8
2.03	Educate the Operators	Yes	Yes	During the winter months, close the garage doors when not in operation	1	\$150	\$500	1
3.0 Heating, Ventilation, Air Conditioning (HVAC) and Domestic Hot Water						\$745	\$460	2
3.01	Install Programmable Thermostats on HVAC Systems	Yes, Manual Thermostat	Continuing	Install programmable thermostats to control the indoor air temperature and night/weekend set back temperatures	2	\$495	\$450	2
3.02	Programmable Timer on the Domestic Hot Water Tank	No	No	Install a programmable timer on domestic hot water tank system	2	\$150		#DIV/0!
3.03	Insulate Pipework on the Domestic Hot Water Service	No	No	All existing domestic hot water service pipework to be insulated	2	\$100	\$10	10
4.0 Electrical						\$2,400	\$1,000	3
4.01	Replace Existing Light System With an Energy Efficient Lighting System	No	No	Commence a halogen and T12 lighting fixture replacement program with new energy efficient LED and T8 fluorescent lighting systems	2	\$2,400	\$1,000	3
5.0 Renewable Energy								
5.01	Renewable Energy Generation facility Operated by the Township, such as Solar Photovoltaic (PV)	No	No	Municipality to monitor the Ontario Power Authority's FIT program for opportunities				
5.02	Ground Source Heat Pump (GSHP) and Air Source Heat Pump (ASHP) Systems (Heating & Cooling)	No	No	Township will take into consideration the installation of GSHPs and ASHPs during replacement of all its heating, ventilation and air conditioning (HVAC) systems				
5.03	Solar Thermal Air Technology (Space Heating)	No	No	Township will take into consideration the installation of solar thermal air technology during replacement of all its heating, ventilation and air conditioning (HVAC) systems				
5.04	Solar Thermal Water Technology (Domestic Hot Water Heating System)	No	No	Township will take into consideration the installation of solar thermal technology during replacement of all its hot water tanks/heaters				
6.0 Water Conservation						\$300	\$20	15
6.01	Low-Flow Toilets	No	No	At the end of an existing toilet's service life, replace with low-flow type	4	\$300	\$20	15
7.0 Energy Efficient Appliances/Office Equipment								
7.01	Energy Star Rated Appliances	Commenced	Continuing	Replace end of service life equipment (refrigerators, kettles, etc.) with new Energy Star rated appliances		TBD	TBD	TBD
Estimated Totals						\$4,395	\$2,110	3



Site: Old Hastings Works Garage
Address: 8386 Old Hastings Road
 Gilmour, Ontario

Built: Circa 2006

Area of Building (SF): 1370

Primary Use: Truck Service Garage

Primary Heating System: Oil-Fired Forced Air System

Energy Conservation and Demand Management Measure Summary

Measure Summary		Past	Current	Proposed				
Measure Type	Description			Priority	Capital	Savings (Annual)	Simple ROI (Years)	
1.0 Grounds						\$350	\$80	5
1.01	Energy Efficient Outdoor Lighting With Control Sensors	No	Yes, Photocell Control	At end of service life, replace existing non LED outdoor lighting with energy efficient lighting with control sensors	4	\$350	\$80	5
2.0 Building Envelope						\$150	\$25	6
2.01	Garage Doors	Yes	No	The weatherstripping on the garage doors appear to be in fair condition	5	TBD	TBD	TBD
2.02	Entrance Doors	Yes	No	Replace weatherstripping on the entrance door	3	\$150	\$25	6
3.0 Heating, Ventilation, Air Conditioning (HVAC) and Domestic Hot Water						\$165	\$150	2
3.01	Install Programmable Thermostats on HVAC Systems	Yes, Manual Thermostat	Continuing	Install programmable thermostats to control the indoor air temperature and night/weekend set back temperatures	2	\$165	\$150	2
4.0 Electrical								
4.01	Replace Existing Light System With an Energy Efficient Lighting System	No	No	Due to the amount of annual operating time of the garage, the halogen and T12 lighting fixture replacement program will be delayed until the end of the existing system's service life	5	TBD	TBD	TBD
5.0 Renewable Energy								
5.01	Renewable Energy Generation facility Operated by the Township, such as Solar Photovoltaic (PV)	No	No	Municipality to monitor the Ontario Power Authority's FIT program for opportunities				
5.02	Ground Source Heat Pump (GSHP) and Air Source Heat Pump (ASHP) Systems (Heating & Cooling)	No	No	Township will take into consideration the installation of GSHPs and ASHPs during replacement of all its heating, ventilation and air conditioning (HVAC) systems				
5.03	Solar Thermal Air Technology (Space Heating)	No	No	Township will take into consideration the installation of solar thermal air technology during replacement of all its heating, ventilation and air conditioning (HVAC) systems				
5.04	Solar Thermal Water Technology (Domestic Hot Water Heating System)	No	No	Township will take into consideration the installation of solar thermal technology during replacement of all its hot water tanks/heaters				
Estimated Totals						\$665	\$255	3

APPENDIX C

Support for Energy Conservation and Demand Management Plan

371 Weslemkoon Lake Road
Box 436, R.R. #2
GILMOUR, ON K0L 1W0
clerk@tudorandcashel.com
www.tudorandcashel.com



WANDA DONALDSON, REEVE
BERNICE CROCKER, CLERK-TREASURER
613-474-2583 (Phone)
613-474-0664 (Facsimile)

THE CORPORATION OF THE TOWNSHIP OF TUDOR AND CASHEL

June 09, 2014

GREENVIEW ENVIRONMENTAL

13 Commerce Court
PO Box 100
BANCROFT, ON
K0L 1C0

ATTN: MARTIN COX

Dear Sir:

RE: ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

This is confirmation that the Township of Tudor and Cashel's senior management has approved the Township's Energy Conservation and Demand Management Plan, as required under Ontario Regulation 397/11, Section 6, Sentence (1), Clause (vii).

Sincerely,

A handwritten signature in cursive script that reads 'Bernice Crocker'.

BERNICE CROCKER
Clerk-Treasurer

APPENDIX D

Statement of Service Conditions and Limitations



EVERGREEN ENERGY SOLUTIONS LTD. – STATEMENT OF SERVICE CONDITIONS AND LIMITATIONS

Provision of Services and Payment

Upon documented acceptance of Evergreen Energy Solutions Ltd.'s (Evergreen Energy) proposed services, costs and associated terms by the client, Evergreen Energy may commence work on the proposed services directly. Evergreen Energy may utilize subcontractors as required to complete the work without express permission of the client. Upon retention of Evergreen Energy's services related to this project, the client agrees to remit payment for the services rendered for the specified period within thirty (30) days of receipt as invoiced by Evergreen Energy. In the event of non-payment by the client, Evergreen Energy reserves the right, without external influence or expense, to discontinue services and retain any documentation, data, reports, or other project information until such time as payment is received by Evergreen Energy.

Service and Labour Warranty

Workmanship for the construction of the project has a one (1) year warranty, free of poor workmanship, within the defined scope of the Project, commencing on the date Project receives final inspection.

Equipment Warranty

Warranty for equipment supplied by Evergreen Energy for the Project is warranted consistent with the equipment manufacturer's warranty. In the event of an equipment failure or malfunction, of any kind, by any means, Evergreen Energy is not responsible for any financial losses sustained by the Client.

Professional Work Product

The Services provided by Evergreen Energy are intended for one time use only. All documents, that may include but not be limited to, reports plans, designs, boring logs, field data, field notes, laboratory test data, calculations, and estimates and all electronic media prepared by Evergreen Energy are considered its professional work product (the "Documents"). Evergreen Energy retains all rights to the Documents. Client understands and acknowledges that the Documents are not intended or represented by Evergreen Energy to be suitable for reuse by any party, including, but not limited to, the Client, its employees, agents subcontractors or subsequent owners on any future project, whether Client's or otherwise, without Evergreen Energy's prior written permission. Any reuse unauthorized by Evergreen Energy will be at Client's sole risk.

Intellectual Property

To the extent that the Services involve Evergreen Energy providing Client with engineering, design, and material information related to the Project, Evergreen Energy expressly reserves all rights in and to the products specified for the Project. Evergreen Energy shall own all Intellectual Property (as hereinafter defined) associated with the Services and the Evergreen Energy Products together with any modifications, updates or enhancements to said Intellectual Property and grants no right or license to such Intellectual Property to Client. Client conveys to Evergreen Energy any interest in any such Intellectual Property rights that, notwithstanding the foregoing, would otherwise be deemed by law to vest in Client. "Intellectual Property" includes patents, patent applications, trademarks, trademark applications, copyrights, moral rights or other rights of authorship and applications to protect or register the same, trade

secrets, industrial rights, know-how, privacy rights and any other similar proprietary rights under the laws of any jurisdiction in the world. Evergreen Energy may use and publish the Client's name and give a general description of the Services rendered by Evergreen Energy for the purpose of informing other clients and potential clients of Evergreen Energy's experience and qualifications. Evergreen Energy retains the rights to use project photos for marketing and sales purposes as example of Evergreen Energy's professional work product. Evergreen Energy will not explicitly identify the project location unless the Client specifically authorizes Evergreen Energy to do so.

Electronic Information

Client acknowledges that electronic media is susceptible to unauthorized modification, deterioration, and incompatibility and therefore Client cannot rely upon the electronic media versions of the Documents. In the event of any discrepancy, Evergreen Energy's hardcopy shall prevail. It is the Client's responsibility to acknowledge receipt of all Project Documentation in writing.

Reliance

When preparing documentation, Evergreen Energy considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but Evergreen Energy is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines, and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

Confidentiality

Evergreen Energy provides proposals, reports, assessments, designs, and any other work for the sole party identified as the client or potential client in the case of proposals.

For proposals specifically, the information contained therein is confidential, proprietary information, and shall not be reproduced or disclosed to any other party than to that of the addressee of the original proposal submission, without prior written permission of Evergreen Energy. Breach of this condition may result in legal action against the breaching party by Evergreen Energy.