



TOWNSHIP OF HURON-KINLOSS

Corporate Energy Conservation & Demand Management Plan

JULY 2024



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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 includes three communities of Lucknow, Point Clark, Ripley, and rural areas and hamlets throughout the Township, encompassing 443 square kilometres and has over 7000 permanent, year-round residents. Included within the Township's operations there are forty-three facilities, including 13 water and wastewater facilities, a municipal office located in Ripley, 3 community centres, 2 libraries, 2 Fire stations, and a medical centre / daycare. 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 and energy expenses. Included within this report are annual energy consumption for stationary energy, current goals and objectives for conserving energy, present energy projects, and the potential cost savings of proposed initiatives.

1.3 Relationship to the Climate Change & Energy Plan

The Township completed 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 naturally crossover with the CCEP. Where there is crossover, 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 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 2029 and will review our target every five years.

2.5 Objectives

To implement energy audits on municipal facilities identified as beyond the maximum intensity benchmark during the next five years and to reduce the total energy

consumption in municipal water/wastewater and facilities, normalized to weather conditions, by a minimum of 1% over the next five 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 2023

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 2023, the stationary energy data for the 2022 and 2023 inventory year was reported and included all the Township's buildings, water and wastewater facilities, and outdoor lighting for each energy source. The Township's buildings and outdoor lighting fixtures are owned and operated by the Township, while the thirteen water and wastewater facilities, though owned by the Township, are operated by contract with Veolia.

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 not included within this report.

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 the community. The 2016 corporate energy data is available, however not complete, and it is not as exhaustive as the data available for 2019, and therefore annual comparisons prior to 2019 are difficult. Therefore, going forward the 2019 data will be used as the baseline data.

The Township’s energy management strategy includes ensuring that data is as accurate and robust as possible going forward. Figure 1 below compares total energy consumption for the years 2019 and 2023. The graph is represented in equivalent kilowatt hours, which is the unit used to compare the amount of energy present in several types of energy sources. The Township in 2019 used 3 types of energy, including electricity, propane, and light fuel oil compared to 2023 energy sources of electricity, propane, and Natural gas now which was not presently available in the Township; Natural gas conversions are now taking place which reduces the GHG emissions since natural gas burns cleaner than propane.

Figure 1 2019 data compared to 2023 below and Emergency Services use increased from 2% to 6% with adding the Lucknow Fire Station to the database, otherwise no significant changes

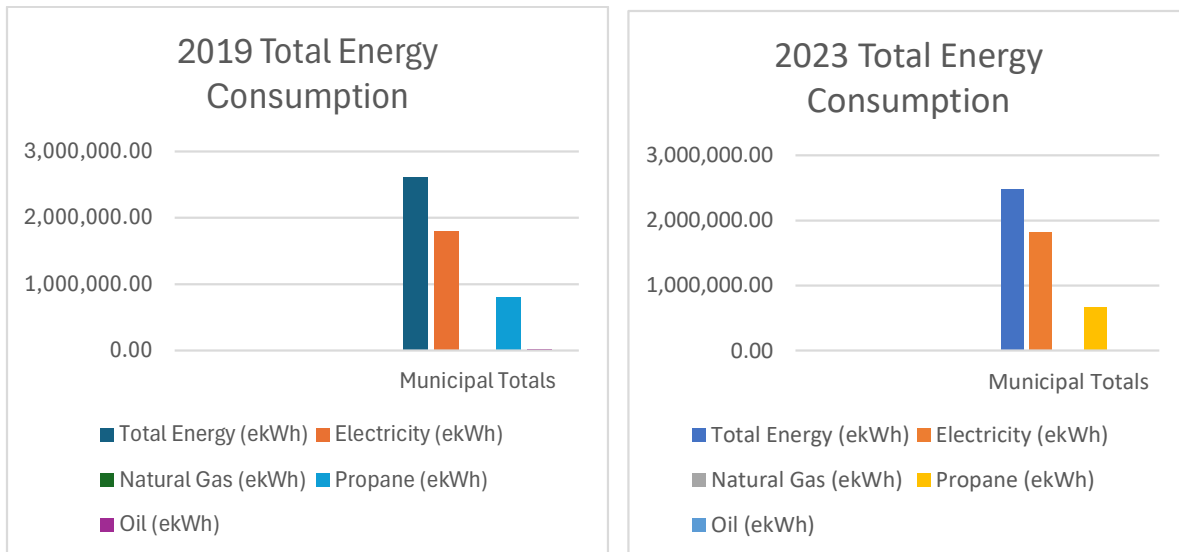




3.3 Energy Consumption

The bar graphs below demonstrate the total energy for all energy types utilized by the Township. Energy use reduced from 2019 to 2023 by 16%.

Figure 2 Total Energy Consumption 2019 – 2023

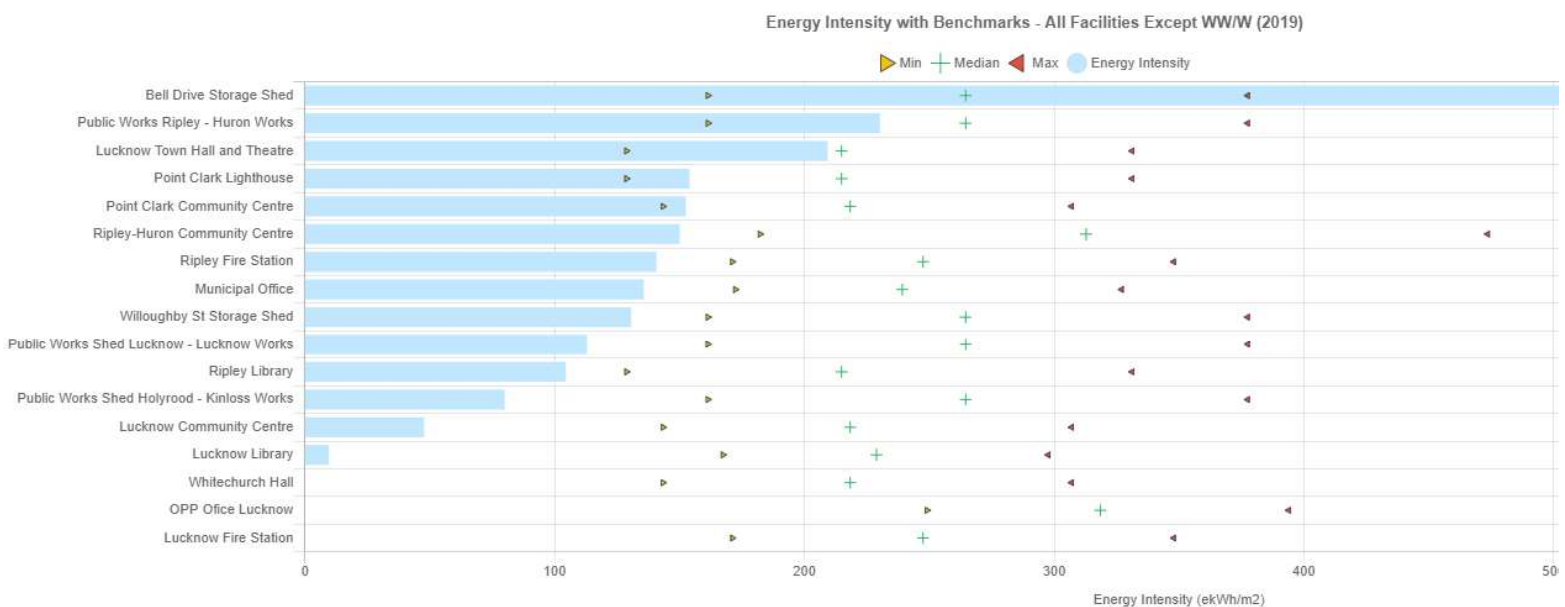


3.4 Energy Intensity in Buildings and Water & Wastewater Facilities

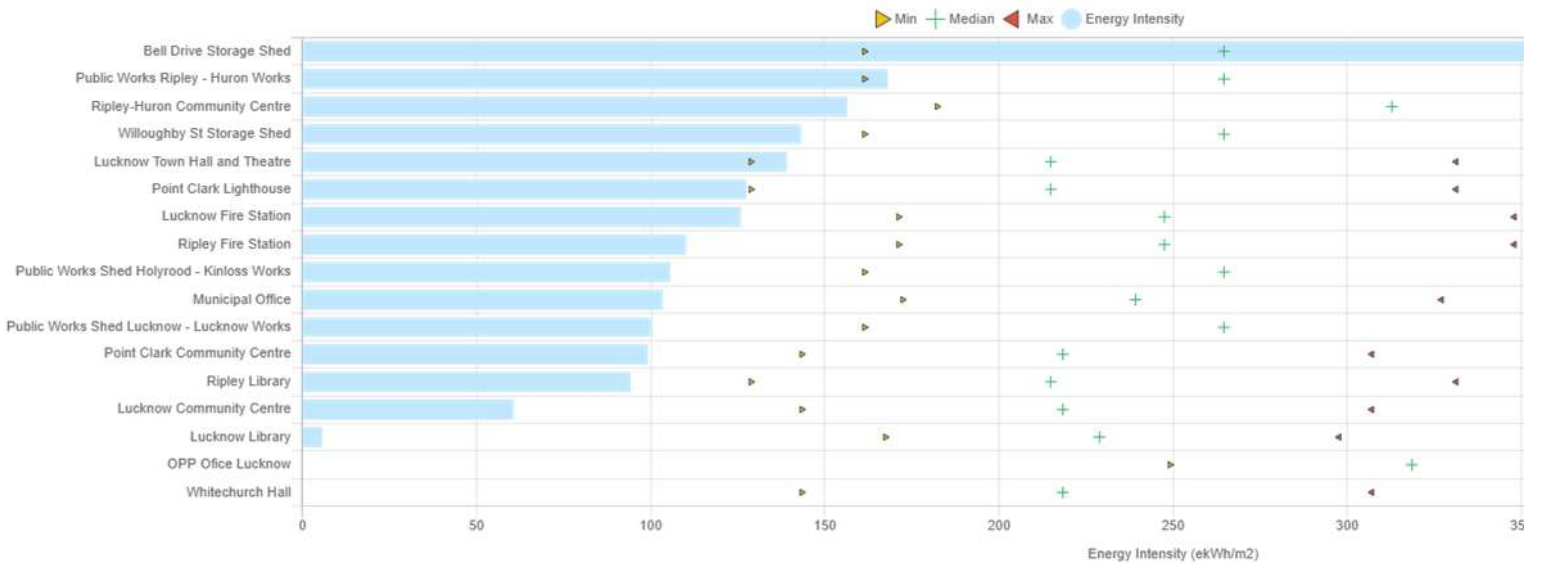
Energy intensity benchmarking in Ontario involves comparing a building's or facility's energy use to other similar many other similar facility operations and size to identify opportunities for improving energy efficiency and reducing operational costs.

Municipal facilities, energy intensity would refer to the amount of energy consumed per unit of output or service provided by the municipality. This is measured in several ways depending on the specific service, such as: Energy use per square foot of municipal building space.

Figure 3: Electricity consumption in buildings (does not include water & wastewater). Electricity intensity in the Township's buildings from 2019 to 2023. Facilities continue to operate well below the median, and often below the minimum compared to other facilities in the national database. The Bell Drive storage shed will investigate to determine a future solution.



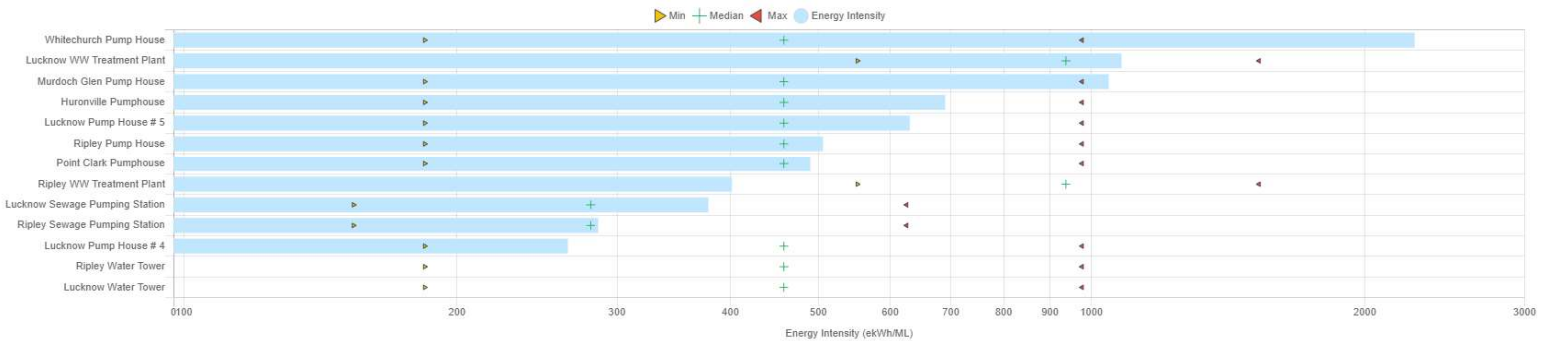
Energy Intensity with Benchmarks - All Facilities Except WW/W (2023)



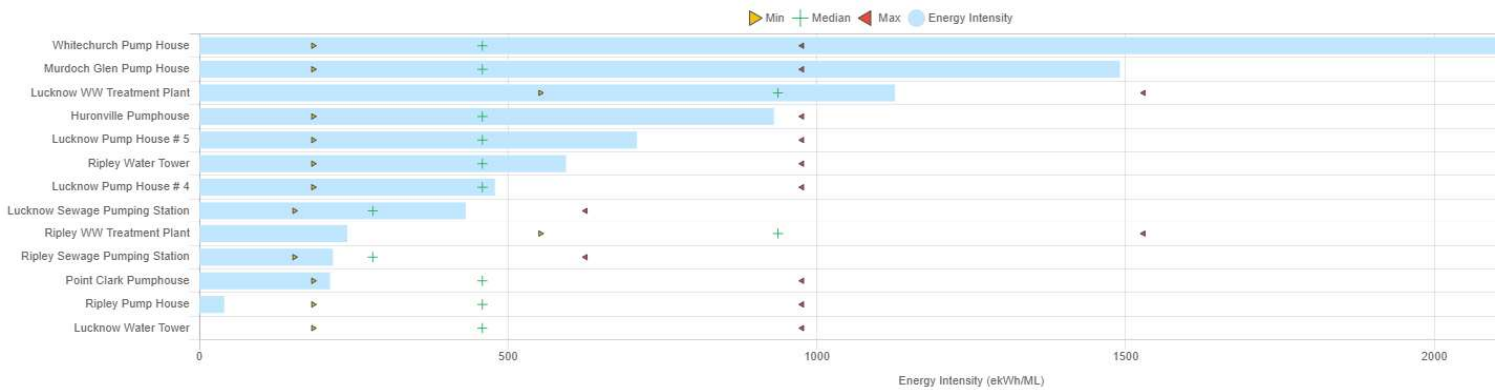
Municipal water and wastewater energy intensity refers to the amount of energy consumed per unit of output or service provided by the municipality. This could be measured in several ways depending on the specific service, such as: Energy use per megalitre of water distributed or energy use per megalitre of wastewater treated. The variance for facilities can be contributed to equipment improvements such as softstarts on motors and may also be contributed to the motor efficiency deteriorating over time.

Figure 4: 2019 vs 2023 Water and Wastewater Energy Intensity The data indicates both Whitechurch and Murdoch Glen pumphouse do not have storage capacity which reduces efficiency and that further investigation into the Whitechurch pumphouse, and Murdoch Glen pumphouse equipment and operations is required. All other facilities are below the maximum benchmark values.

Energy Intensity with Benchmarks - Water & Waste Management (2019)



Energy Intensity with Benchmarks - Water & Waste Management (2023)



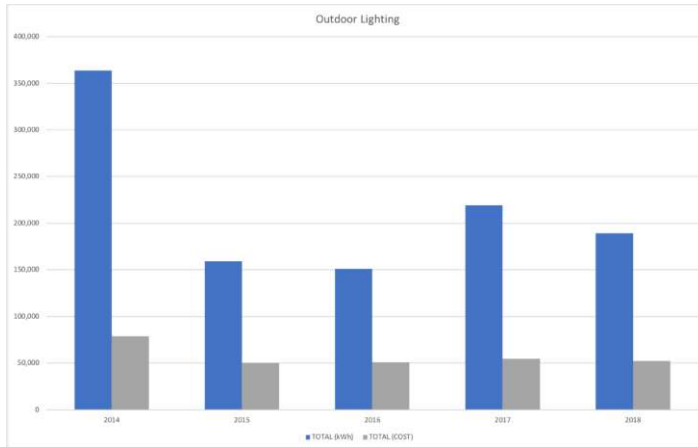
4. Past Energy Management Initiatives

4.1 Street lighting

In 2014, Energy efficient, LED lightbulbs replaced incandescent lightbulbs in communities within the Township, including Ripley, Lucknow, and Huron. The upgrade improved the quality of the street lighting in the Township and provided benefits. The electricity consumption of outdoor lighting in the Township was reduced by two hundred mega joules, or over 50 percent, while costs lowered from \$80,000 to \$50,000. To implement the project, the Township received grant funding 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 was 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 5: Outdoor Lighting Electricity Consumption (kWh) and Cost.

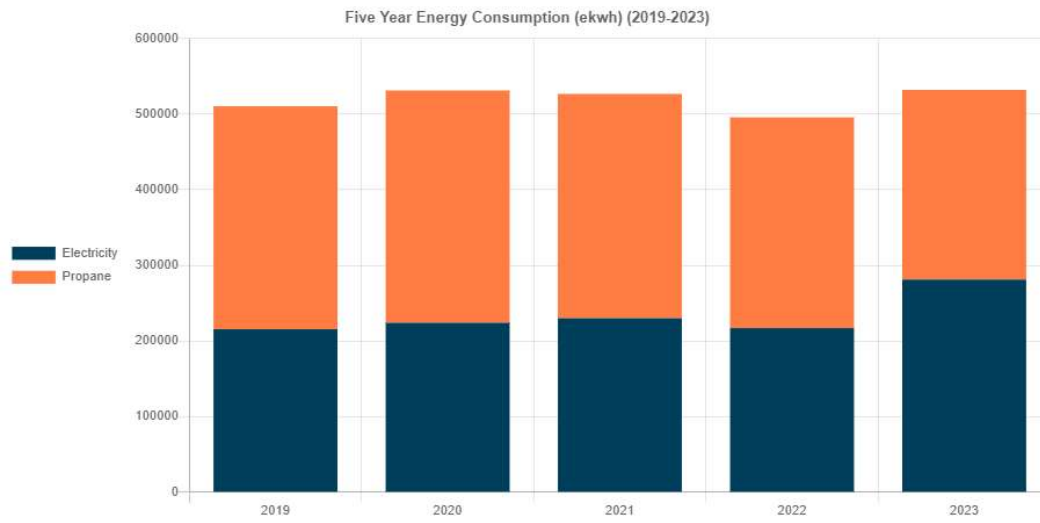


4.2 Ripley-Huron Community Centre

The Ripley- Huron Community Centre is a hub for recreational, winter and summer sports, cultural events, and workshops. Upgrades introduced include indoor LED lighting, motion sensor lighting, and an upgrade to the walk-in cooler. A recent 2500 square foot addition to the building as well as a renovation to the front entrance with an air curtain has increased the electrical usage of the building while decreasing the building’s propane heating consumption and resulting GHG emissions.

The Township replaced the propane powered ice resurfer with an electric model in 2022 and reduced the greenhouse gas emissions associated with the propane powered machine and improved the air quality inside the Ripley-Huron ice surface facility.

Figure 6: Ripley Huron Community Centre electricity consumption



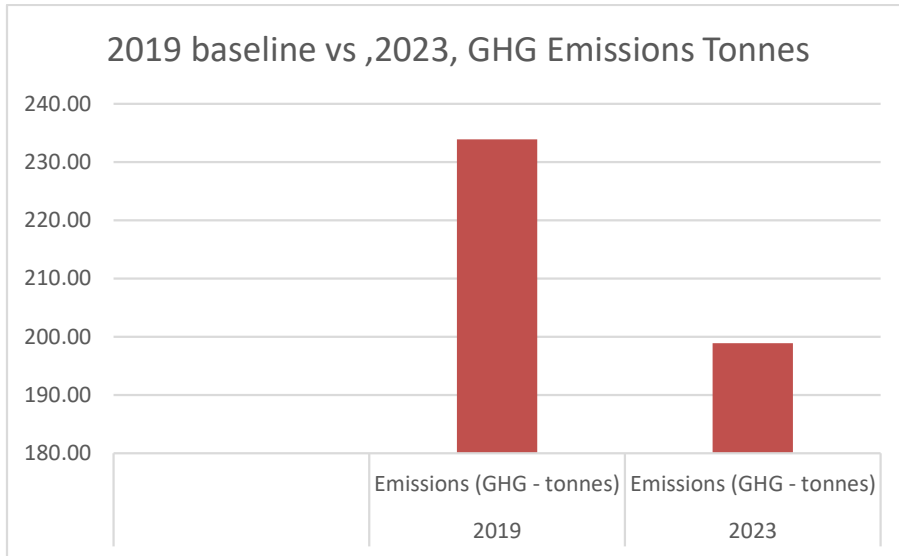
5. Energy Management Strategy

5.1 Overview

The table below demonstrates that Huron-Kinloss used 2019 as the baseline year, facilities that were previously unreported were added by 2019, and going forward 2019 will be used as the baseline data.

From 2019 to 2023 further growth has occurred, however further conservation measures implemented resulted in a decrease of 16% in GHG emissions.

Figure 7 GHG Emission comparison of 2019 and 2023



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. 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
- f) Continue to consider electrifying fleet during future procurement

An energy management team is being created with 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 to track energy consumption and cost as well as GHG emissions associated with the Corporation’s activities. Data is compiled within

the tool monthly to make reporting annually to the province as well as monitoring progress of conservation measures accurate and streamlined.

5.2 Current Energy Management Projects

Short terms projects are currently being developed by the Township which fall under the energy efficiency, change from propane to natural gas, and renewable energy project categories.

The Township of Huron-Kinloss is converting most facilities from propane to natural gas by 2025. Currently propane usage of 95 000 litres produces 143.6 tonnes of GHG emissions. Upon conversion, the natural gas GHG emissions is 124 tonnes. The conversion of propane to natural gas will reduce the corporate GHG emissions by almost 13% in the next two years.

The Township of Huron-Kinloss currently does not own, operate, or lease out any EV stations on municipal property, however the first proposal is Lucknow in 2025-2026 in partnership with the County of Bruce partnership. EV station proposals have been discussed in the past for both Ripley and Point Clark, however, Point Clarks electricity distribution system does not have the capacity to install EV stations at this time.

Energy conservation opportunities will also be considered for indoor and outdoor equipment. Upgrades to outdoor lighting will also continue, as the baseball diamond and park lighting will be reviewed for switching to LEDs.

Staff will review the data and further investigate into the Whitechurch Pumphouse, and Murdoch Glen pumphouse equipment and operations to determine if the energy intensity from 2019 to 2023 is operational or simply due to the lack of storage capacity.

The 2024 energy audit of the Ripley-Huron Community Centre and the Huron-Kinloss Municipal office determined that the energy conservation opportunities identified are limited and the buildings are operated efficiently now.

Finally, the Township staff propose to review feasibility analysis for hybrid HVAC equipment coinciding with the introduction of solar generation on the roof / ground of municipally owned buildings, and land owned by the municipality. The feasibility

analysis must provide a solid business case to reduce operating costs to be implemented.

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, green cone digesters promotions, and food cyclers promotions 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 street lighting to LEDs, have been successful in reducing energy demand and associated costs to the residents of Huron-Kinloss.

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 and GHG emissions.

A building audit / retrofit feasibility plan would significantly reduce GHG emissions. Alternative energy projects combined with net metering could supply buildings with clean energy while reducing the operating costs to the taxpayers. 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 everyone to also accomplish.