





Community Energy Plan Executive Summary Report

## Township of Mulmur





June 2020







Community Energy Plan Comprehensive Report Executive Summary

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#### **Township of Mulmur**

**Executive Summary** June, 2020

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#### 1.0 Introduction

#### 1.1 Purpose of the Community Energy Plan (CEP)

The purpose of the Community Energy Plan (CEP) is to develop a set of guidelines that will help the Mulmur community and its municipal government:

- Improve energy efficiency;
- Reduce energy consumption and greenhouse gas emissions;
- Study the impact of future growth on energy needs; and
- Foster renewable energy production and economic development.

The CEP process evaluates a community's existing energy use and greenhouse gas (GHG) emissions in order to:

- Determine community-wide energy consumption and GHG emissions; and
- Identify and implement solutions to improve energy efficiency and conservation.

R.J. Burnside & Associates Limited (Burnside) in partnership with the Township of Mulmur (Mulmur) have created this CEP. The plan will be used as a reference tool to track and compare Murmur's energy consumption and emissions in future years and set goals for reduction of GHG emissions. This plan will also serve as a tool for educational purposes and the report will provide a place to obtain additional information for the public. Mulmur and Burnside wishes to acknowledge funding provided by the Federation of Canadian Municipalities and the Ontario Ministry of Energy without which this important work would not have been possible.

#### 2.0 Objective

#### 2.1 Community Energy Plan Vision (CEP)

This CEP captures Mulmur's energy use and provides a strategic plan on how to move towards a more sustainable energy system while reducing climate changing greenhouse gas (GHG) emissions. The CEP will make recommendations and outline actions to bring financial, social, and environmental benefits to the community. This study identifies energy consumption and the associated GHG emissions by the community. It documents the sectors which are consuming the most and the least energy. It provides information on the GHG emissions associated with this energy consumption. The CEP's purpose is to guide the community on actions that can be taken to achieve both energy and GHG reduction goals. Goals and targets for reduction have been recommended in this report will need to be approved by Council following public review of the CEP reports.

The CEP will act as a baseline for monitoring if the goals and targets to reduce energy use and GHG emissions are being met. With increased energy cost, and global temperatures rising it is critically important for each community member to be informed of your individual roll to help mitigate our impact on the environment.

#### 2.1.1 Mulmur 2040 Vision Statement

"By no later than 31/12/2040 the Municipality of Mulmur will have achieved Net Zero GHG Emissions from the engagement/participation of 95 percent residents including Business Owners. The Municipality of Mulmur will be recognized among the top 10 [or better] in the Province for energy related GHG emission reduction."

#### 2.2 Study Limitations

This report follows the guidelines of the International Emissions Analysis Protocol (Canadian Supplement). However, because this report is focused on energy consumption and the associated GHG emissions other emission sources not directly associated with energy consumption have not been recorded. Examples of GHG emissions not captured in this study include the following sources:

- Waste and waste management;
- Livestock, enteric emission and manure management;
- Biomass burning;
- Harvesting wood products;
- Soil management, fertilization, liming, pesticides \*except for emissions released indirectly from machinery;
- Emissions from leaks or spills; and
- Industrial processing and product use.

#### 3.0 Study Limitations

#### 3.1 Greenhouse Gas

#### 3.1.1 Why Track Greenhouse Gases?

A global climate crisis is occurring. The Canadian House of Commons passed a motion to declare a national climate emergency<sup>1</sup>. Immediate action is required to combat the effects of anthropogenic (originating from human activity) climate change.

<sup>1</sup> House of Commons, Motion Government Business No. 29 (National climate emergency).

According to Lawrence National Centre for Policy and Management,<sup>2</sup>

"Canada's greenhouse gas (GHG) emissions currently represent about 1.6 percent of the global total. Canada is among the top 10 global emitters and one of the largest developed world per capita emitter of GHGs (Canada stands firmly in the top 3 for emissions per capita). Canadian federal governments have committed to reduce annual GHG emissions from the current level of 726 mega tonnes (Mt) to 622 Mt in 2020 and 525 Mt in 2030. Within Canada, GHG emissions vary widely across provinces ranging from 267 Mt in Alberta to 1.8 Mt in PEI in 2013. In per capita terms, Saskatchewan and Alberta are among the developed world's largest emitters at 68 and 67 tonnes respectively. Per capita emissions in BC, Ontario, and Quebec are in the 10 to 14 tonne range, comparable to best performers in Western Europe."

Figure 1-1 below shows GHG emissions released in Canada by economic sector. Mulmur's CEP studies the emission released from energy (blue bars below). Noted emissions from energy encompasses about 78% of all global emissions (Natural Resources Canada, 2019).





Global goals have been set to reduce our emissions, the Paris Agreement being the most notable, aims to keep global climate below 2° (rise) based on 1950's preindustrial levels.

<sup>2 &</sup>quot;By the Numbers Canadian GHG Emissions", Paul Boothe and Félix-A. Boudreault Lawrence National Centre for Policy and Management, Ivey Business School at Western University, 2016.

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In Canada almost all territories and provinces agreed to the Pan-Canadian Framework on Clean Growth and Climate Change. Each community must do its part to reduce GHG levels.

#### Figure 3-2: History of Global CO2 Levels<sup>3</sup>

Data source: Reconstruction from ice cores. Credit: NOAA



Figure 1-2 displays the levels of carbon dioxide through history and bring attention to the spike in CO2 levels from 1950 to present. Scientists have proven that global temperature increases and decreases for thousands of years have mirrored these CO2 levels.

#### **Study Protocols**

The International Local Government Greenhouse Gas Emissions Analysis Protocol (IEAP) is resource for local governments to use when tracking GHG emissions and creating a standard for GHG recording. Though this report is energy focused, the IEAP structure was a suitable guide to follow, due to the correlation between energy use and greenhouse gas emissions. Because of this correlation, Mulmur's CEP has the added benefit of providing an inventory for greenhouse gases released from energy consumption.

<sup>3</sup> NASA. (2019, May 17). Carbon Dioxide. Retrieved from Global Climate Change Vital Signs of the Planet: https://climate.nasa.gov/vital-signs/carbondioxide/

#### 3.1.2 The Climate Emergency

Readers may have noted the recent action by 11,000 of scientists from all over the world to issue a call to all of us and in particular governments worldwide to take immediate and decisive action to stop climate change. They state in their opening paragraph:

"Scientists have a moral obligation to clearly warn humanity of any catastrophic threat and to - tell it like it is. On the basis of this obligation and the graphical indicators presented below, we declare, with more than 11,000 scientist signatories from around the world, clearly and unequivocally that planet Earth is facing a climate emergency"4.

It is an important document and we urge people to read it.

Many municipalities in Canada (recently Collingwood) along with our Federal Government and the European Union have made similar declarations. Mulmur may wish to consider a similar declaration. Burnside presents some very positive actions in our recommendations that may be taken locally to help achieve the objectives noted earlier in this study to reduce energy consumption and prevent climate change.

Based on the most recent Canadian Government Report we must act quickly to prevent any further increases in GHG production and dramatically reduce levels in the atmosphere as quickly as possible. Although this report is focused on energy consumption one of the principle drivers for the CEP and its proposed programs is climate change. Burnside thought it was important to provide a reference to the full report at: www.ChangingClimate.ca/CCCR2019.<sup>5</sup>

## 4.0 The Community of Mulmur, Energy and Emissions Assessment

The CEP report distinguishes energy consumption and emissions created by the whole community and those specifically created by Mulmur's Municipal Government. As one might expect, the municipal government's energy use and emissions are very small (about 2%) in comparison to the Community as a whole.

To properly track energy use in Mulmur a base year is determined to show either future progress or regression. For this study the base year chosen was 2018. Ideally the base year is as recent as possible to ensure the most up to date data. Not all data from 2018 was available. In the case of missing data alternative methods were used to calculate either energy consumption or CO2e emissions.

<sup>4</sup> William J Ripple, Christopher Wolf, Thomas M Newsome, Phoebe Barnard, William R Moomaw, World Scientists' Warning of a Climate Emergency, BioScience, biz088, https://doi.org/10.1093/biosci/biz088

<sup>5</sup> Canada's Changing Climate Report, CCCR 2019 - See www.ChangingClimate.ca/CCCR2019.

Readers are likely aware that not all forms of energy consumption produce the same amount of GHG emissions. If the energy is produced from renewable sources the emissions will be very small, if any. If the energy is produced from hydrocarbon sources the emissions are likely to be high. But a reduction in energy use no matter the source can save operating costs.

The report provides a detailed description of the energy consumption and production in Mulmur along with the emissions released due to energy consumption and/or production. The two figures below also found in the comprehensive report summarize some of the CEP findings.







#### Figure 4-2: Mulmur's Generated GHG Emissions

In the CEP Comprehensive Report, Section 2.0 an energy map of the community is provided to show the different energy consumption by residential housing age in different areas of Mulmur. Settlement patterns are reflected in the house ages shown.



In Section 3.0 of the Community of Mulmur's: transportation, residential, agricultural, commercial, industrial and institutional sectors energy consumption and GHG emissions are reviewed in detail. Figure 3-4 below shows the energy consumption totals for each sector with emphasis on the transportation sector – the largest consumer of energy and emitter of GHG's. The second largest consumer of energy in Mulmur is the residential sector.





#### 4.1 Community Transportation Energy & Emissions Assessment

In Section 3.1 of the comprehensive report community transportation has been assessed. It covers the estimated energy consumed in the form of combustion fuels within Mulmur's boundaries. Energy for this sector will be expressed in gigajoules to provide a consistency in units though out this report. Emissions directly released from combustion fuels and if applicable indirect emissions from grid sourced energy will be recorded into Mulmur's generated emissions from transportation, expressed in tonnes of CO2 equivalent.

Mulmur's community transportation contributes half of the total energy consumed, but it contributes 60.5 percent of GHG emissions.

Below are a few statistics used to project Mulmur's community transportation energy use and emissions released:

- Average VTK (km) 16,024 (Canadian Supplement to the International Emissions Analysis Protocol, page 44);
- The average amount of fuel used per household is 2,903.2 Litres (rounded) per year for 2018; and
- The average amount of emissions released from transportation per household in Mulmur is 7.231 t of CO2e.

#### 4.2 Community Residential Energy & Emissions Assessment

The CEP study in Section 3.2 assessed several aspects of Mulmur's residential housing stock. Residential energy consumption accounted for 38 percent of the total energy consumption. Detailed information is provided on the following subjects.

- Building Age;
- Building Size;
- Energy Efficient Upgrades;
- Building Code Development Overview;
- Understanding Energy Consumption by Use; and
- Energy Consumption by Fuel Source.

To provide just a sample of the residential assessment data we have provided Table 4-1 below Mulmur's residential houses were grouped by construction date in relation to Ontario's building code development. The table also shows energy consumed. Although houses built between 1850-1940 only take up 23% of the total square footage of floor space, they are using 28% of Mulmur's residential energy. This highlights the inefficiency of houses built before 1941.

Year Built	Average Energy	Energy Efficiency
	Intensity	
1850 1040	621 C I/M2	29.7% less efficient then
1050-1940	.021 00/101	houses built after 2007.
10/1 2006	513 C I/M2	19% less efficient then
1941-2000	.515 65/10	houses built after 2007.
2007-2018	.460 GJ/M <sup>2</sup>	-

Table 4-1:	<b>Energy Intensity</b>	v b	V Year Built <sup>6</sup>
	Energy interior	<b>/</b> ∼.	

<sup>6</sup> Natural Resources Canada. (n.d.). Comprehensive Database. Retrieved from Natural Resources Canada:

http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/showTable.cfm?type=CP&sector=com&juris=on&rn=22&page=0

In Table 4-1 the average energy intensity shows that on average houses built between 1850 to 1940 are using 29.7% more energy per square foot than houses built after 2007. However, further evaluation shows the houses getting larger in more recent years in Mulmur and therefore using as much or more energy even though they are more energy efficient. The report provides an informative read for residents who may not fully appreciate their individual contribution to energy consumption and GHG emissions.

#### 4.3 Agricultural Energy and Emissions Assessment

This CEP report focuses on energy consumption and the GHG emissions released exclusively from energy consumption. Therefore, as noted earlier agriculture emissions shown in this report will not provide a total estimate of the emission's generated from that sector. For example, methane from enteric fermentation and manure management are not calculated or counted in Mulmur's emissions generation for agriculture.

It is also important to note that the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories, groups emissions from building and vehicles on farms or other agriculture areas into stationary energy and transportation sources.

Mulmur's CEP report includes energy from agricultural buildings and vehicles used on farms in the agricultural sector. It provides estimates of tractor fuel used, and the emissions generated, it also reports electricity used from barn lighting and secondary emissions released from electricity generation.

## 4.4 Commercial Industrial and Institutional Energy and Emissions Assessment

Energy consumption and GHG emissions from buildings and facilities for these three sectors were recorded and assessed. Data for this sector's assessment was obtained from Natural Resource Canada's (NRCan) comprehensive data base and GIS data analysis completed by Burnside.



Figure 4-5: Commercial, Industrial, Institutional Energy Consumption

#### 4.5 Municipality of Mulmur's Energy and Emissions Assessment

A detailed description of the energy consumption and production in each of Mulmur's municipal facilities has been assessed. It includes the GHG emissions released due to energy consumption and/or production and is based largely on actual data provided by Mulmur.

Mulmur does not provide any sewage treatment facilities or solid waste management facilities. Although the Township used to provide landfill disposal services to its residents the County of Dufferin now provides all solid waste collection and disposal services. The Township does provide drinking water services to the hamlet of Mansfield.

The CEP Comprehensive Report provides a detailed assessment of energy consumption and GHG emissions concerning:

- Municipal Owned Fleet Vehicles;
- Contracted Services Vehicles and Equipment;
- Municipal Buildings;
- North Dufferin Community Center (Arena), Overview (Ice Plant included);
- Hamlet Drinking Water Supplies, Mansfield; and
- Other Stationary Energy Consumption.

## 5.0 Net Zero Road Map for Economic Development and Energy Security

The proposed CEP Goals recommended for the study are shown from 2018 to 2040. Implications of goal achievement in relationship to anticipated population growth is discussed and thought to be low. The CEP goals are based on a reduction of GHG emissions. The goals are shown in Figure 5-1 below.

Burnside proposes aggressive goals to achieve Net Zero GHG emissions by 2040. We propose a five-year review and reporting schedule on the progress achieved to reach these goals. Updates and modifications to the CEP every five years should be made to ensure progress and the goals are achieved.

From the public comments received to date there appears to be strong support for action from the majority of those responding.

#### 5.1 What Does Net Zero Emissions Mean?

Net zero emissions means that all man-made greenhouse gas emissions must be removed from the atmosphere through reduction measures. "Net emissions" means gross emissions (including all sector activities, mostly from fossil fuel combustion) minus carbon sinks from forestry activities and agricultural soils. Although Mulmur can be expected to benefit from the consideration of carbon sinks due largely to its forested areas. We recommend that a more easily measured Net Zero emissions target focus on the buildings and transportation sectors which are the largest emitters of GHG.

As defined by the U.S. Department of Energy, a Net Zero energy building, as a building with zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is equal to the amount of renewable energy created on the site, or by renewable energy sources offsite<sup>7</sup>. Net Zero Emissions for Mulmur's transportation sector could be measured by the reduction of vehicle hydrocarbon fuel consumption and conversion to Electric Vehicles.

Again, from public comments submitted there is support for EV's and charging stations in Mulmur.

Although this study focuses on energy conservation, we recommend that the priority targets at this time for a Net Zero future (by 2040) relate GHG emissions. Moving from current energy consumption using carbon-based fuels to clean energy consumption based on renewables will represent a giant step forward in achieving the goals set out earlier and as recommended.

<sup>7</sup> A Common Definition for Zero Energy Buildings, The National Institute of Building Sciences, September 2015, U.S. Department of Energy



Figure 5-1: Mulmur's Proposed GHG Emissions Targets calculated as CO2e

## 6.0 Demonstration Project Examples

In Section 6.0, the CEP comprehensive report briefly reviews several demonstration projects examples. These projects were studied to prove that action by individual Mulmur residents is not only possible but will provide cost effective solutions. The demonstration projects show the estimated return on investment. In most cases the proposed investments in either energy conservation or renewable energy provide a positive return. The demonstration projects reviewed can be found in Volume 2 and 3 and include the following:

#### 6.1 Energy Audit of the North Dufferin Community Centre, Honeywood

The purpose of this audit is to show the benefits of a formal professional energy audit and how it can save money for property owners. In this case several energy saving measures were recommended that with investments will save the Municipality of Mulmur a range from \$22,000 to \$28,500 (rounded) per year with a reasonable pay-back period depending on government programs and actual energy prices. If that savings estimate was constant over the next 10 years it would represent \$220,000 to \$285,000 in savings at the arena. Other potential measures that have a longer payback period were not recommended.

# 6.2 Demonstration Solar Feasibility Assessment for a Typical Mulmur Residence

The Solar Photovoltaic (PV) Feasibility Assessment demonstrated that even under the current net-metering program by the Ontario Government a solar project can have a reasonable payback on the investment. The average residential house size in Mulmur is 1854 sq. ft. (see Volume 1, Section 3.2.2). To replace existing energy sources consumption (electricity, oil, propane, wood) the average residence is estimated to require approximately 20 kW of electricity. The payback period or Return on Investment (ROI) for a solar system that is paid for 100% without a loan is about 11.5 years. The solar system would be connected to the grid under the net metering program and will provide all of the electrical energy needed for the house. Solar systems can be expected to produce energy for 25 to 30 years.

## 6.3 A Demonstration Heating Source Assessment for a Typical Mulmur Community Residence

A simplified lifecycle cost analysis comparing different heating sources; propane, oil, geoexchange (geothermal) heat pump (GSHP), and air source heat pumps (AHSP) was analyzed. For all cases analyzed ASHP and GSHP outperform the fossil fuel furnace options.

The high efficiency furnaces for both oil and propane were a lower Net Present Cost than the mid efficiency furnaces. GSHP and AHSP have a high initial capital cost but a low yearly operating cost. Based off these assumptions geoexchange systems and Air source heat pumps could offer financial benefits to Mulmur residents. More detailed lifecycle cost analysis for site specific considerations should be undertaken before any development decisions are made. For the base case scenario, the ASHP had a net present cost of \$35,000 compared to \$42,700 for a high efficiency propane furnace.

## 6.4 Electric Vehicle (EV) Infrastructure Assessment

The EV infrastructure assessment determined that there is currently limited publicly available electric charging stations in or close to Mulmur. Two locations were identified at the time of this report's production. One is located at the Mansfield Ski Resort on Airport Road and the other EV charging station just outside of Mulmur at Trillium Ford (located at Hwy 10 between Primrose and Shelburne).

The assessment reviewed the critical issues to consider when selecting EV charging locations and charger needs depending on use expectations. For example, home use overnight charging versus commuter use.

The assessment also provided a review of EV's currently available on the market. It was determined that EV's that are both cost competitive and can achieve significant travel distances before needing to be recharged are now available. Mulmur residents are strongly encouraged to consider purchase or lease of an EV.

#### 6.5 Agricultural Anaerobic Digestion (AD) Assessment

Our study considered a potential project opportunity for Mulmur agricultural operations to benefit from a renewable energy project.

An anaerobic digester (AD) is considered a renewable energy technology. The anaerobic digestion process occurs in an enclosed vessel where agricultural manure and/or plant waste materials are broken down by micro-organisms in the absence of oxygen. Methane gas is generated and is directed to an internal combustion engine powering an electrical generator (for electrical production). The heat produced from the facility can also be used.

According to a report by Robert C. Anderson, Don Hilborn, and Alfons Weersinka,

"...Previous studies have generally found ADs to be a poor investment for private firms without public assistance. The mixed results on the financial feasibility of ADs could be due to the site of the analysis since results vary with size, geographic location or the type of AD system, which are not standardized but rather customized to the individual situation."

Readers are encouraged to review the CEP, Comprehensive Report Volume 2 which provides more detail on the subject. Projects could be viable under certain circumstances and with public sector grants.

## 7.0 Stakeholder Engagement and Consultations

The CEP Comprehensive Report, Section 7.0 reviews the efforts to engage and consult with both the Mulmur public and its Municipal Government officials. Details of the public engagement and consultation activities can be found in Volume 4.

The success of the program and achievement of any goals established by Council will be highly dependent on participation of the Mulmur community's residents and businesses. Our recommendations reflect this reality and if approved by Council will provide strong financial incentives for the Mulmur community to participate and act.

A number of opportunities for stakeholder engagement were provided during the study as documented in the Stakeholder Engagement and Consultation Report such as:

- Newsletter and newspaper information provided;
- A website established;

- Invitations to join a leadership team, appointment of a council member team leader and team formation;
- An opinion survey was undertaken;
- A public open house was held with preliminary findings of the study provided; and
- Formal presentations to Township Council, Staff Meetings and presentations.

#### 7.1 Final Town Hall Meeting

A final public meeting was planned for the spring of 2020 and preparation of materials was underway when the COVID-19 outbreak made it apparent that the meeting should not be held. The draft reports were published for public comment on the Township website. It is understood that some public comments were received. Staff and council prepared comments on the report and Burnside replied to all comments received. In lieu of the public meeting that was originally planned Burnside proposed an alternative to obtain additional public comments on the draft reports through use of a survey monkey on-line survey provided in Volume 4. Questions were prepared and the survey set up and provided to the Township. The Township determined not to proceed with the survey and asked that we finalize the reports based on the comments previously provided.

## 8.0 Community Energy Plan Conclusions

Section 8.0 of CEP, Volume 1 presents our conclusions from the study. Energy consumption and GHG emissions from energy related activities of the Mulmur community and its Municipal Government have been clearly established. The study concluded that GHG emissions related to energy consumption Mulmur's emissions recorded in this report do not represent total emissions from activities in Mulmur as explained in the report. They do however identify the sources of significant energy consumption and GHG emissions by the Mulmur community.

The study shows that taking action to prevent climate change by reductions or changes to the type of energy consumed can be very beneficial to each property owner. The CEP includes recommendations and ideas that can bring financial, social, and environmental benefits to the community and its Municipal Government.

Mulmur residents have so far been sheltered from the dramatic effects that are being felt around the world in varying degrees. We concluded that this will not last! Canada is warming at twice the rate of some other areas of the world. This study shows that it is not only possible for Mulmur's residents to individually contribute, but also benefit from the recommended actions proposed.

Active engagement of Mulmur's Municipal Government and other sources by providing funding incentives and marketing the proposed solutions will encourage residents and businesses to act.

#### 8.1 Recommendations

This report and the recommendations for action that follow, if approved by Council, are expected to encourage the Mulmur community to embrace the CEP and work to achieve the stated general and specific target goals.

Mulmur residents and businesses will need to help ensure that electrical energy cost and energy security benefits accrue directly by acting on the energy conservation measures proposed and by developing renewable energy projects on their property. Both hydrocarbon fuel and electrical energy costs are expected to increase in the future. Energy conservation and development of renewable energy projects will provide not only cost benefits but energy security to those who act now. Transition to renewable energy will ensure local GHG emissions are substantially reduced. This CEP study shows that energy conservation will reduce transportation, residential and business costs.

Most, but not all of the recommended actions that the Mulmur community and municipal government need to take will involve capital expenditures. This is capital that many may not be able to easily access. Therefore, our key recommendations focus on access to capital to help the Mulmur community and its government undertake the energy conservation and renewable energy projects that will make a difference.

#### 9.0 Community Energy Plan Recommendations

The CEP recommendations and actions proposed to achieve the CEP goals are explained in Section 9.0 of the CEP, Comprehensive Report and summarized below.

#### 9.1 Establish a Local Improvement Charges (LIC) Fund

The recommendations provide considerable detail on what a LIC program looks like. They also review the basics of a possible LIC Program Design.

The Ontario Ministry of Municipal Affairs and Housing authorized Ontario Regulation (O.Reg.) 322/12, amending O.Reg. 586/06 under the Municipal Act, 2001. The regulatory amendments expanded the examples of uses to specifically include energy efficiency, renewable energy and water conservation in alignment with municipal goals and policies. The report includes excerpts from the Clean Air Partnership that describe the LIC program features.

"The new LIC regulation describes a user-pay cost allocation method that covers all costs, which include the upgrades plus pro-rated administrative costs of delivering the program (such as marketing) as well as interest on borrowing. As with traditional LICs, this LIC would be repaid as a special temporary charge on the participating owner's property tax bill that would be removed once the cost is recovered by the municipality. Another unique LIC benefit is that financing stays with the property not the owner. on sale. As a result, if owners move before completing the repayments. the new owner continues LIC payments and receives the benefits. If property ownership changes before the full LIC debt is repaid, the municipality continues to collect the charge through the property tax charged on that property. In legal terms, the charge runs with the land. The property owner is able to make a one-time payment to the municipality to clear the outstanding balance before selling a property. Otherwise, the LIC automatically transfers to successive owners upon sale.

Participation in the program is completely voluntary. Upon entering into an agreement with the municipality, participants could access financing for extended terms up to 20 years at a competitive fixed rate that would include a provision for administrative costs. The opportunity to have long term financing at an attractive rate can help homeowners finance larger, higher-impact upgrades that could achieve deeper savings. The participants repay the financing as a user fee on their property tax bill for the duration of the term. The LIC does not increase the owner's property taxes. The participants in the program, not the general taxpayer, share the cost of program administration."

#### Next Steps for Developing LIC in Mulmur

- Retain the services of a Consultant to design the LIC program;
- Retain Legal services to provide advice and prepare the LIC Legal Agreements; and
- Retain the services of an Energy Manager.

Detailed recommendations can be found in the CEP Comprehensive Report, Volume 1.

#### 9.2 Sector Recommendations for CEP and LIC Program Development

Among those stakeholders who responded, it is clear there is strong support for action by Council. Our recommendations are focused on the key sectors that are major consumers of energy and the associated emitters of GHG emissions in Mulmur. The recommendations assume that a LIC program will be established. Those sectors in order of importance are:

- The Community Transportation Sector;
- Community Residential Sector;
- Business, Institutional Buildings and Properties; and
- The Agricultural Sector.

Please see the CEP Comprehensive Report, Volume 1 for detailed recommendations concerning each of the above sectors.

#### 9.3 Recommendations for Municipal Infrastructure

The CEP Comprehensive Report, Volume 1, details recommendations concerning each of the following subject areas.

- Municipal Fleet Transportation;
- Municipal Contractors;
- North Dufferin Community Centre, Honeywood;
- Installation of a PV Solar System on the Honeywood Firehall;
- Installation of a PV Solar System at the Main Mansfield Well;
- A Tree Planting Program;
- Local and County Authority to Require New Housing and Other Building Infrastructure to Meet Net Zero Building Standards or Approach the Province to Promote Building Code Improvements; and
- A Mulmur Promotional Program to Encourage Net Zero for both the Building and Transportation Sector.

#### 9.4 Update CEP with Comprehensive GHG data at next Plan Update

Comments received by Mulmur Council and staff outlined the desire for a comprehensive GHG emissions baseline. Some of the data needed for this was unavailable at the time of the study, furthermore, the resulting calculation is out of the scope of the funding for this Community Energy Plan. However, it is recommended that a comprehensive GHG inventory study including sources and sinks from non-energy related items accompany an update to the CEP when funding becomes available.

The missing data could be collected through better data from Statistics Canada (StatsCan as outlined in section 10.2). If data can not be obtained through StatsCan data could be collected from a qualified social research firm. This was an item applied for in the initial funding request for this report, however budget that would have allowed this work was denied. With the required data a qualified firm could calculate a comprehensive net GHG inventory from sources other than energy.

#### 9.5 Establish Energy Conservation Stakeholder Committee

A Council member has been identified to lead this committee. It is intended that the committee be a recommending body who can potentially help with community outreach efforts to engage with fellow community members and local businesses and implement the CEP recommendations.

#### 9.6 Apply for Energy Manager Funding When Available

In cooperation with municipal staff Burnside previously assisted in an application for Energy Manager funding from NRCan. The Township applied for 100% funding for the professional assistance that will be required to undertake and report on energy assessments for municipal, residential, business and institutional facilities in Mulmur. This professional assistance integrates well with development of the proposed LIC funding program. Unfortunately, the funding application was not approved, however, when funding becomes available again, Mulmur should apply. Other funding programs should be considered to help implement the CEP recommendations. Council approval of a CEP report is currently a prerequisite for some funding programs.

## 10.0 Measuring Net Zero Success

Section 10 of the CEP Comprehensive Report, Volume 1 makes recommendations on issues associated with the difficulties of measuring future results and determining if the established goals have been met in the periods recommended.

- The report recommends a five-year reporting schedule to determine progress against the goals set;
- It recommends a letter to Statistics Canada asking that energy consumption questions be included in the next Census;
- An alternative goal results measurement was recommended to survey the community by a qualified professional social research firm; and
- Measure the LIC program uptake as a measure of success.



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