



MUNICIPALITY OF MORRIS-TURNBERRY

ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN for the term- January 1, 2019 to December 31, 2023

**Plan prepared and completed:
June 6, 2019**

**Plan approved by:
Trevor Hallam, CAO/Clerk
June 11, 2019**

**Plan submitted and received by the Council of the Municipality of Morris-Turnberry on:
July 2, 2019**

Public Notification:

- 1. Posted on the Municipal Website**
- 2. Physical copy available at the Municipality of Morris-Turnberry Municipal Office**

Energy Conservation and Demand Management Plan

Municipality of Morris-Turnberry

From: 2019-01-01 to: 2023-12-31

Commitment

- **Declaration of Commitment:** The Municipality of Morris-Turnberry will allocate the necessary resources to develop and implement an Energy Conservation and Demand Management Plan as required under O.Reg 507/18. Council supports energy planning because it will help avoid cost increases and improve service delivery while protecting the environment by reducing the Municipality's greenhouse emissions. Staff and council will update the plan as required under O.Reg 507/18 or any subsequent legislation.
- **Vision:** The Municipality of Morris-Turnberry will strive to continually reduce our total energy consumption and associated greenhouse gases through wise and efficient use of energy, while maintaining an efficient and effective level of service for the general public. This will involve a collaborative effort to increase the education, awareness and understanding of energy management within the municipality and among staff. This vision can be achieved through the integration of energy efficient infrastructure, operational efficiencies and building a culture of energy awareness within the municipality.
- **Policy:** The Municipality of Morris-Turnberry will incorporate energy efficiency into all areas of policy development. Consideration will be given in the development of, but not limited to organizational and human resources policies, management procedures, procurement practices, financial management, investment decisions and facility operation and maintenance. As a major operating cost for facilities and equipment, energy costs will be factored into the lifecycle costs analysis and asset management analyses policies of the municipality.
- **Goals:** The Conservation and Demand Management Plan was completed to help continuously identify areas to improve the energy efficiency of our facilities and processes in order to reduce our operating costs, energy consumption and greenhouse gas emissions. The Municipality believes these goals are attainable while maintaining an efficient and effective level of service for the general public.
- **Overall Target:** The Municipality of Morris-Turnberry has successfully surpassed its 5% reduction goal in energy consumption from its peak usage in 2013/2014. The completion of the projects outlined in Table 'C' has resulted in an overall reduction of energy use, reduction of greenhouse gas emissions and reduction of energy costs. The Municipality will strive to further reduce its overall energy consumption whenever possible and financially feasible with the proposed projects in Table 'A' and ongoing processes outlined in Table 'B'.
- **Objectives:**
 1. Investigate ways to improve energy efficiency across municipal facilities.
 2. Analyze energy costs and look for savings opportunities. This will include taking advantage of available resources and funding for energy projects.
 3. Monitor and report on energy consumption annually.

Organizational Understanding

- **How We Manage Energy Today:** The management of energy consumption and the energy performance of our facilities and equipment are the responsibilities of Finance (cost management), Works Department (maintenance) and department managers (operations). The data is received via supplier invoices and entered into the LAS Energy Planning Tool allowing for the generation of reports as required. Electricity is supplied by Hydro One and natural gas by Union Gas on an as needed basis, priced at the standard rates offered by the provider.
- **Summary of Current Energy Consumption, Cost and GHGs:** Total 2018 energy consumption in the Municipality of Morris-Turnberry is approximately 1,458GJ at a cost of \$43,565 and greenhouse gas emissions of 43.1 tonnes/year eCO₂.
- **Renewable Energy Utilized or Planned:** The Municipality of Morris-Turnberry currently does not own or operate any renewable energy systems. Municipal land is leased to an independent company for the operation of a solar panel. The Municipality of Morris-Turnberry will continue to support the inclusion of renewable energy sources throughout the area.

Planning

- **Links with other municipal plans:** The energy management plan will be coordinated with the municipality's budget planning process, maintenance plans and overall asset management plan. Energy conservation will be incorporated into both short-term and long-term planning processes.
- **Consideration of energy efficiency for all projects:** The Municipality of Morris-Turnberry will incorporate energy planning into the life cycle cost analysis for all capital projects. Additionally energy efficiency will be incorporated into the regular upkeep and maintenance of existing buildings and equipment.
- **Energy Leader:** Energy efficiency leadership will be designated to the departments responsible for the operation and maintenance of their buildings and equipment.
- **Energy Team:** All staff members and personnel will be empowered to act in the Municipality's best interests in matters relating to energy procurement, usage and conservation. Through first hand experience and observations, employees can suggest alterations to existing processes to reduce waste and improve energy efficiency. Collectively each department will contribute towards the Municipality's overall energy reduction goals.
- **Key Individuals:** Departmental managers will be responsible for energy performance within their own departments. Each can provide essential input and will be an integral part of the energy management process. Efficiencies discovered in one department will be shared among all managers and utilized where appropriate to maximize the total savings opportunity.
- **Consideration of energy efficiency for all projects:** The Municipality of Morris-Turnberry will incorporate energy consumption as part of the life cycle cost analysis for the design and procurement for all capital projects. The same consideration will be given to projects whether they are constructed in house or contracted to an outside company.
- **Consideration of energy efficiency of acquired equipment:** The Municipal purchasing procedures will be modified as required to incorporate energy efficiency into the criteria for selection of materials and equipment.
- **Business Procedures:** The Municipality of Morris-Turnberry will review all business processes and modify them as necessary in order to incorporate energy efficiency considerations.

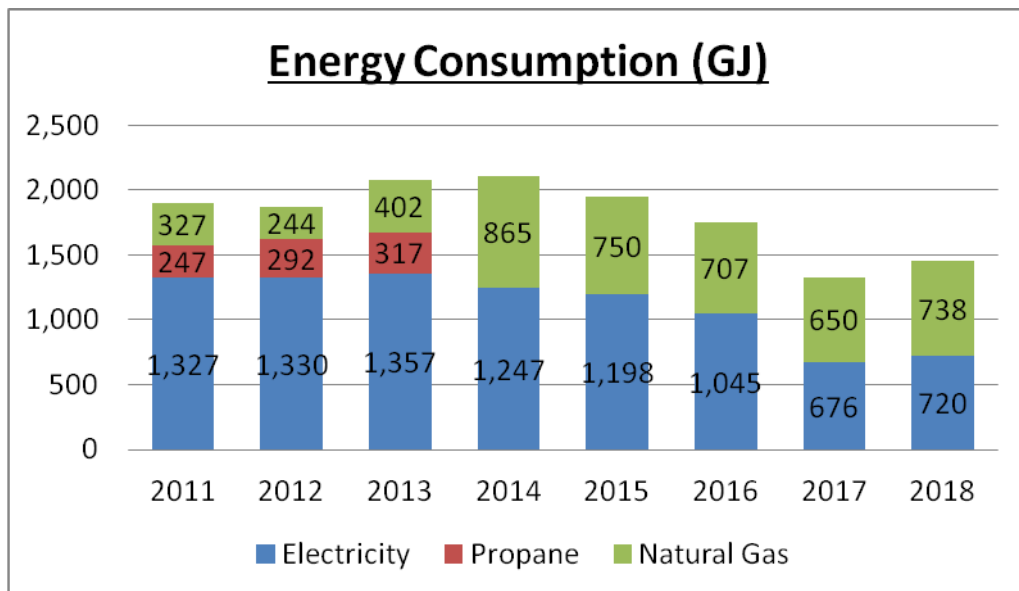
Projects Execution

- **Municipal Level:** The Municipality of Morris-Turnberry will continually develop and evaluate the plans, projects and programs outlined within the Conservation and Demand Management Plan. All staff will be educated on the importance of energy conservation and work towards a culture of conservation. Through web based energy management tools staff will be able to see the results of their efforts and compare the Municipality of Morris-Turnberry usage to benchmarks and industry standards.
- **Asset Level:** In order to sustain a corporate culture of conservation, departmental management will be encouraged to promote energy efficiency awareness throughout Municipal facilities. Although the managers have the lead responsibility all Municipal employees will be familiar with and encouraged to promote energy efficient measures wherever and whenever possible.

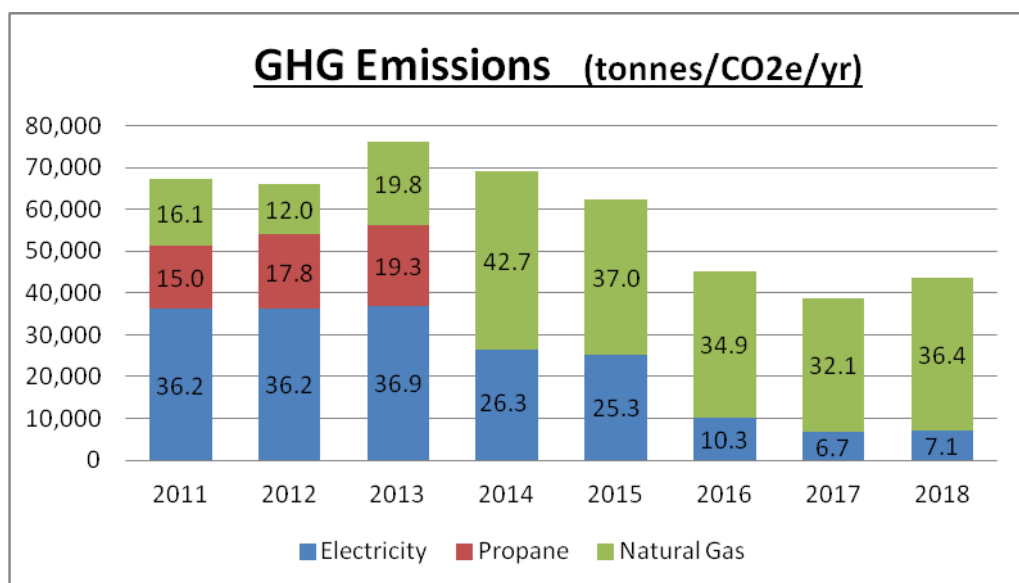
Review

- **Energy Plan Review:** The Municipality of Morris-Turnberry will continually monitor its energy consumption and greenhouse gas emissions. Municipal staff will develop and annual progress report and update Council on the Municipality's energy consumption, greenhouse gas emissions and total energy costs.

- **Energy Consumption:** 2018 energy consumption consisted of 720 GJ from electricity and 738 GJ from natural gas. The total energy consumption of 1,458 GJ represents a decrease of approximately 30% over the 2014 peak level of 2,112 GJ and a decrease of approximately 23% from the 2011 baseline of 1,901 GJ. This decrease was largely attributable to upgrading the Municipal streetlights to LED Streetlights.



- **Green House Gas Emission:** 2018 GHG emissions consisted of 7.1tonnes CO2e from electricity and 36.4 tonnes CO2e from natural gas. The total GHG emissions of 43.50 tonnes CO2e, represents a decrease of approximately 42% from the 2013 peak level of 76.0 tonnes CO2e and a decrease of approximately 35% from the 2011 baseline level of 67.30 tonnes CO2e. This decrease was largely attributable to upgrading the Municipal streetlights to LED Streetlights.



- **Cost:** The Municipality of Morris -Turnberry's total energy costs in 2018 was \$43,122. This represents an overall decrease of \$32,839 or 56% from the 2016 peak level of \$75,961 and a decrease of \$10,504 or 19% from the 2011 baseline level. The largest contributor to the overall decrease was the upgrade to LED streetlights.

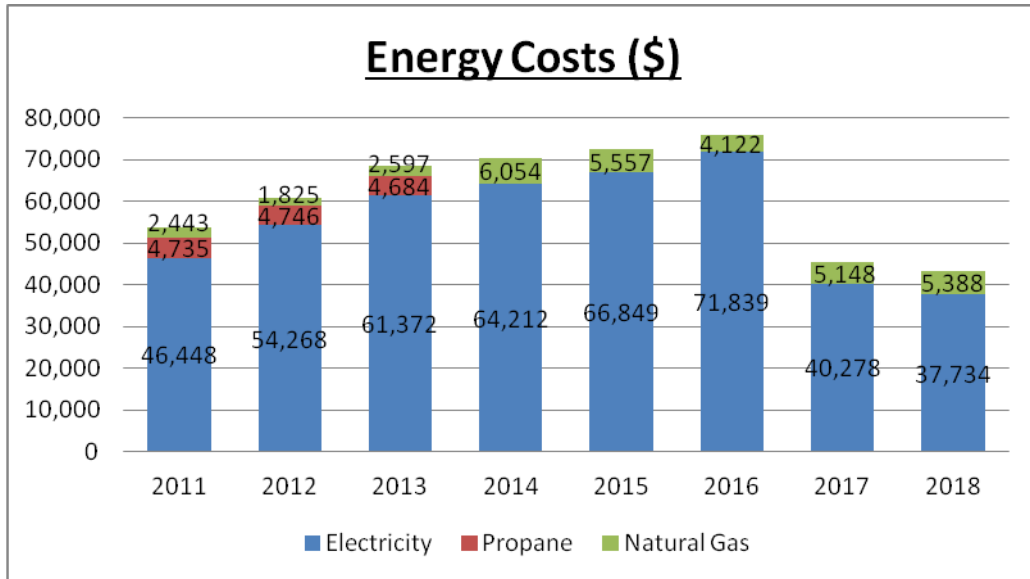


Table 'A' - Proposed Projects

Description	Facility	Start	End	Status	Cost	Save (ekWh/yr)	Save (\$)	ROI
Install Motion Sensors for Lighting	Turnberry Shop Bluevale Hall	2014-01-01	2023-12-31	Ongoing [33%]	0.00	0	0	0
Details	Investigate the use of motion sensors for lighting in Municipal owned washrooms and buildings. Process relevant to Turnberry Shop and Bluevale Hall. Motion sensor lighting currently installed in Morris Office washrooms. Opportunity to upgrade lighting when repairs/replacements occur.							
Upgrade Lighting	Morris Shop	2019-01-01	2023-01-01	Ongoing [25%]	6,400	4,000	400	16yrs
Description	Lighting upgraded to LED in 1 of 4 shop bays as a trial run. If lighting levels are deemed appropriate, the remaining lighting in the shop will be upgraded to LED as they burn out.							
New Heating / Cooling System for Office	Morris Office	2019-01-01	2019-12-31	Ongoing [0%]	4,000	800	150	26yrs
Details	Modern heating/cooling system for the Morris Office will eliminate the ineffective cooling of the municipal office & council chambers during the summer months. The current system is undersized and wastes energy attempting to cool the office work area. An appropriately sized system, tuned with a programmable thermostat will be more energy efficient. The Municipality hopes for a conservative reduction in overall electricity use at the Morris Office of 5%.							
New Scalehouse	Morris Landfill	2020-01-01	2020-12-31	Ongoing [0%]	20,000	5,400	1,000	20yrs
Details	The current landfill scalehouse is past its prime and does not have appropriate insulation. The resulting heat loss during the winter has driven electricity consumption to an all time high in 2018. The construction of a new smaller insulated building should improve heat retention and reduce overall energy consumption during the winter. The Municipality hopes for a reduction in overall electricity use at the Morris Landfill of approximately 40%.							

Table 'B' - Ongoing Processes

Description	Facility	Start	End	Status	Cost	Save (ekWh/yr)	Save (\$)	ROI
Fine Tune Heating/Cooling System	Morris Office/Shop	2014-01-01	2023-12-31	Active [100%]	0.00	0	0.00	0r
Details	Fine tune heating/cooling system to minimize wasted energy. Use a programmable thermostat to schedule the building's heating and cooling to energy saving set-points for extended periods of time.							
Identify Unnecessary Plug Loads	Municipal Wide	2014-01-01	2023-12-31	Active [100%]	0.00	0	0.00	0
Details	Identify devices & equipment that draw an unnecessary electrical load when not in use. Develop best practice to reduce the waste Process relevant to all Municipal owned buildings.							
Enhance Building Envelope	Municipal Wide	2014-01-01	2023-12-31	Active [100%]	0.00	0	0.00	0
Details	Investigate opportunities to improve a building's air envelope to reduce the heating and cooling loss due to air leakage. Relevant to Morris Office/Shop, Turnberry Shop & Bluevale Hall							

Table 'C' - Completed Projects

Description	Facility Contact	Start	End	Status	Cost (\$)	Save (ekWh/yr)	Save (\$/yr)	ROI
Retrofit Turnberry Shop Lighting	Turnberry Shop	2013-07-01	2013-07-31	Complete [100%]	681.03	4,406	440	2yr
Details	Retrofit and replace Turnberry Shop lighting with energy efficient lighting The Municipality benefited from the SaveOnEnergy Small Business Lighting program, minimizing total capital costs. Cost savings have paid for the project and the Municipality is now benefiting from energy savings.							
Convert Morris Works Garage to Natural Gas	Morris Office/Shop	2013-10-01	2013-12-31	Complete [100%]	16,771.99	0	1,700	10yr
Details	Converted Morris Office/Garage from Propane to Natural Gas. Removed and Replace Morris Works Garage propane heaters with Natural Gas heaters. Overall energy usage and greenhouse gas emissions are approximately the same, but total project costs for heaters (\$14,220.96) and natural gas line to building (\$2,551.03) have resulted in an overall cost savings of approximately \$1,700/yr.							
Upgrade Office Lighting	Morris Office	2015-07-01	2015-07-31	Complete [100%]	3,901.48	3,600	500	8yr
Details	Morris Office Lighting upgraded as part of Office Renovation. Savings estimated based on previous period billings and estimated cost per kWh. Cost savings will pay for the project in approximately 8 years from project completion							
Upgrade to LED Streetlights	Municipal Wide	2016-01-01	2016-12-31	Complete [100%]	104,071.98	138,000	22,000	5yr
Details	Replaced existing Streetlights with energy efficient LED Streetlights in Belgrave, Belmore, Bluevale, Brussels, Junctionville, Lower Town Wingham, North Wingham and Walton. Cost savings will pay for the project in approximately 5 years from project completion.							