



GREY  
COUNTY  
CLIMATE  
CHANGE  
ACTION PLAN

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## 1. Executive Summary

Climate change is an urgent global problem that requires local solutions and collaborative efforts from all levels of government and every facet of society. In Grey County, the effects of climate change are being felt already from increased extreme weather events and shifting weather patterns that negatively impact our health and our livelihoods. Internationally, the global community has agreed to take action to limit the increase of global average temperature by no more than 2°C, and drive efforts to limit the temperature increase to 1.5°C above pre-industrial levels, so that we stay within what has been identified as the “safe” upper limit of global warming. At the local level, Grey County is undertaking actions to address the causes of climate change within our community. The Climate Change Action Plan (CCAP) addresses the activities in our community that contribute to climate change as well as focusing on sustainability concerns more generally, and the co-benefits to our community that will be realized through transitioning Grey County into a low-carbon future.

Grey County is situated on the southern shores of Georgian Bay, comprised of nine member municipalities that make up the rich diversity of our community from tourism destinations to a vibrant agricultural sector. 40-45 percent of Grey County is forested, and the natural landscape is a vital part of the economy, community and provides significant ecosystem services and carbon sequestration. The CCAP was developed through consultation with stakeholders from a variety of sectors as well as the general public which has allowed the actions identified in the plan to be tailored to Grey County and to enable solutions at the local level that will create a more sustainable and prosperous future for all individuals in Grey County.



## Grey County – Climate Change Action Plan

In 2018, the Corporation of Grey County generated 3,900 tonnes of CO<sub>2</sub>e, and the community of Grey County as a whole generated 909,500 tonnes of CO<sub>2</sub>e, which amounts to 9 tonnes of CO<sub>2</sub>e per person. While Grey County's own assets generate less than 1 percent of the community wide emissions there is still an important opportunity to lead by example and demonstrate new technologies.

Our guiding vision describes what is important for our community when it comes to the future of climate change action in Grey County. It also recognizes the global shift towards more low-carbon communities and will build on work already being done within Grey County:

*The County of Grey is a clear and visible climate leader; taking actions to address climate change throughout municipal operations and in the community. By embracing energy conservation, innovative and nature-based solutions, promoting awareness, and working with residents and businesses, Grey County is creating a more prosperous, sustainable, and healthier future in Grey County that is equitable, accessible, and inclusive of urban and rural lifestyles.*

Our vision for the CCAP guides the pathway to determine our corporate and community GHG reduction targets, so that we may implement and adjust our mitigation actions over the long-term. Recognizing the Federal commitment to net-zero emissions by 2050, Grey County has also set a net-zero emissions goal and established an interim 2030 emissions reduction goal based on the proposed long-term pathway.

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**Corporate target:** 40% reduction in greenhouse gas emissions by 2030, relative to 2018 levels. Net-Zero greenhouse gas emissions by 2050, relative to 2018 levels.

**Community target:** 30% reduction in greenhouse gas emissions by 2030, relative to 2018 levels. Net-Zero greenhouse gas emissions by 2050, relative to 2018 levels.

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Grey County has set greenhouse gas (GHG) reduction targets and developed a suite of actions to help achieve this vision:

The Grey County CCAP is intended to guide Grey County and the wider community towards reducing GHG emissions and setting a pathway to meeting GHG reduction targets. To assist in the implementation of the actions in this plan, and ensure they are effectively implemented according to identified metrics and identified schedules, will require a governance and oversight structure, implementation plan and monitoring and review framework. The recommended organizational model for implementing the CCAP is a 'Grey County-led and Community Supported' model. This model enables Grey County to take a leadership role while sharing responsibilities for implementation with the community and member municipalities, while leveraging community capital to implement actions that are beyond municipal control or responsibility.

Recommended actions are prioritized based on the GHG reduction potential, the level of Grey County influence, and the potential co-benefits.

## 2. Glossary

### Key Terms

**Adaptation:** Includes any initiatives or actions in response to actual or projected climate change impacts and which reduce the effects of climate change on built, natural, and social systems.

**Adaptive Capacity:** The ability of built, natural, and social systems to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.

**Baseline:** Estimation of the current (2018) energy use and greenhouse gas emissions.

**Building Retrofit:** Upgrades to a building's envelop (walls, floor, ceiling), windows, doors, HVAC (heating, ventilation, and air conditioning) systems, and lighting that reduce the heating and cooling needs of a building and operate with greater energy efficiency.

**Business-as-Usual:** The Business-as-Usual (BAU) scenario is developed to understand future energy consumption, energy costs and emissions for Grey County, assuming no action is taken to reduce energy or emissions.

**Climate Change:** Climate change refers to changes in long-term weather patterns caused by natural phenomena and human activities that alter the chemical composition of the atmosphere through the build-up of greenhouse gases which trap heat and reflect it back to the earth's surface.

**Climate Projections -** Climate projections are projections of the response of the climate system to emissions or concentration scenarios of greenhouse gases and aerosols. These projections depend upon the climate change (or emission) scenario used, which are based on assumptions concerning future socioeconomic and technological developments that may or may not be realized and are therefore subject to uncertainty.

**District Energy System (DES):** District energy systems (DES) use pipes to supply heating, cooling and/or power to multiple connected buildings from a centralized, local energy plant, and allow for the production of energy from a variety of sources such as heat pumps, waste heat, wood waste, etc.

**Gigajoule (GJ):** A gigajoule (GJ) is a derived unit of energy in the International System of Units. It equals one billion Joules. The amount of energy represented by one GJ is equivalent to 278 kWh.

**Greenhouse Gas (GHG) Emissions:** Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation, emitted by the Earth's surface, the atmosphere itself, and by clouds. Water vapour (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), ozone (O<sub>3</sub>), and chlorofluorocarbons (CFCs) are the six primary greenhouse

gases in the Earth's atmosphere in order of abundance. It is measured in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

**Ground-mounted solar:** Ground-mounted solar panels are anchored to the ground, rather than rooftop systems. They can be a single array or much larger to cover a field or parking lot.

**Kilowatt-hour (kWh):** A kilowatt-hour is a unit of electrical energy used as the basic billing unit and equals the use of 1 thousand watts of electricity in one hour.

**Mitigation:** The promotion of policy, regulatory, and project-based measures that contribute to the stabilization or reduction of greenhouse gas concentrations in the atmosphere.

**Mode shift:** Encouraging individuals to use active transportation (walking, rolling, cycling) or public transit instead of gasoline-powered vehicles.

**Net-zero ready:** Net-zero ready implies an energy efficiency performance standard for the building envelop and other technologies whereby on-site renewable energy systems meet the remaining energy needs. For example, a Passive House or Canadian Green Building Council Zero Carbon Building.

**Offset:** A transferable financial instrument that allows emission reductions to be sold to the purchaser in the form of an "offset" against their emissions. Offsets (measured in tonnes of CO<sub>2</sub>e) effectively reduce the purchaser's net emissions.

**Resilience:** The capacity of a system, community or society exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure.

**Sequestration:** Long-term storage of carbon (carbon dioxide) from the atmosphere.

**Solar thermal:** Solar thermal technology uses energy from the sun for domestic hot water heaters and can be used year-round in Canada.

**Solar photovoltaic:** The use of solar cells to convert energy from the sun into electric energy, either with on-site solar panels or off-set site generation distributed through the electricity grid.

**Weather:** The day-to-day state of the atmosphere, and its short-term variation in minutes to weeks.

## Acronyms

<b>BAU</b>	Business-as-Usual
<b>CCTF</b>	Climate Change Task Force
<b>CHP</b>	Combined heat and power
<b>CH<sub>4</sub></b>	Methane
<b>CIP</b>	Community Improvement Plan
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent
<b>DES</b>	District energy system
<b>ECCWG</b>	External Climate Change Working Group
<b>ECDM</b>	Energy and Conservation Demand Management
<b>EV</b>	Electric vehicle
<b>FCM</b>	Federation of Canadian Municipalities
<b>GDS</b>	Green Development Standard
<b>GFA</b>	Gross floor area
<b>GHG</b>	Greenhouse gas
<b>GJ</b>	Gigajoule (unit for measuring energy)
<b>GJ/m<sup>2</sup></b>	Gigajoule per m <sup>2</sup> of floorspace (unit for measuring energy use intensity)
<b>GPC</b>	Global Protocol for Community-Scale Greenhouse Gas Emission Inventories
<b>HVAC</b>	Heating, ventilation, and air conditioning
<b>ICCWG</b>	Internal Climate Change Working Group
<b>IESO</b>	Independent Electricity System Operator
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>kW</b>	Kilowatt
<b>kWh</b>	Kilowatt-hour
<b>LED</b>	Light-emitting diode
<b>LIC</b>	Local Improvement Charge

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<b>LID</b>	Low impact development
<b>MURB</b>	Multi-use residential building
<b>MW</b>	Megawatt
<b>N<sub>2</sub>O</b>	Nitrogen oxide
<b>NRCan</b>	Natural Resources Canada
<b>OBC</b>	Ontario Building Code
<b>PACE</b>	Property Assessed Clean Energy
<b>PCF</b>	Pan-Canadian Framework
<b>PCP</b>	Partners for Climate Protection
<b>PPS</b>	Provincial Policy Statement
<b>PV</b>	Photovoltaic
<b>tCO<sub>2</sub>e</b>	Tonnes of Carbon-dioxide equivalent
<b>TMP</b>	Transportation Management Plan
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change

### 3. Acknowledgements

The County would like to gratefully acknowledge everyone who participated in the development of the Climate Change Action Plan. It is a culmination of efforts and strong leadership displayed by the Project Team, External Climate Change Working Group, Internal Climate Change Working Group, Climate Change Task Force, and key external stakeholders, and is reflective of a diverse range of knowledge and expertise.

#### Climate Change Task Force

The Climate Change Task Force made key decisions regarding the CCAP and provided strategic direction to the overall development of the plan. The Climate Change Task Force was comprised of Grey County councillors and the Grey County Warden. The Chief Administrative Officer, as well as other senior management staff from various Grey County departments attended meetings as needed. Members of the Climate Change Task Force include:

**Aakash Desai**, Deputy Mayor, Municipality of Grey Highlands, Grey County

**Brian Gamble**, Deputy Mayor, Township of Chatsworth, Grey County

**John Woodbury**, Mayor, Township of Southgate, Grey County

**Paul McQueen**, Deputy Warden and Mayor, Municipality of Grey Highlands, Grey County

**Selwyn Hicks**, Warden and Deputy Mayor, Town of Hanover, Grey County

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**Tom Hutchinson**, Deputy Mayor, Municipality of West Grey, Grey County

#### Internal Climate Change Working Group

The Internal Climate Change Working Group was made up of Grey County staff from a wide range of departments. These individuals worked closely with the Project Team to develop the CCAP, contributing their knowledge, expertise, and guidance to each step of the planning process. Members of the Internal Climate Change Working Group include:

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## Grey County – Climate Change Action Plan

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### External Climate Change Working Group

The External Climate Change Working Group was made up of key external stakeholders, partners, and representatives from across various economic sectors in Grey County. These individuals worked with the Project Team to develop the CCAP, contributing their knowledge and local expertise to help make sure the CCAP is a reflection of the community. Members of the External Climate Change Working Group include:

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**Barry Randall**, Grey Bruce Sustainability Network

**Diane Giroux**, Community Activist

**Donald Cole**, University of Toronto

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**Randy Scherzer**, Director of Planning and Development, Grey County

**Linda Swanston**, Manager Climate Change Initiatives, Grey County

**Scott Taylor**, Manager Planning Services, Planning and Development, Grey County

#### 4. Message From the Warden

The decisions we make and the actions we take each day have an impact on the world around us. The evidence is undeniable that our climate is changing and it's up to all of us – as governments, businesses, and individuals – to act boldly and make necessary changes to limit the rate of global warming. This Climate Change Action Plan is a major step forward in our own sustainable future in Grey County.

As a former Top 7 Intelligent Community recipient, we want to build on our reputation as a forward-thinking and innovative community. We want to be leaders in climate action by embracing new technology and modern practices. We also need to be prepared, ensuring our services and our communities are ready for challenges that will come our way through climate change. Through this plan, we hope not just to inform, but to inspire our community to act against climate change and find inclusive solutions that leave nobody behind.

Climate change may very well be the biggest challenge we face in our lifetime.

Let's all do our part.

Selwyn 'Buck' Hicks,  
Grey County Warden



## Land Acknowledgement

We acknowledge with respect, the history, spirituality, and culture of the Anishinaabek, Six Nations of the Grand River, Haudenosaunee, and Wendat-Wyandot-Wyandotte peoples on whose traditional territories we gather and whose ancestors signed Treaties with our ancestors. We recognize also, the Metis and Inuit whose ancestors shared this land and these waters. May we all, as Treaty People, live with respect on this land, and live in peace and friendship with all its diverse peoples.

We further acknowledge the Territory of the Anishinabek Nation: The People of the Three Fires known as Ojibway, Odawa, and Pottawatomie Nations. And further give thanks to the Chippewas of Saugeen, and the Chippewas of Nawash, known collectively as the Saugeen Ojibway Nation, as the traditional keepers of this land.

Inherently built upon and grounded in generations of place-based observations and experiences, Indigenous knowledge systems are central to a thorough understanding of how people perceive, understand, mitigate, and adapt to climate change. During the implementation phase of this plan, Grey County will seek to build meaningful collaboration with the Saugeen Ojibway Nation, the traditional keepers of this land, and Indigenous communities and organizations located within the Grey County to nurture their contribution and guidance, and ensure their feedback is integrated into the Plan.



## **5. Introduction & Background**

### **5.1 Overview of the Grey County Climate Change Action Plan**

The Grey County Climate Change Action Plan (CCAP) outlines a path forward and provides long-term strategic direction to achieve a sustainable, low-emissions, energy-efficient community that maximizes the benefit of Grey County’s natural assets and landscape. Having experienced the impacts of increased flooding, extreme heat, snowstorms, and other severe weather events, Grey County recognizes the need to mitigate the causes of climate change at the corporate and community levels.

The Plan captures how we use our energy today and predicts energy use into the future and identifies actions we will employ to reduce emissions created by the Corporation of Grey County (including our services, fleet, and public buildings), as well as our community (including our residents, businesses, and institutions). As a two-tier municipal government Grey County has worked with our member municipalities in developing the CCAP actions. Many of the community-wide actions will be implemented in collaboration with member municipalities, while Grey County’s corporate actions can be adapted and adopted by member municipalities.

It is important to note that emission reductions will be achieved through a multitude of cross-cutting actions that tackle our natural, built, social, and economic systems. This includes actions that not only increase our energy efficiency, but also programs, policies, and practices that conserve, better protect, and strengthen our natural assets and green infrastructure. Collectively, these initiatives and long-term planning can help us achieve our greenhouse gas (GHG) reduction targets.

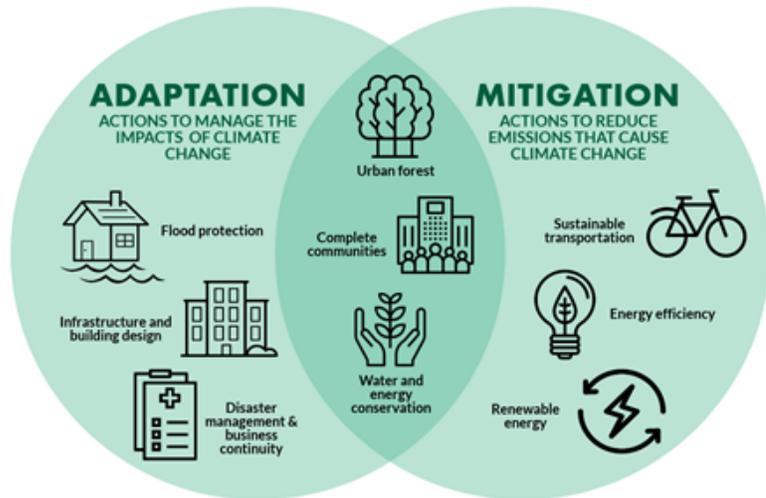
### **5.2 Climate Change Adaptation and Mitigation**

Climate change refers to the long-term changes in weather patterns caused by human activities and natural phenomena that alter the chemical composition of the atmosphere through the build up of greenhouse gases which trap heat and reflect it back to the earth’s surface. In addressing climate change, two complementary approaches work in tandem that can be employed: climate change adaptation and mitigation.

Adaptation includes any measures that help us adjust to the impacts of climate change. This could include measures such as planning for more intense and frequent extreme weather events, enhancing the capacity of our physical infrastructure, updating our operating and maintenance procedures, and reducing impacts on vulnerable populations.

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Mitigation includes any measures that help us reverse the effects of climate change through emissions reduction or sequestration efforts and prevent further contributions to climate change. This could include policy, regulatory, and project/program-based measures that reduce the amount of GHGs released into our atmosphere. Examples of this include transitioning to low-carbon energy sources, reducing consumption of goods, more active transportation, and less driving.



Although the CCAP is primarily focused on climate change mitigation, climate adaptation is an identified theme in this plan. It includes actions to address a pressing climate change adaptation issue in Grey County: the protection of our waterways and shorelines. Any adaptation co-benefits and opportunities that arise from the application of the actions outlined in this plan have also been identified and discussed. It is acknowledged, that Grey County's next priority will be to work with our member municipalities and the community to develop a comprehensive climate change adaptation plan, that identifies our specific vulnerabilities to the impacts of climate change and outlines programs, policies, and projects that will help us reduce our risks and increase our resilience in the face of a climate-adjusted future.



### 5.3 International and National Direction on Climate Change Mitigation

In December 2015, Canada was one of 195 countries to sign the Paris Agreement at the 21<sup>st</sup> Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement aims to keep the increase in global average temperature to well below 2°C and drive efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Recent federal climate mitigation policy developments are as follows:

- In June 2021, the Canadian Net-Zero Emissions Accountability Act became law and set a legally binding net-zero greenhouse gas emissions target by 2050 and includes a commitment to reduce emissions between 40 and 45 percent by 2030 from a 2005 baseline. To reach these targets, the Federal Government has put in place the following commitments and plans: The Pan Canadian Framework on Clean Growth and Climate Change. This framework identifies pathways to meet Canada's 2030 target, whilst growing the economy and building resilience to adapt to climate change.
- The Green Municipal Fund (GMF), now in its 22<sup>nd</sup> year, is a \$1 billion endowment fund that continues to provide funding for municipal capacity building, planning, feasibility studies, pilot projects, and capital projects.
- The Low-Carbon Economy Trust Fund - This fund finances projects that are making strides to reduce carbon and invest in clean energy and clean technology by the year 2030.
- A federal GHG offset system covering activities not under carbon pricing is currently underdevelopment with draft regulations published in March 2021. The system focuses on voluntary projects in agriculture, waste, and forestry.

### 5.4 Provincial Direction on Climate Change Mitigation

The Province of Ontario released its Made-In-Ontario Environment Plan in 2018, which targets protection of our air, water, species, natural environment, as well as aims to reduce our litter and waste, better prepare communities for climate change, and reduce Ontario's GHG emissions. Ontario's target for emissions reduction is 30 percent below 2005 levels by the year 2030. As of 2020, major strides have been made to continue implementing the plan. Some of these achievements are as follows:

- Finalizing and receiving federal recognition of the emissions performance standards program to ensure large, industrial emitters are accountable for their greenhouse gas emissions.
- Establishing an enhanced emissions testing program, requiring regular emissions tests for big polluters such as commercial trucks and buses.
- Laying the foundation for a new model of waste management that puts producers in charge of the lifecycle of their products and packaging.
- Releasing a discussion paper that will inform Ontario's first low-carbon hydrogen strategy to create jobs and help the province move towards its greenhouse gas reduction target.

In addition to the Made-In-Ontario Environment plan, other climate mitigation efforts include:

- The Provincial Policy Statement (PPS) (2020). This provides direction to municipalities on managing and directing land use and development. It directs municipalities to support energy conservation and efficiency, improve air quality, reduce GHG emissions, and better prepare for climate change impacts through their land use and development planning.

- The Greenbelt Plan (2017). Parts of Grey County are located in Ontario's Greenbelt, and this plan encourages consideration of climate change mitigation by integrating these considerations into the planning and management of both natural systems and growth.
- Planning Act (amended in 2021). This is a provincial legislation that sets out the ground rules for land use planning in Ontario, describing how land uses may be controlled, and who may control them. The Act now requires municipalities to include climate change policies in their Official Plans to identify specific actions to be taken to achieve climate change objectives. These policies can complement other municipal programs and initiatives that address climate change and reduce greenhouse gases (e.g., programs for tree planting, green building and energy efficiency incentives, water conservation and carpooling).

### 5.5 Grey County's Commitment to Climate Change

Grey County is projected to grow to 125,000 residents and add approximately 8,700 jobs by 2046. Current and future vulnerabilities posed by climate change will be compounded by stressors such as population growth and development. As such, Grey County needs to put measures in place now so that we can continue to grow and meet the needs of our community sustainably and mitigate the potential negative impacts of this growth on the environmental, infrastructural, economic, social, and cultural facets of the community.

An objective of the *Recolour Grey*, the 2019 County of Grey Official Plan, is to develop a Climate Change Action Plan in order to "coordinate Grey County's efforts to embrace and facilitate resilient, sustainable development to mitigate the effects of climate change." *Recolour Grey* highlights many principles that align with the CCAP and address Grey County's natural, physical, social, and economic systems:

- **Cultivate Grey:**
  - Food production and support for the local food movement
  - Growing the rural economy through innovation
- **Develop Grey:**
  - Downtowns as a recognized place for economic growth
  - Land allocation needs to accommodate population growth
- **Natural Grey:**
  - Protection of environmental features and systems
  - Climate change preparedness
- **Live Grey:**
  - Healthy community needs
  - Community inclusion
  - Encouraging mixed-use development
- **Move Grey:**
  - Accessible public transit
  - Active transportation infrastructure
  - Waste management and protecting our water

Grey County has already been making great strides in the realm of climate change action. Some of these initiatives include:

- **Cycling and Trails Master Plan**

- Developed a plan that evaluates all the networks and supportive infrastructure in Grey County which are intended to enhance multi-modal travel and recreational opportunities for all ages and all abilities.
- **Recreational Trails Master Plan**
  - Developed a strategic and target plan for the management of Grey County-owned forests and trails to ensure the protection of natural areas while offering multiple recreational opportunities to the public.
- **Grey Transit Route**
  - Grey County received Provincial funding to develop a regional public transportation system. The funding has been used to support local and intercommunity transit projects.
- **Energy Retrofit of Grey County Buildings**
  - Grey County has invested in retrofitting Grey County owned Affordable Housing Buildings while ensuring that new Grey County Administration Building utilized energy efficient technology.
- **Updating Asset Management Policies and Plans**
  - As part of the Provincial mandate, Grey County has implemented a Strategic Asset Management Policy that considers climate change and is updating their next iteration of the Asset Management Plan to include climate change considerations as part of risk management and green infrastructure as required under the Provincial regulation policy.
- **Forest Management Plan**
  - Grey County has recently updated its 20-year plan for how it manages Grey County-owned forests. The forests are managed using good forest management techniques while providing multiple recreational opportunities.

### 5.5.1 Role of Local and Regional Governments

Although climate change efforts are necessary across all levels of government, local governments are especially well-positioned to respond to climate change. The Federation of Canadian Municipalities (FCM) estimates that over 50 percent of emissions are under the direct influence of local governments, and since local governments are the level closest to the community, they are also on the front lines of response efforts when preparing for both short- and long-term impacts of climate change. Local governments have the tools and mechanisms that are needed to design and implement approaches that mitigate the causes of climate change. Grey County, through working with its member municipalities and the community, can make a big difference by investing in energy efficiency and cutting GHG emissions in areas such as building energy use, land use, transportation, waste, and agriculture.

### 5.5.2 Vision Statement and GHG Targets

Grey County recognizes the value of our charmed and irreplaceable natural setting. Residents value their natural and cultural heritage, the economic and environmental quality of the area's natural resources and agriculture, the entrepreneurship of local businesses, and the significance of the tourism industry. A vision for Grey County's Climate Change Action Plan describes what is important for residents, businesses, and the broader community when it comes to the future of climate change action in Grey County.

The vision for the CCAP was developed through discussion and feedback from our ECCWG, ICCWG, and CCTF, and recognizes the global shift towards more low-carbon communities and will build on work already being done within Grey County. Our vision for the CCAP is as follows:

*The County of Grey is a clear and visible climate leader; taking actions to address climate change throughout municipal operations and in the community. By embracing energy conservation, innovative and nature-based solutions, promoting awareness, and working with residents and businesses, Grey County is creating a more prosperous, sustainable, and healthier future in Grey County that is equitable, accessible, and inclusive of urban and rural lifestyles.*

Our vision for the CCAP guides the pathway to determine our corporate and community GHG reduction targets, so that we may implement and adjust our mitigation actions over the long-term.

Recognizing the national commitment to net-zero emissions by 2050, Grey County has also set a net-zero emissions target and established an interim 2030 emissions reduction target based on the proposed long-term pathway.

Grey County has set the following GHG reduction targets:

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**Corporate target:** 40% reduction in greenhouse gas emissions by 2030, relative to 2018 levels. Net-Zero greenhouse gas emissions by 2050, relative to 2018 levels.

**Community target:** 30% reduction in greenhouse gas emissions by 2030, relative to 2018 levels. Net-Zero greenhouse gas emissions by 2050, relative to 2018 levels.

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## 5.6 Benefits of Taking Action on Climate Change Mitigation

Implementing the actions outlined in the plan provides numerous financial, environmental, and social benefits to our community, our business, and the local economy.

### 5.6.1 Benefits to Community Members

- Our collective impact on climate change is reduced, resulting in healthier local and global environments.
- Reduced energy costs and increased quality of life as a result of more energy-efficient technologies. This will help protect against rising fuel, natural gas, and electricity prices in Ontario as well as help alleviate energy poverty, which is defined as households that struggle to meet their energy needs and that use a disproportionate amount of their income for home heating and electricity. Forty-three percent of Grey County residents experience a high home energy cost burden (6% or more of their after-tax income on energy), and 8.5 percent of residents experience an extreme energy cost burden (spending 15% or more of their income).
- Better energy resiliency and energy security. With more local renewable energy generation, citizens will be less affected by power outages and interruptions, and less impacted by the rising price of energy in Ontario.

- Reducing food waste creates an opportunity to improve food security of residents by redirecting excess food. Food Bruce Grey data shows that the number of families accessing food banks and community meal programs increased during the COVID-19 pandemic and continues to increase.
- Improved physical and mental health (i.e., reduced rates of illness and mental health impacts) amongst community members and vulnerable populations (i.e., children, seniors, those with pre-existing health conditions) due to reduced air pollution, increased access to green spaces, improved housing quality through energy retrofits, active transportation, and more public transit and carpooling.
- Increased social cohesion due to more compact, mixed-use development.

### 5.6.2 Benefits to Businesses and the Local Economy

- Reduced energy costs as a result of more energy-efficient technologies, buildings, and practices. This will keep energy dollars in the community, where these energy savings can be used to grow our local economy.
- New forms of employment and innovation resulting from economic growth in the building and construction industries and clean energy/cleantech sector, as a result of more investment in energy-efficient technologies, buildings, hydrogen and renewable energy generation and storage.
- More diverse, resilient, and competitive local economy as other regions in Ontario and Canada begin to shift towards a low-carbon economy.
- Improved health and safety of employees as a result of reduced pollution and unsafe working conditions (e.g., reduced impacts of extreme weather events such as heatwaves, flooding, ice storms, etc.).
- A growing tourism industry resulting from the expansion of EV charging stations, conservation and interpretation of our natural heritage, and investment in more sustainable practices to promote Grey County as sustainability leader.
- Businesses that invest in energy efficiency and sustainability will be recognized as leaders by the community they serve and their peers in Ontario.
- Sustained recognition of Grey County as part of the Clean Energy Frontier – highlighting the role of the region of Grey, Bruce, and Huron as a clean energy leader in the province of Ontario a hub of clean energy production. Continue to access and leverage the knowledge, expertise and the network offered by the Nuclear Innovation Institute, and position Grey County as a leader and innovator in hydrogen technology.

## 5.7 Plan Approach, Development, and Engagement

The Plan follows ICLEI Canada and the Federation of Canadian Municipalities' (FCM) [Partners for Climate Protection \(PCP\) Program](#) 5 Milestone Framework. The PCP program, of which Grey County has been a member of since 2019, has operated in Canada for over 25 years in support of climate change mitigation planning at the local government level, and currently has over 500 local governmental members across Canada. The PCP Framework provides a structural approach and comprehensive methodology for community scale climate change mitigation planning, specifically created for local governments in Canada.

Through the various milestones, we developed an emissions inventory to understand our current and future projected GHG emissions, set our GHG emission reduction targets, defined our goals for the Plan, identified actions to reduce GHG emissions, and developed a plan to implement programs, policies, and projects across Grey County's various sectors to reduce

emissions. The completion of the CCAP meets the requirements for both the community and corporate Milestones 1 to 3 of the PCP program.

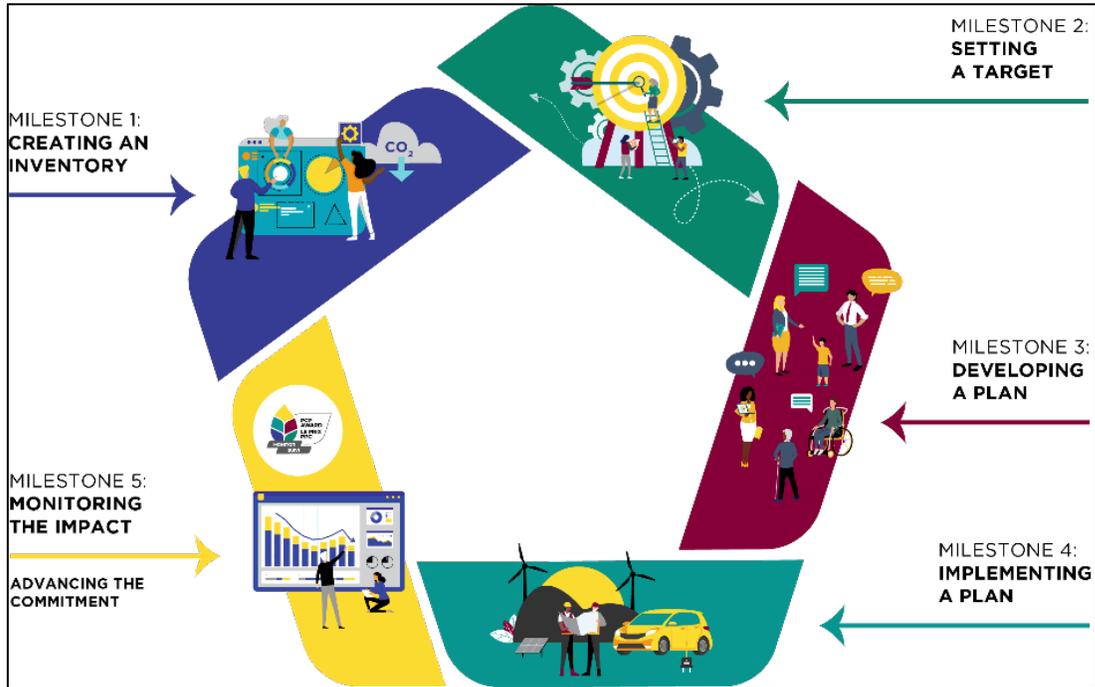


Figure 2: Partners for Climate Protection (PCP) Framework

## Grey County – Climate Change Action Plan

Development of the CCAP took place between December 2019 up until the spring of 2022. An overview of the process and major tasks completed in each phase of the plan’s development are indicated in Figure 3 below.

PHASE 1 DECEMBER 2019 - MARCH 2020	PHASE 2 AUGUST - DECEMBER 2020	PHASE 3 JANUARY 2021 - APRIL 2022
TASKS	TASKS	TASKS
<ul style="list-style-type: none"> <li>• Establish working groups and task force</li> <li>• Develop a Communications &amp; Engagement Plan</li> <li>• Collecting data for inventory</li> <li>• Develop GHG emission inventory and BAU projections</li> <li>• Establish an initial vision for the CCAP</li> <li>• Identify options for Corporate and Community GHG reduction targets</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out communication &amp; engagement strategies.</li> <li>• Identify existing plans, policies, and programs</li> <li>• Conduct inventory mapping &amp; analysis</li> <li>• Finalize corporate and community GHG reduction targets</li> <li>• Finalize a vision, goals, and objectives for the Plan</li> <li>• Develop a list of strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Continue communication &amp; engagement strategies</li> <li>• Finalize priority list of strategies</li> <li>• Quantify emission reductions</li> <li>• Identify implementation &amp; monitoring considerations</li> <li>• Develop preliminary report on recommendations for proposed strategies</li> <li>• Write and develop the CCAP</li> <li>• Review and finalize the CCAP</li> </ul>

*Figure 3: Overview of CCAP Development and Major Tasks*

While COVID-19 continues its impacts in Ontario and around the globe, climate change has not halted. In 2020, we saw flooding in parts of Canada, drought conditions and heat in the summer, and more incremental weather in the fall. The impacts of climate change tend to be larger on more vulnerable populations and reinforce existing demographic inequities, highlighting an unfortunate commonality between climate change and COVID-19. It is for that reason, that as we continue to try and learn from this pandemic, we need to, at the same time identify ways in which we can apply these learnings in the fight against climate change.

As such, a crucial component of the plan was ensuring our community members were provided with meaningful opportunities to contribute to the overall goals, objectives, and actions within the Plan. When Grey County finalized its Communications and Engagement Plan in 2019, we aimed to employ a variety of online and in-person engagement opportunities and events specifically aimed at the general public, residents, vulnerable populations, community partners and organizations, First Nations and Indigenous Peoples, member municipalities, businesses, and key economic sectors. With COVID-19 presenting the challenges it did, we adjusted our engagement methods and timelines to ensure we still captured as much feedback as possible, allowing for meaningful knowledge exchange and discussion – at the same time, being sensitive

## Grey County – Climate Change Action Plan

to the fact that many of our community members had more pressing priorities in dealing with implications of COVID-19.

Regular updates about the status of plan development as well as engagement opportunities were shared with the public through various communications channels, including newsletters, media releases, website updates, and social media. As part of engagement around plan development, Grey County facilitated a series of online workshops with community organizations and external stakeholders, hosted one-on-one meetings with member municipalities, met with local climate advocacy groups, and conducted two surveys with the community. The first survey was made available to all residents and community members and centred around the community's knowledge and desire to take action on climate change as well as their appetite for various proposed actions. The second survey was targeted at members of the agricultural community and centred around the climate change impacts and challenges being faced by the agriculture sector, what their needs are, and their appetite for various proposed actions.

The External Working Group was a key component of the engagement strategy and was comprised of a wide range of individual and representatives from organizations across Grey County including Public Health Grey Bruce, the Bagida'waad Alliance, Grey Bruce Sustainability Network, Conservation Authorities, the Escarpment Biosphere Conservancy, the Blue Mountain Village Association, Enbridge, the Council of Aging, as well as individual community advocates. Two virtual meetings were held with the External Working Group to gain feedback on target setting, the vision statement, objectives of the plan, and on proposed actions.

A draft of the CCAP was made available to the public for their review and comments after which the Project Team coalesced and integrated the feedback into the plan. A summary of the engagement findings are available in the Grey County Climate Change Taskforce presentation [“What We Heard” – Climate Change Action Plan Engagement Findings](#).

Eleven central recommendations emerged:

1. Set more ambitious targets, align with federal net-zero by 2050 target, and set “science based” goals.
2. Pay more attention to nature-based solutions, (including afforestation and agricultural land sequestration potential); leverage the advantages of Grey County's landscape.
3. Create a clear prioritization of actions and identify initial specific implementation actions.
4. Treat plan as a “living document,” recognizing the dynamic nature of climate science and update regularly.
5. Continue to improve data collection, analysis, and communication particularly in the agricultural sector.
6. Show leadership at the upper tier level in climate action, and support collaboration and coordination with member municipalities
7. Centre reconciliation in climate action, given the long history of Indigenous leadership in environmental stewardship, and Grey County's location on the traditional territories of the Anishinaabek, Six Nations of the Grand River, Haudenosaunee, and Wendat Wyandot-Wyandotte peoples.

8. Recognize that agriculture is a critical element of Grey County culture and economy, and support and enhance the agri-food sector's existing efforts to address climate change.
9. Leverage emerging energy innovation sector, particularly related to hydrogen, in Grey County and Bruce County, and champion local low-carbon energy leadership.
10. Consider lifecycle emissions of building materials and technologies where possible, not just local operational emissions.
11. Ramp up engagement, education, and communication, as essential opportunities to build awareness and involvement in climate issues with residents and businesses, as response needs to be both technological and cultural.

## 6. Current GHG Emissions

### 6.1 Baseline Energy and Emissions Profile for Grey County

A baseline emissions inventory was completed for Grey County's municipal operations (referred to as the corporate inventory), and for the community of Grey County as a whole.

2018 was the year with the most complete dataset available and was therefore selected as the baseline year. An energy profile detailing energy consumption and cost was also created alongside the community and corporate emission inventories. Preparation for both inventories followed the [Global Protocol for Community-Scale Greenhouse Gas Emission Inventories](#) (GPC)<sup>1</sup> BASIC level of reporting and the [Partners for Climate Protection Protocol: Canadian Supplement to the International Emissions Analysis Protocol](#). The baseline energy profile and GHG emissions inventory account for energy and emissions occurring inside the municipal boundary (Scope 1) and emissions occurring from the use of grid-supplied electricity within Grey County (Scope 2). Energy and emissions occurring outside the municipal boundary that arise from activities taking place within Grey County (Scope 3), for example, the consumption of goods that were manufactured outside of Grey County, were not included.

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<sup>1</sup> World Resources Institute. (2014). Global Protocol for Community-Scale Greenhouse Gas Emission Inventories: An Accounting and Reporting Standard for Cities.

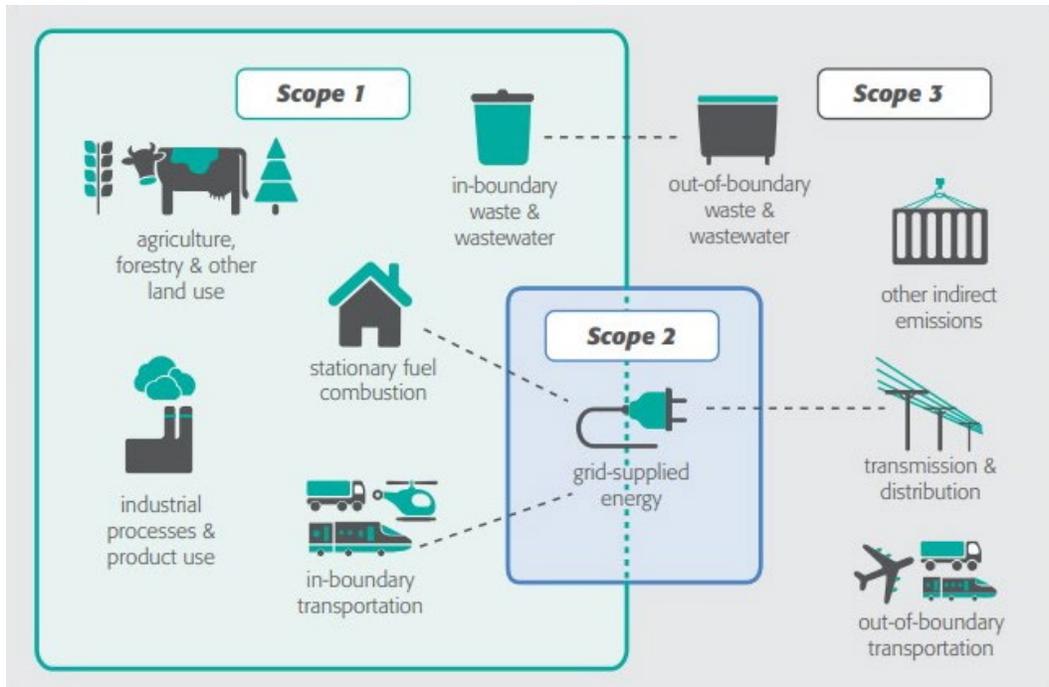


Figure 4: A visual representation of emission Scopes 1, 2 and 3

The GHG inventory covers the three most common greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). The gases were converted to carbon dioxide equivalents (CO<sub>2</sub>e), using the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment global warming potentials. Sulphur hexafluoride (SF<sub>6</sub>) is also included for electricity consumption. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF<sub>3</sub>) are optional for the BASIC level of GPC reporting and were not included. The emissions factors were sourced from Environment and Climate Change Canada’s *National Inventory Report: 1990-2018*, the relevant federal report on Canadian emissions<sup>2</sup>. For electricity, the consumption factor was used, which includes SF<sub>6</sub> and electric energy losses (mainly) in transmission and distribution.

### 6.1.1 GHG Inventories Presented in the CCAP

The Grey County corporate and community-wide emissions inventories are further categorized by the mechanism of their creation; energy use and biogenic (from living organisms). Emissions from energy use arise from the burning of fossil fuels which releases carbon dioxide and other greenhouse gases that have been locked in the ground for millions of years. Biogenic sources emit carbon dioxide that is already part of the ongoing carbon cycle. These two types of emissions require different responses and so are considered here separately.

### 6.1.2 Exclusions from the Baseline Inventory

Certain categories from the GPC BASIC level of reporting were not included in the inventory. An explanation of their exclusion is included below.

<sup>2</sup> Environment and Climate Change Canada. 2020. National Inventory Report 1990–2018: Greenhouse Gas Sources and Sinks in Canada. Retrieved <https://unfccc.int/documents/224829>

- **Buildings Energy**
  - Energy Industries: Not occurring within the Grey County.
  - Agriculture, forestry, and fishing activities: The consumption of energy and the associated emissions from this subsector would be included in the Commercial/Institutional or Manufacturing sectors. Energy consumption data from the utilities were not disaggregated by this subsector.
  - Fugitive emissions from mining, processing, storage, and transportation of coal: Not occurring within the Grey County.
  - Institutional building energy data was not available disaggregated from the commercial and industrial sector.
- **Transportation**
  - Freight Rail: Not occurring within the Grey County.
  - Aviation: Insufficient data.
- **Waste**
  - Incineration and open burning of waste generated in the city: Not occurring within Grey County.
- **Agriculture, Forestry and Other Land Use**
  - Forestry: Insufficient data
  - Land Use Change: Insufficient data

### Additional Data and Outputs

The following outputs from the energy consumption, energy expenditure and emissions profile for Grey County will be presented, graphically and as data tables:

- Total energy consumed in Grey County in 2018, by sector and source. Sector refers to building energy (residential, commercial, industrial, institutional etc.), transportation (private/personal, public transit, etc.), waste, and agriculture. Source refers to the fuel type (natural gas, electricity, etc.).
- Total energy dollars spent by residents and businesses in Grey County in 2018, by sector and by source.
- Total emissions generated in Grey County, by sector, source, and scope.

### 6.1.3 Data Collection Recommendations and Next Steps

GHG emissions inventorying is an iterative process, and a constantly evolving field. While baseline years are selected for data accuracy, completeness, and availability, some data is simply unavailable. To gather missing data and/or improve upon existing data sets, additional studies are often needed. The recommendations below outline suggested approaches to filling in data gaps in Grey County.

## Data Collection Recommendations

- Conduct a GIS or remote sensing study to analyze land use change and forest cover over time (i.e., acres of forests to development). A further study of forest and tree canopy sequestration potential could also be undertaken to acquire local data that includes detailed analysis of the influence of weather, soil characteristics, tree age, and species, etc.
- Gather information required for additional subsectors of agricultural emissions, including liming (tonnes of calcic limestone and dolomite per year), urea application (tonnes urea per year), and managed soils (amount of synthetic nitrogen fertilizer, organic nitrogen fertilizers, nitrogen in crop residues, amount of nitrogen in mineral soils that is mineralized).
- Conduct a corporate waste audit to determine the tonnes of solid waste generated by the corporation and gather data on the waste stream concurrently.
- Conduct an audit of the solid waste stream that captures all sectors in the community.
- Request utilities to track consumption by facility type (residential, institutional, commercial, and industrial) and provide number of connected premises for each type.
- Work with community partners to collect disaggregated institutional sector building energy data (i.e., school boards, hospitals, etc.)
- Work with local airports to collect aviation data such as fuel sales, average number, and length of flights, etc.
- Conduct a survey to determine the amount and cost of fuel that is used by recreational boaters annually.<sup>3</sup>
- Conduct a survey to determine the amount and cost of fuel that is used by off-road vehicles annually.
- Conduct a survey to determine the amount of fuel, propane, and wood that is used in residential, commercial, institutional, and industrial sectors.
- Conduct a survey to determine the other fuels utilized by the industries in Grey County

## Next Steps

Tracking emissions over time is an important component of a GHG inventory, as it develops a picture of historical emission trends, which can help to identify trends and factors that influence emissions, and it tracks the impact of GHG emissions reduction policies and actions over time. The Partners for Climate Protection program recommends that the GHG inventory process be undertaken every three to five years, however, some municipalities have developed internal processes to update emissions inventories annually.

When conducting updated emissions inventories, it is important to ensure methodological consistency between inventory years. Methodologies and access to data improve over time and it may be necessary to conduct a re-inventory of the baseline year in the future in order to ensure

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<sup>3</sup> *The aviation sector should only include helicopter and airplane flights within the administrative boundaries of Grey County (flights that depart and land in Grey in the same trip).*

comparability between different emissions inventory years. Municipalities may undergo significant change over the years which may make meaningful comparison over time difficult. The GHG Protocol recommends that municipalities set a baseline year recalculation policy, including a significance threshold for recalculating the base year (e.g., 5%). Significant changes that may trigger a recalculation include structural changes in the inventory boundary, changes in methodology or data accuracy, and discovery of significant errors.

## **6.2 Community-wide Emissions in 2018**

### **6.2.1 Energy and Emissions Inventory from Fossil Fuel Sources**

Total energy consumption in Grey County in 2018 to heat and power buildings for residents and businesses and for transportation was 11 million gigajoules. Total energy expenditure was \$347,382,900, which on an individual basis is \$3,500 per person per year. Reducing energy consumption throughout the community, whether it is in the building or transportation sector, will reduce the cost that Grey County's residents and businesses spend on energy each year and could keep energy dollars within the community.

The following two graphs present the energy profile for Grey County. Three sectors make up most of the energy consumed in the community, those are private vehicles (47%), institutional and commercial buildings (28%), and residential buildings (15%), while private vehicles (53%) and commercial/institutional buildings (28%) account for the majority of energy costs.

**Energy Use (GJ) by Subsector (2018)**

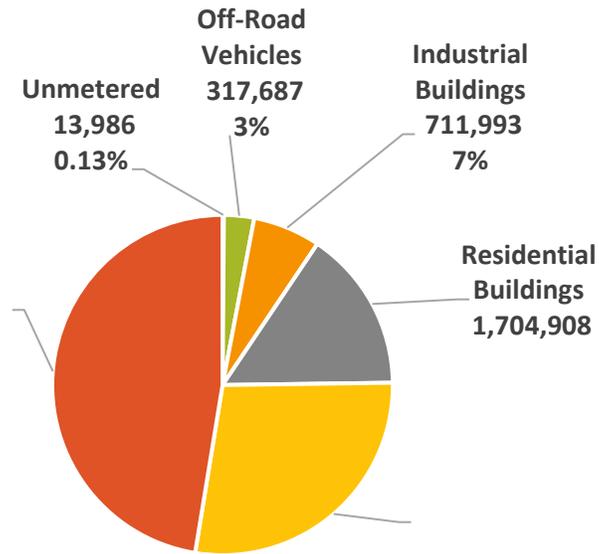


Figure 5: Energy Consumption by subsector in 2018

**Energy Cost by Subsector (2018)**

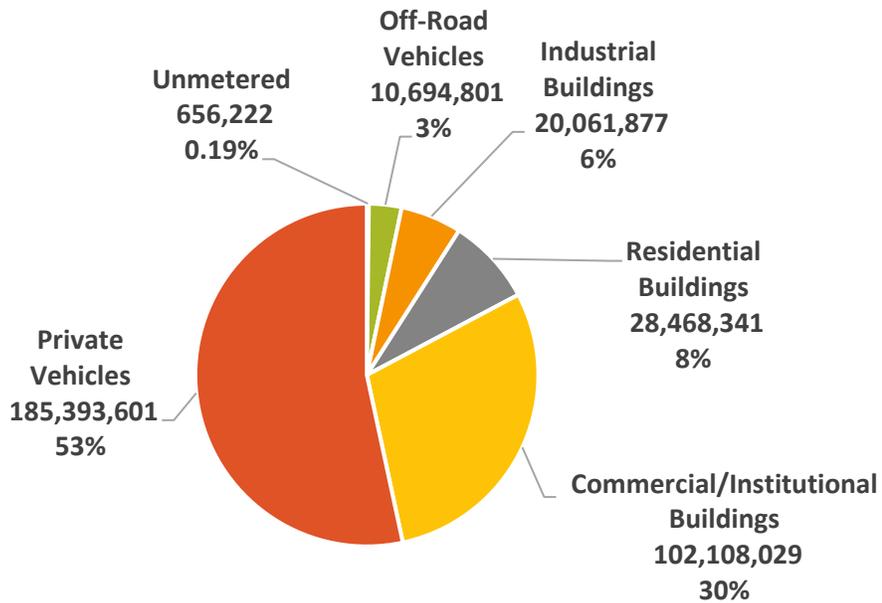


Figure 6: Energy expenditures by subsector in 2018

## Grey County – Climate Change Action Plan

Within the building sector, commercial and institutional buildings contribute most to energy use and costs using 56 percent of the energy and 67 percent of energy expenditures. However, the residential sector generates more emissions (45% of total) due to higher natural gas usage in homes, which per gigajoule of energy has a much higher GHG emissions intensity.

Single-family dwellings make up the majority of residential housing units within Grey County (91%), followed by multi-unit residential buildings (6%), and then by duplexes and townhouses (3%). As a community established in the mid-1800s, nearly 20 percent of residential structures were built before 1900, with about a third of homes built between 1900 and 1980, and roughly half of all homes built after 1980. Identifying the unique characteristics of the buildings in Grey County, and the types of fuel consumed to heat and power buildings provides insight into how and where energy is consumed in the building sector and where opportunities exist for energy conservation measures to be implemented.

The transportation sector accounted for 50 percent of all energy use, 56 percent of energy costs, and 42 percent of emissions. On-road transportation accounts for 94 percent of transportation emissions and off-road vehicles produce 6 percent. Active transportation, primarily walking and cycling, and transit use within Grey County account for less than 1 percent of all trips made, according to data provided by Google's Environmental Insights Explorer. While electric vehicles are present in Grey County, emissions associated with grid-supplied energy cannot presently be disaggregated from the building sector and so have been included there rather than in the transportation sector of the inventory. Overall, on-road travel within Grey County cost an average of \$2,000 on transportation fuel, consumed 56 gigajoules of gasoline and diesel, and generated 3.8 tonnes CO<sub>2e</sub> per person.

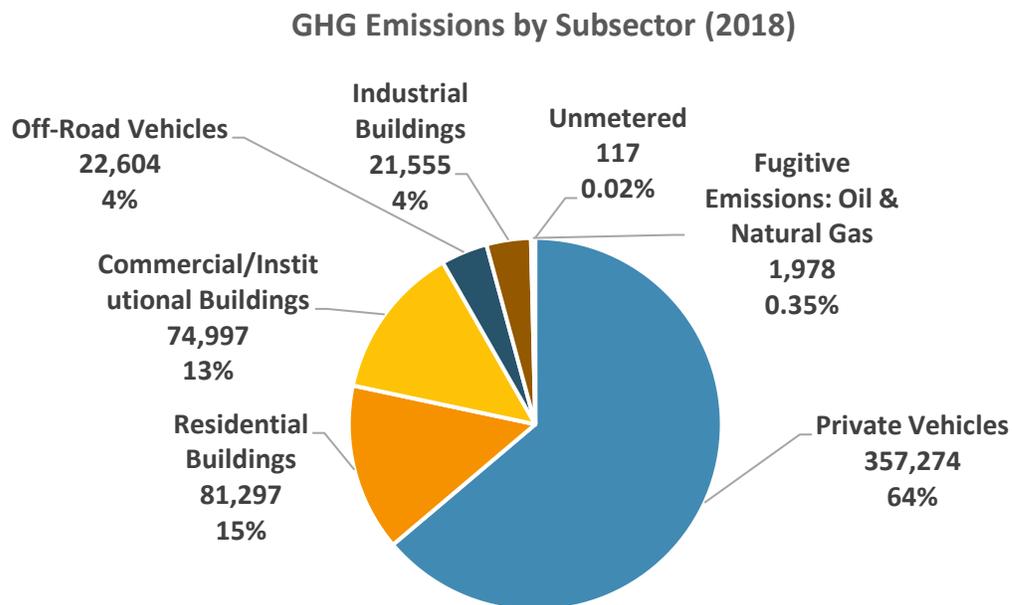


Figure 7: GHG emissions by subsector in 2018

As a result of energy use in Grey County in 2018, the community generated 559,800 tonnes of CO<sub>2</sub>e or 5.6 tCO<sub>2</sub>e per capita from energy use. As diesel and gasoline have a relatively high emissions intensity per gigajoule of energy, private vehicles accounted for 42 percent of emissions, a higher amount than the commercial, institutional, and residential buildings combined. Consequently, by fuel type, gasoline (44%) was the highest source of GHG emissions (Figure 8)

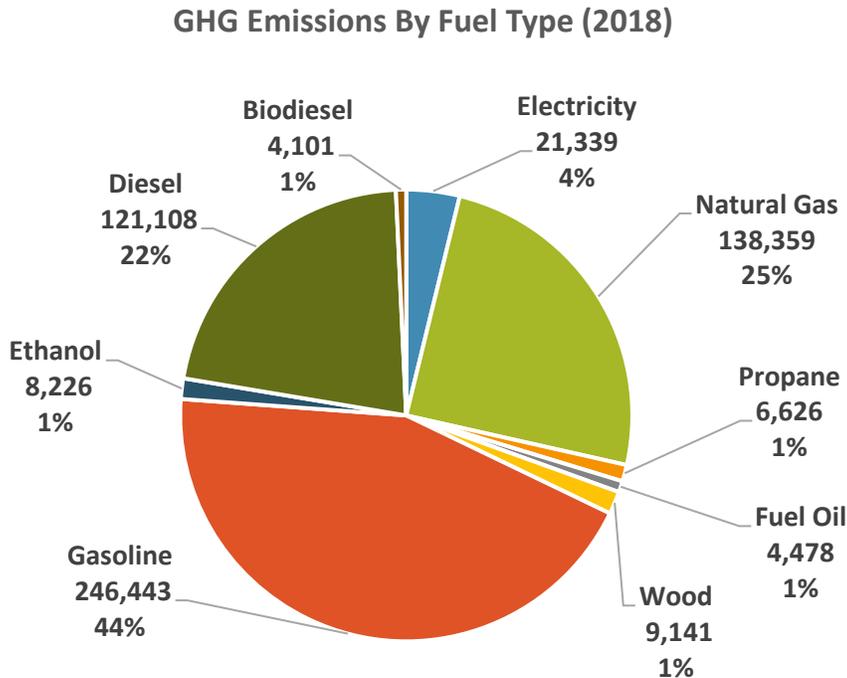


Figure 8: GHG emissions by fuel type in 2018

There are several sectors represented in the emissions inventory that are absent from the energy profile of the community because their emissions are not associated with energy consumption. The subsectors that make up this group in Grey County are wastewater, agriculture, solid waste, and composted organic waste. The waste sector only includes emissions from the decomposition of waste and wastewater, rather than the energy used to operate waste and wastewater facilities which is included under the commercial and institutional building subsector of the inventory. Likewise, energy used to power agricultural vehicles and equipment is included under off-road transportation and energy used to operate facilities is included under the commercial building sector.

### 6.2.2 Business-as-Usual Projection for Fossil Fuel Sources

The Business-as-Usual (BAU) scenario is a projection of future energy consumption, energy costs and emissions for Grey County which assumes that no actions to reduce energy and emissions are taken and that current patterns and trends of energy consumption, energy efficiency, and GHG emissions continue. The underlying assumption of the modelled BAU scenario is that population and employment growth drive energy and emission which leads to more houses, more businesses, more cars on the road, and more waste. However, actions from higher levels of government as well technological changes and broader economic trends that are outside the influence of Grey County that also have an impact on energy consumption and emissions (i.e., fuel and electricity prices, increasing energy efficiency in building codes and vehicles etc.)

The chart below shows the projection in fossil fuel emissions for the community to the year 2050. In the building sector, emissions from population and economic growth are offset by the natural rate of energy efficiency retrofits as well as ongoing improvements to the energy performance of new buildings. Transportation sector energy use and emissions decrease from 2018 to 2050 by 39% and 50%, respectively, primarily as a result of increased EV uptake which outweighs the expected increases in overall vehicle registrations as well as projected electrical grid emission intensity increases to 2040.

**Projected Community-Wide GHG Emissions to 2050 from Fossil Fuel Use**

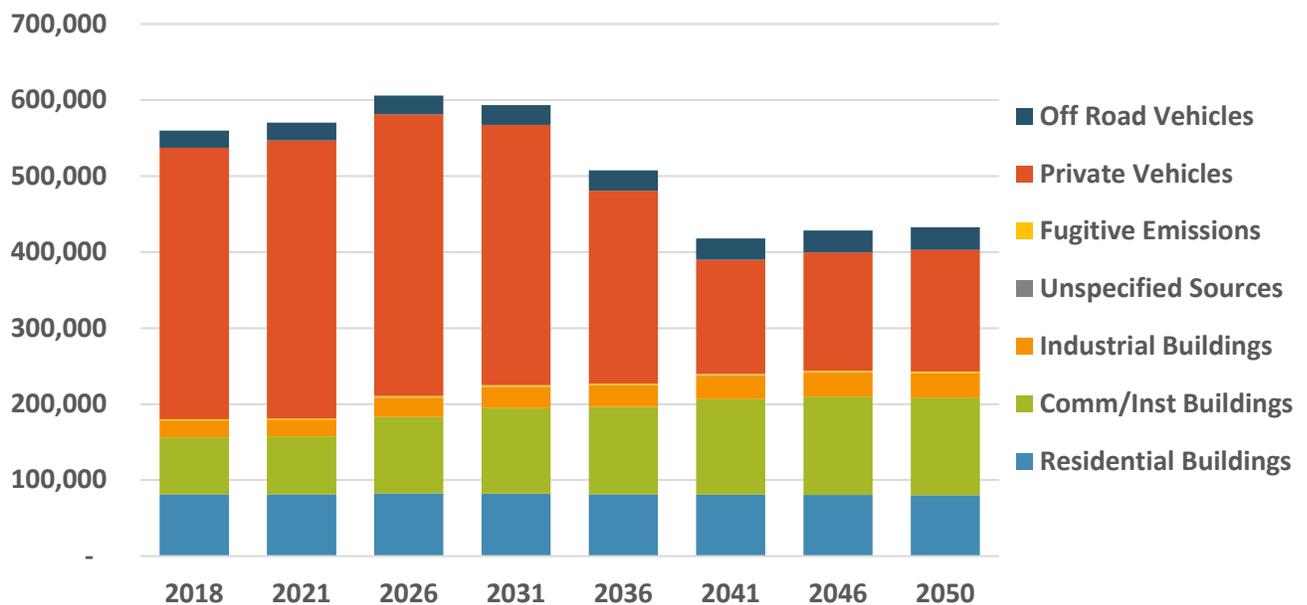


Figure 9: Projection of fossil fuel GHG emissions under a business-as-usual scenario, by sector

### 6.2.3 Emissions Inventory from Biogenic and Waste Sources

Biogenic sources of emissions are primarily produced from the agriculture, forestry, land use change (AFOLU) sectors, as well as from the decomposition of solid waste and wastewater. Emissions from energy consumption to power buildings or to fuel vehicles are not biogenic and are therefore included within the building and transportation sectors in the inventory.

In Grey County in 2018, biogenic emissions were produced from livestock and manure management, as well as from the decomposition of solid waste and wastewater totalled 349,700 tonnes carbon dioxide equivalent accounting for 38 percent of total emissions or 3.5 tonnes of GHGs per capita.

**GHG Emissions from Biogenic Sources and Waste (tCO<sub>2</sub>e)**

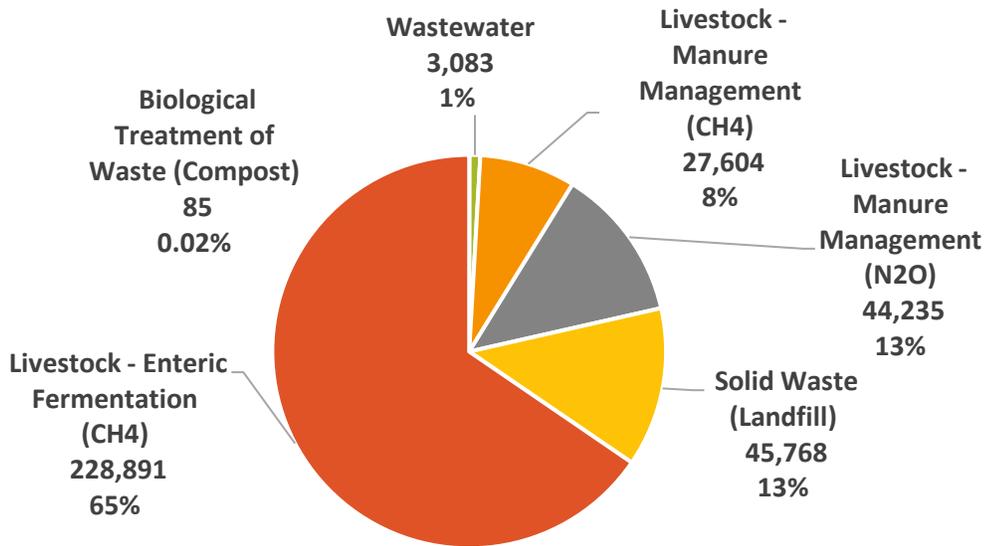


Figure 10: GHG emissions from biogenic sources by subsector in 2018

In 2018, 24,200 tonnes of waste were produced by residents, or 0.25 tonnes of waste per person; lower than the provincial and national averages which are 0.70 and 0.69 respectively<sup>4</sup>. As a result, 45,800 tonnes of emissions were generated from landfilled waste and 85 tonnes from composting (also referred to as the biological treatment of waste).

Wastewater emissions include CH<sub>4</sub> and NO<sub>2</sub> emissions from the degradation of organic material in wastewater and its sludge components. Wastewater emissions resulted in 3,100 tonnes of CO<sub>2</sub>e.

The primary driver of agricultural emissions is the production of CH<sub>4</sub> from enteric fermentation in livestock, as well as CH<sub>4</sub> and NO<sub>2</sub> from manure management practices. Due to the large number of livestock in Grey County this category accounted for 33 percent of all emissions occurring community-wide in 2018. At this time data is not available for Grey County related to soil and crop management, however, nationally agricultural soil management accounts for 42 percent of agricultural emissions according to the National Inventory Report in 2018.

The agricultural sector can act both as a source of emissions and as a sink for sequestering emissions. The source of emissions come from methane produced by livestock, as well as methane and nitrous oxide resulting from manure and soil management. The sequestration of emissions, that is the capture and conversion of carbon dioxide from the atmosphere, can also result from soil management and from plants and trees on agricultural property. While the

<sup>4</sup> Statistics Canada. 2020. Disposal of waste, by source. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810003201>

agricultural sector accounts for a large portion of the community’s overall emissions, the opportunity for carbon sequestration is an important consideration for future development within the sector and has been included within the CCAP’s actions.

**Emissions from Livestock (tCO2e)**

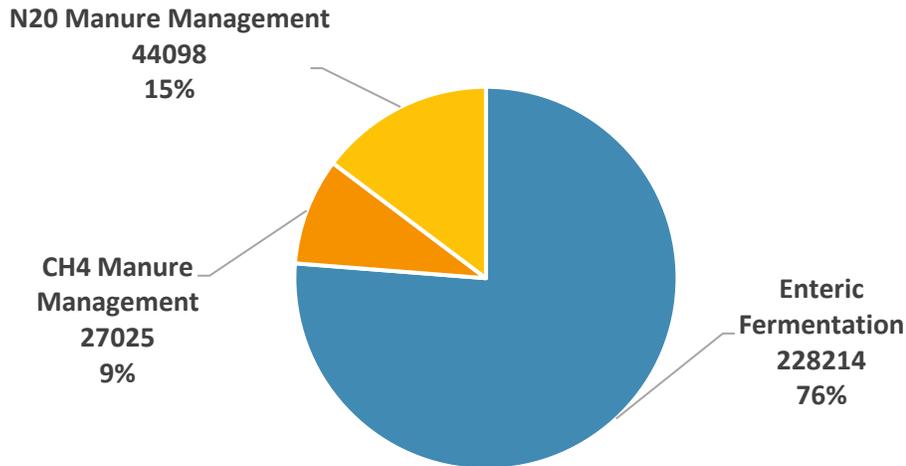


Figure 11: Emissions resulting from agricultural activities in 2018

**6.2.4 Business-as-Usual Projection for Biogenic and Waste Sources**

The projected emissions for solid waste and wastewater to 2050 are primarily driven by population growth. Projected agricultural emissions are estimated from the on the historical emissions growth rate for livestock nationally. The projected increase in emissions from agricultural sources is 3 percent by 2050, and 32 percent by 2050 for waste and wastewater. In contrast to projected fossil fuel emissions, biogenic emissions show a small but steady increase to 2050, as biogenic sources of emissions do not benefit from the normal rate of energy efficiency increase associated with fossil fuel technologies.

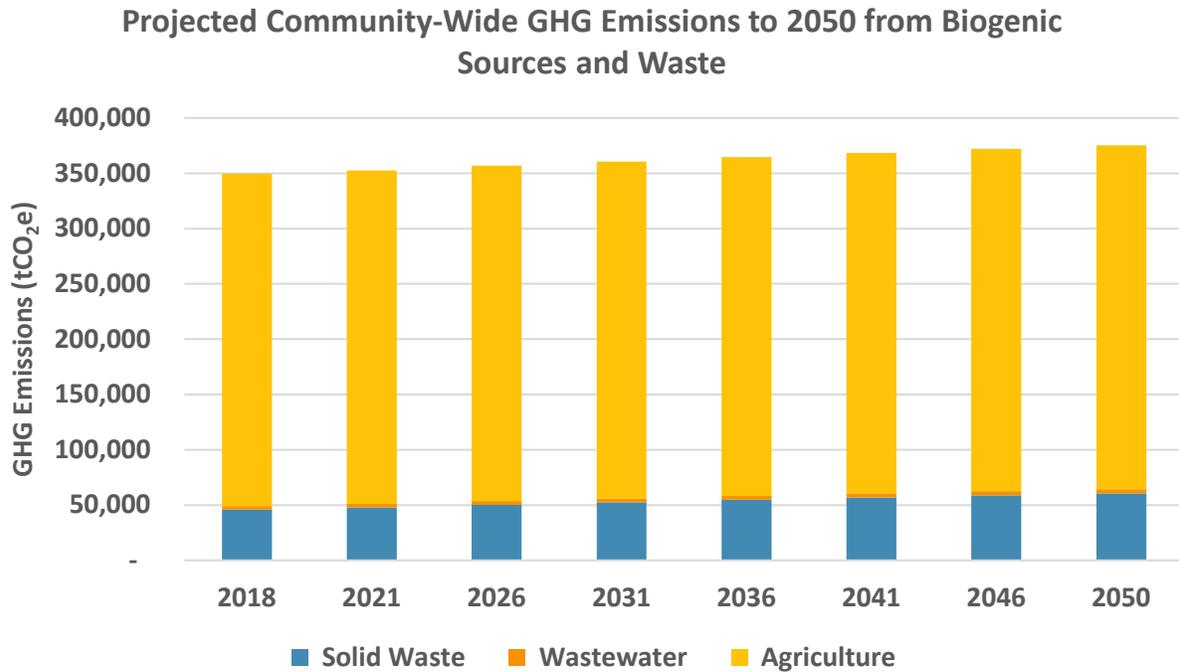


Figure 12: Projection of biogenic GHG emissions under a business-as-usual scenario, by sector

### 6.3 Corporate Emissions in 2018

Corporate emissions account for less than 1 percent of community wide emissions but present an important opportunity for Grey County to lead by example and demonstrate low-carbon technologies and approaches.

#### 6.3.1 Energy and Emissions Inventory from Fossil Fuel Sources

Energy consumption across all Grey County owned corporate facilities, fleet vehicles and equipment, and streetlighting was 98,000 GJ in 2018. Grey County spent \$2.6 million on energy to power its facilities and vehicles. Of the total cost, 76 percent is from buildings and 24 percent is from the vehicle fleet. Total GHG emissions produced by Grey County corporate operations as a result of energy consumption was 3,900 tonnes of carbon dioxide equivalent.

**Municipal Energy Use GJ (2018)**

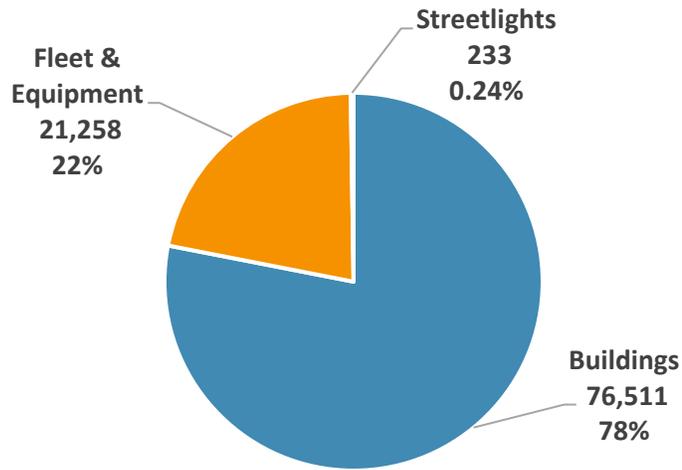


Figure 13: Energy Consumption by the Municipality in 2018.

**Municipal Energy Spending by Sector 2018 (\$)**

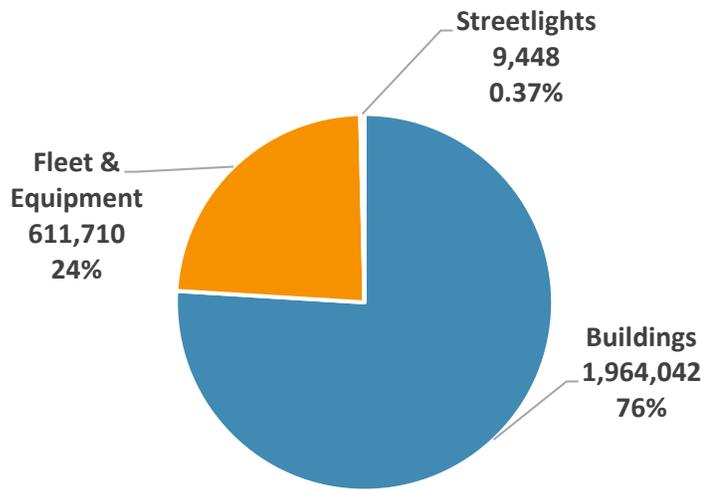


Figure 14: Municipal energy expenditures in 2018.

**Municipal GHG Emissions (tCO2e) by Sector 2018**

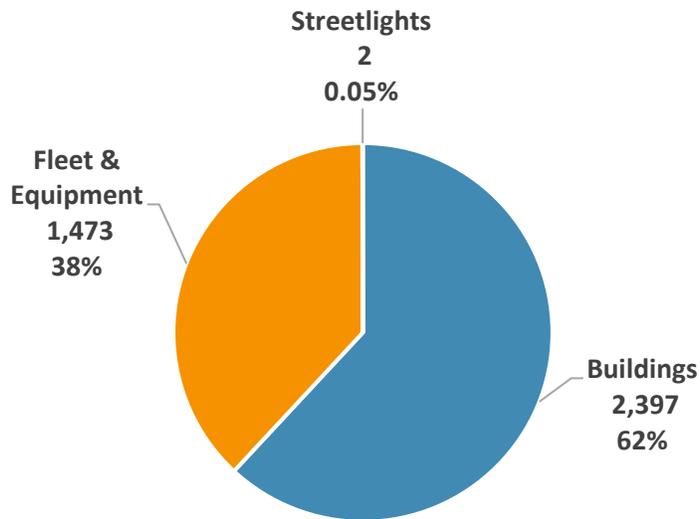


Figure 15: Municipal GHG Emissions by sector in 2018

Building sector energy consumption and emissions are a result of all energy used for heating and powering Grey County’s corporate buildings. Housing was the largest contributor to this sector’s energy consumption (82%) and also accounted for the majority of energy consumption across all of Grey County’s operations (64%). When looking at energy use by fuel type, natural gas was the most significant fuel type used across all sectors, making up 42 percent of fuel consumption, followed by electricity at 36 percent. Buildings were the largest contributor to GHG emissions overall (62%) followed by the vehicle fleet (38%) and streetlighting which made up a small percentage (0.05%). Within the vehicle fleet diesel was the largest source of fuel use (65%) and cost (62%), as well as emissions (66%). Streetlights, which also include traffic signals, consumed 230 GJ of electricity in 2018, contributing 0.4 percent of total energy costs.

Municipal Building GHG Emissions 2018 (tCO2e)

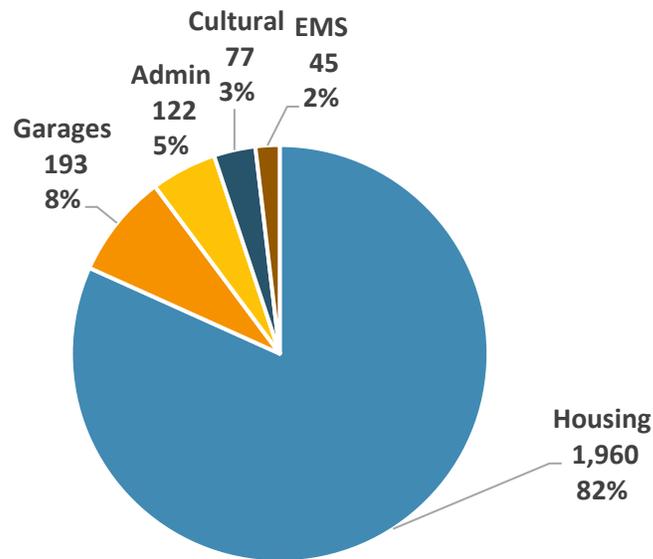


Figure 16: Municipal building GHG emissions by facility type in 2018.

**6.3.2 Business-as-Usual Projection for Corporate Fossil Fuel Sources**

The corporate BAU follows similar assumptions to the community model is primarily driven by population and employment growth. The regional changes outlined above that impact the community’s energy consumption patterns, also affect the energy consumption patterns of municipal operations. However, due to the energy profile of both the community and corporation, which includes varying fuel sources and energy sectors, regional patterns impact each model in different ways. Overall, the trajectory of corporate energy and emissions are similar to the community sector however, there is a greater influence of increased building energy efficiency with respect to employment projections at the corporate level than at the community level and a slight decrease at 2050 is projected.



Figure 17: Projection of corporate emissions under a business-as-usual scenario by operation type.

## 7. Community and Corporate Actions to Address Climate Change

Grey County's CCAP was developed to address the contributing factors of climate change across the community and to create a more sustainable, prosperous, and liveable future for all residents in Grey County. The following section outlines the actions identified through the development of the CCAP to reduce emissions and promote a more sustainable future. The detailed emissions inventory undertaken to establish an emissions profile for Grey County's baseline year informed the set of actions outlined in this plan. Through public consultation, as well as review from internal and external stakeholder working groups, actions have been designed to meet the unique needs and characteristics of the Grey County.

The actions presented in the CCAP target emissions from both the Grey County's own corporate operations as well as the community at large. The actions have been organized according to theme area, starting with actions for the community and then followed by actions for the corporation. Each action includes a description as well as supporting points, and where applicable information regarding the targeted scope for each action, as well as the potential energy, emissions, and energy cost reduction associated has been indicated. For the community, the actions fall under one of eight themes, these include nature-based solutions and agriculture, waste, transportation, buildings and development, energy, climate adaptation, and outreach and engagement. For Grey County's corporate operations, the actions fall under four themes, these include buildings and lighting, vehicle fleet and equipment, waste, and municipal culture.

The scope of the actions presented in the plan have been quantified to show what is needed to achieve ambitious emission reduction targets. The actions identified and the corresponding scope outlined, move Grey County on a pathway towards reaching emission reduction targets for 2030 and 2050. Each action will require the development of more detailed design during the implementation phase of the project; therefore, the scope of actions will likely shift and adapt overtime with a goal for meeting overall emission targets established for 2030 and 2050. Not all actions include direct emission reductions, either because the action is focused on sustainability more generally, an estimate for the reduction potential is not quantifiable, or the quantification was included with another action and could not be disaggregated. Where this is the case, a note will be provided to readers. At the end of this section, the cumulative emission reduction from the quantifiable actions is be presented. Information regarding action implementation, including lead organization(s), supporting partner(s), relative cost, timeframes, and funding opportunities is provided in the Implementation, Monitoring, and Review section of the plan.



## 7.1 Community Actions

### 7.1.1 Biogenic and Waste Emission Actions

#### Theme 1 - Nature-based Solutions & Agriculture

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Objective: To maximize nature-based climate solutions through protection of existing ecosystems and afforestation efforts and prioritizing the needs of farmers and their role in climate solutions, by developing resources and tools, leveraging funding for on-site projects and new technologies as well as recognizing the importance of a vibrant, sustainable, and healthy farming community to Grey now and into the future.

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Grey County's landscape presents unique opportunities for nature-based climate solutions. Expanding and protecting natural areas also increases biodiversity and ecosystem health, allowing for the continued provision of essential ecosystem services that provide natural purification of water, erosion and flood control, nutrient cycling, soil formation and storm water management. These elements play an important role in climate adaptation. Increased tree canopies also provide shade, reduce the cooling needs required of buildings, increase stormwater management, and lead to more nature-based tourism opportunities. With between 40-45 percent of the community forested there is a unique opportunity to advance nature-based solutions across Grey County.

Grey County has a large agricultural sector that plays an important role in the larger community, identity, and economy of the community. Farmers are stewards of the land, maintaining soil and landscape health, as well as feeding our communities. Due to the size and strength of the agricultural community, in proportion to the residential, commercial, industrial and transportations sectors, agriculture accounts for approximately 33 percent of GHG emissions in Grey County. In the business-as-usual scenario, emissions from the agricultural sector are projected to account for 32 percent by 2030 and 38 percent by 2050. In addition to mitigating climate change, the actions outlined present an opportunity to work together to further farm prosperity by leveraging provincial and federal funding, providing cost-sharing opportunities, generating cost savings by improving on-farm efficiencies, exploring sustainable ways to increase farm productivity, creating agri-tourism opportunities, and demonstrating climate leadership.

Cost savings as a result of efficiency gains (energy and otherwise) and improved farm productivity and yields can be reinvested into other aspects of farm improvement and sustainability. Furthermore, environmental benefits from sustainable farming practices include preservation of wetlands and reduction of runoff that produces eutrophication (production of algae blooms as a result of excess nutrients in wastewater and agricultural runoff). Many mitigation actions have synergies with climate change adaptation and will help increase resilience to climate impacts, prevent loss of income due to climatic changes, as well as preserve waterways as freshwater reserves become scarce as result of climate change.



## Action 1: Afforestation, Habitat and Biodiversity Protection

Reforestation, planting trees where they once stood and afforestation, adding additional trees, has the potential to capture carbon dioxide from the atmosphere and convert it into biomass. Sequestering carbon dioxide will support our efforts to meet emission reduction targets at 2030 and reach net-zero emissions by 2050. The Federal government has committed to planting 2 billion trees by 2030 across Canada as part of their climate action program and Grey County aims to establish tree planting initiatives with similarly ambitious goals.

**Recommendation:** Develop a multi-faceted approach to advance the protection of natural assets, throughout Grey County. The strategy considers the critical importance of conservation areas, natural assets owned by the County (which total over 8,500 acres), ecologically sensitive areas, and opportunities for enhancing natural assets managed by private property owners across the community.

### Target Scope of Action

By 2030, 1 million and by 2050, 5 million trees are planted across Grey County or equivalent sequestration from habitat and biodiversity protection.

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The approach includes supporting tree planting programs, such as those by the Grey Sauble, Grand River, Nottawasaga Valley and Saugeen Valley Conservation Authorities, that provide guidelines, resources, and trees to property owners in the Grey County; implementing the tools and resources that protect and enhance natural assets; the consideration of partnerships to develop and support naturalization projects; and the monitoring, and protection of Grey County owned forests which act as a source for carbon sequestration. Critical wildlife habitats, such as wildlife corridors and endangered species habitat, will be prioritized, especially for pollinator species essential for a healthy agricultural sector.

	<b>Annual Reduction Potential at 2050</b>	<b>Cumulative Reduction Potential to 2050</b>	<b>Relative Impact</b>
GHG Emissions (tCO <sub>2</sub> e)	30,000	378,000	Medium
Energy Consumption (GJ)	NA	NA	NA
Energy Cost Savings (\$CAD)	NA	NA	NA

**As part of the Afforestation, Habitat and Biodiversity Protection action, the following supporting components will also be included:**

- ✓ Expansion of naturalization programs and integration within Grey County's existing planning processes, including Grey County's Forestry By-law and the Forestry Management Plan.
- ✓ Provision of incentives from Grey County in partnership with local Conservation Authorities, and other partners to encourage naturalization and tree planting on private property.
- ✓ Inclusion of natural assets, wetlands, ecosystems, and Areas of Natural and Scientific Interest within the Climate Adaptation Plan action and exploration of opportunities for green infrastructure/natural assets to replace grey infrastructure.
- ✓ Development and enhancement of management plans for Natural Heritage Systems Areas, as well as collaboration with member municipalities on the creation of urban forest management plans and tree cutting by-laws.
- ✓ Update of inventories and evaluations of natural assets, green spaces, wetlands, ecosystems, including on-going aerial surveys to assess land use changes and sequestration potential (where possible, measure changes against previous 20-year period).
- ✓ Explore programs, such as tree give aways, to encourage naturalization and tree planting/preservation on public and private property.
- ✓ Development of programs to promote naturalization and tree planting/preservation on institutional properties (i.e., Grey County and municipal owned properties, hospitals, schools, etc.) and along roadways/highways including living snow fences to protect crop land from significant winds.
- ✓ Enhancement of pollinator habitats on public and private lands through the provision of guidelines, resources, and support for what, how and when to plant.
- ✓ Explore opportunities to support the protection of hedgerows/fencerows within fields as wildlife corridors, as well as to reduce windspeed and erosion.

## Action 2: Conservation and Protection of Wetlands

Identify through mapping, areas in Grey County where there is wetland loss and develop a program that encourages conservation. Build on existing source water protection programs and policies.

**As part of the Conservation and Protection of Wetlands action, the following supporting components will also be included:**

- ✓ Undertake improved and expanded wetland evaluation and mapping in partnership with local Conservation Authorities and the Ministry of Natural Resources and Forestry.
- ✓ Provision of resources and support to the Conservation Authorities for watershed monitoring and reporting activities; explore with ALUS opportunities to compensate landowners for maintaining protected wetlands on their properties.
- ✓ Collaboration with the agricultural community to find alternatives to tile drainage and provide educational resources on the importance of ecological features; developing in partnership with the agricultural community and Conservation Authorities, Grey County tile drainage guidelines and best practices to protect wetland hydrology.

*Energy and emission reduction estimate not applicable for this action.*

## Action 3: Facilitate Ongoing Capacity Building in Sustainable Agricultural Best-Practices

Actions in the agricultural sector will provide support, capacity-building, and facilitation activities to farmers to encourage continued and increased sustainable and farming techniques that reduce GHG emissions from livestock and manure management, increase carbon sequestration in plants and soil, and improve protection of the environment such as nearby wetlands that are affected by agricultural activity.

**Recommendation:** Support Grey Agricultural Services and their capacity-building network that delivers forums, training sessions, resources, and supports knowledge sharing amongst farmers in Grey County and beyond. Work with local partners including Alternative Land Use Services to deliver programs to the Agricultural community that reward sustainable farm practices. Explore opportunities to support additional revenue opportunities and income diversification in the agricultural sector such as on-farm businesses and carbon offset programs.

### Target Scope of Action

By 2030 20% of natural land for pasture and 30% of cropland are under best management practices for carbon sequestration; By 2050 60% of natural land for pasture and 90% of cropland are under best management practices for carbon sequestration; 50% of manure is managed under best practices.

GHG Emissions (tCO <sub>2</sub> e)	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
Manure Management	11,300	164,300	Low

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Enteric Fermentation	45,000	511,700	Medium
Sustainable Soil and Crop Management	196,300	2,862,600	High

**As part of the action to Facilitate Ongoing Capacity Building in Sustainable Agricultural Best-Practices, the following supporting components will also be included:**

- ✓ Support for improving manure management and nutrient loss from livestock production systems, including but not limited to enhancing manure collection, storage, treatment, animal diet changes, and improved and manure deposition and application. Leverage existing expertise at OMAFRA and local higher education institutions.
- ✓ Support research and pilot projects related to the reduction of methane production in ruminants, and improving the digestibility of feed including, but not limited to, methane reducing feed livestock supplements, livestock selection for enhanced food conversion, productivity and reproductive efficiency, enhanced quality of feed and forage diets, precision feeding, and improved animal health and welfare.
- ✓ Support for increasing carbon sequestration and storage in soil and farmland, including but not limited to enhancing crop and pastureland management (i.e., cover cropping, crop rotation, adaptive multi-paddock grazing), restoration of degraded lands, conversion of marginal farmlands to perennial grass and trees, and agroforestry. Continue to monitor development of Federal, Enhanced Soil Organic Carbon and Livestock Feed Management carbon offset protocols and support farmers in participating in these programs once established. Explore role for Grey County as aggregator to enable smaller producers to participate in carbon offset programs.
- ✓ Connecting key sectors of the regional economy on decarbonization initiatives, including highlighting the opportunity for local carbon sequestration and other on-farm decarbonization projects through the Carbon Offset Coalition initiative launched by the Nuclear Innovation Institute and Bruce Power.
- ✓ Collaboration with the agricultural community to facilitate on- farm sustainability program applications (e.g. Canada-Ontario Farm Plan, OMAFRA nutrient management plans), and use of existing GHG modelling tools for the agricultural sector (e.g. HOLOS)
- ✓ Engagement with academic and government research institutions specializing in agriculture to develop reference materials for farmers as well as on-farm demonstrations, and pilot and research projects. Collaborate with County of Wellington on Experimental Acres Project.
- ✓ Recognition for farmers currently implementing sustainable and regenerative farming practices.
- ✓ Advocate to other levels of government and the Canadian Agricultural Partnership (CAP) to bring funding to Grey County for an Agriculture Demonstrating Sustainability program which supports best management practices on farms as well as economic development and continue to support the Regional Agriculture Learning and Demonstration Site (RALDS) agri-food demonstration project at Grey Roots Museum.
- ✓ Continued support and participation in SWIFT, a regional broadband expansion project committed to improving access to high-speed internet services across Southwestern Ontario to allow use of advanced computerized systems for farm management.

## Action 4: Continue to Promote Locally Grown Food

The action will leverage existing local food-focused resources including Grey County's Agricultural Advisory Committee, the agri-food focused Economic Development Officer, and support the implementation of the Grey's Local Agri-Food Strategy.

**Recommendation:** Apply climate lens to next update of the Grey County Local Agri-Food Strategy.

**As part of the action to Continue to Promote Locally Grown Food the following supporting components will also be included:**

- ✓ Continued promotion on Grey County's website of information on local food providers, the benefits of supporting local economies and consuming fresh produce, farmers market hours and locations, and links to distributors' websites and contact information.
- ✓ Maintain, promote, and expand the existing Grey County Agri-Food Asset Map to enable residents to access local food and explore opportunities to support connections between local producers and purchasers.
- ✓ Support Eat Local Grey Bruce Food Co-operative in connecting local producers to local consumers.
- ✓ Support for farmers markets to open on additional days and/or for extended hours and support increased accessibility to markets through public transit access and active transportation infrastructure.
- ✓ Promotion of existing organizations and initiatives that enable the purchase of locally produced products.
- ✓ Explore "Grown-in-Grey" labelling system so consumers know what products were produced in Grey for use in local grocery stores.

*Energy and emission reduction estimate not applicable for this action.*

## Theme 2 - Waste

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Objective: To collaborate with and support member municipalities in their initiatives to divert waste from landfills, to establish innovative ways to create a circular economy in Grey County and work together with the community to sustainably manage our waste well into the future.

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In 2018, residents of Grey County produced 24,200 tonnes of municipally managed waste or 0.25 tonnes of waste per person. Although this is lower than the provincial and national averages of 0.70 and 0.69 respectively, it can be minimized further<sup>5</sup>. Emissions associated with waste and wastewater are a result of methane, a potent greenhouse gas, released during decomposition. Solid waste generated 45,800 tonnes of emissions from landfill, 85 tonnes from composting, and

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<sup>5</sup> Statistics Canada. 2020. Disposal of waste, by source. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810003201>

3,100 tonnes from wastewater. Collectively, waste and wastewater accounted for 5 percent of the community’s emissions in 2018.

**Waste and Wastewater Emissions by Subsector (tCO<sub>2</sub>e)**

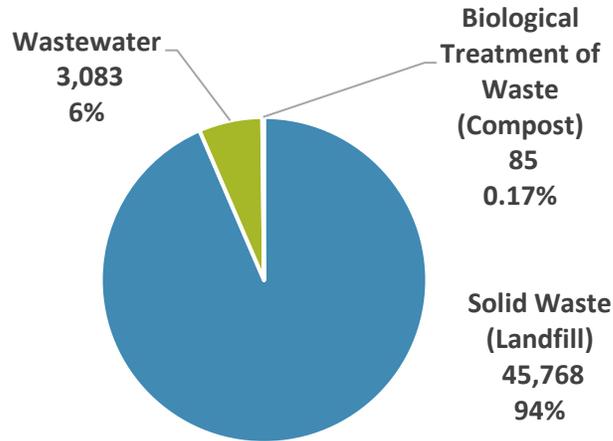


Figure 18: Waste emissions by subsector in 2018.

In order to reduce emissions from the decomposition of waste, where possible, waste should be reduced, and diverted from landfills. [Grey County’s Official Plan, Recolour Grey](#), supports and encourages waste reduction, maximizing the value of waste, and working towards a circular economy as the best response to managing waste. The CCAP actions build upon the waste policies in Recolour Grey by developing initiatives to divert waste from landfills, including recycling, re-purposing of materials, reusing materials, and composting organic waste. The co-benefits of reducing waste from landfills, include increasing the longevity of the landfills in Grey County, reducing waste that can end up entering local waterways, and creating a circular economy that allows for materials to be repurposed, reducing the cost of firsthand items and generating funds for other community priorities.

## Action 5: Collaborate with Member Municipalities to Support Waste Diversion

As solid waste decomposes in our landfills, methane, a potent greenhouse gas is released into the atmosphere. There are several approaches to reducing the amount of waste that ends of up in landfills, including expanding recycling programs, increasing composting, reducing, redirecting food waste, sending surplus organic materials to biogas facilities, installing methane capture technology at landfills, and increasing efforts to re-use materials and goods. To reach our climate goals, our waste diversion efforts aim to reduce the amount of solid waste that ends up in landfills by at least 10 percent by 2030, and 30 percent a year by 2050. While methane is released during the decomposition of all solid waste, an additional target of 50 percent has been set for organic waste as these sources result in higher emissions per tonne than inorganic waste.

### Target Scope of Action

By 2030, 10% and by 2050, 30% of all solid waste is diverted from landfill and by 2050, 50% of organic waste is diverted from landfill.

**Recommendation:** Collaborate with member municipalities to determine how Grey County can best support ongoing and new waste diversion initiatives, encourage resource sharing, and promote a circular economy across all member municipalities. Explore opportunities to use biogas technologies in waste management systems.

	<b>Annual Reduction Potential at 2050</b>	<b>Cumulative Reduction Potential to 2050</b>	<b>Relative Impact</b>
GHG Emissions (tCO <sub>2</sub> e)	22,000	348,400	Medium
Energy Consumption (GJ)	NA	NA	NA
Energy Cost Savings (\$CAD)	NA	NA	NA

**As part of the action to Collaborate with Member Municipalities to Support Waste Diversion, the following supporting components will also be included:**

- ✓ Explore harmonization of waste collection streams across member municipalities and support for existing waste diversion initiatives in member municipalities as well as the collection of additional waste streams to divert waste from landfill (e.g. plastic wrapper, bale twine, Styrofoam, film plastic, mattresses, e-waste, textiles, etc.).
- ✓ Advancement of organic waste diversion across Grey County. This can include the promotion of and support for backyard composting, encouraging pick-up of organic curbside waste for non-rural residents (member municipalities or private sector), inclusion of organic waste in biogas facilities, as well as facilitation of education and awareness programs.
- ✓ Advocate to other orders of government for the “right-to-repair” so that residents are able to repair their existing appliances and equipment rather than replacing them.
- ✓ Promotion of community waste diversion initiatives and events such as curbside giveaway days, community garage sales, and re-use it/re-build it centres.
- ✓ Regular review of waste collection programs to identify opportunities to continually expand diversion efforts.
- ✓ Continue to support local programs, such as [Second Harvest Food Rescue](#) in Grey Bruce, enabling commercial kitchens that use excess food from fruit and vegetable markets, grocery stores, and growers to provide community meals for people in need.
- ✓ Collaboration with the commercial and institutional sector to ensure existing recycling initiatives and newly developed re-use pathways are effectively implemented.
  - Facilitation of waste audit initiatives within the commercial and institutional sector, and support for programs and policies that encourage increased waste diversion.
  - Promotion of social enterprise models for waste reduction and diversion that create employment opportunities and advance economic, social, and environmental benefits for the community.

## **Action 6: Support Re-Use/Re-Build It Centers and Programs**

Support the expansion of existing ‘re-use it/ re-build it’ centers, managed by [Habitat for Humanity Grey Bruce](#), for residents and businesses in Grey County. These centers enable materials from construction sites and renovated buildings (doors, cabinetry, sinks, etc.) to be made available for purchase and re-use.

**As part of the action to Support Re-Use/Re-Build It Centers and Programs, the following supporting components will also be included:**

- ✓ Promotion through education and awareness across Grey County’s residential and business sectors will be a key component in supporting the program.
- ✓ Connection of the building retrofit program with a re-build it center initiative to reduce retrofit materials from ending up in landfill.
- ✓ Collaboration with stakeholders in the development community to encourage and facilitate greater uptake.
- ✓ Explore and support a community tool library concept; promote resources related to repair programs.

*Energy and emission reduction potential included in quantification of Action 5.*



## 7.1.2 Fossil Fuel Emission Actions

### Theme 3 - Transportation

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Objective: To transition Grey County's transportation sector to low-carbon vehicles and increase participation in active transportation modes, reduce emissions, increase air quality, and encourage healthy lifestyles while increasing connectivity and mobility amongst rural and urban spaces across Grey County.

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In 2018, the population of Grey County was 99,100, and employment was at 42,700. Grey County encompasses an area of 4,500km<sup>2</sup> with nine member municipalities, which together have a 47 percent urban population and 53 percent rural population<sup>6</sup>. Due to the vast expanse of Grey County and the large rural population, transportation throughout the community has unique characteristics and priorities. Private vehicle use, both on and off-road, account for 99 percent of

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<sup>6</sup> Grey County. 2014. Transportation Master Plan.

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the vehicle kilometers travelled, less than 1 percent of all trips are made are by active modes (walking and cycling) and transit.

### Total Vehicle Kilometers Travelled (All Modes, 2018)

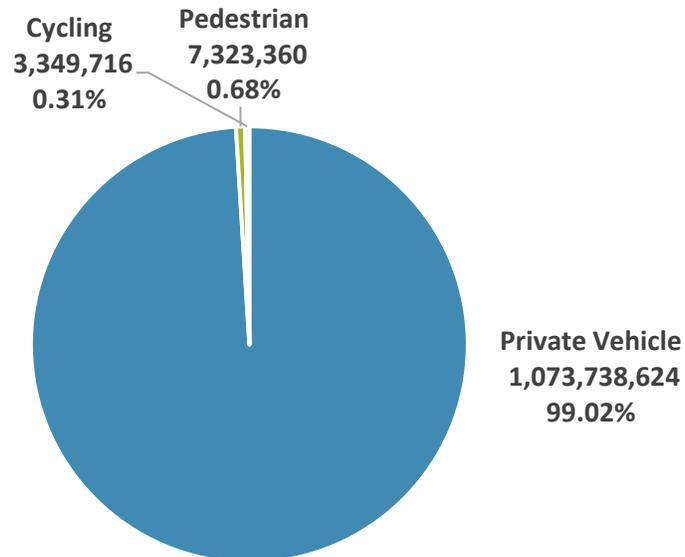
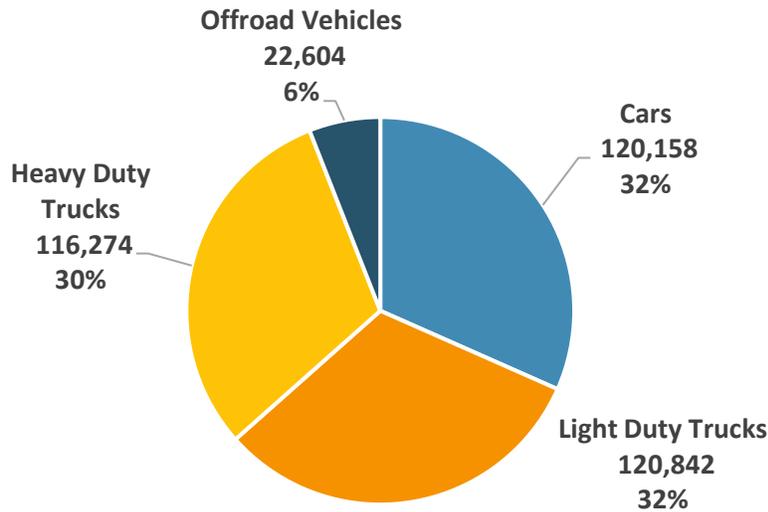


Figure 19: Kilometers travelled by transportation mode 2018 (Google Insights Explorer, Grey County)

In 2018, the average person in Grey County spent \$2,000 on fuel for private vehicles and generated 3.8 tonnes of CO<sub>2</sub>e. Community-wide, energy consumption from transportation fuels made up 50 percent of all energy consumption, 56 percent of energy cost, and 68 percent of all fossil fuel emissions.

**Transportation GHG Emissions by Subsector 2018 (tCO<sub>2</sub>e)**



*Figure 20: Transportation Emissions by subsector in 2018.*

There are several planning documents in place that set the strategic direction for transportation in Grey County, including the Transportation Master Plan, Cycling and Trails Master Plan, and Recreational Trails Master Plan. The transportation actions outlined in the CCAP build from, reinforce, and carry the same strategic direction as outlined in transportation planning currently in place in Grey County. However, the actions outlined in the CCAP focus specifically on the emission reduction potential realized by encouraging active transportation, transit usage and ride-sharing, as well as electric vehicle adoption (which has not been included in previous plans).

Along with reducing emissions that contribute to climate change, there are many co-benefits to the community that can be realized through the implementation of the transportation actions outlined. This includes increasing mobility for households with limited access to private vehicles, increasing road and trail safety throughout Grey County, improving connectivity between municipalities, reducing rural isolation, increasing air quality, and encouraging healthy lifestyles. From a climate adaptation perspective, increased mobility and connectivity improves access to essential and emergency services for rural populations in the event of extreme weather events or other disasters.

## Action 7: Zero-Emission Vehicle Adoption

In 2018, 150 million litres of diesel and gasoline were utilized to power transportation systems, which accounted for 42 percent of the emissions across all sectors in Grey County and 68 percent of the emissions from fossil fuel consumption. Shifting to zero emission and low-emission vehicles will be a critical part of reaching our climate goals while also providing many co-benefits to the community. The Zero Emission Vehicle action will encourage the adoption of electric and hydrogen fuel cell vehicles throughout Grey County and move towards a phase out of internal combustion engine vehicles by 2050. The Federal government has committed that by 2035 all new light-duty cars and passenger truck sales in Canada will be zero-emissions.

### Target Scope of Action

By 2030 25% and by 2050 100% of vehicles registered in Grey County are zero-emission vehicles.

**Recommendation:** Encourage the adoption of electric vehicles (EVs) by transitioning Grey County into an electric vehicle ready region through the installation of EV charging infrastructure, and education and awareness about EV options. The strategy will build on the Regional EV Network Study being conducted in partnership with County of Wellington, County of Dufferin, County of Perth, County of Huron, Grey-Bruce Public Health, City of Guelph, Our Energy Guelph, and the [Nuclear Innovation Institute](#), and include the installation of EV charging stations for public use at municipally-owned facilities and parking lots, preferred parking stalls for electric and low-emission vehicles, as well as encourage the adoption zero-emission vehicle fleets belonging to local businesses and institutions and the installation of EV charging stations at tourist destinations throughout Grey County.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	165,400	2,360,000	High
Energy Consumption (GJ)	2,482,800	36,477,800	High
Energy Cost Savings (\$CAD)	\$22,733,300	\$460,073,400	High

**As part of the Zero-Emission Vehicle Adoption action, the following supporting components will also be included:**

- ✓ Inclusion of EV readiness for new buildings in the green development standard.
- ✓ Creation of a page on Grey County’s website with information about EVs and a map of EV charging stations throughout the County.
- ✓ Provide education and outreach to car dealers in Grey County about EVs.
- ✓ Advocacy to the provincial and federal government for continued support of EV infrastructure, including public charging for private and commercial vehicles, zero-emission vehicle mandates, bi-directional charging and storage, as well as increased financial incentives for EV and low-emission vehicle sales.
- ✓ Promotion of organizations that provide educational programs related to EV adoption, and leverage the information contained within the recent Nuclear Innovation Institute

report, [Plugging In: Why Bruce, Grey and Huron must prepare for the electric vehicle future.](#)

- ✓ Market Grey County as an EV-friendly tourism destination in public campaigns by highlighting available infrastructure once present.
- ✓ Explore the development of a county-wide electric car share program by a third-party provider.

## Action 8: Active Transportation

Of private vehicle trips made in 2016, 38 percent were short-duration trips, trips 15 minutes or shorter, equivalent to roughly 4 million vehicle kilometers travelled. The active transportation action will support the adoption of alternatives to private vehicles for short trips by advancing complete walkable community development, and

making active transportation networks more accessible, safe, and connective. In order to support Grey County’s climate change goals, the Active Transportation action will aim to increase the number of kilometers travelled by active transportation for short duration trips to 25 percent annually by 2030, and to 40 percent annually by 2050.

### Target Scope of Action

By 2030 25% and by 2050 40% or short duration trips are made by active modes of transportation.

**Recommendation:** Encourage active transportation and mode shifting from single-occupancy vehicles within Grey County. The strategy includes implementing the recommendations from the 2020 Grey County Cycling Trails Master Plan to support active commuting and connectivity between member municipalities, implementing the recommendations from the 2019 Recreational Trails Master Plan, and building on the Grey Bruce Health Unit Complete Streets Policy and Implementation Guide for upgrades to urban roadways to ensure streets are ‘complete’ and designed for the use and safety of all road users, including pedestrians, cyclists, transit riders, and vehicles.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative GHG Impact
GHG Emissions (tCO2e)	1,100	253,300	Medium
Energy Consumption (GJ)	129,100	5,275,800	Medium
Energy Cost Savings (\$CAD)	\$38,035,600	\$441,461,600	Medium

**As part of the Active Transportation Action, the following supporting components will also be included:**

- ✓ Continued support for complete, compact development within settlement areas so residents can access amenities and services by active transportation modes.
- ✓ Installation of visually appealing and colourful bicycle racks at all municipally owned properties including parks, and engagement with students from local community colleges and schools to participate in the design process.

- ✓ Collaboration with employers in Grey County to promote alternative transportation modes including active transportation and carpooling.
- ✓ Regular review of plans and assessment of opportunities for additional bike routes, paved shoulder upgrades, trail connectivity to urban centres as well as parks and green spaces.
- ✓ Continued year-round maintenance improvements for sidewalks and pedestrian walkways that facilitate convenient, accessible, and safe pedestrian travel, ensuring sufficient road-crossings and signage for pedestrian safety and wayfinding infrastructure for trail users.
- ✓ Continued promotion of active transportation throughout Grey County, such as existing annual cycling events and resources.
- ✓ Explore opportunities to support and promote electric bicycles for mid-distance trips of 5-10kms.

### **Action 9: Rural Bus, Ride Share and On-demand Transit Program**

Expand rural to rural, and rural to urban connectivity by increasing rural bus services (numbers of days, times of day, ridership, geographic area) and promoting/developing available ride share programs. Exploring further integration of connections between Grey Transit Route and urban GO Transit connections. Developing a detailed business case, considering the costs and benefits of a demand responsive transit model with flexible routing and schedules versus a fixed route model during times of high demand. An accessible and affordable transit program that enables both lower carbon transportation and also improves access of low-income residents to employment, education, food and other household needs.

**As part of the Rural Bus, Ride Share and On-demand Transit Program action, the following supporting components will also be included:**

- ✓ Monitoring of existing Grey Transit Route (GTR) Service and assessment of opportunities for further expansion of the service. Consider and analyse fee-supports to enable low-income residents to access public transportation.
- ✓ Support zero-emission vehicles within the transit fleet; explore federal funding offers such as the Rural Transit Solutions Fund to support zero-emissions transit solutions.
- ✓ Establishment of new and/or support for existing ride share services, peer-to-peer car sharing, taxi buses, and carpooling.
- ✓ Coordination between existing transit providers using technology, such as phone-based applications to organize rides and track buses.
- ✓ Identification of potential partners such as existing mobility and transportation companies for the delivery and operation of the service.
- ✓ Work with organizations including the [Grey Bruce Poverty Taskforce](#) on awareness and education campaign about the benefits of shifting to public transportation.

*Energy and emission reduction estimate not estimated for this action.*

## Theme 4 - Buildings and Development

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**Objective:** Continue to promote compact, mixed-use development and integrate sustainable growth principles into land use planning processes, while preserving and enhancing Grey County’s natural areas to create healthy, vibrant, sustainable communities to live, work and play; to prioritize energy conservation by building cleaner more efficient buildings, retrofitting existing structures, creating indoor spaces that are more comfortable for residents while ensuring policies are equitable and reduce energy poverty across our communities.

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The CCAP land use planning actions build on Grey County’s existing land use planning documents and actions currently working to advance sustainable growth, mitigate climate change and preserve natural assets. These include Recolour Grey: County Official Plan, the Grey County Growth Management Strategy, the Develop Grey Discussion Paper, the Grey County Natural Heritage System Study (Green in Grey), and the Natural Grey Discussions Paper.

These actions also have the potential to provide health benefits by increasing access to green spaces and enabling more active lifestyles as more compact, mixed-use developments increase walkability and pedestrian-friendly environments. Additional benefits include enabling easier access to amenities, encouraging transportation mode-shifting, increasing property values, revitalizing downtown areas, promoting tourism, attracting private investment, reducing cost associated with infrastructure and municipal services due to shorter distance to travel (i.e. police, fire, ambulance).

In 2018, residents and businesses consumed 5.5 million gigajoules of energy to heat and power buildings across Grey County. Energy consumption in buildings accounted for 50 percent of all energy consumed in the community and produced 20 percent of all emissions and 32 percent of fossil fuel emissions. Collectively, the cost associated with energy consumption in the building sector was roughly \$151 million or \$1,500 per person. The total greenhouse gas emissions were 180,000 tonnes CO<sub>2</sub>e, nearly 2 tonnes per person.



**Building GHG Emissions (tCO<sub>2</sub>e)**

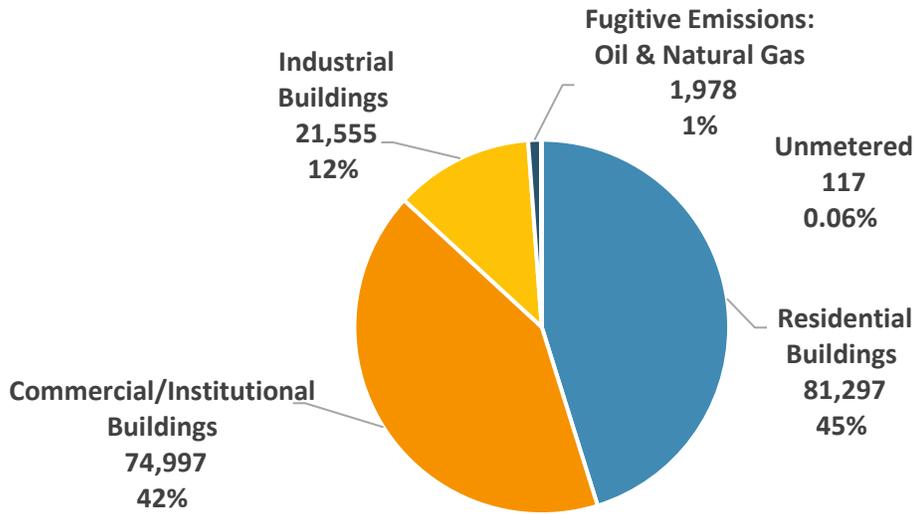


Figure 21: Emissions from building energy consumption by subsector in 2018.

As the graph above demonstrates, residential buildings account for the greatest portion of emissions from buildings followed closely by commercial and institutional buildings, with a smaller portion resulting from energy to power industrial facilities, as well as emissions associated with unmetered energy and with gas leaks occurring during the production and distribution of natural gas, known as fugitive emissions. The breakdown of energy consumption differs from emissions from buildings, as GHG emission intensity is not consistent across all fossil fuel sources.

**Building Energy Use 2018 (GJ)**

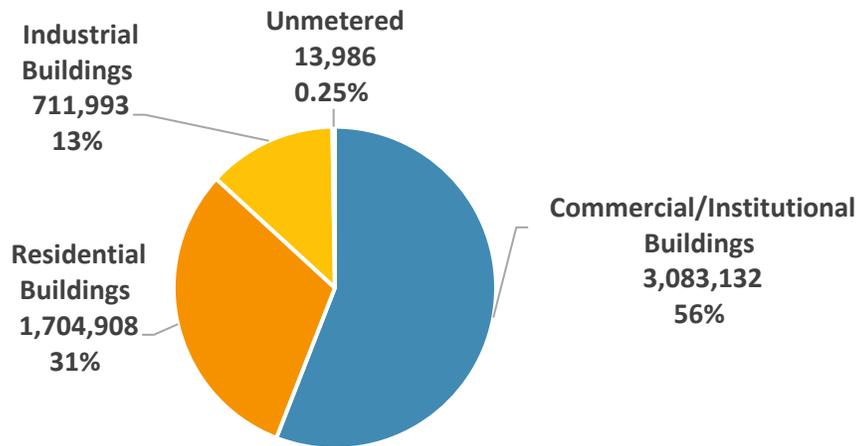


Figure 22: Energy Consumption by building energy subsector in 2018.

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Actions in the building sector focus on ways to conserve energy through improvements in the energy efficiency of buildings and shifts towards low emission technologies. Energy efficiency improvements can include changes to the building envelope that reduce the amount of energy required to heat and cool buildings through greater insulation of walls, roofs, and floors, sealing air leaks, and installing new windows and doors. Operational improvements can also have a significant impact on reducing the energy requirements to heat, cool, and power buildings. The installation of air source and/or ground source heat pumps have been identified as an especially important technology for increasing the energy efficiency of all building types. Small changes to how occupants use energy within buildings can also have a significant impact on reducing overall energy usage. Actions under this theme consider the existing built environment in Grey County, buildings that will be built in the future, and compact, mixed-use development.

Implementing actions to improve building envelopes and upgrade heating and cooling technologies reduce energy and emissions associated with buildings. These actions also result in energy cost reductions. Reducing energy cost will have many benefits to residents and businesses across Grey County, particularly for low-income households that experience energy poverty (households that spend more than double the average after-tax income on home energy bills<sup>7</sup>). Other co-benefits exist as well, including generating jobs within the local economy (e.g., construction contractors, construction suppliers, energy auditors, etc.), improving indoor air quality which has health benefits for building occupants, and increasing property values through building upgrades. There are climate change adaptation benefits as well, primarily from the increase in thermal comfort for occupants during periods of extreme temperature and weather which has positive health benefits, particularly for vulnerable individuals (e.g., seniors, youth, those with pre-existing health conditions, etc.). Buildings that have been outfitted with renewable energy technologies can also continue to supply heat and power in the event of power outages caused by extreme weather events and/or disasters.

While emissions from land use change are not quantified due to the lack of available data, land use planning plays an integral role in reducing transportation-related emissions by encouraging sustainable growth through the development of dense, mixed-use, transit-supported, and walkable communities that reduce reliance on gas and diesel vehicles. Land use planning also plays an important role in the protection and preservation of Grey County's vast natural assets and heritage including forests, wetlands, lakes and rivers by balancing the need for the creation and protection of natural heritage systems with the protection of ongoing agricultural, recreational, tourism and resources uses.

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<sup>7</sup> Canadian Urban Sustainability Practitioners. 2019. The Many Faces of Energy Poverty in Canada. Retrieved online from <https://energypoverty.ca/>

## Action 10: Compact, Mixed-Use Development in Designated Settlement Areas

Given the impacts of land-use planning on transportation and housing choices there is a need to reinforce and expand existing policies on settlement area intensification, complete streets, forest management, natural heritage systems, and naturalization efforts such as native tree and shrub planting, with a specific focus on the emissions reduction potential of continued compact, mixed-use development as well as increased carbon sequestration from expanded tree canopies, and natural areas.

**Recommendation:** Prioritize higher density, mixed-use development throughout Grey County especially for brownfield redevelopment projects. As part of the strategy, continued support and implementation of complete street design will also be considered by municipal planners and engineers to ensure roadways are accessible and safe for all road users as well as complete communities where mixed use development allows for goods and services to be accessed efficiently from both within the community and surrounding communities. Further consideration will be given in Grey's Official Plan update to promote zoning that supports sustainable growth principles, and that contain additional environmental, social, and economic benefits for the community, balancing community needs with financial viability.

**As part of the Compact, Mixed-Use Development in Designated Settlement Areas action, the following supporting components will also be included:**

- ✓ Support for member municipalities to undertake compact, mixed-use development, creating complete, walkable communities and intensification in designated Settlement Areas.
- ✓ Provision of incentives for development on brownfield sites through the Community Improvement Plan Program (support access to grants for site studies and feasibility assessments, reduction in development charges, expedited permitting, servicing allocation, and developer awards and recognition).
- ✓ Increased focus on mixed-use development including affordable housing within the Community Improvement Plan (CIP) update.
- ✓ Support for increased residential densities throughout Grey County's settlement areas.
- ✓ Explore removing minimum housing size requirements for new developments.
- ✓ Inclusion of sustainable growth principles as part of the green development standard.
- ✓ Support for green infrastructure and natural asset management in green development standard and land-use planning decisions.
- ✓ During development of the Climate Adaptation Plan consideration for future climate projections should inform land-use planning decisions and explore green infrastructure solutions such as permeable grey infrastructure and LIDs to manage stormwater.

*Energy and emission reduction estimate not applicable for this action.*

## Action 11: Green Standard for New Buildings

As the population of Grey County grows and businesses expand, new buildings will be added to our community. In the business-as-usual projection, new buildings across Grey County could add close to 50,000 additional tonnes of carbon dioxide to the atmosphere each year by 2050. A green standard for new buildings, has the potential to reduce emissions from buildings and reduce the cost of heating and powering buildings across the community. To reach Grey County’s climate goals, all new buildings will be encouraged to be built to net-zero ready standards by 2030.

### Target Scope of Action

By 2030, all new buildings are constructed to be net-zero ready and are at least 80 percent more efficient than new buildings built in the baseline year.

**Recommendation:** Develop and implement a voluntary green development standard (GDS) that is tier-based, includes incentives, and progresses to net-zero ready buildings by 2030. Identify absolute performance metrics that specify targets for total energy use, thermal energy demand intensity, and GHG intensity and allow flexibility in how developers meet targets. Explore low-embodied carbon construction materials and life cycle emissions in developing the standard, including mass timber and wood construction approaches. Include site design interventions including green infrastructure such as building orientation, tree planting to reduce energy use, and incentivize maintaining existing green infrastructure. Introducing incentives to encourage developers and property owners to undertake higher efficiency standards for new properties will also be a key component of the strategy.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	48,300	801,400	Medium
Energy Consumption (GJ)	871,600	15,801,400	Medium
Energy Cost Savings (\$CAD)	\$23,710,000	\$378,793,200	Medium

**As part of the Green Standard for New Buildings action, the following supporting components will also include:**

- ✓ Adaptation of green development standards from other communities in Ontario to meet local context in Grey County and ensure standards provide pathway to a net-zero ready target.
- ✓ Alignment and integration of existing plans with the green development standards.
- ✓ Development of metrics and indicators for different building types based on stakeholder consultation.
- ✓ Creation of tools and resources to support developers in meeting standards, particularly for low-carbon technologies (e.g. ground and air sourced heat pumps, district energy, solar

photovoltaic, and electric vehicle building readiness), as well as energy efficiency design and construction.

## Action 12: Residential Building Energy Efficiency Retrofit Program

Residential buildings accounted for 9 percent of the overall emissions in the community in 2018. Making changes to how we heat and power our homes reduces the cost of energy, increases indoor thermal comfort and air quality, and can play a big part in meeting Grey County’s ambitious climate goals. A deep energy retrofit program aims to increase energy efficiency at least 40 percent by improving building envelopes and installing energy efficient heating systems. To reach Grey County’s climate goals, the residential energy retrofit program will aim to retrofit 17 percent of homes by 2030, or roughly 13,000 structures and 84 percent of homes by 2050, or roughly 63,000 structures.

### Target Scope of Action

By 2030, 17% homes and by 2050, 84% of homes are retrofitted with a target energy efficiency gain of 40% or more per project.

**Recommendation:** Develop and implement a voluntary residential energy retrofit program for existing buildings that addresses energy conservation, energy efficiency, and greenhouse gas emissions.

Design a financing mechanism to support residential property owners as well as tenants/landlords to participate in the program. Financing structures can utilize local improvement charges (loans attached to property tax bills), incentive-based options, and/or available provincial and federal grants and loans.

The program will address upgrades to building envelopes (insulation, weather stripping, air leaks, double/triple pane windows), energy efficiency (air sourced and ground sourced heat pumps, thermal controls, traditional HVAC systems), and renewable energy (solar photovoltaic). Include green infrastructure interventions such as green roofs and tree planting to reduce energy costs and build community resilience.

To address the least efficient buildings first, the program will prioritize older, less efficient homes and will include all residential building types (single-detached homes, town or row houses, and multi-unit residential buildings).

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	42,100	1,225,900	High
Energy Consumption (GJ)	686,900	21,977,500	High
Energy Cost Savings (\$CAD)	\$2,499,700	\$181,822,000	Medium

**As part of the Residential Building Energy Efficiency Retrofit Program action, the following supporting components will also be included:**

- ✓ Identification of appropriate program design and financing mechanisms through the completion of a detailed business case for the program.
- ✓ Explore building retrofit funding options available through the [Green Municipal Fund](#).
- ✓ Creation of an education and awareness campaign for residents throughout Grey County. The campaign will include hosting a page on Grey County's website that provides a detailed checklist of retrofit measures, information on all available retrofit and rebate programs in Grey County, and information on accessing and moving through the Grey County's program.
- ✓ Explore existing networks or regional organizations advancing building retrofit and energy management best practices, such as [Green Economy Canada](#) and [Quest Canada's Deep Energy Retrofit Working Group](#).
- ✓ Creation of a system that prioritizes low-income households as well as residential properties on agricultural lands and develop a financing structure that is inclusive to all households.
- ✓ Prioritize buildings that are not already connected to natural gas to prevent technological lock in.
- ✓ Provide information on Grey County's website about existing interim financial supports for households experiencing energy poverty including the Utility Assistance Program offered by [United Way Bruce Grey](#).
- ✓ Advocacy to provincial and federal governments for greater support for residential energy efficiency retrofit programs.
- ✓ Encouragement of local colleges to develop and/or expand trade programs that are relevant to energy efficiency construction and other measures to support sustained job growth within the community.

## Action 13: Institutional/Commercial/Industrial/Agricultural Building Energy Efficiency Retrofit Program

Institutional/Commercial/Industrial/Agricultural buildings accounted for 11 percent of the overall emissions in our community in 2018. Making changes to how we heat and power our buildings reduces the cost of energy, increases indoor thermal comfort and air quality, and can play a big part in meeting ambitious climate goals. An energy retrofit program aims to increase energy efficiency at least 40 percent by improving building envelopes and installing energy efficient heating systems. To reach Grey County’s climate goals, 15 percent of institutional and commercial buildings are retrofitted by 2030, or roughly 200 structures and 88 percent, or roughly 900 structures are retrofitted by 2050.

**Recommendation:** Develop and implement a voluntary commercial/institutional energy retrofit program for existing buildings that addresses energy conservation, energy efficiency, and greenhouse gas emissions.

As part of this strategy, Grey County will design a financing mechanism to support commercial property owners and institutions to participate in the program. Financing structures can utilize local improvement charges (loans attached to property tax bills), incentive-based options, such as grants, and other financial incentives provided through Community Improvement Plans (CIP) as well as available provincial and federal grants and loans.

The program will address upgrades to building envelopes (insulation, weather stripping, air leaks, double/triple pane windows), energy efficiency (ground sourced heat pumps, thermal controls, traditional HVAC systems), and renewable energy (solar photovoltaic). To address the least efficient building first, the program will prioritize older, less efficient properties.

As part of the residential and commercial retrofit, agricultural operating facilities and adjacent residential buildings will be prioritized.

Encourage the implementation of energy efficiency best practices in industrial facilities through education and awareness initiatives and the facilitation of capacity building networks amongst industrial stakeholders throughout Grey County. Best practices can include building commissioning and recommissioning, energy audits, implementation of energy management systems, operational improvements, benchmarking, and employee awareness.

### Target Scope of Action

By 2030, 15% and by 2050, 90% of institutional and commercial buildings are retrofitted with a target energy efficiency gain of 40% or more per project.

By 2030, all buildings in the industrial sector operate under energy management best practices.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO2e)	62,600	1,466,000	High

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Energy Consumption (GJ)	1,367,800	36,871,000	High
Energy Cost Savings (\$CAD)	\$33,520,000	\$958,946,600	High

**As part of the Institutional/Commercial/Industrial/Agricultural Building Energy Efficiency Retrofit Program action, the following supporting components will also be included:**

- ✓ Identification of appropriate program design and financing mechanisms through the completion of a detailed business case for the program.
- ✓ Explore building retrofit funding options available through the [Green Municipal Fund](#).
- ✓ Update of Community Improvement Plans (CIP) to include financial incentives for energy efficiency upgrades for business owners. Financial incentives can include tax increment grants, tax relief programs development charge grants or rebates, loans and/or direct grants to finance a portion of eligible costs such for energy audits or equipment purchasing and installation.
- ✓ Creation of an education and awareness campaign for businesses throughout Grey County. The campaign will include hosting a page on Grey County’s website that provides a detailed checklist of retrofit measures, information on all available retrofit and rebate programs in Grey County, and information on accessing and moving through Grey County’s program.
- ✓ Explore existing networks or regional organizations advancing building retrofit and energy management best practices, such as [Green Economy Canada](#), or [Quest Canada’s Deep Energy Retrofit Working Group](#).
- ✓ Advocacy to provincial and federal governments for greater support for residential energy efficiency retrofit programs.
- ✓ Encouragement of local colleges to develop and/or expand trade programs that are relevant to energy efficiency construction and other measures to support sustained job growth within the community.
- ✓ Consultation with the agricultural community to establish a program design that effectively supports retrofits projects for farmers across Grey County.
- ✓ Identification of supportive technologies, including ground mounted solar photovoltaics and combined heat and power systems.
- ✓ Development of resources and tools for the agricultural community to support the identification and implementation of energy efficiency improvement in operational facilities unique to the agricultural sector, and which are made available through the Grey County’s website.
- ✓ Promotion of existing programs and funding streams such as:
  - Canadian Industry Partnership for Energy Conservation (CIPEC), Energy Star, ISO 5001, Superior Energy Performance, Ontario SaveON Energy Programs, IESO Industrial Accelerator Program, Enbridge Industrial Custom Solutions and Incentives Program, and ecoEnergy Efficiency for Industry.

## Theme 5 - Energy

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**Objective:** Promoting renewable and low-carbon energy in the County that is owned and operated locally, has minimal impact on the surrounding landscape, develops jobs locally, and supports the energy independence of residents and business.

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With Grey County's large land area there is significant potential to further develop renewable energy production technologies beyond the existing large scale wind farms and range of solar panels. Grey County is part of the [Clean Energy Frontier](#) and an emerging hub for low-carbon energy projects and technologies. While the current political, policy and regulatory landscape in Ontario does not favour expansion of renewable energy, smaller scale opportunities still remain through net-metering programs with local utilities that allow building and homeowners to offset the cost of electricity consumption by sending electricity generated from onsite renewable energy to the grid. The owner only pays for their net-usage—the difference between the amount of electricity generated and the amount consumed. Nevertheless, Grey County can continue to advocate for and promote renewable energy, participate in pilot or demonstration projects, as well as monitor the political, policy and regulatory landscape for emerging opportunities. As there are some concerns regarding large-scale wind turbine development in Grey County it is important that future renewable energy models ensure that the community is extensively consulted and directly benefits from these projects such as is enabled through cooperative ownership models, community charities, development trusts, or share ownership.

Aside from reducing emissions from the production of heat and electricity community renewable energy projects can provide a multitude of benefits particularly for rural areas where investments in community revitalization are needed. Locally owned community energy projects present an avenue for economic diversification, with revenues being reinvested into needed community services and infrastructure. As renewable energy technologies such as wind and solar do not require fuel and can be directly connected to the point of consumption they provide energy independence and security benefits by insulating the community from rising energy prices and can continue providing electricity in the event of grid outages. Furthermore, switching from fossil fuel forms of energy production improves air quality providing human health benefits.

## Action 14: Support Renewable and Emerging Energy Technologies

Developing and expanding renewable and low-carbon energy will support the energy needs of our community and reduce the dollars spent on energy that leave the community. By avoiding emissions associated with powering the electricity grid in Ontario, renewable energy systems can reduce emissions and create jobs within our community. To reach Grey County’s climate goals, the renewable energy action will aim to support energy innovation and encourage rooftop and ground mounted solar photovoltaic systems throughout the community and the development of a large scale solar photovoltaic facility within the community as Provincial regulations permit.

### Target Scope of Action

By 2030, 5% and by 2050 15% of the available residential roof space has solar panels by 2030

By 2030, 100 MW of renewable energy is installed in Grey County.

**Recommendation:** Encourage the development of renewable energy in Grey County by providing clear and streamlined land use policies, bylaws regulations, permitting, and procedures. Develop a program to promote and encourage solar photovoltaics across all sectors (residential, commercial, institutional, industrial) in Grey County. Solar photovoltaic systems targeted will include rooftop solar systems, solar thermal systems, and ground-mounted arrays. The program will consider a financing structure alongside the retrofit program where funding is provided either by Grey County or third-party investors and based on a Local Improvement Charge (LIC) mechanism, dependent on the outcome of a detailed business case for the program. Other financing mechanisms such as net-metering, solar leases and power purchase agreements will also be considered.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	1,000	205,400	Low
Energy Consumption (GJ)	NA	NA	NA
Energy Cost Savings (\$CAD)	NA	NA	NA

\* Values assume construction of 100MW solar farm that can use virtual net-metering.

**As part of the action to Support Renewable and Emerging Energy Technologies, the following supporting components will also be included:**

- ✓ Inclusion of solar-ready design guidelines as part of the green development standard to ensure new buildings are structurally ready for rooftop solar photovoltaics where applicable.
- ✓ Promotion of existing programs and resources to encourage adoption of solar photovoltaics.

- ✓ Advocacy to the provincial government for virtual and third-party net-metering to allow for expanded access and greater financial incentives for solar photovoltaic installation.
- ✓ Prioritization of ground mounted solar on brownfields, parking lots, and less ecologically sensitive lands, including quality agricultural, special agricultural lands, naturalization areas, and greenfields.
- ✓ Work with local educational institutes to explore potential green jobs training programs including renewable energy installation and maintenance.
- ✓ Review of existing bylaws and policies and procedures for barriers to renewable energy development.
- ✓ Collaboration with local utilities to establish a landing page that provides clear direction on the procedures, regulations and permits required to develop different types of renewable energy projects including but not limited to wind, solar, and geo-exchange systems.
- ✓ Survey and map existing renewable energy installations in Grey County, including those not grid connected, and create case studies to help other residents learn about the opportunities of renewable energy.

### Action 15: Promote Biogas Capture and Conversion

**Recommendation:** Facilitate the adoption of biogas production across Grey County and in the agricultural sector. Collaborate with the agricultural community to explore a collaborative biogas initiative and connect farmers throughout Grey County that are interested in the opportunity.

#### Target Scope of Action

By 2030, 13,000,000 m<sup>3</sup> of renewable natural gas, produced from agricultural and food waste, displaces fossil natural gas.

GHG Emissions (tCO <sub>2</sub> e)	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
Biogas Facility*	10,000	228,000	Medium
Energy Consumption (GJ)	NA	NA	NA
Energy Cost Savings (\$CAD)	NA	NA	NA

\* Values assume by 2030 50 percent of manure from confinement livestock operations is being sent to a biogas facility and resultant renewable natural gas is displacing fossil natural gas.

**As part of the promotion of Promote Biogas Capture and Conversion action, the following supporting components will also be included:**

- ✓ Explore the benefits of collective biogas production and support the development of a biogas cooperative in Grey County in partnership with local Conservation Authorities, energy utilities, the agricultural community and other community partners.
- ✓ Conduct feasibility study, create business case, and seek members from the agricultural community to join the collective.
- ✓ Consider:

- Assessment of potential for developing new anaerobic digesters in Grey County and potential of biogas production from a variety of feedstock sources across the community including wastewater treatment facilities, agricultural waste, and other sources of organic waste in the community and the waste management system.
- Conducting a lifecycle assessment of the environmental impacts of a biogas facility in Grey County.
- Assessment of potential for agricultural waste to be delivered to the existing anaerobic digester in Grey County.
- Exploring opportunities for individual on-farm anaerobic digesters, where manure volumes exceed what can be used on-farm, and where a centralized facility using a co-operative model is unavailable.
- Assessment of the range of uses for the biogas product including upgrading the biogas to renewable natural gas (RNG) for sale to the natural gas grid or use as a fuel in on-farm combined heat and power systems.
- Identification of potential sites with consideration for delivery routes, proximity to residential areas and the impact of trucking on costs and emissions.

### 7.1.3 Cross-Sector Actions

#### Theme 7 - Climate Adaptation

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**Objective:** To ensure Grey County and its community is well-adapted and resilient to the impacts of climate change, while continuing to ensure the protection of waterways and shorelines including lakes, rivers and streams, and to reduce the impact of flooding on local infrastructure.

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Climate adaptation plays a key role alongside climate mitigation to ensure our communities, businesses, assets, and services are protected and adapted to extreme weather events and other impacts of a changing climate. A comprehensive adaptation plan, made collaboratively with our community and member municipalities, will aim to identify specific vulnerabilities of climate change impacts in Grey County and outline programs, policies, and projects that will help us reduce our risks and increase our resilience over the long-term. A key aspect of adapting to climate change is protection and enhancement of our natural assets and spaces. Situated on the southwest tip of Georgian Bay, Grey County contains a large extent of shorelines along with internal waterways, rivers, and ground water throughout its rural landscape. The protection of waterways and shorelines is an important component of sustainability and climate planning, as well as an important part of building a healthy and viable community now and into the future. Actions taken by the community to prevent shoreline erosion, conserve and protect wetlands, protect water quality, and increase the resilience of natural assets and built infrastructure from flooding form an important part of creating a holistic climate plan for the communities across Grey County.



## Action 16: Develop Climate Adaptation Plan

Create a Climate Adaptation Plan for Grey County outlining actions and strategies to increase our communities' climate resilience, minimize the exposure of our community and assets (both physical and natural) to the impacts of climate change, and take advantage of new opportunities as they arise. Focus adaptation plan on maximizing the potential of natural infrastructure.

**As part of Climate Adaptation Plan action, the following supporting components will also be included:**

- ✓ Align adaptation planning with current emergency management work including the annual Hazard Identification Risk Assessment (HIRA) process.
- ✓ Include updated climate projections in annual HIRA process and departmental emergency planning activities so assumptions are forward looking rather than only historically based.
- ✓ During asset management plan update, look at asset "Levels of Service" through a climate lens to think about how our changing climate should inform asset management decisions.
- ✓ Identify impacts to key economic sectors (e.g. the agricultural sector) in Grey County from a warmer, wetter and wilder climate with increased frequency of extreme weather events.
- ✓ Continue to protect and enhance our natural assets (including waterways and shorelines) and adopt more nature-based solutions
- ✓ A key aspect of this Plan will also be to protect Grey County's waterways and shorelines to maintain an intact habitat.
- ✓ Identify opportunities for collaboration around climate adaptation between Grey County, community organizations, and the private sector.

- ✓ Increase local education and awareness of the impacts of climate change and the steps that can be taken by community members (i.e. residents, vulnerable community members, businesses, etc.) to increase their overall resilience
- ✓ Continue to invest in upgrades and/or retrofits to Grey County assets to ensure they are resilient in the face of future climate change.
- ✓ Explore potential opportunities that may arise from climate change in Grey County (e.g. reduced demand for heating due to warmer winter temperatures, longer construction seasons due to longer shoulder seasons, more year-round active transportation due to warmer winter temperatures, etc.).

*Energy and emission reduction estimate not applicable for this action.*

### **Action 17: Reducing the Risk of Flooding**

Work with the four Conservation Authorities in Grey to update Grey County hazard land mapping to further clarify and strengthen areas of Grey County that are prone to flooding. Include climate change data and information in emergency planning work and outreach efforts.

**As part of the action to Reducing the Risk of Flooding, the following supporting components will also be included:**

- ✓ Development of resources, guidelines, and educational materials for residents and business that provide information on how to manage properties for flooding and promote materials during Emergency Planning week.
- ✓ Collaborate with Conservation Authorities to encourage the installation of permeable pavements and storm water LIDs to reduce runoff.
- ✓ Support conservation of natural infrastructure including wetlands and encourage the use of green infrastructure to create a build environment more resilient to extreme precipitation events.

*Energy and emission reduction estimate not applicable for this action.*

### **Action 18: Prevention of Shoreline Erosion**

Develop a monitoring program in partnership with local Conservation Authorities that helps manage current shorelines and identify areas that are prone to erosion focused on nature-based solutions.

**As part of the action to Prevention of Shoreline Erosion, the following supporting components will also be included:**

- ✓ Collaborate with Conservation Authorities to strengthen mapping and County Official Plan policies that protect Grey County's shorelines.
- ✓ Provision of educational resources to private landowners on preventative practices.
- ✓ Promote tree planting in flood prone areas and other nature-based solutions to protect and sustainably manage shorelines and be attentive to shoreline hardening impacts.

*Energy and emission reduction estimate not applicable for this action.*

## Theme 8 - Outreach & Engagement

### Action 19: Establish a Climate Action Engagement Program

Climate action is a collective endeavor that requires cooperation across sectors and the involvement of all residents. Many of the above actions are dependent on community participation and an overall climate action engagement program will build awareness and buy-in for specific climate programs.

**Recommendation:** Develop an education and awareness program across all sectors for residents and business, targeting appropriate messages to sub-sectors (e.g. building efficiency retrofits and programs to property owners and tenants.) Public education should occur on waste reduction, circular economy principles, natural asset value, energy efficiency opportunities. Develop a Climate Action Volunteer program collaborating with local partners to engage residents in direct emissions reduction and sequestration activity (e.g. tree planting, naturalization, community gardens).

**As part of the action to Establish a Climate Action Engagement Program, the following supporting components will also be included:**

- ✓ Develop a simplified, plain language summary of the Climate Change Action Plan that will build awareness, develop trust, and inspire action.
- ✓ Development of education materials in print, digital, and video formats for residents and businesses related to energy conservation practices for occupants of buildings, promoted through Grey County's social media and traditional channels
- ✓ Provision of education and awareness through Grey County's existing online and traditional channels around climate change including carbon footprints and climate justice.
- ✓ Creation of page on Grey County's website to provide information on CCAP's programs, including:
  - A detailed checklist of retrofit measures across all sectors, information on all available retrofit and rebate programs in Grey County, and information on accessing and moving through Grey County's program and capacity building networks.
  - Information on residential and commercial waste reduction, composting opportunities, and availability of new and existing community solid waste diversion programs.
  - Information about EVs and a map of EV charging stations throughout the County.

*Energy and emission reduction estimate not applicable for this action.*

## Action 20: Promote Sustainable Tourism Programs & Incentives to Operators

Tourism is a vital element of Grey County's economy and depends on our local landscape and natural assets. Each year there is \$333 million in visitor spending, creating almost 9,000 tourism related jobs. As visitors discover Grey County there is an opportunity to advance climate action both to tourism operators and visitors to our region.

**Recommendation:** Explore promoting Grey County as a sustainable low-carbon destination and support tourism operators in reducing their carbon footprint and educating visitors about the value and importance of sustainable low-carbon lifecycles and the role of natural assets in climate action.

**As part of the action to Promote Sustainable Tourism Programs & Incentives to Operators the following supporting components will also be included:**

- ✓ Profile active transportation opportunities, trails, and infrastructure in tourism materials.
- ✓ Continue to support agri-tourism as an outreach and education opportunity for sustainability.
- ✓ Promote RTO7's existing Sustainable Tourism Implementation Program funding to operators.
- ✓ Explore opportunities to quantify tourism sectors emissions in future GHG inventories.
- ✓ Involve tourism operators as key stakeholders in building retrofit program development processes and the green development standard.
- ✓ Explore opportunity for foreign direct investment specifically for sustainable tourism.

*Energy and emission reduction estimate not applicable for this action.*

## Action 21: Establish a Climate Action Implementation Advisory Group

The Grey County CCAP is a living document that will need to be updated over time as technologies evolve. To guide the ongoing implementation and periodic updates to the plan diverse experience and expertise will be needed.

**Recommendation:** Grey County establish a Climate Action Implementation Advisory Group, that represents the diversity of Grey County residents and businesses and ensure the voices of youth and Indigenous community are at the table.

As part of the action to Establish a Climate Action Implementation Advisory Group, the following supporting components will also be included:

- ✓ Convene a Program Advisory Group with a variety of expertise and lived experience.
- ✓ Apply an equity lens to the development of the Advisory Group terms of reference.
- ✓ Engaged the Program Advisory Group on the ongoing implementation of the CCAP and the annual progress reporting.

*Energy and emission reduction estimate not applicable for this action.*

### 7.1.4 Emission Reduction Potential of Community Actions

The current set of actions would reduce emissions by 659,800 tonnes CO<sub>2</sub>e annually at 2050 and by 11,145,200 tonnes CO<sub>2</sub>e cumulative by 2050. Emissions would be reduced by 32 percent by 2030 and by 84 percent by 2050 below the 2018 baseline (based on the business-as-usual projection).

Aggregated Emission Reduction from all Community Actions

	<b>Annual Reduction Potential at 2050</b>	<b>Cumulative Reduction Potential to 2050</b>	<b>% Reduction from Baseline</b>
GHG Emissions (tCO <sub>2</sub> e)	659,800	11,145,200	84
Energy Consumption (GJ)	5,538,200	116,403,700	61
Energy Cost Savings (\$CAD)	\$120,498,600	\$2,421,096,900	41

Grey County – Climate Change Action Plan

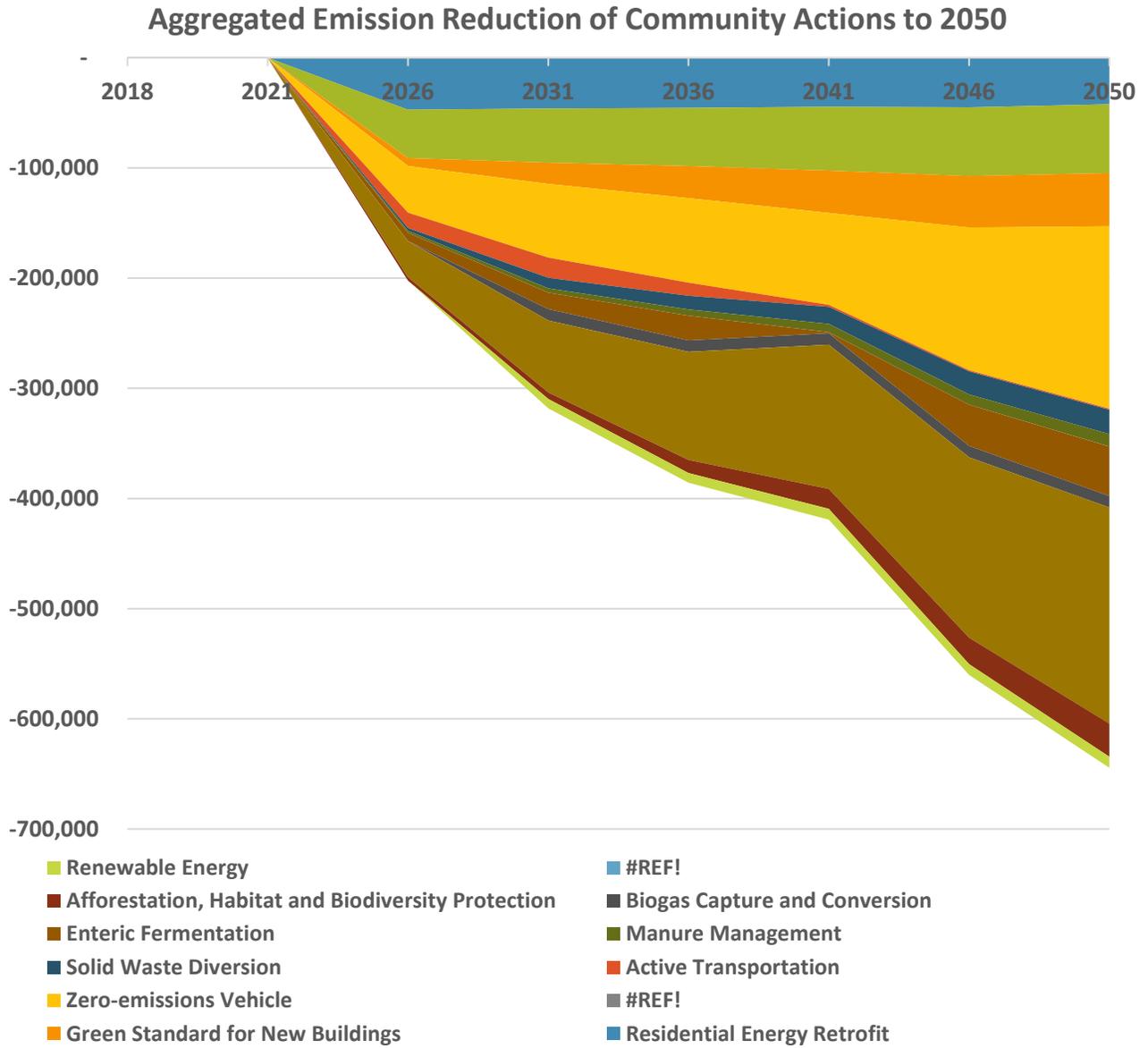


Figure 23: GHG Emission Reductions from Community Actions

Grey County – Climate Change Action Plan

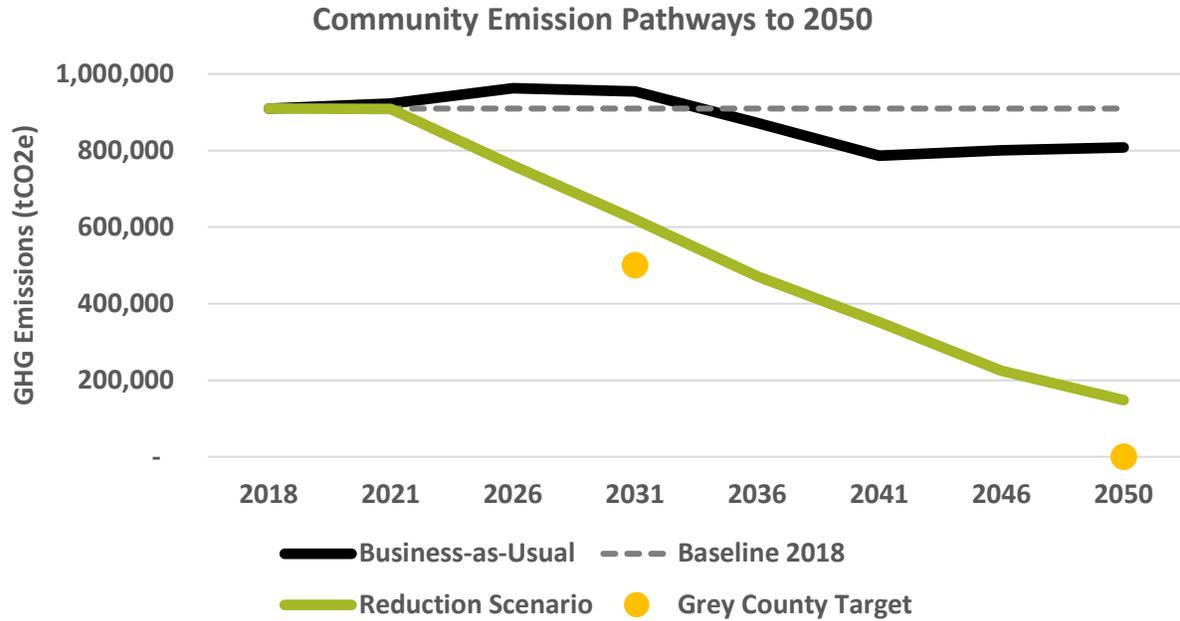


Figure 24: GHG Emissions Business-As-Usual Scenario, 2018 Baseline Emissions, Emission Reduction from Community Actions, and Community GHG Targets



## 7.2 Corporate Actions

### Theme 1: Buildings & Lighting

In 2018, Grey County owned buildings and facilities required 76,500 gigajoules of energy, which

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**Objective:** To improve energy efficiency and energy conservation across corporate buildings and operations and demonstrate leadership by implementing best practices in low carbon buildings and energy solutions.

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cost the corporation \$2.0 million and resulted in 2,400 tonnes CO<sub>2</sub>e, or 62 percent of all corporate emissions. Outdoor lighting, streetlights and traffic signals, make a small portion of corporate emissions (0.05%), however, with upgrades to LED bulbs there is not only a reduction in energy cost, but operating costs as well and an improvement in the quality of lighting making the community safer for all road users.

By undertaking energy efficiency retrofits, implementing energy management best practices, installing renewable energy on Grey County owned property, and ensuring new buildings and facilities are built to the highest energy efficiency standards, Grey County has an opportunity to demonstrate climate leadership and the effectiveness of energy efficiency to the wider community.

**Municipal Building Energy Consumption (2018)**

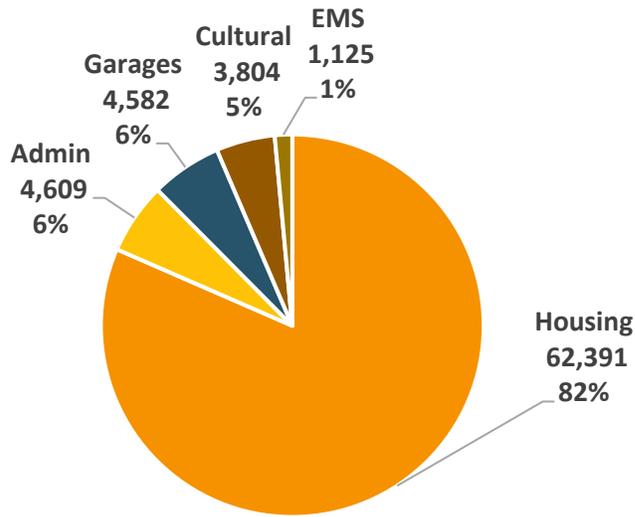


Figure 25: Municipal building energy consumption in 2018.

**Municipal Building GHG Emissions 2018 (tCO2e)**

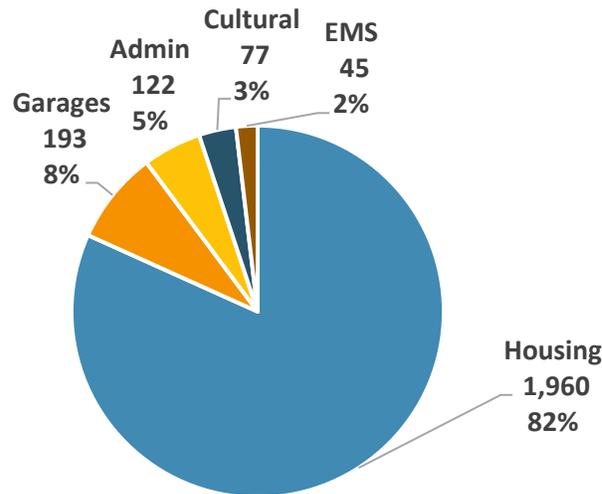


Figure 26: Municipal building GHG emission in 2018.

As shown in the above graphs, 82 percent of emissions and energy consumed by Grey County owned buildings is from community housing. Undertaking an energy efficiency retrofits of Grey County owned housing will significantly reduce corporate emissions and energy expenditures. Additional benefits, such as improved indoor air quality and thermal comfort of occupants, can also be expected through deep energy retrofit projects. Retrofitting other buildings such as garages, administrative offices, cultural centres, and EMS buildings will have similar results, reducing the cost the corporation spends on energy to power its buildings and facilities.

## Action 1: Energy Efficient New Buildings

Implement the highest tier of the green development standard created as part of the CCAP’s community building actions, to build Grey County owned buildings to net-zero ready standards and demonstrate leadership across Grey County. Grey County-owned buildings will be built according to absolute performance metrics that specify targets for total energy use, thermal energy demand intensity, and GHG intensity as well as be constructed with electric vehicle infrastructure and solar photovoltaic technologies, where applicable.

### Target Scope of Action

All new buildings built to be net-zero energy ready by 2025, remaining energy required to power buildings is from clean renewables.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO2e)	800	12,700	High
Energy Consumption (GJ)	16,600	272,300	High
Energy Cost Savings (\$CAD)	\$429,300	\$6,900,100	High

**As part of the Energy Efficient New Buildings action, the following supporting components will also be included:**

- ✓ All new Grey County-owned buildings designed and built to net-zero ready standard by 2025 that considers both operational and embodied carbon.
- ✓ Explore new construction funding options available through the Green Municipal Fund.
- ✓ Net-zero feasibility studies are undertaken for all new buildings from now on, and funding will be pursued for projects where net-zero is not deemed financially feasible.
- ✓ Integration of green infrastructure such as green roofs, low impact development (LID) landscaping, permeable pavement and tree and native species planting.

Grey County owned new constructions will also consider measures that increase resiliency against potential changes in climate in the Grey County.



## Action 2: Retrofit Existing Buildings

The action to retrofit existing buildings will continue the implementation of energy efficiency retrofits and upgrades of Grey County-owned facilities. Based on energy audits of facilities and buildings, the action will identify and prioritize upgrades to target the least efficient buildings first. The retrofits will include upgrades to building envelopes, heating and cooling systems, operations, and behavioural adaptation to reduce energy consumption requirements. Commissioning and recommissioning of facilities will also be implemented to ensure systems are operating at their peak performance levels.

### Target Scope of Action

All corporate owned facilities are retrofitted by 2050 with energy efficiency gains aiming at 40% or greater.

Buildings owned and operated by Grey County represent 78 percent of the overall corporate emissions and 76 percent of the cost associated with energy consumption. Of this, Grey County owned housing makes up a large portion of the total, accounting for 82 percent of the emissions across all facilities. Several co-benefits for occupants of Grey County-owned housing units will also be realized through the implementation of this action, including increasing indoor air quality and thermal comfort.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	2,600	48,900	High
Energy Consumption (GJ)	30,000	500,700	High
Energy Cost Savings (\$CAD)	\$-24,400	\$-2,064,600	Low

**As part of the action to Retrofit Existing Buildings, the following supporting components will also be included:**

- ✓ Leverage energy audits completed as part of last round of building condition assessments (BCAs) of all Grey County-owned housing units to determine the least energy efficient buildings and areas within each building where the greatest opportunities for energy efficiency improvements are available.
- ✓ Explore building retrofit funding options available through the [Green Municipal Fund](#).
- ✓ Development of a retrofit management plan for Grey County owned housing units will be based on results of energy efficiency auditing.
- ✓ Implementation of retrofits will address upgrades to building envelopes (insulation, weather stripping, air leaks, double/triple pane windows), energy efficiency (air sourced heat pumps, thermal controls, traditional HVAC systems), and renewable energy (solar photovoltaic) where appropriate.
- ✓ Update energy management plans that include reactive, preventative, and predictive maintenance to prevent common sources of energy waste in building energy.
- ✓ Seek funding for projects that do not meet pay-back thresholds.

### Action 3: Residential Demonstration Building

Creation of a Grey County-owned, net-zero residential demonstration building which showcases design, construction, and technologies that lead to meeting the highest tier of the green development standard and building retrofit recommendations. The demonstration building will showcase a variety of technologies for improvements to building envelopes (insulation, weather stripping, air leaks, double/triple pane windows), energy efficiency (air sourced heat pumps, thermal controls, traditional HVAC systems), renewable energy (solar photovoltaic), electric vehicle charging, and green infrastructure. The building will include climate resilient design and structural elements as well to demonstrate Grey County specific climate adaptation measures for residential buildings. The project will be open to the public and increase education and awareness for building programs being implemented in Grey County.

**As part of the Residential Demonstration Building action, the following supporting components will also be included:**

- ✓ Centralization of education and awareness materials for building to net zero standards and creation of a hub for resource sharing and community engagement.
- ✓ Demonstration center will support engagement with colleges and schools developing programs in the trades in energy efficient design and construction.
- ✓ Collaboration with community organizations and partners to promote energy efficiency design and construction in the community.

*Energy and emission reduction estimate not applicable for this action.*

### Action 4: Renewable Energy

Grey County will consider opportunities for developing renewable energy systems to power corporate owned facilities and buildings. Renewable energy systems will be considered broadly to be inclusive to appropriate technologies across Grey County owned buildings, some examples include, rooftop and ground mounted solar photovoltaic technology, energy from waste generated at Grey County and member municipality facilities, and combined heat and power (CHP) systems.

Energy efficient technologies will also be considered as part of the action; including switching to less carbon intensive fuels, installation of ground source heat pumps, and opportunities for district energy in clusters of corporate buildings adjacent to community owned buildings which could act as part of a DES network.

#### Target Scope of Action

By 2030, 1.65 MW and by 2050 1.78 MW of renewable energy are installed to power Grey County's operations.

	<b>Annual Reduction Potential at 2050</b>	<b>Cumulative Reduction Potential to 2050</b>	<b>Relative Impact</b>
GHG Emissions (tCO <sub>2</sub> e)	500	6,400	Medium

Energy Consumption (GJ)	NA	NA	NA
Energy Cost Savings (\$CAD)	\$2,932,300	\$39,272,200	High

**As part of the renewable energy strategy, the following supporting components will also be included:**

- ✓ Completion of a pre-feasibility study to identify potential sites and renewable energy systems that are appropriate for Grey County owned infrastructure.
- ✓ Identification of opportunities where renewable energy will act as a provision for backup power and increase resiliency and emergency preparedness.
- ✓ Completion of energy auditing of Grey County owned buildings will identify opportunities for renewable energy systems and installation of energy efficiency technologies.

### Action 5: Outdoor Lighting Conversion to LEDs

Encourage member municipalities to retrofit existing outdoor lighting, including streetlighting, traffic signals, decorative lighting, and park lighting, from incandescent bulbs to light emitting diode (LED) bulbs, building on Grey County’s experience with retrofitting Grey County owned outdoor lighting to LED.

**As part of the Outdoor Lighting Conversion to LEDs action, the following supporting components will also be included:**

- ✓ Installation of LEDs that illuminate roadways and pedestrian pathways effectively while supporting measures to increase dark sky compliance will also be prioritized.
- ✓ Consideration of Smart City technology and solar photovoltaic technology to increase efficiency and reduce reliance on electricity grid.

*Energy and emission reduction estimate not applicable for this action.*

## Theme 2: Vehicle Fleet & Equipment

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**Objective:** To reduce GHG emissions and demonstrate climate leadership by transitioning the corporate fleet to low carbon vehicles, reducing single passenger commuting, encouraging modal shifts, and improving fuel efficiency through improved operations and maintenance practices.

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The municipal corporate fleet is the second largest source of GHG emissions in the corporate inventory, accounting for 38 percent of all emissions and 24 percent of overall energy costs. Emissions reduction in this sector can be improved by replacing gas and diesel vehicles with zero emissions vehicles as existing vehicles reach the end of their lifetime and when new additions to the fleet are needed. In addition, improving the operational efficiency of existing vehicles through

management and maintenance practices can reduce the fuel required to power Grey County’s vehicle fleet. The CCAP actions build on the updated Fleet Management Strategy and will also encourage and enable staff to reduce single passenger commuting through carpooling programs, active transportation infrastructure, and telecommuting. These actions have the added benefit of reducing maintenance costs of the fleet, reducing fuel expenditures, and improving air quality as well as demonstrating to the wider community the feasibility and benefits of zero emission vehicles.

## Action 6: Reduce Single Passenger Commuting & Private Vehicles

Develop a program to support municipal staff to carpool, use active transportation, and telecommute.

**As part of the action to Reduce Single Passenger Commuting & Private Vehicles, the following supporting components will also be included:**

- ✓ Installation of bicycle infrastructure outside of all Grey County buildings.
- ✓ Creation of an internal carpooling network amongst municipal staff, which includes increased flexibility of hours.
- ✓ Implementation of rewards and benefits to encourage staff to participate in the program.
- ✓ Implement a work from home policy that allows for staff to work remotely on a part-time basis.
- ✓ Utilize video conferencing technology for meetings where appropriate to reduce travel.
- ✓ Ensure an effective telecommuting system is in place that allows completion of duties and ease of communication between staff.

*Energy and emission reduction estimate not applicable for this action.*

## Action 7: Fleet Operations Maintenance

Improve fleet monitoring, maintenance, and driver behaviour to ensure optimal fuel economy and emission reduction.

### Target Scope of Action

Operational changes, anti-idling, and maintenance improvements result in 10% less fuel consumption across corporate fleet vehicle and equipment beginning in 2025.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO <sub>2</sub> e)	4	2,100	Low
Energy Consumption (GJ)	500	34,500	Low
Energy Cost Savings (\$CAD)	\$25,300	\$296,600	Low

**As part of the Fleet Operations Maintenance action, the following supporting components will also be considered:**

- ✓ Continued refinement of fleet management system, CityWorks, to track maintenance and monitor vehicle performance.
- ✓ Ongoing preventative maintenance practices.
- ✓ Provision of fleet operator training to improve fuel economy, including anti-idling driving and driving practices.
- ✓ Explore introduction of anti-idling technologies.

### Action 8: Zero Emission Fleet Vehicle Adoption

Purchase electric vehicles and equipment on an on-going basis as existing equipment and vehicles are retired and replaced.

#### Target Scope of Action

Vehicles and equipment are replaced with zero emission options as technology is available.

	Annual Reduction Potential at 2050	Cumulative Reduction Potential to 2050	Relative Impact
GHG Emissions (tCO2e)	1,900	23,700	High
Energy Consumption (GJ)	23,000	294,100	High
Energy Cost Savings (\$CAD)	\$317,600	\$5,260,300	High

**As part of the Zero Emission Fleet Vehicle Adoption action the following supporting component will also be included:**

- ✓ Monitor development of electric vehicle and equipment market to identify opportunities for new technologies as they become available with special consideration for gasoline light trucks, diesel light trucks, diesel heavy trucks, and diesel off-road vehicles.
- ✓ Assess all new fleet vehicle purchases based on total cost of ownership including purchase price, maintenance, and fuel.
- ✓ Prioritize light-duty vehicle replacement with electric technologies; consider issuing tenders now for electric equipment to indicate demand and Grey County intention to decarbonize fleet as equipment becomes available.
- ✓ Look at zero emissions off-road equipment (e.g. tractors, leaf blowers, lawnmowers etc.) as they become available.

## Theme 3: Waste

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Objective: To reduce corporate waste across all operations, encourage behavioural change and create a culture of conservation.

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Solid waste generated from municipal facilities is not a significant source of emissions, however there is an opportunity to implement a range of waste reduction measures across corporate operations that will reduce single-use plastics, increase recycling, and compost rates, and divert waste from landfill that include other environmental and economic benefits. The CCAP actions in this section will also demonstrate leadership and commitment of Grey County to the vision and objectives of this plan.

### Action 9: Corporate Waste Reduction Program

Conduct a corporate waste audit and develop waste policies to identify opportunities that minimize waste from corporate facilities and operations.

**As part of the Corporate Waste Reduction Program action, the following supporting components will also be included:**

- ✓ Adoption of measures to reduce waste from Grey County facilities and buildings, could include but is not exclusive to the following:
  - Installation of water refilling stations to promote use of reusable bottles.
  - Implementation of paperless options throughout administrative offices.
  - Provision of green bins in washrooms for paper towels.
  - Restricting single-use plastics from corporate food services and events.
  - Installation of composting infrastructure at Grey County owned facilities
  - Creation of a Grey County goal for waste diversion from landfills.
  - Provision of recycling bins and green bins at all Grey County owned facilities.

*Energy and emission reduction estimate not applicable for this action.*

### Action 10: Collaborate with Member Municipalities to Support Wastewater Efficiency

Collaborate with member municipalities to implement operational improvements that increase energy efficiency at wastewater facilities, which can include equipment upgrades, operational modifications, and retrofits to building envelopes. Encourage member municipalities to assess the feasibility of installing anaerobic digesters, combined heat and power generators and/or solar photovoltaics at wastewater facilities. Energy created by cogeneration systems can be used to heat and power wastewater facilities themselves, thereby reducing the energy cost and emissions associated with electricity supplied from the provincial electricity grid.

**As part of the action to Collaborate with Member Municipalities to Support Wastewater Efficiency, the following supporting components will also be included:**

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- ✓ Encourage facility operators from member municipalities to conduct energy performance audits that identify and implement opportunities for energy efficiency improvements and cost savings.
- ✓ Facilitation of Grey County-wide water and wastewater facility operator training for operational and maintenance energy efficiency best practices such as through the Ontario Drinking Water and Wastewater Operator Certification Program developed by the Ministry of Environment, Conservation, and Parks, or the Ontario Clean Water Agency's wastewater treatment courses.
- ✓ Facilitation of resource sharing between member municipalities on pathways to improve processes and equipment (aeration blower upgrades, variable frequency drives, and ultra-fine bubble diffusers, pump efficiency, leak detection, and pressure management).
- ✓ Encourage the expansion of existing and new wastewater treatment plant biodigesters to include additional organics sources (agricultural waste, household organics, and yard waste).

*Energy and emission reduction estimate not applicable for this action, as data is not currently available.*

### Theme 4: Municipal Culture

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Objective: To integrate climate change considerations across all municipal operations and infrastructure decisions, and to foster a culture of conservation amongst municipal staff that promotes, enables, and encourages energy conservation and waste reduction.

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Developing a municipal culture of climate change action will be multifaceted and support the CCAP's visions for being a clear and visible climate leader within Grey County. While actions within the theme of creating a municipal culture will advance all the actions identified within the CCAP, both for actions in the community and corporate sections, emission reduction potentialities are not directly quantifiable. However, actions identified support other sections of the plan and encourage municipal staff across all departments to participate and recognize the importance of climate action within their departments. Actions identified in the section support the effective implementation of all other actions identified in the CCAP and apply climate change considerations to other planning and operational activities, provincial requirements, and day to day activities of Grey County, which together create a holistic approach to climate leadership by Grey County throughout the community.

### **Action 11: Develop Municipal Climate Lens**

Develop, implement, and embed a climate lens policy throughout all municipal plans and operations. Review of policies, plans, and initiatives developed by Grey County to ensure climate considerations are prioritized as part of approval process.

**As part of the action to Develop Municipal Climate Lens, the following supporting components will also be included:**

- ✓ Integration of lifecycle energy cost assessment into capital projects and consideration for the material value of energy efficiency measures.
- ✓ Provision of training on the importance of climate mitigation throughout Grey County's operations and programs.
- ✓ Development and implementation of a green procurement policy that integrates environmental considerations into all purchasing decisions and supports decarbonization of supply chains.
- ✓ Consideration for adding a section in the staff report template regarding 'climate change considerations' so that all reports going to council/committee highlight potential impacts to climate change mitigation and adaptation priorities.
- ✓ Add climate change considerations to standard operational reviews and evaluations.

*Energy and emission reduction estimate not applicable for this action.*

### **Action 12: Retain a Climate Change Initiatives Manager**

Retain a climate change initiatives manager to oversee the implementation of the corporate and community actions identified in the CCAP, and the facilitation of Grey County's implementation advisory group, climate change task force, as well as partnerships with key stakeholders and Indigenous communities. The manager will oversee the overall implementation of the CCAP.

*Energy and emission reduction estimate not applicable for this strategy.*

### **Action 13: Culture of Conservation**

Promote a culture of conservation with events, awards, benefits and other programs to promote a cultural shift towards conservation amongst municipal staff and operators. Encourage waste prevention by developing resources, guidelines, and educational materials for staff on waste reduction measures.

**As part of action to develop a Culture of Conservation, the following supporting components will also be included:**

- ✓ Creation of an annual climate change event hosted by Grey County to recognize climate achievements made by various departments.
- ✓ Provision of resources internally to education and promote awareness of climate initiatives by Grey County for both the corporate and community actions.
- ✓ Continuation of internal climate change working group with broad cross-departmental representations.
- ✓ Implementation of waste reduction signage to support appropriate waste separation measures.
- ✓ Support for staff to use reusable mugs and food containers.

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- ✓ Provision of training on the importance of climate mitigation throughout Grey County’s operations.
- ✓ Establish a Climate Advisory Committee as a subcommittee of Grey County council to oversee ongoing implementation of the CCAP and direct the future updates to the CCAP.

*Energy and emission reduction estimate not applicable for this action.*

### 7.2.1 Emission Reduction Potential of Corporate Actions

The current set of actions would reduce emissions by 5,800 tonnes CO<sub>2</sub>e annually at 2050 and result in a cumulative reduction in emissions of 93,700 tonnes CO<sub>2</sub>e by 2050. Emissions would be reduced by 37 percent by 2030 below the 2018 baseline year and reach net-zero by 2050.

Aggregated Emission Reduction from Corporate Actions

	<b>Annual Reduction Potential at 2050</b>	<b>Cumulative Reduction Potential to 2050</b>	<b>% Reduction from Baseline</b>
GHG Emissions (tCO <sub>2</sub> e)	5,800	93,700	100
Energy Consumption (GJ)	70,200	1,101,600	56
Energy Cost Savings (\$CAD)	\$3,680,200	\$49,665,500	100

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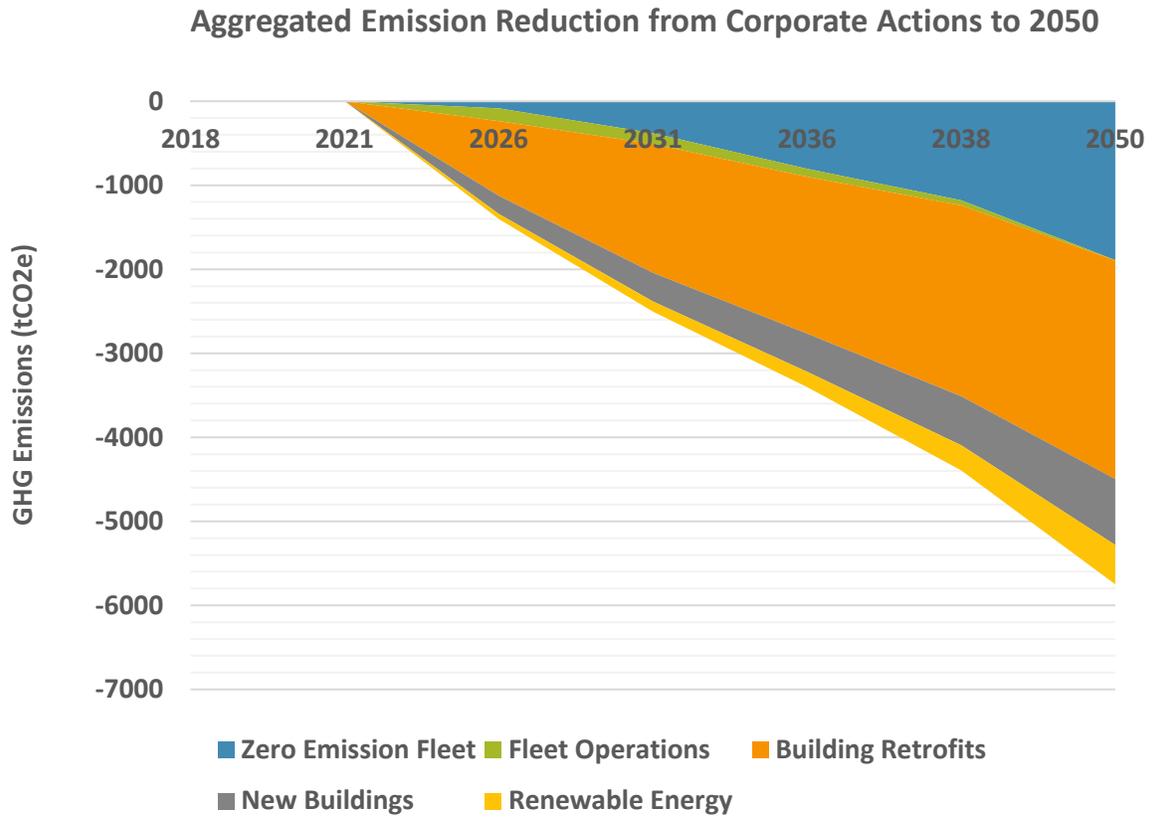


Figure 27: GHG Emission Reductions from Corporate Actions

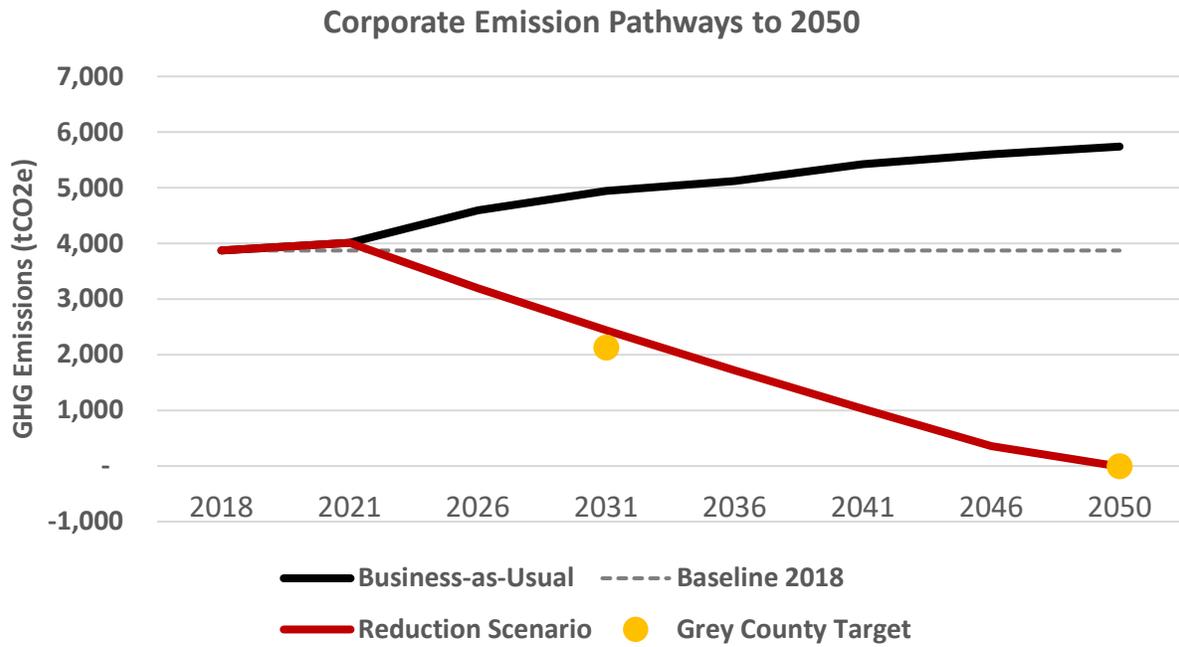


Figure 28: GHG Emissions Business-As-Usual Scenario, 2018 Baseline Emissions, Emission Reduction from Corporate Actions, and Corporate GHG Targets.

## 8. Implementation, Monitoring, and Review

### 8.1 Implementation

To ensure that the actions in the plan are implemented effectively over the long-term, an implementation plan has been developed. The implementation plan was developed based on research drawn from best practices in community climate planning and with review and feedback from the ECCWG, ICCWG, and the CCTF. For each action, the implementation plan provides initial considerations and high-level estimates for the following items:

**Lead Organization(s):** The department(s) or organization(s) leading implementation of the action.

**Potential Supporting Partner(s):** The department(s)/stakeholder(s)/organization(s) supporting implementation of the action.

**Timeframe:** Length to begin implementation of the action:

Ongoing/Near term: Already underway, will be continued/expanded with existing resources

Immediate term: Start working now

Short-term: Start work 1-3 years

Medium-term: Start work 3-5 years

**Relative Cost Characterization:** Estimated cost range for implementing each action:

N/A: Cost is covered by existing staff capacity or operating budgets

Low Cost: 0 - 100,000

Medium Cost: 100,000 -500,000

High Cost: 500,000+

**Funding Opportunities:** Any external funding opportunities that can help partly or fully finance the implementation of the action.

**Suggested Monitoring Metric(s):** Metric(s) that help measure the success of the action.

**Resilience Co-Benefit:** Identification of whether a simultaneous co-benefit associated with climate change adaptation exists through implementation of the action.

**Target Scope of Action:** Outlines the assumptions in scope that support the action's emission, energy, and energy cost reduction impact and the breadth of implementation required to meet Grey County's emission reduction targets at 2030 and 2050.

**Relative GHG Impact:** Where actions have quantifiable emission reduction associated, the relative impact in respect to all other actions is identified by a range. The following values were used to assign the range based on an action's cumulative reduction potential:

#### *Community Actions*

Low Impact: <300,000 tCO<sub>2</sub>e

Medium Impact: 300,000-1,000,000 tCO<sub>2</sub>e

## Grey County – Climate Change Action Plan

High Impact: >1,000,000 tCO<sub>2</sub>e

### *Corporate Actions*

Low Impact: <3000 tCO<sub>2</sub>e

Medium Impact: 3000-10,000 tCO<sub>2</sub>e

High Impact: >10,000 tCO<sub>2</sub>e

It is to be noted that the implementation plan is a living document and should be updated to account for any changes and/or opportunities that arise. The implementation plan provides initial considerations for key aspects of the CCAP's implementation.

As identified in Community Action 21, a next step for Grey County will be to establish an implementation advisory group, identify and collaborate with lead organization(s) and supporting partner(s), and develop a governance strategy for the CCAP.

## 8.2 Monitoring and Review

The CCAP is intended to guide Grey County and the wider community towards reducing GHG emissions and set Grey County on the pathway to reaching the GHG reduction targets. To assist in the implementation of the actions in this plan, and ensure they are effectively implemented according to identified metrics and identified schedules, a thorough governance and oversight structure, implementation plan and monitoring and review framework should be established. The recommended organizational model for implementing the CCAP is a 'County-led and Community Supported' model. This model enables the County to take a leadership role while sharing responsibilities for implementation with the community and member municipalities, while leveraging community capital to implement actions that are beyond municipal control or responsibility.

To coordinate and guide the implementation of the CCAP, it is recommended that the County establish an implementation advisory group. This group can be comprised of County staff from identified departments, organization leads and supporting partners, Indigenous organizations, members of the ECCWG, ICCWG, and the CCTF, as well as interested stakeholders and members of the community.

As per Corporate Action 12, the Climate Initiatives Manager at Grey County would act as the staff member responsible for overseeing and coordinating the CCAP's implementation, facilitating meetings with the implementation advisory group, coordinating with municipalities, lead organizations, supporting partners, Indigenous organizations, Saugeen Ojibway Nation, as well as serving as the main point of contact for the CCAP's implementation.



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The Manager would also prepare funding applications and facilitate education and outreach efforts related to the plan. The implementation advisory group can support the Climate Initiatives Manager in their duties.

The advisory group should meet regularly to discuss and report on implementation activities including development of annual workplans and reporting on year-end progress in their respective strategic areas, which should include quantification of GHG and energy savings as a result of implementing individual projects where feasible.

In addition to assessing the degree to which actions in the CCAP have been implemented on an ongoing basis, it is suggested that the CCAP be formally reviewed every five years. The review should assess progress towards the vision, targets, and objectives of the plan, and involve an update to the actions and the baseline inventory.

Updating the baseline inventory will allow Grey County to compare and assess performance relative to the original baseline and measure progress towards GHG reduction targets. Updating the inventory also provides an opportunity to assess and incorporate improvements in data availability and methodologies that have occurred over the years. While community baseline inventories are most commonly updated on a two- or three-year basis, due to easier access to data, corporate inventories can be updated on an annual basis. Establishing internal processes to update the corporate inventory on an annual basis also helps to further interdepartmental cohesion on climate action.

Having already achieved the first three PCP Milestones through the development of this CCAP, it is recommended that Grey County continue through the Milestone Framework to Milestone 4: Implement the Local Action and Plan and Milestone 5: Monitor Progress and Reporting Results as they undertake their monitoring and review activities. This will provide access to further guidance, resources, and third-party review.

Monitoring and review are essential components of the plan as they put in place processes to assess if the actions in the plan are producing the desired outcomes. It also ensures the longevity of the plan through assessment of best practices and continuous learning from challenges and barriers encountered along the way to provide direction for future GHG mitigation actions. Monitoring and review create a basis for ongoing community support for the plan by highlighting achievements and allowing Grey County to build upon the networks created during the plan development process. Establishing a monitoring framework also allows Grey County to assess the impact of changing government legislation, regulations, and technological advances on the plan and help determine if adjustments are needed over the planning horizon.

As part of this process, indicators are required to measure and track progress towards the objectives of the plan and can be categorized into two types: Process-based indicators and outcome-based indicators.

In many cases measuring the outcomes of mitigation actions are not feasible as it is not possible to directly attribute a reduction in energy or emissions to a project such as installing more bike parking or bike lanes. In these instances, process-based indicators are incredibly useful for identifying the processes that contributed to the achievement and success of the project. Where feasible, outcome-based indicators provide a more direct and quantifiable indicator of progress towards GHG reduction or energy efficiency goals. Suggested indicators for each action in the plan are identified in the Implementation Plan below and will be measured and tracked by the lead department/organization or supporting partner identified in the action.

### 8.3 Implementation Plan

#### Community Actions

ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
1	Afforestation Habitat and Biodiversity Protection	<ul style="list-style-type: none"> <li>Grey County - Planning and Development Department</li> <li>Member municipalities</li> <li>Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>Niagara Escarpment Commission</li> <li>Ministry of Natural Resources and Forestry</li> <li>Ministry of the Environment, Conservation, and Parks</li> <li>Local naturalist groups and organizations</li> <li>Land trusts</li> <li>Ontario Nature</li> <li>Escarpment Biosphere Conservancy</li> <li>ALUS Grey-Bruce,</li> <li>Tree and plant nurseries,</li> </ul>	Ongoing/ Near Term	Low to Medium Cost	n/a	<ul style="list-style-type: none"> <li>Number of trees planted per year</li> <li>Number of people purchasing trees/pollinator habitat and attending workshops</li> </ul>	Yes	By 2030, 1 million and by 2050, 5 million trees are planted across Grey County or equivalent sequestration from habitat and biodiversity protection.	Medium

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
1			<ul style="list-style-type: none"> <li>• Owen Sound Field Naturalists</li> <li>• Saugeen Nature</li> <li>• Stewardship Grey Bruce</li> </ul>				<ul style="list-style-type: none"> <li>• Hectares of greenspace and forested area added</li> <li>• Amount of carbon sequestered resulting from tree planting</li> <li>• Long-term increase in forest canopy cover</li> </ul>			

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
2	Conservation and Protection of Wetlands	<ul style="list-style-type: none"> <li>Grey County - Planning and Development</li> <li>Member municipalities</li> <li>Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>Stewardship Grey Bruce</li> <li>ALUS Grey-Bruce</li> <li>Ducks Unlimited Canada</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	Species at Risk Stewardship Program - <a href="#">Ontario Enhancing Protection for Species at Risk</a>	<ul style="list-style-type: none"> <li>Hectares of wetland protected by conservation program</li> </ul>	Yes	n/a	n/a
3	Facilitate Ongoing Capacity Building in Sustainable Agricultural Best-Practices	<ul style="list-style-type: none"> <li>Grey County - Agricultural Advisory Committee</li> <li>Economic Development, Tourism and Culture,</li> </ul>	<ul style="list-style-type: none"> <li>Grey County Federation of Agriculture</li> <li>Georgian Soil and Crops</li> <li>National Farmer's Union (NFU)</li> <li>Christian Farmers Federation of Ontario (CFFO)</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Number of farmers participating in capacity building network</li> </ul>	Yes	By 2030 20% of natural land for pasture and 30% of cropland are under best management practices for carbon sequestration; 30% of livestock	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
3		<ul style="list-style-type: none"> <li>• Planning and Development</li> <li>• Grey Agricultural Services</li> <li>• Alternative Land Use Services (ALUS Grey-Bruce)</li> <li>• Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>• Soil and Crop Improvement Association</li> <li>• OMAFRA</li> <li>• Academic Institutions (Guelph University)</li> </ul>				<ul style="list-style-type: none"> <li>• Number of farmers participating in farm sustainability programs</li> <li>• Number of demonstration/research projects</li> <li>• Number of farm education tours completed</li> </ul>		<p>manure not sent to biogas facilities are managed under best practices and; 30% of cattle are under best practice enteric fermentation GHG mitigation actions. By 2050, 60% of natural land for pasture and 90% of cropland are under best management practices for carbon</p>	

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
3							<ul style="list-style-type: none"> <li>Participant surveys to identify what new</li> <li>on-farm practices are being implemented</li> </ul>		sequestration; 90% of livestock manure is managed under best practices and; 90% of cattle are under best practice enteric fermentation GHG	
4	Continue to promote Locally Grown Food	<ul style="list-style-type: none"> <li>Grey County - Agricultural Advisory Committee</li> <li>Economic Development, Tourism and Culture</li> </ul>	<ul style="list-style-type: none"> <li>Eat Local Grey Bruce</li> <li>Farmers</li> <li>Farmers Markets</li> <li>Member municipalities</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Number of participants in local food hub</li> </ul>	Yes	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
4							<ul style="list-style-type: none"> <li>Amount of food and/or food sales sold/distributed through the local food hub</li> </ul>			
5	Collaborate with Member Municipalities to Support Waste Diversion	<ul style="list-style-type: none"> <li>Member municipalities</li> <li>Waste Departments</li> <li>Waste management companies</li> </ul>	<ul style="list-style-type: none"> <li>Conservation Authorities</li> <li>Grey County Farmers (composting actions)</li> <li>Grey County</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Tonnes and type of waste diverted from landfill</li> <li>Number of new backyard composters</li> </ul>	n/a	By 2030, 10% and by 2050, 30% of all solid waste is diverted from landfill and by 2050, 50% of organic waste is diverted from landfill.	Medium

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
6	Support Re-Use/Re-Build It Centres and Programs	<ul style="list-style-type: none"> <li>Grey County - Economic Development</li> <li>Habitat for Humanity</li> </ul>	<ul style="list-style-type: none"> <li>Member Municipalities</li> <li>Community Foundation Grey-Bruce</li> </ul>	Medium Term	Medium Cost	Initial capital costs can be recuperated through sales at both facilities. Funding to program is not available.	<ul style="list-style-type: none"> <li>Number/total weight and type of donations</li> <li>Total sales</li> <li>Amount of dollars reinvested in social programs</li> </ul>	n/a	n/a	n/a
7	Zero-emissions Vehicle Adoption	<ul style="list-style-type: none"> <li>Grey County – Manager of Climate Change Initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Member municipalities</li> <li>Plug n’ Drive</li> <li>Regional Electric Vehicle Charging Network Initiative</li> </ul>	Immediate Term	Low to Medium Cost	NRCAN Zero Emission Vehicle Infrastructure Program	<ul style="list-style-type: none"> <li>Number of EVs in the County since program implementation</li> </ul>	n/a	By 2030 25% and by 2050 100% of vehicles registered in Grey County are zero-emission vehicles.	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
7		<ul style="list-style-type: none"> <li>Transportation Services</li> <li>Economic Development, Tourism and Culture</li> </ul>					<ul style="list-style-type: none"> <li>Number of EV charging stations</li> <li>kWh charged at each station</li> </ul>			
8	Active Transportation	<ul style="list-style-type: none"> <li>Grey County – Transportation Services</li> <li>Planning and Development</li> <li>Economic Development, Tourism and Culture</li> <li>Member municipalities</li> </ul>	<ul style="list-style-type: none"> <li>Grey Bruce Health Unit</li> <li>Local cycling clubs and associations</li> <li>Local Police Forces</li> <li>CAA</li> </ul>	Ongoing/ Near Term	High Cost	Green Municipal Fund: Transportation Networks and Commuter Options	<ul style="list-style-type: none"> <li>Number of complete street upgrades completed</li> <li>Number of bike racks installed</li> <li>Kilometres of new trail routes added</li> </ul>	n/a	By 2030 25% and by 2050 50% or short duration trips are made by active modes of transportation.	Low

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
9	Rural Bus/Ride Share Program	<ul style="list-style-type: none"> <li>Grey County –, Economic Development, Tourism and Culture</li> </ul>	<ul style="list-style-type: none"> <li>Member municipalities</li> <li>Home and Community Support Services of Grey-Bruce</li> <li>Ontario Ministry of Transportation</li> <li>Local mobility/transportation service providers/taxi services</li> <li>Existing car share or car-pooling organizations/services</li> </ul>	Ongoing/ Near Term	Low to Medium Cost	<p>*Grey County has received funding from the Ministry of Transportation to improve transportation services for rural residents. Continue seeking funding through the Ministry's program to expand the existing GTR Service</p> <p>*Hanover receiving 11 vehicles (8 vans and 3 buses) to the public transit</p>	<ul style="list-style-type: none"> <li>Number of new ride share services established</li> <li>Number of users of the Grey Transit Route</li> </ul>	Yes	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
9		<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>			fleet from funding through provincial and federal government.	<ul style="list-style-type: none"> <li></li> </ul>			
10	Compact, Mixed-Use Development in Designated Settlement Areas	<ul style="list-style-type: none"> <li>Grey County - Planning and Development Department</li> </ul>	<ul style="list-style-type: none"> <li>Grey County - Housing Department, Tourism, Culture and Economic Development Department</li> <li>Member municipalities</li> <li>Grey Bruce Public Health Unit</li> <li>Local developers</li> <li>Ontario Home Builders Association</li> <li>Georgian Triangle Development Institute</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Number of new mixed-use, complete street developments</li> <li>Number of participants in CIP</li> <li>Land area of brownfield sites revitalized</li> </ul>	n/a	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
10			<ul style="list-style-type: none"> <li>• Chambers of Commerce</li> <li>• Business Improvement Areas</li> <li>• Real Estate Associations</li> <li>•</li> </ul>							
11	Green Standard for New Buildings	<ul style="list-style-type: none"> <li>• Grey County Climate Change Initiatives Manager</li> <li>• Planning and Development Department</li> <li>• Member Municipality's</li> <li>• Chief Building Officials</li> </ul>	<ul style="list-style-type: none"> <li>• Westario,</li> <li>• Hydro One</li> <li>• Enbridge</li> <li>• Local developers</li> <li>• Ontario Home Builders Association</li> </ul>	Immediate Term	Low Cost	n/a	<ul style="list-style-type: none"> <li>• Energy, emissions and energy dollars saved</li> <li>• Efficiency standard and/or</li> </ul>	Yes	By 2030, all new buildings are constructed to be net-zero ready and are at least 80	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
11		<ul style="list-style-type: none"> <li>Planning Departments</li> </ul>	<ul style="list-style-type: none"> <li>Georgian Triangle Development Institute</li> </ul>				energy use intensity (GJ/m <sup>2</sup> ) of new buildings		percent more efficient than new buildings built in the baseline year.	
12	Residential Building Energy Efficiency Retrofit Program	<ul style="list-style-type: none"> <li>Grey County - Climate Change Initiatives Manager</li> <li>Housing Department</li> <li>Planning and Development Department</li> <li>Member municipalities</li> </ul>	<ul style="list-style-type: none"> <li>Enbridge</li> <li>Westario</li> <li>Hydro One</li> <li>Energy contractors</li> <li>Housing Non-Profits</li> <li>United Way Grey Bruce</li> <li>Grey Bruce Poverty Taskforce</li> <li>Giiwe Indigenous Supportive Housing Program</li> </ul>	Short Term	Medium to High Cost	Green Municipal Fund: Study - Improve an existing local financing program for home energy upgrades; Green Municipal Fund: Capital project - Retrofit of community projects;	<ul style="list-style-type: none"> <li>Number of retrofits completed;</li> <li>Energy, emissions and energy dollars saved</li> </ul>	Yes	By 2030, 17% homes and by 2050, 84% of homes are retrofitted with a target energy efficiency gain of 40% or more per project.	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
12						Green Municipal Fund: Study - Retrofit of community projects				
13	Institutional/ Commercial/ Industrial/Agricultural Building Energy Efficiency Retrofit Program	<ul style="list-style-type: none"> <li>Grey County - Climate Change Initiatives Manager</li> <li>Economic Development, Culture, Tourism, Planning and Development Department</li> </ul>	<ul style="list-style-type: none"> <li>Westario, Hydro One</li> <li>Enbridge</li> <li>IESO</li> <li>Energy contractors and equipment suppliers</li> <li>Business Improvement Areas</li> </ul>	Medium Term	Medium to High Cost	Green Municipal Fund: Capital project - Retrofit of community projects; Green Municipal Fund:	<ul style="list-style-type: none"> <li>Number of retrofits completed</li> <li>Energy and Energy Cost Reduction</li> </ul>	Yes	By 2030, 15% and by 2050 90% of institutional and commercial buildings are retrofitted with a target energy efficiency	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
13		<ul style="list-style-type: none"> <li>Member municipalities</li> </ul>	<ul style="list-style-type: none"> <li>Chamber of Commerce</li> <li>Local industries</li> <li>Energy managers</li> </ul>			Study - Retrofit of community projects			<p>gain of 40% or more per project.</p> <p>By 2030, all buildings in the industrial sector operate under energy management best practices.</p>	
14	Support Renewable and Emerging Energy Technologies	<ul style="list-style-type: none"> <li>Grey County - Planning and Development, Economic Development</li> <li>Nuclear Innovation Institute</li> </ul>	<ul style="list-style-type: none"> <li>Member municipalities</li> <li>Solar Contractors</li> <li>Westario</li> <li>Hydro One</li> <li>Enbridge</li> </ul>	Short-term	Medium Cost	Property Assessed Clean Energy (PACE) program financed by Grey County and/or third party where the return on investment recuperates	<ul style="list-style-type: none"> <li>Number of solar panels installed per year</li> <li>Number of participating buildings</li> </ul>	Yes	<p>By 2030, 5% and by 2050 15% of the available residential roof space has solar panels by 2030</p> <p>By 2030, 100 MW of renewable energy is</p>	Low

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14						the initial capital costs and is used for further capital to finance additional projects. Green Municipal Fund Feasibility Study; Green Municipal Fund Design Study; Green Municipal Fund Program Evaluation	<ul style="list-style-type: none"> <li>• Total solar capacity installed (MW)</li> <li>• Total MWh generated from installed panels</li> <li>• Emissions reduced from the use of grid electricity</li> </ul>		installed in Grey County.	

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15	Promote Biogas Capture and Conversion	<ul style="list-style-type: none"> <li>• Grey County – Climate Change Initiatives Manager</li> <li>• Agricultural Advisory Committee</li> <li>• Economic Development, Tourism, Culture</li> <li>• Planning and Development</li> </ul>	<ul style="list-style-type: none"> <li>• Ontario Biomass Producer's Cooperative</li> <li>• Canadian Biogas Association</li> <li>• Anaerobic digester technology providers (see OMAFRA Anaerobic Digestion Contact List)</li> <li>• Enbridge</li> </ul>	Medium Term	n/a: Cost is covered by existing staff capacity or operating budgets	NA	<ul style="list-style-type: none"> <li>• Tonnes of waste diverted for use as feedstock in anaerobic digesters</li> <li>• Amount of renewable natural gas produced</li> <li>• Natural gas emissions displaced</li> </ul>	Yes	By 2030, 13,000,000 m3 of renewable natural gas, produced from agricultural and food waste, displaces fossil natural gas.	Medium

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
15							<ul style="list-style-type: none"> <li>• Amount of byproduct used as fertilizer</li> <li>• Number of participating farmers</li> </ul>			
16	Develop Climate Adaptation Plan	<ul style="list-style-type: none"> <li>• Grey County - Climate Change Initiative Manager</li> <li>• Member municipalities</li> <li>• Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>• Grey County Federation of Agriculture</li> <li>• Grey Agricultural Services</li> </ul>	Short Term	Low Cost	n/a	n/a	Yes	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
17	Reducing the Risk of Flooding	<ul style="list-style-type: none"> <li>Grey County - Planning and Development</li> <li>Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>Member municipalities,</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Amount of permeable pavement installed</li> </ul>	Yes	n/a	n/a
18	Prevention of Shoreline Erosion	<ul style="list-style-type: none"> <li>Grey County - Planning and Development</li> <li>Conservation Authorities</li> </ul>	<ul style="list-style-type: none"> <li>Member municipalities</li> <li>Stewardship Grey Bruce</li> </ul>	Ongoing/ Near Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Metres of shoreline eroded per year</li> </ul>	Yes	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
19	Establish a Climate Action Engagement Program	<ul style="list-style-type: none"> <li>Grey County – Manager Climate Change Initiatives</li> </ul>	<ul style="list-style-type: none"> <li>IESO</li> <li>Westario</li> <li>Enbridge</li> <li>HydroOne</li> <li>Member Municipalities</li> <li>Windfall Home Energy</li> <li>Save On Energy</li> <li>Grey Bruce Climate Action Network</li> <li>The 519 Sustainability Project</li> </ul>	Immediate Term	n/a: Cost is covered by existing staff capacity or operating budgets	<a href="#">ICLEI Canada - Agents of Change Project</a>	<ul style="list-style-type: none"> <li>Post-program survey to identify if education program resulted in uptake in activities</li> <li>Increased awareness changed behaviour</li> </ul>	n/a	n/a	n/a
20	Promote Sustainable Tourism Programs & Incentives to Operators	<ul style="list-style-type: none"> <li>Grey County – Economic Development, Tourism &amp; Culture</li> </ul>	<ul style="list-style-type: none"> <li>RTO7</li> <li>BIAs</li> <li>Chambers of Commerce</li> </ul>	Short Term	n/a: Cost is covered by existing staff capacity or	n/a		n/a	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost Characterization	Funding Opportunities	Suggested Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
20					operating budgets					
21	Establish a Climate Action Implementation Advisory Group	<ul style="list-style-type: none"> <li>Grey County – Manager Climate Change Initiatives</li> </ul>		Short Term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a		n/a	n/a	n/a

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Corporate Actions

ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
1	Energy Efficient New Buildings	<ul style="list-style-type: none"> <li>Grey County - Housing Department, Long-Term Care Department</li> </ul>	<ul style="list-style-type: none"> <li>Westario</li> <li>Hydro One</li> <li>Enbridge</li> </ul>	Short-term	Low Cost	<a href="#">Green Municipal Fund: Capital project: New construction of energy-efficient facilities</a>	<ul style="list-style-type: none"> <li>Energy, emissions and energy dollars saved</li> <li>Efficiency standard and/or energy use intensity (GJ/m<sup>2</sup>) of new buildings</li> <li>Number, capacity, and generation of solar panels installed</li> </ul>	Yes	All new buildings built to be net-zero energy ready by 2025, remaining energy required to power buildings is from clean renewables.	High

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
2	Retrofit Existing Buildings	<ul style="list-style-type: none"> <li>Grey County – Housing Department</li> </ul>	<ul style="list-style-type: none"> <li>Westario</li> <li>Hydro One</li> <li>Enbridge</li> </ul>	Short-term	High Cost	<a href="#">Green Municipal Fund - Sustainable Affordable Housing</a>	<ul style="list-style-type: none"> <li>Number of retrofits completed</li> <li>Energy, emissions and energy dollars saved</li> </ul>	Yes	All corporate owned facilities are retrofitted by 2050 with energy efficiency gains aiming at 40% or greater.	High
3	Residential Demonstration Building	<ul style="list-style-type: none"> <li>Grey County – Housing Department, Planning and Development Department, Economic Development, Tourism and Culture, Climate Change Initiatives Manager</li> <li>Third-party organization</li> </ul>	<ul style="list-style-type: none"> <li>Net-zero housing developers</li> <li>Grey Bruce Sustainability Network</li> <li>Bruce Power</li> <li>Hydro One</li> <li>Enbridge</li> </ul>	Medium-term	High Cost	<a href="#">Green Municipal Fund - Pilot project: Signature initiative</a>	<ul style="list-style-type: none"> <li>Number of visitors to demonstration building</li> <li>Energy, emissions and energy dollars saved</li> </ul>	n/a		n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
4	Renewable Energy	<ul style="list-style-type: none"> <li>Grey County – Housing Department</li> <li>Climate Change Initiatives Manager</li> </ul>	<ul style="list-style-type: none"> <li>Internal Working Group</li> </ul>	Medium-term	Medium Cost	<a href="#">Green Municipal Fund: Capital project: Renewable energy production on a brownfield</a>	<ul style="list-style-type: none"> <li>Solar potential of County-owned buildings</li> <li>Number of renewable energy projects completed</li> <li>Energy, emissions and energy dollars saved</li> </ul>	Yes	By 2030, 17% and by 2050, 87% existing buildings have rooftop or ground mounted solar photovoltaic installations, or equivalent energy generated from alternative renewable energy technology.	Medium
5	Outdoor Lighting Conversion to LEDs	<ul style="list-style-type: none"> <li>Grey County – Transportation Services, Climate Change Initiatives Manager</li> <li>Municipal Climate Change Community of Practice</li> </ul>	<ul style="list-style-type: none"> <li>Hydro-One</li> </ul>	Medium-term	Existing budgets	n/a	<ul style="list-style-type: none"> <li>Number of streetlights converted</li> <li>Energy, emissions, and energy dollars saved</li> </ul>	Yes	n/a	n/a

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6	Reduce Single Passenger Commuting & Private Vehicles	<ul style="list-style-type: none"> <li>Grey County - Climate Change Internal Working Group, Climate Change Initiatives Manager</li> </ul>	n/a	Short-term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Number of staff carpooling</li> <li>Number of staff working from home and how often</li> <li>Number of bike racks installed</li> <li>Energy, emissions, and costs saved.</li> </ul>	n/a	n/a	n/a
7	Fleet Operations Maintenance	<ul style="list-style-type: none"> <li>Grey County – Transportation Services and Paramedic Services</li> </ul>	n/a	Ongoing/ Near-term	Low Cost	n/a	<ul style="list-style-type: none"> <li>Fuel and fuel costs saved</li> <li>Emissions reduced</li> <li>Number of maintenance trips per year</li> </ul>	n/a	Operational changes, anti-idling, and maintenance improvements result in 10% less fuel consumption across corporate fleet vehicle and equipment beginning in 2025.	Low

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8	Zero Emission Fleet Vehicles & Equipment	<ul style="list-style-type: none"> <li>Grey County – Transportation Services</li> </ul>	<ul style="list-style-type: none"> <li>Propulsion Quebec (Saver model)</li> </ul>	Short-term	Medium Cost	<a href="#">Pilot project: Reduce fossil fuel use in fleets</a> <i>*Consider Saver model to support financing</i>	<ul style="list-style-type: none"> <li>Number of electric vehicles</li> <li>Fuel saved and emissions avoided based on km travelled of replaced vehicles</li> </ul>	n/a	Vehicles and equipment are replaced with zero emission options as technology is available.	High
9	Corporate Waste Reduction Program	<ul style="list-style-type: none"> <li>Grey County - Climate Change Internal Working Group</li> <li>Climate Change Initiatives Manager</li> </ul>	n/a	Short-term	Low Cost	n/a	<ul style="list-style-type: none"> <li>Amount of single-use plastics avoided</li> <li>Number of waste streams collected at municipal facilities</li> <li>How full corporate waste bins are before removal</li> </ul>	n/a	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
10	Collaborate with Member Municipalities to Support Wastewater Efficiency	<ul style="list-style-type: none"> <li>Member municipalities - waste departments</li> </ul>	<ul style="list-style-type: none"> <li>Grey County</li> <li>Ministry of Environment, Conservation, and Parks</li> <li>Ontario Clean Water Agency</li> <li>Wastewater management companies</li> </ul>	Medium Term	High Cost *in member municipality budgets	n/a	<ul style="list-style-type: none"> <li>Energy, emissions and energy dollars saved</li> </ul>	n/a	n/a	n/a
11	Develop Municipal Climate Lens	<ul style="list-style-type: none"> <li>Grey County - Climate Change Internal Working Group, Climate Change Initiatives Manager</li> </ul>	n/a	Short-term	n/a: Cost is covered by existing staff capacity or operating budgets	n/a	<ul style="list-style-type: none"> <li>Energy efficiency measures implemented</li> <li>Energy saved, energy costs saved, and emissions reduced</li> <li>Number of staff trained</li> </ul>	Yes	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
11							<ul style="list-style-type: none"> <li>Climate change considerations integrated into asset management plans</li> </ul>			
12	Retain or Appoint a Climate Change Initiatives Manager	<ul style="list-style-type: none"> <li>Grey County - Climate Change Internal Working Group</li> </ul>	n/a	Ongoing/ Near Term	Low Cost – cost can be covered through existing operating budget	n/a	<ul style="list-style-type: none"> <li>Energy efficiency measures implemented</li> <li>Energy saved, energy costs saved, and emissions reduced</li> <li>Number of projects completed</li> </ul>	Yes	n/a	n/a
13	Promote a Culture of Conservation	<ul style="list-style-type: none"> <li>Grey County - Climate Change Internal Working Group</li> </ul>	n/a	Ongoing/ Near Term	Low Cost	n/a	<ul style="list-style-type: none"> <li>Energy efficiency measures implemented</li> </ul>	n/a	n/a	n/a

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ID #	Action	Leading Organization(s)	Potential Supporting Partner(s)	Timeframe	Relative Cost	Funding	Monitoring Metrics	Resilience Co-Benefits	Target Scope for Action	Relative Cumulative GHG Impact
13		<ul style="list-style-type: none"> <li>Climate Change Initiatives Manager</li> </ul>					<ul style="list-style-type: none"> <li>Energy saved, energy costs saved, and emissions reduced</li> </ul>			

## 9. Conclusion

Continuous community collaboration and engagement will be essential to building and carrying forward the momentum of the CCAP so that its impacts go well beyond the 5-year plan period. Additional efforts will be needed to engage the wider community outside of the community climate and sustainability leaders, and it will be important to report on progress and share success stories regularly to demonstrate co-benefits and emerging business opportunities to the community.

The Grey County Climate Change Action Plan marks the beginning of an exciting journey towards a sustainable future that builds on, strengthens, and protects the most important parts of the community while unlocking new opportunities for collaboration and innovation. The vision, goals, and actions in this plan are an opportunity to work together for a better future, while upgrading and building new home, business and social infrastructure that saves money and supports community wellbeing and a high quality of life.