



**Community Energy and Emissions Plan (CEEP)
A Plan for Climate Action in
the Municipality of Central Manitoulin**



A MESSAGE FROM THE CLIMATE ACTION COMMITTEE (CAC) ON BEHALF OF COUNCIL

We are fortunate to live in one of the most beautiful places in the world – Manitoulin Island. Our daily actions and behaviours have an impact on the amount of carbon/greenhouse gas emissions the Municipality of Central Manitoulin collectively releases. To do our part in reducing greenhouse gases by 50% by 2030, we have developed a Community Energy and Emissions Plan (CEEP), commonly referred to by Council as a plan for climate action using community engagement, to outline solutions and next steps we can all take. The Plan is only the beginning as we now look to community members to support and help us. If everyone takes small actions, we can reach our goals and help maintain Central Manitoulin’s agriculture, natural areas, water bodies and beauty. Combating climate change starts locally, with every one of us.

The Municipality of Central Manitoulin Council, supporting partners and community members that participated in the planning process are proud to present this collaborative, grass-roots community plan that has immediate and actionable objectives and long-term targets that will build a more resilient community. Thank you to everyone that participated in the creation of this plan and an advance thank to all those that will continue to participate in this endeavour as we move to implementation. Let us preserve our Island for future generations to discover and enjoy.

Climate Action Committee (CAC) on behalf of Council,

Councillor Dale Scott
Co-Chair, Central Manitoulin CAC

Cori Davy
Co-Chair, Central Manitoulin CAC¹

PREFACE

A child growing up after World War II in a Canadian town would have witnessed community sirens installed in neighbourhoods, and practiced crawling under desks to prevent injury from debris as a result of The Bomb. The Bomb was a threat to human existence. A number of countries today are still trying to learn the technology to control nuclear fission in warhead missiles, and arms accords between nations are trying to stop the spread of nuclear arms.

Children today are facing a new threat to existence, one which was not considered when the threat and terror of total nuclear war haunted us. Humans are destabilizing the earth's ecology in many ways. We are taking more and more resources out of the environment while pumping back massive quantities of waste and poison, changing the very composition of the earth's soils, the water, and the atmosphere. Habitats become degraded, animals and plants are put on threatened lists and are becoming extinct. Nuclear war is still a threat in the future, but a changing climate is a present reality. There is scientific consensus that human activities, especially the emission of greenhouse gases such as carbon dioxide, are causing the earth's climate to change.

“Hazards resulting from the increasing intensity and frequency of extreme weather events, such as abnormally heavy rainfall, prolonged droughts, abnormal extreme winds, environmental degradation, or sea-level rise and cyclones are already causing an average of more than 20 million people to leave their homes and move to other areas in their countries each year².”

People living on islands are disproportionately impacted by climate change and some island communities are on the frontlines of mitigation and adaptation activities or have begun planned, managed and in worst case scenario, unplanned retreats from generational homes due extreme weather caused by climate change. There is opportunity for Manitoulin Islanders to learn from other island communities and begin planning a resilient and prosperous future that acknowledges the past can no longer predict the future and the increased hazards and stress on our infrastructure due to climate change must be factored into community planning and decision making.

Manitoulin Island has a beautiful but fragile ecology. It is the meeting place for Boreal, Carolinian and even Atlantic seaside plants. It is on the great eastern North American migratory bird flyway and with four distinct seasons, offers natural beauty and processes which are unparalleled in most of the world. The Island actually sequesters more carbon than it produces, and we depend on large nations to come to climate change accords to attempt a decrease in greenhouse gas emissions. Our small population can do very little to affect the large scope of the problem. We can however educate ourselves and try to develop and implement a plan for our community to become part of the solution rather than part of the problem.

This report starts with an exercise by local students who go into the future year of 2050 and report what they see and the rest of the report outlines the actions that the community and municipality can make to reduce impacts from climate change locally.

² United Nations Refugee Agency: Climate Change and Disaster Displacement (retrieved May 2021) <https://www.unhcr.org/climate-change-and-disasters.html>

A LETTER FROM THE FUTURE – 2050

Dear Manitoulin Residents of 2021,

We just recently got together and took a trip around Manitoulin Island to experience where we all grew up and talked about all the improvements. Looking out through our self-driving public transportation, it's clear that the land has been protected with the utmost care, and when our vehicle stopped to recharge, Lake Huron was wonderfully pristine. All of the stewardship and care that has preserved the island over the last few decades was crucial to mitigate the effects of climate change, providing a sustainable role model for communities across Canada.

Within the local townships, we stopped to visit the familiar heritage buildings that had been retrofitted for efficiency while maintaining the Manitoulin charm. We were delighted to see rooftop gardens on many of the municipal buildings and businesses, consistently solar powered homes and offices, and a highly visible composting program. We are pleased that new housing projects have undergone rigorous environmental assessment for approval ensuring that new residents contribute to the green vision. This includes restrictions on household waste and net-zero energy consumption. The addition of tiny homes in the community was also very welcomed and provided great eco-friendly places for tourists to stay. Thanks to the climate action plan and the subsequent incentives, all residents have gladly supported the improvements.

After touring the communities, we re-lived our fond memories on Lake Manitou via the very popular paddle-share program, uncontaminated by pollution or invasive species. We returned to shore famished and quickly found one of the many organic community gardens. The youth greeting us shared that the organic garden was fully stocked by products from the co-operative farm and local suppliers. We learned that from their inception, these farms integrated the cultivation and harvesting of traditional foods and medicines in partnership with the Anishinabek on Manitoulin. These farms are both a source of food security for many locals, as well as a thriving Manitoulin attraction.

Investment and concerted sacrifice at the global level has mitigated so many potential catastrophes: including violent weather and heatwaves, increased skin cancer and disease rates, water scarcity and mass extinction. We hope efforts continue on Manitoulin and in communities across the world. Our tour around the island has reminded us that the vibrancy and beauty of Manitoulin is a product of its citizen's love. Manitoulin is a model that has moved past just surviving and is now focused on living harmoniously and graciously as stewards for future generations.

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ACKNOWLEDGEMENTS

Thank you to everyone that participated in the development of this Corporate and Community climate change plan for the Municipality of Central Manitoulin. A commitment to advancing a collaborative approach and strong leadership from Municipal Council and Climate Action Committee (CAC) members has helped to advance community resilience and climate change awareness in our municipality because of this project.

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Mayor Richard Stephens
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LOCAL PARTNERS, STAKEHOLDERS AND REGIONAL SUPPORT

Manitoulin Streams
United Manitoulin Island Transit
Manitoulin Expositor/Recorder
Northern Ontario Climate
Change Network (NOCCN)

Hydro One
Quest
Ethelo
Alterum
Clean Air Partnership

Manitoulin Secondary School
Mindemoya Public School
Climate Risk Institute
ReThink Green
Manitoulin Green

This project was made possible by a two-year staff grant from the Government of Canada, Federation of Canadian Municipalities (FCM) and the Municipal Energy Program (MEP) through the Province of Ontario's Ministry of Energy, Northern Development and Mines. This staff grant was shared with the Municipality of Central Manitoulin and was responsible for the development of a Greenhouse Gas (GHG) inventory for corporate and community emissions, management of stakeholder/committee and community engagement initiatives, research on local government climate change mitigation/adaptation best practices and is the primary author of publications prepared for submission to FCM and MEP under these grants.

The Municipality of Central Manitoulin would also like to acknowledge the significant contributions from citizens and partnership organizations that participated in this planning process. Over 300 members of our community contributed to these consultation efforts by attending events/committee meetings and participating in a community-wide educational engagement survey on climate change.

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INDIGENOUS LAND ACKNOWLEDGEMENT

As we gather and create community climate change plans – we are reminded that the Municipality of Central Manitoulin is situated on treaty land that is steeped in the rich Indigenous history of the Ojibwe, Odawa, and Potawatomi peoples. Mnidoo Mnising/Manitoulin Island is sacred to the Anishinaabe people and stewardship of the land and water that surrounds us is the thing that binds us.

Today and always the Municipality of Central Manitoulin acknowledges the United Chiefs and Councils of Mnidoo Mnising (UCCMM) on whose traditional territory outlined by the 1862 Manitoulin Island Treaty and the unceded territory of Wiikwemkoong make up the land that is called Manitoulin Island and where we all call home.

May our collaborative efforts to prevent the impact of climate change on Manitoulin Island and protect and preserve our shared natural assets be led by the principles outlined in the 1990 Friendship Treaty, Maamwi Naadmaading Accord.

EXECUTIVE SUMMARY

The climate is changing – all over the world and in the Municipality of Central Manitoulin. Past extreme weather, flooding and wildfire risks no longer provide adequate information to predict community planning efforts. Each community in Canada must develop unique plans to protect residents from climate change risk. A Community Energy and Emissions Plan (CEEP) will provide Central Manitoulin with a strategy to integrate climate risk considerations into existing corporate/municipal operations and participate in a Collaborative Model approach to implement community climate action.

This Community Energy and Emissions Plan (CEEP) is the culmination of over two years of joint community-based study and consultation to investigate climate change hazards and preparedness with the goal of providing the Township of Billings and the Municipality of Central Manitoulin with two unique climate action plans that have overlaps identified and can be implemented by each local government in partnership with other local, provincial, federal, private and not-for-profit supporting partners. From the beginning of the climate planning process, it has been a key strategic goal to identify collaborative opportunities to accelerate and build shared resources for community action while simultaneously considering options for each municipality to adopt customized corporate climate change plans that are specific, ambitious, have wide-spread community support and are attainable.

MISSION STATEMENT

TO BUILD A MORE RESILIENT AND NET-ZERO COMMUNITY BY 2050 AND SET A PATHWAY FOR 50% ENERGY AND GHG EMISSION REDUCTIONS BY 2030 THAT:

HEALTH



Enhances Health and well-being of community members

NATURE



Preserves and enhances local biodiversity and natural systems

COMMUNITY BUILDING



Builds community through inclusion

ECONOMIC DEVELOPMENT



Fosters a prosperous and sustainable local economy

INNOVATION



Promotes innovation and growth

CLIMATE ACTION VISION

SHARED NATURAL SPACES

LAND, WATER, AND AIR

Minimize (mitigate) impacts of climate change on communities by taking actions to protect, restore and enhance natural systems, reduce agricultural/tourism emissions, protect people and property from natural hazards and promote sustainability best practices for all local businesses with a focus on enhancing support for the agricultural, forestry, tourism sectors.

BUILDINGS

Reduce by 50%, below 2018 GHG emission levels by 2030

Actions will increase energy efficiency and the adoption of renewable energy/low carbon technologies to build climate resilience into new and existing buildings

TRANSPORTATION

Reduce by 50%, below 2018 GHG emission levels by 2030

Actions will reduce vehicle trips, promote active and public transportation and accelerate low carbon/GHG transportation options

WASTE

Reduce by 50%, below 2018 GHG emission levels by 2030

Reduce overall consumption by promoting circular economy concepts and increase waste diversion through recycling rate increases and home composting program

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GLOSSARY AND ACRONYMS

The Community Energy and Emissions Plan (CEEP) uses several key terms and acronyms that are consistent within climate change conversations and literature. Whenever possible, plain language is used to describe scientific or economic concepts related to climate change. Many definitions outlined below have been adjusted into plain language descriptions that can be found in the Intergovernmental Panel on Climate Change (IPCC) and the Partners in Climate Protection Protocol (Canadian Supplement).

Definitions and Acronyms	
Adaptation	An action taken to change societal, behavioural or infrastructure to anticipate the impact of more extreme weather due to climate change
Asset Management Plan AMP	A tactical plan for managing municipal infrastructure (buildings, roads, parks) to deliver a standard of service agreed upon by the community for this infrastructure
Capacity	The combined strengths, attributes, and resources available to an individual, community, organization and/or local government that can be used to achieve established goals.
Carbon Dioxide Equivalent CO ₂ e	A metric used to compare emissions from various greenhouse gases. The global warming potential of any greenhouse gas can be converted to this carbon dioxide metric so that emissions can be represented using a common factor.
Carbon Sequestration	A natural or artificial process by which carbon dioxide is removed from the atmosphere and held in a solid (including biomass) or liquid form
Carbon Sink	Anything that absorbs more carbon dioxide from the atmosphere than it releases
Climate Action Committee CAC	The Council appointed committee responsible for the creation, oversight, recommendations, and future implementation of climate actions included in this Community Energy and Emissions Plan (CEEP) for the Municipality of Central Manitoulin
Climate Change	A change in average weather patterns that persist over long periods – at least 30 years or more. For this document – climate change refers specifically to human-caused changes in long term weather patterns that have occurred since the Industrial Era.
Climate-friendly	An action that is not harmful to the environment because it is not contributing to making climate change worse by burning/consuming carbon dioxide or other greenhouse gases
Conservation and Demand Management Plan CDM	A regulatory reporting and management requirement for all public sector organizations under the Province of Ontario Energy Act, 2009 (O.Reg 397/11). A tactical plan for managing energy and emissions to meet community and/or organizational environmental responsibility goals and

	objectives.
Decarbonization	The reduction of greenhouse gas emissions using low or lower carbon power sources that achieve a lower output of greenhouse gasses into the atmosphere.
Deep Energy Retrofit DER	Energy conservation measure taken to minimize energy use for an existing building (usually by 50% or more) compared to baseline energy use.
Energy Poverty	The experience of households or communities that struggle financially to heat and/or cool their homes and power their lights and appliances
Electrification	The process of replacing other energy sources (oil, gas, wood) with electricity
Federation of Canadian Municipalities FCM	A national organization that brings together more than 2000 municipalities in Canada and represents over 90% of Canadians.
Greenhouse Gas Emissions GHGs	Gases in the atmosphere that absorb and emit infrared radiation contributing to the greenhouse effect.
Independent Electricity Service Operator IESO	Operates the Ontario power system in real time, ensuring reliability of the provinces power, balancing the supply of and demand for electricity on a second-by second basis and directing its flow across high-voltage transmissions lines to Ontarians.
Impacts	Impacts in the context of this report shall refer to the consequences from climate change, good and/or bad, expected and realized on human and natural systems.
Intergovernmental Panel on Climate Change IPCC	An international body established under the United Nation to assess the science, impacts and response options to climate change
Key Performance Indicator KPI	A quantifiable measure used to evaluate the success of an organization, individual or process in achieving a goal
Low-Carbon Resilience LCR	Strategic alignment of climate adaptation and mitigation actions that simultaneously reduce enterprise/organizational risk, and produce health, economic, ecological, and social benefits.
Low Carbon	Power that is produced with substantially less greenhouse gas emissions than traditional fossil fuel/coal power generation.
Mitigation	Actions that contribute to the reduction of GHG emissions and/or increase carbon sequestration to prevent the worst impacts of climate change
Major Retrofits	Modifications to an existing building that reduce energy or water consumption but require a larger investment – replacing window glazing and doors, updating inefficient heating, cooling systems, installing smart meters or other devices to help manage consumption,

Minor Retrofits	Modifications to an existing building that are low cost, easy to implement and offer good value for money and effort to reduce energy or water consumption – could include, sealing with caulking or spray foam, adding insulation, or upgrading lighting systems.
Net-Zero	A target that completely negates the amount of greenhouse gases produce by human activity – generally achieved by reducing emissions and implementing methods to absorb greenhouse gases from the atmosphere
Natural Asset and Natural Asset Inventory	Soil, air, water, flora, fauna which can deliver valuable services such as timber, fish, solar energy, erosion control, flood protection, drinking water, air purification. A natural asset inventory is a practice that measures and values these assets based on services they provide in a defined jurisdiction.
Partners in Climate Protection Protocol PCP	Partners in Climate Protection is a national network of over 400 municipalities with a shared goal of acting against climate change. The protocol, developed by PCP, is a set of detailed accounting and quantification guidelines for greenhouse gas emissions in a local government boundary.
Resilience	The capacity to recover quickly from difficulties

1 A VISION FOR CLIMATE ACTION

The climate is changing – all over the world and in the Municipality of Central Manitoulin. Each community will need to mitigate and adapt to climate risk – this Community Energy and Emissions Plan (CEEP) is a climate change plan using a community-based approach. When implemented – community and corporate climate risk and opportunity can be managed and harnessed to address community-wide vulnerabilities to build a more resilient and prosperous community.

1.1 MUNICIPALITY OF CENTRAL MANITOULIN –RESILIENT AND PROSPEROUS

Many of our local economic, environmental, social, and cultural practices already demonstrate leadership in sustainability and resilience.

As residents of the world’s largest freshwater island, in the centre of Lake Huron our Island community is unique, resilient and acknowledges that action must be taken to prepare for climate change. The Municipality of Central Manitoulin is very much at the heart of Manitoulin Island with geographical boundaries that connect 5 neighbouring municipalities and one First Nation. Central Manitoulin has historically played a meaningful role on the island because of its central

location. For generations, Manitoulin Island’s remoteness has contributed to our unique culture – grounded in resilience and ingenuity. Our main economic drivers are agriculture and tourism, both based on the unique climate and natural environment. Building these two sectors to be sustainable is a testament to Manitoulin’s home-grown resilience and community acknowledgement that protecting our land, air and water for future generations are deeply rooted values. Many of our local

This global climate change challenge is a local challenge and our local eco-system is both a strength and weakness.

economic, environmental, social, and cultural practices already demonstrate leadership in sustainability and resilience. These community values are a strength – if fact – our Greenhouse Gas (GHG) study found that our community absorbs (sequesters) more carbon than we create through human activity. This GHG finding puts our municipality in a category describing very few local governments in Canada. While most municipalities in Canada will find it challenging to increase carbon sequestration to help mitigate the impact of climate change, our challenge will be to keep it and protect it from climate change risk so our shared natural spaces can continue to sustain our way of life and remain at the core of our cultural values and heritage. This is why living in this unique natural place is both a strength and weakness for our community as we begin to estimate the impact that climate change might have on our resilient lifestyles.

Global average temperatures continue to rise, worsening extreme weather events and endangering vital ecosystems. This means the things we value and depend upon – human health, water, agriculture, energy, transportation, and the environment – are at great risk. Around the world the climate crisis is intensifying and the impact on Central Manitoulin has already started. Out of 77 eco-regions across southern Canada, the Manitoulin-Lake Simcoe ecoregion was identified in the group of nine of the most significant and threatened places for biodiversity. Manitoulin Island is home to 75 national Species at Risk (SAR) and about 40 species of global concern³. Of greatest importance, however, is Manitoulin Island's central location within the Great Lakes. With many neighbouring State of Michigan streams having dams for the production of electricity, Island streams become an important cold water species spawning area. Indigenous communities have long used the Island for agriculture and fishing, and the collection of medicinal plants. The unique biodiversity of the Island, where Boreal, Carolinian and even Atlantic species continue to thrive, connects the Island to the cultural history and natural regions of the North Shore of Georgian Bay and the historic cultures of the Wendat of Huronia and the agriculture of present day Simcoe County.

Any vision for climate action must first acknowledge the role of a local government in influencing climate action and the co-benefits for taking climate action to ensure the long-term health and wellness of Central Manitoulin residents while establishing the required capacity and infrastructure needed to respond to the possible impacts of climate change. Central Manitoulin also has several unique challenges and opportunities when it comes to climate change planning that have been identified throughout this two-year project, such as residents having the second highest energy costs per household in Canada and our local governments and First Nation neighbours living without collaborative governance structures and organizational capacity to accelerate and amplify community-wide community programs. This Community Energy and Emissions Plan (CEEP) is a strategy for the municipality and the community to mitigate and adapt to the possible coming impacts of climate change to build further on existing partnerships and resilient systems to accelerate action starting now and looking towards 2050.

1.2 THE ROLE OF LOCAL GOVERNMENTS IN RESPONDING TO CLIMATE CHANGE

³ Nature Conservancy of Canada "Unique study pinpoints key places to stem biodiversity loss in Canada's South" (March 3, 2021). Retrieved From: <https://www.natureconservancy.ca/en/who-we-are/news-room/in-the-news/unique-study-pinpoints-key.html>

Municipalities are in an ideal position to respond to climate change. According to the Federation of Canadian Municipalities (FCM), municipalities have control of over 44-50 percent of Canada’s GHG emissions⁴. Municipalities are also responsible for providing affordable and reliable services to residents



that will be impacted by climate change risk. It is also possible, as will be explored later in this report, that the role of the municipality with respect to responding to climate change may change over the next thirty years. If municipalities have influence over 44-50% of GHG emissions in our district – it's safe to say that the other 46-50% will be influenced by people

who live, work and travel here. Figure 1 shows how local governments influence the different categories that the community can target for climate action⁵.

Since this is Central Manitoulin’s first attempt at creating a climate change plan it should be understood by the reader that the approach taken will:

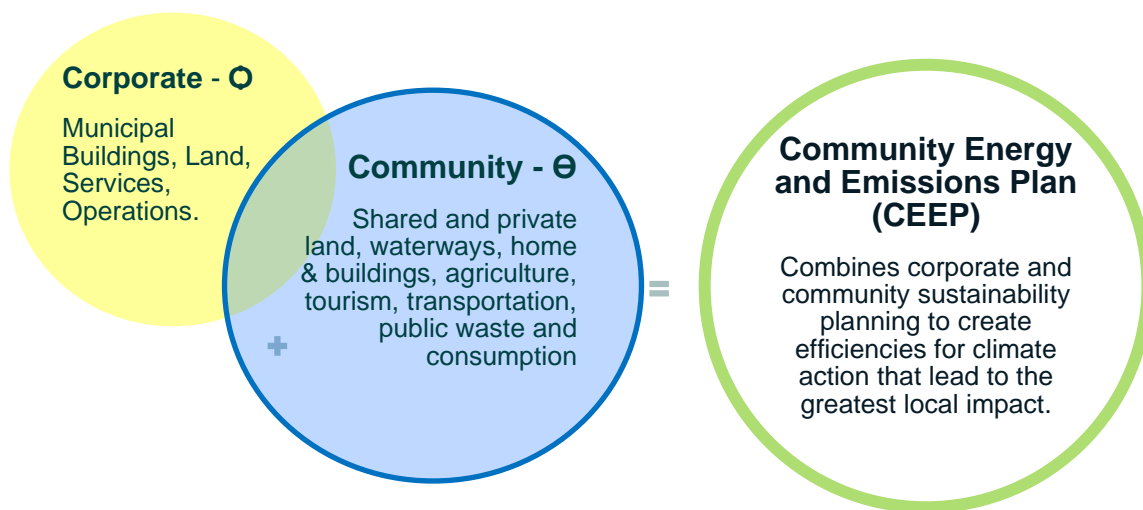
- Mainly consider areas where the municipality has direct control and direct influence, per figure 1.
- If the municipality does not currently provide a service in an area where a local government can have direct control/influence – potential partners and collaborative opportunities will be explored.
- Where the municipality has indirect, or little control, comment in this plan will be high level with a focus on partnership and collaboration

For this report, and in keeping with commonly used practices to define the parameters for climate change mitigation planning, land, services, and operational areas where the municipality has direct control, these will be referred to as “corporate”. All other land, service, or operational areas in the municipal boundaries where the municipality has direct influence or indirect control, will be referred to as “community”. This nomenclature is supported by the Partners in Climate Protection (PCP) program. The corporate and community categories are used to measure community carbon sequestration capacity, energy, and Greenhouse Gas (GHG) emissions within a defined municipal boundary.

⁴ Federation of Canadian Municipalities, *Act Locally: The Municipal Role in Fighting Climate Change* (2009). Retrieved from: <https://fcm.ca/sites/default/files/documents/resources/report/act-locally-municipal-role-fighting-climate-change.pdf2>

⁵ Dufferin Climate Action Plan “The Role of Local Governments p. 29” (April 2021). Retrieved from: [https://www.dufferincounty.ca/sites/default/files/climate-change/DCAP-2021-FINAL-accessible%20\(1\).pdf](https://www.dufferincounty.ca/sites/default/files/climate-change/DCAP-2021-FINAL-accessible%20(1).pdf)

Figure 2 outlines the commonly used structure in climate change planning that has been considered for Central Manitoulin's CEEP. This figure can help define the difference between corporate and community emissions for measurement, management, and implementation of local climate actions. By using a structured approach, it becomes possible to begin identifying areas for priority action, collaboration, or further investigation. This plan will also consider how the municipality will connect its other important planning processes to climate change to ensure critical services provided by the municipality to continue to meet standards expected by the community as climate impacts increase and new scenarios emerge.



How does Central Manitoulin's long-term vision, mission and guiding principles connect to climate change planning?

The Municipality of Central Manitoulin has a Strategic Plan 2016-21 and as this planning horizon ends in 2021, the municipality will undertake a new planning cycle. The CEEP, which has a planning horizon from 2018 to 2050 is a timely publication that will provide a roadmap for the municipality when considering the impact of climate change on operations and service levels. As Figure 1 demonstrates there is only so much that is in the direct control of a municipality. Even with the most ambitious goals and investment, climate action is a shared long-term commitment that will require investment and change throughout the community working with all orders of government and the private sector.

Figure 3 demonstrates a framework on which Central Manitoulin has already prioritized being environmentally and fiscally responsible. Environmental and fiscal responsibility are unlikely to change as the municipality enters its next strategic planning cycle from 2021 to 2026. Climate mitigation and adaptation actions must reduce GHG emissions and protect existing natural spaces all while providing co-benefits that connect to Central Manitoulin's strategic plan to ensure a continued commitment to being fiscally and environmentally responsible. The CEEP is intended to be a document which supports these strategic goals by setting clear, specific, and attainable actions to achieve environmental responsibility while maintaining financial and social commitments.

Municipality of Central Manitoulin

Strategic Plan 2016-2021

Vision Statement

Central Manitoulin will enable an environment for sustained growth in the community and in all municipal services while maintaining a strong relationship with the community and supporting family values. The municipality will be both fiscally and environmentally responsible.

Mission Statement

Central Manitoulin is a progressive municipality that provides quality services, well maintained infrastructure, supports economic development and is a friendly community for both seniors and families to live.

Guiding Principles

We will be fiscally, environmentally, and socially responsible.

We will be forward thinking and innovative.

We will treat all people respectfully, with equality and fairness.

We will be accountable at all times.

We will support our local economy.



Figure 3 Municipality of Central Manitoulin, Strategic Plan 2016-2021 Vision, Mission, Guiding Principles

ENVIRONMENTAL RESPONSIBILITY – CLIMATE MITIGATION VS. ADAPTATION

Environmental responsibility is at the core of financial and social responsibility. If adequate planning and environmentally responsible policies and best practices are implemented by a local government, it will ultimately lead to sound financial and social decision making. Central Manitoulin has maintained a commitment to environmental responsibility throughout several long-term planning cycles. When the project to create a Community Energy and Emissions Plan (CEEP) was proposed – project coordinators sought to build upon the strong environmental responsible approaches that Central Manitoulin has already applied. Throughout the CEEP project, Central Manitoulin began implementation of several climate-friendly projects, demonstrating that the organization can accelerate the transition to a low carbon local economy if adequate resources and capacity continue to be available.

The following is a summary of climate-friendly corporate and community projects that have emerged since the start of this climate change planning project:

- Streetlight LED upgrade reducing municipal monthly energy bills (Spring 2020, project completed Fall 2020)
- Continuous maintenance of parks and natural shared spaces like the Providence Bay beach, boardwalk

- A.J. Wagg Memorial Park (Wagg's Woods) hiking trail committee inception in 2020 - a 42 acre mature forest and unique alvar features within walking distance of Central Manitoulin's main economic areas that will now be maintained and operated as a major eco-friendly tourist attraction and enhance the protection of natural shared spaces within municipal boundaries
- Became the first local government on Manitoulin Island to formally support an island wide shared public transit system -forging an administrative agreement with United Manitoulin Island Transit (UMIT) to access a grant to start a local transit system on Manitoulin Island
- Continued relationship and community building with Manitoulin Streams to promote, educate Central Manitoulin residents about our shared natural spaces and implement natural based waterway restoration and maintenance projects
- A mandate for the Water, Waste and Education committee to organize community education events for waste reduction and management in the community
- Waste Reduction Week educational events – clothing drive, garage sale and educational webinars about glass and plastic recycling (Fall 2020)
- Climate Change Open House, educational engagement and community outreach at local farmers' markets and environmental events on Manitoulin Island (Spring/Fall 2019)
- Continuous maintenance of roads, stormwater, and other engineered community assets and applying energy efficiency, flood/wildfire prevention and climate-friendly lens
- A burgeoning energy conservation and management process for municipally owned buildings and facilities – including the review of deep energy retrofits for roof replacements on municipal assets

Central Manitoulin continued to demonstrate leadership in climate action for the community by creating a Climate Action Committee (CAC) and a Trail Committee in the Spring of 2020. The municipality is committed to building upon its organizational and governance capacity to pursue best practices in environmental sustainability and has already approved the continuation of a partnership with the Township of Billings to continue implementing the actions outlined in this CEEP. The purpose of this project and CEEP is to create a vision for climate action that will increase and improve environmental responsibility for the long-term, building on the excellent work that has already been done.

All modernized local governments need to consider the reality that if they do not begin to increase response and preparedness to the impacts of climate change – the cost of inaction now will lead to unmanageable costs later in the form of emergency response and support after a flood, wildfire, or extreme weather events., Any vision for climate action must consider how environmental responsibility can be increased through adaptation and mitigation actions (Figure 3) to respond to the impacts of climate change, while simultaneously considering to social and financial benefits related to adaptation and mitigation efforts.

Mitigation and adaptation actions lead to Low-Carbon Resilience (LCR) which allows a community to apply a lens that coordinates adaptation and mitigation strategies in planning, policy, and implementation processes. LCR strategies have co-benefits for health, equity, biodiversity and community livability. These co-benefits will be the foundational elements of this CEEP's mission and vision on a path to net-zero carbon by 2050.

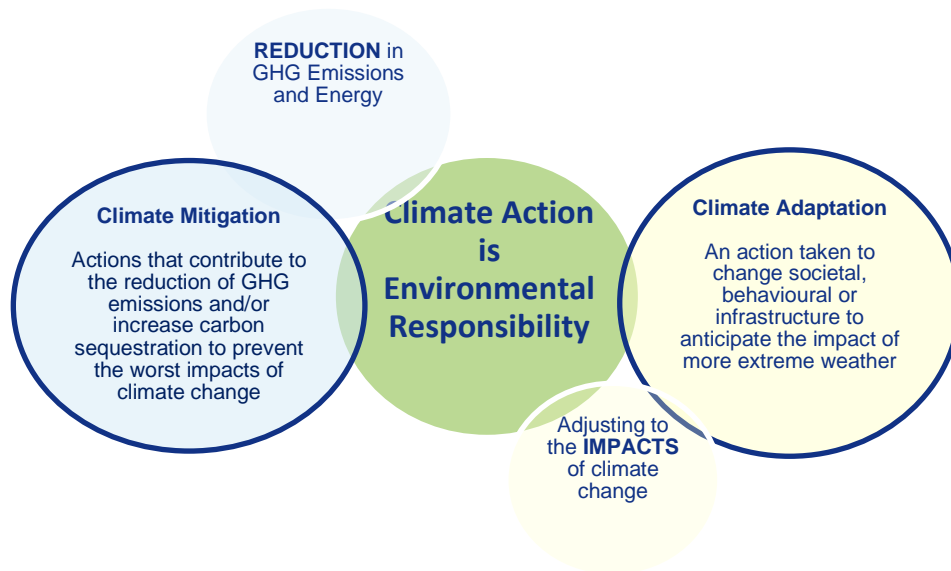


Figure 4 Environmental responsibility means recognizing climate change, its impacts on the community/local government operations and enabling a climate adaptation and mitigation response.

1.3 VISION AND TARGETS

Throughout this climate change planning project in the Municipality of Central Manitoulin has engaged the public, municipal leadership, staff and several community groups and businesses to collect visions for the future of an environmentally responsible and resilient municipality. As the climate change survey results show (Appendix D), most community members are supportive of the municipality taking both corporate and community climate action. This Community Energy and Emissions Plan (CEEP) will recommend two approaches to mitigation: carbon sequestration and energy/GHG reduction in four main categories where the municipality has direct control, and influence in the community. Table 1 provides a visual summary of the CEEP categories, goals and foundational objectives which will be extrapolated on in Section 4 Taking Climate Action.

Table 1 CEEP Climate Action Vision - Categories, Goals and Foundational Objectives

<p>⦿ CORPORATE ENERGY AND EMISSIONS ⦿</p> <p>Includes all items that the local government has operational control over (example - fully owns, or has full authority to implement operational health, safety and environmental policies)</p>	<p>⊖ COMMUNITY ENERGY AND EMISSIONS ⊖</p> <p>Emissions from activities within municipal boundaries but the local government may have limited control over some emissions sources.</p>
<p style="text-align: center;">SHARED NATURAL SPACES</p> <p>Minimize (mitigate) impacts of climate change on communities by taking actions to protect, restore and enhance natural systems, reduce agricultural/tourism emissions, protect people and property from natural hazards and promote sustainability best practices for all local businesses with a focus on enhancing support for the agricultural, forestry, tourism sectors.</p>	

Corporate natural spaces (or Natural Assets) includes - forests, community gardens, beaches, wetlands, waterways, trails and roadside stormwater drainage <u>owned</u> and <u>operated</u> by the municipality.	Community natural spaces (or Natural Assets) includes - forests, agricultural lands, beaches, wetlands, waterways, trails, hunting lots, nature and sustainable tourism camps owned by <u>private residents</u> .
BUILDINGS Reduce by 50%, below 2018 GHG emission levels by 2030 Action will increase energy efficiency and the adoption of renewable energy and low carbon technologies and build climate resilience into new and existing structures.	
Municipal Buildings and Facilities	Community Homes and Buildings
TRANSPORTATION Reduce by 50%, below 2018 levels by 2030 Actions will reduce vehicle trips, promote active and public transportation and accelerate low-carbon/GHG transportation options.	
Municipal Transportation	Community Transportation
WASTE REDUCTION Reduce by 50%, below 2018 levels before 2030 Reduce overall consumption by promoting circular economy concepts and increase waste diversion through recycling rate increases and home composting programs.	
Municipal ownership, operation and community awareness of landfill and recycling services in the municipality	Community participation and engagement in circular economy, waste reduction and diversion programs






Moving forward into the implementation, monitoring and adjustment phases of this plan, it will be helpful to align the vision, mission, and actions into both Corporate (C) and Community (Θ) categories so there is a basis for determining what level of involvement the municipality will have in leading climate action. As the climate change survey results show (Appendix C), most community members are supportive of the municipality taking both corporate and community climate action.

This Community Energy and Emissions Plan (CEEP) will recommend two approaches to mitigation: carbon sequestration and energy/GHG reduction in four main categories (Shared Spaces, Buildings, Transportation and Waste) where the municipality has direct/indirect control and influence in the community. Table 1 provides a visual summary of the CEEP categories, goals and foundational objectives which will be extrapolated on in Section 4 Taking Climate Action.

Using the Climate Action Vision outlined in Table 1, the following overall mission statement was developed from community responses and the municipality’s commitment to climate action by linking carbon sequestration, energy and GHG emission reduction actions to important co-benefits that are the pillars of a resilient and future net-zero community:




Table 2 Central Manitoulin **Mission** Statement in Action

TO BUILD A MORE RESILIENT AND NET-ZERO COMMUNITY BY 2050 AND SET A PATHWAY FOR 50% ENERGY AND GHG EMISSION REDUCTIONS BY 2030 THAT:

HEALTH	NATURE	COMMUNITY BUILDING	ECONOMIC DEVELOPMENT	INNOVATION
				
Enhances Health and well-being of community members	Preserves and enhances local biodiversity and natural systems	Builds community through inclusion	Fosters a prosperous and sustainable local economy	Promotes innovation and growth while preserving and protecting greenspace.

When the municipality and community come together to implement these targets – the co-benefits can often be measured and have greater impact on a community than the environmental benefits associated with carbon sequestration, energy and GHG reductions. Table 3 provides an overview of these co-benefits. These infographics denoting co-benefits will be used throughout this planning report to identify how each climate action will create a positive impact on the community and serve as a reminder that key performance indicators on impact are often more than just the energy measured or the GHG emissions that are saved.

Table 3 CEEP - Climate Action Co-Benefit Framework

	<p>Climate action enhances health and well-being of community members by:</p> <ul style="list-style-type: none"> • Improving air quality, reducing risk of illness and disease • Addressing land-use based health inequities • Supportive infrastructure that encourages an active lifestyle • Reducing risk of injury and illness from extreme weather exposure • Reduces risk to critical water, sanitation, and power infrastructure • Improves risk of social isolation by providing pathways for everyone to participate
	<p>Environmental responsibility is connected to climate action as described in Figure 4 and can also result in:</p> <ul style="list-style-type: none"> • Improved biodiversity • Improved water retention and absorption, reducing flood risk • Stable air quality and increasing natural carbon sequestration • Creates and protects habitat • Improves water quality
	<p>Climate actions can result in building a stronger community by:</p> <ul style="list-style-type: none"> • Increasing educational opportunities for all ages • Increasing access to recreational parks, greenspace and trails • Building spaces, natural and engineered, that generate a sense of space • Accessibility and equity improvements to encourage everyone to participate. • Supports for local healthy food systems and security

	<p>Enhancing our local economy through climate action looks like:</p> <ul style="list-style-type: none"> • Improvements to energy reliability, security and a reduction in energy poverty • Waste reduction and optimization of local resources • Improves cost savings for businesses and residents • Creates local jobs • Growth in our local economy by incentivizing sustainable businesses and lifestyles
	<p>Enhancing innovation through climate action looks like:</p> <ul style="list-style-type: none"> • More community-based partnerships that result in the adoption of low GHG alternatives • More supporting partnerships with local, provincial and national public, private and non-profit organizations to accelerate energy and sustainability transition

2 CLIMATE CHANGE IN THE MUNICIPALITY OF CENTRAL MANITOULIN

2.1 BY 2050 – LOCAL CLIMATE CHANGE RISK AND IMPACT

Climate is different from weather.

Weather reflects short-term conditions of the **atmosphere** while **climate** is the **average** daily **weather** for an extended period of time at a certain location.

Want to know more about the top 10 reasons our weather is changing on Manitoulin Island over an extended period of time or in other words how our climate is changing?

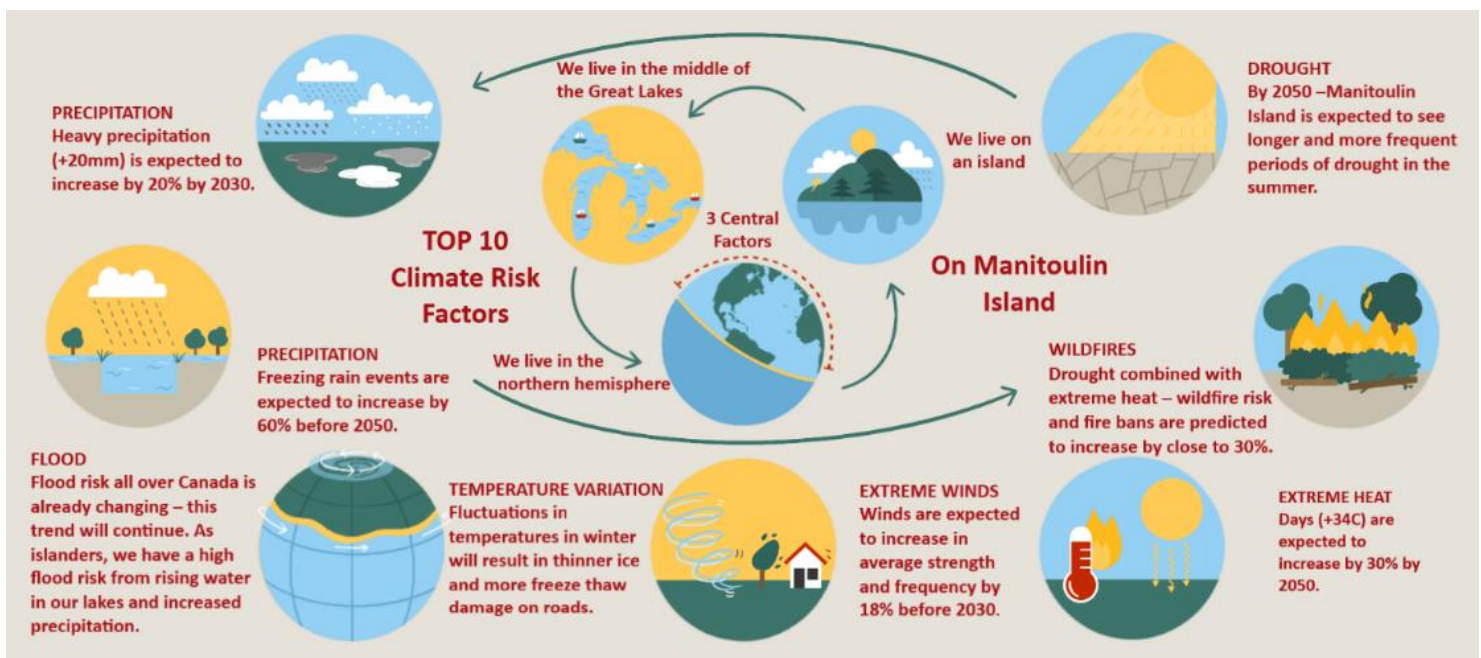


Figure 5 Top 10 Climate Risk Factors on Manitoulin Island. Compiled with detailed research completed from May 2019 to May 2021. Detailed sources and a summary of data used to create infographic can be found in Appendix A – Local Climate Projections.

3 Central Factors - make climate change risk unique for Manitoulin Island and impact all 10 of top risk factors for our island.

Great Lakes: Our beautiful freshwater lakes make us unique but because we live on the largest freshwater island in the world, we are in the middle of several weather streams that collide over the Great Lakes. This means over time; our weather is becoming more unpredictable and extreme.

Northern Hemisphere: The northern hemisphere is warming faster than the southern hemisphere. Some people like this change but it is already starting to have significant impacts on growing seasons, infrastructure, and biodiversity.

Manitoulin Island: By now, you might be thinking the Great Lakes and northern hemisphere are not that unique. When you combine them with the fact that we live on the largest freshwater island in the world, it creates another layer of climate risk vulnerability that can exponentially influence how unpredictable, extreme weather will impact the community. This seemingly small difference, living on an island in the middle of the Great Lakes, in the northern hemisphere starts to compound the climate change predictions for our island. Our climate change predictions are different than mainland Ontario - they show more extremes - much higher winds, longer extreme precipitation events and when it gets hot we are more susceptible to drought and wildfire than our mainland neighbours

Drought: By 2050 – Manitoulin Island is expected to experience longer and more frequent periods of drought during summers.

Wildfire: Drought combined with extreme heat increase our risk of wildfire. Manitoulin Island has not experienced a significant wildfire for over 100 years. Sustainable forest management occurs on the island but it is not widespread. Wildfire risk and fire bans are predicted to increase by close to 30% by 2050 on our island without mitigation and management of our forested areas.

Extreme Heat: Days (+34C) are expected to increase by 30% by 2050.

Extreme Winds: Winds are expected to increase in average strength and frequency by 18% by 2030, resulting in more property damage and unsafe open water conditions.

Temperature Variation: Fluctuations in temperatures throughout the winter months will result in thinner ice cover on lakes and more freeze thaw damage on roads.

Precipitation: Freezing rain events are expected to increase by 60% before 2050. Heavy precipitation (+20mm) is expected to increase by 20% by 2030⁶.

Flood: Flood risk all over Canada is already changing – this trend will continue. As islanders, we have a high flood risk from rising water in lakes. The key to understanding flood risk on Manitoulin Island will be to advance scientific and indigenous knowledge using innovative mapping technics that will advance the entire island's understanding of how all of our lakes, streams, wetlands, grasslands and forest coverage contribute to flood prevention and mitigation. Using innovative technology like LiDar – combined with on the ground field experience in water quality and habit restoration will make a significant impact on building a more flood resilient community by 2030.

⁶ Data used for climate projections on Manitoulin Island can be found in Appendix A: Local Climate Projections

3 PLANNING FOR CLIMATE CHANGE

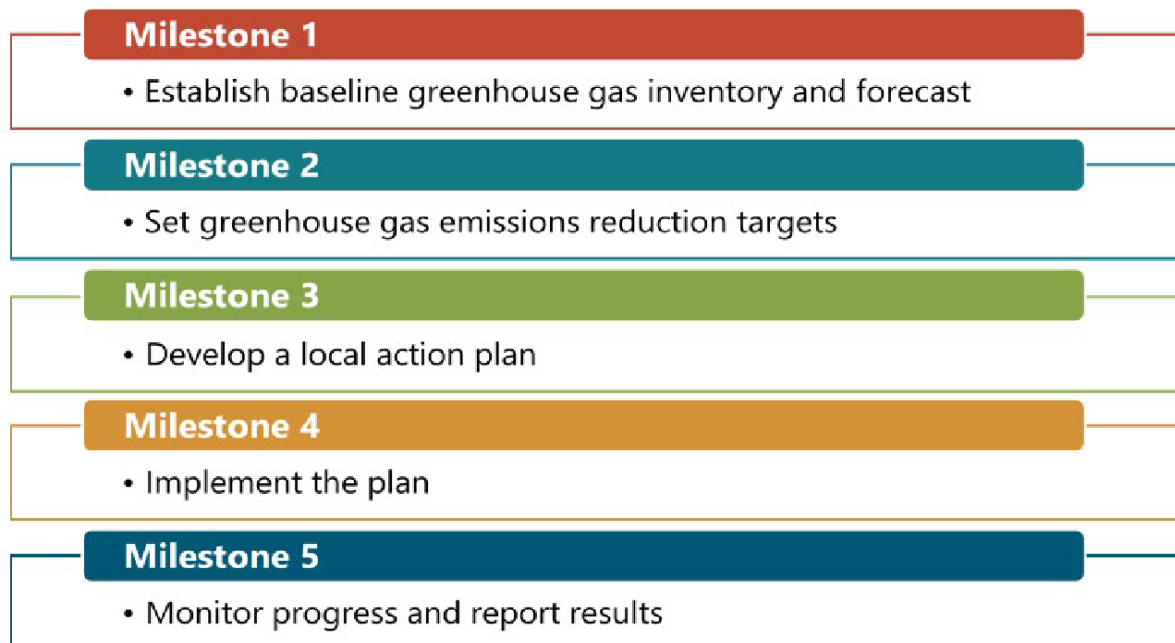
3.1 APPLYING A GUIDING FRAMEWORK FOR CLIMATE CHANGE ACTION

The municipality is committed to a community-based, inclusive planning approach for climate action that considers climate risk and impacts. The GHG reduction targets in this CEEP are supported by the majority of those that participated in the community-wide climate engagement conducted in the winter of 2021. From these community-wide survey results, climate-change planning in the Municipality of Central Manitoulin has advanced significantly, providing municipal leadership and Climate Action Committee members with the credible community feedback required to pursue ambitious climate action targets. Just like we adapted to COVID19 and are mitigating the worst impacts of this virus – together we will confront climate change, learning from what our community has achieved by working together to manage this global pandemic.

The publication of this first Community Energy and Emissions Plan (CEEP) to be adopted by the Municipality of Central Manitoulin municipal Council for continuous measurement and implementation of corporate and community climate actions is a result of many years of community support which officially began when the municipality passed the following motion in 2018:

MUNICIPALITY OF CENTRAL MANITOULIN CLIMATE COMMITMENT

By a resolution of council, Central Manitoulin joined the Partners in Climate Protection Program administered by FCM and ICLEI. The Partners for Climate Protection (PCP) program, from ICLEI — Local Governments for Sustainability (ICLEI Canada) and FCM, is a framework on how to help Central Manitoulin do its part to mitigate and adapt to climate change. It consists of a five-step Milestone Framework that has been the guide for municipal staff to bring climate action to Central Manitoulin. There are now over 350 municipalities across Canada who are members of the PCP network and have developed long-term plans to take climate action on both a corporate and community level.



At this stage of planning, Central Manitoulin is at Milestone 2 and 3 of the PCP framework and once this climate action plan has been reviewed and officially accepted by Council it will signal the beginning of Milestone 4 and 5, implementation and monitoring of the plan. Section 4 and 5 of this report provide a guiding framework for implementation and monitoring of corporate and community emissions following the acceptance of this plan.

3.2 PLANNING TIMELINE AND COMMUNITY ENGAGEMENT

Since community engagement has been a key focus for building support for the CEEP and actions to pursue, this Project Timeline only begins to scratch the surface of individual interactions that CEEP project stakeholders have had with residents in Central Manitoulin about climate change. Supporting partners and other organizations on the Manitoulin Island have also played a key role in increasing the profile of the importance of developing local solutions to the impact of climate change and in some instances have led the way for municipal climate action. This timeline acknowledges project milestones and events organized by Central Manitoulin and Billings and includes a few other (but certainly not all) other notable community drivers for climate action that have influenced this planning process.

May 2019	Central Manitoulin and Billings hire a Climate Change Coordinator to begin CEEP process Work begins on collecting corporate and community energy and GHG emissions data for Central Manitoulin and Billings.
June 2019	Municipal staff survey on climate change and awareness about GHG emission reduction co-benefits
July-August 2019	Kagawong market and Summerfest in Billings, and the Providence Bay market and Providence Bay Fair in Central Manitoulin to interact with residents and begin community engagement outreach activities.
December 2019	Central Manitoulin and Billings both hold Open Houses with members of the public to discuss climate change planning on December 2 and 4th, respectively. Open house included key supporting partners Share/Go Green Committee from Manitoulin Secondary School, Manitoulin Streams, Council and municipal staff.
Jan-March 2020	Significant progress made on GHG inventory for Central Manitoulin and Billings
March 2020	Educational Event in collaboration with the Climate Risk Institute and the Northern Ontario Climate Change Network (NCCN) Central Manitoulin and Billings agree on Terms of Reference (TOR) for two Climate Action Committees (CAC) of Council to begin working with the Climate Change Coordinator on the CEEP.
May 2020	Central Manitoulin Climate Action Committee (CAC) members begin meeting with the Climate Change Coordinator monthly to steward planning process
September 2020	Central Manitoulin Climate Action Committee (CAC) members begin meeting with the Climate Change Coordinator monthly to steward planning process Both Central Manitoulin and Billings CAC review community GHG inventory and both pass motions to proceed with a community-wide climate change engagement survey to improve community GHG information and receive widespread

	<p>community feedback on GHG targets and the most supported actions.</p> <p>CCC attends Northern Ontario Permaculture Research Institute (NOPRI) to receive feedback from local sustainable food system advocates on planning process</p>
October 2020	<p>Climate Action Committee and CCC organize a series of events for Waste Reduction week, stewarding community discussions about composting, producer responsibility legislation and glass recycling on Manitoulin Island – approximately 35 community members attend virtual events and participated in the climate change youth artwork contest.</p> <p>CCC presents Collaborative Model idea for community climate action at Manitoulin Island Municipal Association and discussed a regional Electric Vehicle Charging Network strategy and business plan</p> <p>New LED streetlights are installed in Central Manitoulin and Billings reducing monthly energy bills</p>
February 2021	<p>4882 page views of the Climate Change Engagement survey to set community and corporate GHG emission targets and priorities – 12% of Central Manitoulin Residents Participated</p>
May 2021	<p>Since March 2018, the start of this planning process - approximately 48 articles in the Manitoulin Expositor about Climate Change and this count doesn't include articles about flooding, high water and windstorms. 20% of local media has been related to this municipal project.</p>

4 GREENHOUSE GAS INVENTORY UPDATE

Milestone 1 of the PCP program is to create a GHG inventory for both corporate and community emissions in the municipality. This Milestone was completed in April 2020, however, once the Climate Action Committee began meeting and discussing how to use the GHG inventory committee members and staff recognized that further investigation would be required, particularly to improve community GHG information. In addition, while GHG inventories can help inform decision making – setting targets require community support and consensus. Therefore, in October 2020 the CAC recommended to Council that a community-wide survey to help improve community GHG data and build consensus on actions an targets was required.

After the community survey results became available the Climate Change Coordinator arranged for new data to be combined by a carbon modelling software firm called Alterum. Alterum's carbon accounting software uses grid, statistics Canada and other baseline to build community emission profiles. Then these profiles can be customized and continuously improved with specific community data, like Hydro One consumption information, survey responses and other GHG data that has been collected earlier in the project to update the community and corporate GHG inventory. The result is more accurate modelling and reliable projections to help visualize baseline data and future goals.

Results from the updated GHG inventory can be found in Appendix D. The community data collected from the survey has improved overall understanding of energy used in residential buildings and community transportation in the district and the application of the new information has been applied in section 5.4.1.

In addition, Business As Usual (BAU) and other future emissions modelling projections have been included in Appendix D so that municipal staff and community organizations can use this information to track progress more easily moving forward.

5 TAKING CLIMATE ACTION

5.1 SHARED NATURAL SPACES

CEEP VISION STATEMENT IN ACTION #1

SHARED NATURAL SPACES

Minimize (mitigate) impacts of climate change on community by taking actions to protect, restore and enhance natural systems, protect people and property from natural hazards and promote sustainability best practices for all local businesses with a focus on enhancing support for the agricultural, forestry, tourism sectors.

Within the boundaries of the Municipality of Central Manitoulin, our community sequesters more carbon than we currently emit, absorbing 90 770 tCO₂e per year⁷. Our forests, wetlands, grasslands, farmland, lakes and streams are strongly connected to our cultural values, livelihoods, health and wellbeing. The carbon that is sequestered here is already contributing positively to climate action. Natural spaces are often referred to as natural assets for the purpose of planning. No matter who owns land all our natural systems and assets are

connected. When it rains – water moves through the soil and karst topography and into our shared lakes, aquifers, and streams where we all obtain our drinking water. When a forest is removed, it impacts the air that we all breathe. To describe the interconnectedness of natural assets, planning documents often go one step further and refer to these spaces as a Natural Heritage System. Central Manitoulin has had a long-term commitment to maintaining Natural Heritage System Features and Areas. This commitment is outlined in the District of Manitoulin Official Plan October 29, 2018:

“The Manitoulin Planning Board, and its member municipalities, are committed to maintaining and promoting a healthy natural environment and protecting its unique and special natural heritage features for the present generation and all successive generations”⁸

As part of long-term planning guidelines – the District of Manitoulin Island Planning Board will undertake a consultation process within the next year to develop a Natural Heritage System Strategy. The municipality, Climate Action Committee(s) and all community stakeholders interested in achieving climate action goals related to the protection, preservation and enhancement of Manitoulin Island’s shared natural spaces ought to participate in the development of this Natural Heritage System Strategy. Moreover, this consultation process will provide all local governments party to Manitoulin Official Plan with the opportunity to accelerate implementation of goals that will be outlined in the Natural Heritage System Strategy. After all, the District Manitoulin Island Planning Board may be responsible for planning, but it is

⁷The Municipality of Central Manitoulin: Greenhouse Gas Inventory 2018. Approved by Council May 2020.
http://www.centralmanitoulin.ca/sites/default/files/central_ghg_inventory_-_final_0.pdf

⁸ District of Manitoulin Official Plan D.6 Natural Heritage and Open Space Strategy pg. 148. Retrieved (July 2020):
http://www.manitoulinplanning.ca/images/43/Manitoulin_OP_Approved_by_MMAH_October_29_2018_Reduced.pdf

the direct responsibility of the municipality to implement strategies within each community to protect, preserve and enhance Natural Heritage System features. As part of the process, the District of Manitoulin will also be seeking participation from indigenous communities to develop the Natural Heritage System Strategy, highlighting the importance of integrating indigenous knowledge into our community's long-term strategy to care for our natural assets that interconnect.

Currently, the municipality and other communities on Manitoulin Island play a key role in caring for natural assets but data gaps, vulnerability assessments for natural hazards (like wildfire and flood) are insufficient to help inform local decision making. Capacity, staff, training, and oversight is stretched to a maximum. Many of the strategies listed in the District of Manitoulin Island Official plan related to protection, preservation and enhancement of natural spaces are a challenge to implement for the small communities' party to the agreement. To adequately prepare for climate change and advance this action collaboration and investment from Manitoulin Island local governments, local organizations, provincial, federal and the community will be needed to meet the increasing preventative maintenance costs required to measure, monitor, restore and enhance our shared natural spaces.

To adequately prepare for climate change and advance this action collaboration and investment from Manitoulin Island local governments, local organizations, provincial, federal and the community will be needed to meet the increasing preventative maintenance costs required to measure, monitor, restore and enhance our shared natural spaces.

CHALLENGES AND THREATS

The unique challenge for Central Manitoulin and other local governments on Manitoulin Island is there is limited collaboration on regional projects and when there is – normally, a third-party organization is involved to coordinate projects. Municipal staff and leadership are diluted and stretched to a limit, often sitting on multiple Council committees and regional boards/associations that are driving forward collaborative projects like broadband, shared services through the Manitoulin Planning Board and sustainable tourism. The idea of adding the regional governance capacity to integrate Natural Asset Management Planning into the municipal organizational and decision making has received community support but progress must overcome barriers surrounding funding, technical expertise and staff capacity.

How do other communities overcome these barriers?

To prevent floods, sequester more carbon and consider natural solutions, instead of engineered solutions, Ontario municipalities are grouped together through watersheds, with local Conservation Authorities providing expert advice on how development activities in the counties impact the natural shared environment. The benefit of having a conservation authority in a river watershed is that it brings together multiple local governments, leading to a greater scientific understanding of how development activities in each local government impact the shared water resources.

This CEEP is not suggesting that a conservation authority should be organized to manage natural assets to achieve the goals stated in the Natural Shared Spaces section. By identifying this environmental management and governance gap it provides an opportunity to outline the key barriers local municipal governments have to implement the natural asset protection, preservation, and enhancement strategies. Many of the basics are already outlined in the District of Manitoulin Official Plan. Larger southern Ontario municipalities have specialized municipal staff in storm water management, land resources, and parks. These departments work with conservation authorities and community stakeholders to mitigate flood, wildfire, and other natural hazard risks and this scientific understanding helps to inform long-term planning, permitting, and natural asset management processes at the local level.

In Waterloo Region Ontario, a third-party non-for-profit called REEP Green Solutions has been working with multiple municipalities, the University of Waterloo and other community members and organizations to make a local climate change impact. This organization started in 1999 to help improve home energy efficiency and has since expanded community climate action work to include forest/tree stewardship, stormwater and water conservation, renewable energy and electrification of transit.

STRENGTHS AND OPPORTUNITIES – CARBON CREDITS AND DATA SHARING

Transform challenges to opportunity through innovative partnership.

While conservation authorities can offer benefits when collaborative activities between local governments result in cleaner water, air, and land, the absence of a collaborative organizational and governance structure to continuously oversee and offer stewardship in climate action on Manitoulin Island, presents an opportunity for local governments to consider innovative approaches. All local governments on Manitoulin Island could benefit from the enhancement of local scientific and indigenous knowledge. Wiikwemkoong stewardship committee and the charitable organization Manitoulin Streams have played an important role locally to help build the capacity to perform environmental due diligence required to adequately measure, monitor and maintain natural assets. These two island organizations have developed some local capacity and understanding of the local environment and are already helping other local communities build the data needed to create natural asset inventories, reliable water quality information and flood mapping risk assessments that Manitoulin Island communities need to adequately plan for the impact of climate change. These organizations are a local strength that demonstrates how collaborative work in environmental protection can be uniquely implemented in Central Manitoulin.

Manitoulin Streams came into being during the years that Mike Harris served as premier of Ontario, with many monetary and personnel cuts made to the Ministry of Natural Resources resulting in greatly reduced manpower. In the vacuum, a group of local concerned citizens started to organize a not-for-profit organization to fight climate change and the warming threat of warming waters to cold water loving salmonids species such as trout and salmon. Municipalities were asked for representation, and First Nation communities were also approached for input. It took two years of monthly meetings at the Blue Jay Creek Fish Culture Station in Tehkummah, to develop a Terms of Reference for the organization. Meetings became instructional events with environmental engineers taking on teaching roles. The group studied the Rosgen Classification of streams worldwide and learned about engineered stream rehabilitation methodologies in use worldwide. A project coordinator was hired, and streams were mapped. The Blue Jay Creek and the Manitou River were the first streams involved. They were divided into sections, photographed, named and the amount of required rehabilitation work was assessed. Since most land in the watershed is privately owned, section projects involving in-stream work required partnering with the landowners and an in-kind or monetary donation for the work to be done. The Manitou River is a thirty-year project. The sections were ordered as to the ones needing most work foremost, followed by smaller projects. The Blue Jay Creek has a similar plan, as does the Kagawong River in Billings Township. The Project Coordinator organizes funding applications, in-stream work, educational programmes related to invasive species, and even stream tours and activities for youngsters.

Central Manitoulin has partnered with Manitoulin Streams in the rehabilitation work done on many sections of the Manitou River, sections and mouth of the Mindemoya River, and many projects on Grimesthorpe Creek have played an important role locally on Manitoulin Island to help build the capacity to perform environmental due diligence required to adequately measure, monitor and maintain natural assets. These two island organizations have developed the local capacity and understanding of the local environment and are already helping other local communities build the data needed to create natural


asset inventories, reliable water quality information and flood mapping risk assessments that Manitoulin Island communities need to adequately plan for the impact of climate change. These organizations are a local strength that demonstrates how collaborative work in environmental protection can be uniquely implemented in Central Manitoulin. Manitoulin Streams has gained the trust of neighbouring First Nation communities and has worked with M'Chigeeng FN through projects on the local stream entering West Bay, and with Unceded Wiikwemkoong in a three-year collaboration which involves in-stream work and fish viewing platforms to augment tourism.

The First Nations do have an indigenous "Lands and Forests" management structure but one must remember that Wiikwemkoong is the only unceded territory in Ontario, and that other Indian Reserves under The Indian Act are not contiguous and management of natural resources and planning for climate change are hardly possible with the current evolution of settler-indigenous land and societal relationships, especially after the impact of residential school education which in no way was part of the university and colleges system in Ontario and other provinces, yet the First Nations served in the two World Wars and other campaigns stretching back to the 1700s and the War of 1812.

The Ontario Centre for Climate Impacts and Adaptation Resources near the Laurentian University campus in Sudbury is used by Manitoulin Streams. Al Douglas, President of the group, an individual who operates Hideaway Lodge in Billings, has worked with Manitoulin Streams to gather local Manitoulin knowledge to try to amass database and a baseline of "normal" Island weather events leading to a climate description against which, changing seasonal weather events can be collected and used as a comparison. Kristen Koetsier asked Al Douglas to make a presentation during her first year of organizing community awareness evenings. The Centre exists under a new name "Climate Risk Institute" and the website is <https://climateriskinstitute.ca/>. Manitoulin Streams hired a young man from Campbell Ward to work in the gathering of local data during a full year contract. Grocery stores, garages, local resorts, and "old timers" were consulted to add information such as ice out dates over the years, first snowfalls, first frosts and dates of spawning runs.

One example of local knowledge which comes to mind is the stream which flows through the main intersection in Mindemoya. The blasting and digging up of streets to put in a water delivery and sewage network, caused disruptions to the network of Karst sinkholes which move water between above ground and underground passages. Teaching at Central Manitoulin Public School for over several decades it was common to drive into the village on highway 542 and go through gushing water, relieved of its underground pressures, by a combination of sinkholes and new water and sewage lines. The water would gush out of the basement of the corner store and flow across the road into a sewer grate. This was temporarily fixed not by engineers hired to examine data and design maps of water movement, but by observations by local roads crews, and a determination that the creek flowing through Mindemoya needed to be observed during springtime freshets and a channel maintained through Wagg's Park. Once this was done, the intersection flooding became a memory rather than a yearly event.

The benefits for a collaborative approach to Natural Asset Management Planning can be mapped using the climate action co-benefits framework:

	<ul style="list-style-type: none"> • Nature heals – the natural environment is a key determinant of healthy outcomes for any population • Increasing overall scientific and indigenous knowledge about unique and undiscovered karst, caves and other geomorphic natural features on the island will lead to better an understanding of how human activities impact access to clean drinking water
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	<ul style="list-style-type: none"> • By joining together, the community can preserve, protect and enhance more shared natural spaces and access more funding opportunities • Enhance essential eco-systems in the Manitoulin Lake-Simcoe eco-region to ensure they continue to provide habitat for people and wildlife
	<ul style="list-style-type: none"> • Preservation and increase in shared natural spaces for people to gather and socialize • Community based collaborative projects to protect, preserve and enhance forests, wetlands, streams, lakes and grass lands builds community connection and a sense of space • More events and community projects for the natural environment was in the top three actions supported in the community climate change survey
	<ul style="list-style-type: none"> • More local jobs in forestry, agriculture, environmental science and technology • Preservation and protection of the land and water that drives Manitoulin Islands largest economic sector - eco-tourism and agriculture. • Once data has been collected – each local government and private landowner can have access to carbon sequestration and environmental information for their property and the community can pool these natural assets together to sell carbon credits in the voluntary market place
	<ul style="list-style-type: none"> • Sharing natural asset, flood and water quality data will lead to a better overall understanding of scientific and indigenous knowledge in the community • Use the most innovative drone, GIS and LiDar technology to create Natural Asset Inventory and flood maps – partnership with Wiikwemkoong • Build local knowledge of these technologies to ensure regular monitoring, mitigation and adaptation actions can be taken as climate change increases the vulnerability of local habitats

Moreover, if combined this data can be used to value land, discover interconnected waterways and eco-systems so that accurate economic and environmental contributions of natural assets to the community can be considered locally. Once natural spaces have adequate valuations – vulnerability assessments and the economic impact of loss as a result of extreme weather caused by climate change can be made. Plans to protect, preserve, monitor and enhance spaces can be executed. Finally, when data is made public – everyone in the community will benefit by having access to the environmental due diligence performed and this will provide every landowner in the district an understanding of the carbon sequestered on their land and how protecting and preserving natural assets can generate property income by selling carbon credits.

Advancing our scientific understanding of our natural assets and most importantly sharing how to use this information to maintain and enhance our land, water and air will ultimately lead to positive community-wide outcomes, like:

Increased Resilience: The community’s ability to bounce back and sustain increased extreme weather events with very little recovery time will always be problematic.




Risk Avoidance: Once community members have access to improved scientific understanding and indigenous knowledge about Manitoulin Island’s Natural Heritage System our community will be able to identify key areas of concern that are more vulnerable to climate related impacts like flooding, wildfire and drought. This data will help municipal leaders, property owners and everyone that lives in the district to prioritize adaptation or mitigation actions – like building away from a flood zone or managing high risk forests to reduce wildfire risk.

TAKING ACTION – SHARED NATURAL SPACES

Unlike the other Taking Action sections in this plan, taking action for our natural environment to increase carbon sequestration and mitigate climate change will require the greatest level of regional collaboration and recognition that by pooling together funds we can meet the increased capacity and demand that will be required to support these activities. Key objectives (Table 7) are long-term goals while specific actions (Table 8) will provide short to mid-term plans to jump start climate action for our shared natural spaces in pursuit of key objectives, mainly through a Collaborative Model.

<i>Table 7 Natural Shared Spaces - Key Objectives for Action</i>		
Meeting these objectives will require collaboration and partnership to achieve corporate and community objectives.		
Corporate – ☉ Municipality leads development of project with a Supporting Partner + Community – ☉ Local NGOs and a sustainable Collaborative Model leads development of capacity and resources with support from municipality.	N1	Increase local capacity, knowledge sharing and educational opportunities by teaming up with local partners to deliver grant application support and services for local businesses to sequester more carbon and protect, preserve and enhance natural spaces.
	N2	Create a valuation and protection system of stormwater and natural purification systems linked to drinking water sources in the community.
	N3	Continue and enhance effective management, rehabilitation and valuation of natural shared spaces to increase our climate mitigation and adaptation capacity in preparation for increased climate change impacts.

Table 8 Taking Action to protect, restore and enhance natural spaces

Table 8 Taking Action to protect, restore and enhance natural spaces				
N1 Increase local capacity, knowledge sharing and educational opportunities by teaming up with local partners to deliver grant application support and services for local businesses to sequester more carbon and protect, preserve, and enhance natural spaces.				
Natural	Action	Local Government Role	Supporting Partners	Investment Required
<p>N1Θ1</p> 	<p>Promote, educate, and incentivize the adoption of climate-friendly practices in the agricultural, forestry and sustainable tourism sectors</p>	<p>Support these community led actions by combining capacity/resources with other local governments and partners.</p> <p>Build and become a founding member of Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities on a per grant/project basis.</p>	<p>Project Lead: Manitoulin Streams</p> <p>Academic Partners and Sector Experts</p> <p>Advisory panel coordinated by Collaborative Model with local agricultural, forestry and sustainable tourism businesses and organizations</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$- Federal</p> <p>\$ - Community</p> <p>Pool together Municipal and Community investment under Sustainable</p> <p>Collaborative Model to leverage Provincial/Federal funding opportunities.</p>
<p>N1Θ2</p> 	<p>Encourage regenerative and ecological agricultural practices that will increase cover crops to control run off and soil erosion, riparian zones, tile or controlled natural system drainage.</p>	<p>Expand Community Improvement Plan to include renewable energy and low carbon incentives, grants and other loans programs for local businesses.</p>	<p>OMAFRA</p> <p>Academic Partners and Sector Experts</p> <p>Advisory panel coordinated by Collaborative Model with local agricultural, forestry and sustainable tourism businesses and organizations</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$- Federal</p> <p>\$ - Community</p>
<p>N1Θ1</p> 	<p>Encourage low-GHG operational and energy alternatives for all businesses</p>	<p>Expand Community Improvement Plan to include renewable energy and low carbon incentives, grants and other loans programs for local businesses.</p>	<p>OMAFRA</p> <p>Academic Partners and Sector Experts</p> <p>Advisory panel coordinated by Collaborative Model with local agricultural, forestry and sustainable tourism businesses and organizations</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$- Federal</p> <p>\$ - Community</p>

N102	Create the municipal organizational structure to support N101 and N102	<p>Adjust municipal committee structure to support these community initiatives by:</p> <p>Build and become a founding member of Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities on a per grant/project basis.</p> <p>Appointing representatives to the Collaborative Model Board and</p> <p>Appoint CAC members to relevant, existing Council committees</p> <p>Participate quarterly in joint Collaborative Model meetings</p>	<p>Manitoulin Streams</p> <p>Advisory panel coordinated by Collaborative Model with local agricultural, forestry and sustainable tourism businesses and organizations</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p>	<p>\$ - Municipal</p> <p>Community - capacity and involvement in organizational discussions</p>
N2 Create a valuation and protection system for stormwater and natural purification systems linked to drinking water sources in the community.				
Natural	Action	Local Government Role	Supporting Partners	Investment Required
N203	Develop an aquifer and source water monitoring program that can proactively identify areas of health and safety concern.	<p>Support these community led actions by combining capacity/resources with other local governments and partners.</p> <p>Build a Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities on a per grant/project basis.</p>	<p>With stable financial support from local governments, apply for grants to start and implement water monitoring program.</p> <p>Lead: Manitoulin Streams</p> <p>Academic Partners and Sector Experts</p> <p>Consider Collaborative Model Board members with a wide range of water resources credentials.</p> <p>Indigenous and Non-Indigenous Neighbours and</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$- Federal</p> <p>\$ - Community</p> <p>Pool together Municipal and Community investment under Sustainable</p> <p>Collaborative Model to leverage Provincial/Federal funding</p>

N204	Combine, update and manage a flood mapping and management system.	<p>In collaboration with Manitoulin Planning Board and other local governments Central Manitoulin will need to consider where a project like this will fit into the organizational structure at the municipality.</p> <p>Currently, flood mapping is insufficient (10m resolution) which means it is difficult to use this data to inform decision making or identify vulnerable areas.</p>	<p>local governments</p> <p>Manitoulin Planning Board</p> <p>Ministry of Natural Resources</p> <p>Manitoulin Streams (possible to integrate flood mapping into Natural Asset Inventory – see below)</p>	opportunities.
N203	Support water protection initiatives	<p>Update stormwater management plans and consider natural solutions whenever possible to manage stormwater.</p> <p>(ex. Create or restore nearby wetlands rather than installing new culverts, dams or engineered flood management systems)</p> <p>Support these community led actions by combining capacity/resources with other local governments and partners.</p> <p>Build a Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities on a per grant/project basis.</p>	<p>With stable financial support from local governments, apply for grants to start and implement water monitoring programs.</p> <p>Lead: Manitoulin Streams</p> <p>Academic Partners and Sector Experts</p> <p>Consider Collaborative Model Board members with a wide range of water resources credentials.</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p> <p>Manitoulin Planning Board</p> <p>Ministry of Natural Resources</p> <p>Manitoulin Streams (possible to integrate flood mapping into Natural Asset Inventory – see below)</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$\$- Federal</p> <p>\$ - Community</p> <p>Pool together Municipal and Community investment under Sustainable</p> <p>Collaborative Model to leverage Provincial/Federal funding opportunities.</p>

N3 Ensure the effective management, rehabilitation, valuation, and enhancement of natural shared spaces to increase our climate mitigation and adaptation capacity in preparation for increased climate change impacts.				
Natural	Action	Local Government Role	Supporting Partners	Investment Required
N3Θ1	Increase scientific understanding and indigenous knowledge of current natural systems to protect and enhance local shared natural spaces	Support these community led actions by combining capacity/resources with other local governments and partners.	With stable financial support from local governments apply for grants to start and implement a Natural Asset Inventory for local governments and community natural assets.	\$ - Municipal \$\$ - Provincial \$\$- Federal
N3○1	Participate in community-based project N3Θ1 create a Natural Asset Inventory and per O.Reg. 588/17 develop a Natural Asset Management Plan (NAMP) and integrate it into the corporate Asset Management Plan (AMP) by the regulatory deadline of July 1, 2023	Build a Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities on a per grant/project basis.	Once a Natural Asset Inventory is complete – the community can use this to make a Natural Asset Management Plan (NAMP) that will map future projects that require restoration, protection or enhancement to reduce climate risk. Lead: Manitoulin Streams Consider Collaborative Model Board members with experience deploying NAMPs in a regional setting Indigenous and Non-Indigenous Neighbours and local governments Academic Partners and Sector Experts	\$ - Community Pool together Municipal and Community investment under Collaborative Model to leverage Provincial/Federal funding opportunities.
Θ N-6	Increase tree cover and protection	Consider development of community-based collaboration tree, shrub and plant supply programs to increase climate resilient tree species and manage tree cover loss from climate related impacts.	With stable financial support from local governments apply for grants to start and implement a tree, shrub, and plant cover program.	

			<p>Lead: Manitoulin Streams</p> <p>Indigenous and Non-Indigenous Neighbours and local governments</p> <p>Academic Partners and Sector Experts</p>	
○ -N3		Review municipal by-laws to encourage tree protection and preservation.	Consultation with Manitoulin Streams and community groups through Collaborative Model	<p>\$ - Municipal</p> <p>\$ - Community</p> <p>Capacity</p>
○ -N4	Protect and enhance municipal owned and operated natural spaces.	Work with community partners to train outdoor municipal staff and volunteers to identify species at risk, invasive species and protect, restore and effectively manage natural systems.	<p>Training capacity to be delivered with Collaborative Model resources.</p> <p>Consultation with Manitoulin Streams and Western Manitoulin Community Garden and other local food sovereignty groups to:</p> <p>Facilitate training and create educational materials for natural system preventative maintenance programs on municipal owned land</p>	<p>\$ - Municipal</p> <p>\$\$ - Provincial</p> <p>\$\$- Federal</p> <p>\$ - Community</p> <p>Pool together Municipal and Community investment under Sustainable</p> <p>Collaborative Model to leverage Provincial/Federal funding opportunities.</p>

5.2 BUILDINGS

Buildings

Reduce by 50%, below 2018 levels by 2030

Actions will increase energy efficiency and the adoption of renewable energy and low carbon technologies and build climate resilience in new and existing buildings

Buildings and facilities are responsible for 44% of GHG emissions in our community. Reducing emissions, even by a small amount in this category will help mitigate climate impacts but more importantly it will reduce energy costs and improve community resilience. Unlike Shared Natural Spaces, for homes and buildings the climate mitigation strategy for corporate and community actions are distinctly different. The municipality must set their own targets and continuously pursue opportunities for energy efficiency and the conversion to low GHG energy sources or renewable energy. This Taking Action will have less corporate and community overlap with the municipality playing a direct influence role in helping to reduce community emissions through collaborative programming with other communities on Manitoulin Island to reach community goals.

CHALLENGES, STRENGTHS, OPPORTUNITIES: MUNICIPAL BUILDINGS AND FACILITIES

Continue to pursue rational, cost-effective, and efficient use of municipal property, buildings, and facilities, to maximize the availability of public space, in the context of the results of the structural condition assessment reports.

Key Objective: Reduce energy consumption and emissions from all municipally owned buildings by 50% by 2030 and net-zero by 2050.

What if all the poor and very poor designated building assets in Central Manitoulin had Deep Energy Retrofits (DERs) and/or met net-metering standards by 2030?

The municipality would be able to achieve a 50 to 75 percent reduction in energy costs and emissions. Achieving a 50% reduction in GHG emissions is possible by planning DERs/Net-Metering on the buildings that are currently slated for significant renovations in the next five years, specifically the Mindemoya Arena and Mindemoya Community Hall. By conducting a Front-End Engineering Design (FEED) with a scope that requires the building to meet 50% energy efficiency and a net-zero standard the municipality will qualify for most available energy efficiency funding programs and will increase innovation scores on general infrastructure grant competitions.

The municipality has several building assets that are in poor or very poor condition and must undergo upgrades in the next 5-10 years. These buildings need to be either replaced with new, undergo significant upgrades because key components of the asset require replacement or alteration to meet accessibility standards, or they must be evaluated for consolidation/repurposing based on current service needs of the community. Table 9 outlines the current environmental and energy cost performance of municipal buildings that are in either poor and very poor condition and will likely be assessed under the Asset Management Plan (AMP) in the next 5-10yrs for Council decision. This table is shown here to demonstrate how the municipality can integrate a climate lens into the asset management planning to meet this climate action objective. The expanded implementation table in Appendix A provides more

details in the general best practices the municipality could apply for all buildings and the funding sources available to implement and achieve these ambitious climate goals while maintaining fiscal responsibility objectives.

Table 9 Sample municipal building strategy integrating asset condition and energy consumption information. Sources: MCM Asset Management Report (2013), with various updates based on current age of building asset and updated condition reports and Corporate GHG Inventory (2018) ⁹		
In the next 5yrs	Environmental Score Emissions on a scale of 1 to 100	Cost Score Avg. annual energy cost - scale of 1 to 100
<p>Mindemoya Arena</p> <p>AMP: Very Poor</p> <p>tCO2e: 11</p> <p>Replace with a new multicomplex that is standalone or attached to Mindemoya Community Hall and achieves DER.</p> <p>FEED with 50% and net-zero lifecycle analysis.</p>	<p>7 out of 100 (Low)</p> <p>The lower emissions from this building compared to other buildings in the municipality's portfolio is low because the greatest energy source is electricity.</p>	<p>25 out of 100 (Highest)</p> <p>On an average year – this building has the highest energy bill at the municipality.</p>
<p>Mindemoya Community Hall</p> <p>AMP: Poor</p> <p>tCO2: 35.54</p> <p>Standalone or attached to a new arena this building requires requires significant building envelope upgrades.</p>	<p>25 of 100 (Highest)</p> <p>The high emission score for this building is because it uses the second <u>most</u> fuel oil in the municipality's portfolio.</p>	<p>9 out of 100 (medium)</p> <p>The cost to run this building every year is on the low/medium side of the scale. Several other buildings in the portfolio have a similar score.</p>
<p>Other Community Halls</p> <p>AMP: Good to Very Poor</p> <p>tCO2: > 12</p> <p>Consolidate or repurpose. Consider the lifecycle analysis between Minor Retrofit and DER.</p>	<p>8 of 100 (low)</p> <p>Combined the small community halls in the district account for a very small environmental and cost footprint. Includes Sandfield, Providence Bay, Big Lake and Spring Bay community halls.</p>	
By 2030	Environmental Score Emissions - scale of 1 to 100	Cost Score Avg. annual energy cost - scale of 1

⁹ Corporate and Community GHG Inventory – Municipality of Central Manitoulin (approved by Council May 2020)
K. Koetisier. http://www.centralmanitoulin.ca/sites/default/files/central_ghg_inventory_-_final_0.pdf

		to 100
Providence Bay Arena AMP: Good, Poor by 2030 tCO2: 22 Consider DER, installation of a heat recovery system to replace fuel oil and other DERs.	15 out of 100 <u>Third</u> highest emissions in portfolio because of size, age and fuel consumption.	15 out of 100 <u>Third</u> highest emissions in portfolio because of size, age and fuel consumption.
Municipal Garage AMP: Good, Poor by 2030 tCO2: 29 Consider DER and replace the fuel heating system with net-metered renewable energy source(s).	19 out of 100 Highest fuel consumption in the portfolio. Replacing fuel	14 out of 100 The cost to run this building every year is on the low/medium side of the scale. Several other buildings in the portfolio have a similar score.

FCM's Green Municipal Fund (GMF) has operated for 20yrs to support innovative green building designs of community buildings. Since August 2020, discussions with GMF on potential projects on Manitoulin Island has resulted in the development of actions listed in Table 6.

To prepare for greenbuilding funding opportunities it is critical to have a CEEP that is integrated into the municipal Asset Management Plan. This way, when applying to any type of funding for municipal building upgrades Central Manitoulin can apply a standardized approach to evaluating the environmental, financial, service, usability and long-term maintenance and operational considerations on each project. FCM provides funding to complete feasibility studies for capital/renovation projects and capital grants/loans for construction of green municipal buildings. These municipal buildings fund are competitive and everytime Central Manitoulin Council is considering renovations or capital construction to municipal buildings, the following best practices ought to be considered in conjunction with actions outlined in Table 10:

GREEN MUNICIPAL BUILDING

FEASIBILITY CHECKLIST

- Baseline information on current environmental performance – this means keeping GHG Inventory and energy consumption up to date, so it can be easily retrieved when a project is being considered
- A technical explanation of how the proposed project will meet or exceed the GMF environmental eligibility criteria, environmental criteria varies per building type and renovation
- Include contextual details for various project options.
- Describe the selection criteria and models that support expected environmental performance.
- Assess operational and maintenance costs.
- Describe key project risks, propose solutions and offer risk management recommendations.
- Draft a project schedule.
- Produce a life-cycle analysis.
- Propose a financial plan

If feasibility study funding is required, plan for a 6-8month wait for a grant response and ideally have engineering, contractor and other renewable energy and building energy efficiency experts already selected through a vendor RFP. Selecting qualified engineering, contractors and renewable sector experts is essential to meeting environmental performance requirements for grant opportunities.

The municipality can invest in the Front End Engineering Design (FEED) for any project and skip applying for a feasibility study grant for renovation and capital grant projects but submissions require all of the elements that would be done in a feasibility study. Make sure to use the feasibility study checklist everytime a renovation or capital project is contemplated to understand the true costs of a building. Integrating the feasibility checklist into engineering design contracts will ensure that professional services completed on FEED meet grant submission requirements. Always structure RFP's for FEEDs to ensure that projects have adequate information to qualify for multiple grants. Often, green building grants can be stacked with normal infrastructure or building accessibility grants – this gives a project a better overall business plan and higher score for innovation on grant applications.

TAKING ACTION – MUNICIPAL BUILDINGS AND FACILITIES

Any strategic plan can make a statement that an organization will be environmentally responsible but executing environmentally responsible processes and procedures to implement these goals requires deliberate, detailed and most importantly consistent application of energy efficiency concepts when taking care of municipal buildings and facilities, each day. By applying the concepts and organizational recommendations below and making sure there is a mechanism for Council to have oversight over the execution of these concepts and organizational recommendations – Central Manitoulin will realize their commitment to environmental responsibility while reducing energy bills and maintenance costs.

Table 10 Taking Action to reduce energy and emissions in municipal buildings and facilities.

Table 10 Taking Action to reduce energy and emissions in municipal buildings and facilities.			
B1	Reduce energy consumption and emissions from all municipally owned buildings by 50% before 2030 and net-zero by 2050.		
Buildings	Action (s)	Current Status	Short-Mid Term Objectives
BO1	<p>Capacity</p> <p>Improve municipal staff capacity to implement:</p> <p>Energy efficiency and reduction strategy and</p> <p>Integrate energy and emissions considerations into Asset Management Plan (AMP)</p> <p>Update AMP and associated documents listed in Appendix C: Implementation Chart</p> <p>Provide quarterly updates to Council and relevant Council committees on energy and emissions consumption and management to ensure the</p>	<p>The municipality continues to adhere to energy and GHG emission reporting under provincial guidelines and has a Conservation and Demand Management (CDM) Plan. This plan is not regularly monitored and updated. The CCC assisted in creating the new 5yr plan in 2019 but actions contained in the CEEP constitute a review of the CDM for 2020/21.</p> <p>Data Systems: Input of energy data monthly into a database that can be used to monitor and manage energy and emissions is not done on a consistent basis. One tracking method was explored to integrate energy consumption data through the accounting system throughout the duration of this project but has not</p>	<p>The corporate climate actions in the CEEP (if accepted at Council) could now replace the CDM as it has more ambitious reduction targets and a specific implementation, monitoring and measurement strategy.</p> <p>Hire certified energy management professional (Certified Energy Manager (CEM) or Energy Advisor (EA) to:</p> <p>Set up the appropriate energy management system that can be updated monthly and track projects.</p> <p>Integrate energy data into the asset management plan so it can be actively managed and reviewed regularly through existing organizational structures.</p> <p>Train municipal staff on the basics of energy management and how to spot</p>

	<p>municipality is on target to meet reduction goals.</p>	<p>resulted in consistent organizational and management operations of energy/emissions.</p> <p>Organizational Structure: Roles and responsibilities with respect to monthly data input are not clearly defined in the organization. This weakness was identified in the CDM and continues to impact the implementation of an energy management system and regulatory reporting.</p> <p>Annual reporting has inaccuracies and energy/emissions are only tracked for reporting purposes.</p> <p>Right now, several local governments share a Health and Safety and By-law Officer in the region. Continuing to meet service and maintenance needs for energy systems in municipal building assets may require a similar approach.</p>	<p>air leakage, moisture, and insulation issues in a municipal facility.</p> <p>Collaborative Model: Consider joint procurement of energy management services with other local governments to provide quarterly reports and update projects to track corporate progress towards GHG goals.</p>
<p>BC02</p>	<p>Energy Efficiency</p> <p>Minor to Major Retrofits</p> <p>Consider minor and major building envelope upgrades, building automation and lighting upgrades as part of all municipal building renewal projects.</p>	<p>While the municipality considers energy retrofit upgrades on renovation and new building projects it is not codified in any municipal policies, procedures, or AMP. This means that the benefits of energy efficiency projects are not tracked either.</p> <p>The current CDM states the following:</p> <p>Assessments/audits of facilities then retrofit of mechanical and structural systems to improve efficiency and reduce cost and;</p> <p>To reduce the energy consumption and lower the energy intensity.</p> <p>No specific annual energy or emissions targets are set in the current CDM. The CCC provided comments on building renewal projects during the creation of the 2021 budget but an energy audit</p>	<p>Create a sustainability policy and procedural manual.</p> <p>Include checklists that Council, committees, and staff can use when evaluating energy efficiency components of a building during regular AMP review.</p> <p>Set a reporting standard to Council that facilitates decision-making organizational structure to allow for consideration of current energy performance, regular maintenance time/costs, engineering life.</p> <p>Perform energy audits on buildings when renovations are being considered, including blower door tests (pre/post project) to ensure the project can qualify for incentives. Do the energy audit at this same time as the pre-construction conditional assessment.</p>

		was not conducted.	
BO3	<p>Energy Efficiency</p> <p>Preventative Maintenance and regular monitoring</p> <p>Consider updating all municipal building maintenance procedures to optimize energy use.</p>	<p>Some of this information is currently stored in the asset management database. Including age and condition of mechanical, heating and HVAC systems.</p> <p>The AMP requires condition report updates before short/midterm objectives can be achieved.</p>	<p>Include the maintenance, fill dates and repair dates on all equipment associated with energy systems in AMP.</p> <p>Consider seasonal checks and updates to committee and Council with quarterly Energy Management reports.</p> <p>Ensure maintenance/regular monitoring details for assets are included with capital project proposals.</p>
BO4	<p>Energy Efficiency</p> <p>Incorporate building envelope, automation and lighting upgrade standards and targets for municipal buildings/facilities renewal projects in a municipal by-law to create a plan to achieve ISO50001 standards.</p>	<p>Currently – the Conservation and Demand Management Plan for 2019 to 2024 states two key targets:</p> <p>Develop Policy and Procedure that require capital improvements follow energy efficiency guidelines</p> <p>No significant progress on this target has been made to date, primarily due to the time required to create the CEEP.</p>	<p>By accepting the CEEP at Council – allow the CEEP to override the CDM for corporate energy efficiency targets.</p> <p>Create a by-law or build elements of ISO 50001 standard into Asset Management Policy and Plan.</p> <p>Identify specific capital and maintenance budget allocations that relate to achieving energy and emissions operational maintenance standards.</p> <p>Set an energy efficiency capital expenditure budget target during the annual yearly budgeting process.</p>
BO5	<p>Energy Efficiency</p> <p>Deep Energy Retrofit (DER) and Net-Zero (NZ)</p> <p>If an asset has a conditional assessment of poor or very poor – automatically trigger a feasibility study priority list. Feasibility scope should consider financial implications for Deep Energy Retrofit (DER) and Net-Zero (NZ) and accessibility standard upgrades to maintain service levels compared to repurposing and market conditions for consolidation of assets.</p>	<p>Several buildings in Central Manitoulin are in either poor or very poor condition and the Infrastructure Recreation Committee is considering DER and NZ targets.</p> <p>Mindemoya Arena – high use, very poor condition so it has been prioritized in 2021.</p> <p>Mindemoya Community Hall – use has dropped during Covid. Roof requires replacements. Council currently reviewing building renewal and DER options for early 2022 implementation.</p>	<p>Continue community consultation on the replacement of the Mindemoya Arena with NZ readiness energy components:</p> <ul style="list-style-type: none"> - Heat recovery refrigeration of ice rink - Windows - Lights - Solar roof - Geothermal <p>FCM has not yet provided grant and/or loan funding for a net-zero arena in Canada. In a competitive grant space – having more ambitious energy efficiency design elements and our northern, rural community designation would provide the competitive edge required to fund this project.</p> <p>To qualify directly for capital funding</p>

	If the municipality will retain the asset, conduct Front-End Engineering Designs (FEED) with DER and NZ lifecycle analysis in the context of AMP.		from FCM, complete Front-End Engineering Design (FEED) that meets FCM feasibility study requirements is needed before November 2021 for a Spring 2022 construction start date.
BO6	Energy & Water Efficiency Install Smart Water Metering to major equipment at facilities and parks (i.e. ice rinks) to better understand water consumption trends and ensure that equipment is operating at optimal efficiency.	Right now, Central Manitoulin does not measure or actively manage water consumption in any municipally owned buildings or facilities. The CDM does not comment on water conservation or reduction targets goals or objectives.	Install one water meter at the new Mindemoya Arena and begin tracking, monitoring, and managing water consumption. Consider rain-water capture technologies whenever replacing roofs to offset water consumption where possible.

COMMUNITY HOMES AND BUILDINGS

When it comes to helping home and business owners reduce their energy bills and improve energy efficiency the municipality has indirect influence. While Central Manitoulin has a Community Improvement Plan that provides incentives to local businesses for energy efficiency improvements, it does not include energy upgrade incentives for residential homeowners. Local governments all over Canada are taking climate action to help coordinate locally stewarded home energy upgrade programs and by-laws that encourage green building standards. There are several ways the municipality can act to help our community reach a 50% home energy and buildings GHG reduction target by 2030. This section provides a strategy on how to achieve community-wide energy and emissions reductions and how a collaborative island wide approach will provide the greatest path to success.

LOCAL CHALLENGE AND OPPORTUNITY: REDUCING ENERGY POVERTY AND RESILIENCE

Energy is a significant cost in Canadian communities, seasonal fluctuations in temperature have a great influence on our energy costs. Average annual energy spending can be as much as \$12 million in communities of less than 10,000 people¹⁰. Manitoulin Islanders, with a population of around 13,000, spend more of our annual income on energy than almost every Canadian. 62% percent of Manitoulin Island residents spend over 6% of their annual income on energy costs¹¹. This energy cost burden on the Manitoulin Island is the second highest energy poverty rate in Canada. A term commonly used to describe high home energy cost burdens is Energy Poverty.

Energy poverty refers to the experience of households or communities that struggle to heat and cool their homes and power their lights and appliances. Those in this situation face multiple challenges and impacts, including:

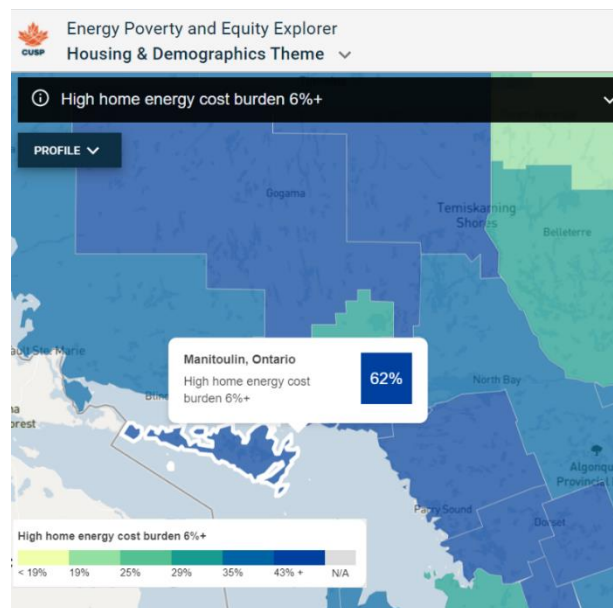
¹⁰ Partners in Climate Protection: Small and Rural Communities Climate Action Guidebook: <https://www.pcp-ppc.ca/resources/guide-climate-action-in-small-and-rural-communities>

¹¹ Canadian Urban Sustainability Practitioners (CUSP) Energy Poverty and Equity Explorer. Retrieved (February 2021): <https://energypoverty.ca/mappingtool/>

- Discomfort from living in cold and drafty homes.
- Disruptions from abrupt utility shutoffs, such as inability to cook and resultant spoiled food.
- Sacrificing other essentials such as groceries and medication in order to keep up with energy bills.
- Increased incidence of respiratory illness in children and infants
- Higher stress and poor mental health outcomes for adults.
- Difficulty participating fully in community life¹²

Energy poverty also makes energy planning challenging at a local government level for several reasons but prominently, there is no “typical” demographic that experiences energy poverty, it can impact people in variable income brackets, backgrounds, and geographical regions. Although by reviewing the energy poverty tool used to create Figure 4, rural and northern Canadian communities have a higher energy burdens, as a rule. The key demographic data impacting energy poverty on Manitoulin Island is the age of homes, average income and costs associated with having several home heating/energy sources because of unreliable hydro service.

While prolonged electricity outages have significantly decreased in the past decade on Manitoulin Island. Prolonged outages (>6hrs or more) are still a major concern in our northern and remote community. Electricity from Ontario’s power grid is the main source of energy for over 80% of Central Manitoulin’s



residents, hydro is the cleanest source, next to renewable electricity. The cost for electricity from the grid can be a barrier for some and many older buildings have fire places. Wood is relatively inexpensive on Manitoulin Island, although prices have fluctuated during the pandemic. Sustainable forestry practices exist in several communities, including a wood pellet manufacturing and home heating program in Wiikwemkoong.

This finding is what some might call a double-edged sword – on one side is the fact that Ontario has a low-carbon electricity grid, which means most residents are purchasing relatively clean energy already and using propane, wood, or oil as backup or supplemental supply for heating, cooling or appliances. The downside is that the delivery charges and affordability of clean energy from Ontario’s grid is the most expensive option.

Affordability of energy from Hydro One is driving consumer behaviour and energy poverty locally. Moreover, power is delivered to Manitoulin Island via one transmission station in Little Current, referred to by Hydro One staff as Manitoulin TS. From the Manitoulin TS electricity is distributed throughout the island and the most prolonged outages are due to line disruptions between the Manitoulin TS and homes.

While Hydro One has increased risk management practices by widening right of ways and increasing the frequency of forest/vegetation growth surrounding these high-risk lines, projected increases in climate change related to extreme weather conditions may cancel out these increased preventative maintenance

¹² Canadian Urban Sustainability Practitioners. Retrieved (2021) from: <https://energypoverty.ca>

measures being undertaken by our local Hydro One staff. This makes grid reliability an on-going factor in building greater energy resilience in Central Manitoulin.




According to the community-wide survey that was completed for this CEEP and can be found in Appendix A, prolonged power outages is the number one worry from citizens when they think about the impact of climate change in our community. This finding was not surprising, with only one transmission line supplying the entire island and with renewable energy sources from wind turbines and the hydro-electric generating station being shipped off the island – islanders are left to rely on alternative fuel and electricity sources to ensure adequate back-up in the event of a power outage. Some islanders do not have adequate back-up power. Therefore, the municipality maintains a designated emergency response centre (Mindemoya Community Hall) with back-up power generated by geothermal and propane systems.



These research findings on energy poverty and reliance on electricity from Ontario’s power grid in the community present unique challenges and opportunities for climate change and energy planning locally. By identifying these weaknesses, it is possible to target action to build a more resilient and climate-friendly community that has sufficient back-up energy to prevent human health impacts in the event of prolonged power outages.

TAKING ACTION: BUILDING BUILDINGS ON OUR STRENGTHS

The Climate Action Committee (CAC) in both the Municipality of Central Manitoulin and the Township of Billings have considered several trends and opportunities that can be taken by the local government level to accelerate community-wide support systems that can incentivize energy efficiency and low carbon energy generation. There has also been consideration made that while local governments can directly influence positive behavioral changes in building efficiency – a community-wide endeavour will require provincial and federal financial support to enable local resource deployment and capacity development. There is inherent political risk and consistent advocacy required to ensure small and rural communities can sustainably access an adequate level of support.

The actions outlined in Table 11 below present a Collaborative Model approach that will:

	<ul style="list-style-type: none"> • Decrease Energy Poverty • Decrease incidence of respiratory illness in children and infants • Increased incidence of respiratory illness in children and infants • Lower stress and poor mental health outcomes for adults
	<ul style="list-style-type: none"> • Sustainable, energy efficient and low carbon energy sources in community buildings help protect, preserve and enhance the natural environment by significantly lower GHG emissions.
	<ul style="list-style-type: none"> • Increase the integrity of community energy and emissions data so incentive and grant program engagement with community members can be custom tailored for Central Manitoulin residents • Share local expertise, knowledge and strengths in the construction and building-code sector

	<ul style="list-style-type: none"> • Maximize and accelerate community-wide access to energy efficiency services and grants • increase affordability and economic opportunity to create a more resilient and affordable community • Build on local expertise, knowledge and strengths in the construction and building-code sector
	<ul style="list-style-type: none"> • Build the capacity required to provide sustainable professional support locally to deploy innovative energy efficiency and low carbon infrastructure • Deliver innovative community-based energy auditing solutions that provide detailed quotes, return on investment, lifecycle analysis, engineering, contractor and materials information for low carbon home energy solutions

Sometimes to transform challenges into opportunities it is first important to look towards existing local strengths and successes in other Canadian communities to envision how these actions can come to life to reach the ambitious target of 50% energy and emissions reductions by 2030.

Local Strength #1: Community Support

245 Central Manitoulin residents responded to the community-wide climate change engagement survey that was completed as part of this planning process. These engagement results and participation are a community strength and provide data results that can help target programs, services and progress toward goals. To meet a goal of 50% energy and emissions reductions by 2030 – residents in the municipality must update 35 pieces of fossil fuel burning equipment used to heat or power the home each year

Table 12 and Appendix D Updated GHG Inventory provides the due diligence and breakdown of these updated figures.

Table 12 Residential home heating equipment now vs. 2030 based results found in the updated Community GHG Inventory found in Appendix B		
Residential Home Heating	2018	2030
Oil furnaces	109	55
Wood furnaces	606	303
Propane	381	191

50% of the survey participants also indicated that they were planning energy efficiency renovations or upgrades in the next 5 years, which is about 25 equipment updates per year. By providing local expertise and grant support this target is attainable but will require increased educational, technical and administrative expertise to maximize access to grant opportunities for residents.

Local Strength #2: Local Building Experts

Municipal building officials play a key role in the implementation of property and buildings standards locally. They work directly with members of the public and while they spend a lot of time inspecting and

enforcing local, provincial and other building code standards, their in-depth knowledge, experience and understanding of buildings locally is important to advancing climate-action. Climate change plans ought to acknowledge that the municipal staffs have direct contact, influence and expertise in construction and building more climate resilient structures. Building upon community strengths that allow municipal staff and local contracting/engineering experts to review current local policies to incentivize voluntary green buildings standards is a strategy that is working around the country. Moreover, collaborative voluntary green building projects can promote job creation, upskilling the workforce, sustainable development growth and innovation in the community.

Local Strength #3: Size Matters

In this case, Manitoulin Island’s small population size matters. With 1790 households within the Central Manitoulin boundaries¹³, working with the community to deploy energy efficiency retrofits and low carbon energy source upgrades, relatively small investments and household transitions have a big impact. Pair this with the fact that bureaucracy should technically be less of a barrier for implementation of non-financial incentive and green building standards, makes being small a strength.

More examples and case-studies on how other small and rural communities are implementing green building incentives and voluntary standards can be found by picking up almost any other community’s CEEP but most best practices and examples relied upon for this plan are:

- Towards Low Carbon Communities: Creating Municipal Green Development Standards (An Implementation Toolkit for Municipal Staff) – Clean Air Partnership (Accessed October 2020) <https://www.cleanairpartnership.org/wp-content/uploads/2020/10/GDS-toolkit.pdf>
- Small and Rural Communities Climate Action Guidebook Partners for Climate Protection (PCP) Program (April 2021) <https://www.pcp-ppc.ca/resources/guide-climate-action-in-small-and-rural-communities>

Table 13 Building Buildings on our Strengths				
Reduce energy and emissions from homes and business by 50% before 2030 and net-zero by 2050				
Buildings (B)	Action	Local Government Role	Supporting Partners	Investment Required
B01	Develop a non-profit to deliver Deep Energy Retrofit Programs – energy auditing, grant/incentive application support, educational and financing programs	Support these community led actions by combining capacity/resources with other local governments and partners. Build and become a founding member of Collaborative Model to work directly with community partners and local governments to coordinate joint grant submissions, governance and on the ground implementation activities.	Advisory panel coordinated by Collaborative Model with local energy advisors, contractors and qualified persons to conduct home energy upgrades. Academic Partners and Sector experts Indigenous and Non-Indigenous Neighbours and local governments	\$ Municipal \$\$ Provincial \$\$ Federal By helping local residents access home energy grants and financing this non-profit is expected to become self sustaining within 3yrs.

¹³ MPAC Household count for the Municipality of Central Manitoulin – retrieved January 2021

5.3 TRANSPORTATION

Transportation is the second largest sources of GHG emissions on Manitoulin Island. About 85% of people who live on Manitoulin Island have a vehicle, most commute for work irregularly which is likely correlated to the amount of retired and remote working residents in the district. To reach the transportation GHG reduction goals in this CEEP, 45 gas-powered vehicles will need to covert to electric vehicles in the municipality, each year to reach 2030 and 2050 GHG reduction goals. This section will primarily focus on the community actions that can be pursued to reach these goals, with only brief comment on recommendations for the municipality.

5.3.1 TAKING ACTION: MUNICIPAL FLEET

On a corporate level, the municipality is committed to reviewing low carbon transportation opportunities for the municipal fleet and has incorporated fuel efficiency considerations into heavy truck RFP's. This practice must continue from now until 2050. Electrification of heavy vehicles and other utility trucks that the municipality relies on for operations is dependent on projected industry advancements and cost reductions of electrifying heavy vehicles. This is likely to begin accelerating in the next 10yrs. Each time the municipality tenders for a new vehicle in our small fleet in the next 30yrs, the market conditions will have changed and RFP's need to review each time to ensure that electrification opportunities are not missed. In the meantime, the municipality should continue staff training practices that promote climate-friendly and fuel-efficient driving habits. When it comes to municipal staff and driver safety – Central is best in class and this is a strength that will need to continue as electrification of the municipal fleet is considered.

Immediate opportunities, while the municipality waits for the inevitable market changes and electrification innovations in the heavy vehicle sector – investing in smaller, road certified utility vehicles to perform outdoor maintenance activities has been discussed throughout the CEEP process. Investing in one or two road certified utility vehicles is a viable option to replace older trucks than cannot access parks, trails and other natural spaces that municipal staff must access for maintenance. Investment in an electric utility vehicle would also mean that the municipality could install EV chargers at municipal garages so that when heavy vehicles are feasible to transition, the infrastructure is ready for charging.

TAKING ACTION: COMMUNITY OWNED TRANSIT






Throughout the duration of this project, a new cooperative, non-for-profit transit organization named United Manitoulin Island Transit was founded. This transit organization is currently operating because of an administrative relationship with Central Manitoulin to access grants that are only available to municipalities for transit. In the absence of any local governments taking on the responsibility for stewarding public transit on the island, the collaborative community-based approach designed my UMIT has begun to fill the gap.

Since beginning a bus route operation in the Spring of 2020, UMIT has unmasked a significant amount of transportation data that has allowed them to analyze the operations and adjust services. In December 2020, after the release of several new federal government programs to support the expansion of electric vehicle charging networks all over Canada, UMIT began discussing transportation electrification opportunities with the Climate Change Coordinator from Central/Billings. UMIT has an ideal community-based corporate structure to deliver a regional electrified transit system on Manitoulin Island and armed with data from this project and their own consistent data collection on usage it is clear that the future of rural transit solutions will require:

- Clear and agile business plans that can adapt to fluctuating seasonal usage
- Electrification of ride-share fleets to realize marginal revenue gains while paying drivers fairly

- Implementation, applied, real-time usage data to coordinate transit system efficiencies

Electrified public transit systems offer and host of community co-benefits:

	<ul style="list-style-type: none"> • Transportation is one of the largest stressors for modern families, such as after hour activities at schools, or sharing vehicles with young drivers. Shared transportation can alleviate some of this stress and lead to better health outcomes • Shared transportation helps facilitate safe travel, and keeps traffic levels low on our highways and could lead to less instances of impaired driving
	<ul style="list-style-type: none"> • Improving EV infrastructure facilitates the transition to electric vehicles for everyone, and helps us reach GHG reduction more quickly protecting the environment
	<ul style="list-style-type: none"> • Shared transportation options can improve community relationships allowing more for conversations and community connections. • Reduces isolation in our rural and remote community
	<ul style="list-style-type: none"> • Shared transportation options allow significant cost savings for families that won't have to purchase and maintain additional vehicles. • Incorporating online apps and data sharing for transportation sharing can involve financial opportunities for local entrepreneurs • New economic opportunities arise with the introduction of ridesharing and less reliance on personal vehicles for all transportation needs.
	<ul style="list-style-type: none"> • Shared transportation options will help track GHG emissions by facilitating data collection relating to transportation trends.

RURAL TRANSIT CASE STUDY: REGIM

REGIM is a transit system comprised of partner municipalities in small, rural, island communities responsible for organizing transit in the territory of Gaspésie-Les Îles, in Quebec. This community has strikingly similar demographics, geography, and a slightly larger population than Manitoulin Island. Looking at the way they have structured a unique electric ride-share program that also supports the expansion of community EV charging stations for members of the public to use is like looking at Manitoulin Island's future transit system.

This organization has slowly, overtime and with minimal financial support from municipalities – has leveraged a relatively small community and municipal investments to secure significant federal and provincial grants to expand the fleet and EV charging stations. This transit service provides an array of

options for users, bike share, electric vehicle car sharing services, ridesharing/carpooling apps for smartphones and a small bus system¹⁴.

Table 15 Taking Action: Reducing transportation costs and developing a connected, safe community

Transit (T)	Action	Local Government Role	Supporting Partners	Investment Required
T01	Work with local government partners to expand low and zero emission vehicle uptake and charging networks	Partner with UMIT and Collaborative Model non-for-profit to deliver these actions.	Lead: UMIT Indigenous and Non-Indigenous Neighbours and local governments Angel Bus Collaborative Model non-for-profit – coordinate community engagement, education and community GHG inventory data analysis with UMIT	\$ Municipal \$\$\$ Provincial \$\$\$ Federal \$ Private \$ Community
T02	Expand public transit, ride-share and support fleet electrification			
T03	Increase public awareness of and education and knowledge using community data on climate-friendly travel modes on climate-friendly travel modes			

5.4 WASTE

While waste management and the operation of garbage and recycling programs are often the

CEEP VISION STATEMENT IN ACTION # 4

Reduce overall consumption by promoting circular economy concepts and increase waste diversion through recycling rate increases and home composting program

responsibility of local governments across Canada, the ultimate responsibility for waste reduction falls upon everyone in the community. This section of the CEEP will provide an outline of the current waste management operations provided by the municipality, the emissions and environmental/human health risks related to landfill sites in the community, legislative changes to recycling programs in Ontario and climate actions that can be explored by both the municipality and the

community to reduce waste to mitigate climate change and prevent human health hazards in the future.

¹⁴ RÉGÎM (Retrieved January 2021) <https://regim.info/en/about-the-regim/the-regie/>

5.4.1 CENTRAL MANITOULIN WASTE MANAGEMENT AND GHG EMISSIONS

For well over a decade, Manitoulin Island local governments have known that our landfills are filling up too fast and the cost to ship our waste off-island will be prohibitive. About 10 years ago, several local governments worked together to have a waste audit and report completed for the island. The report was supposed to help create a collaborative waste management approach to deal with over ten aging landfills on the island. The ultimate recommendation was to ship household waste to Dodge Landfill, and this was not the collaborative solution local governments could agree with. In the absence of a collaborative approach, each municipality opted to manage recycling contracts and landfill/waste management independently.

Waste collection, reduction and maintaining a recycling program are the most visible services offered by the Municipality of Central Manitoulin in the community. This essential waste management service includes ownership and responsibility for five landfills, weekly collection of household waste/recycling and the haulage of a portion of the waste off island to the Dodge Landfill in Espanola. The Municipality of Central Manitoulin ships about 30% of annual household waste to the Dodge Landfill in Espanola, saving space in the Providence Bay landfill that accepts the 70% of household waste. Each municipality on Manitoulin Island has recycling hauled off-island 200km away to Blind River. Waste accounts for about 5% of the overall GHG emissions produced in Central Manitoulin. The environmental impact of community waste on the environment is not just measured in GHG emissions and these GHG emission calculations do not consider the GHG emissions from private citizens that burn or bury waste, which is a common practice in the community.

Table 16 The Municipality of Central Manitoulin Waste Management operational data identified in 2018 GHG Inventory

Central Manitoulin Waste Operations Summary 2018	Landfill Site	2018 GHG Inventory
Providence Bay Landfill	Open – Primary waste disposal for municipality Owned by Central Manitoulin	1401tCO ₂ e Volume = 3912y ³
Waste Hauled to Dodge Landfill	Owned by Espanola	553tCO ₂ e Volume = 1543y ³
Mindemoya Landfill	Closed Closure Plan in Progress since 2018	No volume information available
Big Lake Landfill and Transfer Station	Landfill Closed (July 15, 2015) Transfer Station – Open	
Sandfield	Closed	
Spring Bay	Closed – Waste to be Removed	
Total known GHG Emissions 2018		1477tCO₂e

CHALLENGES AND THREATS

Old Landfills and Fractured Bedrock

As mentioned in the earlier Shared Natural Spaces section, Manitoulin Island has a unique geology, composed mainly of Ordovician and Silurian deposits of carbonate bedrock composed of limestone and dolostone. Take a stroll on the famous Cup and Saucer trail or look closely at the rocks surrounding Bridal Veil Falls and you can see the uniqueness of these rock formations and how they can form large visible cracks. Throughout time, the weather and surface water enlarge these cracks, eventually forming Karst Topography composed of clints and grikes, sinkholes and even and underground caves that interconnect the streams, rivers and lakes that are often sources of drinking water. The Providence Bay landfill site is situated on such bedrock.

Thankfully, the Providence Bay landfill site does have 18 leachate monitoring stations surrounding the landfill and a yearly monitoring program. The Municipality has been diligent in its monitoring at this site for over 18 years and has reduced the amount of waste placed yearly into the site by mandatory recycling and has recently added transportation of a portion of collected waste to an off-island site. There is no way of knowing the true risk of interconnected cracks in the bedrock, unless detailed LiDAR mapping, hydrogeology, and field studies, as suggested in section 5.1 Shared Natural Spaces are completed in the area. This makes the data collected for natural spaces additionally useful in protecting human health and drinking water from potential future landfill contamination.

Leaky landfills designed on top of fractured bedrock are not approved by the province today unless engineered liners and collection systems to capture the methane gas and potentially hazardous substances that seep out of landfills are in place. The province may approve the expansion of these landfills because the original design predates hazardous leachate and methane gas collection requirements, but the inevitable risk that these landfills will continue to leak into groundwater, and possibly contaminate nearby wells. This makes leaking landfills a known and manageable risk that requires community investment to prevent further migration of contaminants into drinking water sources. It is also possible that while regulations may allow for old landfills to expand without appropriate leachate and methane gas collection now, under different political and environmental circumstances local governments could become liable for retrofitting leaking landfill. Costs for installing landfill collection systems at the front end of a landfill expansion is far more economical than having to manage contamination zones after the landfill has begun leaking.

Regulatory Risk

Right now, every local government on the island procures recycling haulage services from a third-party to haul collected recycling materials off-island. In Ontario, municipalities with a population under 5,000 are not required to recycle glass – so the third-party recycling contractor stopped picking up glass and glass started filling up island landfills. Small and rural communities that individually procure recycling services will always be at a disadvantage and subject to private sector and provincial regulatory risk. A good example of this is that Central Manitoulin indicated that it would be willing to move over to the new producer responsibility recycling system as early as 2023 but was pushed to 2025. Either way, by 2025 producer responsibility legislation in Ontario will require producer to be fully responsible for Blue Box services provincewide¹⁵. While some policy experts state that this will save taxpayer dollars, give producers incentive to redesign products and make them easier to recycle – it is inevitable that this will have an impact on small and rural communities that may transition to this new system more slowly or may see an increase in recyclable materials on the municipally operated landfills if producers refuse to pick up all recyclable items for communities under 5000, like they have done for glass recycling on the island.

STRENGTHS AND OPPORTUNITIES – COMMUNITY ENGAGEMENT AND SHARED PROCUREMENT

Food Waste – Overlooked Climate Mitigation Measure

42% of the GHG emissions created from the food we eat are created during the production, processing, transportation, and disposal phase¹⁶. Approximately, one third of Canada's food is never eaten producing

¹⁵ Producer Responsibility for Ontario waste diversion programs. Retrieved from <https://www.ontario.ca/page/producer-responsibility-ontarios-waste-diversion-programs>

¹⁶ US Environmental Protection Agency, Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices (2009) Retrieved from <https://www.epa.gov/sites/production/files/2016-08/documents/ghg-land-materials-management.pdf>

unnecessary emissions throughout the entire food system, as well as methane when it is disposed of in the landfill¹⁷. It is estimated that close to 40% of the waste deposited in the Central Manitoulin landfill is food waste. By reducing food waste in the landfill, Central Manitoulin could realize GHG emissions reductions, save tax dollars due to lower volumes of waste in the landfill and reduce the hazardous waste that leaks from landfills into bedrock.

Central Manitoulin has implemented a composting program in the past, close to 50% of the residents that participated in the climate change survey did not know about the program. Only 5% said they would not want to compost from home – indicating that home composting could be the most cost efficient and easiest way for Central Manitoulin to reduce GHG emissions from waste when consistent education and engagement is pursued as part of an integrated waste diversion approach.

Shared Procurement – Improved Contractual Risk and Cost

More recently, Billings and Central Manitoulin have been approached by innovative companies like Food cycler, Eco-Growth Environmental and Gagnon Renewable Energy Inc. to consider innovative waste management and diversion solutions. Private sector partnerships have been challenging for individual

small and rural communities to consider because they require specialized procurement and contract negotiations. In addition, it is difficult to truly identify whether the technology will be beneficial for the community without evaluating technical and business plans with the private sector with the assistance of a procurement and waste management expert. Combining procurement processes for third-party recycling services would mean that the contractors could not refuse to pick up glass because the population of the island is greater than 5000. Centralized composting is too expensive for one island municipality, but a shared site could be feasible transportation contracts could be shared.

In the meantime, the most feasible, cost effective and community supported action is to pursue an at home community composting program and to increase education in the community on waste management and diversion best practices.

TAKING ACTION: MUNICIPAL AND COMMUNITY WASTE REDUCTION

Based on the challenges, threats, strengths, and opportunities for safe and improved waste reduction in Central Manitoulin – climate actions will focus on steps that can be taken by the municipality (corporately) and in the community by residents and a community based, municipally supported non-for-profit.

Table 17 Taking action to reduce overall consumption by promoting circular economy concepts and increase waste diversion through recycling rate increases and home composting program				
Waste (W)	Action	Local Government Role	Supporting Partners	Investment Required
W01	Deploy 200 home composters in Billings and Central Manitoulin to divert organic waste from landfills	Partial financial contribution to the composting program and; Communications through website, social	Collaborative Model climate change non-for-profit Private sector	Municipal \$10,000 (per partnering municipality for 100 composters) Provincial \$10,000 (see Appendix D for

¹⁷ National Zero Waste Council, Reducing Food Waste and Cutting Canada’s Emissions: Policies for Reaping the Environmental, Economic, and Social Benefits (2016). Retrieved from <http://www.nzwc.ca/Documents/NZWCSubmissionOnPan-CanadianFrameworkForCombatingClimateChange.pdf>

W02	Track composter use, waste, and GHG emission reductions from community-based composting program	media with other waste management information	School Board Alterum for data management of program and resulting GHG savings	Foodcycler program proposal which will subsidize 50% of composter costs) All other investments will be secured through the private sector, provincial, federal grants and community fundraising efforts to begin the community owned and operated tool share library and reuse centre.
W03	Create local circular economy opportunities – organize reuse and repurposing events, repair seminars and eventually a permanent tool share library and reuse centre.	Communications and advertising through website, social media with other waste management information sharing.		
WO1	Integrate leachate and methane gas collection systems into sequential fill design	Create a committee of Council to improve waste management oversight and operations.	Collaborative Model climate change non-for-profit can provide technical, cost, GHG savings, joint compactor procurement and grant application support to secure compactors and wood chippers at landfill site.	\$\$ - Municipal \$\$ - Provincial \$\$- Federal
		Start setting aside a larger percentage of tax revenue annually to meet future infrastructure needs at landfill sites.		
WO2	Increase municipal staff support at the landfill to improve covering, chip clean yard waste instead of burning and operate recycling compaction equipment.			
WO3	Integrate tourism advertisements with waste diversion and management messaging	Every time the municipality advertises tourism digitally or in print, include messaging about keeping natural tourism attractions clean and waste free.	Local businesses to create advertisements that encourage waste free tourism	\$ - Municipal

6 IMPLEMENTATION OF THE PLAN

6.1 COLLABORATIVE MODEL

This plan presents an inspiring but challenging list of actions to make significant action against climate change in our municipality. The sheer length of this document and the depth of detail can make it seem daunting, as climate change is certainly the most wide-ranging crisis of this century. One of the main challenges of implementing this plan is staffing hours and funds that are available. A summary of some of the major steps needed to proceed with implementation are:

- Prioritizing actions in order of logistical and chronological organizing a complete plan to implement these actions
- Establishing joint agreements between municipalities to lower costs and facilitate actions
- Developing a local and partnered plans to go forward to implement each action
- Mandating local and partnered actions through municipal councils
- Implementing local and partnered actions in conjunction with other municipalities
- Tracking information with success and challenges moving forward

Reviewing this list makes it clear that there is a significant amount of work needed to move forward with this plan. Each municipality will need to dedicate adequate time and resources to ensure success of this plan.

It is also clear that partnering with other municipalities will be required to make this plan manageable and ultimately successful. Climate change is a world-wide challenge and working together is essential to be able to meet this crisis. A collaborative model is required to implement this plan in our municipality.

Since the inception of this climate change planning endeavor, it has been acknowledged by both the Municipality of Central Manitoulin and the Township of Billings that sharing staff resources and collaborating to achieve climate action is required. This was further solidified when both Municipality of Central Manitoulin and Township of Billings Councils approved the following motion to continue collaborating once provincial and federal funding for climate change staff resources has concluded in the middle of 2021:

Council Meeting – The Municipality of Central Manitoulin March 11, 2021

81-2021 Motion: Johnson and Diebolt

That Council approves the continuation of the Central Manitoulin/Billing climate change planning and implementation partnership, once the current FCM/MEP grant has concluded and further, that Council approves the continuation of the Central Manitoulin/Billings climate change partnership resources including but not limited to sharing a staff resource (job title, hours etc. to be determined) and maintaining Council Climate Action Committee (s) once the current FCM/MEP grant has concluded provided that Billings also approves..... Carried

There is strong support from both Councils to continue this work and share resources. Much of this planning project, although jointly funded, has spread staff resources thinly in the early days of collaborative thinking and joint action. Differing meeting schedules for both municipal governments prohibited agreement on a joint committee and decision-making structure.

Overcoming Challenges:

Members from Central Manitoulin and Billings and CAC members have expressed a primary concern that while creating a climate change plan is a positive step forward, they worry most that implementation will be too slow and under resourced to achieve the targets that the community would like to reach for both corporate and community energy and emission reductions. Municipal staff have also expressed similar concerns but tend to see the risk/lack of continued, sustainable financial support from the province and federal government as barriers to implementation.

After reviewing the strengths, weaknesses, opportunities, and threats to overcome implementation challenges of the actions outlined in this CEEP, a collaborative model that relies in the strengths in the community so that relatively small municipal and community member investments can be leveraged to attract public and private funding that will be used to scale community climate actions and this has been the number one solution supported by all project stakeholders.

A significant challenge throughout the District of Manitoulin Island has been collaboration on the implementation of projects like shared waste management plan, transit and other local services that could have had significant taxpayer cost savings, energy, emissions, and social benefits if a sustainable collaborative governance model and capacity was available locally. These so-called collaborative project ‘failures’ in the past decade or more on Manitoulin Island may be impacting local perception and behavior with respect to engaging in climate change, but there are more and more signs of drastic climatic changes, and these might spur a rapid organizational process.

Upon further investigation, Table 18 provides just the tip of the iceberg of collaborative multi-municipal and First Nation endeavours that have started to attract significant provincial and federal support for climate action. This trend is only expected to continue as governments at every level look to create cost savings in climate change response, so debts from the pandemic can be balanced. Another emerging trend is the success of local collaborations – of which, some can be used for precedent, benchmarking and lessons learned. The case studies listed below, along with several other project partnership examples have been the inspiration behind the development of this evidence-based implementation plan.

Table 18 Successful collaborative implementation models to build from for climate action		
Collaborative Successes Case-Study Samples	What evidence does this provide for the CEEP implementation plan?	Measurable Implementation Outcomes Win-Win-Win
<p>Hazardous Waste Days - Manitoulin Island (Local)</p> <p>A 17-year partnership between local Manitoulin Island municipalities to jointly procure and organize hazardous waste pick-up and safe disposal of residential hazardous waste.</p>	<p>Shared service between multiple municipalities on Manitoulin Island is possible</p> <p>Collaborative waste management procurement, programs and services is sustainable and manageable in the District of Manitoulin Island.</p>	<p>Decreased service and administrative fees for each partner</p> <p>Reduction of hazardous waste materials and environmental reduced contamination risk</p>

<p>Manitoulin Streams</p>	<p>Collaborating on natural solutions for the protection, conservation and enhancement of shared natural spaces is possible on Manitoulin Island.</p> <p>This non-profit with charitable status has worked on natural asset protection, preservation and conservation projects all over Manitoulin Island – project partners have included First Nations, municipal governments, agricultural small businesses and educational institutions.</p>	<p>Flood management and protection of public and private property</p> <p>Habitat enhancement and restoration</p> <p>Biodiversity protection and conservation</p> <p>Enhanced carbon sequestration</p>
<p>Local Food Manitoulin – Community Gardens</p>	<p>Island-wide projects that provide customized and tailored community solutions is possible in Manitoulin Island.</p> <p>Community gardens that received initial financial support and on-going staff support from local governments were able to continue operating with less risk once grant funds for start up costs were exhausted.</p>	<p>Malnutrition in the community is decreased.</p> <p>Local jobs, volunteer and learning opportunities are created.</p> <p>Sustainable and sovereign food systems are created to building resiliency.</p> <p>Local food becomes more affordable and accessible.</p> <p>GHG emissions from the overall food system are decreased</p>
<p>Reep Green Solutions (Ontario – Waterloo Region)</p> <p>A collaborative non-profit that pairs academic research with practical action in the community and includes multiple municipal governments as stakeholders.</p> <p>Projects that could apply here on Manitoulin Island: Home Energy Efficiency, Healthy Yards and Neighborhoods (backyard tree planting, home flood and wildfire protective services)</p> <p>https://reepgreen.ca/</p>	<p>Multi-municipal partnerships to implement climate action, particularly in service areas that are not generally offered by municipal governments have existed for over a decade in Ontario.</p> <p>REEP is just one very successful model that started with community energy efficiency and has expanded its community climate action services over a 20yr period.</p> <p>Municipal governments have a role to play in the organization, but they are not ultimately responsible for it and can choose to opt-in in programs that are most appropriate for their community.</p>	<p>Provides organizational structure to deliver climate action programs and services that local governments do not have the resources to provide.</p> <p>Increases residents access and success in obtaining provincial and federal grants to plant trees or improve home energy efficiency.</p>

<p>Our Energy Guelph https://www.ourenergyguelph.ca/</p>	<p>With an initial 5yr funding commitment from the municipal government, this non-for-profit will be financially independent within the first 4yrs of operation and will be responsible for delivering community energy efficiency services, expanding electric vehicle charging station infrastructure, leveraging initial capital to secure grants and providing technical and sustainability consulting services with the local community that helps the municipality reach and monitor community GHG emission goals.</p>	<p>Mobilization of local grass roots community action that starts with municipal led support for the start-up phase of the non-for-profit.</p> <p>By year 5, non-for-profit self-sustaining, reinvesting any profits back into the expansion of services and programs.</p>

For a Collaborative Model to succeed and implement climate actions on Manitoulin Island it must:

- Provide organizational structure and incorporated status independent of each local government or supporting partner organizations to respect the autonomy of each member organization
- Projects for climate action must be opt-in and custom tailored to each community, using overlaps and economies of scale for delivery
- After initial start-up costs, any organization providing the organizational structure to lead climate action must be able to maintain financial independence without annual financial support from local government members
- Maintain a broad community membership with local governments, not-for-profits like Manitoulin Streams, United Manitoulin Island Transit, Local Food Manitoulin and local businesses
- Like other Collaborative Models outlined in Table 10 – the proposal for a Collaborative Model for Manitoulin Island to move forward corporate and community climate action will include the founding of a non-for-profit joint venture between local governments and other non-for-profits like Manitoulin Streams and Uniter's Manitoulin Island Transit (UMIT).

None of the collaborative projects, services or strategies found in this CEEP is brand new; they are all based on the review of other successful implementation strategies. What is brand new is the idea of combining multiple community climate action strategies under one social enterprise that is owned, operated, and powered by the community for the community. Joint governance model and fund details can be found in Appendix F.

7 CONCLUSION

Climate change is real – it is a threat to current and future generations. The Municipality of Central Manitoulin recognized this and has played a leadership role in the community by beginning to tackle this threat. This leadership was demonstrated by joining the PCP program, completing the climate change engagement survey, and approving the CEEP. This CEEP is the start – we must now all continue building

on the relationships and collaborative opportunities that have presented themselves throughout this planning process to implement and monitor climate change actions in this plan.

Municipalities need not tackle climate action alone; many allies can and have been found in the local community. Other municipalities on Manitoulin Island have already expressed interest in sharing costs and resources that will benefit all communities involved. Establishing partnerships with existing and new community groups to drive community climate action is a key driving factors for success. This success has already been realized by the establishment of collaborative partnerships with Manitoulin Streams and UMIT. A collaborative model that can be implemented following the approval of this CEEP can ensure that work continues political commitments and community vision/consensus for sustainability and climate action is realized. The CEEP is a roadmap for starting but most importantly continuing climate action on Manitoulin Island.

8 APPENDICES

A. CLIMATE ACTION COMMITTEE TERMS OF REFERENCE FOR CEEP

THE CORPORATION OF THE TOWNSHIP OF BILLINGS

BY-LAW 2020-06

SCHEDULE A

TERMS OF REFERENCE

CLIMATE ACTION COMMITTEE

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1. CONTEXT

- (1) With sustainability as a strategic priority, the Township of Billings is developing a Climate Action Plan (CAP) with the assistance of a hired Climate Change Coordinator. Billings's plan will help to reduce greenhouse gas emissions on both a corporate and community level. The Climate Change Coordinator will be facilitating this project until the end of February 2021, with the goal of developing and beginning to implement a plan that will ensure continued reductions in greenhouse gas emissions well beyond that time.

2. ROLE OF THE COMMITTEE

- (1) The Climate Action Committee (the "Committee") shall oversee the development of the CAP and assist with implementation, in order to ensure that:
 - i. the actions included work well for everyone in the community
 - ii. there is widespread participation from community members
- (2) The Committee shall advise council on actions they can take to support the objectives of the CAP, including actions related to both corporate assets/operations and support for community emissions reductions.
- (3) In providing advice to council, the Committee shall have regard for the township's Strategic Plan, the mission statement for which states:

"Billings Township is a vibrant community where new people are excited to relocate and existing residents are happy to stay because of the sustainable economy, the artistic and cultural diversity, and the beauty of the environment. Guided by the vision of its citizens, Billings Township is a safe and progressive community that practices environmental responsibility, provides dependable services, and maintains its rich cultural heritage."

3. COMMITTEE STRUCTURE

- (1) The Climate Action Committee is hereby established as an ad hoc committee, lasting the remaining length of the Climate Change Coordinator's contract, until the end of February 2021. The Committee is comprised of the following members as appointed by council:
 - i. one (1) member of council, sitting as Chair;
 - ii. up to four (4) members of the general public;
 - iii. up to one (1) high school student, as a non-voting member;
 - iv. Mayor sitting *ex officio*, with voting privileges when present;
 - v. The Climate Change Coordinator, to lead relevant portions of discussion, assist in committee administration, keep minutes, and act as a resource person/liaison.

4. APPOINTMENT OF MEMBERS

- (1) All Committee appointments shall be made by council, following an advertised application process.
- (2) Council shall make all Committee appointments by resolution, whether appointing council members or public members.

- (3) The Mayor shall be an *ex officio* member of the Committee, with voting privileges when present.
- (4) A Council member shall sit as Chair for all standing advisory and statutory Committees, unless otherwise noted in the Committee terms of reference.
- (5) Any eligible elector in the Township of Billings is entitled to apply for appointment to a Board or Committee and such appointment, subject to any statutory limitations, and/or removal is at the sole discretion of council.
- (6) Where possible, appointments to this Committee made by council shall be for the term of this ad hoc Committee, ending February 28th 2021.
- (7) When selecting Committee members, council will seek individuals who:
 - i. have good knowledge of the community and are committed to finding solutions that work well for everyone
 - ii. are deeply interested in ambitious local climate action and are committed to seeing implementation through
 - iii. are eager to engage with both council and the public, in a manner respectful of the due process by which all municipal actions must abide
 - iv. represent the diversity in Billings's population, taking age, ethnic/cultural background, and gender into account

5. CODE OF CONDUCT FOR MEMBERS AND OTHER APPLICABLE POLICIES

- (1) At the beginning of their term, Committee members shall be required to review the following Acts and policies and confirm such review by submitting a signed acknowledgement to the Clerk within 30 days of appointment:
 - the Code of Conduct for Members of Council and Local Boards of the Township of Billings
 - the *Municipal Conflict of Interest Act*
 - the Township of Billings Procedural By-law
 - the Township of Billings Workplace Harassment, Discrimination and Violence in the Workplace Policy
 - the Township of Billings Council-Staff Relations Policy
 - the Township of Billings Accountability and Transparency Policy
 - The Township of Billings Procurement Policy
 - the Township of Billings Health and Safety Policy
- (2) All Committee members shall comply with the provisions of the Code of Conduct for Members of Council and Local Boards of the Township of Billings at all times for the duration of their appointment to the Committee and thereafter for any ongoing obligations in relation to confidentiality or otherwise.
- (3) All Committee members shall comply with the provisions of all other applicable Acts and policies, including but not limited to:
 - the *Municipal Act*
 - the *Municipal Freedom of Information and Protection of Privacy Act*
 - the *Occupational Health and Safety Act*
- (4) Members shall disclose any pecuniary interest to the chair, and shall absent herself/himself from meetings for the duration of the discussion and voting (if any) with respect to that matter.
- (5) No individual member nor the Committee as a whole, has the authority to make direct representations

of the township to Federal or Provincial governments.

6. AGENDAS AND MINUTES

- (1) The Committee shall prepare agendas generally in accordance with the format and notice requirements for council agendas, as set out in the Township's Procedure By-law.
- (2) Agendas shall be prepared by the Chair with the assistance of the Climate Change Coordinator.
- (3) The Committee shall prepare minutes in a form as approved by the Clerk.
- (4) Committee meeting minutes shall be submitted to the Clerk for inclusion in the next regular council meeting agenda package for receipt.
- (5) Committee agendas and minutes will be posted on the township website by the Clerk.

7. COMMITTEE REPORTING AND FINANCE

- (1) Any recommendations made by the Committee shall be in the form of a written report.
- (2) Any ideas generated by the Committee that would require a commitment from council shall be submitted to council as a resolution to seek council's approval of further research being done on the topic by Committee members, before this work takes place.
- (3) The Committee will prepare an annual work plan and budget request to submit to the Treasurer in accordance with the annual budget timetable.
- (4) Any expenditures by the committee will be approved by council during the annual budget process or otherwise in accordance with the township's Procurement By-law.

8. MEETING TIMES AND PROCEDURES

- (1) The Committee shall meet monthly at the Kagawong Park Centre, at a consistent day and time to be established by the Committee, aiming to reduce commutes potentially by setting the time as the end of the workday.
- (2) The Committee shall establish a meeting schedule for the year during their first meeting of the year.
- (3) Meetings may be cancelled and/or rescheduled if necessary, as determined and announced by the Chair.
- (4) Meetings shall follow the provisions of the township's Procedure By-law, including notice and agenda requirements.
- (5) Committee members will respect the requirements of the *Municipal Act* and the township's Procedure By-law.

9. ATTENDANCE

- (1) No Committee member shall miss three (3) or more consecutive meetings without prior approval from the Chair and council.
- (2) All requests for permission to be absent from three (3) or more consecutive meetings will be submitted to the Chair and council in writing.

10. RESIGNATION AND TERMINATION

- (1) A Committee member shall be deemed to have resigned where:
 - i. The member delivers written notice of resignation to the Chair and council; or,
 - ii. The member is absent from three (3) consecutive meetings without prior approval from the Chair and council.
- (2) Council will provide notice of termination in writing.
- (3) Council may terminate any Committee appointment for just cause.
- (4) Without limiting the generality of the foregoing, council may terminate the appointment of a Committee member where:
 - i. The member has been absent from three (3) or more consecutive Committee meetings without obtaining prior approval from the Chair and council;
 - ii. The member has been found by council to have engaged in conduct in breach of the Code of Conduct for Members of Council and Local Boards of the Township of Billings; or,
 - iii. The member has been found by council to have engaged in conduct that council considers inappropriate.

11. REVISIONS TO TERMS OF REFERENCE

- (1) Council will consider revising the Terms of Reference (TOR) for this Committee towards the end of the Climate Change Coordinator's contract (February 2021), to reflect whether the Committee may have a role beyond that time, such as ensuring the continued implementation and updating of the CAP.
- (2) Council may, at its discretion, revise the Terms of Reference (TOR) for this Committee at any time by by-law.
- (3) Any revisions proposed to these TOR shall be presented to council through an appropriate report.
- (4) The committee may be dissolved by a resolution of council.

Terms of Reference: Central Manitoulin Climate Action Committee

1. Context

The Municipality of Central Manitoulin is developing a Climate Action Plan (CAP) with the assistance of a hired Climate Change Coordinator. Central Manitoulin's plan will help to reduce greenhouse gas emissions on both a corporate and community level. The Climate Change Coordinator will be facilitating this project until the end of February 2021, with the goal of developing and beginning to implement a plan that will ensure continued reductions in greenhouse gas emissions well beyond that time.

2. Purpose of the Climate Action Committee (CAC)

The purpose of this committee is to oversee the development of the CAP and assist the Climate Change Coordinator with its implementation. The committee should ensure that the actions included in the CAP work well for everyone in the community, and that there is widespread participation from community members. The CAC should also make recommendations to Council regarding actions that council can take in support of the CAP's objectives.

3. Chair

The Chair will be elected by committee members at the first meeting.

4. Roles & Responsibilities

Committee members are required to attend year-round monthly meetings in the Council Chambers (day/time to be determined, possibly 4:30 to reduce GHG emissions). An agenda for each meeting will be prepared in advance by the Chair in conjunction with the Climate Change Coordinator, who will serve as the staff resource person, taking minutes to be sent to the Property Committee. All members of the committee are invited to contact the Climate Change Coordinator with additional items to be placed on the agenda. Meetings will proceed according to the regulations described in Bylaw No. 2011-08.

A regular item on the agenda will be an update from the Climate Change Coordinator, regarding the progress of the Climate Action Plan. The Climate Change Coordinator may request that committee members provide input on specific topics or assist with outreach, research, and/or implementation. This will be followed by time in which committee members can ask questions or bring forth new ideas regarding the CAP.

Suggestions regarding the development of the CAP can usually be made informally, directly to the Climate Change Coordinator, who will be acting as lead author of the CAP, under direction from the CAO and Council. When a decision is required from Council, a committee member may choose to make a motion, which, if seconded and carried, may be presented to the Property Committee for further consideration. The CAC should also make recommendations to Council

regarding any opportunities for climate change mitigation that may come up before the CAP is complete.

5. Authority

The committee shall be formed under the authority of Council as a subcommittee of the Property Committee. The committee shall have no spending authority other than spending requests approved by Council. The committee shall also have no authority to enter into agreements with third parties or otherwise impose obligations on the Municipality without the Municipality's express consent.

6. Continuity

It is important to ensure that the CAP continues to be implemented beyond the length of the Climate Change Coordinator's contract, and is updated by staff as necessary over time. Keeping the CAC in place could help to achieve this, the main challenge being the need for a staff person to take on the workload of being the resource person at meetings, and of completing any in-office tasks required. The CAC members and council should consider potential solutions for this before the Climate Change Coordinator's contract comes to an end.

7. Members

The CAC will consist of up to seven members, all residents of Central Manitoulin, appointed by Council following an advertised application process. Two spaces will be reserved for Council members. The Climate Change Coordinator will attend as a staff resource person, rather than as a committee member. In selecting committee members from applicants, Council will seek individuals who:

- have good knowledge of the community and are committed to finding solutions that work well for everyone
- are passionate about ambitious local climate action and are committed to seeing implementation through
- are eager to engage with both Council and the public, in a manner respectful of the due process by which all municipal actions must abide
- represent the diversity in Central Manitoulin's population, taking age, ethnic/cultural background, and gender into account

B. LOCAL CLIMATE PROJECTIONS

See report in this section next page

Appendix B Climate Change Projections Manitoulin Island

	Region: Alpena (includes Municipality of Central Manitoulin and Township of Billings) Retrieved November 2020 - ClimateAtlas.ca	BASE PERIOD 1976-2005	FUTURE PROJECTIONS 2021-2050	FUTURE PROJECTIONS 2051-2080
Temperature	Mean Temperature	Mean	Mean	Mean
Hot Weather	Number of +30C days per year	1	5.4	18.9
	Number of +20C Nights per year (Tropical Nights)	0.9	6.9	22.1
Cold Weather	Freeze Thaw Cycles	62.4	58.8	53
	Icing Days	70.8	50.1	31.1
Precipitation	Heavy Precipitation (10mm)	20.9	23.1	24.3
	Heavy Precipitation (20mm)	4.7	5.9	6.6
Agriculture	Date of first frost	October 22	November 5	November 19
	Date of last Spring frost	May 3	April 21	April 10
	Growing Degree Days (Base 10C)	903.9	1239	1616

○ Provide sources from climate atlas, PIEVC and wind research

APPENDIX

C. COMMUNITY ENGAGEMENT SURVEY RESULTS

See Ethelo report in this section next page



ETHELO

Central Manitoulin Carbon Budget

Summary

As part of the municipality's ongoing response to climate change, the Municipality of Central Manitoulin used a carbon emission simulation exercise, powered by Ethelo, to gather public feedback. The purpose of this exercise is to give residents a say in proposing solutions that are fair and effective, and maximize community buy-in to the Community Energy and Emissions Plan (CEEP) that is currently under construction for Council's consideration and adoption. The survey also educated respondents on aspects of response and proposed solutions from other municipalities engaged in similar climate change planning processes.

2020 was challenging for everyone in our community – COVID 19 forced us all to rethink various aspects of our lives. The Municipality of Central Manitoulin has not skipped a beat and despite challenges, forged into 2021 by adjusting our community engagement strategy. Instead of hosting in-person events for climate change consultation, we conducted an in-depth educational and action-oriented online survey. Initially, the idea of conducting a climate change survey online received mixed support – committee members and municipal staff expressed concern over not being able to reach everyone in our district by taking this non-traditional online engagement approach.

Despite legitimate concerns about our ability to reach and engage residents through this method, participation results ultimately exceeded expectations with 245 respondents or approximately 12% of our population weighing in on climate action. While some skeptics may point out that this participation rate is less than half of the population, in the world of public engagement surveys and statistics, response from 12% of the total sample available is solid achievement. Ultimately, consideration must be paid to our sample size and tolerance for inaccuracy. The goal of any comprehensive public engagement survey is to achieve useful information while maintaining the lowest margin of error possible – where a +/-3% margin of error is generally accepted as excellent – and we are pleased to report that our survey results were within this margin.

Summary

Community-wide Support for a 50% reduction in GHG emissions by 2030

When it came to the voting sections of the engagement, participants were asked to indicate how large a Greenhouse Gas (GHG) reduction they thought the community should strive towards, on the topics of Homes & Buildings, Transportation, and Waste Reduction. Participants were asked to vote using a sliding scale of 0% to 100% GHG reduction in each of these areas, while also ensuring their ideal plans hit our overall GHG reduction target and were easy enough to implement over the next 10 years. These votes exist as the basis for the GHG reduction targets outlined in the CEEP, and below:

- 50% Energy Efficiency Upgrades - 8,001 tonnes GHG reduction by 2030
- 50% Municipal Building Efficiency Upgrades - 77 tonnes GHG reduced by 2030
- 25% Gas-Powered Personal Vehicles replaced by Electric Vehicles - 2,130 tonnes GHG reduction by 2030
- 50% Gas-Powered Municipal Vehicles replaced by Electric Vehicles - 117 tonnes GHG reduction by 2030
- 50% Increase in Composting - 711 tonnes GHG reduction by 2030

Overall GHG Reduction by 2030 - 11,036 tonnes GHGs

GHGs The scenario outlined above was identified by the survey algorithm as being the most broadly supported plan, which includes an overall GHG reduction target that surpasses the community's goals and has a difficulty score low enough to make this a plausible plan. This scenario has a predicted overall support of 100%, meaning that this plan has a high likelihood of success, and includes components that every single voter can get behind.

Summary

How can something be supported and have a rate of conflict?

In addition to finding areas of consensus, the survey algorithm also considered every participant vote and used this data to identify areas of polarization, which can generally be communicated as the rate of potential conflict in attempting to implement climate actions. Key findings related to the concept of conflict include the reality that the greatest polarization exists around the community's composting goals. However, in comparison to similar engagements in other communities, this was a very low-conflict consultation, showing the Municipality of Central Manitoulin has a community with strong consensus around the actions outlined for Council's consideration in the Community Energy and Emissions Plan (CEEP).

Perceptions of Climate Change: Most respondents in Central Manitoulin do not want the municipality to declare a climate emergency but this doesn't mean that residents are not worried about the impact of climate change with the majority of respondents indicating they are at least somewhat, very worried or extremely worried about climate change. 50% of respondents are most worried about extreme wind events, prolonged power outages and wildfire

Home Buildings and You: A 50% GHG reduction in homes and buildings is looking attainable with over 50% of respondents indicating that they would be planning at minimum; minor energy efficiency upgrades on their home in the next 5yrs. Only 24% of people are considering deep energy retrofits like replacing a roof or upgrading an energy system. While 24% might seem low – this finding is could result in a major carbon positive shift, driving down emissions and energy costs, if homeowners choose renewable energy sources. Next steps could include, increasing the profile of Central Manitoulin's already successful business incentive program and extending this program offering to include homeowners, providing support and educational resources on applying for provincial and federal grants and incentive programs, working with local contractors and educators to increase our community capacity to implement this energy transition.

"I'm impressed with the survey and software. I like how participants have the info. at the top and the "how achievable is my target" on the right. Super cool!"

- Central Manitoulin Resident

Summary

Transportation and You: Interestingly – close to 30% of residents reside only 5-10 km away from work but most of them drive to work instead of cycling or car-pooling. The good news is that the top two supported actions are to increase the availability of electric vehicle (EV) charging stations and the establishment of an island wide transit system.

Waste Reduction and You: The waste reduction survey questions focused on reducing our GHG emissions and waste in the landfill by diverting more materials through glass recycling and composting. The survey found that 59% of respondents thought the municipality should collaborate with other island communities to create a glass pulverizing facility and a significant majority – 86% of respondents are in support of at home composting instead of a centralized composting facility.

Shared Spaces: When it comes to our shared municipal buildings the majority, 66% of participants are in favour of the municipality prioritizing the conversion of fuel/propane power to a renewable, net-metered energy source. Our natural assets are also very important to our residents and the survey showed that most participants 85% live in Central Manitoulin because of our natural environment. It's no surprise that the actions supported in this category are equally supported with more than 50% of respondents in support of establishing an aquifer monitoring and source water protection program, community gardens and more grant application and technical support for natural asset management to protect, preserve and increase Central Manitoulin's sensitive, unique and biodiverse eco-system.

“One of the best surveys I have ever taken. Loved the kids pictures! Really well thought out questions and scope, love the way you guys are thinking.....”

- Teg Gidda, VP and Global Leader, Future Energy – GHD and Adjunct Professor at University of Waterloo

“I love the idea that the township is using modern communication strategies to get feedback from the community. This survey was more than just a survey – educational and engaging, its more like a community engagement masterpiece”

- Billings Resident

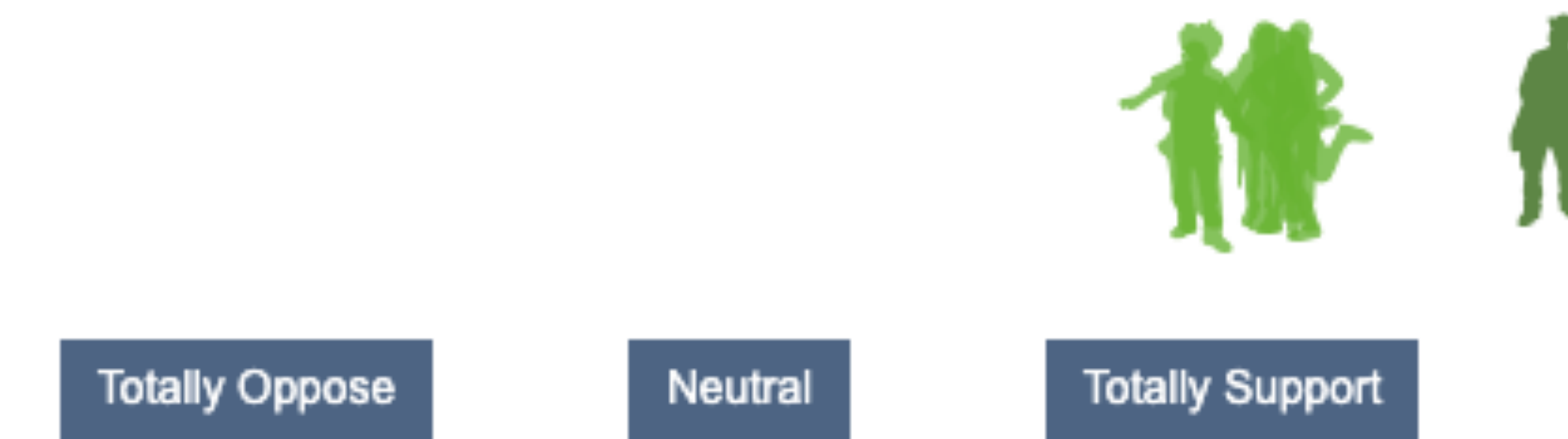
Food and Agriculture: The top three most supported actions to promote more local food consumption are increasing local food vendors at farmers markets, educational and resources support for expanding home gardens and investment in 4-season farming and food production locally.

Overview

Based on community members' input, Ethelo was able to identify key elements of an ambitious Climate Action Plan that meets the community's 50% reduction target and is widely supported by a broad cross section of community members.

11,036 tonnes of greenhouse gas could be reduced within this set of options.

Difficulty score of 2 out of 10. This plan is considered easy and achievable overall.



Extremely Popular. The distribution of support shows how happy people are with the plan overall.

245 community members
voted in the public engagement process

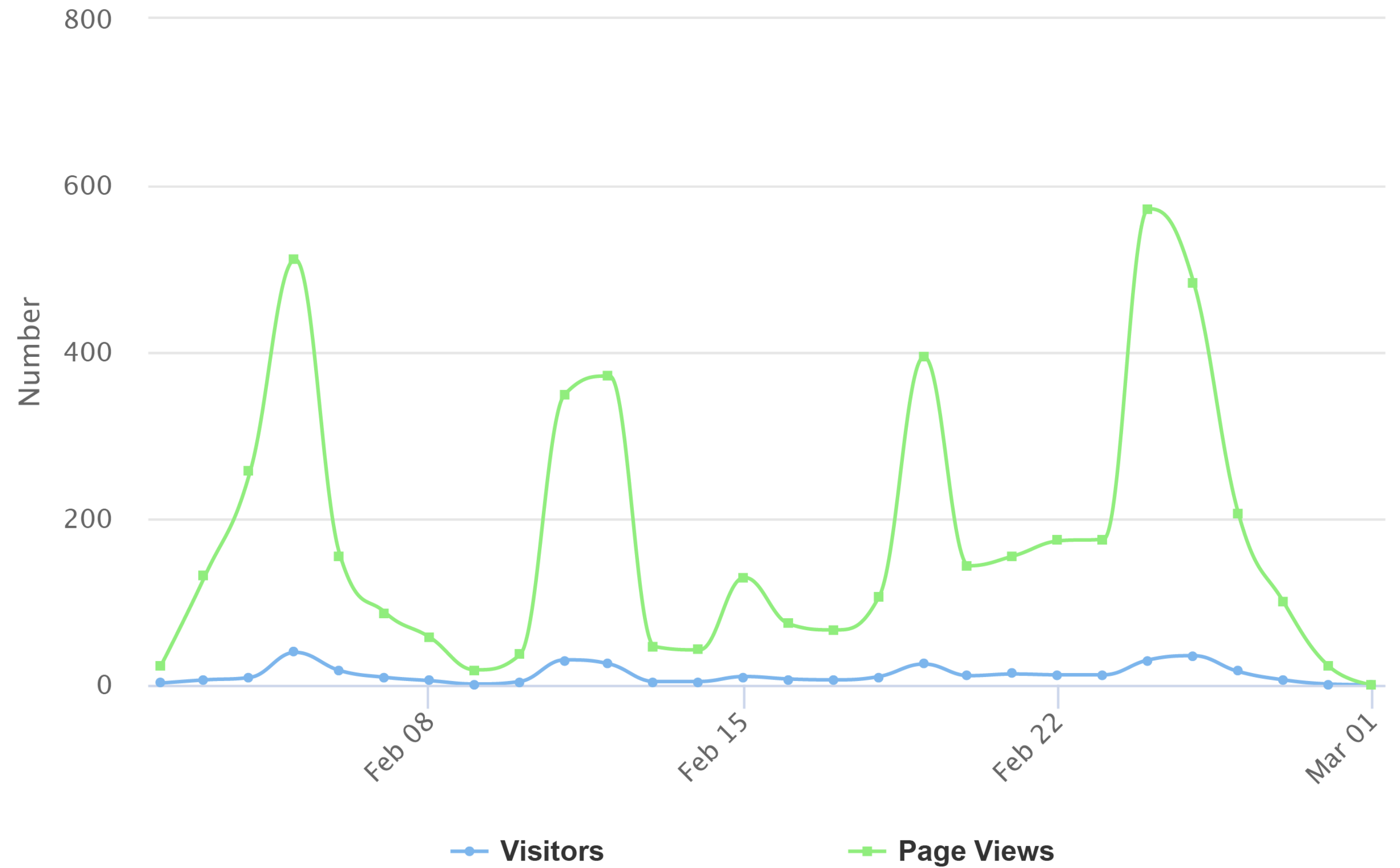
Overview

Support is the average values of the votes, where the value of a totally opposing vote is 0 and a totally supportive vote is 100.

Service Area	Support
Municipal Buildings	
50% = 77 tonnes GHG	74%
Energy Efficiency	
50% = 8,001 tonnes of GHGs	77%
Personal Vehicles	
25% = 2130 tonnes GHG	69%
Municipal Vehicles	
50% = 117 tonnes GHG	66%
Composting	
50% = 711 tonnes of GHGs	70%

Participation

- Number of visitors: **362**
- Number of respondents: **245**
- Page views: **4,882**
- Average time on platform: **19 minutes**



Participant Recruitment

In order to ensure a representative sample of the Municipality's population had the opportunity to participate, eDemocracy Solutions, (Ethelo's sister not-for-profit,) with support from municipal staff and community members, executed an outreach campaign which included:

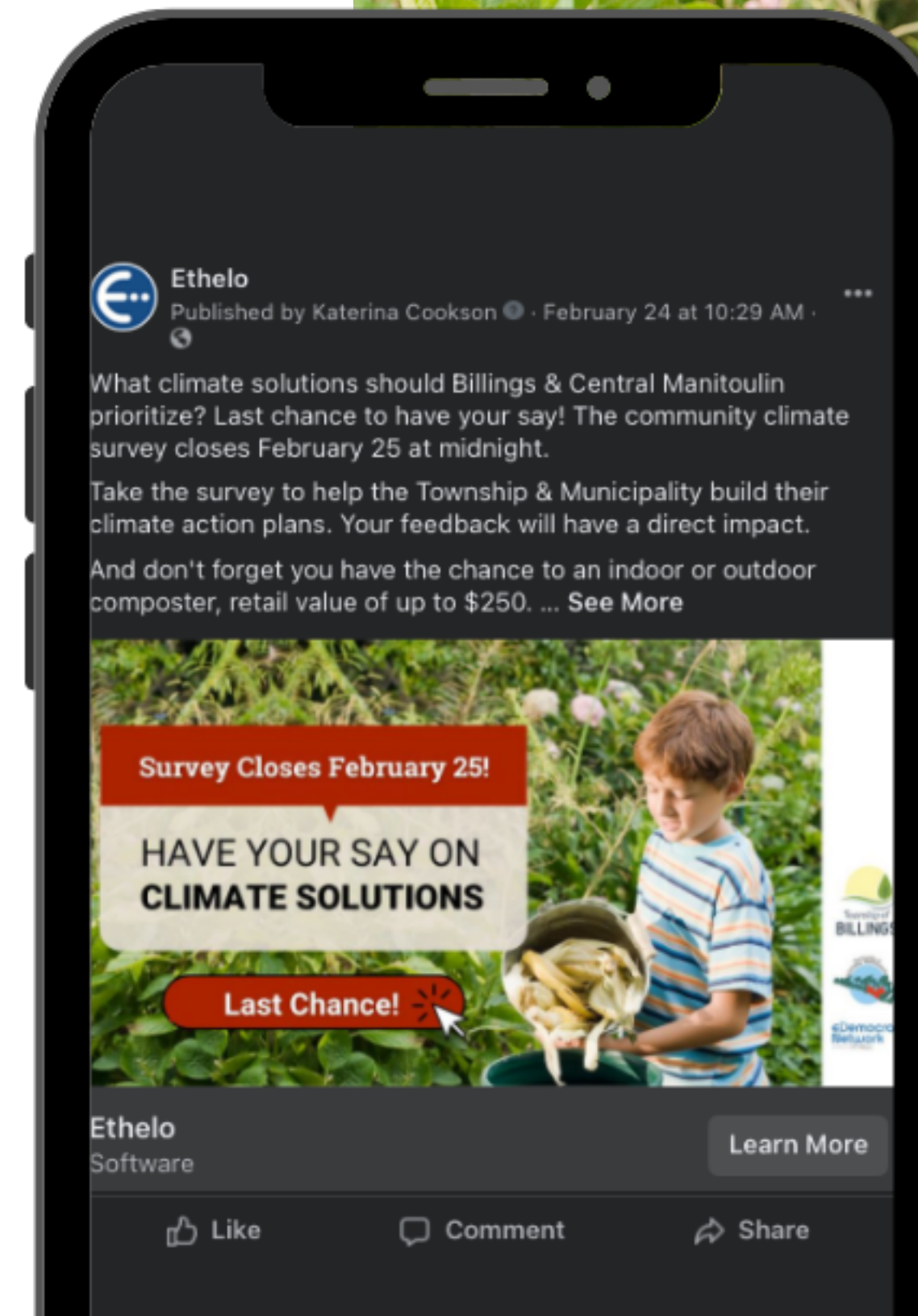
- posters throughout the community
- municipality-wide mail-out
- phone campaign
- digital advertising campaign

Our Phone Campaign Included

- 310 Outbound Calls
- 80 People Spoken To
- 98 Voicemails Left
- 39 Surveys Completed Over Phone

HAVE YOUR SAY ON CLIMATE SOLUTIONS!
PUBLIC ENGAGEMENT NOW OPEN

ClimateSurvey.ca



Energy & Emissions Plan. Survey closes February 25th.
Complete this survey over the phone—call 705-905-4406.

For taxpayers in the Municipality of Central Manitoulin

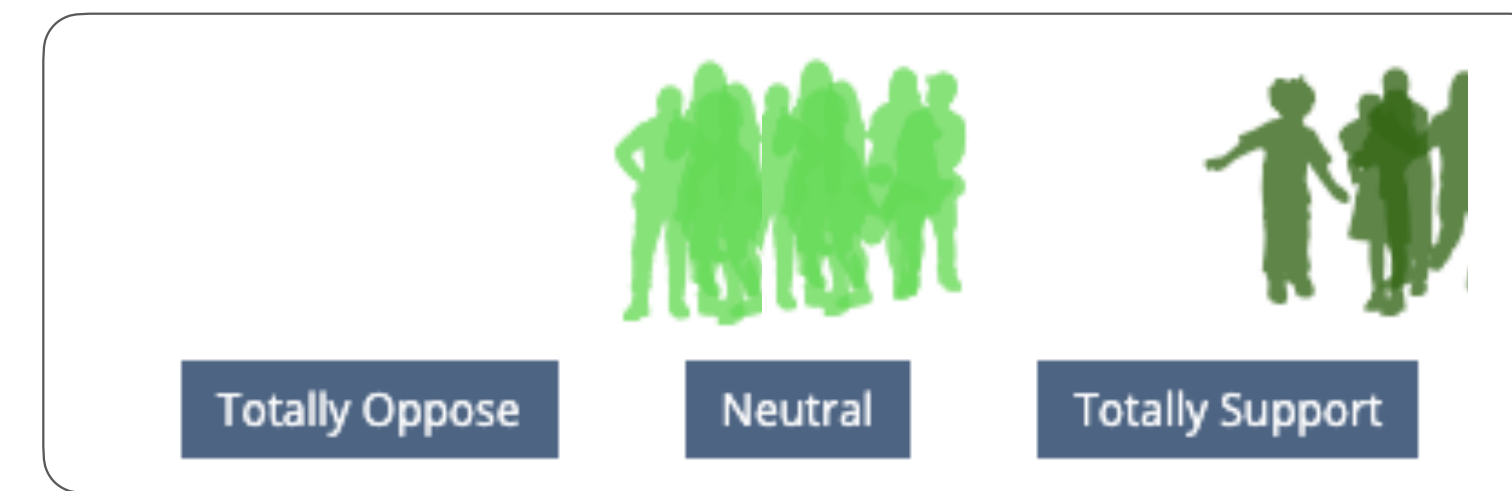




Voting Results

Overview

What makes a good plan?



The two pictures above represent levels of **support*** and **conflict**** for two potential plans. In each picture, colours are used to reflect the overall sentiment of each respondent, with red representing “unhappiness”, and dark green representing “happiness”. The plan on the right is a better plan than the one on the left. Why? Because the people on the right are roughly equally happy. They will be united in moving forward together, which increases the chance of success. The plan on the left is divisive and polarizing, with winners and losers. This means a higher chance of conflict and resistance to moving forward. Fairness is very important in group decisions and for society in general. The plan on the right distributes happiness in a fair way, which is critical to social cohesion and the democratic legitimacy.

Ethelo has outlined each of the following options after optimizing for the highest levels of community support, and the lowest levels of conflict, thereby minimizing polarization and creating wide-spread community buy-in.

***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.

****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.

Energy Efficiency

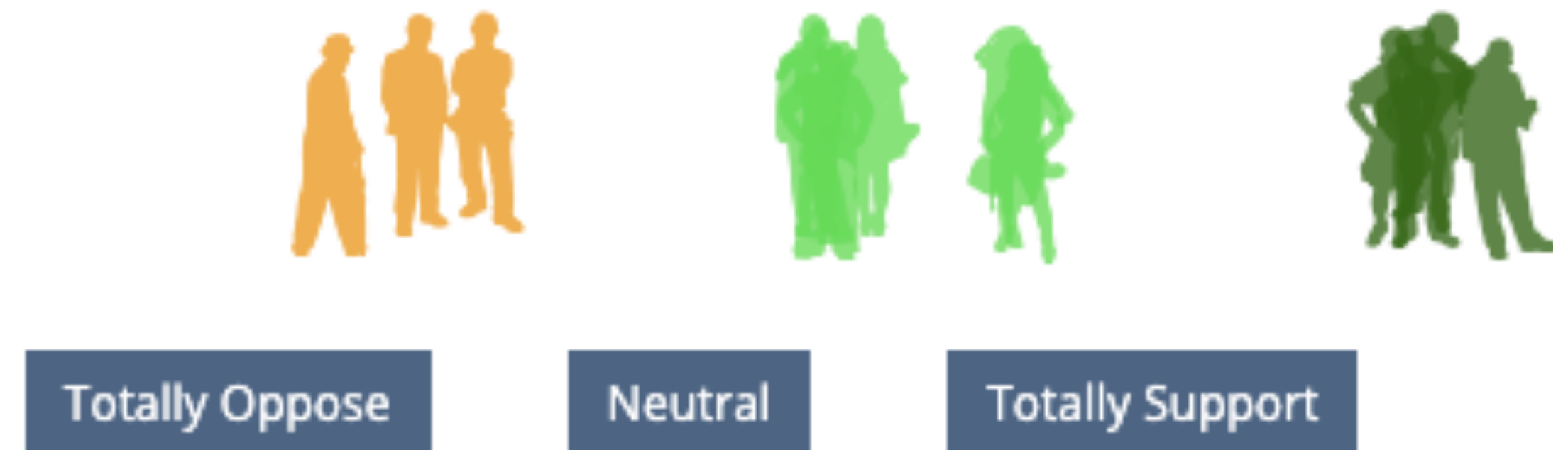
- Recommended Target: 50%
- GHG Reduction: 8,001 tonnes GHG by 2030



***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.
****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.

Composting

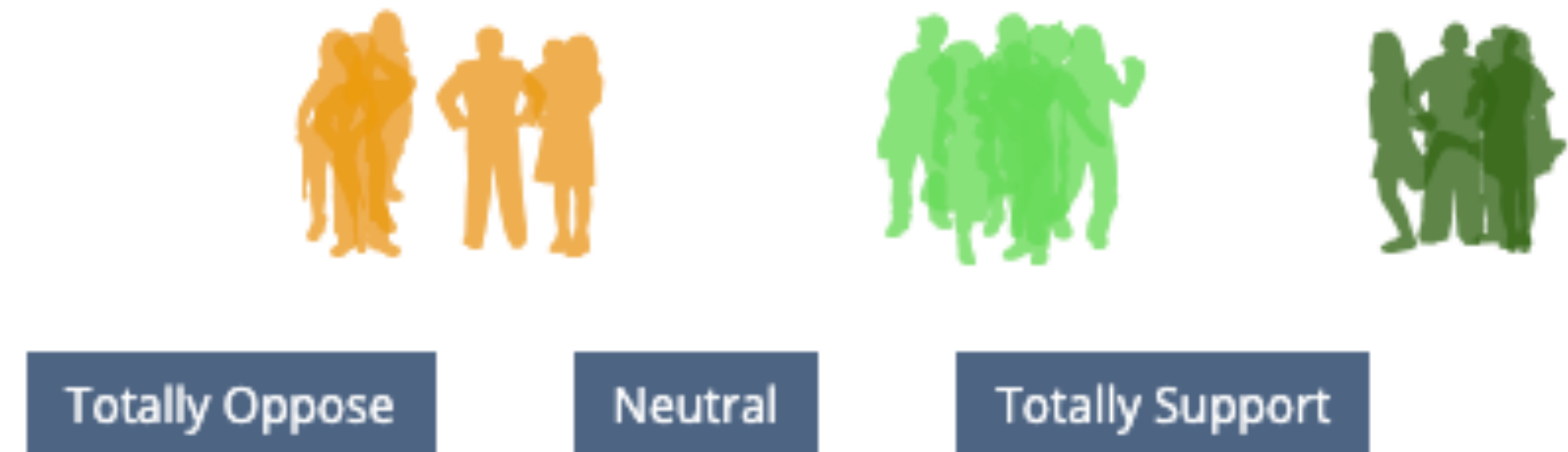
- Recommended Target: 50%
- GHG Reduction: 711 tonnes GHG by 2030



***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.
****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.

Municipal Vehicles

- Recommended Target: 50%
- GHG Reduction: 117 tonnes GHG by 2030



***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.
****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.

Municipal Buildings

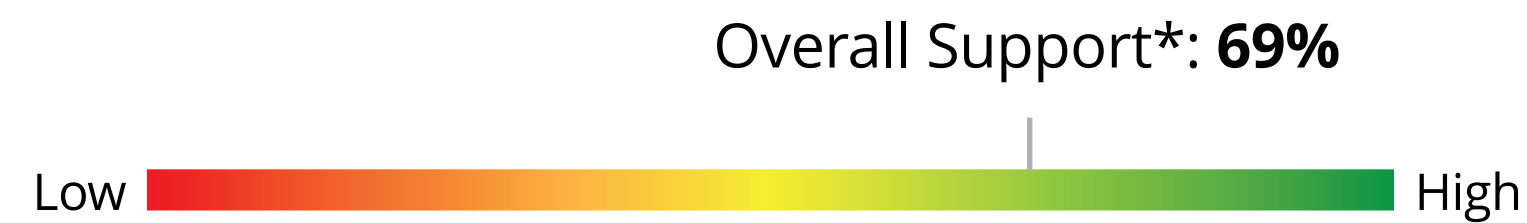
- Recommended Target: 50%
- GHG Reduction: 77 tonnes GHG by 2030



***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.
****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.

Personal Vehicles

- Recommended Target: 25%
- GHG Reduction: 2,130 tonnes GHG by 2030



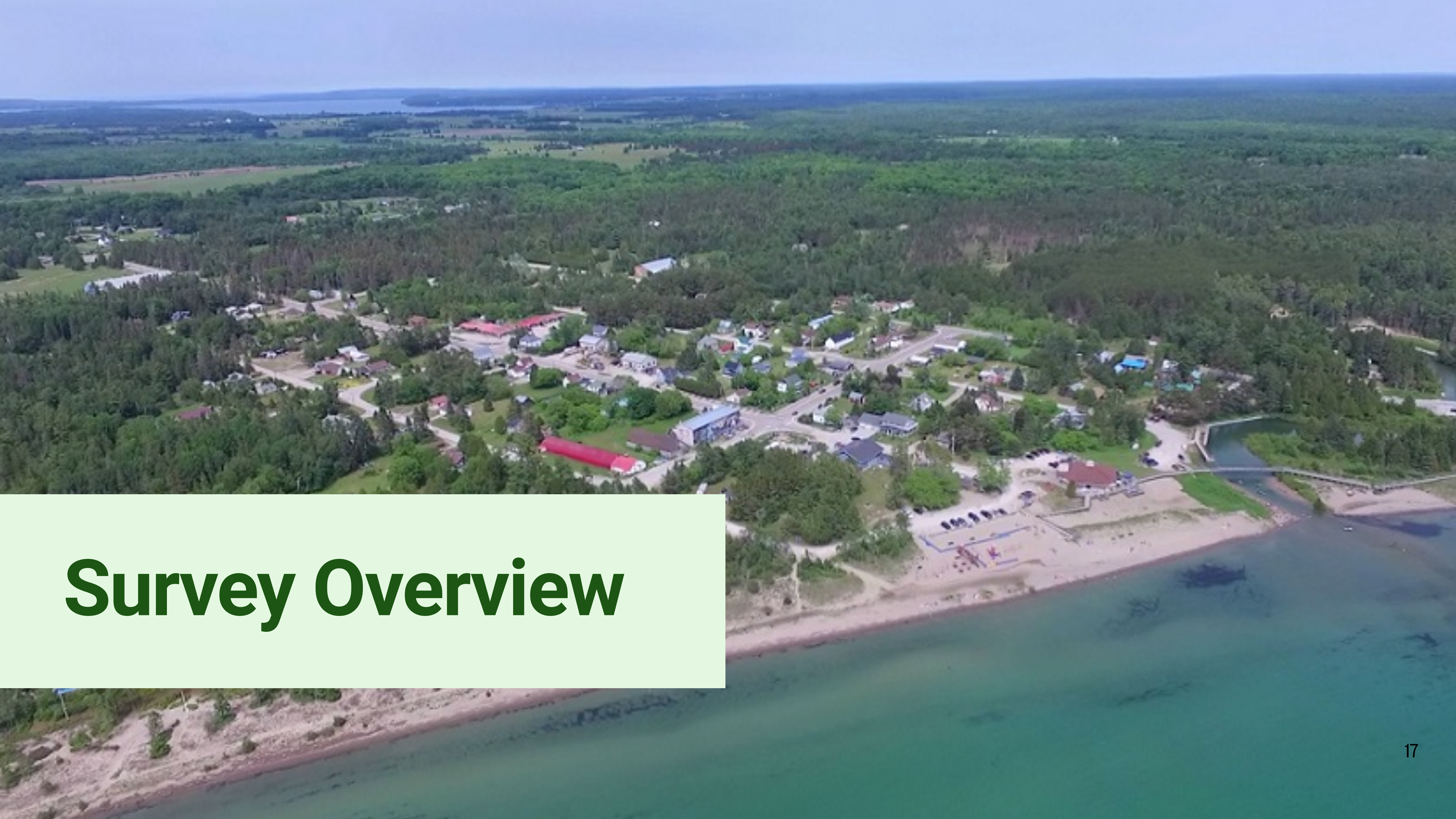
Totally Oppose

Neutral

Totally Support

***Support** is the average value of all participant votes where 0 represents a totally opposing vote, and 100 represents a totally supportive vote.

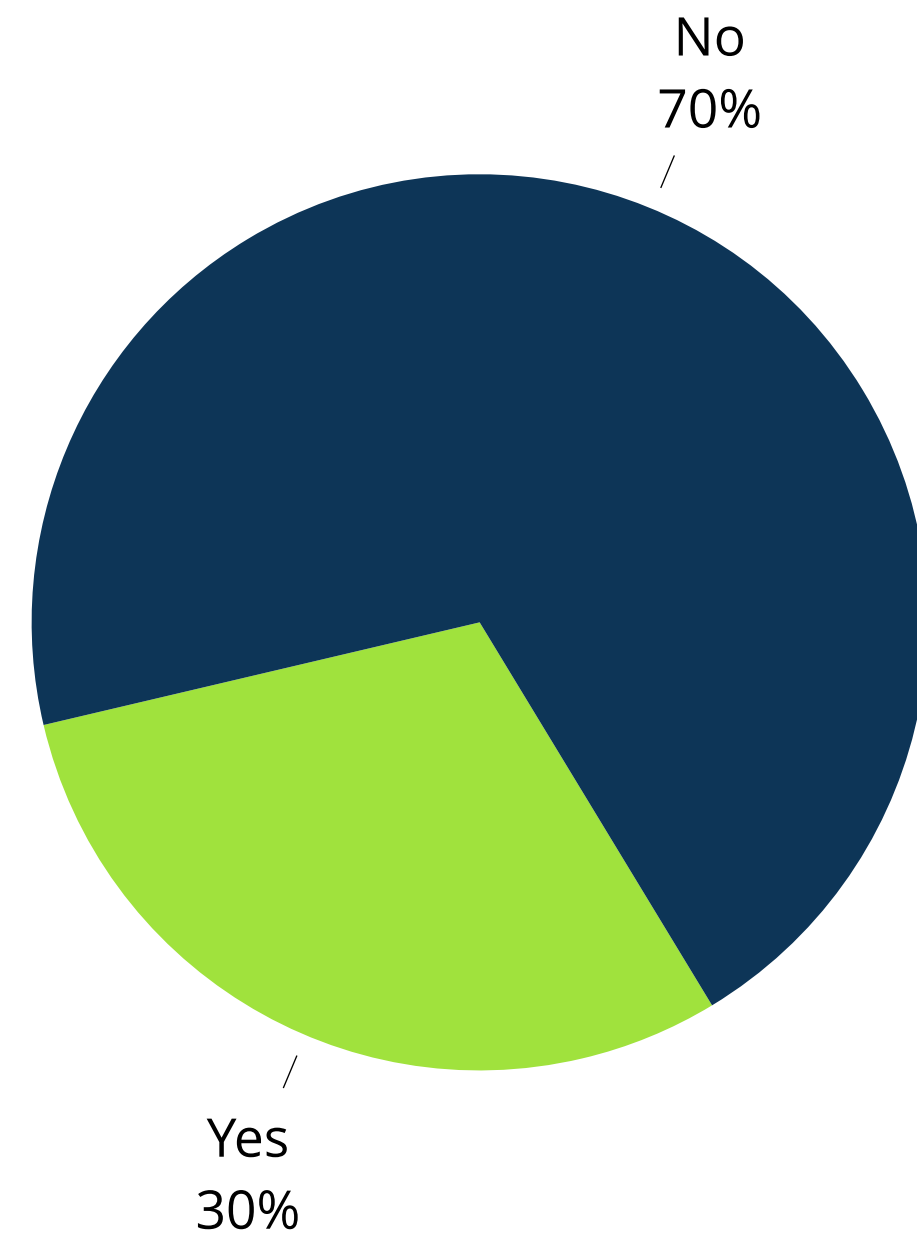
****Conflict** is a measure of the level of disagreement in a group. Higher conflict scores represent higher likelihood of internal resistance and failure.



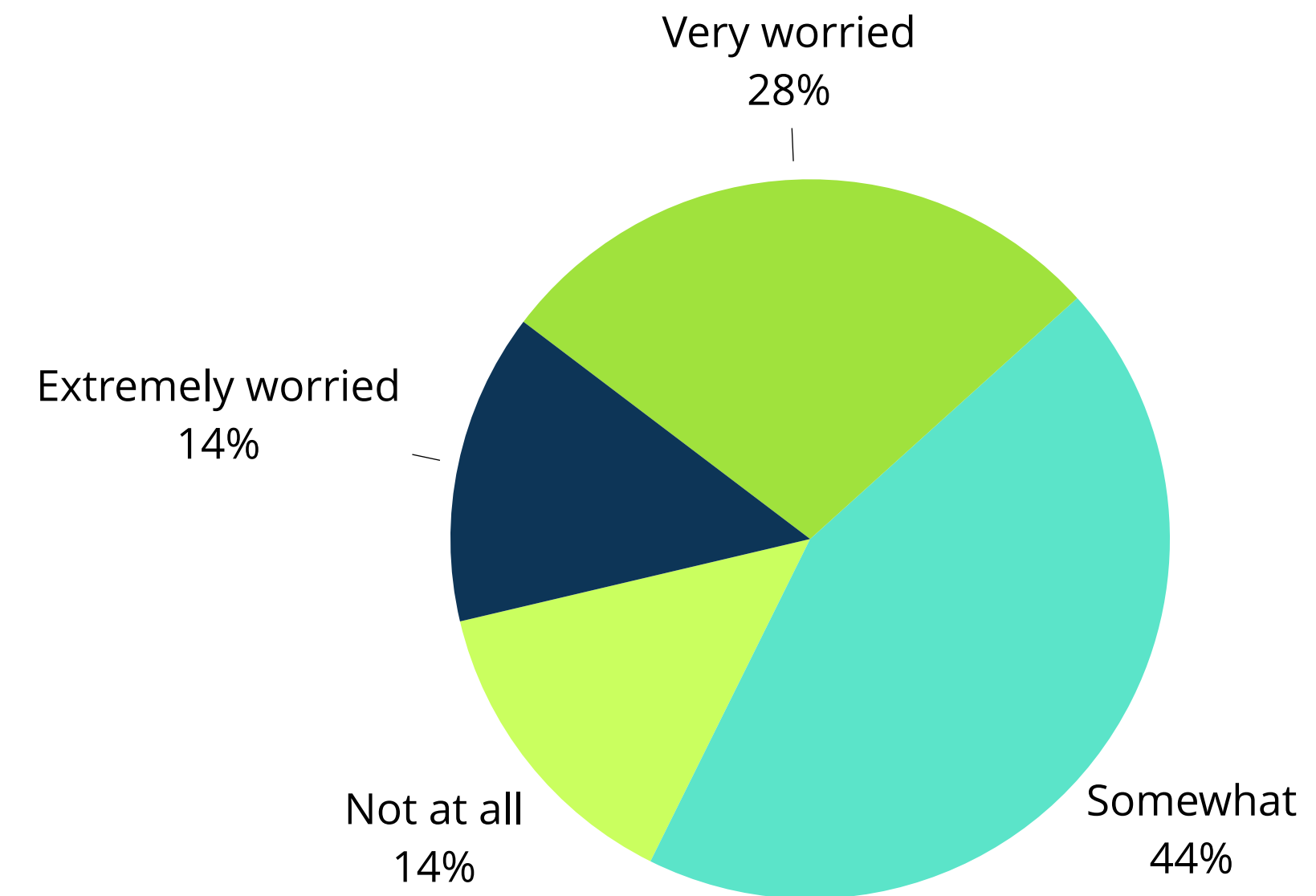
Survey Overview

Climate Change

Do you think the Municipality of Central Manitoulin should declare a climate emergency

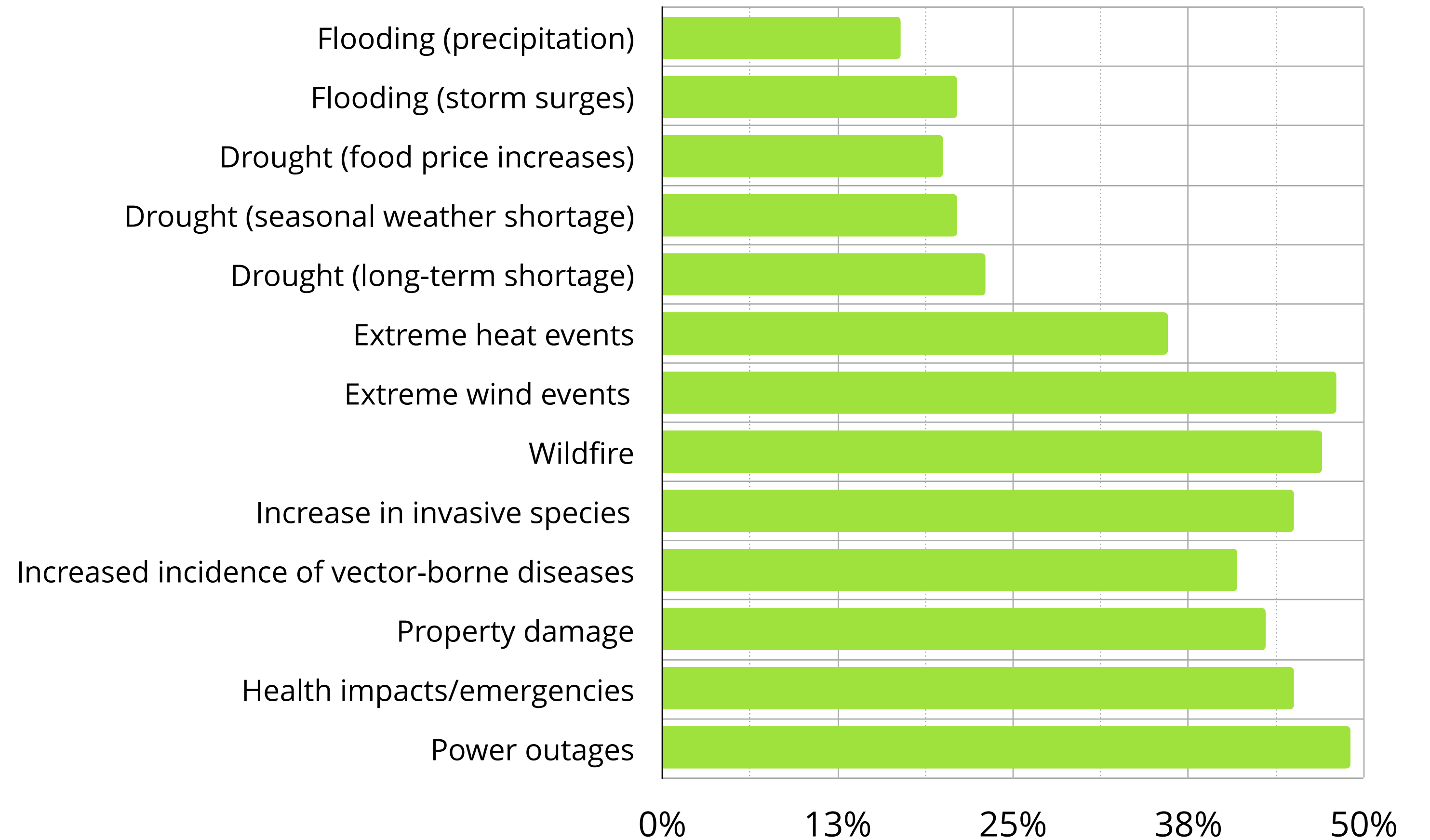


How worried are you about climate change?



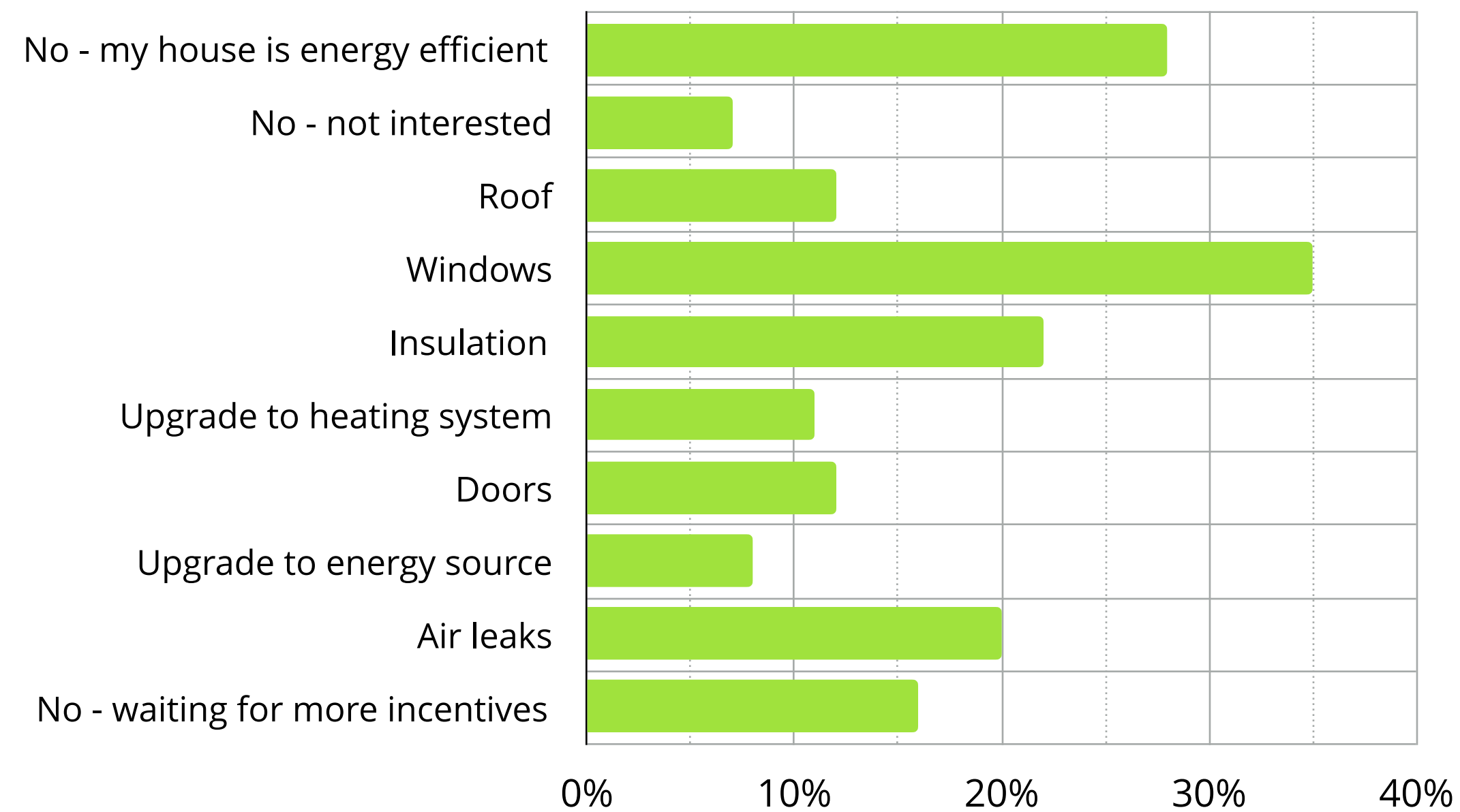
Climate Change

Considering the information provided above about the climate change hazards and impacts that will affect us on Manitoulin Island – Tell us the top 5 hazards and impacts that concern you most?

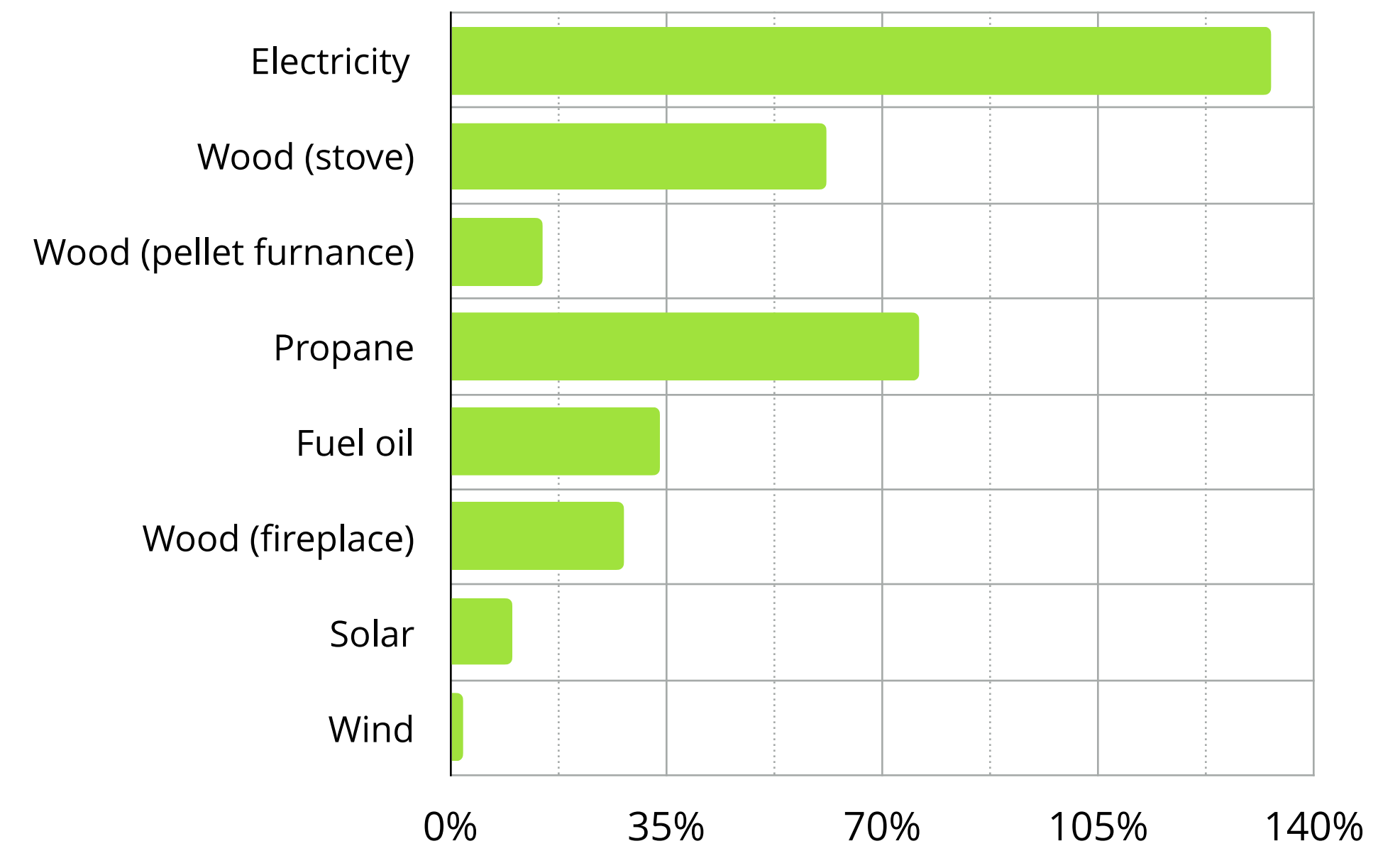


Homes, Buildings and You

In the next 5 years do you have any plans on making repairs or upgrades that will improve the energy efficiency of your home?

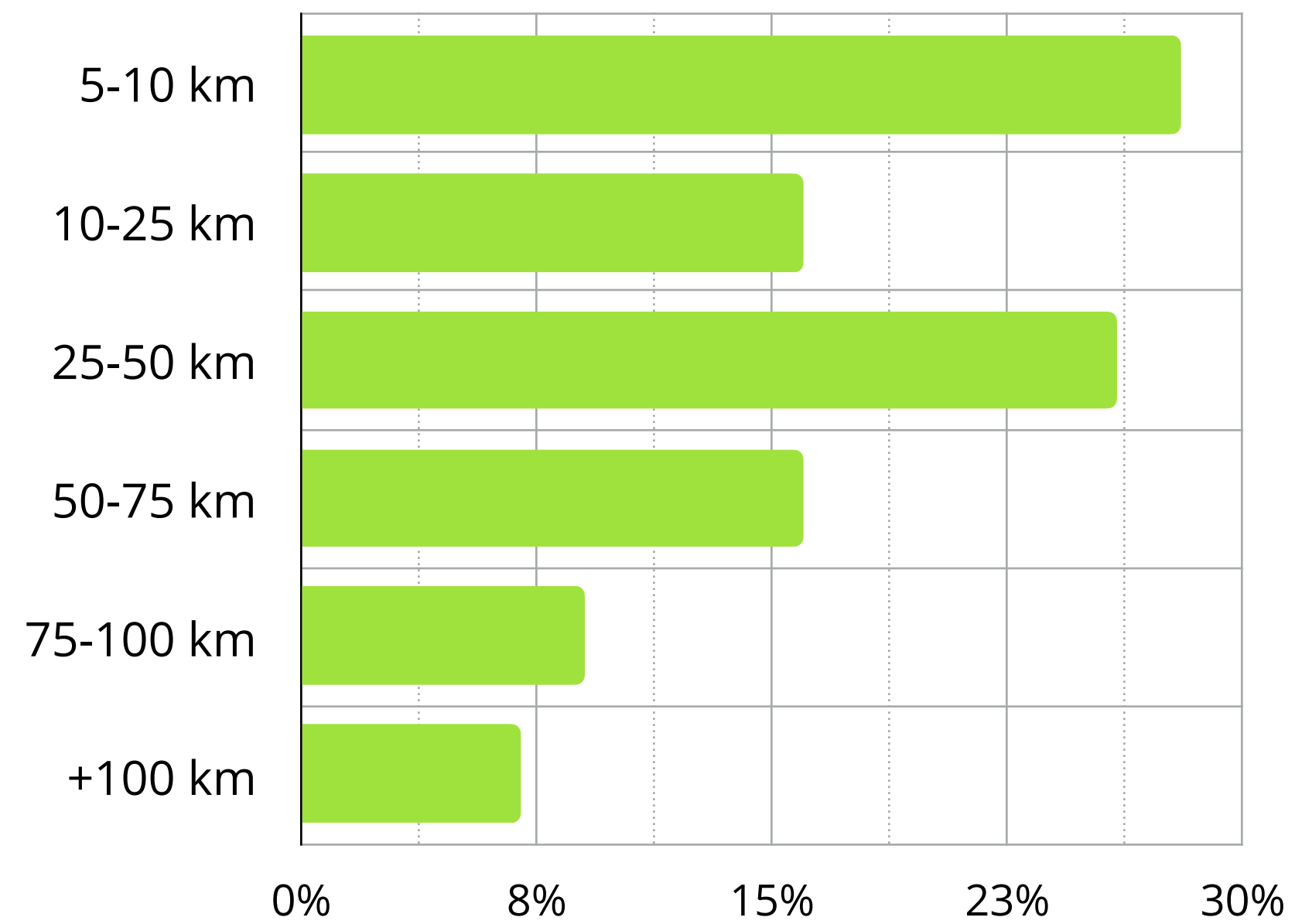


What type of energy source do you use to heat, cool, and power your home?

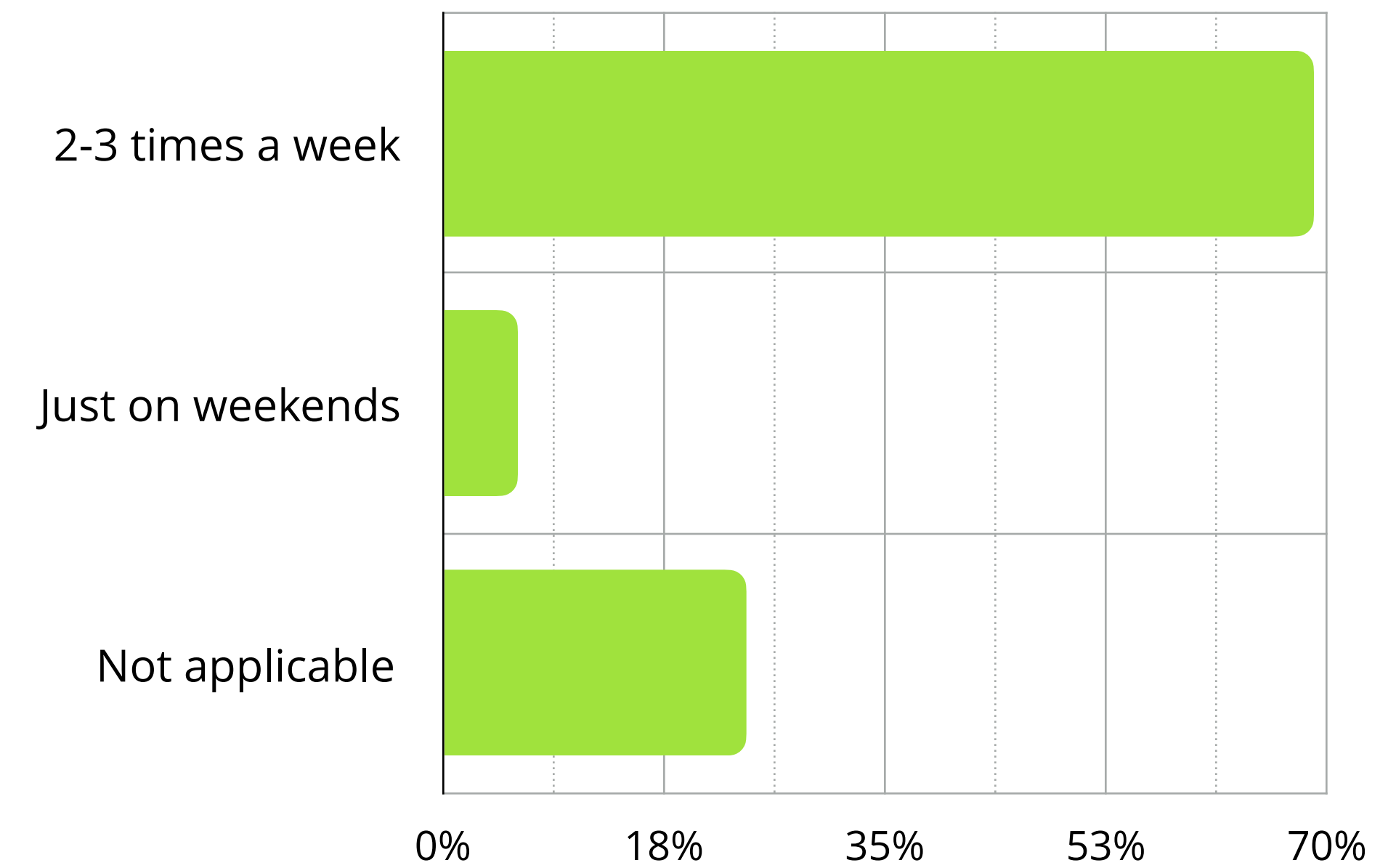


Transportation and You

If you are a regular commuter, how many kilometres is your round trip commute?

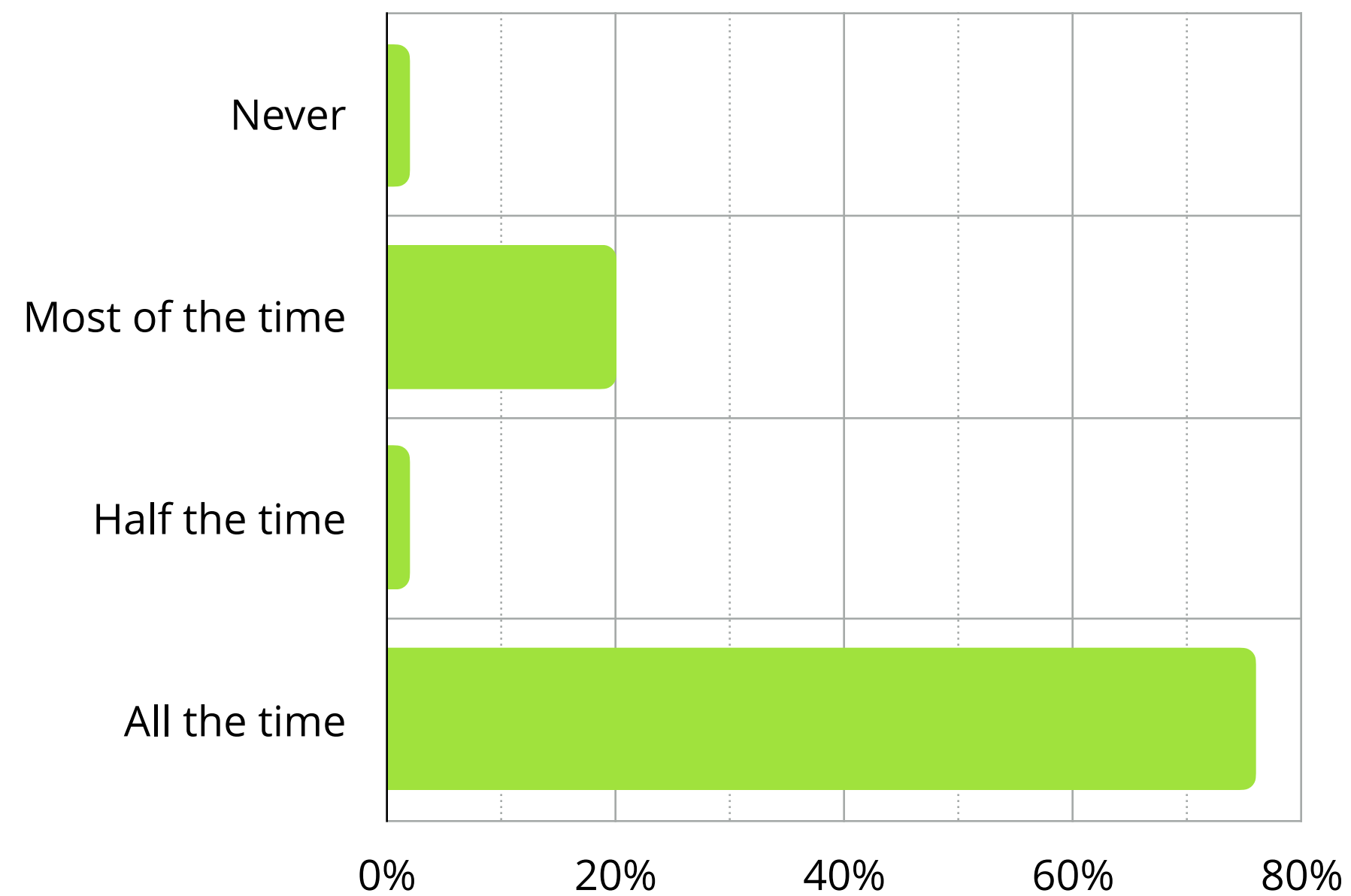


If you are an irregular commuter, how often do you drive?

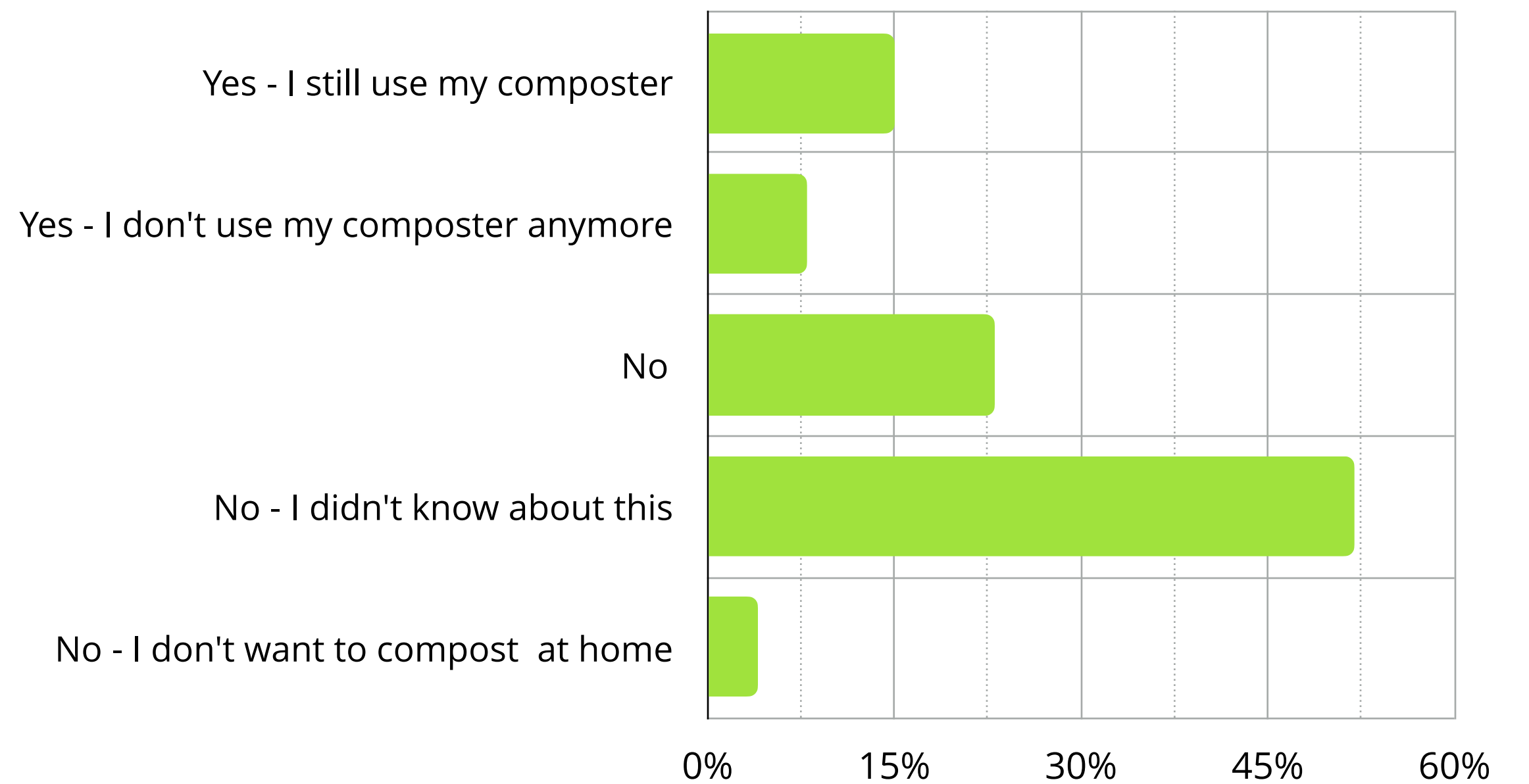


Waste Reduction and You

How often do you recycle?

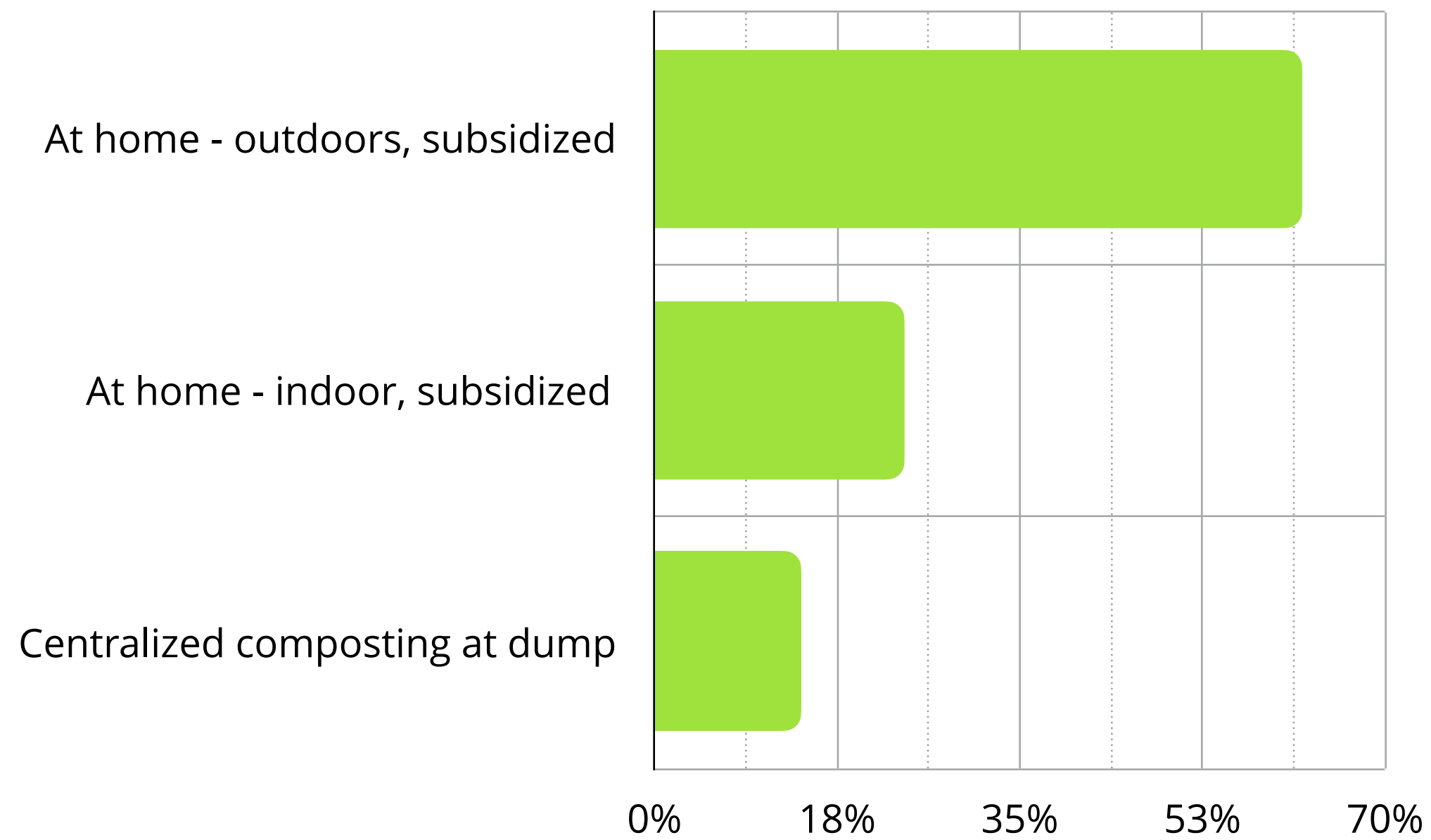


Please let us know if you participated in this program and if you are still using your composter purchased from the municipality?

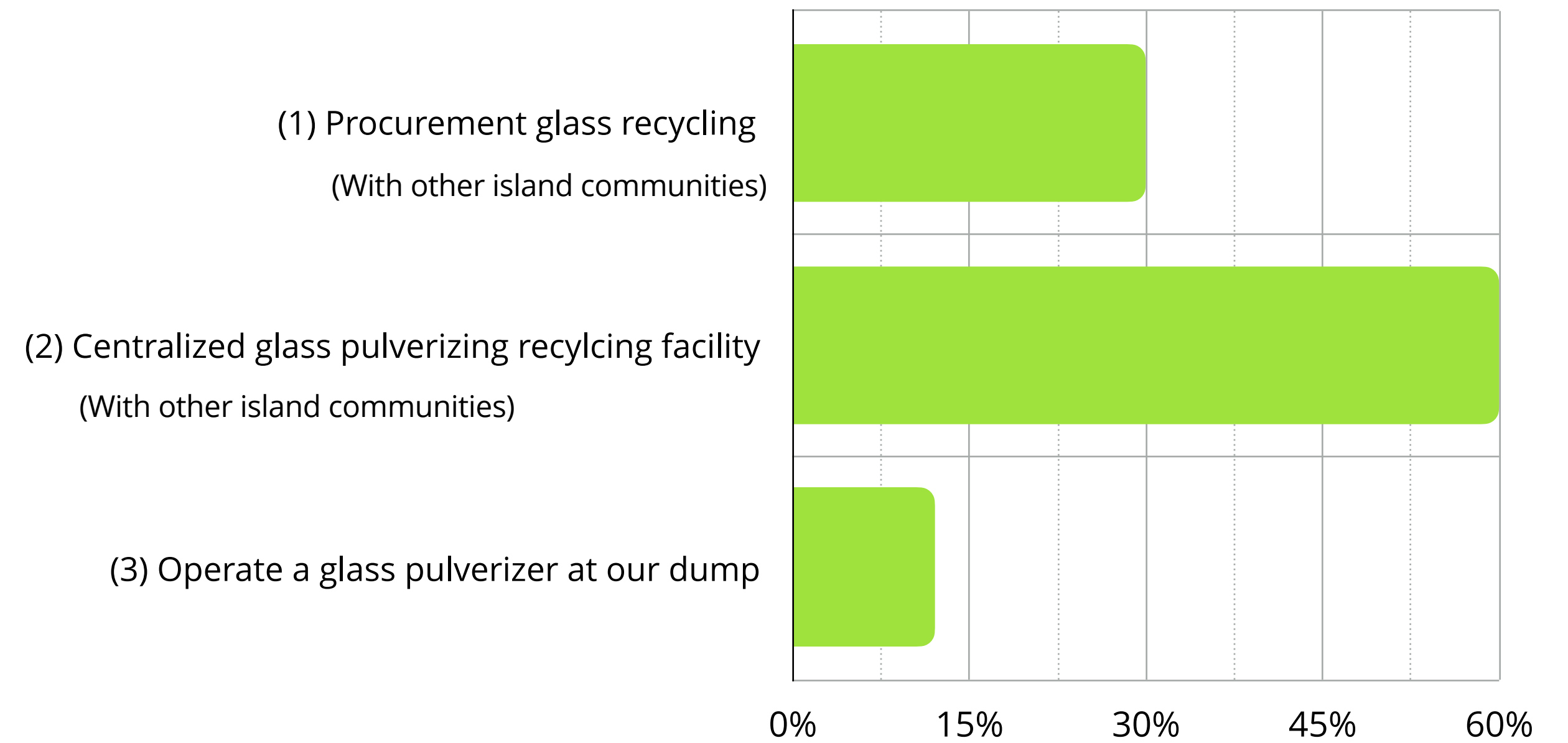


Waste Reduction and You

What composting solution would you be most likely to use regularly?



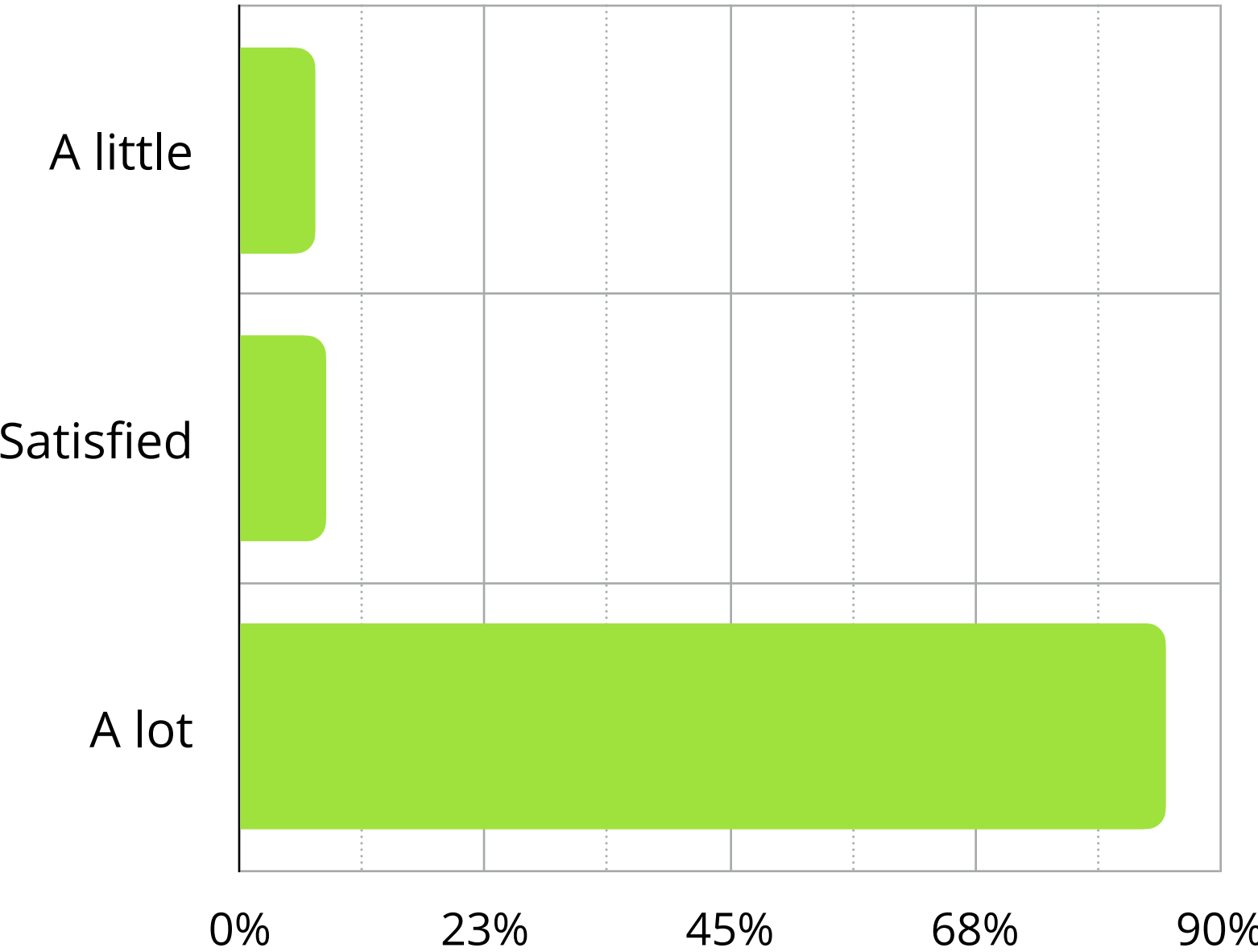
Which of the following glass recycling solutions do you think the township can and should pursue?*



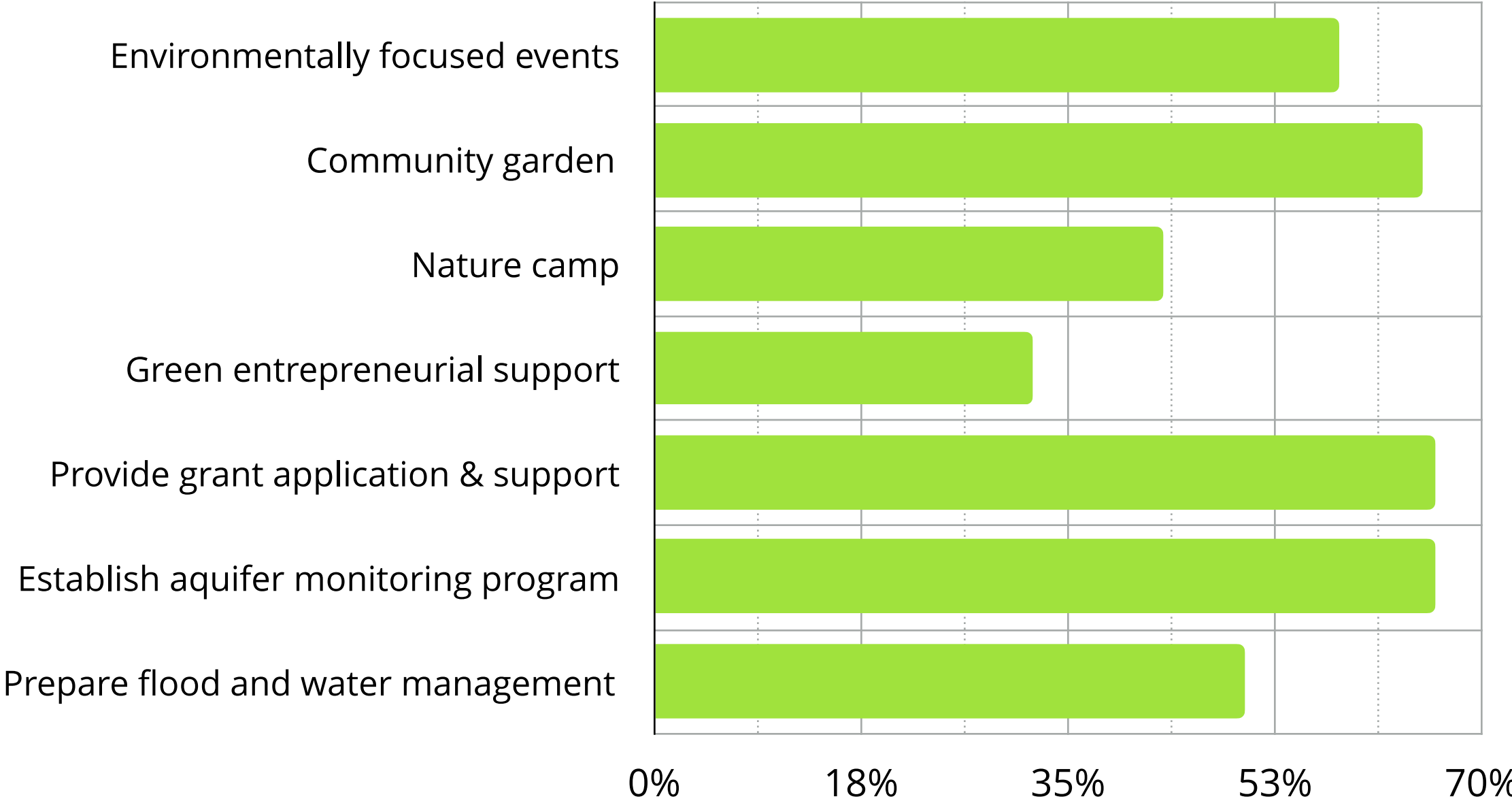
*Full titles: (1) Partner with other island communities to conduct a combined procurement for glass recycling. (2) Partner with other island communities to create a centralized glass pulverizing recycling facility that operates on renewable energy. (3) Operate a glass pulverizer at our dump - recycle the glass here on the island and make it into sand.

Shared Spaces

How much do you value our natural shared spaces?*



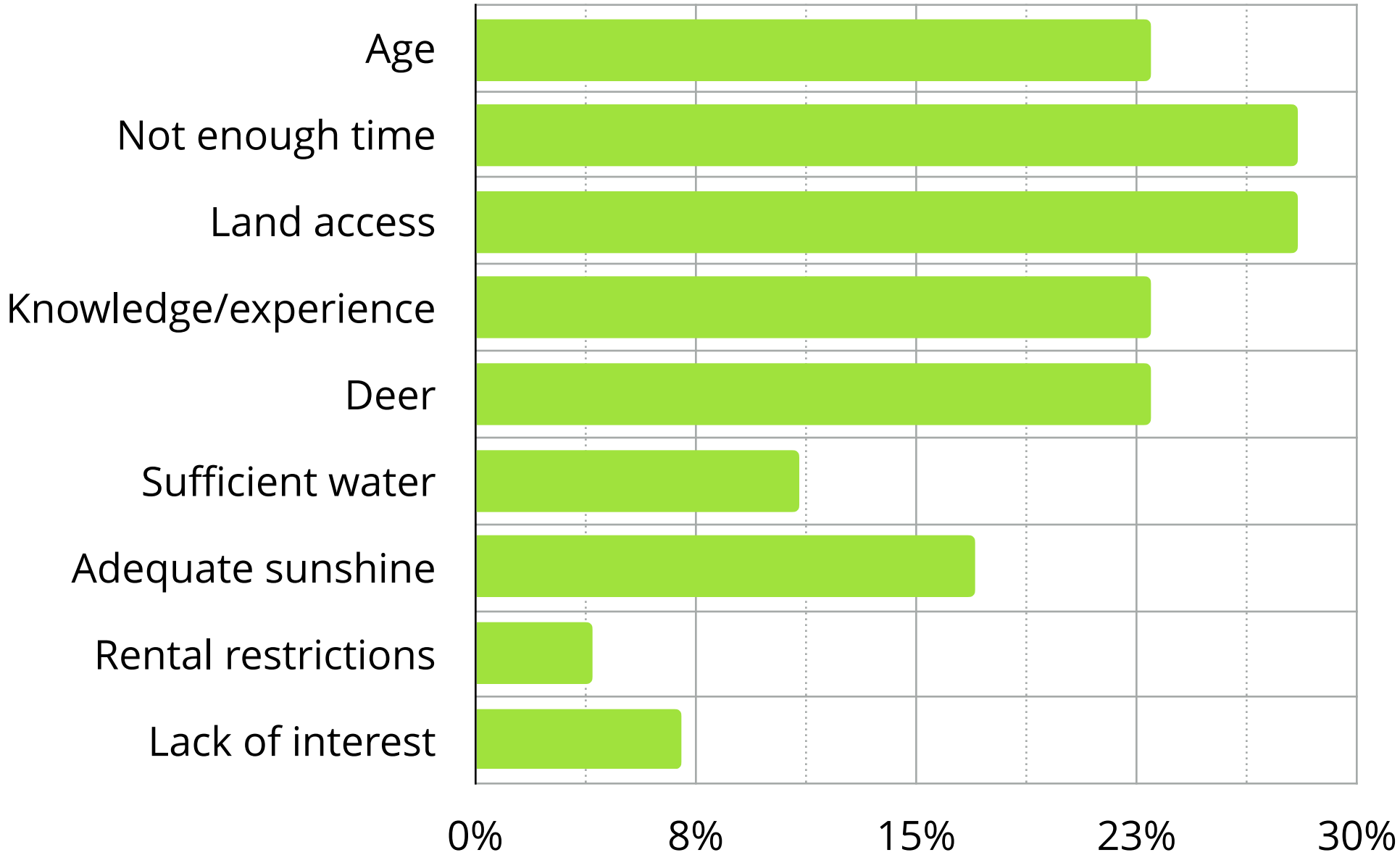
What are your top three priorities for our shared natural spaces?



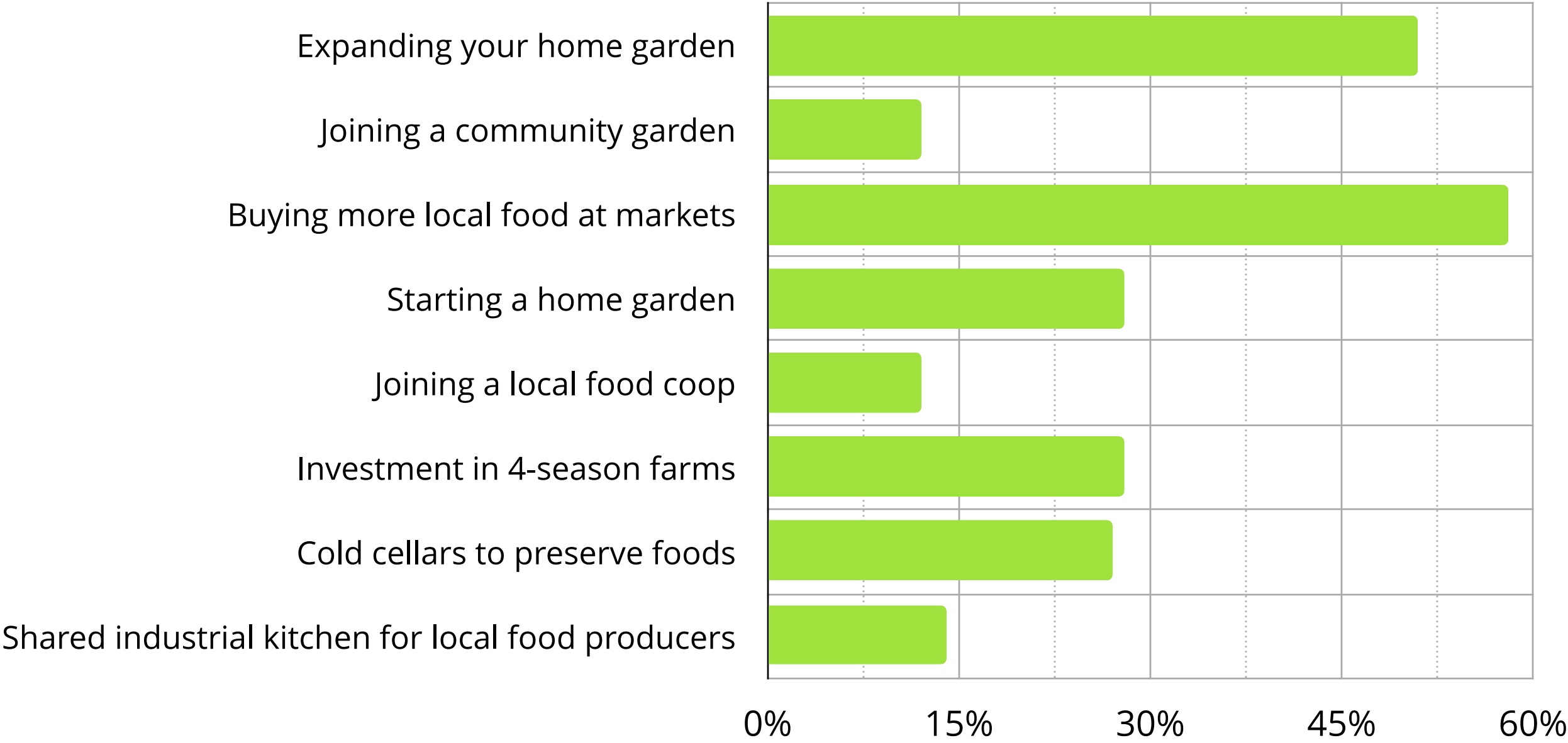
*Not Featured: Not at all - 0%

Food and Agriculture

What are the barriers for you to grow more of your own food and increase local food production?



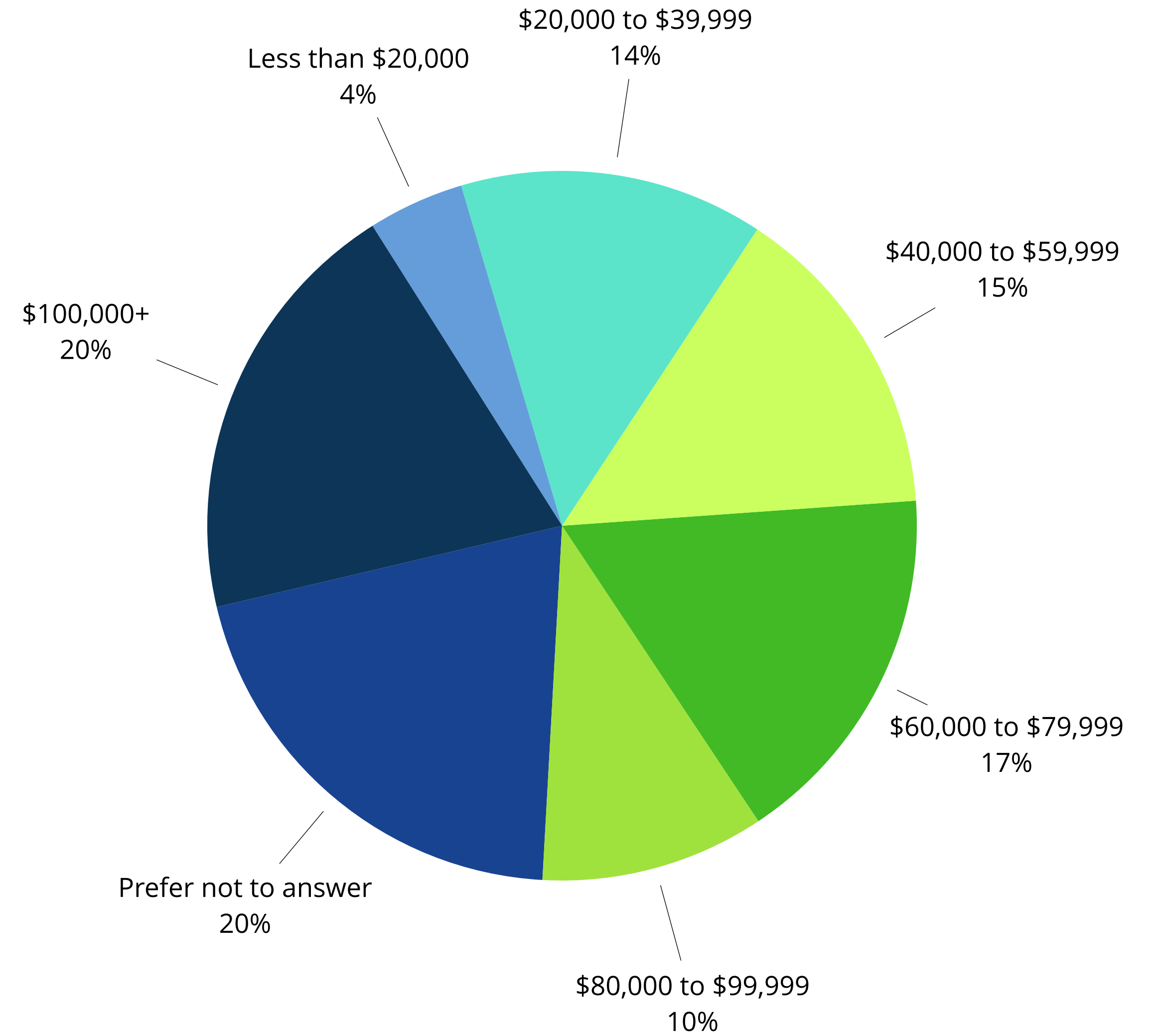
What method of local food production/consumption are you most interested in supporting?



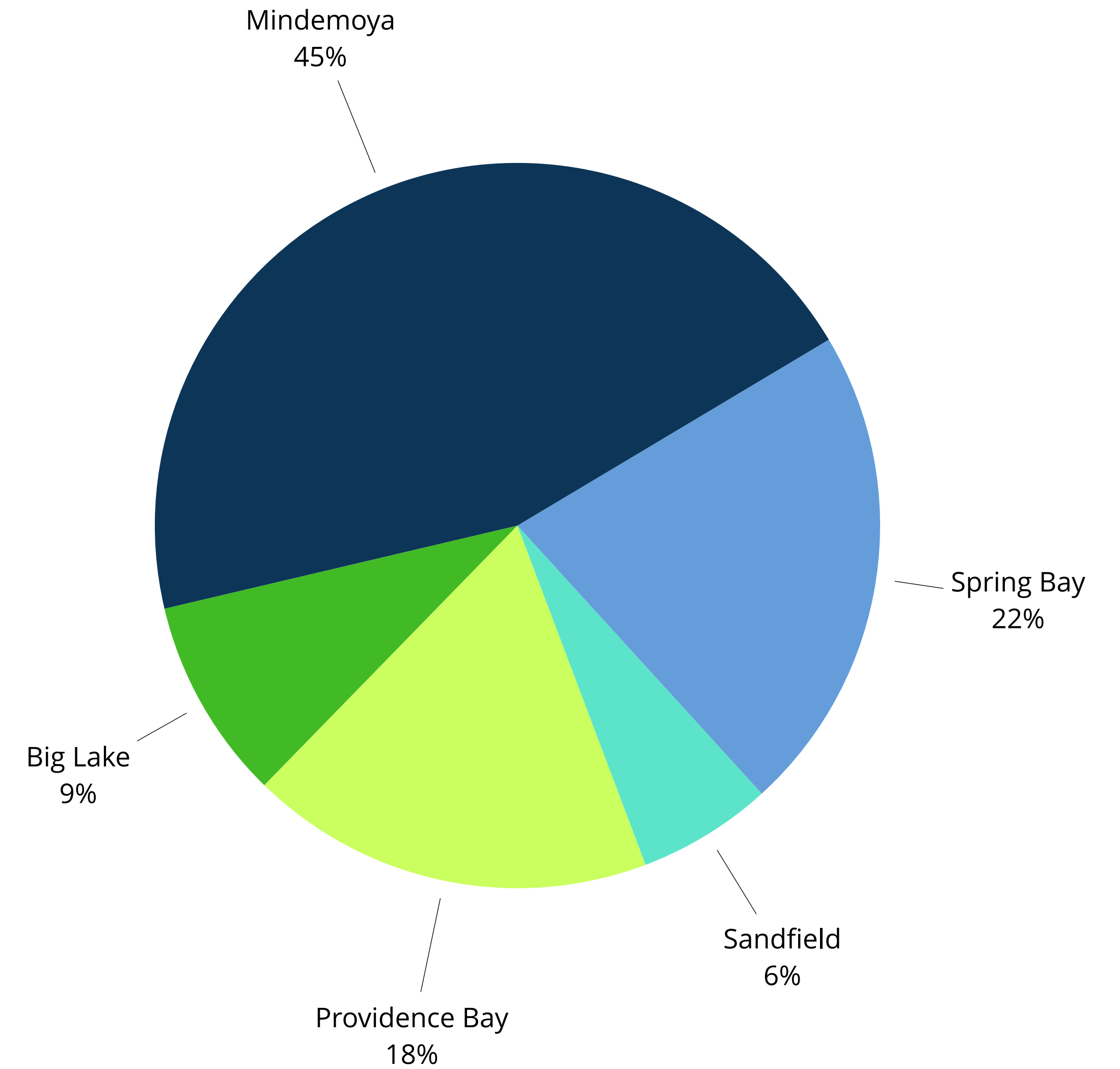


Demographic Information

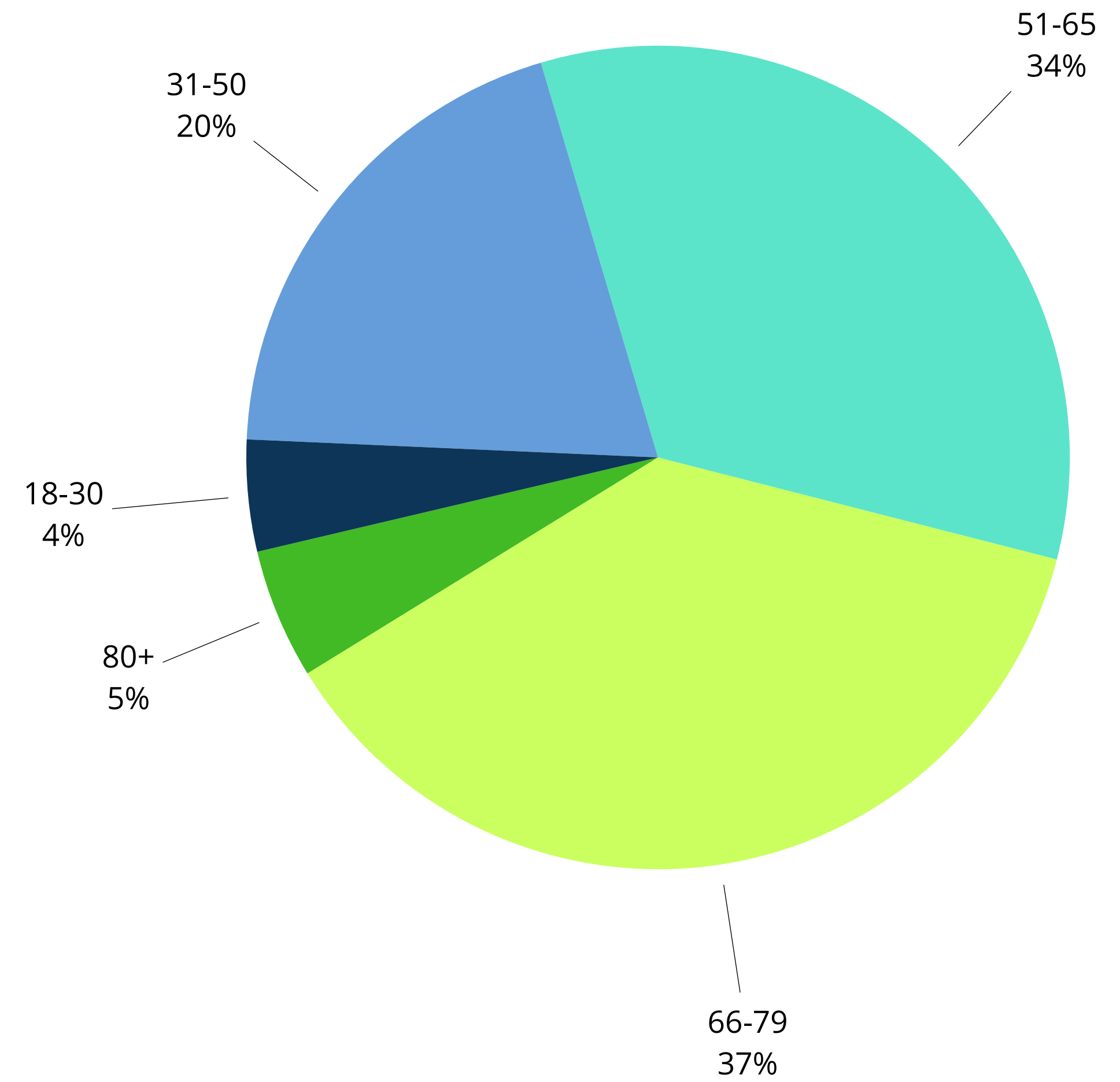
Household Income



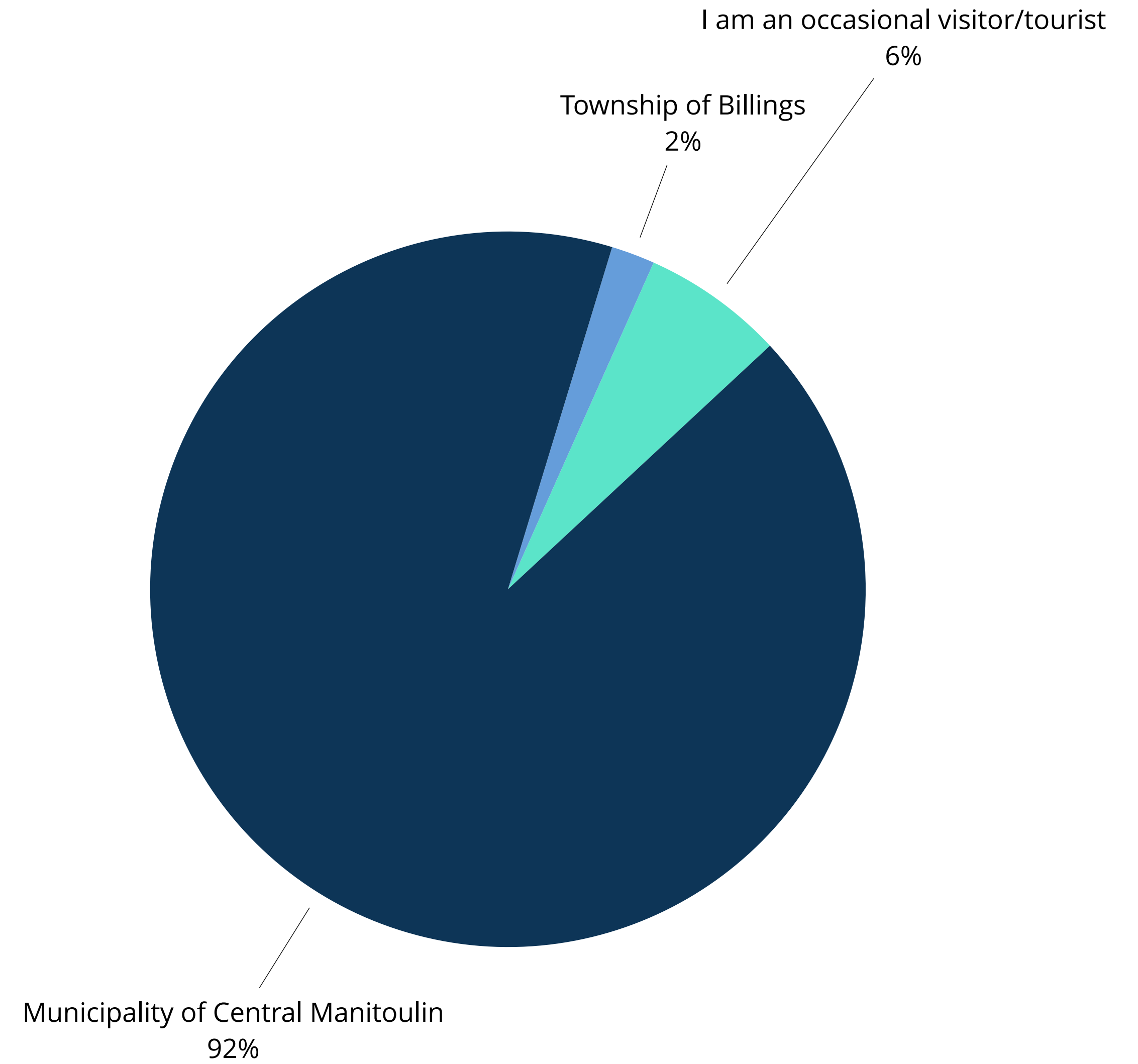
Where do you live?



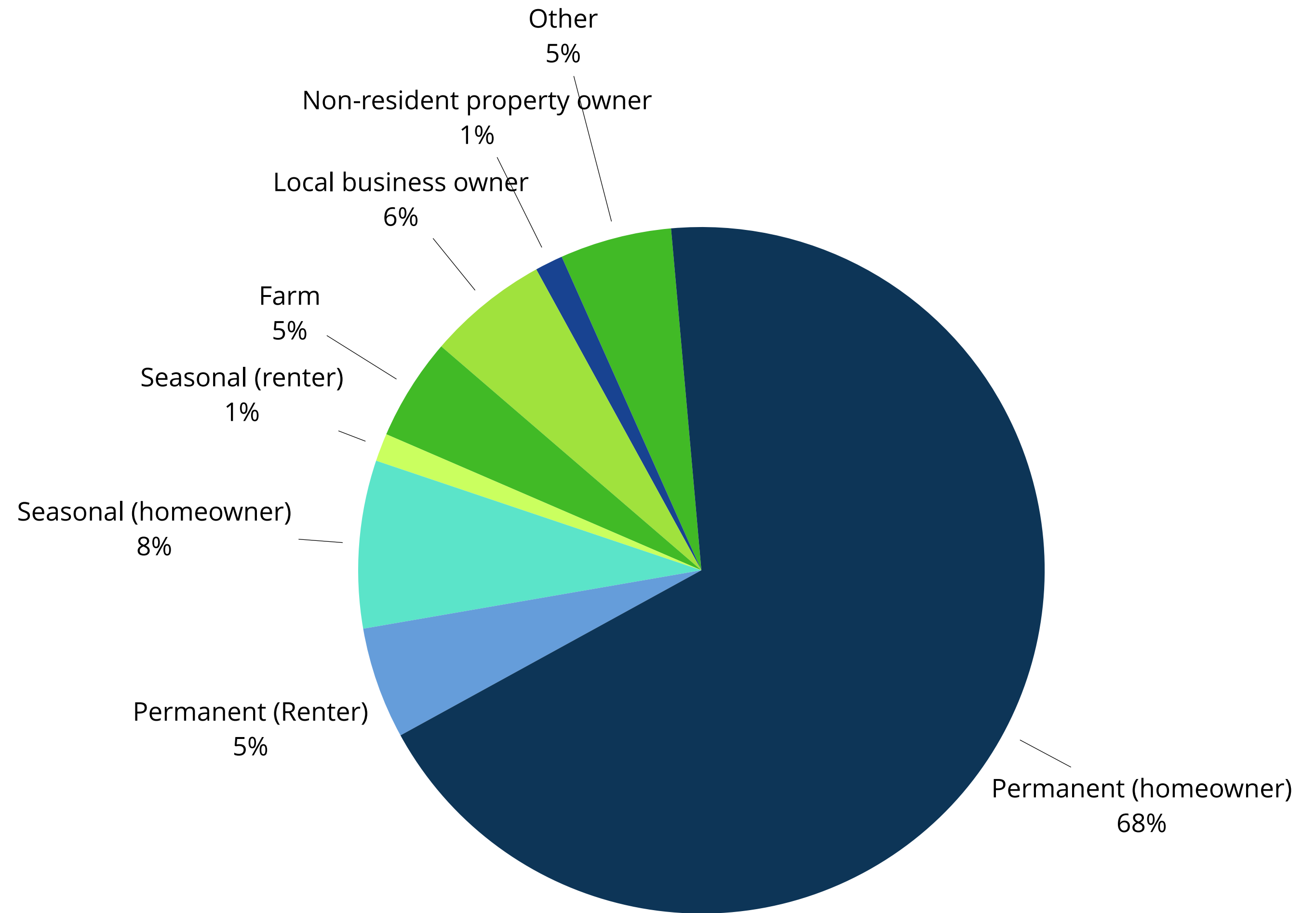
Age



Municipality/Township



Residency





ETHELO

Thank you!



APPENDIX

D. UPDATED GHG INVENTORY

Alterum updated GHG inventory in this section

Emissions and Energy Reduction Plan

Municipality of Central Manitoulin

Executive Summary



Executive Summary

In 2018, the Municipality of Central Manitoulin's emissions were 37,420.8 tCO₂eq. To meet international goals of carbon neutrality in 2050, the Municipality of Central Manitoulin must focus its efforts on electrifying transportation and space heating.

Prepared by Alterum.

May 18, 2021

Introduction

In response to this climate crisis, Alterum is developing an application to guide municipalities in meeting their greenhouse gas (GHG) emission targets. The Alterum application uses provincial grid energy intensity data and local information that has been collected as part of the Municipality of Central Manitoulin Community Energy and Emissions Planning (CEEP) process. Central Manitoulin contacted Alterum Inc. to update their community greenhouse gas (GHG) inventory after completing a community climate change engagement and survey, generating statistically significant and more reliable residential energy consumption data. This updated residential energy consumption data was then combined with corporate and community GHG measurements to determine a new baseline GHG inventory for 2018 of 37,420.8 tCO₂eq.

As part of the fight against climate change, Canada is aiming for carbon neutrality by 2050, and Ontario is aiming for an 80% reduction in emissions below the 1990 threshold. The movement is also engaged by many municipalities that regularly suffer the consequences of climate change such as floods, forest fires, etc. Municipalities have a major role to play in the fight against climate change, not only to adapt to the changes but also to reduce the impact on their communities. To achieve these objectives, a concrete and coordinated action planning must be put in place at all levels: federal, provincial and municipal.

This report provides an overview of the new GHG inventory for 2018 for the Municipality of Central Manitoulin and what it will take for our community to meet a 50% reduction in GHG emissions by 2030 and reach net-zero by 2050. These estimates will then be used in the CEEP and for ongoing monitoring of GHG emissions to help the Central Manitoulin begin to track and manage progress towards GHG reduction in township operations and in the community.

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Emissions profile	2
Energy profile	3

Planning the Municipality of Tomorrow	4
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Setting reduction targets	4
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The cost of doing nothing	5
A new need for electricity	6
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1. Description of the methodology to create a community energy and emissions profile

Local governments of the future will be energy efficient, carbon neutral and resilient communities. The Community Emissions Energy Profile (CEEP) is one approach to achieving this goal. Many organizations around the world advocate its use. It is intended to provide a framework for planning greenhouse gas reductions for an organization, such as a business or municipality. The Federation of Canadian Municipalities (FCM) has adopted the Partners in Climate Protection (PCP) Protocol, a protocol adapted from ISO 14064, to guide and assist local governments on their journey towards the Canadian government's 2050 carbon neutrality target. The Municipality of Central Manitoulin officially joined PCP and began using the protocol to measure GHG emissions in May 2019. Capacity to begin tracking and measuring corporate and community GHG emissions was made possible by a staff grant from FCM's Municipalities Climate Innovation Program (MCIP).

A first version of the corporate and community GHG emissions was approved by the Municipality of Central Manitoulin in June 2020. Following the approval of the first GHG inventory the following areas were identified by community members, municipal staff, Council, FCM and ICLEI to improve the baseline inventory and help inform climate action planning priorities for the CEEP:

- Waste emissions from municipal waste sites were reported in the community emissions section and did not apply PCP protocol recommended standards for waste sites with no leachate and methane gas collection
- Residential energy and emissions data was only available for electricity consumption - resulting in unreliable estimates for propane, wood and other residential energy uses
- Agricultural emissions were based on hydro one and local cattle reports and it was identified that more reliable information directly from this community demographic could be beneficial to improve

- Community transportation data relied up provincial driving averages, United Manitoulin Island Transit, a local transit system co-op began operating and collecting specific ridership and driving habit data and
- Recreational vehicles like boats, ATV's and other types of gas power or electric transportation was not accounted for

In April 2020, the Climate Action Committee (CAC), a committee of Council, was appointed to work with municipal staff to set GHG targets and create a Community Energy and Emissions Plan (CEEP). After reviewing the GHG Inventory - the CAC made a recommendation to Council to engage the social enterprise Ethelo to obtain community feedback through an online survey to build community consensus on GHG target setting and improve residential energy consumption, transportation and waste management data. The most reliable and applicable data from this survey was accurate, statistically significant residential consumption data. Other notable data adjustments that have been made throughout the community consultation process after the first GHG inventory was approved include, improved recycling and housing data from MPAC and acknowledgement from CAC members and municipal staff that there will be some error in the collection of data but this will be improved overtime and with regular upkeep of GHG inventory data.

Central Manitoulin Energy and Emissions Profile (2018)

The energy and emissions profile is the starting point for beginning greenhouse gas reduction planning in a community. It helps to understand where to start and to discover opportunities for greenhouse gas reduction.

a) Introducing Central Manitoulin

Central Manitoulin is located in Ontario in the Manitoulin District and has a population of 2,084.

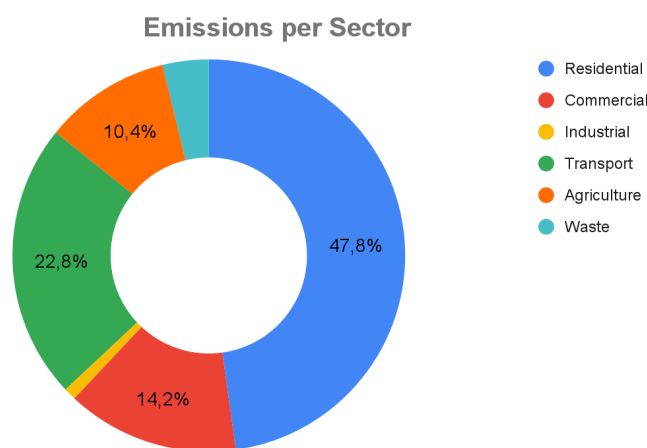
Demographics of Central Manitoulin

	Number of units
Population	2,084
Residential buildings	960
Commercial and institutional buildings	207
Light vehicles	1,245
Heavy vehicles and other vehicles	155

b) Emissions profile

Using survey data provided by the town and data provided by the electricity distributor Hydro One, Alterum was able to create a specific energy profile for the residential sector of the municipality. For the sectors, municipal operations, commercial and agricultural emissions - the data was taken from the Municipality of Central Manitoulin's first GHG Emissions Inventory that was approved April 2020 - as these baselines were considered to be more accurate than the community residential energy information.

Community emissions for 2018 are estimated at 37.4 ktCO₂eq, or 18 tCO₂eq per capita. For comparison, [the Ontario average is 11.2 tCO₂eq per capita](#). The total emissions for the municipal corporate assets were 388 tonCO₂eq in 2018.



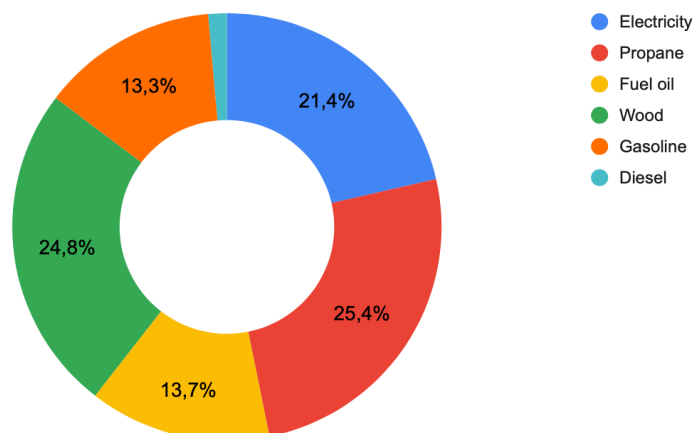
The main greenhouse gas (GHG) emission sectors are residential (47.8%), road transportation (22.8%) and the commercial sector (14.2%). Combined, these three sectors are responsible for 84.8% of the total emissions within municipal boundaries. The remainder of GHG emissions comes from the industrial sector (1.0%), agriculture (10.4%) and waste sector (3.8%).

The residential sector is the sector with the most GHG emissions. This is explained by the fact that many fossil fuel heating systems are still present in the municipality.

c) Energy profile

Total energy consumption for the entire municipality is estimated at 119.8 MWh.

Energy Distribution per Resources



The non-access to the natural gas network in the community explains a significant use of resources such as propane (25.4%) and wood (24.8%). Electricity represents 21.4% of the total energy used in the community. In Ontario, 60% of the towns electricity is produced by nuclear energy, 25% by hydroelectricity and the rest by various sources. This electricity mix is therefore found in the town's energy mix. Fossil fuels are still present (gasoline, diesel, propane, heating oil) and are used mainly for vehicle operation and building heating.

With a full energy and emissions profile the municipality can initiate the creation of a greenhouse gas reduction plan.

3) Planning the Municipality of Tomorrow

a) Set a base year

A baseline year is used to measure the impact of actions taken and to verify the results achieved. The baseline year for Central Manitoulin is the most recent year for its emissions profile update, which is 2018.

b) Setting reduction targets

The IPCC experts believe that we need to be [carbon neutral by 2050](#) to limit global warming to below 1.5°C. It is in this sense that Canada wishes to be net-zero by 2050. Ontario is aiming for an 80% reduction in emissions below the 1990 threshold, and has also set an intermediate target for 2030: reduce emissions by [30% compared to the 2005 threshold](#). Central Manitoulin has set the following goal:

- **2030: 50% GHG reduction compared to 2018**
- **2050 : Carbon Neutrality achieved**

Carbon neutrality means that the municipality emits as much GHG as it absorbs. To achieve this goal, as many emissions as possible must be removed from the town and the remaining emissions offset.

To reach these objectives, we must prioritize the most emitting sectors and look at the solutions that are available to reduce our emissions.

c) Identification of opportunities

With 48% and 23% of emissions, the transportation and heating sectors are respectively the two sectors to prioritize to reduce emissions in Central Manitoulin. The solution in both cases is to electrify, that is, to replace equipment that runs on fossil fuels with electric equipment.

Residential heating: 17,420 tons of CO₂ are due to the presence of fossil fuels for space and water heating. It is estimated that the community still contains these heating equipments:

- 109 oil furnaces
- 606 wood furnaces
- 381 propane equipment.

Solution: Replace furnaces and other equipment running on fossil fuels with efficient electric heating systems. An average of 35 equipment will need to be replaced per year over the next 30 years.

Commercial heating: 4,520 tons of CO₂ are attributable to the use of fossil fuels for space and water heating in the commercial sector.

Solution: Replace oil-fired boilers with electric systems.

Transportation: There are 1,400 vehicles at Central Manitoulin emitting 8,520 tCO₂eq, this represents an annual average of 5.87 tCO₂eq / vehicle.

Solution: Replace gasoline vehicles with electric vehicles. Annually, 45 vehicles should be replaced by electric vehicles annually to achieve a 100% electric vehicle fleet by 2050.

Electrifying transportation and space heating would reduce the municipality's emissions by 71%. The remaining 29% could be removed with case-by-case measures and finally by using local offsets. Thanks to the accessibility of solutions and Ontario's almost clean electricity, carbon neutrality is achievable by 2050.

d) The cost of doing nothing

Currently, the carbon pricing system in place in Ontario is the federal carbon tax. This financial mechanism is designed to send a price signal to consumers and industries to reduce their greenhouse gas emissions.

However, the carbon tax and the carbon market are causing a leakage of capital from the community to governments and to California via carbon market offsets. The price per ton of carbon emitted is expected to increase in the coming years. For example, the federal government plans to increase the federal tax to \$170 per ton of CO₂ by 2030. This would result in an average cost of \$3,058 per capita per year in Central Manitoulin. On a community-wide basis, that would be **\$6,361,533 per year**, which would leave the municipality. Doing nothing will not only have an impact on the environment but also on the overall community budget.

4) A new need for electricity

Using Ontario's clean electricity is the most attractive option for reducing municipal emissions. Meeting the 2030 and 2050 targets means electrifying uses such as heating and transportation. To meet the targets, sufficient electricity must be available to meet all demand. To do this, Central Manitoulin can use several processes:

- Increase the supply of electricity through the electrical grid, assuming that electricity providers will have the capacity to supply electricity at all times and in sufficient quantities
- Implement energy reduction measures in buildings. This reduces energy consumption in buildings and makes electricity available for other uses.
- Produce energy locally and set up a micro-grid. This allows us to gain energy resilience, to adapt to climate change and to anticipate possible breakdowns on the main grid.

Conclusion

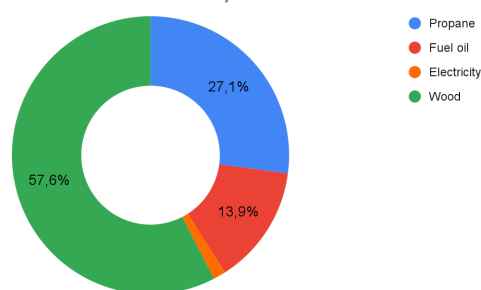
Central Manitoulin has a higher per capita emissions record than the Ontario average (18 tCO₂eq for Central Manitoulin versus 11.5 tCO₂eq for the Ontario average). In order to limit global warming to 1.5°C by 2050, it is necessary to achieve carbon neutrality by 2050. Achieving this goal is possible if measures to reduce greenhouse gas emissions are taken as soon as possible. Central Manitoulin's best opportunity is to electrify transportation and space heating. Electrifying these uses would reduce the town's emissions by 71%. The remaining emissions can be eliminated through individual measures and the purchase of local offsets.

Methodology to improve the Energy and Emissions Profile

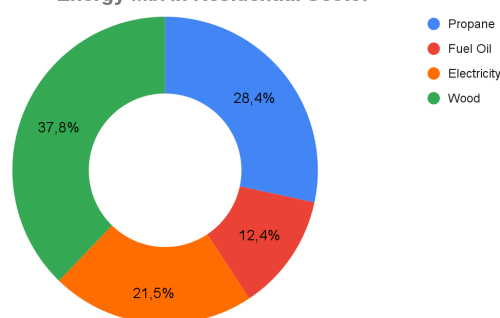
Residential Sector

The residential sector is the sector emitting the most GHG emissions in Central Manitoulin, with a total of emissions of 17,885 tCO₂eq for 2018. The main GHG source is wood, which was accounted as non-renewable source, followed by the propane. Since electricity emits much less greenhouse gases, a solution to reduce GHG emissions in Central Manitoulin would be to electrify usages, especially space heating. The following pie charts present the energy mix and the emission sources for Central Manitoulin.

Emissions Distribution in Residential Sector (Updated Profile)



Energy Mix in Residential Sector



The rurality of the community has repercussions on multiple aspects:

- A singular energy mix : no natural gas access, a high usage of fossil fuels like propane and heating oil and a high usage of wood,
- Seasonal residents who live on the island only a part of the year.

In its GHG inventory, the Municipality of Central-Manitoulin assumes that home heating is distributed evenly among the various resources. Thanks to the survey data carried out within the community, as well as the data collected by the electricity distributor Hydro One, Alterum was able to create an energy profile specific to the community. The following adjustments have been made to the original profile:

- Energy mix
 - Based on the survey for Central Manitoulin, a new energy mix was extracted for the community, which is closer to reality than the energy profile from the inventory (the table below shows the differences between the two profiles).
- New usages repartition
 - As Central Manitoulin is a rural community, the distribution for heating and non heating usages is not the same as in urban areas. In this case, Alterum platform suggests the following distribution of usages:

- 85% for space heating,
- 15% appliances.

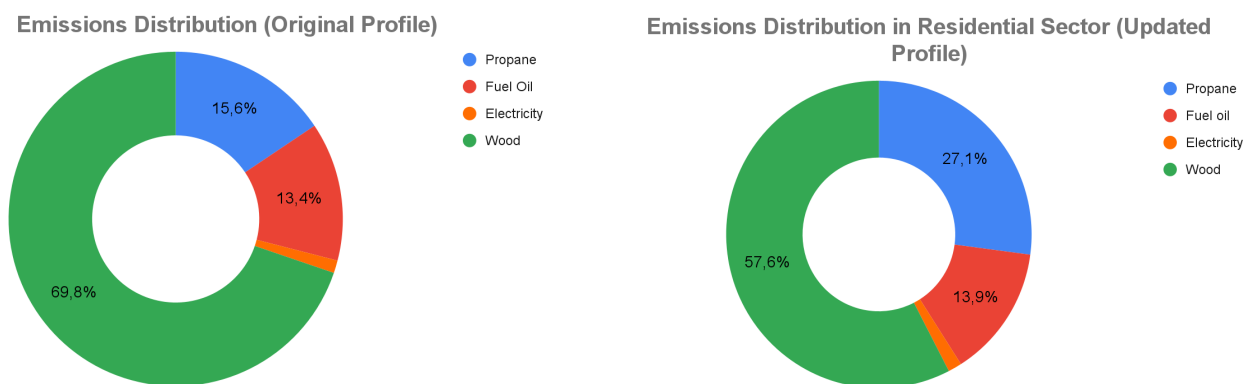
Energy type	Original Profile	Updated Profile with Survey Data
Electricity	25.0 %	21.5 %
Propane	25.0 %	28.4 %
Heating Oil	25.0 %	12.4 %
Wood	25.0 %	37.8 %
Total	100 %	100 %

Data provided by Hydro One suggests a total consumption of 16,220,812 kWh for the residential sector for the year 2018. The energy profile constructed with survey data suggests that electricity accounts for 21.5% of total energy consumption in the residential sector. The complete energy profile can therefore be represented in the following table.

Energy type	Energy Distribution (%)	Energy Distribution (kWh)
Electricity	21.5	16 220 812,5
Propane	28.4	21 379 124,3
Heating Oil	12.4	9 311 381,1
Wood	37.8	28 481 871,5
Total	100	75 393 189,4

Using survey information and data provided by Hydro One, the profile takes into account hypotheses such as the effect of the seasonal residents. The profile could be even more accurate with a more specific survey of the population.

Total emissions are estimated at **17,885 tCO₂eq for 2018**. Central Manitoulin's municipal inventory yields emissions of **16,004.17 tCO₂eq for 2018** for the residential sector. The two pie charts present the differences between the original profile and the Updated profile.



Other Sectors

For other emissions sectors, Alterum was also able to compare its methods with those presented in the inventory made by the town. The results varied while remaining in a correct order of magnitude. The differences between the results observed can be explained by the different methodologies used, as well as the different conventions.

For example, for the road transportation sector, the inventory made by the municipality the Vehicle Kilometres Travelled (VKT) method was adopted to estimate emissions within the town, based on data from the Ontario Ministry of Transportation. This method has the advantage of taking into account all road transport within the town. This method yields emissions of **8,521.05 tCO₂eq** for the transportation sector.

Alterum calculates transport-related emissions using a method based on the distribution of the population in an area as well as the number of vehicles recorded in a community. Although this method does not take into account all of the road traffic in the municipality, it generally makes it easier to plan the electrification of vehicles. This method yields emissions of **6,383.29 tCO₂eq** for the transportation sector.

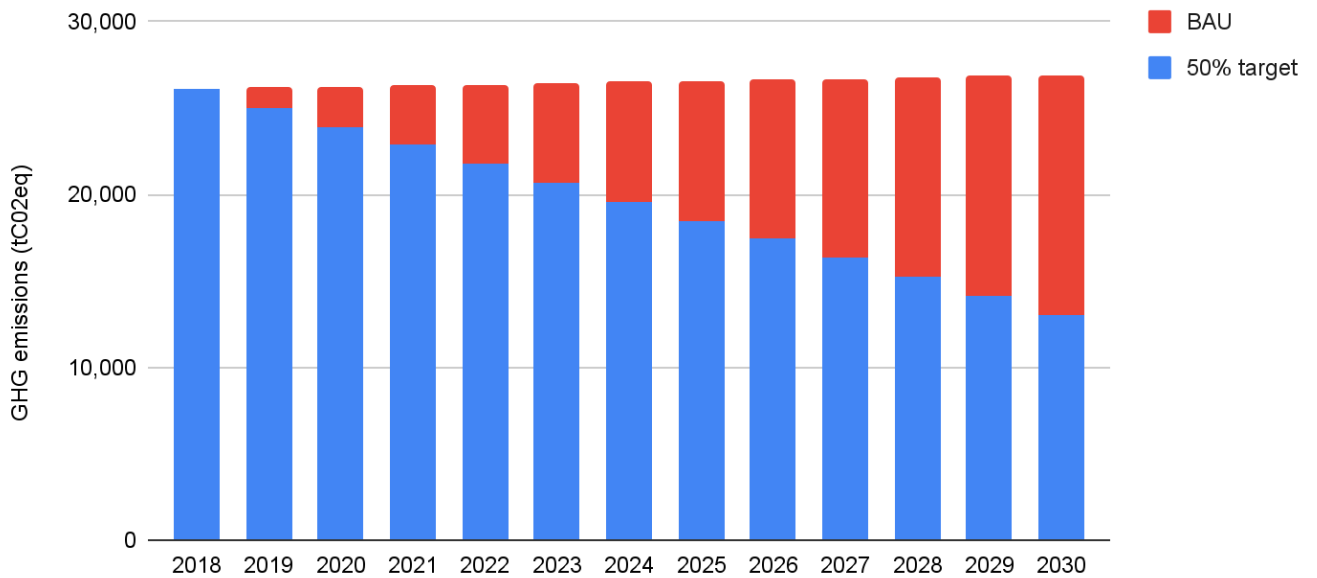
Both methods are valid and are more a matter of choice. It was therefore decided to use the results obtained in the municipality's GHG inventory. For the other sectors, the figures presented in the

Central-Manitoulin inventory were used.

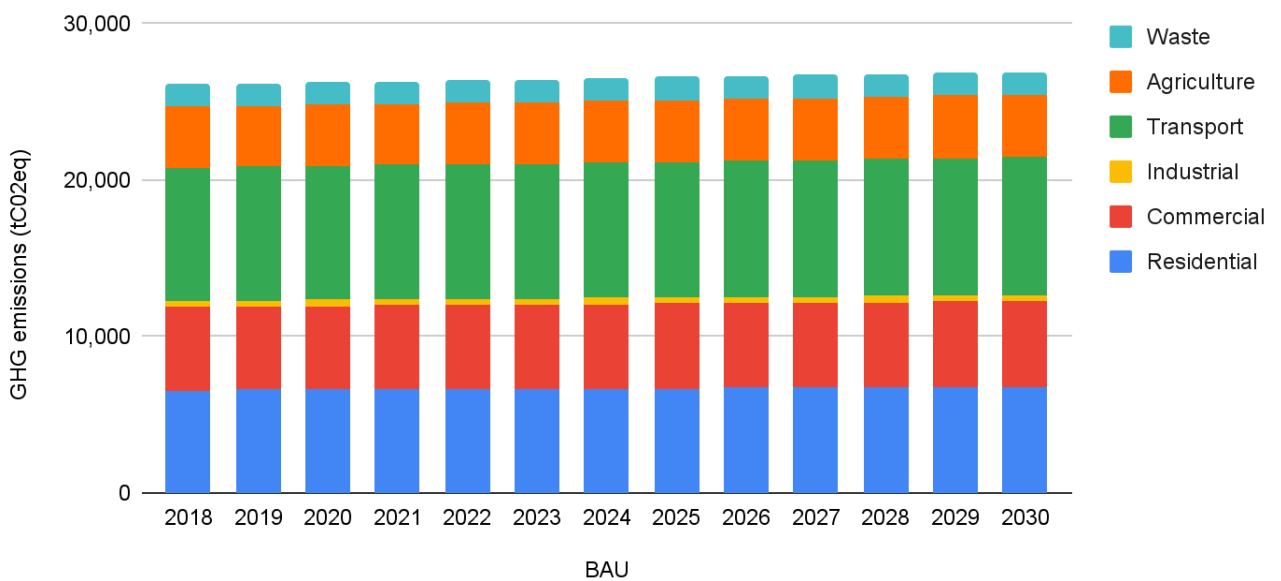
Appendix

The graphs below show the emissions projections until 2030 in two cases : the BAU case and with a 50% emission reduction target. According to the Manitoulin Plan, the population growth was taken at 0.25%.

50% emission reduction by 2030 in Central Manitoulin



BAU emissions in Central Manitoulin until 2030



APPENDIX

E. FOODCYCLER COMPOSTING PROGRAM PROPOSAL AND COST BREAKDOWN



Food Cycle Sciences Corporation (FoodCycler)
371a Richmond Rd, Suite #4, Ottawa, ON K2A 0B7
municipal@foodcycler.com

May 26th 2021

Municipality of Central Manitoulin
P.O. Box 187 | 6020 Highway 542 Mindemoya, Ontario P0P 1S0

Township of Billings
15 Old Mill Road P.O. Box 34 Kagawong, ON P0P 1J0

Subject: Implementation Partnership for Impact Canada Food Waste Reduction Challenge

Dear Municipality of Central Manitoulin and Township of Billings Staff and Council,

Thank you for your interest in food waste diversion in your community. Food waste and loss is a huge problem in Canada and worldwide with global food waste accounting for 8% of worldwide greenhouse gas emissions.

FoodCycler has been chosen as a semi-finalist in the Government of Canada's *Food Waste Reduction Challenge* run by Impact Canada and Agriculture and Agri-Food Canada for our project titled: **"Residential On-Site Food Waste Diversion for Northern, Rural, and Remote Communities"**.

Based on several factors, FoodCycler believes your community would be an ideal *"Implementation Partner"* for this stage of the challenge and we are proposing a study involving 100 households in your community.

The FoodCycler FC-30 can process ~2 litres of food waste per cycle and converts it into a nutrient-rich soil amendment that can be added to plants / gardens or pelletized for home heating purposes. Power consumption per cycle is ~0.8 kWh.

Every FoodCycler deployed is estimated to divert at least 2 tonnes of food over its expected lifetime. Based on market rates of \$100/tonne of waste, 100 households participating would divert 200 tonnes of food waste and save the municipality an estimated \$20,000 in disposal costs. Please note that this analysis is based on market rates and depending on remaining landfill lifespan and closure costs, local rates for waste disposal may vary.



Every tonne of food waste diverted from landfill is estimated to reduce greenhouse gas emissions by 1.3 tonnes of CO₂e before transportation emissions. Based on this, 100 households could divert approximately 260 tonnes of greenhouse gas emissions.

FoodCycler is looking to achieve the following through this proposed partnership:

1. Receive high-quality data from pilot program participants regarding food waste diversion (data to be submitted to Impact Canada)
2. Receive high-quality feedback from residents, staff, and council regarding the feasibility of a FoodCycler food waste diversion program for the Implementation partner and similar communities (feedback to be submitted to Impact Canada)
3. Demonstrate the viability of our technology and solutions in a municipal setting so the model can be re-deployed in other similar communities in Canada

The Implementation partner would receive several benefits through this partnership as well:

1. Opportunity to trial a food waste diversion solution at a cost well below market prices
2. Reduce food waste going to landfill which supports local climate change goals
3. Opportunity to bring new technology to residents at an affordable price
4. Obtaining data that could be used to develop a future organic waste diversion program



Pricing and Financial Terms: 100 Households

A pilot program with 100 participating residents is proposed based on financial contributions as follows:

Retail price		\$500.00	+ taxes
Municipality discount (- \$200)	-\$200.00	\$300.00	+ taxes
Investment of Impact Canada Funding (- \$100)	-\$100.00	\$200.00	+ taxes
Implementation partner Subsidy (- \$100)	-\$100.00	\$100.00	+ taxes
Average cost to resident		\$100.00	+ taxes

Shipping cost estimate TBD

The cost of shipping to be paid for by the Implementation partner or covered by residents.

An invoice to the municipality would contain the following line items:

100 FC-30 Units	\$20,000.00
Shipping Charges	TBD
Total Invoice	\$20,000 + taxes

Net Cost to Municipality **~\$10,000+taxes**

(based on residents paying \$100 + taxes + shipping)

Payment terms: Payment due in full prior to shipping.

Timeline: Purchase order to be received no later than July 5th 2021.

Other purchase terms:

- Replacement filter packs may be purchased at a price of \$22.12 + taxes (\$25 tax included) per filter pack. Filter packs are packaged in boxes of 20 and must be purchased in increments of 20.
- Warranty: 1-year standard manufacturer’s warranty starting on date of delivery of all FoodCycler units to the Implementation partner. We will repair or replace any defects during that time. Extended warranties may be purchased at additional cost.
- Buyback clause: FoodCycler will buyback any unsold units after a period of 1 year from the delivery date. All units must be in new and unopened condition. The municipality is responsible for return shipping to our warehouse in Cornwall, ON plus a \$25/unit re-stocking fee.

Other Terms:

- Surveys / Tracking
 - The trial / survey period will be for 12 weeks starting no later than August 1st 2021
 - Residents will be asked to track weekly usage of the FoodCycler during each week of the trial. Sample tracking sheets will be provided.
 - At the end of the 12 weeks, residents must report their usage and answer a number of survey questions. Survey is to be provided by FoodCycler / Impact Canada and approved by the Implementation partner.
 - The survey is to be administered by the Implementation partner and all survey results are to be shared with FoodCycler / Impact Canada. The Implementation partner is responsible for data collection and ensuring all personal information of participants is removed from any data ahead of sharing with FoodCycler / Impact Canada.
 - FoodCycler will provide several prizes to residents as an incentive to complete the survey and will be responsible for shipping these prizes directly to residents. Estimated value \$500.

- Report
 - A report must be prepared and delivered to FoodCycler / Impact Canada no later than November 30th 2021 summarizing program performance including waste diversion, potential for expansion, and other factors deemed relevant by the Implementation partner.
 - The Implementation partner staff may be asked to provide a quote / video testimonial for the sole purposes of completing written / video reporting to Impact Canada.

- Other options
 - If requested by the Implementation partner, FoodCycler will jointly investigate the possibility of collecting soil amendment at municipal waste site and permitting requirements.
 - If requested by the Implementation partner, FoodCycler will jointly investigate the possibility of having collected soil amendment taken to a permitted facility for processing.
 - If FoodCycler is successful in later stages of the Impact Canada Food Waste Reduction Challenge, The Implementation partner will be given the right of first refusal on program expansion in partnership with FoodCycler. No further information on later stages is available at this time.

We respectfully ask that you confirm your participation no later than June 30th 2021 in order to respect the timeline of the Impact Canada Food Waste Reduction Challenge. Please let us know any questions.

FoodCycler looks forward to working with the Implementation partner to reduce the amount of food waste going to landfill in a manner that is convenient and cost-effective. FoodCycler acknowledges the support through the Government of Canada's Food Waste Reduction Challenge in making this study possible.

Sincerely,

Bradley Crepeau
CEO

Alex Hayman
Director of Strategy / Municipal Programs

APPENDIX

F. COLLABORATIVE MODEL DRAFT GOVERNANCE STRUCTURE

APPENDIX F Central Manitoulin and Billings CEEP

To: Council, Municipality of Central Manitoulin & Township of Billings
 cc: Municipal Staff, Climate Action Committee
 From: Kim Neale, Climate Change Coordinator
 Date: 03/XX/21

RE: Manitoulin Island – Climate Action – Collaborative Model

Now that both the Municipality of Central Manitoulin (Central) and the Township of Billings (Billings) have passed motions to continue collaborating on climate change planning and implementation, the next steps are to consider why, who, what and how we will collaborate and share resources to meet corporate and community Greenhouse Gas (GHG) reduction goals. The following is a proposed **joint venture governance model** for your review and consideration. If both Climate Action Committees and Councils can agree on a joint venture governance model, we can include it in the draft CEEP.

Why is a joint venture governance model ideal for Central/Billings and Manitoulin Island?

Throughout this process, several overlapping opportunities to reduce GHG emissions in our districts have been identified for Central/Billings and there is at least one or two more local governments on Manitoulin Island that agree. Table 1.1 is a summary of these joint-venture opportunities for climate action.

Table 1.1: Collaborative opportunities to reduce GHG emissions and build a more resilient community on Manitoulin Island by implementing climate action together		
GHG Emission	Climate Action(s)	How is this governed now?
Waste	Composting and/or Waste to Energy System	No program exists
	Glass Recycling	No program exists
	Re-Use & Repair Centre	No program exists
Sustainable Food Systems	Community Gardens	Noojmowin Teg/Local Food
	Integrated educational approach to support local food producers	Manitoulin/Western Manitoulin Community Garden
Transportation	Electric Vehicle Charging Stations	No program exists
	Ride-Share Transit System	UMIT with Central providing admin support
Residential Homes	Energy audit/advisor services	Closest licenced NRCan service provider in North Bay
	Energy Retrofit Grant/Loan Program	Some grants/loans exist through non-profits, but most are geared to income and many residents on the island have household incomes slightly above the income thresholds.

<p>Natural Assets</p>	<p>Create a Natural Asset Management system at each municipality.</p> <p>Creating a Natural Asset Management system and plan is the first step to truly understanding:</p> <ul style="list-style-type: none"> - Flood risk and stormwater retention capacity of natural features in the municipality - Wildfire risk and sustainable woodlot management practices in the municipality, including tree planting programs - Land-Use planning decisions and impacts 	<p>The Manitoulin Planning Board and Manitoulin Tourism Association has the basic components of a Natural Asset Management Plan. They also both represent successful multi-stakeholder governance structures that work well on the island to achieve collective goals and programs.</p> <p>Section D. 6 Natural Heritage and Open Space Strategy – the Natural Heritage System project is currently on hold due to CoVid.</p> <p>No staff person at the municipality is currently assigned to work with the Manitoulin Planning Board on this project. By assigning a staff person to work with the Manitoulin Planning Board, each municipality could use this process to update their own asset management plans to include</p>
<p>Municipal Buildings</p>	<p>Energy management and continuous energy audit services</p>	<p>A staff person is currently assigned, in Central/Billings to track energy for the purpose of reporting GHG emissions related to buildings to the Ministry of Energy. The Climate Change Coordinator has assisted in this process during the contract but a reliable system has not yet been implemented to modernize this function in Central/Billings.</p> <p>For example, this job task does not currently include all GHG emission tracking, management, auditing, and energy reduction planning/implementation.</p>
	<p>Integrate climate lens into long-term asset management plan</p>	<p>While integrating a climate lens into asset management can be done by current staff – both asset management teams could benefit from the addition of a multi-disciplinary team member that knows how to conduct lifecycle models to evaluate climate risk, low carbon and energy saving options.</p>
<p>Municipal Fleet</p>	<p>Integrate climate lens into long-term asset management plan</p>	<p>While integrating a climate lens into asset management can be done by current staff – both asset management teams could benefit from the addition of a multi-disciplinary team member that knows how to conduct lifecycle models to evaluate climate risk, low carbon and energy saving options.</p>

What are other municipalities doing in Canada?

To accomplish ambitious community energy and emissions reductions goals municipalities across Canada, either hire a internal team to handle corporate and community goals or the have opted to

combine forces with other municipalities by funding third party organizations to deliver projects that will help the municipality achieve goals faster.

Table 1.2: Examples of other third-party organizations implementing climate actions by combining local government funds to leverage Provincial and Federal climate action grant and loans. These organizations are also generating revenue by administering energy retrofit programs.

Municipality	Third Party Organization	Funding
City of Guelph	<p>Our Energy Guelph https://www.ourenergyguelph.ca/about-us</p> <p>Responsible for the City of Guelph’s community energy and emissions plan</p>	<p>\$700,000 over 5yrs from the City of Guelph</p> <p>100% funding in year 1, tapering down to 50% by year 5</p>
Kitchener Waterloo Region	<p>REEP Green Solutions https://reepgreen.ca/about/</p> <p>Responsible for implementing community climate change programs that help member municipalities reach community GHG reduction goals. A joint venture between the University of Waterloo and Elora Environmental Centre. Board members include representatives from participating municipalities.</p>	<p>City of Cambridge City of Kitchener City of Waterloo Waterloo North Hydro Inc.</p> <p>Revenue generation from energy efficiency auditing services.</p> <p>Local donations and provincial/federal grants.</p>

Almost all joint ventures that have emerged from municipal climate change planning initiatives in Canada focus on community related energy and emission reduction goals (waste, transportation, home energy). Meanwhile, the municipality continues to maintain a climate change/sustainability staff person to manage the corporate energy and emissions plan, usually representing the municipality on the joint venture board that focuses on community GHG reduction goals. This structure works and it helps municipalities focus on the energy and emissions goals they have set for the buildings and infrastructure that they own and operate, while the third-party organization focuses on community wide initiatives that the municipality may not have the capacity, desire to manage or its simply not feasible unless done with other partnering municipalities. The municipality and third-party organization keep communication lines open through cross representation on boards, funding agreements, terms of reference and governance documents that create the organizational structures needed strategically align and achieve ambitious climate change action plans.

What could our governance and funding model look like on Manitoulin Island?

Throughout this climate action planning process, both committees and Councils in Central/Billings have largely worked independent of each other – sharing a staff person – which has led to the identification of several common areas for further collaboration. The climate engagement and survey development process highlighted this, after each Climate Action Committee meeting, both surveys improved immensely based on feedback from everyone involved. Each person contributed a different perspective

– including municipal staff and each committee member – in the end we truly identified several climate actions that Central/Billings and other local governments on Manitoulin can and want to implement.

Our Biggest Challenge is governance and the effective use of minimal resources.

A collaborative governance process is the biggest challenge for small, rural, and northern communities to implement climate action all over the country. Manitoulin Island needs something that facilitates community based, program and infrastructure implementation, that will make the biggest impact to improve the social wellbeing of the people that live in our districts and that uses our funds in the most efficient way possible.

A triple-bottom line approach and a climate action vision that - builds community resilience by:

- *Improving community safety and health*
- *Protecting Ecosystems and Biodiversity*
- *Improving affordability for local residents*
- *Respecting First Nation heritage and contributes to reconciliation*

With a collaborative governance structure that is inclusive to all potential partners on climate action (suggestions, listed in table 1.3 below) it will combine our resources (staff, funds, programs, some infrastructure) and leverage these resources to implement a Manitoulin Island wide, joint venture that will greatly improve our ability to secure the Provincial and Federal funding we need to implement these climate actions and build community resilience.

Table 1.3: Manitoulin Island – Climate Action – Joint-Venture Governance Model, proposed Board of Directors structure		
Local Government Members	Representation	1 elected official - voting member/ Each member Local Government
Cross-Jurisdictional Collaborative Governance		
Central	A membership organization shall: <ul style="list-style-type: none"> • Provide proportional funds that will be shared for start up costs, shared staff person(s), per shared program/infrastructure project • Each establish a Council committee or group that will be responsible for stewarding the climate change action decision making process within the representatives local government • An annual budget will be approved by each local government to deliver collaborative programs/infrastructure • Each local government will be able to opt in or out on each program/infrastructure program 	
Billings		
Any other type of local governing Council of a geographic region on Manitoulin Island		
Members-At-Large	Representation	1 voting member/ each member Local Government
Cross-Jurisdictional Collaborative Governance		
Central		

Billings	A member-at-large shall be:	
Any other type of local governing Council of a geographic region on Manitoulin Island	<ul style="list-style-type: none"> Appointed by each local government member applying their own selection process Ideally, members-at-large will also be members of a their local governments climate action committee or group or a staff person from the local government tasked with implementing joint venture climate action projects 	
Associate Members	Representation	1 non-voting member
Climate Action Program/Infrastructure Collaborative Delivery		
Manitoulin Planning Board	Provides a cross-jurisdictional pathway to Integrate the Natural Heritage System into our local climate action plans, land-use policies and deliver community specific Natural Asset Management projects like, tree planting programs, develop sustainable woodlot and agricultural strategies, etc.	
Public Health Sudbury and Districts	Provide cross-jurisdictional pathway to improve community safety and health that will enhance emergency preparedness and other health related impacts due to climate change.	
Manitoulin Tourism Association	Provides cross-jurisdictional pathway to incorporate MTA work into Natural Asset Management plans, protecting eco-systems and biodiversity while ensuring the long-term sustainability of our tourism economy.	
United Manitoulin Island Transit (UMIT)	Provides a cross-jurisdictional pathway to deliver affordable, clean transit options for everyone on the island.	
Noojmowin Teg – Local Food Manitoulin	Provides a cross-jurisdictional pathway to build a sustainable food system for everyone on the island.	
Kenjgewin Teg	Provides a cross-jurisdictional pathway to build educational programs that will ensure Manitoulin Island has the capacity to train people for a low carbon green economy.	
Manitoulin Streams	Provides a cross-jurisdictional pathway to deliver eco-system and biodiversity restoration and maintenance programs.	

Timeline for development of a joint-venture governance model:

In the next 6 months:

- Develop joint-venture incorporation documents for Central/Billings approval
- Work closely with current Central/Billings Councillors to present this joint-venture proposal to other potential members and establish a group of founding members that can agree to 3-5

initial climate action programs/infrastructure projects we want to implement first and submit funding applications

- Develop a joint-venture 5yr plan for program implementation – outlining initial shared programs and budgets – including:
 - Local government financial contributions
 - Anticipated access to Provincial and Federal funding programs and;
 - Outlines a plan to generate revenue from energy retrofitting audit, grant and loan programs to ensure the joint-venture can operate if unsuccessful in obtaining long-term Provincial or Federal climate action grants
 - Private sector grants and in-kind donations

Any revenue generated from shared programs and infrastructure – like energy retrofitting programs and shared renewable energy infrastructure will be re-invested in the joint-venture to execute more climate action.