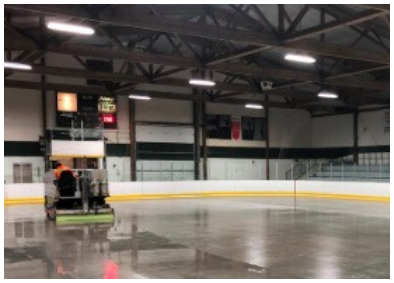

TOWNSHIP OF HURON - KINLOSS

CORPORATE ENERGY CONSERVATION & DEMAND MANAGEMENT PLAN

JULY 2019

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1. Introduction

1.1 Township of Huron-Kinloss

The Township of Huron-Kinloss is located at the south end of Bruce County in western Ontario on the shores of Lake Huron. The Township is made up of three communities of Lucknow, Point Clark, Ripley, and rural areas and hamlets throughout the Township, encompassing 443 square kilometres and has 7069 permanent, year-round residents. Included within the Township's operations there are 43 facilities, including 17 water and wastewater facilities, a municipal office located in Ripley, 2 community centres, 2 libraries, medical centre / daycare, and a satellite OPP station. The Township also manages outdoor lighting, which includes over five hundred streetlights, as well as park and seasonal lighting. Energy consumption data is collected and monitored by the Township for each of its buildings, water and wastewater facilities, outdoor lighting fixtures, and fleet vehicles.

1.2 Conservation & Energy Demand Management

Ontario Regulation 397/11 was introduced by the provincial government in 2011 under the Green Energy Act and was moved to reside under the Electricity Act in 2019. The regulation requires municipalities, universities, school boards, and hospitals to annually report their energy consumption data to the province. In addition, the regulation requires municipalities to publish an Energy and Conservation Demand Management (CDM) plan every five years, which began in 2014.

Corporate energy management in the Township of Huron-Kinloss presents a significant opportunity for reducing the amount of energy utilized throughout the Township's operations. In 2014 the Township developed its first Corporate Energy Demand Management plan and set a target of reducing energy consumption in the Township's stationary energy operations by 1 percent per year. The Township implemented several projects to reduce energy consumption which resulted in significant electricity reduction and cost savings. While targets were not met, it is hoped that lessons learned from implementing previous projects will significantly aid the Township is meeting energy management targets in the future. Included within this report is annual energy consumption for stationary energy, current goals and objections for conserving energy, present energy projects, and the potential cost savings of proposed initiatives.

1.3 Relationship to the Climate Change & Energy Plan 2020

The Township is working with ICLEI-Canada to develop its Climate Change and Energy Plan (CCEP). The CCEP plan focuses on reducing emissions generated by the Township and community, as well as adapting to the impacts of climate change. Unlike the CDM plan, the CCEP is intended to be township-wide and its corporate mitigation section prioritizes GHG emissions reductions rather than energy reduction. The CMD explicitly focuses on energy management for the Corporation, though the strategies and goals of the CDM will naturally have some cross over

with the CCEP. Where there is cross over, some strategies will be implemented that will cover objectives in both plans however these can function to reinforce the goals and targets of each.

2. Township's Commitments

2.1 Declaration of Commitment

That the Township of Huron-Kinloss will allocate the necessary resources to develop and implement a strategic energy management plan for our energy consumption and its related environmental impact.

2.2 Vision

The Township of Huron-Kinloss will exercise stewardship in our use of finite energy resources to demonstrate leadership, optimize our delivery of services, and enhance the overall quality of life in our community.

2.3 Goals

To continuously improve the energy efficiency of our facilities and processes in order to reduce our operating costs, our energy consumption and greenhouse gas emissions.

2.4 Overall Target

We will reduce our consumption of fuels and electricity in all municipal operations by an average of 1% per year between now and 2024, and will review our target every five years.

2.5 Objectives

To implement energy audits on all municipal facilities during the next five years and to reduce the total energy consumption in municipal facilities, normalized to weather conditions, by a minimum of 2% over the next three years.

The following are the strategic objectives:

- The creation of a culture of conservation within the Corporation will serve to reduce greenhouse gas emissions and ensure the wise use of resources.

- Fiscal accountability through savings and cost avoidance will lead to both direct and indirect savings.

- Demonstrate leadership within the Corporation and community as to the commitment to energy management and investigation of new and emerging technology.

• The integration of operational processes, facility-based infrastructure improvements and staff awareness is critical to move the Corporation towards the goal of reducing GHG emissions and transition to a carbon neutral future

3. Corporate Energy Consumption

3.1 Stationary Energy in 2017

The total stationary energy for the Township of Huron-Kinloss is reported annually to the Ontario Ministry of Energy, Northern Development, and Mines in accordance with Ontario Regulation 397/11. In 2019, the stationary energy data for the 2017 inventory year was reported and included all of the Township's buildings, water and wastewater facilities, and outdoor lighting for each energy source. The Township's 26 buildings and 543 outdoor lighting fixtures are owned and operated by the Township, while the 17 water and wastewater facilities, though owned by the Township, are operated by contract with Veolia. Figure 1 below, shows the energy consumption in equivalent kilowatt hours (ekWh) for stationary energy by asset type, along with data for the total cost of energy and GHG emissions.

2017 Stationary Energy Consumption, Cost, & GHG Emissions

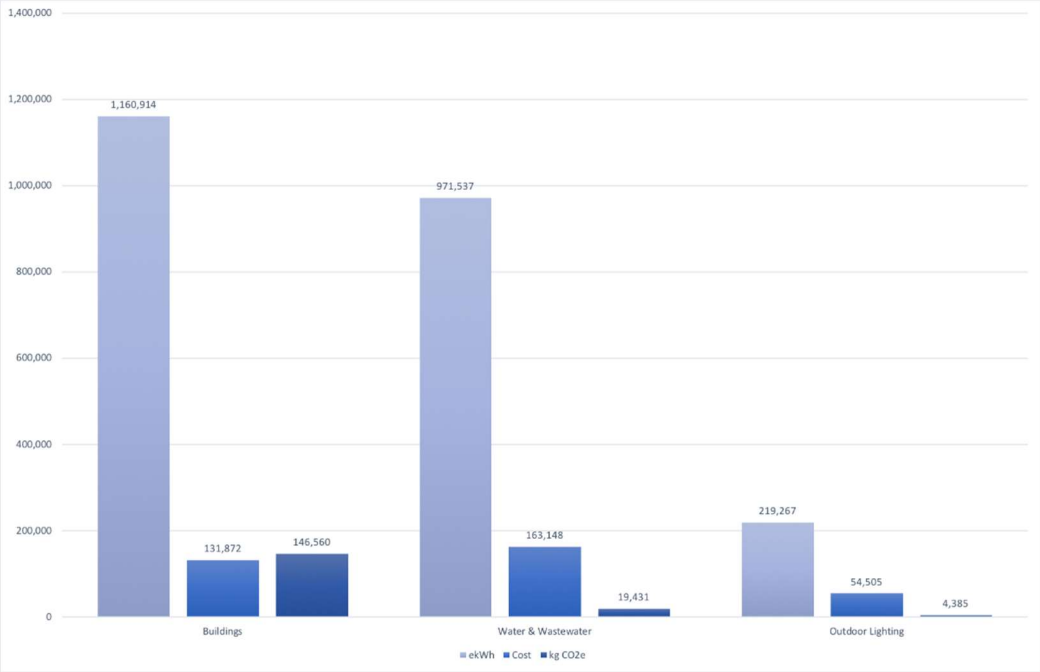

Figure 1: 2017 Stationary Energy Consumption (ekWh), Cost, & GHG Emissions (CO2e)

3.2 Energy Demand Trends

The energy and GHG emissions data required by Ontario Regulation 397/11 excludes energy consumption from corporate fleet vehicles and off-road equipment. However, since the Township is also tracking energy consumption from the Township's vehicle fleet and off-road equipment, as

part of its Climate Change and Energy Plan, data is included within this report to provide a more complete picture of energy consumption by the Corporation.

The CCEP plan utilizes 2016 as the baseline year for its inventory as it is the year with the most complete GHG emissions data for both the Corporation and the community. While 2014 corporate energy data is available, it is not as exhaustive as the data available for 2016, and therefore annual comparisons prior to 2016 are difficult. The Township's energy management strategy includes ensuring that data is as accurate and robust as possible, going forward. Figure 2 below, shows total energy consumption, including stationary and nonstationary energy, for the years 2016 through to 2018. The graph is represented in equivalent kilowatt hours, which is the unit used to compare the amount of energy present in different types of energy sources. The Township currently uses 5 types of energy, including electricity, diesel, gasoline, propane, and light fuel oil. Natural gas is not presently available in the Township; however, it is expected to be introduced to the area within the next few years.

Figure 2 below, shows the rising trend in energy demand for the Township's operations and activities. From the year 2016 to 2018, the Township's energy consumption increased by 14 percent. While diesel, gasoline, and light fuel oil use have remained relatively constant, electricity consumption has slightly but steadily increased each year as a result of increased demand in water and wastewater facilities.

Total Energy Consumption 2016 - 2018

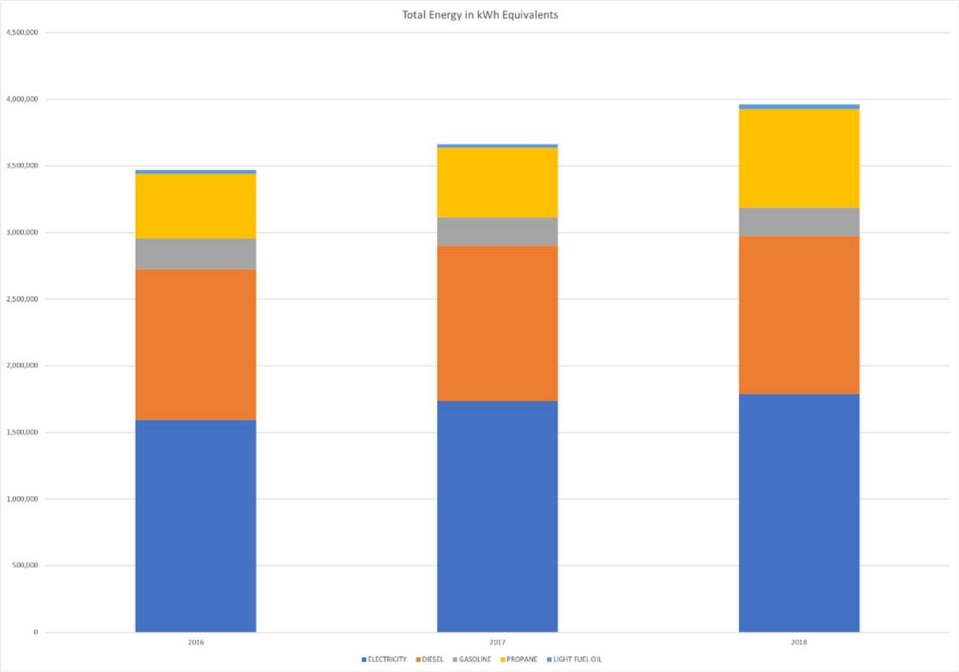

Figure 2: Total Energy Consumption in equivalent kilowatt hours from 2016 to 2018

3.3 Energy Costs

This combined bar graph shows the total cost of energy for all energy types utilized by the Township. The costs reflect some of the changes in usage, as the expenditure of propane and diesel increased as a result of higher consumption. However, electricity usage increased slightly while the cost of electricity declined each year from 2016 to 2018. This reflects a change in the price of electricity provincially. While the price of electricity dropped in the years depicted here, other years have seen an increase, namely from 2012 to 2013. Thus, the Township is vulnerable to price fluctuations regionally which can put considerable strain on the Township's financial resources in years where prices increase.

Total Energy Cost 2016 – 2018

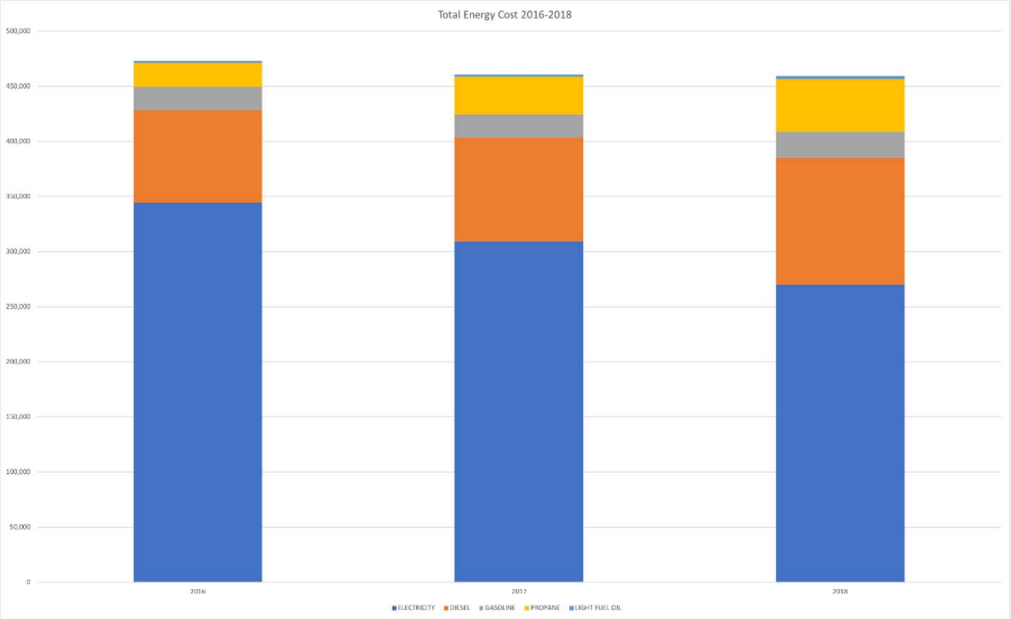

Figure 3: 2016-2018 Energy Cost by Fuel Type

3.4 Energy Demand in Buildings and Water & Wastewater Facilities

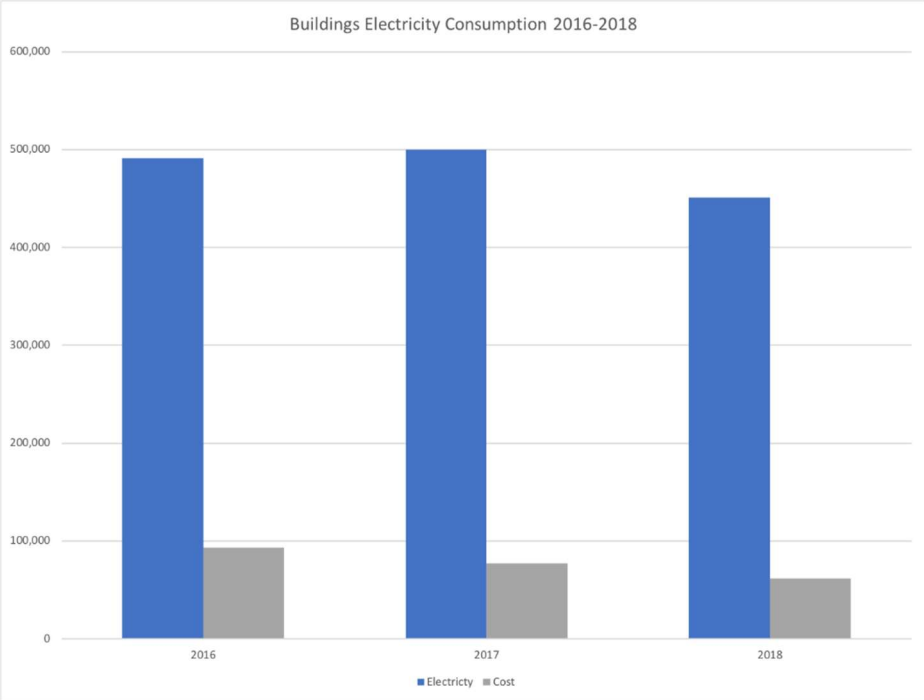

Figure 4: Electricity consumption in buildings (does not include water & wastewater). Electricity demand in the Township's buildings has decreased from 2016 to 2018. Retrofit projects and an increase in propane for heating are the major causes of this decline.

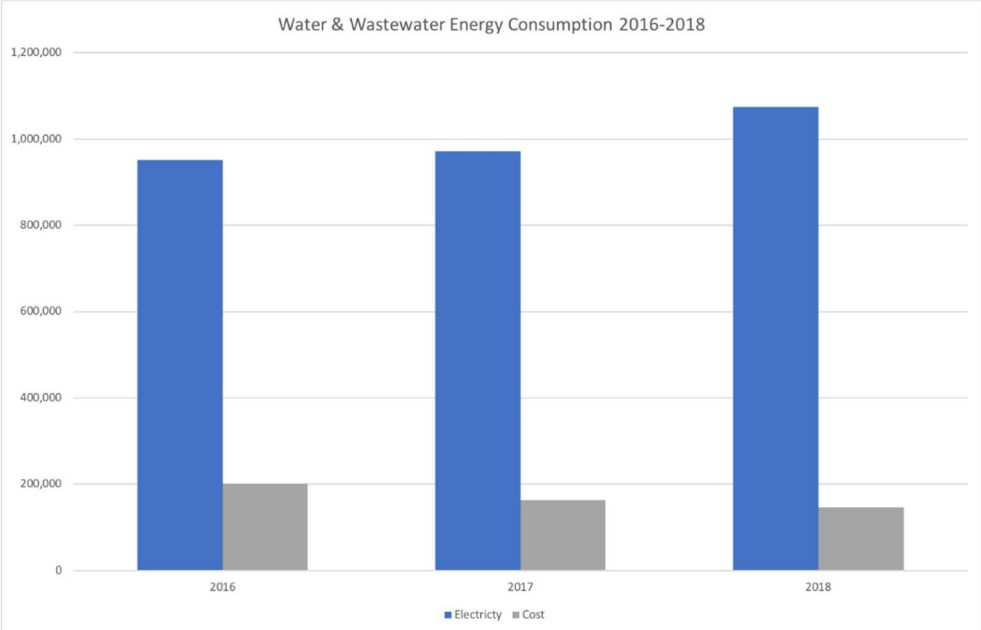

Figure 5: Electricity demand in waste & wastewater facilities has increased from 2016 to 2018. The increases have been the result of higher electricity demand in several but not all of the Township's water and wastewater facilities. The increase in electricity overall in the Township, can be attributed to the rise in consumption from these facilities.

4. Past Energy Management Initiatives

4.1 Street lighting

In 2014, Energy efficient, LED lightbulbs replaced the old incandescent lightbulbs in several communities within the Township, including Ripley, Lucknow, and Huron. The upgrade improved the quality of the street lighting in the Township and provided many benefits. The electricity consumption of outdoor lighting in the Township was reduced by 200 mega joules, or over 50 percent, while costs were lowered from $80,000 to $50,000. In order to implement the project, the Township received funding from Westario and Hydro One while the remaining capital costs for the project were provided by the Township, which were recovered within a 4-year payback period. In addition, the operating costs for outdoor lighting were significantly reduced as the newer LED bulbs have a longer lifespan than the previous incandescent models. The project also resulted in a reduction in GHG emissions from 14 tonnes to 8 tonnes of CO2 per year.

Note: The increase in electricity in 2017 and subsequent decrease in 2018 was a result of changes made to the administration of the Township's account and does not reflect actual changes in usage.

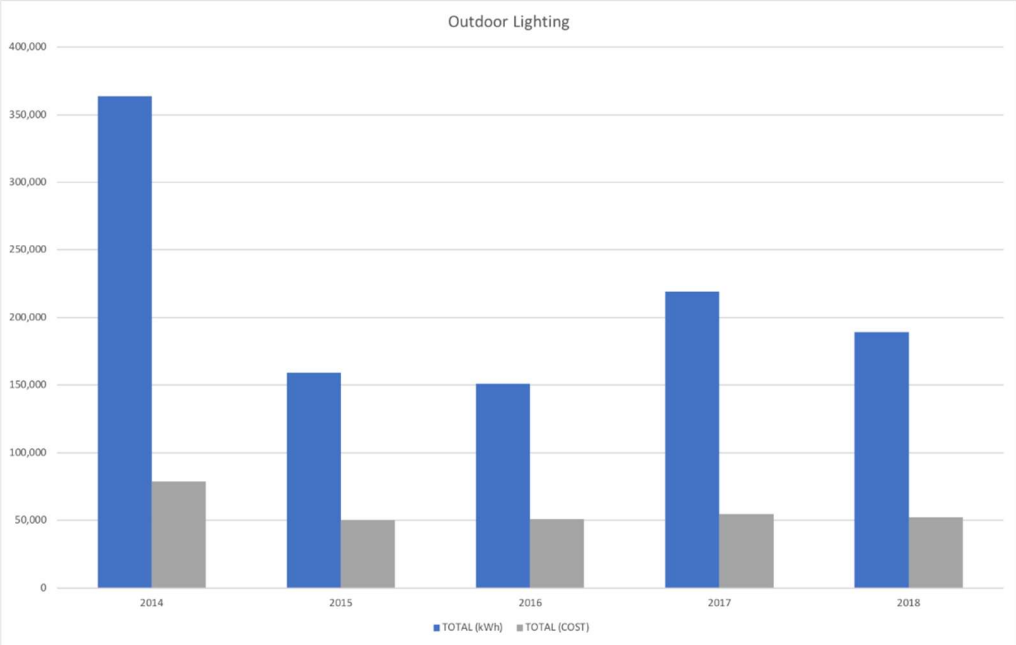

Figure 6: Outdoor Lighting Electricity Consumption (kWh) and Cost.

4.2 Ripley-Huron Community Centre

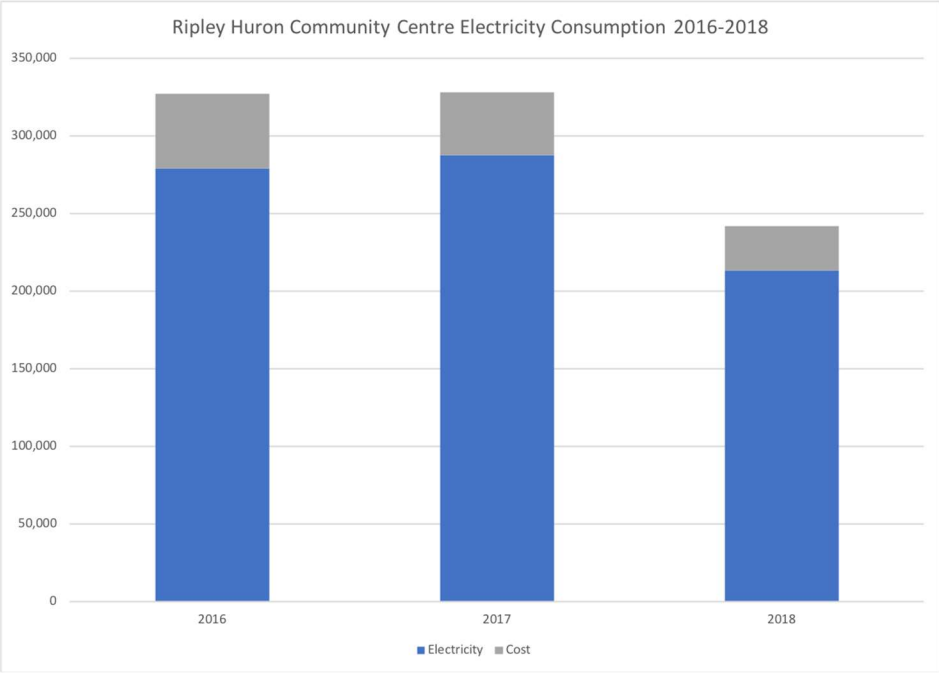

Figure 7: Ripley Huron Community Centre electricity consumption

The Ripley- Huron Community Centre is a hub for recreational, winter and summer sports, cultural events, and workshops. Several upgrades have been introduced, including indoor LED lighting, motion sensor lighting, and an upgrade to the walk-in cooler. Retrofits to the building as well as an increase in propane usage to heat the building has resulted in a decrease in the building's electricity consumption.

5. Energy Management Strategy

5.1 Overview

The Township of Huron-Kinloss is planning short term strategies and initiatives to reduce energy consumption in the Corporation's operations as well as implementing a longer-term energy management mandate that will be regularly updated and reviewed.

The CDM plan and energy management strategy includes energy from buildings, water and wastewater, outdoor lighting, and fleet vehicles. Strategies and initiatives for energy management fall under five broad groups, these include:

a) Energy efficiency projects
b) Fuel switching
c) Renewable energy projects

d) Energy procurement
e) Conservation culture

An energy management team has been created which consists of individuals from various municipal departments. While both the CDM and CCEP outline strategies and specific actions that the Township plans to take, the energy management team will guide implementation of both plans as well as meet regularly throughout the year to analyze progress and identify further opportunities for energy conservation within the Township's operations. An energy management tool was created in order to track energy consumption and cost as well as GHG emissions associated with the Corporation's activities. Data is compiled within the tool on a monthly basis to make reporting annually to the province as well as monitoring progress of conservation measures accurate and streamlined.

5.2 Current Energy Management Projects

Several short terms projects are currently being developed by the Township which fall under the energy efficiency and renewable energy project categories. One of the objectives of the Township is to reduce energy consumption in all of the Township's buildings by 2 percent over the next three years. An energy audit of the buildings will be conducted and energy conservation opportunities identified.

Energy conservation opportunities will also be considered for indoor and outdoor equipment. A current priority for the Township is to replace the propane powered ice resurfacer with an electric model within 1-2 years. The introduction of the electric ice resurfacer will reduce the greenhouse gas emissions associated with the propane powered machine and improve air quality inside the Ripley-Huron arena. Upgrades to outdoor lighting will also continue, as the baseball diamond and park lighting will be switched to LEDs.

Finally, the Township staff is reviewing a pre-feasibility analysis for the introduction of solar generation on the roof of municipally owned buildings, and land owned by the municipality.

5.3 Growing a Culture of Conservation

Developing a culture of conservation across the various municipal departments, operations, and activities is important to achieving energy management goals. While developing a culture of conservation may at first not seem as essential to energy management as a large retrofit project, for example, the potential reduction in energy usage and cost savings can add up. The Township aims to encourage staff to conserve energy by turning off lights, refraining from idling fleet vehicles, and using less water, amongst other conservation measures. Within the CCEP plan, activities that target GHG emissions rather than exclusively energy will also be implemented, and so a culture of conservation will also include reducing the amount of waste the Township

generates, banning or discouraging single-use plastics from events and daily operations, and increasing organic waste disposal and recycling.

Conclusion

The Township of Huron-Kinloss continues conserving energy across its municipal operations and activities. Previous energy efficiency projects, namely the Ripley-Huron Community Centre retrofits and upgrading the Township's street lighting to LEDs, have been tremendously successful in reducing energy demand while saving the Township financial resources. Since 2014 the Township has aimed to reduce stationary energy consumption by 1 percent each year. Continued monitoring and planning by the Energy Management Team moving forward will aid the Township in meeting its goal of reducing energy consumption. A building audit and retrofit program could significantly reduce energy demand in this sector, while renewable energy projects could power several buildings with clean energy. Meeting energy targets will not only reduce expenses for the Township but will situate the Township as a leader in the field of energy management, demonstrating what is possible for others to also accomplish.