
COUNTY OF HALIBURTON

**C O R P O R A T E
C L I M A T E C H A N G E
M I T I G A T I O N P L A N**

**C H A P T E R 5:
T O W N S H I P O F
M I N D E N H I L L S**

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MESSAGE FROM THE MAYOR

Minden Hills is happy to participate with Haliburton County's Climate Change Plan and the changes that will flow from it over the next decade. This plan is necessary to protect and prepare our community from the climate changes that have already transpired, and those that will occur in the years to come. In the last 8 years Minden Hills has had to cope 50% of the time with spring flooding in our jurisdiction (2013, 2017 & 2019 emergency declarations, and 2016 almost a declaration) due to changing weather patterns and the ill effects that it has on our community. In living up to our municipal responsibilities in Minden Hills, initiatives such as Lidar imaging, updated dam infrastructure, better operational communications with all levels of government, and municipal storm water management infrastructure have happened with the assistance of our neighbouring municipalities and both Federal and Provincial governments. These changes have all helped to help us minimize and mitigate the damage to our area. The next logical step in stopping adverse climate change outcomes is to adopt County and Municipal policies that reduce and remove the human activities that contribute to our GHG emissions within Haliburton County and around the globe.

Across the region, citizens have increasingly let us know that climate change is a top priority for all politicians. We are fortunate that climate change committees across all 4 municipalities have worked hard to aid and guide us on the creation of our Climate Change Plan, and I am sure these stakeholder groups will continue their ideas and expertise in the years to come. The changes that will flow from this plan will need to be substantial, and regularly monitored against achievable objectives. Both Federal and Provincial policies will evolve and develop in the years to come and our plan will need to dovetail with their policies to maximize outcomes. Minden Hills Council and Staff are excited and committed to the objectives of the Corporate Climate Change Mitigation Plan for our County.

MAYOR BRENT DEVOLIN
TOWNSHIP OF MINDEN HILLS

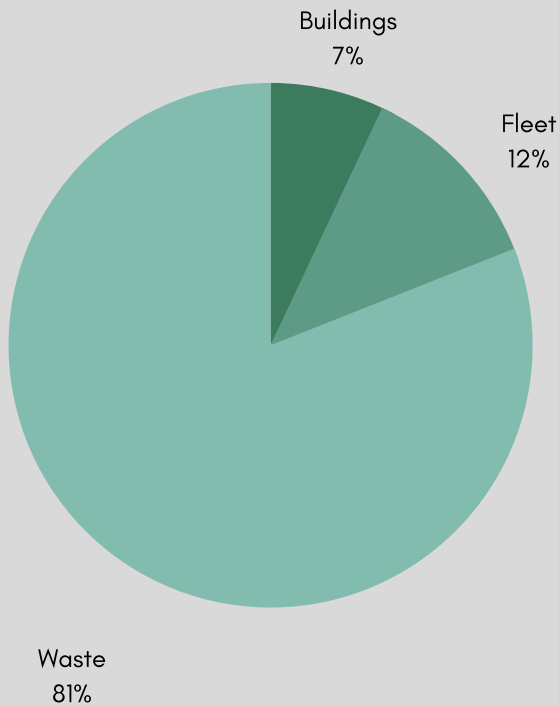
ACKNOWLEDGEMENTS

This plan was created by the Climate Change Coordinator in collaboration with the Waste Facilities and Roads departments.

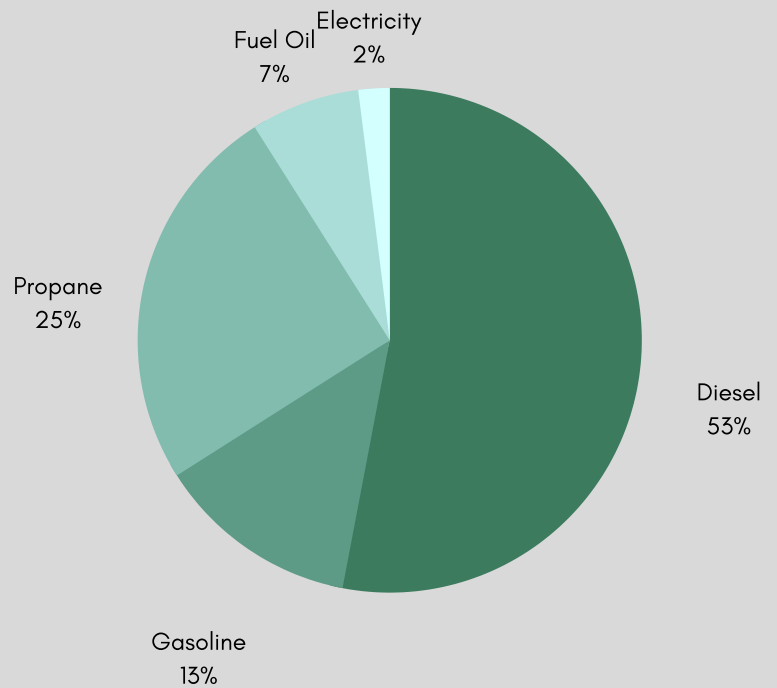
GLOSSARY OF ACRONYMS

BAU	Business as usual
CH ₄	Methane
CO ₂	Carbon dioxide
tCO ₂ e	Tonnes of carbon dioxide equivalent
FCM	Federation of Canadian Municipalities
GHG	Greenhouse gas
GJ	Gigajoule
HVAC	Heating, ventilation and air conditioning
ICLEI	Local Governments for Sustainability
PCP	Partners for Climate Protection

EMISSIONS BY SECTOR



EMISSIONS BY SOURCE

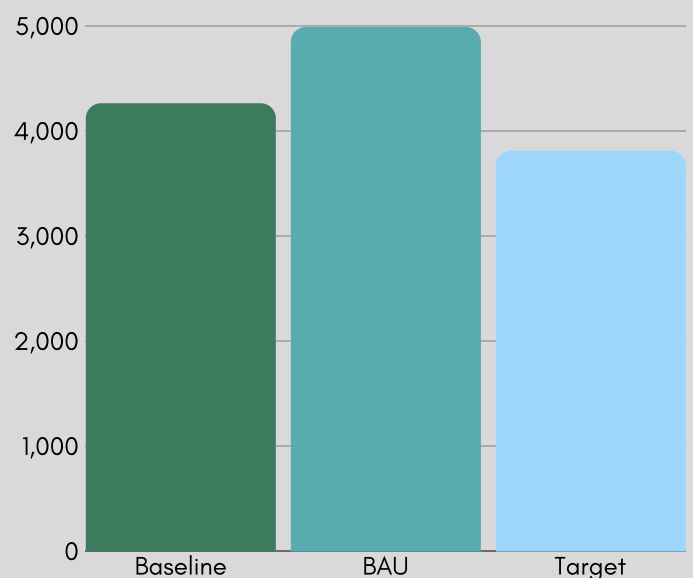


CORPORATE GHG INVENTORY

The Township of Minden Hills emitted 4,253 tCO₂e in 2018. Corporate GHG emissions primarily come from decomposing organic waste at the landfills (81%), operating municipal fleet (12%) and heating and powering municipal buildings (6%). The Township consumed 16,400 GJ of energy. Emissions associated with energy consumption come from the use of diesel (53%), propane (25%), gasoline (13%), fuel oil (7%), and electricity (2%).

BUSINESS AS USUAL FORECAST

A business-as-usual (BAU) forecast provides a projection of future GHG emissions if no explicit action is taken to address climate change. Under the assumption that a growth in population is roughly equivalent to a growth in municipal operations and services, then corporate emissions are forecasted to rise 17% from the 2018 baseline by 2030, from 4,253 tCO₂e to 4,978 tCO₂e.



GHG REDUCTION TARGET

The Township has set targets to reduce corporate greenhouse gas emissions by 20% for buildings, 10% for fleet and 10% for waste below the 2018 baseline by 2030. If the targets are reached, emissions will decrease from 4,253 tCO₂e to 3,801 tCO₂e.



LOCAL ACTION PLAN



Proposed actions should be read as a bank of potential opportunities for Minden Hills Council to consider over the next decade. The recommended actions are best practices that have proven to be successful for reducing emissions in other municipalities but will require greater analysis on local feasibility. The majority of the actions can be a collaborative effort between the County and the four local municipalities. Municipal staff provided input through sharing their knowledge and experience and providing suggestions and critiques. Exact costs of each action will be determined during the budget planning and procurement processes. Many actions will be dependent on external funding and partnership opportunities.

LEGEND

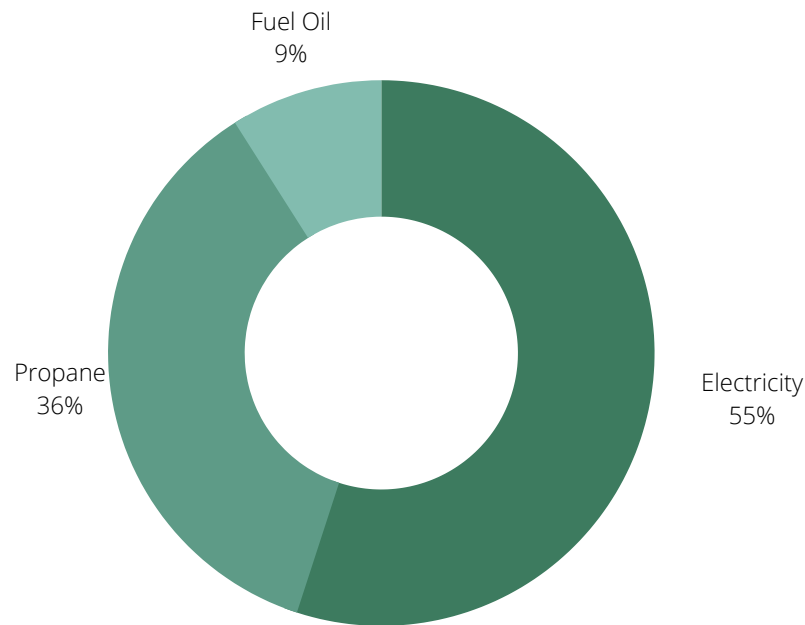
TIMEFRAME	Short: 2020-2023 Medium: 2024-2026 Long: 2027-2030
GHG REDUCTION POTENTIAL	Indirect: Acts as a precursor for another action Low: Under 5% reduction for the sector Medium: 5-10% reduction for the sector High: Over 10% reduction for the sector
COSTS	Nominal: Little outside of staff time Low: Below \$10,000 Moderate: \$10,000-\$50,000 Medium: \$50,000-\$100,000 High: Over \$100,000

BUILDINGS

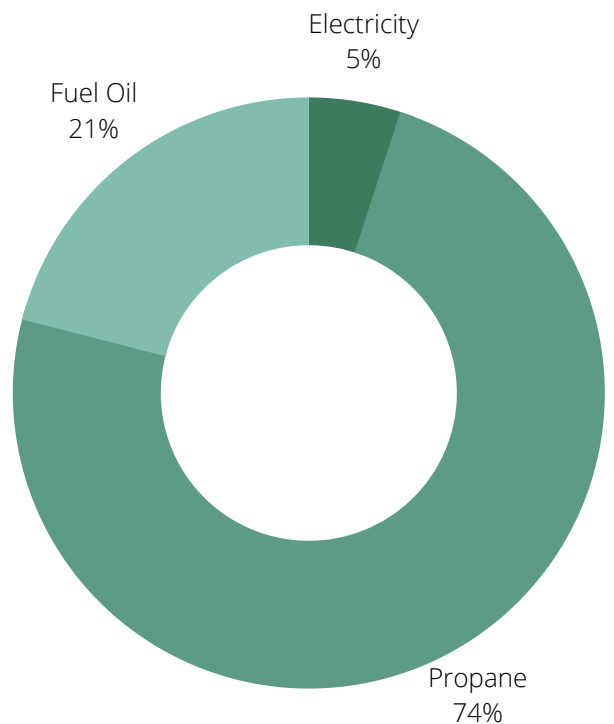
Municipal buildings include those used for administration, community centers, cultural facilities, fire stations, libraries, and vehicle storage and repairs. Municipal buildings produced 268 tCO₂e or 7% of corporate emissions in 2018. To reach a target of a 20% reduction in GHG emissions, building emissions will need to be less than 214 tCO₂e in 2030. GHG emissions from corporate buildings comes from the use of propane (74%), fuel oil (21%), and electricity (5%).

The Township consumed 9,000 GJ of energy in 2018 to heat and power corporate buildings and facilities. While electricity is the largest source of energy consumption, the associated GHG emissions are small due to the low carbon electricity grid in Ontario.

Reduce-Improve-Switch[1] is an approach used for energy and emissions planning for buildings. Reducing GHG emissions from municipal buildings will involve both reducing the demand for energy and switching to low or zero carbon sources of energy. In most cases, the focus should first be on reducing energy demand before investing in alternative forms of energy.



FUEL SOURCE BY CONSUMPTION



FUEL SOURCE BY GHG EMISSIONS

BUILDINGS



REDUCE

Avoid the consumption of energy in the first place

IMPROVE

Perform energy retrofits

SWITCH

Shift to low carbon and renewable sources of energy

Reducing the demand for energy will involve creating a culture of energy conservation among municipal staff and implementing higher construction standards for new municipal buildings. Improving municipal buildings includes improving building envelopes, lighting retrofits, and building automation. Switching to heat pump technology and solar photovoltaics will also be essential for reducing reliance on fossil fuels. The Township's Energy Conservation and Demand Management Plan outlines energy savings opportunities for municipal buildings that should be implemented over the next several years. The Township has increased energy efficiency through installing programmable thermostats and variable frequency drive equipment, upgrading lighting and appliances and phasing out the use of fuel oil. The Climate Change Coordinator will work with Department Heads to implement the recommended actions outlined in this section.

The Township spent \$334,000 in 2018 to heat and power municipal buildings. The carbon tax in Canada has the potential to gradually increase and reach \$210/tCO₂e in 2030 [2]. The Township could spend up to \$443,000 to heat and power buildings by 2030 [3], giving increased incentive to reduce energy consumption sooner rather than later.

GOALS

- Improve energy efficiency
- Transition to low carbon and renewable sources of energy

RECOMMENDED ACTIONS FOR BUILDINGS



Create a schedule for implementing the proposed energy savings measures in the Energy Conservation and Demand Management Plan, prioritizing those with the greatest GHG impact. Measures include lighting upgrades, improving building envelopes, and HVAC upgrades.

Timeline: Short

GHG Reduction Potential: High

Cost: High

Potential Funding: Save on Energy; Green Municipal Fund; Energy Performance Contracts

Explore and implement renewable energy opportunities for municipal facilities.

Timeline: Medium

GHG Reduction Potential: High

Cost: High

Potential Funding: Green Municipal Fund; Energy Performance Contracts

RECOMMENDED ACTIONS FOR BUILDINGS



Implement a green building policy requiring higher construction standards for new municipal buildings. New builds should go beyond building code and consider lifecycle carbon emissions.

Timeline: Medium

GHG Reduction Potential: Avoids future growth in emissions

Cost: Premium of 2-7% [5]

Potential Funding: Green Municipal Fund

Continue staff education on reducing energy consumption.

Timeline: Ongoing

GHG Reduction Potential: Low

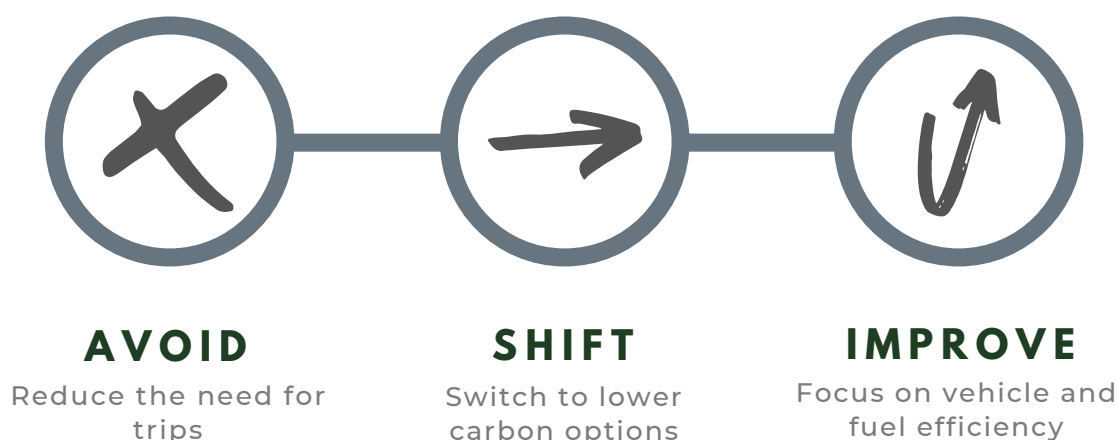
Cost: Nominal

FLEET

Municipal fleet includes equipment, light-duty and heavy-duty vehicles used for roads, fire, planning, and parks and recreation. Municipal fleet produced 520 tCO₂e or 12% of corporate emissions in 2018. GHG emissions from municipal fleet result from the use of diesel (80%) and gasoline (20%). To reach a target of a 10% reduction in GHG emissions, fleet emissions will need to be less than 468 tCO₂e in 2030.

The Avoid-Shift-Improve approach can be utilized to reduce emissions from fleet. Avoidance seeks to reduce the need for trips, which can be achieved through carpooling or route optimization. Switching refers to the shift to lower carbon options of transportation, such as replacing a gas-powered vehicle with an electric option. Improvement focuses on vehicle and fuel efficiency, which can be achieved through selecting the smallest size vehicle that meets the requirements.

Avoiding fuel consumption through reducing unnecessary idling time and optimizing driver behavior are able to reduce fuel consumption by 5-10% [6]. Vehicle tracking systems can be used to monitor progress in this area.



FLEET

The shift to lower carbon options for fleet will involve evaluating the needs of each vehicle upon replacement to determine if a vehicle can be right sized and/or replaced with a lower carbon option. The most promising action to reduce GHG emissions from fleet is electrification. Hybrid and electric options are available for a range of light-duty vehicles, with more options becoming available every year. While low emission vehicles will come at a cost premium, considering the entire lifecycle cost of a vehicle can demonstrate greater cost effectiveness. Heavy-duty fleet and equipment will be limited as to what is available on the market, and will be a challenging area for reducing GHG emissions. The recommended future actions outlined in this section will be led by the Climate Change Coordinator with support from the Public Works department.

The Township spent \$232,000 in 2018 to fuel the vehicle fleet. The federal carbon tax has the potential to gradually increase and reach \$210/tCO₂e in 2030. The Township has the potential to spend up to \$372,000 to fuel the vehicle fleet by 2030, giving increased incentive to reduce fuel consumption sooner rather than later.

GOALS

- Reduce fuel consumption
- Transition to low carbon vehicles and fuels

RECOMMENDED ACTIONS FOR FLEET



Install electric vehicle charging stations in municipal parking lots with prioritized use for municipal fleet

Timeline: Short

GHG Reduction Potential: Indirect

Cost: Low (\$5,000-\$8,000) [7]

Potential Funding: Natural Resources Canada Zero Emission Vehicle Infrastructure Program

Incorporate additional GHG considerations into the Corporate Fleet Policy (purchase the lowest emission vehicle where cost effective, right-sizing, etc.)

Timeline: Short

GHG Reduction Potential: High

Cost: Medium (Premium of \$3,000-\$15,000 per vehicle for light duty fleet) [8]

Potential Funding: Municipalities for Climate Innovation Program

RECOMMENDED ACTIONS FOR FLEET



Implement fleet operator training for reducing fuel consumption (anti-idling, optimal driving behavior, etc.)

Timeline: Short

GHG Reduction Potential: Medium

Cost: Nominal

Resources: Natural Resources Canada Smart Driver Training

Continue to monitor the feasibility of alternative fuel sources (ex. biodiesel and hydrogen)

Timeline: Medium-Long

GHG Reduction Potential: High

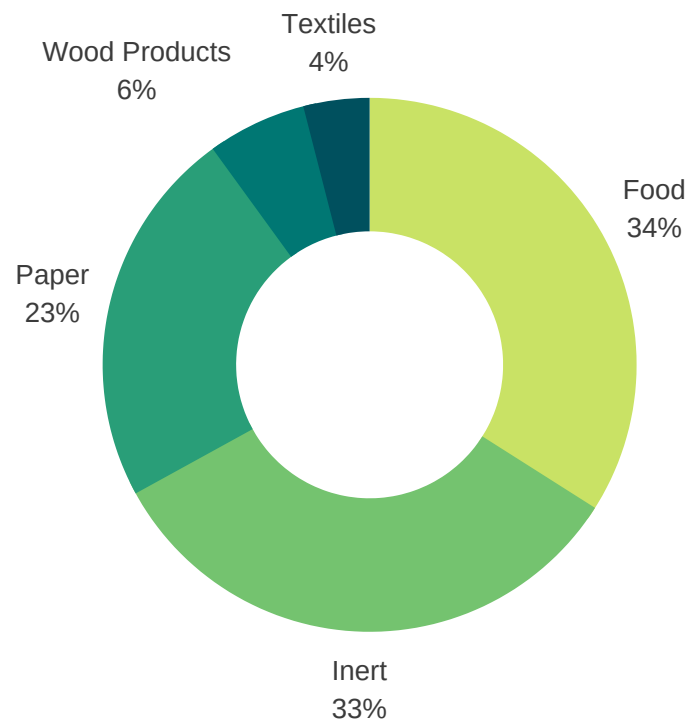
Cost: No estimate available

Potential Funding: Green Municipal Fund

WASTE

The Township operates two landfills (Irondale and Scotch Line) and three transfer stations (Ingoldsby, Iron Mine and Little Gull). The landfills produced 3,455 tCO₂e or 81% of corporate emissions in 2018. To reach a target of a 10% reduction in GHG emissions, landfill emissions will need to be less than 3,109 tCO₂e in 2030.

Organic waste that decomposes in an oxygen-free environment such as a landfill releases both carbon dioxide and methane. Methane is a GHG that is up to 34 times more powerful than carbon dioxide over a century. In an average municipal landfill in North America, waste is composed of food (34%), paper and cardboard (23%), wood products (6%), textiles (4%) and inert materials such as glass, metal and plastic (33%) [9]. Inert materials do not contribute directly to the landfill GHG emissions since they do not decompose.

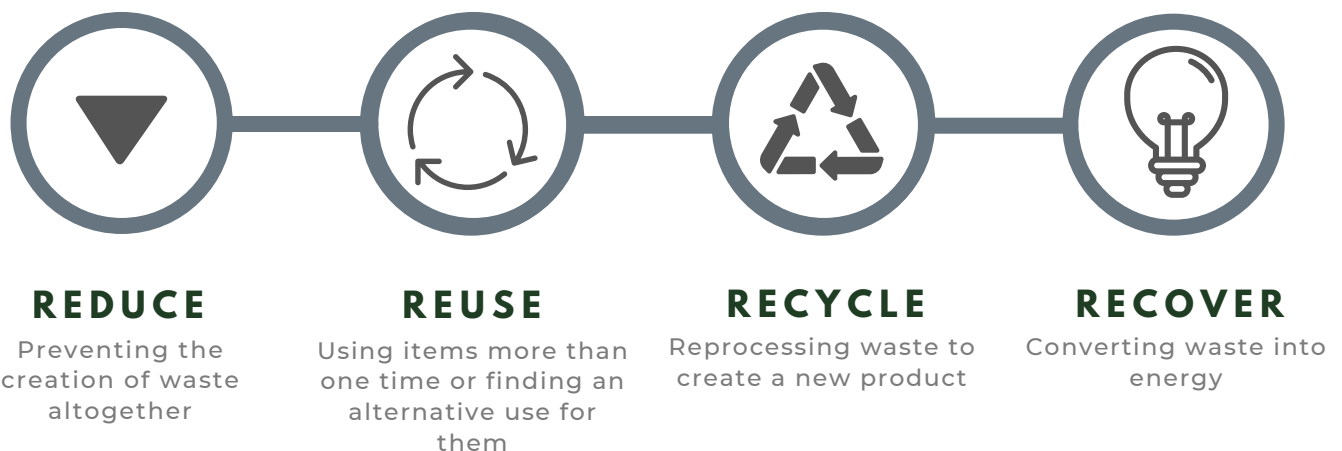


AVERAGE MUNICIPAL WASTE COMPOSITION

The Township owns and operates the landfills, and thus has the power to implement policies and changes over landfill operations. While a small fraction of the waste comes from municipal facilities, the vast majority comes from the community. The Township can increase programs and policies for waste reduction and diversion, however success will ultimately be driven by decisions made by the community.

WASTE

Reducing landfill emissions involves following the 4 R's in order of importance: reduce, reuse, recycle and recover. In the short-term, actions should be focused on reducing waste, which creates the greatest environmental and economic benefit. A particular focus should be on waste that emits the largest quantities of methane, such as food waste. Project Drawdown lists reducing food waste as the third top global solution for reversing climate change [10]. According to the National Zero Waste Council, more than a third of food produced and distributed in Canada is wasted [11]. This results in excess costs for municipal governments to manage waste, unnecessary GHG emissions, among other social, environmental and economic issues. The strategies that have the largest impact for reducing landfill emissions include recycling organic waste through composting and recovering landfill gas. These strategies are more difficult to implement in municipalities that have small landfill sites and quantities of waste. While there are different options that can be explored for organics diversion, recovering landfill gas may not be feasible.



WASTE

The Township currently encourages waste diversion through enforcing bag limits and requiring the use of clear bags for garbage, implementing a two-stream blue box recycling program, and providing composters available for sale to residents. Before any new and additional actions are taken, more data needs to be collected on the specific municipal waste composition and community preferences and tolerances for change. The Township is planning to create a waste management master plan which will assess the current waste diversion strategies and investigate the technical and financial merits of future actions. The recommended actions outlined in this section will be led by the Climate Change Coordinator, Waste Facilities and Corporate Services.

GOALS

- Reduce and divert organic waste from landfills
- Improve corporate waste management
- Improve landfill data

RECOMMENDED ACTIONS FOR WASTE



Continue communication to residents and businesses on how to reduce and divert waste through the annual Waste Communications Strategy

Timeline: Ongoing

GHG Reduction Potential: Low (2-3%)

Cost: Low

Potential Partnership: U-Links

Conduct a waste audit of our corporate waste and implement strategies to reduce waste that is generated from municipal facilities

Timeline: Short

GHG Reduction Potential: Low (>1%)

Cost: Low

Potential Partnership: U-Links

RECOMMENDED ACTIONS FOR WASTE



Complete a waste composition study at the landfills

Timeline: Short

GHG Reduction Potential: Indirect

Cost: Low to Moderate

Potential Funding: Continuous Improvement Fund

Potential Partnership: U-Links

Implement a backyard composting program

Timeline: Short

GHG Reduction Potential: Medium (5-10%)

Cost: Low to Moderate

Potential Funding: ECO Canada Student Work Placement Program

RECOMMENDED ACTIONS FOR WASTE



Reduce garbage bag limit to 2 bags per week and ensure compliance is effectively monitored

Timeline: Short

GHG Reduction Potential: Low (3%)

Cost: Nominal

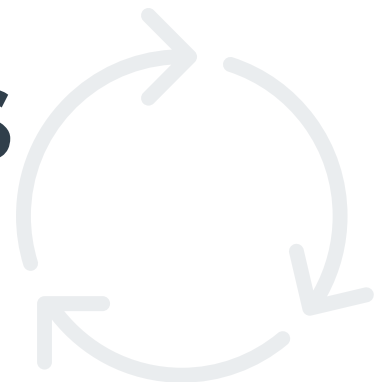
Invest in scales to provide more accurate data on tonnage

Timeline: Medium

GHG Reduction Potential: Indirect

Cost: High

RECOMMENDED ACTIONS FOR WASTE



Expand options for re-use

Timeline: Medium

GHG Reduction Potential: Low (1-3%)

Cost: Low

Introduce textile recycling at landfill sites

Timeline: Medium

GHG Reduction Potential: Low (1-3%)

Cost: Moderate

Potential Partnership: A non-profit organization

RECOMMENDED ACTIONS FOR WASTE



Explore the potential of organics diversion for yard waste and food waste at landfill and/or community sites

Timeline: Medium-Long

GHG Reduction Potential: High (15-20%)

Cost: Variable depending on best solution

Potential Funding: Green Municipal Fund

Potential Partnerships: Neighbouring municipalities (Kawartha Lakes, Peterborough)

Increase source separation of waste in public areas (downtown, parks, etc.) with clear signage and appropriate lids to encourage proper sorting

Timeline: Long

GHG Reduction Potential: Low (1-3%)

Cost: Low

LEADERSHIP

To ensure the Township is considering the potential climate impacts when decisions are made, policies and processes will need to be re-focused to promote climate change mitigation. This can be achieved through highlighting GHG considerations in existing plans and policies or through the creation of new policies and tools. The Climate Change Coordinator will work with Department Heads to implement the recommended actions outlined in this section. The Township has incorporated climate mitigation considerations into existing plans, including:

Official Plan: Encourages energy conservation, alternative energy and compact development

Energy Conservation and Demand Management Plan: Describes previous, current, and proposed measures for conserving and reducing energy consumption in municipal buildings

GOAL

- Integrate climate change considerations across municipal programs, policies and plans

RECOMMENDED ACTIONS FOR LEADERSHIP



Integrate comprehensive GHG and climate change considerations into municipal plans and policies (asset management plan, energy conservation and demand management plan, official plan, procurement policy)

Timeline: Short

GHG Reduction Potential: Indirect

Cost: Nominal

Incorporate a climate change lens into municipal decision-making (staff reports, RFPs, RFTs)

Timeline: Short

GHG Reduction Potential: Indirect

Cost: Nominal

FOOTNOTES

[1] Government of Ontario, Community Emissions Reduction Planning: A Guide for Ontario Municipalities, 2017.

[2] Canada's Ecofiscal Commission, Bridging the Gap: Real Options for Meeting Canada's 2030 GHG Target, 2019.

[3] Assumptions consider cost increases due to the carbon tax and estimated increases in energy consumption following the business-as-usual forecast. Does not consider changes to commodity prices.

[4] Assumes \$0.20 per ft² for 85,000ft² of Municipal buildings. Estimated from City of Prince George Energy and GHG Management Plan and U.S. Department of Energy Guide to Energy Audits.

[5] Environmental Protection Agency, State and Local Climate and Energy Program Rules of Thumb, 2016.

[6] Federation of Canadian Municipalities, Enviro-Fleets: Reducing Municipal Heavy-Duty Vehicle Emissions, 2010.

[7] For purchase and installation of a Level 2 (240V) station. Estimated from Plug In BC, Frequently Asked Questions and Partners in Project Green, Charge Up Ontario: A Guide for Businesses to Invest in Electric Vehicle Charging Stations.

[8] Assumes five fleet vehicles can be replaced with a low carbon option. Cost estimate from City of Waterloo Energy Conservation and Demand Management Plan and research on what is currently available on the market. Estimate does not account for cost savings from reduced fuel use.

[9] Federation of Canadian Municipalities and Local Governments for Sustainability, Partners for Climate Protection Protocol, 2014.

[10] Project Drawdown, Reduced Food Waste, 2017.

[11] National Zero Waste Council, A Food Loss and Waste Strategy for Canada, 2018.