

FIVE YEAR ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

JULY 2018 – JUNE 2023



**THE CORPORATION
OF THE
MUNICIPALITY OF
CALVIN**

PREPARED: JUNE 2018

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1.0 Introduction

This Energy Management Plan (EMP) builds on the previous report on the five (5) year period 2014 – 2018 and updates to the next five (5) year period 2018 - 2022. The purpose of this plan is to continue to provide a description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the Municipality's operations and for managing the Municipality's demand for energy.

After June 2022, the Municipality of Calvin will continue to provide the following:

- details of implemented energy conservation measures
- revised forecasts of expected results
- actual results achieved
- planned changes to help meet targets and forecasts

1.1 Background

On January 1, 2012, Ontario Regulation 397.11 under the Green Energy Act 2009 required all broader public sector organizations, which includes municipalities, to develop and implement energy conservation and demand management plans. In addition, information must be provided on their annual energy consumption for the year prior to their plan creation. This will provide a baseline for energy consumption and allow broader public sector organizations to track progress towards achieving the goals laid out in their energy management plan. The Corporation of the Municipality of Calvin was incorporated in 1887 and is located in the Ontario District of Nipissing. The municipal operations consist of the following:

- 1) Fire Hall (two bay facility)
- 2) Public Works Buildings (including two bay garage and sand storage dome)
- 3) Municipal Administrative Offices
- 4) Community Centre

1.2 Declaration of Commitment

The Municipality of Calvin hereby continues its commitment to allocate the resources necessary to complete the development and implementation of an ongoing Five (5) Year Energy Conservation and Demand Management Plan with the focus on being environmentally responsible through continued reduction of energy consumption, maximization of waste diversion and through sustainable planning and environmental management systems.

2.0 Annual Energy Consumption

In 2011, the Ministry of Energy required all broader public sector organizations to post a summary of their annual energy consumption and greenhouse gas emissions with respect to each of their operations.

2.1 2011 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	5753.00	3643.2	n/a	10396.72
Garage	2583.3	9977.37	n/a	11535.7	18609.13
Office	852.0	5343.93	950.1	n/a	3018.78
Hall	2900.3	17696.06	3180.2	n/a	10909.80

2.2 2012 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	5087.42	2994.8	n/a	8679.84
Garage	2583.3	9218.51	n/a	12173.2	19644.05
Office	852.0	4667.65	632.2	n/a	2177.45
Hall	2900.3	15626.46	2116.5	n/a	7289.72

2.3 2013 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	5235.29	3707.90	n/a	10539.6298
Garage	2583.3	10673.14	n/a	16112.80	25640.8537
Office/Hall	3752.0	22690.54	3731.20	n/a	11930.1674

2.4 2014 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	7004.81	3072.80	n/a	8937.03697
Garage	2583.3	8661.23	n/a	13973.20	22190.83504
Office/Hall	3752.0	21608.05	2718.50	n/a	9077.99268

2.5 2015 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	5128.01	3527.8	n/a	9854.26014
Garage	2583.3	8282.60	n/a	16876.3	26337.50339
Office/Hall	3752.0	19333.07	4420.6	n/a	12864.56608

2.6 2016 Energy Consumption

As reported on the Ministry of Energy website:

Operation	Sq. Ft.	Hydro kW/h	Fuel Oil Liters	Propane Liters	Kg GHG Emissions
Fire Hall	3121.5	3839.373	2670	n/a	7439.64857
Garage	2583.3	9108.42	n/a	14070.7	22006.50968
Office/Hall	3752.0	21352.21	3311.8	n/a	9817.31800

2.7 Analysis of the Present State of Energy Use:

STRENGTHS	WEAKNESSES
<p>Successful implementation of some energy efficiency projects in existing facilities continues</p> <p>Continued support expressed by all senior staff</p>	<p>Limited financial resources for energy efficient planning and implementation</p> <p>Minimal energy awareness, commitment, and communication</p> <p>Staff changes and training/familiarity</p> <p>Council change at each 4 year municipal election requiring training and "buy-in"</p>

	Changes at Provincial and Federal levels as a result of election and ongoing legislative changes
OPPORTUNITIES	THREATS
<p>Audits have already identified improvements</p> <p>New regulation that requires municipal energy and greenhouse gas monitoring, planning, target-setting and reporting</p>	<p>Budget constraints increase hesitance to devote funds to energy projects</p> <p>New energy efficiency projects and standards that stretch limited resources and are incompatible with current aging structures</p> <p>Aging structures that make energy retro fits challenging, expensive and/or not possible without rebuild.</p>

3.0 Goals and Objectives Achieved From 2006-2010

The Municipality of Calvin pro-actively works toward reducing the amount of energy use and eliminating energy waste in all four of its municipal operations.

- (i) Action: Changed water system from water treatment of well water to a cistern system that holds potable water delivered by truck. The new water system is used by the community hall/municipal office building and the roads garage. Water is regularly tested by a reputable lab and results are filed with the health unit.
Result: Reduction in hydro cost between 2005 and 2006 for the water maintenance system was \$3,160. Elimination of the six hour backwash pumping system also reduced hydro usage.
- (ii) Action: Range hood replacement from a large industrial fan to two residential range hood fans in 2010 in the community hall kitchen.
Result: Reduced heat loss in the kitchen and reduced hydro consumption.
- (iii) Action: Added 1" foam insulation to the entire outside envelope of the community hall/municipal office building in 2006.
Result: Reduced heat loss in the hall and offices.
- (iv) Action/Result: In 2007 replaced two large old picture windows and frames in municipal offices with new low e argon windows and also tinted glass in these windows.
Result: Reduced heat loss in the offices in winter and also reduced energy used for air conditioning in summer months.

3.1 Goals and Objectives Achieved From 2011-2013

Municipal staff are aware of energy use and work towards conservation by utilizing the following energy-saving audits and/or programs offering grants, rebates or low-interest loans to date.

- Hydro One's Power Savings Blitz to replace light ballasts at no charge
 - Infrastructure Canada reimbursement of 75% of the cost to upgrade and make the municipal offices accessible.
- (i) Action: Replaced seven light ballasts in community hall kitchen and municipal offices in 2011 using a no charge Hydro One Power Savings Blitz program valued at \$1,560.75.
Result: Hydro usage in the community hall was reduced by 2,069 kWh between 2011 and 2012, while usage in the municipal offices was reduced by 676 kWh.
- (ii) Action: Replaced thermostats in the front and back municipal offices to programmable thermostats in 2011.
Result: Furnace oil usage was reduced by 1,064 liters between 2011 and 2012.
- (iii) Action: Replaced old portable air conditioner in front office with newer used air conditioner in 2012.
Result: Contributed to hydro usage reduction by 676 kWh in the municipal office between 2011 and 2012.
- (iv) Action: Relocated thermostat at Fire Hall to back of building in 2012.
Result: Reduced oil usage by 648 liters and reduced hydro usage by 666 kWh between 2011 and 2012.
- (v) Action/Result: Replaced east side door in the community hall by insulated quick-closing door in 2012.
Result: Reduced heat loss in hall.
- (vi) Action/Result: Replaced the front door in the municipal offices in 2013 with an automatic door with a side window using tinted glass. Infrastructure Canada grant reimbursed 75% of the cost.
Result: Reduced heat loss in municipal offices.

3.2 Goals and Objectives Achieved From 2014-2018

Municipal staff continues to promote awareness of energy use and work towards conservation in-house on a daily basis. Utilization of energy-saving audits and/or programs offering grants, rebates or low-interest loans to date continues.

- i) Action: 2014 Replace weather stripping on public works garage – two front main overhead doors.
Result: Reduce heat loss on public works garage while doors are closed.
- ii) Action: 2015 Replaced windows in public works garage.
Result: Further reduce heat loss.
- iii) Action: 2017 Replace fluorescent ceiling lights in public works garage with T-8 style lighting as a full change to LED was deemed too costly at this time.
Result: As a step towards further energy savings.
- iv) Action: 2017 Remove oil furnace from Community Centre, as well as electric hot water tank. Replace with energy efficient propane furnace and in-line “on-demand” hot water heater.
Result: Decreased heating budget by \$2,000 first year but unable to measure GHG emissions for 2017-2018 at this time since we are working two years behind in energy reporting.
- v) Action: 2018 Replace one electrical heating unit (of 2) in the public works garage due to failure. Second unit will be replaced as required.
Results: Intention is to see reduction in electricity costs and GHG emissions at year end.
- vi) Action: 2018 Replace and update sand dome propane furnace/boiler.
Results: Not known at this time.
- vii) Action: 2018 Remove and replace metal siding, soffits and fascia at Fire Hall and reinsulate all walls. Replace all aged windows and 2 man-doors. Plan also to replace two overhead doors as well in fall 2018 depending on budget for insulation and re-siding.
Results: Intend to see a substantial reduction in energy use at year end 2018.

4.0 Proposed Measures for Energy Conservation & Demand Management

July 2018, the Municipality of Calvin published the following information on its website:

- (i) Types of municipal operations
- (ii) Annual energy consumption during the last year
- (iii) Proposed measures under its energy conservation and demand management plan
- (iv) Cost and saving estimates for its proposed measures

- (v) Estimated length of time its energy conservation and demand management measures will be in place, and
- (vi) Confirmation that the energy conservation and demand management plan has been approved by Council.

The Municipality of Calvin proposes to manage its demand for energy by implementing the following proposed measures over the next five (5) years:

A: Technical Measures:

- (i) Goal: Replace roofing, siding and insulation on public works garage, no date currently set.
Anticipated Result: Reduce energy usage 25-30%.
- (ii) Goal: Add solar panels to all municipal buildings, no date currently set.
Anticipated Result: Reduce energy usage.
- (iii) Goal: Replace lighting on ice rink with LED, no date currently set.
Anticipated Result: Reduce energy usage.
- (iv) Goal: Replace oil furnace at Fire Hall with propane furnace, no date currently set.
Anticipated Result: Reduce energy costs.

B: Behavioral Measure:

- i) Goal: Further develop, improve and implement a Staff/Council engagement program to solicit energy saving ideas from municipal Staff/Council to improve awareness of energy and to create new conservation techniques whenever and wherever possible.
Anticipated Result: Create a more energy-conscious environment at the Staff/Council level to actively assist with ways to reduce energy consumption.

C: Organizational Measure:

- i) Goal: Discuss the development of a policy requiring that all new buildings be designed to LEED Silver or Gold standards.
Anticipated Result: Significant reduction in energy consumption and GHG emissions.

5.0 Summary

The Municipality of Calvin continues its commitment to allocating the resources necessary to continue the development and implementation of a continued five year Energy Conservation

and Demand Management Plan. This is evidenced by the pro-active goals and objectives achieved over the past twelve years that have successfully and measurably reduced energy consumption in all four of its municipal operations. While some of the proposed measures for the next five year Plan are both feasible and affordable, others will depend on available funding for renewable energy projects.

On or before July 1, 2022 and on or before every fifth anniversary thereafter, the Municipality of Calvin will publish the following information on its website:

- (i) A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand for energy.
- (ii) A revised forecast of the expected results of the current and proposed measures.
- (iii) A report of the actual results achieved.
- (iv) A description of any proposed changes to be made to assist the municipality in reaching any targets it has established or forecasts it has made.