

*West  
Grey*



# West Grey Climate Change Action Plan

2023

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## Acknowledgements

West Grey celebrates the combined efforts of everyone involved in developing the Climate Change Action Plan (CCAP). The Plan is reflective of a diverse range of knowledge and expertise and represents the leadership of and collaboration between key stakeholders including the municipal staff, the consulting team and community members.

## Consulting Team

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## 1. Executive Summary

West Grey’s Climate Change Action Plan (CCAP) is our municipality’s response to the global climate emergency. Human activity—namely, the burning of fossil fuels—is the primary driver accelerating the rise in global temperature<sup>1</sup>. If left unabated, anthropogenic climate change will only bring more frequent extreme weather events and intensifying detrimental impacts to where we live and work—this requires us to take urgent action. At the international level the global community, including Canada, has agreed to take action to limit the increase of global average temperature by no more than 2°C, and seeks to limit the temperature increase to 1.5°C above pre-industrial levels, to stay within the “safe” upper limit of global warming. This means achieving net-zero greenhouse gas emission globally by 2050. Fortunately, municipalities like West Grey are well positioned to take leadership on reducing local greenhouse gas (GHG) emissions, as well as ensuring communities are protected from unavoidable climate impacts such as flooding, forest fires and extreme heat. Taking action on climate change also provides a wide range of social, economic, health and environmental co-benefits.

West Grey is already taking action to address the causes of climate change. Local climate actions already undertaken in West Grey include waste diversion initiatives like ‘curbside giveaway days’, roll out of public EV chargers and the updating of all streetlights to LED bulbs. But there is more that can and must be done to stay within the “safe” upper limit of global warming. The West Grey Corporate Climate Change Action Plan (CCAP) is a living document that

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<sup>1</sup> This is especially concerning for Canada, which is warming twice as fast as the global rate and the Canadian Arctic, which is warming three times faster than the global rate. Government of Canada. (n.d.). Climate change adaptation in Canada. <https://www.nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/what-adaptation/10025>

## West Grey Climate Change Action Plan

sets GHG targets and outlines West Grey's pathway to reducing GHG emissions from municipal operations to achieve our targets. This document provides a detailed GHG emissions inventory, outlines emissions reductions targets for 2030 and 2050, and lays out a climate action strategy along with implementation guidelines for achieving 15 proposed climate actions to reduce emissions across West Grey's corporate operations. The Grey County Climate Change Action Plan was completed in 2021 and outlined 21 actions to achieve net-zero emission from the wider community. The West Grey CCAP fully supports the implementation of the Grey County CCAP.

In 2019 the Corporation of West Grey generated 2,381 tonnes of CO<sub>2</sub>e from the operation of municipally owned buildings, the municipal vehicle and equipment fleet, water and wastewater facilities, outdoor lighting and solid waste. Recognizing the international and federal commitments to net-zero GHG emissions by 2050, West Grey has set a goal of reducing these emissions to net-zero, along with an interim 2030 goal. West Grey's GHG targets are as follows:

**40% reduction in corporate greenhouse gas emissions by 2030 relative to 2019 levels; and net-zero greenhouse gas emissions by 2050**

In addition to the above GHG targets, The West Grey Corporate Climate Action Plan Vision Statement describes what West Grey desires to achieve across our municipal operations through the implementation of this plan. West Grey residents are proud of their community and this vision recognizes the strong sense of environmental stewardship in the community and the value that residents place on the infrastructure and services provided by the municipality of West Grey.

*The Municipality of West Grey is a champion of environmental stewardship and climate action. Through leadership, collaboration, and commitment, we will build a future-ready community that is sustainable, ecologically, economically, and culturally diverse, and thriving.*

The 15 actions in the West Grey CCAP were developed based on best-practices in municipal GHG mitigation and their GHG reduction potential. They outline a pathway towards net-zero GHG emissions and if implemented can result in significant cost savings for the municipality as a result of reduced energy costs, and insulation from rising energy costs, as well as improved energy resiliency. Successful implementation of the actions in this plan, will require a strong governance and oversight structure, implementation plan, and monitoring and review framework. The entities overseeing West Grey's CCAP will vary according to each climate action/strategy and will require collaboration across all of West Grey's departments. General oversight and coordination for implementation of the plan will be the responsibility of the Environment and Capital Projects Officer, whereas implementation of specific strategies and actions will require the lead of the relevant department. The West Grey Council will be responsible for the monitoring and review of this plan with regular updates from Environment and Capital Projects Officer.

## 2. Introduction

West Grey’s Climate Change Action Plan (CCAP) serves as our corporate long-term strategy to realise a sustainable, low-emissions, and energy-efficient future. West Grey is aware of the need to reduce the effects of climate change, given the reality of more frequent flooding, intense heat, snowstorms, and other severe weather occurrences that continue to affect our area and the rest of the world. Committed to leading by example, this plan focuses on what the corporation can achieve and how we can improve our impacts.

The CCAP details how the municipality currently uses energy, forecasts how we will use it in the years to come. It specifies steps that will reduce emissions produced across West Grey, specifically, from our municipal fleet, public buildings, and services. Emissions reductions will be accomplished via a wide range of intersecting measures that focus on our built, social, economic, and ecological systems. These measures not only address improving energy efficiency but also entail initiatives, rules, and procedures that will safeguard our natural assets and upgrade our infrastructure.

We recognize that this is a difficult situation in which to operate, with many constraints and a steep learning curve. But we are choosing to take the necessary steps to meet the goal of reaching net-zero emissions by 2050, not only to align with the efforts of fellow municipalities and international climate change governance directives, but because it is the right thing to do for our community and will benefit the generations to come.

### West Grey

The municipality of West Grey is located in Grey County in Southwestern Ontario. Its geographic area spans across the River Styx, the Rocky Saugeen River, the Beatty Saugeen River, and the South Saugeen River. The municipality was formed on January 1, 2001 through the amalgamation of the former Townships of Bentinck, Glenelg, Normanby, the Village of Neustadt, and the Town of Durham, and has a population of 13,131 as of 2021.



## What Causes Climate Change



Climate change refers to the long-term changes in global weather patterns that result from the build-up of heat trapping greenhouse gases (GHGs) in our atmosphere. While natural phenomena are part of what cause this to happen, human activity since the 1800s—in particular, the burning of fossil fuels—has been the main driver. Two complementary approaches to address climate change and how it affects our lives are *climate change adaptation* and *climate change mitigation*.

### Adaptation and Mitigation

**Climate Change Adaptation** involves any measures that help us adjust to the impacts of climate change. Examples of such measures include planning for more frequent and intense extreme weather events; reducing the vulnerability of at-risk populations; enhancing the resilience of buildings and infrastructure; and updating operating and maintenance procedures.

**Climate Change Mitigation** involves measures—policy, regulatory, project/program-based, etc.—that prevent or reduce the emission of GHGs. Examples of such measures include transitioning to low-carbon energy sources; investing in renewable energy; promoting active transportation; and reducing our consumption of goods.

West Grey’s CCAP is primarily focused on climate change mitigation, however it is acknowledged that adaptation measures will also need to be developed and integrated into future climate action strategies. Preliminary adaptation work to be done includes identifying specific vulnerabilities to the impacts of climate change in West Grey and outlining projects, policies and programs that will help reduce risks and increase resilience in the face of a climate-adjusted future.

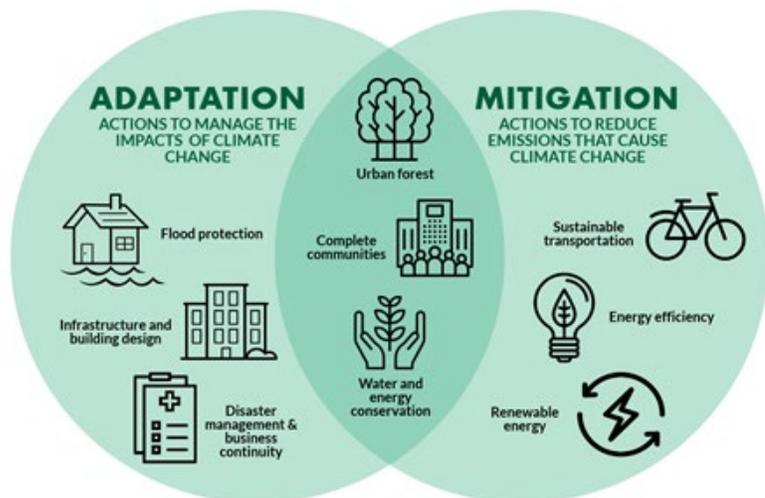


Figure 1: Overlap and Differences between Adaptation and Mitigation

## Benefits of Climate Change Mitigation

In addition to reducing GHG emissions implementing the actions outlined in the CCAP provides financial, environmental, and social benefits to West Grey, including:

- **Elevated leadership status** – local governments that take a serious stance on energy efficiency and sustainability are recognized as leaders by the community they serve and by neighbouring municipalities facing the same challenges who will seek opportunities to share knowledge and, when appropriate, pool resources towards joint objectives.
- **Increased climate awareness and responsibility** – with greater education and direction around climate mitigation measures, municipal staff, local stakeholders, partners and community members will gain a greater understanding of climate change, West Grey's capacity for implementing local climate action, and how they can contribute to climate action.
- **Reduced energy costs** – Improving the energy efficiency of West Grey's buildings, facilities, outdoor lighting fixtures, and practices will reduce annual operating costs and energy cost savings that can be used toward other local priorities. Increased energy efficiency will also help insulate West Grey against rising fuel, natural gas, and electricity prices in Ontario.
- **Increased energy resiliency and energy security** – With more local renewable energy generation, West Grey will be less affected by power outages and disruptions, and less impacted by the rising price of energy in Ontario.
- **New forms of employment and innovation** in the building and construction industries and in the clean energy/cleantech sector, due to more investment in energy-efficient technologies, buildings, hydrogen and renewable energy generation and storage. New economic opportunities can also be realized in sustainable agriculture and naturalization.
- **Improved health & wellbeing**, as a result of reduced air pollution, increased access to natural areas and active transportation, and a greater sense of local (energy) security.
- **Reduced collective impact on climate change**, resulting in a healthier natural environment and a sense of local pride for taking tangible actions to address the climate emergency.

## Governance Directives on Climate Change Mitigation

### International

Canada was one of 195 nations that signed the Paris Agreement in December 2015 at the COP21 Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement intends to keep the rise in the average global temperature well below 2°C and support efforts to maintain it below 1.5°C above pre-industrial levels.



### **National**

The Canadian Net-Zero Emissions Accountability Act, which was passed into law in June 2021, established a legally binding target of net-zero greenhouse gas emissions by 2050 and a promise to cut emissions by 40 to 45 percent from 2005 levels by 2030. The Pan Canadian Framework on Clean Growth and Climate Change was put in place by the federal government to help achieve the goal of meeting Canada's 2030 target while growing the economy and constructing resilience to adapt to climate change.

### **Provincial**

The Made-In-Ontario Environment Plan—unveiled by the province in 2018—focuses on protecting Ontario's air, water, species, and natural environment. Along with setting an emissions reduction target of 30% lower than 2005 levels by 2030, it also seeks to reduce solid waste in the region and better prepare communities for climate change. As of 2020, the following progress has been made toward continuing the plan's implementation:

- Federal recognition for finalizing the emissions performance standards program to ensure accountability for large, industrial GHG emitters.

## West Grey Climate Change Action Plan

- The creation of an enhanced emissions testing program that requires regular emissions tests for commercial trucks, buses, and other major polluters.
- Establishing a new waste management model, putting the responsibility of product and packaging lifecycles on producers.
- Publishing a discussion paper that serves as the basis for Ontario's first low-carbon hydrogen strategy, in an effort to boost employment and assist the province achieve its greenhouse gas reduction goal.

Two other measures in Ontario related to climate change mitigation includes the Provincial Policy Statement (PPS) and the Planning Act. The PPS (2020) gives municipalities guidance on how to control and direct land use and development. Municipalities are directed to support energy conservation and efficiency, air quality improvement, GHG emissions reduction, and prepare for the effects of climate change through land use and development planning.

The Planning Act (amended in 2021) is provincial legislation that provides a legal framework for land use planning in Ontario, specifically the control of land uses, and who can control them. The Act requires municipalities to include climate policies in their Official Plans that specify precise steps to be followed to meet climate change goals.

### Role of Local Governments

Municipalities have a lot to improve when it comes to dealing with climate change. Extreme weather events are increasing in frequency and intensity, posing serious risks to infrastructure and to the local population itself. At the same time, towns and cities are some of the biggest emitters of GHGs. With the need to alleviate costs associated with climate change and in recognition of the influence that municipalities have over local policies and programmes that effect GHG emissions, local governments are increasingly leveraging their unique position and responsibility to champion the transition to a resilient, low-carbon future.



It will take significant investment, innovation, strong regulations, and swift action from all levels of government to achieve Canada's goals of net-zero emissions by 2050. And while this endeavour may seem daunting, taking climate action now can prevent enormous expenses in the future. At the same time, this will spur local economic growth and job creation, improve livability and enhance community health and wellbeing.

### 3. West Grey CCAP Vision Statement and GHG Reduction Targets

#### West Grey's Commitment to Climate Action Leadership

This plan is West Grey's first step towards taking meaningful action on climate change at the municipal level. With the establishment of this plan and with the ongoing development and implementation of climate action initiatives, West Grey is stepping up as a leader in this space to better serve its community and be a responsible member regionally and globally. The primary components of West Grey's climate action commitments are the following vision statement and GHG emission reduction targets which guide the development and implementation of this plan.

#### Vision Statement

The West Grey Corporate Climate Action Plan Vision Statement describes what West Grey desires to achieve across our municipal operations through the implementation of this plan. West Grey residents are proud of their community and this vision recognizes the strong sense of environmental stewardship in the community and the value that residents place on the infrastructure and services provided by the municipality of West Grey. The following vision statement was developed through a workshop with the consultant team and the project team:

*The Municipality of West Grey is a champion of environmental stewardship and climate action. Through leadership, collaboration, and commitment, we will build a future-ready community that is sustainable, ecologically, economically, and culturally diverse, and thriving.*

#### Corporate GHG Emission Reduction Targets

The corporate GHG emission reduction target set a quantifiable reduction goal for West Grey to achieve by a specified year, compared to the selected baseline year. The vision and strategies in this plan are the pathway to achieving these targets. West Grey has adopted the following GHG emission reduction targets:

**40% reduction in corporate greenhouse gas emissions by 2030 relative to 2019 levels; and net-zero greenhouse gas emissions by 2050<sup>2</sup>**

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<sup>2</sup> This target includes all emissions from energy consumed and waste produced across West Grey operations. This target does not include landfill emissions as reducing landfill emissions is a shared responsibility between West Grey and the community. Furthermore, community landfill emissions are already included in the Grey County Community targets.

Net-zero greenhouse gas emissions means that anthropogenic emissions of GHGs into the atmosphere are balanced by GHG removals from the atmosphere over a specified period. Carbon offsetting and sequestration will need to be a part of reaching any ambitious emissions targets. However, direct GHG emissions reduction activities are still the most effective way to mitigate the effects of climate change and should be prioritized. West Grey will strive to mitigate emissions by 80% by 2050 and aim to meet the net-zero target by offsetting or sequestering the remaining 20% of emissions.



## Plan Approach

West Grey’s Climate Change Action Plan follows ICLEI Canada and the Federation of Canadian Municipalities’ (FCM) [Partners for Climate Protection \(PCP\) program](#)<sup>3</sup> 5 Milestone Framework. The PCP Framework provides a structural approach and comprehensive methodology for municipal scale climate change mitigation planning and was developed specifically for local governments in Canada.

## Plan Development

As per the PCP program’s Framework, an emissions inventory and business-as-usual (BAU) was developed to understand current and future projected GHG emissions. With the completion of its inventory, West Grey’s emissions reduction target was set, for which clear objectives were



<sup>3</sup> The PCP program, of which West Grey has been a member of since 2021, 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.

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defined and specific climate actions were identified. From this work, a plan was developed to guide the implementation of emissions reduction programs, policies, and projects across West Grey’s various sectors. The completion of the CCAP meets the requirements for corporate Milestones 1 to 3 of the PCP program, after which Milestone 4: Implementing a Plan and Milestone 5: Monitoring the Impact can be undertaken. Figure 2 provides an infographic of the PCP Milestone Framework.

### Timeline of Work

The work to develop West Grey’s CCAP started in the fall of 2021, at which point preliminary project planning, visioning and communication of plan development was required. The following phase of work carried through to spring of 2022 and involved conducting a full GHG inventory of West Grey’s corporate operations (i.e., PCP Milestone 1). This was followed by the assessment of the completed GHG inventory and setting an emission reduction target (i.e., PCP Milestone 2). Following this, the development of the CCAP was undertaken (i.e., PCP Milestone 3) and this work ran through the summer until fall of 2022. The drafting of a ready CCAP carried through until January 2023, at which point it was provided to West Grey staff for revision and approval.

PHASE 1 Oct – Dec 2021	PHASE 2 Dec 2021 – May 2022	PHASE 3 Jun – Aug 2022
<p>TASKS</p> <ul style="list-style-type: none"> <li>• Kick-off Meeting</li> <li>• Workplan and schedule refinement</li> <li>• Review of West Grey’s relevant materials</li> <li>• Establish working groups</li> <li>• Establish communications plan</li> </ul>	<p>TASKS</p> <ul style="list-style-type: none"> <li>• Data collection, review and refinement</li> <li>• BAU scenario development</li> <li>• Documentation and reporting of inventory and scenarios</li> <li>• Identification of existing planning initiatives, opportunities, constraints</li> <li>• Presentation to council</li> </ul>	<p>TASKS</p> <ul style="list-style-type: none"> <li>• Develop goals and targets</li> <li>• Public survey</li> <li>• Strategy development</li> <li>• Strategy quantification</li> </ul>
PHASE 4 Sept 2022 – Jan 2023		PHASE 5 Feb 2023
<p>TASKS</p> <ul style="list-style-type: none"> <li>• Develop finalized list of recommended actions</li> <li>• Develop implementation and monitoring plan</li> <li>• First draft of CCAP</li> </ul>		<p>TASKS</p> <ul style="list-style-type: none"> <li>• Draft final CCAP</li> <li>• Council presentation of draft CCAP</li> <li>• Presentation to council</li> <li>• Grant opportunity collaboration with staff</li> </ul>

## Stakeholder Engagement

Through the work of the climate advisory committee, West Grey’s vision statement was crafted, and the municipality’s level of ambition and emissions reduction targets were proposed for council approval. 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. In addition, a survey was made available to residents through West Grey’s website in June of 2022, to gain feedback on the development of the CCAP. A total of 72 people responded to the survey.

## 4. West Grey’s Current GHG Emissions

A baseline emissions inventory was completed for West Grey’s municipal (i.e., ‘corporate’) operations following the PCP Protocol: Canadian Supplement to the International Emissions Analysis Protocol and international best practice methodologies based on the Greenhouse Gas Protocol and IPCC Guidelines for Greenhouse Gas Inventories. The baseline year chosen for this corporate inventory was 2019, given that it was the most recent year with the most complete dataset available. Along with the corporate emission inventory, an energy profile outlining energy use and cost was also developed, as energy consumption tends to account for most communities’ emissions. The baseline energy profile and GHG emissions inventory cover energy and emissions occurring inside the municipal boundary and emissions occurring from the use of grid-supplied electricity within Grey County). Not taken into account were any energy or emissions produced beyond municipal limits that resulted from activities carried out within West Grey, such as the consumption of goods manufactured outside West Grey.

### Baseline Energy and Emissions Profile

In 2019, West Grey used 28,310 GJ across their corporate facilities, vehicle fleet, and streetlights. In terms of energy dollars, West Grey spent \$974,393.54 on energy in 2019. As shown in Table 1 and Figures 3 and 4, energy used by the vehicle fleet accounts for 52% of energy consumption and 40% of energy costs. Buildings are the next largest energy user accounting for 35% of energy consumption and 38% of energy expenditures.

*Table 1: Municipal energy consumption, energy spending and GHG emissions in 2019*

Sector	Energy Consumption (GJ)	Energy Costs (\$)	GHG Emissions (tCO2e)
<b>Buildings</b>	9,864	\$365,768	324
<b>Fleet</b>	14,578	\$392,808	993
<b>Streetlights</b>	922	\$53,938	2
<b>Water &amp; Wastewater</b>	2,766	161,878	8
<b>Landfilled Waste</b>	N/A	N/A	862
<b>Operational Waste</b>	N/A	N/A	170
<b>Total</b>	<b>28,310</b>	<b>\$974,393</b>	<b>2,381</b>

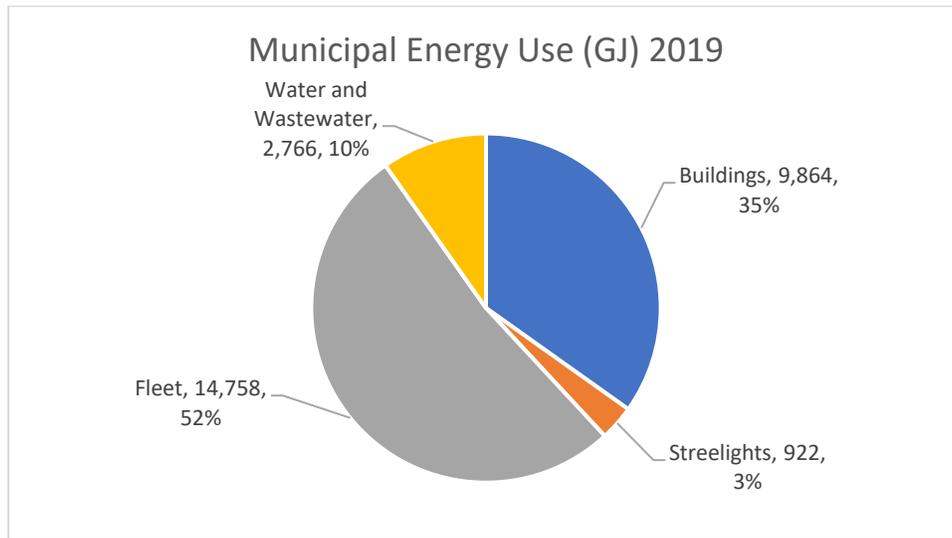


Figure 3: Energy Consumption by the Municipality in 2019

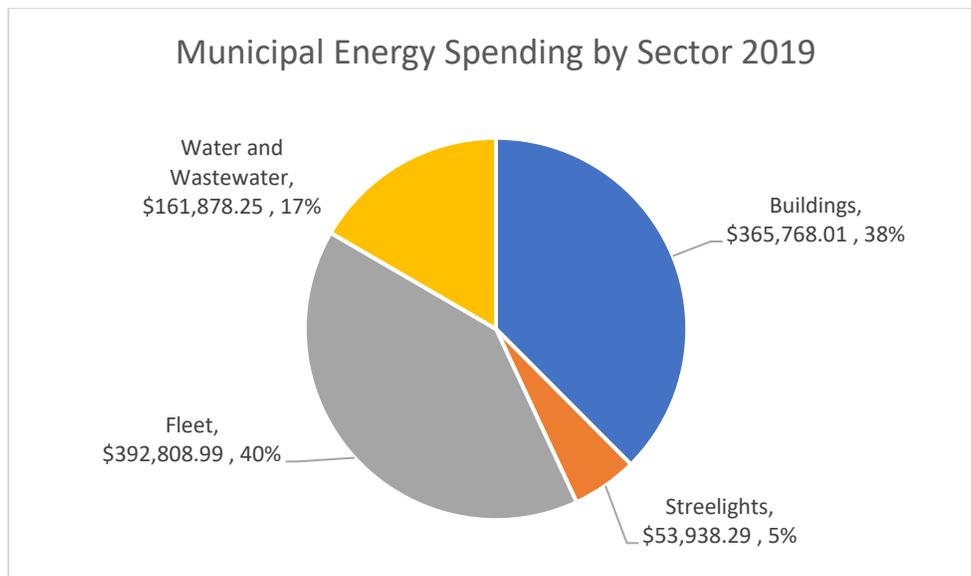


Figure 4: Municipal Energy Spending in 2019

When looking at energy use by fuel type, diesel was the most significant fuel type used across all sectors, making up 41% of all energy consumption, followed by electricity at 30%. (Table 2, Figure 5).

Vehicle Fleet emissions were the largest contributor to GHG emissions (42%) followed by landfill waste (36%) and buildings (13%) (Figure 6).

Fuel type	Energy Consumption (GJ)	Energy Costs (\$)
<b>Diesel</b>	11,551	\$289,949
<b>Electricity</b>	8,583	\$502,359
<b>Gasoline</b>	3,207	\$93,859
<b>Natural Gas</b>	2,756	\$26,028
<b>Propane</b>	1,641	\$43,133
<b>Fuel Oil</b>	572	\$10,062
<b>Total</b>	<b>28,310</b>	<b>\$974,393</b>

Table 2: Total municipal energy consumption and costs by fuel type in 2019.

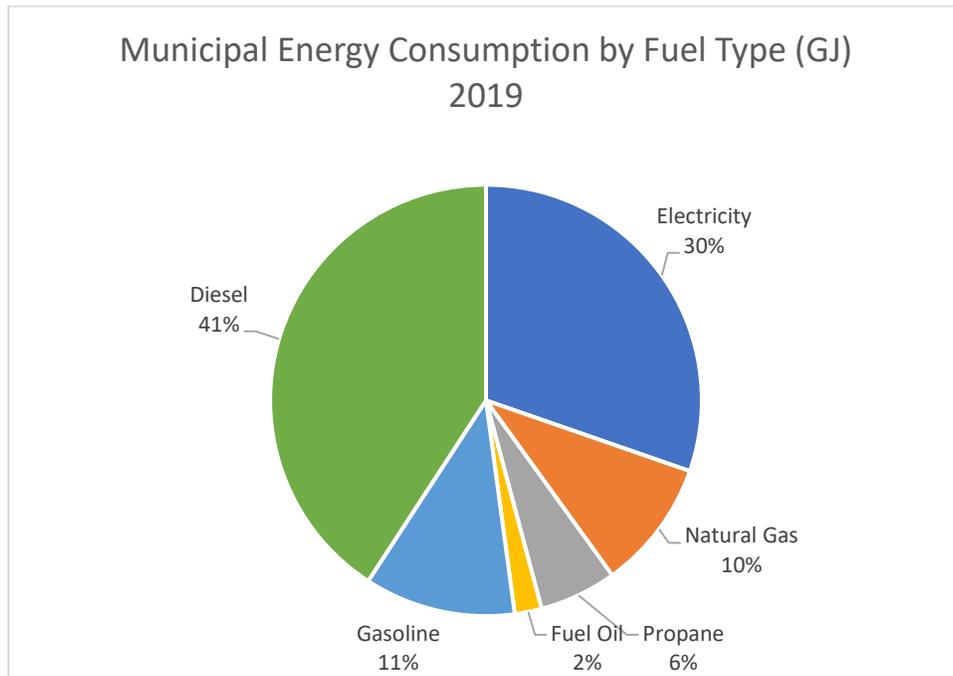


Figure 5: Municipal energy consumption by fuel type in 2019

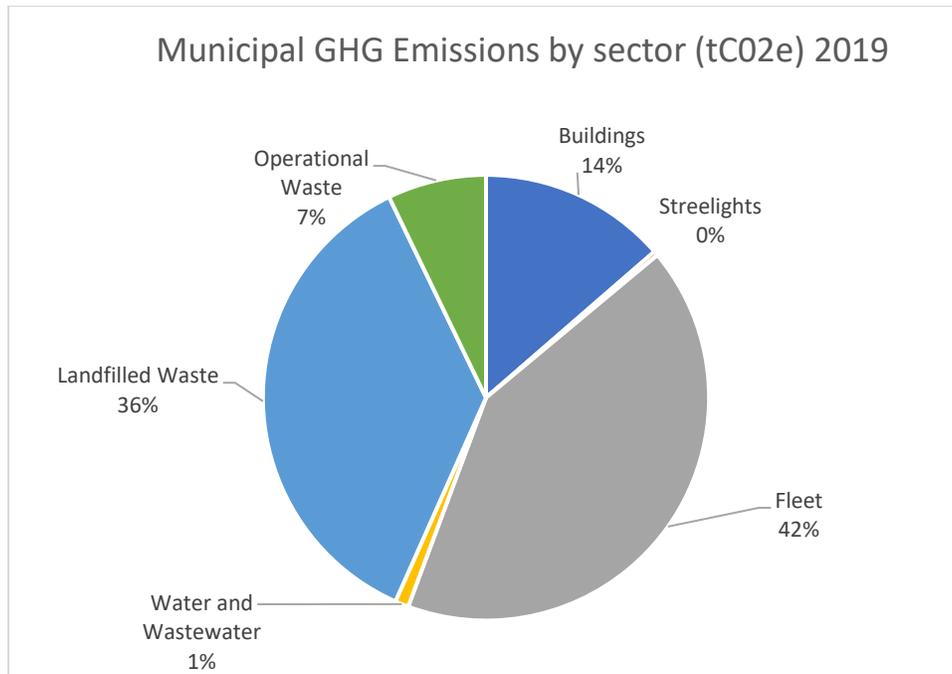


Figure 6: Municipal GHG emissions by sector in 2019

## Business-as-Usual Projection

The Business-as-usual (BAU) projection was developed to understand future energy consumption, energy costs and emissions for West Grey, assuming *no action is taken* to reduce energy or emissions. The primary driver in the projection is population, which influences operations and expands the facilities required by West Grey. Regional changes that impact energy consumption patterns will also affect energy consumption at the municipal level. The BAU forecast is not an absolute picture of future energy and emissions. Instead, it serves as a tool to guide decision making on energy and emissions mitigation strategies. The BAU's methodologies and assumptions reflect the consultant team's expertise in building emissions and energy models for municipalities and follows best practices that align with the Government of Ontario's Community Emissions Reduction Planning: A Guide for Municipalities<sup>4</sup>. Energy consumption, costs and GHG emissions were modelled from 2019 to 2031, 2041, and 2050, in line with population forecasts.

<sup>4</sup> Government of Ontario. 2017. Community Emissions Reduction Planning: A Guide for Municipalities. Retrieved [http://www.downloads.ene.gov.on.ca/envision/env\\_reg/er/documents/2018/013-2083.pdf](http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2018/013-2083.pdf)

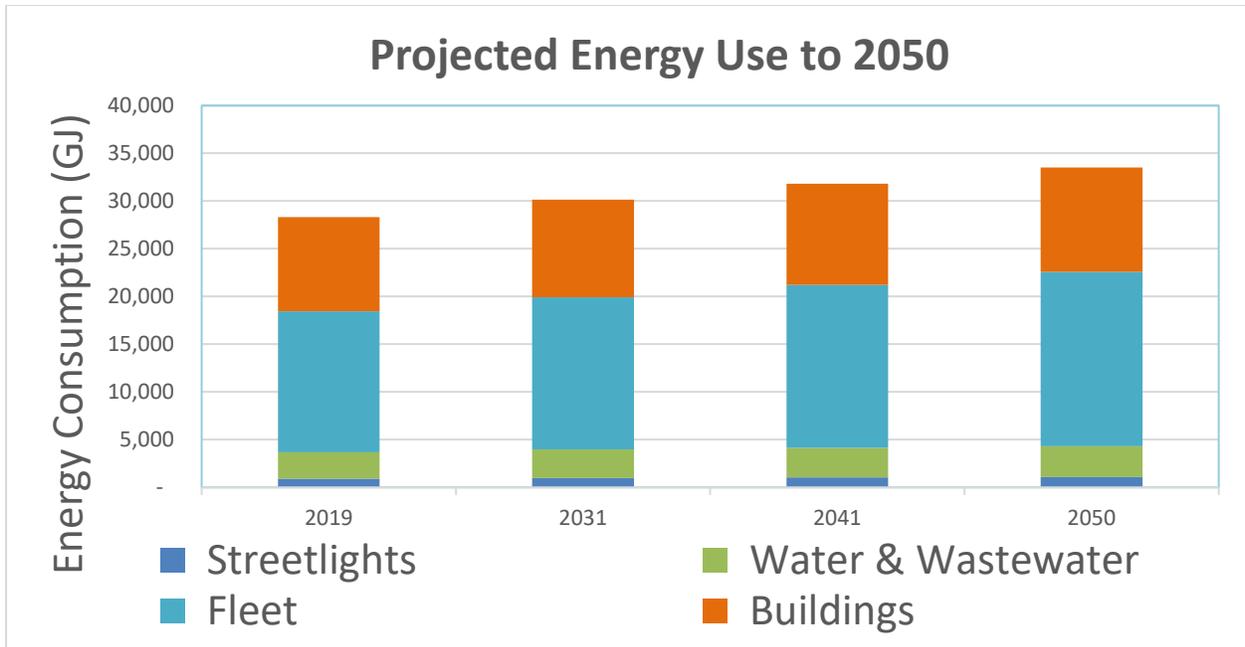


Figure 7: Projection of energy use under a business-as-usual scenario by operation type.

Table 3: Energy use and projected energy use in 2031, 2041, and 2050 assuming no further action is taken to reduce energy use in West Grey

Sector	2019 Energy Use (GJ)	Projected 2031 Energy Use (GJ)	Projected 2041 Energy Use (GJ)	Projected 2050 Energy Use (GJ)
Streetlights	922	991	1,040	1,079
Water & Wastewater	2,766	2,975	3,120	3,238
Buildings	9,864	10,228	10,630	10,953
Fleet	14,758	15,952	17,038	18,249
<b>Total</b>	<b>28,310</b>	<b>30,147</b>	<b>31,828</b>	<b>33,519</b>



Figure 8: Projection of GHG emissions under a business-as-planned scenario by operation type to 2050.

Sector	2019 tCO <sub>2</sub> e	2031 tCO <sub>2</sub> e - Projected	2041 tCO <sub>2</sub> e - Projected	2050 tCO <sub>2</sub> e - Projected
Streetlights	8	23	27	28
Water and Wastewater	23	69	81	84
Fleet	993	1,066	1,138	1,219
Buildings	324	398	423	431
Solid Waste	769	1,007	1,057	1,097
Operational Waste	168	180	189	196
<b>Total</b>	<b>2,381</b>	<b>2,846</b>	<b>3,023</b>	<b>3,167</b>

Table 4: 2019 emissions and projected emissions in 2031, 2041, and 2050 assuming no further action is taken to reduce emissions in the Grey County.

### Business-as-Usual Cost Projections

The BAU also includes a forecast of municipal energy expenditures in West Grey by sector. The cost projections were used to develop a range of expected energy expenditures for West Grey in the BAU scenario. They were applied to the forecasted energy use in the BAU scenario, of which fuel types increase or decrease to varying degrees based on the BAU assumptions, such as expected changes to vehicle fuel efficiency or improved energy efficiency in new construction in the future.

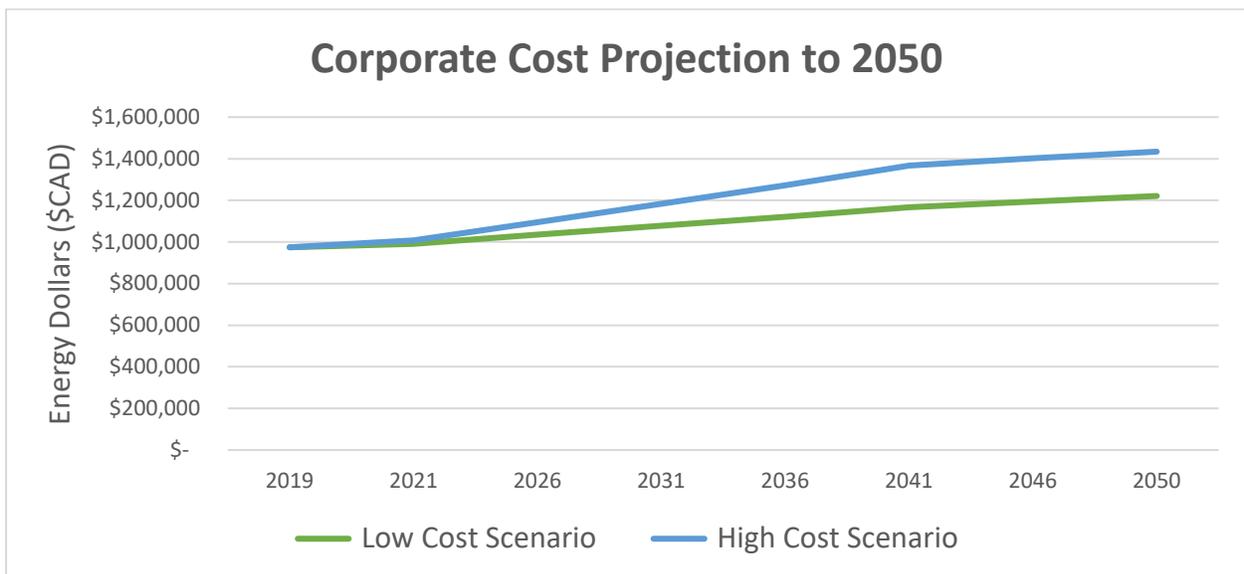


Figure 9: Projection of energy expenditures under a business-as-planned scenario, under a low and high-cost scenario for the Corporation of West Grey

## West Grey Climate Change Action Plan

Under the high-cost scenario, energy costs to the municipality are expected to increase by 24%, 46% and 51% to 2031, 2041, and 2050, respectively, from the 2019 baseline (Figure 8, Table 12). Alternatively, under the low-cost scenario, energy costs to the municipality are expected to increase by 18%, 31%, and 39% to 2031, 2041, and 2050, respectively, from the 2018 baseline (Figure 8, Table 13).

*Table 5: 2019 energy expenditures and projected expenditures in 2031 and 2050 under the Canada Energy Regulator’s high-cost scenario.*

<b>Sector</b>	<b>2019 costs \$</b>	<b>2031 costs \$</b>	<b>2041 costs \$</b>	<b>2050 costs \$</b>
<b>Buildings</b>	\$365,768	\$454,724	\$532,884	\$551,896
<b>Fleet</b>	\$392,809	\$450,953	\$503,163	\$538,927
<b>Streetlights</b>	\$53,938	\$69,376	\$82,683	\$85,805
<b>Water &amp; Wastewater</b>	\$161,878	\$208,211	\$248,145	\$257,515
<b>TOTAL</b>	<b>\$974,394</b>	<b>\$1,183,265</b>	<b>\$1,366,875</b>	<b>1,434,143</b>

*Table 6: 2018 energy expenditures and projected expenditures in 2031 and 2050 under the Canada Energy Regulator’s low-cost scenario.*

<b>Sector</b>	<b>2019 costs \$</b>	<b>2031 costs \$</b>	<b>2041 costs \$</b>	<b>2050 costs \$</b>
<b>Buildings</b>	\$365,768	\$428,590	\$482,328	\$496,641
<b>Fleet</b>	\$392,809	\$417,910	\$440,293	\$471,588
<b>Streetlights</b>	\$53,938	\$58,025	\$60,857	\$63,155
<b>Water &amp; Wastewater</b>	\$161,878	\$174,144	\$182,642	\$189,538
<b>TOTAL</b>	<b>\$974,394</b>	<b>\$1,078,670</b>	<b>\$1,166,119</b>	<b>\$1,220,923</b>

## 5. Corporate Actions to Address Climate Change

Based on best practices West Grey has developed 15 climate action strategies that fit within five categories. They will be undertaken at the municipal/corporate level and are covered in detail in the following section. Where applicable, the energy and emissions reductions and energy cost saving will be identified for each strategy.



### Vehicle Fleet & Equipment

**Objective:** *To develop a green fleet policy to reduce fuel consumption and GHG emissions from West Grey's fleet of vehicles and equipment through fleet optimization, reducing emissions from commuting, encouraging active transportation and by transitioning to low carbon vehicles.*

West Grey's fleet of vehicles and equipment consists predominantly of light gasoline trucks, heavy diesel trucks and off-road diesel equipment such as backhoes, loaders, graders, and excavators. These vehicles provide valuable services to the community and maintenance of essential infrastructure, yet they are the largest source of fuel use and emissions in municipal operations, producing 42% of GHG emissions, amounting to 994 tCO<sub>2</sub>e per year and fuel expenditures of \$392,808.99. This represents a key opportunity to improve efficiency and reduce costs for the West Grey, as well as to lead by example by demonstrating the benefits of zero emission vehicles.

Reducing vehicle fleet emissions will mostly be accomplished by substituting gasoline and diesel vehicles with zero emission models such as electric and hydrogen vehicles, as existing vehicles reach the end of their lifetime and new vehicles are needed. Fuel and emissions savings will also be achieved by improving fleet efficiency and maintenance through the implementation of measures such as fleet rightsizing, anti-idling policies and implementation of other fleet management best practices. Considering remote work options, promoting active transportation where possible and establishing carpool programs will also reduce emission from use of municipal staff personal vehicles.

### **Strategy #1: Develop a Green Fleet Plan**

West Grey will develop a Green Fleet Plan to replace existing gasoline and diesel equipment and vehicles as they reach end of life and are retired, with low carbon/zero emission vehicles such as electric, hydrogen and renewable natural gas vehicles and equipment on a rolling basis. The Green Fleet Plan will identify a schedule for which vehicles will be replaced and when. As a general rule, the oldest and highest emitting vehicles should be replaced first. However, as the market for low carbon/zero emission heavy trucks and off-road construction vehicles is still in the early stages of development, options may be currently limited for West Grey. Therefore, as part of the Green Fleet Plan, West Grey staff will need to monitor market developments and continuously assess the feasibility of purchasing low carbon/zero emission vehicles.

To replace heavy-duty vehicles and off-road equipment, hydrogen fuel cell vehicles will also play a role in the suite of technologies needed to transition to net-zero emissions. Adoption of hydrogen vehicles is dependent on the build out of a clean and renewable regional hydrogen supply chain and network which is being explored as part of the Grey County CCAP. West Grey will support the development of the hydrogen network in West Grey and aim to have adopted 1 hydrogen vehicle by 2030.

As an initial step, West Grey should seek to replace light-duty vehicles such as SUVs with electric alternatives that are currently available and feasible to purchase, in order to demonstrate leadership and the viability of transitioning to low carbon/zero emission vehicles. Municipalities across Canada are beginning to pilot replacing police cruisers with electric models. West Grey's police cruisers are some of the fleet's largest fuel consumers outside of off-road equipment and make good candidates for consideration for electric alternatives. West Grey should monitor the results of these pilot projects and, if feasible, aim to replace two police cruisers with electric models by 2030.

In order to meet the GHG reduction target of 40% by 2030, by 2026 West Grey will need to replace one light-duty vehicle, and one police cruiser as well as replace the lawnmower and one diesel off-road vehicle with electric alternatives. By 2030 West Grey will aim to have replaced an additional police cruiser, one pickup truck, one heavy-duty truck and two off-road vehicles with electric and hydrogen alternatives. These actions combined are estimated to result in a 29% reduction in emissions from baseline and \$186,600 in fuel cost savings by 2030. Additional

## West Grey Climate Change Action Plan

savings from reduced maintenance costs of EVs can also be expected. By 2050 West Grey’s fleet will have fully transitioned to electric and hydrogen vehicles resulting in a 94% reduction in fleet emissions.

West Grey is not pursuing its Green Fleet Plan in isolation. Grey County and many of its member municipalities will also be transitioning to zero emission vehicles in the near future. West Grey will collaborate with other nearby municipalities to identify resource sharing and bulk purchasing opportunities.

<b>Strategy #1 Develop a Green Fleet Plan</b>	
<b>Description of Strategy, Policy, Program</b>	Develop a green fleet plan to replace existing gasoline and diesel equipment and vehicles as they reach end of life and are retired, with low carbon/zero emission vehicles and equipment on a rolling basis.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Monitor the feasibility of adopting alternative fuels (e.g. hydrogen, renewable natural gas, biofuels) and battery electric options for equipment and heavy-duty vehicles (i.e. excavators, backhoes, graders, tandem axle trucks).</li> <li>• Track developments in electric trucks to replace West Grey’s half and one-ton pickup trucks as they become available on the market.</li> <li>• Prioritize opportunities to replace light-duty gasoline vehicles (i.e. cars and SUVs) with electric alternatives.</li> <li>• Investigate the feasibility of replacing police cruisers with EVs.</li> <li>• Partner with member municipalities and Grey County to investigate bulk purchases of low carbon/zero emissions vehicles and equipment.</li> <li>• Use total cost of ownership including purchase price, and lifecycle maintenance and fuel cost to assess new fleet purchases.</li> <li>• Consider retiring gasoline and diesel equipment before end of life where cost-effective.</li> </ul>

<b>Annual Reduction Potential*</b>	<b>2030</b>	<b>2050</b>
<b>Energy Reduction (GJ)</b>	6,300	14,400
<b>Energy Cost Savings (\$)</b>	186,600	303,100
<b>Emission Reductions (tCO2e)</b>	445	1,100

## Strategy #2: Install EV Chargers at municipal parking lots and buildings

As West Grey’s electric vehicle adoption grows, EV charging stations in key locations will be needed to support the fleet. In addition to charging stations at West Grey’s public works depots, installing chargers at West Grey’s parking lots and public buildings provides an opportunity to service both West Grey’s fleet and the wider public. Building on West Grey’s existing initiative to install eight new public EV charging stations at key locations throughout the municipality, West Grey will continue to seek opportunities to install EV chargers for public use at municipal parking lots and buildings such as West Grey’s administrative offices, community centres and the library. To ensure all new building are EV charger compatible, West Grey will develop a policy to ensure all new buildings are built to be EV-ready.

Strategy #2: Install EV Chargers on municipal properties	
<b>Description of Strategy, Policy, Program</b>	Install EV chargers at West Grey owned buildings and parking lots to improve access to EV charging infrastructure for municipal vehicles as well as the wider community.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Assess the feasibility of installing level 2 chargers at West Grey community centres.</li> <li>• Assess the feasibility of installing level 1 or level 2 chargers at key locations where electric fleet vehicles will be parked.</li> </ul>

## Strategy #3: Fleet Optimization

Low-cost fuel savings can be achieved through improved fleet operations and maintenance and optimization of West Grey’s fleet. Fleet optimization involves reducing the number of vehicles in the fleet (i.e., fleet ‘right-sizing’) and ensuring the right-sized vehicle is selected for the task. Through regular assessment of the fleet statistics, low mileage vehicles can potentially be removed from the fleet. In addition, identifying opportunities for increased vehicle sharing between departments should be assessed along with centrally locating fleet vehicles that are used regularly across municipal departments. Fleet optimization also includes ensuring that regular preventative maintenance checks are in place so as to maximize fuel efficiency and reduce maintenance costs.

Fuel savings and emission reductions can also be achieved through adopting more energy efficient driving habits such as reducing speed, maintaining steady speed, slowing acceleration, and coasting to decelerate etc. Staff that regularly operate fleet vehicles and equipment can be trained through a variety of options including an internal instructor, a contract trainer or online modules. More energy efficient driving habits are also tied to efficient route and trip planning to reduce travel distances. Route planning for any vehicles that use regular routes should be reviewed for efficiency and take into account the level of service versus the distance travelled.

## West Grey Climate Change Action Plan

Vehicle idling creates unnecessary and avoidable consumption of fuel. An anti-idling policy is recommended for West Grey vehicles that limits idling to a certain length of time and prohibits it after this duration. Options for introducing anti-idling technology can also be explored.

The suite of fleet optimization strategies will aim to reduce fuel consumption across the vehicle and equipment fleet by 10%.

<b>Strategy #3: Fleet Operation and Maintenance</b>	
<b>Description of Strategy, Policy, Program</b>	Implement best practices in fleet optimization, monitoring and maintenance, and driver behaviour to optimize fuel economy and emission reductions.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Develop a fleet management system to track maintenance and monitor performance of vehicles.</li> <li>• Adopt fleet right-sizing practices.</li> <li>• Ensure implementation of preventative maintenance practices.</li> <li>• Implement where feasible technologies that improve fleet efficiency (i.e., advanced tires, auxiliary power units, engine control modules, engine coolant heaters, tire pressure systems, etc.).</li> <li>• Provide fleet operator training to improve fuel economy (e.g., idling reduction, route optimization, driving behaviour).</li> <li>• Assess the potential for introducing anti-idling technologies.</li> <li>• Anti-idling fleet policies, creation of idle-free zones with appropriate signage, education and community-based social marketing programs.</li> </ul>

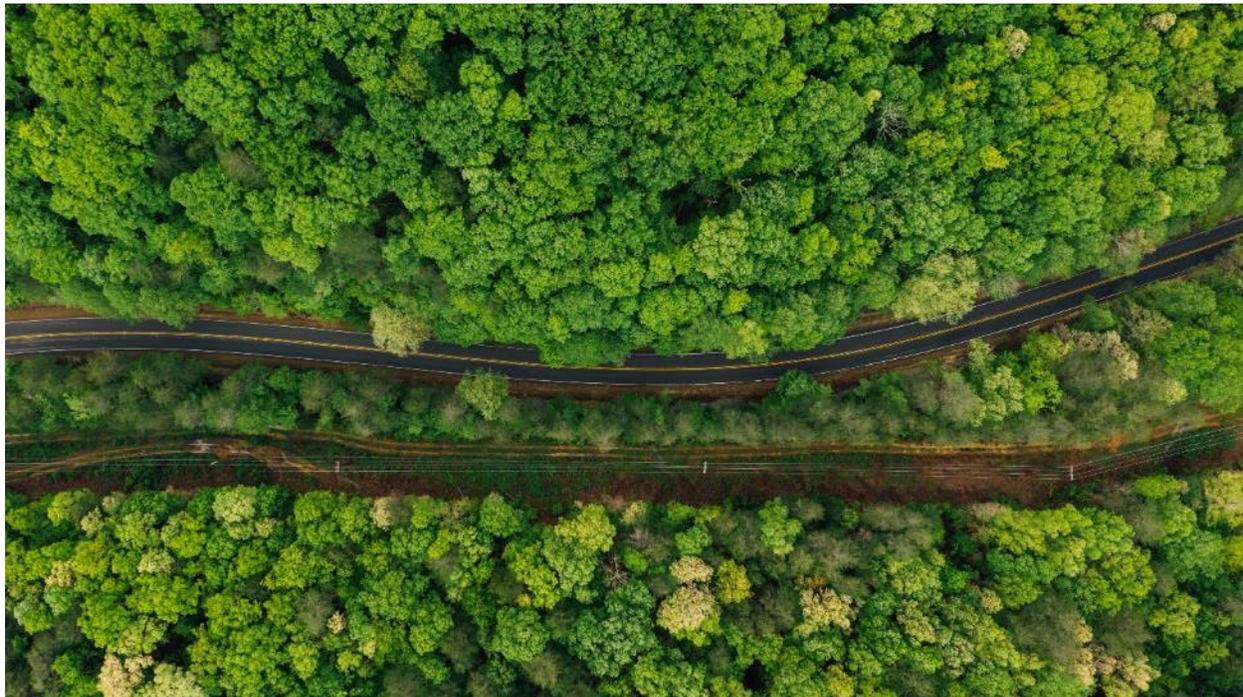
<b>Annual Reductions*</b>	<b>2030</b>	<b>2050</b>
<b>Energy Reduction (GJ)</b>	950	278
<b>Energy Cost Savings (\$)</b>	2,100	22,100
<b>Emission Reductions (tCO2e)</b>	65	7

\*Energy reductions and emissions reductions decrease by 2050 as the fleet becomes more efficient and uses less energy overall. Energy savings increase due increasing electricity prices in 2050 as the fleet is transitioned to fully electric.

### Strategy #4: Reducing Emissions from Single Passenger Commuting & Private Vehicles

West Grey will work to enable and encourage staff to reduce single passenger vehicle trips through the establishment of carpooling programs, installation of bicycle infrastructure at municipal offices, exploring remote work opportunities, and continuing evening meetings as exclusively remote/virtual.

Strategy #4: Reduce Emissions from Single Passenger Commuting & Private Vehicles	
<b>Description of Strategy, Policy, Program</b>	Establish policies, resources, networks and infrastructure to encourage staff to carpool, telecommute and use active transportation.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Install bicycle infrastructure outside of all West Grey buildings.</li> <li>• Offer incentives and rewards to encourage staff to carpool or use active transportation.</li> <li>• Establish a carpooling program connecting staff and allowing flexible work hours.</li> <li>• Ensure an effective telecommuting system is in place.</li> <li>• Maintain virtual evening and council meetings.</li> </ul>



## Buildings & Facilities

**Objective:** *To reduce building energy consumption and GHG emissions through improved energy efficiency in West Grey buildings and operations, and to demonstrate leadership through implementation of best practices in low carbon buildings and energy solutions.*

West Grey's portfolio of buildings includes administrative buildings, waste facilities, EMS services, public works depots, as well as community and cultural buildings such as libraries, community centres and halls. West Grey's buildings produced 324 tCO<sub>2</sub>e or 35% of corporate emission in 2019, using 9,864 GJ of energy, with a total cost of \$365,768. Sources of building emissions include electricity use and heating fuels including natural gas, propane and fuel oil for heating. While electricity use accounts for the majority of energy use in West Grey's buildings, natural gas, propane and fuel oil use produced the most GHG emissions, due to the lower carbon intensity of Ontario's electricity supply.



As the carbon intensity of the grid is projected to rise over the next 5-10 years and beyond due to higher reliance on natural gas generation, in order to reduce emissions, it will be important to ensure that any new municipal buildings are built to the highest energy efficiency standard possible and to improve the energy efficiency of existing buildings. Fuel switching from fossil fuel heating sources, such as natural gas, propane, and fuel oil, to a flexible energy carrier such as electricity using heat pumps, as well as increasing the utilization of onsite renewable energy will also be necessary to reduce GHG emissions from existing and new municipal buildings<sup>5</sup>.

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<sup>5</sup> Although the carbon intensity of Ontario's grid is projected to rise, fuel switching to electrical heating using heat pumps will still produce emission reductions in comparison to fossil fuel heating sources due to the mix of low carbon electricity sources that supply electricity in Ontario including renewables, nuclear and hydro power.

## Heat Pumps

Heat pumps are highly efficiency electrical heating and cooling systems that extract heat from a low temperature source and deliver it to a higher temperature sink, providing cooling during the summer and heating during the winter months. Because electricity is used to transfer thermal energy from one place to another, heat pumps have efficiencies over 100% - more thermal energy is produced than the amount of electricity used. Heat pumps can be 2-3 times more efficient than a gas furnace which range from 90-98% efficiency,

Heat pumps can be air source, ground source or water source. Air source heat pumps are more common as they are less expensive and easier to install. Ground source heat pumps require more space to install as geexchange loops must placed underground making them well suited to less densely populated and rural areas. Ground source heat have higher capital costs, but they are more efficient and will provide better cost savings over the long-term.

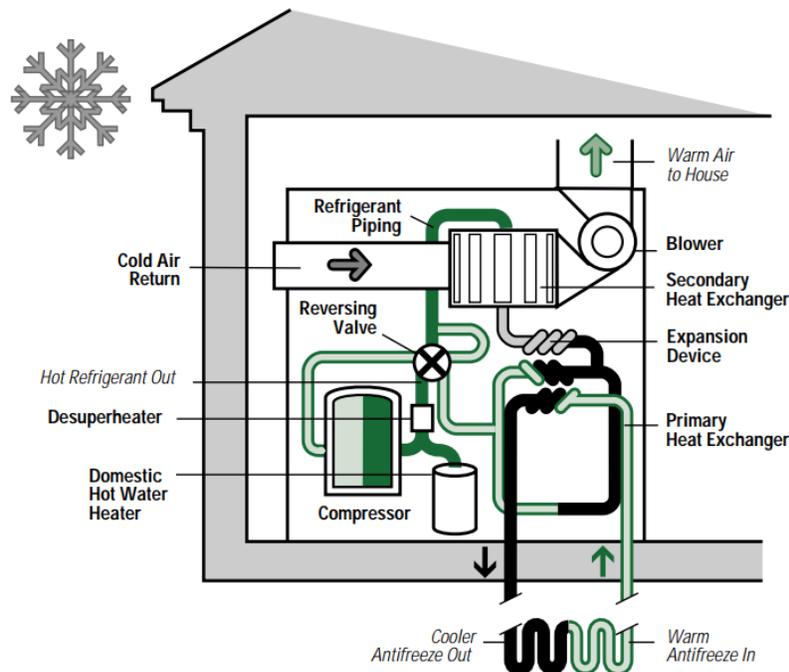


Figure 10: Diagram of the heating cycle of a heat pump<sup>6</sup>

<sup>6</sup> NRCAN. (2022) Heating and Cooling with a Heat Pump. <https://www.nrcan.gc.ca/energy-efficiency/energy-star-canada/about/energy-star-announcements/publications/heating-and-cooling-heat-pump/6817>

### Strategy #5: Energy Efficient New Buildings

To ensure new buildings added to West Grey’s portfolio will not contribute significantly to emissions, West Grey will implement a policy that all new buildings are built to be net-zero ready or the highest energy efficiency standard possible, utilize electric heat pumps for heating, and consider the feasibility of installing onsite renewable energy and geoexchange systems. A net-zero ready building is highly efficient, using as little energy as possible so the remainder can be offset through the use of renewable energy or other carbon offsetting or sequestration mechanisms. Assuming all new municipal buildings improve energy efficiency by 80% compared to business-as-usual and utilize electric heat pumps, results in an emission reduction of 68% compared to meeting minimum building code energy efficiency requirements.

Strategy #5: Energy Efficient New Buildings	
<b>Description of Strategy, Policy, Program</b>	Strive for all new municipally owned buildings to be constructed to net-zero ready or the highest energy efficiency standards above building code possible.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Establish a policy that requires feasibility assessment of all new municipal buildings to be built to above building code energy efficiency standards targeting net-zero, net-zero ready or as high an energy efficiency standard as feasible.</li> <li>• Consider creating a policy for all new corporate buildings to be net-zero ready by 2030.</li> <li>• Integrate solar, and EV ready design and consider lifecycle carbon emissions.</li> <li>• In the building planning phase assess the feasibility of a geoexchange system.</li> <li>• Require integration of green infrastructure where feasible such as green roofs, low impact development (LID) landscaping, permeable pavement and tree and native species planting.</li> </ul>

Annual Reductions*	2030	2050
Energy Reduction (GJ)	600	1,300
Energy Cost Savings (\$)	42,000	100,00
Emission Reductions (tCO2e)	13	76

## **Strategy #6: Develop an Energy Efficiency Strategy for Existing Buildings**

To reduce energy use and emissions from existing buildings, West Grey will develop an energy efficiency strategy that includes:

- A plan to retrofit existing buildings to a higher energy efficiency standard; and
- An energy management plan that targets energy efficiency from improved operations and maintenance, behavioural changes, education and awareness.

### **Strategy #6.1: Energy Efficiency Retrofits**

To inform the energy efficiency strategy energy audits of West Grey's buildings will need to be conducted to identify a package of energy efficiency measures for each building. West Grey's highest energy consumers and GHG emitters should be targeted first for energy efficiency retrofits in order to have the biggest impact in a short of timeframe as possible. During the retrofit process fossil fuel heating sources such as natural gas, fuel oil and propane will be replaced with electric heat pumps.

Ice rinks and community centres such as the Durham & District Community Centre and the Neustadt Arena are strong candidates for an initial energy retrofit project as they are some of West Grey's largest energy consumers and most used buildings. Ice arena and community centre retrofits and energy efficiency upgrades are well understood and have many examples of successful projects to draw on, as well as federal grant funding support. Community centres are highly visible buildings, and a successful retrofit will demonstrate the feasibility and benefits of retrofitting buildings to the public, as well as offer an opportunity to improve the quality of the facilities along with indoor air quality and comfort.

West Grey's next largest emitters to be targeted for retrofit are the public works depots and storage buildings, which contributed 36% of total building emissions in 2019. Retrofitting West Grey's two ice rink/community centres and three of the highest emitting public works depots and storage buildings by 2030 will reduce building emissions by 64%.

<b>Strategy #6.1: Energy Efficiency Retrofits</b>	
<b>Description of Strategy, Policy, Program</b>	Conduct deep energy retrofits across corporate-owned buildings and facilities with a focus on upgrading West Grey community centres and ice arenas first.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Conduct an energy audit of all corporate-owned buildings to determine where investment in energy efficiency retrofits will lead to the greatest energy and cost savings.</li> <li>• Based on the results of the audit develop and implement a deep retrofit plan that aligns with planned building renewal/replacement in the Asset Management Plan where possible.</li> <li>• As part of the retrofit planning process assess the feasibility of installing solar pv, heat pumps, and/or heat recovery systems in corporate-owned buildings.</li> <li>• Consider issuing an RFP for an Energy Performance Service Contract (ESPC) to conduct energy efficiency audits and retrofits across West Grey’s building portfolio with a focus on community centres and ice arenas.</li> </ul>

<b>Annual Reductions</b>	<b>2030</b>	<b>2050</b>
<b>Energy Reduction (GJ)</b>	2,500	4,300
<b>Energy Cost Savings (\$)</b>	7,700	37,200
<b>Emission Reductions (tCO2e)</b>	246	369

### **Energy Retrofits**

Building energy retrofits are modifications made to existing buildings to target improved energy efficiency and reduced energy demand. Energy efficiency retrofit measures can be divided into general categories ranging from shallow retrofits which are easier to install and have shorter payback periods, to deep retrofits which are more capital intensive but provide larger energy reductions. Shallow retrofits include improved lighting and buildings controls and more energy efficient mechanical systems. Deep energy retrofits typically target between a 40-60% reduction in energy and include measures such as improved insulation, building façade upgrades and window and roof replacement. While shallow or ‘low hanging fruit’ energy efficiency measures can provide good savings it is recommended that these measures are packaged with more impactful deep energy retrofit measures so as to improve the overall business case for the retrofit.

### Strategy #6.2: Implement an Energy Management Plan

The largest reductions in energy consumption will be achieved by improving the energy efficiency of existing buildings through energy efficiency retrofits and phasing out the use of natural gas, fuel oil and propane for heating. However, creating a culture of conservation among municipal staff and targeting behavioural changes through energy efficiency education can produce significant low-cost energy savings. Such strategies combined with an energy management plan that identifies areas for improvements in building operations and maintenance can reduce energy demand by up to 20%<sup>7</sup>.

Strategy #6.2: Implement and Energy Management Plan	
<b>Description of Strategy, Policy, Program</b>	Based on the results of the energy audits develop and implement an energy management plan that includes reactive, preventative, and predictive maintenance as well as behavioural changes, education and awareness to prevent common sources of energy waste in building energy systems.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>Integrate the energy management plan into annual building maintenance procedures.</li> </ul>

### Strategy #7: Renewable Energy

Due to the rising carbon intensity of Ontario’s electricity grid, onsite renewable energy production will play an important role in reducing emissions from electricity consumption. West Grey will consider opportunities for all appropriate renewable energy technologies during the retrofit of existing buildings and construction of new buildings, including waste-to-energy, solar thermal, and wind turbines, as well as energy efficient technologies such as combined heat and power systems, geoexchange and district energy as part of this strategy.

Currently, rooftop and ground mounted solar PV are the most viable options for West Grey as a result of the existing policy context in Ontario and the lower capital cost and relative ease of installation and operation. Ontario has a net-metering policy in place which allows electricity generated from onsite renewables to offset the cost of the building’s utility bill by sending renewable electricity to the grid, thereby paying for the cost of the solar panels over time. The payback for net-metered solar systems can take between 12-16 years. As electricity costs are projected to rise, along with the implementation of the carbon tax, the business case for solar PV is expected to improve.

A 200 kW solar system in Ontario has the potential to offset 2,000 kWh of building electricity consumption annually. Installing 1 MW or five 200 kw solar systems across West Grey’s land and rooftops by 2030 would offset all of West Grey’s building electricity use. As the majority of West Grey’s buildings have limited rooftop space, the majority of the solar potential will be ground-mounted systems located on available land on municipal building parcels. The larger

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Durham & District Community Centre, the Neustadt Arena, and the Normanby Community Centre buildings represent the largest potential for rooftop solar PV. In order to reach net-zero emissions, the vast majority of West Grey’s use will be provided by electricity. To offset any electricity grid emissions, West Grey will need to increase its solar share to 9 MW. Increased shares of solar combined with energy storage will also improve energy security and resilience in the event of grid outages.

Strategy #6: Renewable Energy	
<b>Description of Strategy, Policy, Program</b>	Consider opportunities for increased renewable energy generation, fuel switching, waste energy recovery, and more efficient energy production in corporate buildings
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Conduct a pre-feasibility study to identify the potential of installing ground and roof mounted solar PV on municipal properties.</li> <li>• During the buildings retrofit processes and new building construction consider opportunities for the following:                             <ul style="list-style-type: none"> <li>A. Installation of combined heat and power (CHP) generations to provide a more efficient means of energy production as well offering backup power capability, increasing resilience and emergency preparedness;</li> <li>B. Waste energy recovery;</li> <li>C. District energy in clusters of corporate buildings;</li> </ul> </li> </ul>

Annual Reductions	2030	2050
<b>Energy Reduction (GJ)</b>	3,600	32,400
<b>Energy Cost Savings (\$)</b>	250,000	2,500,000
<b>Emission Reductions (tCO2e)</b>	30	274

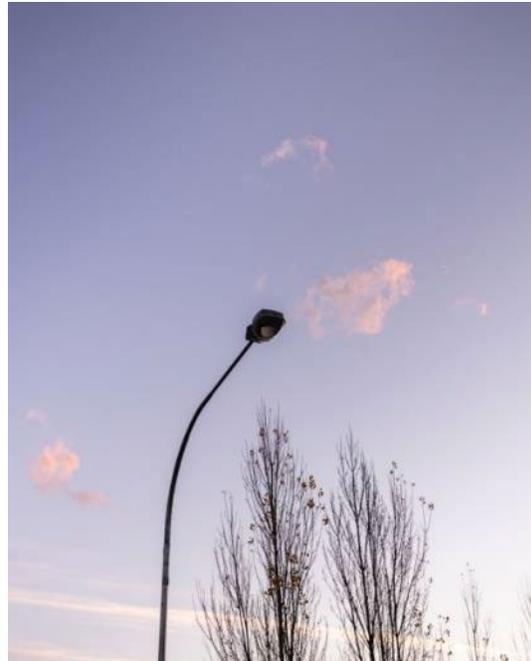


## Streetlights

West Grey’s streetlights consume 255,978 kWh of electricity annually at a cost of \$53,938, producing 7 tCO2e.

### Strategy #8: Solar Streetlights

West Grey has already converted all streetlights to more energy efficient LED streetlights. LED streetlights have longer lifespans than standard high-pressure sodium light bulbs and have a replacement timeline between 15-20 years. Replacing LED lightbulbs at the end of their lifetime and ensuring all new streetlights are solar powered will produce additional cost savings through reduced electricity costs, as well removing the need for electrical wiring and trenching to connect to the grid.



Strategy #8: Solar Streetlights	
<b>Description of Strategy, Policy, Program</b>	Assess the feasibility of solar streetlights when new streetlights are needed and when replacing existing streetlights.

## Water & Wastewater Facilities

West Grey operates water and wastewater facilities in Durham and Neustadt providing clean, safe and reliable drinking water, and treatment of wastewater. Wastewater facilities are the single largest consumer of energy across West Grey’s operations, using 768,234 kWh of electricity in 2019, at a cost of \$161,878. GHG emissions from energy use in this sector can be reduced by improving the energy efficiency of equipment and operations as well as improving water use efficiency which reduces the amount of energy needed to treat and distribute water.

### Strategy #9: Increase the Energy Efficiency of Water and Wastewater Facilities

There are three main areas where water and wastewater facilities can improve their energy efficiency: 1) Equipment improvements, 2) Operational changes, and 3) Building retrofits. Equipment improvements involve the replacement of equipment such as pumps, blowers and with more efficient models. Operational changes entail lowering the amount of energy used to carry out particular tasks, often yielding bigger savings than equipment upgrades as they may

not involve capital investments. Building retrofits include measures such as the installation of energy-efficient windows, lighting, and HVAC systems that lower the amount of energy used by the facility itself. During the retrofit planning process opportunities for solar PV should be explored to offset the high energy consumption of the wastewater treatment facilities.

Wastewater facility retrofits can improve energy efficiency by up to 50% and on average by 30%. By 2030 improving the energy efficiency of West Grey’s water treatment facilities by 30% would reduce water and wastewater emissions by 74%.

<b>Strategy #8: Increase the Energy Efficiency of Wastewater Facilities</b>	
<b>Description of Strategy, Policy, Program</b>	Conduct energy, water and process performance audits at West Grey wastewater facilities to identify and implement opportunities for energy efficiency improvements
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Regularly review the energy performance of water and wastewater facilities.</li> <li>• Investigate and monitor the development of innovative technologies to reduce energy consumption and water and wastewater facilities.</li> <li>• Ensure facility operators are trained on operational and maintenance best practices.</li> <li>• Assess the feasibility of installing solar PV at wastewater facilities.</li> <li>• Assess the feasibility of a shared energy system (i.e. geexchange system and/or solar PV) to service the Durham Wastewater Treatment Plant and adjacent Durham &amp; District Community Centre.</li> <li>• Explore opportunities to install energy efficiency upgrades and renewable energy systems alongside the potential Durham Wastewater Treatment Plant treatment capacity upgrades.</li> </ul>

<b>Annual Reductions</b>	<b>2030</b>	<b>2050</b>
<b>Energy Reduction (GJ)</b>	800	1,000
<b>Energy Cost Savings (\$)</b>	54,000	77,000
<b>Emission Reductions (tCO2e)</b>	50	65

## Solid Waste

### Objective:

*To reduce solid waste across corporate operations, increase landfill diversion rates, improve waste management systems, and integrate circular economy principles*

Landfills generate GHG gases through the process of decomposition of organic materials. West Grey owns and operated 3 landfills in 2019 which are estimated to have produced 924 tCO<sub>2</sub>e in. As the owner and operator of the landfills, West Grey has the ability to implement polices and programs for waste reduction and diversion. However, reducing landfill emissions also requires the full participation of the community in waste reduction and diversion programs. West Grey can also reduce landfill emissions and demonstrate leadership by implementing policies to reduce waste from its operations and day-to-day use of West Grey’s buildings and properties. To this end West Grey will establish a corporate waste policy and educate staff on waste prevention and diversion best practices to reduce waste from daily operations. At the community level West Grey will collaborate with Grey County and member municipalities to improve landfill waste diversion rates which will also help extend the life of the landfill.

### Strategy #10: Corporate Waste Policy

A corporate waste policy will determine how West Grey staff deals with waste and will ensure that waste is sorted and disposed of properly and staff are encouraged and enabled to reduce and reuse wherever possible. The corporate waste policy will target a 5% diversion rate by 2031 growing to 25% by 2050.

Strategy #10: Corporate Waste Policy	
<b>Description of Strategy, Policy, Program</b>	Develop a corporate waste policy to reduce waste from corporate facilities
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Consider conducting a corporate waste audit to determine how to best focus efforts to reduce waste in corporate facilities.</li> <li>• Consider developing a waste strategy for corporate facilities and events, which may include policies such as:                             <ul style="list-style-type: none"> <li>A. Banning plastic water bottles and encouraging and enabling use of reusable bottles by installing water refill stations;</li> <li>B. Providing green bins in washrooms for paper towels</li> <li>C. Banning single-use plastics for any corporate food services or events.</li> </ul> </li> <li>• Consider setting a corporate waste landfill diversion target or zero waste goal.</li> <li>• Consider opportunities for onsite composters at corporate facilities.</li> </ul>

Annual Reductions	2030	2050
Energy Reduction (GJ)	N/A	N/A
Energy Cost Savings (\$)	N/A	N/A
Emission Reductions (tCO2e)	9	49

### Strategy #11: Develop a Waste Education and Awareness Program

Education and awareness of waste production and effective strategies for how to reduce, reuse and properly dispose of waste will be important to ensure successful implementation of a corporate waste policy. An education and awareness program will proper signage in prominent places to remind staff of proper waste prevention and disposal techniques.

Strategy #11: Education and Awareness	
<b>Description of Strategy, Policy, Program</b>	Encourage waste prevention and reuse, and improve waste diversion by developing resources, guidelines, and educational materials for staff and the wider community on how to reduce waste.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Improve and/or develop new waste signage that incorporates waste reduction messaging and educates on waste diversion methods and proper source separation.</li> <li>• Encourage and enable staff to use reusable mugs and food containers.</li> </ul>

### Strategy #12: Waste Diversion

Implementing the waste hierarchy of the 4 Rs (reduce, reuse, recycle, recover) will be key to diverting landfill waste and reducing landfill emissions. Reducing and diverting organic materials from the landfill will have the biggest impact in terms of reducing GHG emissions and should be prioritized. Reducing waste is an important issue for West Grey residents and continued communication to residents and businesses on how to reduce and divert waste can be an effective means creating more awareness. In addition, there are many opportunities to expand options for reuse through such initiatives as community led re-use it centres, swap meets or recovery of construction and demolition waste. Recycling organic material through composting is an effective means of reducing emissions, but large centralized composting facilities can be too cost-prohibitive for rural area, therefore smaller scale onsite and backyard composters should be supported and encouraged. Opportunities for increased organics diversion for yard and food waste at the landfill and/or community sites can also be explored. West Grey will target a 15% diversion rate by 2030 and 40% by 2050.

Strategy #12: Waste Diversion	
<b>Description of Strategy, Policy, Program</b>	Collaborate with Grey County and other member municipalities to investigate landfill waste diversion initiatives and establish circular economy initiatives.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Consider additional waste stream collection opportunities to divert waste from landfill (i.e., wood waste, drywall, shingles, etc.)                             <ul style="list-style-type: none"> <li>○ Assess options for organic waste diversion programs such as: encouraging backyard composting in conjunction with rain barrels, by providing education, resources and guidelines, and making backyard composters available for purchase from the municipality or recommending suppliers; consider curbside pickup, development of a centralized compost drop-off facility, and encouraging private sector organics pickup and composting services (see Spa Hills Farm compost model in the Okanagan &amp; Shushwap Region).</li> </ul> </li> <li>• Building on experience from existing curbside giveaway days, consider other community waste diversion and prevention programs and events such as swap meets and community garage sales.</li> <li>• Encourage and support the establishment of a non-profit community led re-use it center where unused household items can be donated and resold, with proceeds going to local charities or other identified community needs</li> <li>• Encourage and support local repair services, repair cafes and tool libraries.</li> <li>• Regularly review the effectiveness of waste collection programs and implement changes to improve waste diversion regularly.</li> <li>• Update the pay as you throw (PAYT) waste collection program to improve effectiveness.</li> <li>• Conduct a feasibility study for an organics collection program.</li> <li>• Inquire into the potential for CNG waste collection vehicles.</li> <li>• Consider including waste disposal, and waste prevention and diversion instructions and tips in community mailers.</li> <li>• Collaborate with Grey County and other member municipalities on the development of waste education resources including a waste education outreach program into the school system</li> </ul>

Annual Reductions	2030	2050
<b>Energy Reduction (GJ)</b>	N/A	N/A
<b>Energy Cost Savings (\$)</b>	N/A	N/A
<b>Emission Reductions (tCO2e)</b>	130	470

### Strategy #13: Landfill Gas Capture

Capturing landfill gas emissions through a landfill gas capture system can reduce the majority of emissions from landfills but can also be difficult to implement with smaller landfill sites and smaller quantities of waste. West Grey will continue to monitor opportunities for landfill gas capture and assess the economic feasibility of implementation.

Strategy #13: Landfill Gas Capture	
<b>Description of Strategy, Policy, Program</b>	Investigate opportunities to recover gas from landfills
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>Conduct a landfill gas capture feasibility study at West Grey’s landfills including an analysis of different methane destruction options (i.e., flaring, cogeneration, boilers, renewable natural gas (RNG) production).</li> </ul>

### Municipal Culture

**Objective:** *Work across departmental silos to embed climate change data and considerations into municipal decision-making, daily operations and shift the organizational culture toward energy efficiency and conservation.*

Developing a municipal culture of climate action means integrating climate change considerations across all municipal departments and decision-making. Implementing the climate actions in this plan will require all West Grey staff to be aware of the causes and impacts of climate change and to work together across departments.

### Strategy #14: Municipal Climate Lens

A municipal climate lens is a tool available to municipalities to integrate climate change considerations into the day-to-day operations of the municipality. It ensures that both climate change impacts and the GHG intensity of an action are considered across all new and existing municipal policies and projects therefore advancing both climate resilience and GHG mitigation. A climate lens builds awareness among elected official and staff, improves transparency and facilitates inter-departmental engagement.

Strategy #14: Municipal Climate Lens	
<b>Description of Strategy, Policy, Program</b>	Develop a climate lens policy to ensure the climate change implications of municipal policy, program and infrastructure are considered in the process
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"> <li>• Ensure anticipated GHG emissions and climate resiliency impact is considered as part of all municipal infrastructure, program and policy decisions.</li> <li>• Ensure climate change considerations are integrated throughout all municipal strategic planning documents.</li> <li>• Integrate lifecycle energy cost analysis into business case assessments for all capital projects.</li> <li>• Train staff on the importance of GHG mitigation and energy efficiency.</li> <li>• Develop a guidance document to ensure staff are aware of West Grey’s climate commitments and help to address climate change in their projects and activities.</li> <li>• Develop a sustainable procurement policy.</li> <li>• Continue to integrate climate change considerations into the West Grey Asset Management Plan.</li> <li>• Purchase local food for municipal events to demonstrate leadership and to support and advocate for more local food.</li> </ul>

### Strategy #15: Promote a Culture of Conservation

Promoting a culture of conservation is closely tied with **Strategy #6.1 Implement an Energy Management Plan** and **Strategy # 11 Develop a Waste Education and Awareness Program**, as it also involves educating staff to be more aware of energy efficient and waste reductions behaviours. However, creating a culture of conservation also extends to environmental conservation in general and can include building awareness of the importance of environmental sustainability and climate action overall. An awareness program will support and reinforce the objectives of West Grey’s CCAP and can yield many other benefits aside from those related to energy efficiency and waste reductions including creating a better work environment, increasing operational efficiency, increasing productivity, enhancing staff morale, improved workplace comfort, and enhanced organizational reputation as environmental stewards.

<b>Strategy #15: Promote a Culture of Conservation</b>	
<b>Description of Strategy, Policy, Program</b>	Establish a climate change awareness program for municipal staff to breakdown departmental silos, and educate on climate change, climate action, and the benefits of energy efficiency, waste prevention, and conservation.
<b>Supporting Strategies / Enabling Components</b>	<ul style="list-style-type: none"><li>• Consider establishing an internal 'Climate Change Team' comprised of staff from all departments.</li><li>• Conduct events, awards, benefits, or other programs to promote a cultural shift towards conservation amongst municipal staff and operators (i.e., awards for climate achievements by department, signs around the office that provide information on climate, energy efficiency.</li><li>• Offer trainings for staff on energy efficiency and conservation, including how behavioural change can impact energy and climate.</li><li>• Consider hosting an annual climate event in the community.</li></ul>



## Alignment with the Grey County Climate Action Plan

**Objective:** *To support and collaborate with Grey County and member municipalities on the implementation of key community actions in the Grey County Climate Change Action Plan.*

In 2021 Grey County completed the Grey County Climate Change Action Plan, which commits Grey County to reduce the community's GHG emissions to Net-Zero by 2050 and 30% by 2030. The plan lays out 21 actions to achieve this.

In order to reach the target of net-zero community emission by 2050, full support from the member municipalities of Grey County will be needed. West Grey is fully committed to supporting and collaborating on implementation of the Grey County CCAP.

## GHG Reduction Potential

Figure 11 shows the projected cumulative GHG reductions from corporate operations as a result of implementation of the climate strategies outlined in this Plan. Figure 12 displays the emission reduction pathway in comparison to the 2019 baseline and BAU projection. GHG reductions as a result of this plan are projected to reduce 887 tCO<sub>2</sub>e by 2030 and 1,935 tCO<sub>2</sub>e by 2050. This translates into a 43% reduction from 2019 levels in 2030 and a 100% reduction from 2019 levels in 2050, putting West Grey on a trajectory to exceed its 2030 target. GHG reductions from improved energy efficiency, fuel switching, low carbon vehicle transition and reduced corporate waste account for 86% of the emission reductions in 2050. The remaining 14% of emissions stemming from electricity consumed from the grid is offset by solar PV production.

Landfill emissions represent a significant challenge to reduce. With a target landfill diversion rate of 40% by 2050, landfill emissions will still amount to 741 tCO<sub>2</sub>e – more than all West Grey corporate emissions taken together in 2050. Significant strides will need to be taken to reduce the share of organic waste in the landfill in order to reduce emissions further. Alternatively, implementation of a comprehensive landfill gas collection system or carbon sequestration or offsets will be needed in order to achieve net-landfill emissions.

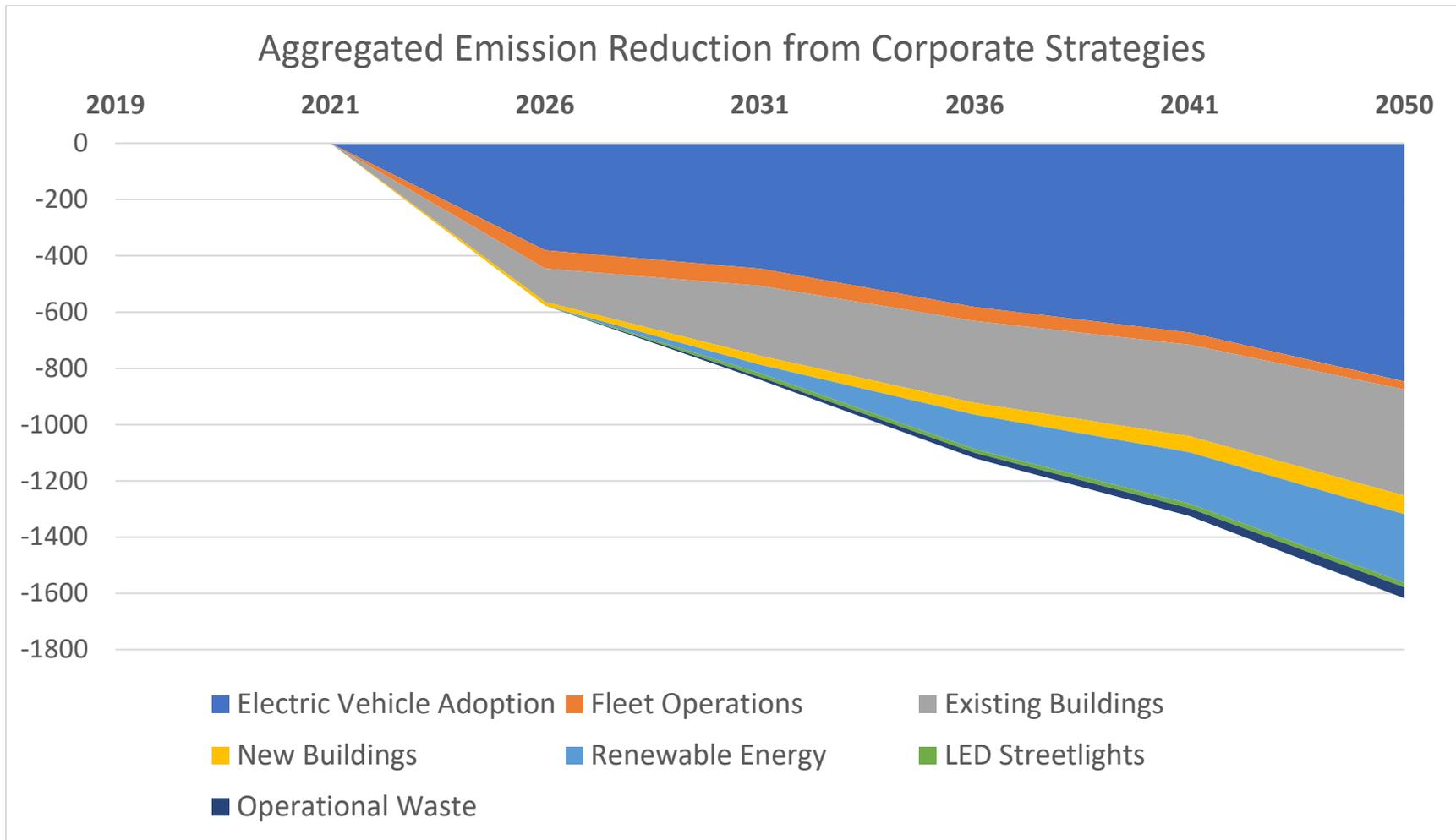


Figure 11: Cumulative annual GHG reductions from all corporate strategies to 2050

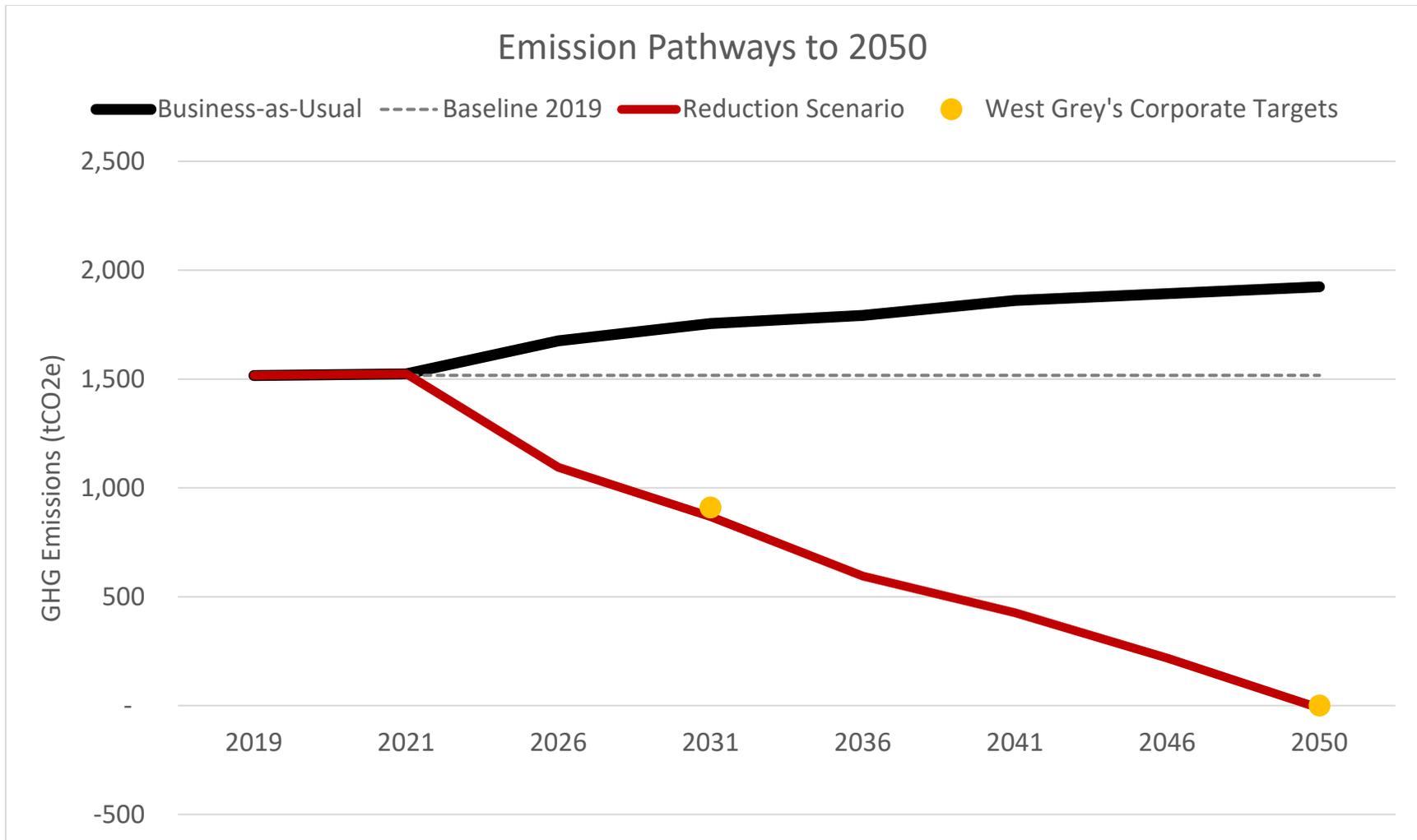


Figure 12: GHG emissions Business-as-Usual Scenario, 2018 Baseline Emissions, Emission Reduction from Corporate Strategies, and Community GHG Targets

## 6. Implementation, Monitoring and Review

### Implementation

The CCAP aims to direct West Grey in lowering the municipality's energy expenses and GHG emissions. The success of the Plan depends on placing a strong emphasis on the following:

- Governance
- Financing
- Partnerships
- Monitoring and Review

#### Governance

The entities overseeing West Grey's CCAP will vary according to each climate action/ strategy and will require collaboration across all West Grey's departments. General oversight and coordination for implementation of the plan will be the responsibility of the Environment and Capital Projects Officer, whereas implementation of specific strategies and actions will require the lead of the relevant department. The implementation table below will outline the municipal departments that will lead the implementation of each strategy. The Environment and Capital Projects Officer will also be responsible for preparing funding applications as well as facilitating education and outreach activities in this plan.

#### Financing

There are a host of financing options available for West Grey's various climate actions. The Green Municipal Fund offers funding opportunities for many different climate action measures, including municipal fleet transition, green building retrofits and energy efficiency. Other funding sources for fleet transition include NRCAN, EPCOR and the Ontario Rural Connectivity Fund. For climate measures tackling building retrofits and increasing energy efficiency, NRCAN, Ontario's Municipal Energy Plan Program, the Municipal Asset Management Plan, and Green Inclusive Community Buildings are all worth considering. Also of note are the Natural Infrastructure Fund for naturalization efforts, the Active Transportation Fund, and the Rural Transit Solutions Fund.

#### Partnerships

The strategies laid out in this plan primarily concern the reduction of GHG emissions across West Grey's corporate operations. However, many of these actions impact the wider community, and reaching the Grey County Community goal of net-zero emissions by 2050 will require collaboration across the county. It is important to acknowledge that there is already good work being done in West Grey, as well as across Grey County. We hope to align these existing efforts with the measures laid out in this plan and the Grey County CCAP to avoid duplication of work, to better navigate trade-offs and conflicts, and take advantage of any co-benefits that may arise from collaboration across sectors. We encourage partners to become familiar with the CCAP and the proposed climate actions therein and support implementation in such a way that complements existing efforts and capacity.

## West Grey Climate Change Action Plan

To ensure that implementation moves forward, West Grey will need to confirm the partnerships entailed in each climate action and each partner will need to commit to their specific role, whether that is:

- Aligning the identified strategies with their organization's mandates, priorities, and targets;
- Providing funding support for the implementation of strategies;
- Building support for implementation within their sectors;
- Sharing best practices, resources, and expertise; or
- Assisting with the implementation, monitoring, and reporting of strategies.

Implementation of the CCAP will require assistance from a wide range of stakeholders, including but not limited to:

- Grey County;
- member municipalities;
- the agricultural community;
- renewable energy developers;
- existing local energy co-operatives;
- EV companies;
- Bruce Power;
- The Nuclear Innovation Institute;
- cycling associations/groups;
- conservation authorities;
- waste management companies;
- community groups/NGOs

The Environment and Capital Projects Officer will be the primary liaison with Grey County environment staff to help promote and collaborate on community action.

### **Monitoring and Review**

The collaborative progress toward putting the municipalities CCAP into action and hitting its emissions reduction goals has to be transparently reported. The municipality is advised to monitor key developments and metrics and to report on them annually. The information gathered should be accessible to the public and there should be opportunity for the public to share feedback and suggestions on specific climate actions.

West Grey Council will be the key monitoring and review body for the implementation of the Plan and will receive regular updates on implementation status from the Environment and Capital Projects Officer.

## West Grey Climate Change Action Plan

It is recommended that the West Grey CCAP be formally reviewed every 5 years and include an assessment of the vision, targets and objectives of the plan, as well as a baseline inventory update. Updating the baseline inventory will allow West Grey 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. By establishing internal data collection processes, the corporate inventory can be updated on an annual basis if deemed necessary which can also aid in interdepartmental cohesion on climate action. The Environmental and Capital Project Officer will work closely with West Grey's finance staff lead on the asset management plan to create, monitor and maintain municipal inventory. The following Implementation Plan outlines key metrics and indicators to monitor the implementation progress of the plan.

## Implementation Plan

Strategy	Potential Lead(s)	Potential Partner(s)	Timeframe	Relative Cost	Funding Opportunities	Monitoring Metrics
1) Vehicle Fleet and Equipment Electrification	Infrastructure and Development Department	Grey County & member municipalities	Short-term	Low Cost	<a href="#">Green Municipal Fund: Reduce fossil fuel use in fleets</a>	<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>
2) Install EV Chargers on municipal properties	Environment and Capital Projects Officer	Grey County & member municipalities; local businesses and institutions	Short-term	Low Cost	<a href="#">NRCAN Zero Emission Vehicle Infrastructure Program</a> <a href="#">EPCOR Electric Vehicle Charging Station Funding Program</a> <a href="#">Ontario Rural Connectivity Fund</a> (details to be announced later this year)	<ul style="list-style-type: none"> <li>• Number and type of EV chargers installed</li> <li>• kWhs charged</li> </ul>
3) Fleet Operation and Maintenance	Infrastructure and Development Department	Energy efficiency driving trainers	Short-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>
4) Reduce Emissions from Single Passenger	Environment and Capital Projects Officer	Municipal departments	Short-term	Low Cost	N/A	<ul style="list-style-type: none"> <li>• Number of staff carpooling</li> </ul>

West Grey Climate Change Action Plan

Strategy	Potential Lead(s)	Potential Partner(s)	Timeframe	Relative Cost	Funding Opportunities	Monitoring Metrics
Commuting & Private Vehicles						<ul style="list-style-type: none"> <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>
5) Energy Efficiency Retrofits	Infrastructure and Development Department	N/A	Medium Term	High Cost	<a href="#">Green Municipal Fund Community Buildings Retrofit Initiative</a> <a href="#">Green Municipal Fund Capital Project: Energy Recovery or District Energy Municipal Asset Management Plan</a> <a href="#">Green Inclusive Community Buildings</a> <a href="#">Community building recommissioning grant   Green Municipal Fund</a>	<ul style="list-style-type: none"> <li>• Number of retrofits completed</li> <li>• Energy, emissions and energy dollars saved</li> </ul>
6) Energy Efficient New Buildings	Infrastructure and Development Department	N/A	Medium 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>

West Grey Climate Change Action Plan

Strategy	Potential Lead(s)	Potential Partner(s)	Timeframe	Relative Cost	Funding Opportunities	Monitoring Metrics
7) Operations and Maintenance	Infrastructure and Development Department	N/A	Short Term	Low Cost	<a href="#">NRCan Energy Manager Program – the application period for this funding ended September 30, 2019, with all proposed project end dates no later than March 31, 2021.</a> <a href="#">Municipal Energy Plan Program   ontario.ca</a> – appears to be current and a possible funding source	<ul style="list-style-type: none"> <li>• Energy, emissions and energy dollars saved</li> </ul>
8) Renewable Energy	Infrastructure and Development Department	N/A	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 West Grey owned buildings and land</li> <li>• Number of renewable energy projects completed</li> <li>• Energy, emissions and energy dollars saved</li> </ul>
9) LED Streetlights Conversion	Infrastructure and Development Department	N/A	Short Term	Low Cost	N/A	<ul style="list-style-type: none"> <li>• Number of streetlights converted</li> <li>• Energy, emissions, and energy dollars saved</li> </ul>
10) Wastewater Facilities	Infrastructure and Development Department	N/A	Short Term	Low Cost	N/A	<ul style="list-style-type: none"> <li>• Energy, emissions, and energy dollars saved</li> </ul>

West Grey Climate Change Action Plan

Strategy	Potential Lead(s)	Potential Partner(s)	Timeframe	Relative Cost	Funding Opportunities	Monitoring Metrics
						<ul style="list-style-type: none"> <li>• Amount of water treated</li> </ul>
11) Corporate Waste Policy	Infrastructure and Development Department	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>
12) Waste Education and Awareness	Environment and Capital Projects Officer	Grey County; member municipalities	Short Term	N/A	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>
13) Waste Diversion	Infrastructure and Development Department	Farmers; community groups; Waste Management Companies; Grey County; member municipalities	Short Term	N/A	<a href="#">Funding opportunities   Green Municipal Fund</a> – assess waste diversion solutions with a study grant.	<ul style="list-style-type: none"> <li>• Tonnes and type of waste diverted from landfill</li> <li>• Number of new backyard composters</li> <li>• Number of waste reduction and reuse events held</li> </ul>

West Grey Climate Change Action Plan

Strategy	Potential Lead(s)	Potential Partner(s)	Timeframe	Relative Cost	Funding Opportunities	Monitoring Metrics
14) Landfill Gas Capture	Environment and Capital Projects Officer	N/A		High Cost		<ul style="list-style-type: none"> <li>• Amount of landfill gas captured</li> </ul>
15) Municipal Climate Lens	Environment and Capital Projects Officer	All municipal departments	Short Term	NA	NA	<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> <li>• Climate change considerations integrated into asset management plans</li> </ul>

## 7. Conclusion

Ongoing collaboration across the municipality's departments along with the facilitation of partnerships within the community, Grey County, neighbouring municipalities, and others will be necessary to build the momentum needed to bring this plan to fruition, while carrying forward the actions to 2030 and beyond. The feasibility of many of the actions in this plan such as the adoption of low carbon off-road vehicles and equipment, as well as renewable energy will rely on continued technological advancements and cost reductions over time, while requiring continuous monitoring of the market. Furthermore, additional enabling components and support from the federal and provincial governments will be needed to fully realize the net-zero future outlined in this plan. Through adoption of the plan West Grey is establishing itself as a leader in this space and demonstrating its commitment to positive change which sends a signal to higher levels of government. This is the beginning of an exciting journey to a more sustainable and prosperous future for all.



## 8. Appendices

### Appendix 1: Detailed Methodology and Assumptions

	Category	Energy Use	Energy Costs	GHG Emissions
Buildings	Natural gas (Scope 1)	Metered energy data was provided by the 2019 West Grey Energy Consumption and Greenhouse Gas Emissions report under <a href="#">O. Reg. 507/18</a> . (Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans)	Electricity and natural gas prices were provided by West Grey.	2019 emission factors from Environment and Climate Change Canada’s National Inventory Report <sup>1</sup> (the most recent federal report on Canadian emissions) were used to convert energy use into GHGs (for specific factors see Table 14 in the Appendix).
	Electricity (Scope 2)	Energy consumption data was provided by the 2019 West Grey Energy Consumption and Greenhouse Gas Emissions report under <a href="#">O. Reg. 507/18</a> . (Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans)	Electricity and natural gas prices were provided by West Grey.	
Transportation	Municipal Fleet & Equipment (Scope 1)	Corporate vehicle totals for 2019 were provided by municipal staff and included fuel consumption, vehicle kilometers travelled and cost, which were used to calculate fleet emissions from diesel and gasoline. As per provincial requirements, it was assumed that 5%	Actual fuel expenditures were provided by municipal staff.	2019 emission factors from Environment and Climate Change Canada’s National Inventory Report <sup>4</sup> were used to convert energy use into GHGs (for specific factors, Table 14 in the Appendix.)

<sup>1</sup> Environment and Climate Change Canada. (2021). National Inventory Report 1990–2019: Greenhouse Gas Sources and Sinks in Canada. Canada’s Submission to the United Nations Framework Convention on Climate Change.

<sup>4</sup> Environment and Climate Change Canada. (2021). National Inventory Report 1990–2019: Greenhouse Gas Sources and Sinks in Canada. Canada’s Submission to the United Nations Framework Convention on Climate Change.

	Category	Energy Use	Energy Costs	GHG Emissions
		of gasoline <sup>2</sup> is ethanol and 4% of diesel is biodiesel <sup>3</sup> .		
Streetlights	Electricity (Scope 2)	Metered energy data was provided by the 2019 West Grey Energy Consumption and Greenhouse Gas Emissions report under <a href="#">O. Reg. 507/18</a> . (Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans)	Electricity and natural gas prices were provided by West Grey.	2019 emission factors from Environment and Climate Change Canada's National Inventory Report <sup>5</sup> were used to convert energy use into GHGs (for specific factors, see Table 14 in the Appendix.)
Waste & Wastewater	Electricity (Scope 2)	Metered energy data was provided by the 2019 West Grey Energy Consumption and Greenhouse Gas Emissions report under <a href="#">O. Reg. 507/18</a> . (Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans)	Electricity and natural gas prices were provided by West Grey.	2019 emission factors from Environment and Climate Change Canada's National Inventory Report <sup>6</sup> were used to convert energy use into GHGs (for specific factors, see Table 14 in the Appendix.)
Solid Waste	Waste (Scope 1)	N/A	N/A	Emissions from landfilled solid waste were calculated using the methane commitment model (GPC <b>Section 8.3.2</b> ). The tonnes of solid waste generated in 2019 were estimated based on the data reported in the Annual Landfill Monitoring Reports (2019). Because the Bentinck Landfill is the only site with a weigh scale, the tonnage of waste weighed at Bentinck, as well as the estimated contributing population within the service area was used to estimate a per capita

<sup>2</sup> O. Reg. 535/05: Ethanol in Gasoline under the Environmental Protection Act, R.S.O. 1990, c. E.19

<sup>3</sup> O. Reg. 97/14: Greener Diesel - Renewable Fuel Content Requirements for Petroleum Diesel Fuel under Environmental Protection Act, R.S.O. 1990, c. E.19.

<sup>5</sup> Environment and Climate Change Canada. (2021). National Inventory Report 1990–2019: Greenhouse Gas Sources and Sinks in Canada. Canada's Submission to the United Nations Framework Convention on Climate Change.

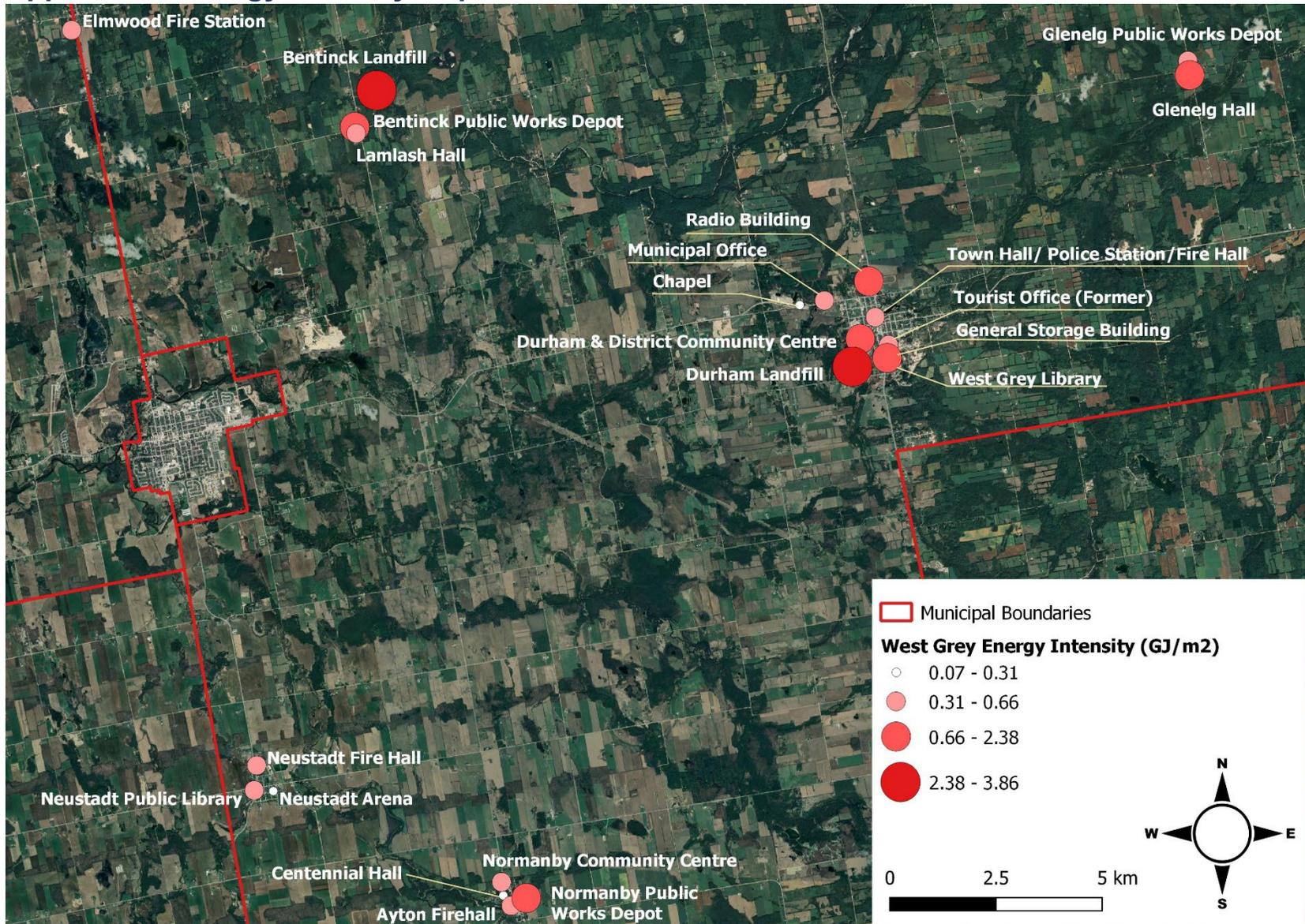
<sup>6</sup> Environment and Climate Change Canada. (2021). National Inventory Report 1990–2019: Greenhouse Gas Sources and Sinks in Canada. Canada's Submission to the United Nations Framework Convention on Climate Change.

Category	Energy Use	Energy Costs	GHG Emissions
			<p>waste tonnage, which was applied to the estimated 2019 population. Waste composition was determined using the default values for Ontario from the National Inventory Report. Emissions from the small amount of open burning of wood at the landfill sites was estimated using emission factors from the scientific literature<sup>7</sup>, and based on tonnes of wood waste burned in the Annual Landfill Monitoring Reports (2019) for the three landfills. CO2 emissions from wood are considered biogenic; therefore, only CH4 and N2O are reported. As landfill weigh scales came into affect in 2019 in West Grey the 2018 Grey County community waste emissions are higher than the waste emissions estimated in this inventory.</p>

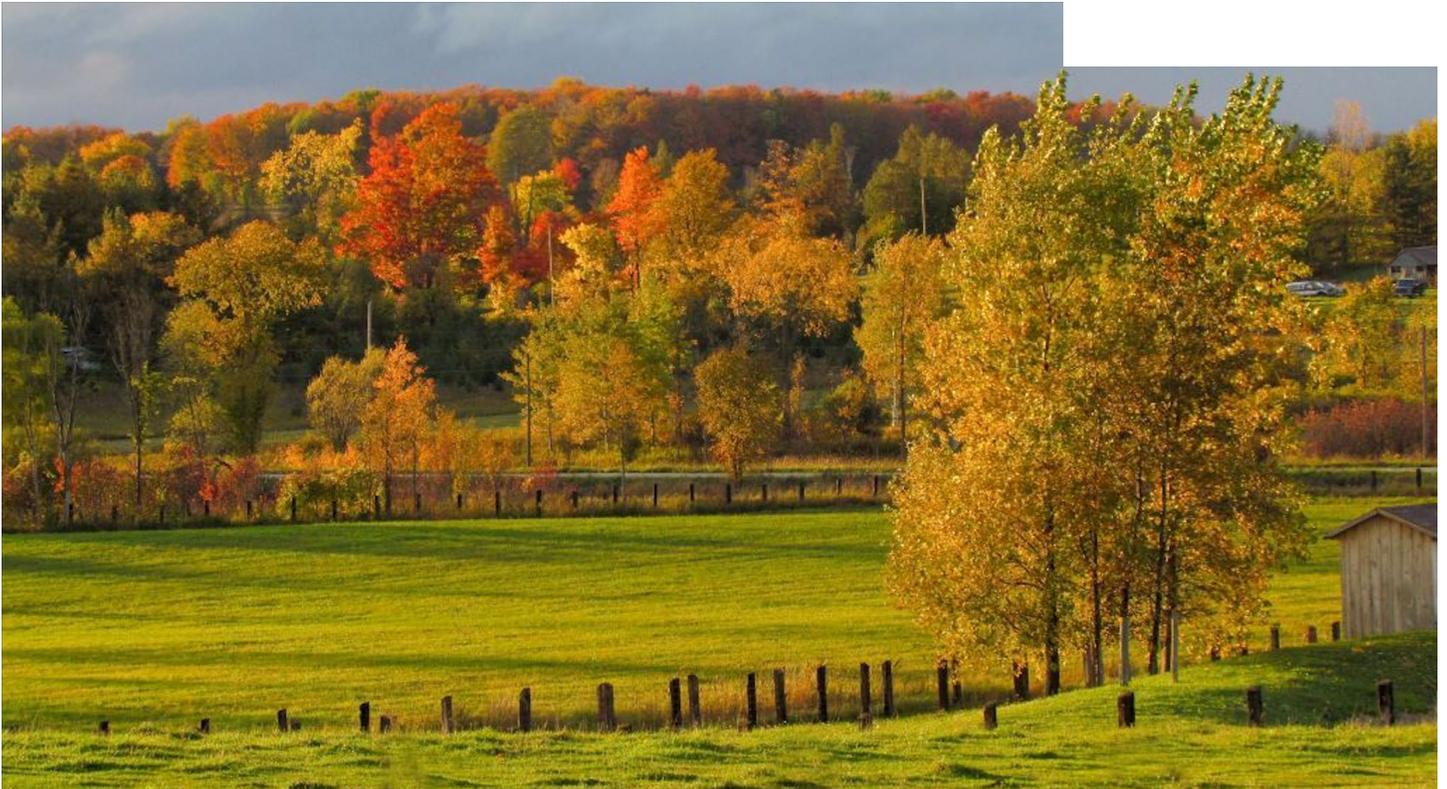
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<sup>7</sup> Bruce Springsteen , Tom Christofk , Steve Eubanks , Tad Mason , Chris Clavin & Brett Storey. (2011) Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Open Burning, Journal of the Air & Waste Management Association, 61:1, 63-68

## Appendix 2: Energy Intensity Map



JULY 2022



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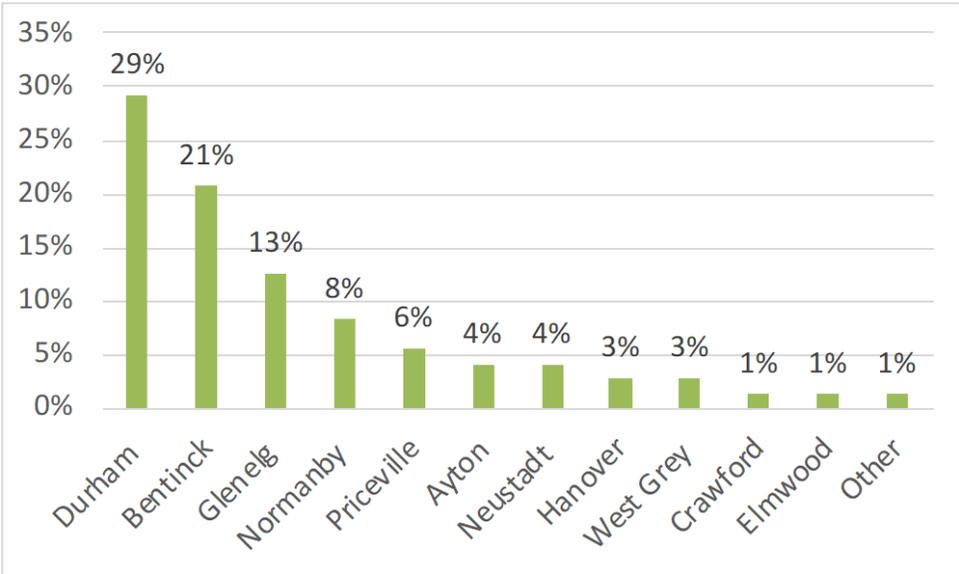
# Overview

The survey was made available to residents on Survey Monkey through West Grey’s website between June 6<sup>th</sup>, 2022 and June 24<sup>th</sup>, 2022, in order to gain feedback on the West Grey Climate Change Action Plan (CCAP). A total of 72 people responded to the survey. This document summarizes and showcases the general sentiments found in the survey on a question-by-question basis using graphics to display the results. Where respondents were given space to provide written responses, a short summary of the emergent themes is given, highlighting supporting and opposing views. Open-ended responses reflected a wide variety of ideas and therefore not all responses are captured in this document. Please see survey results for full answers.

## 1. Community Orientation

Respondents (n=69) indicated affiliation to 12 communities across West Grey. Most said they were from Durham (29%), and Bentinck (21%).

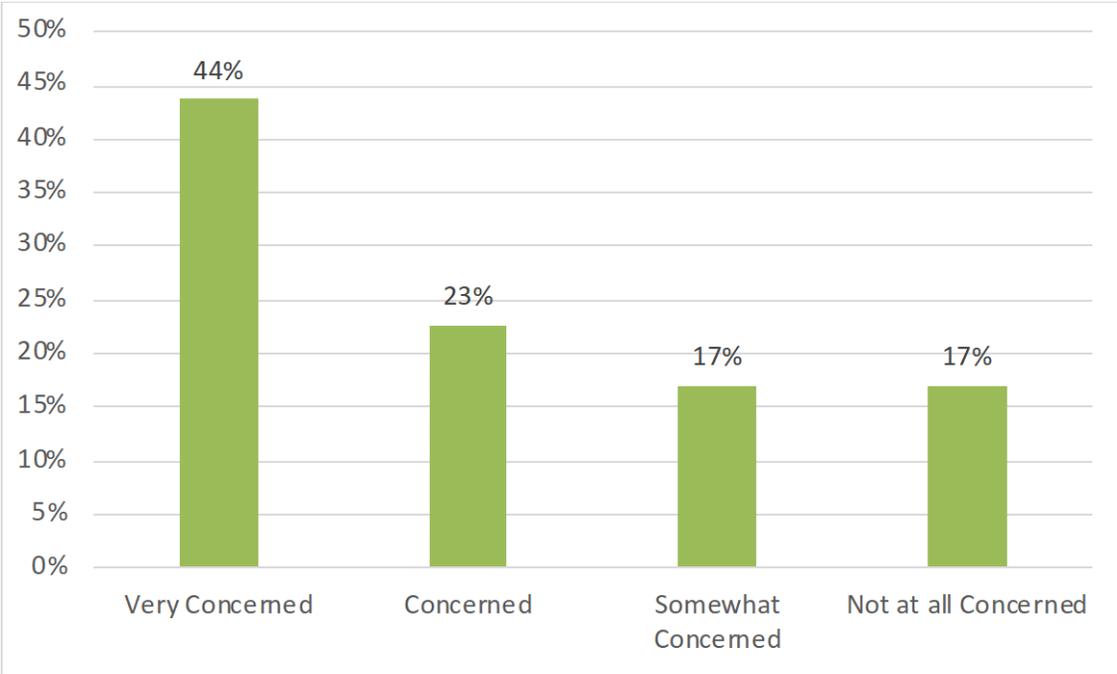
**Q1) Which community within West Grey you are from? (e.g., Durham, Bentinck, Neustadt, Elmwood, etc.) (n=69)**



## 2. Level of Concern About Climate Change

67% of respondents (n=71) indicated that they were very concerned (44%) or concerned (23%) about climate change and sustainability in West Grey. The remaining 34% expressed less concern, with 17% feeling somewhat concerned and 17% who were not at all concerned.

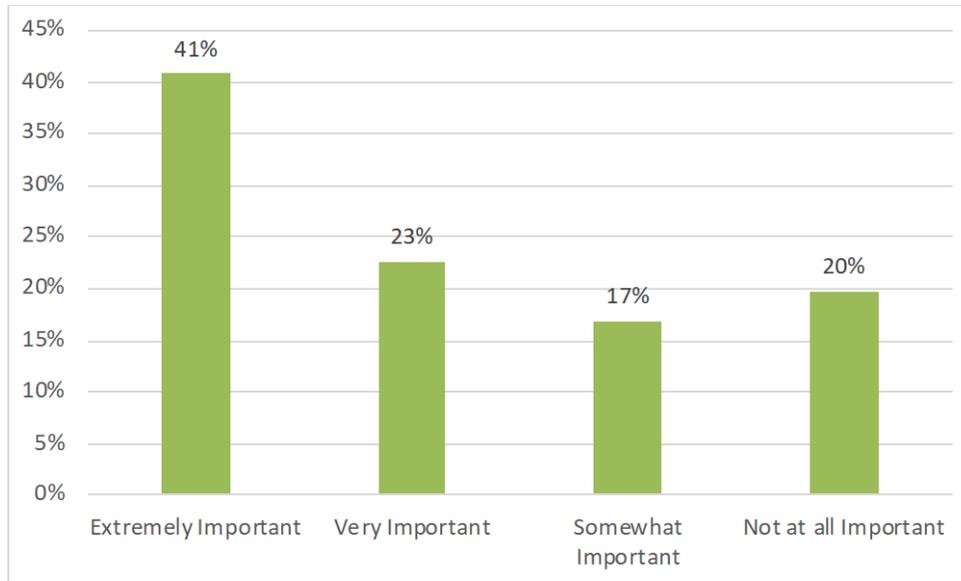
**Q2) Overall, how concerned are you about climate change and sustainability in West Grey? (n=71)**



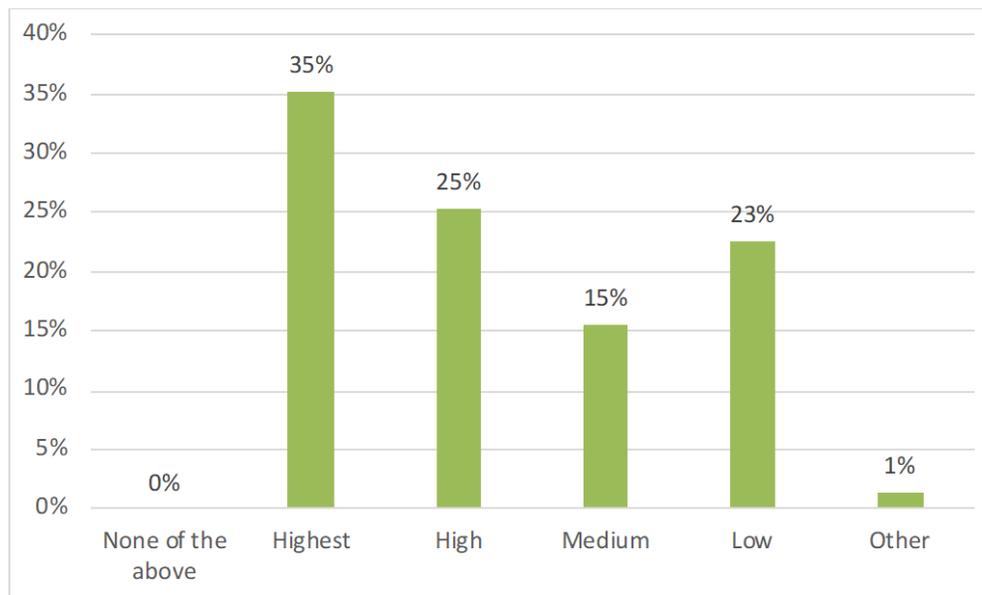
## 3. Climate Leadership and Level of Ambition

64% of respondents (n=71) indicated a strong preference that West Grey take leadership on climate change locally, with 41% saying this is extremely important and 23% saying it is very important. 20% believed this is not at all important and 17% indicated that it is somewhat important.

**Q3) Overall, how important is it to you that West Grey take leadership on climate change locally? (n=71)**



**Q4) What level of ambition should West Grey assume when setting a target or goal to reduce emissions resulting from its own municipal facilities and operations? (n=71)**



A similar distribution to Q3 was noticed in Q4, with 60% of respondents (n=71) favouring the highest (35%) or a high (25%) level of ambition for setting emissions reduction targets. The next

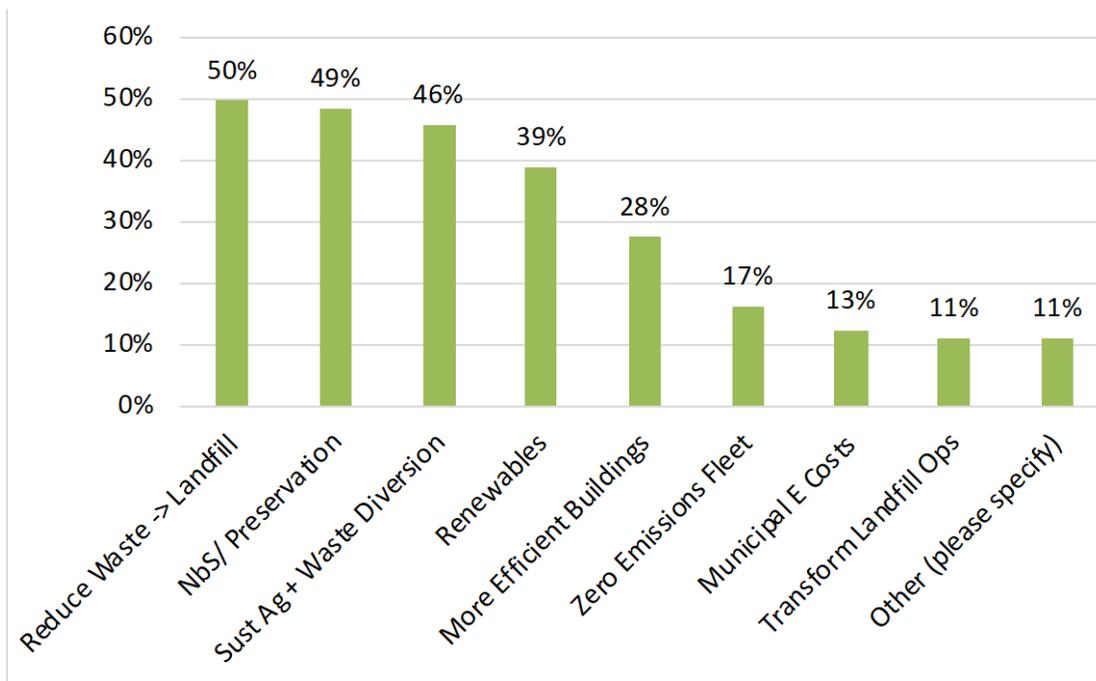
most selected option was for a low level of ambition, at 23%, followed by 15% for a medium level of ambition.

#### **4. Opportunities for West Grey**

The most favoured issues indicated by respondents (n=72) was for West Grey to implement into its CCAP were waste reduction & diversion and natural preservation. 50% supported initiatives to reduce waste that ends up in landfills and 49% favoured implementing nature-based solutions and preserving natural areas. The next highest support (46%) was for collaborating with Grey Country on sustainable agriculture and waste prevention & diversion, further highlighting respondents' interest in waste solutions but with an added emphasis on agriculture. Receiving moderate attention were the options of local renewable energy generation and of increasing energy efficiency of buildings, which received response rates of 39% and 28%, respectively. Interest was relatively low for transitioning the vehicle fleet and equipment (17%) for reducing municipal energy costs (13%), and for transforming landfill operating and management systems (11%).

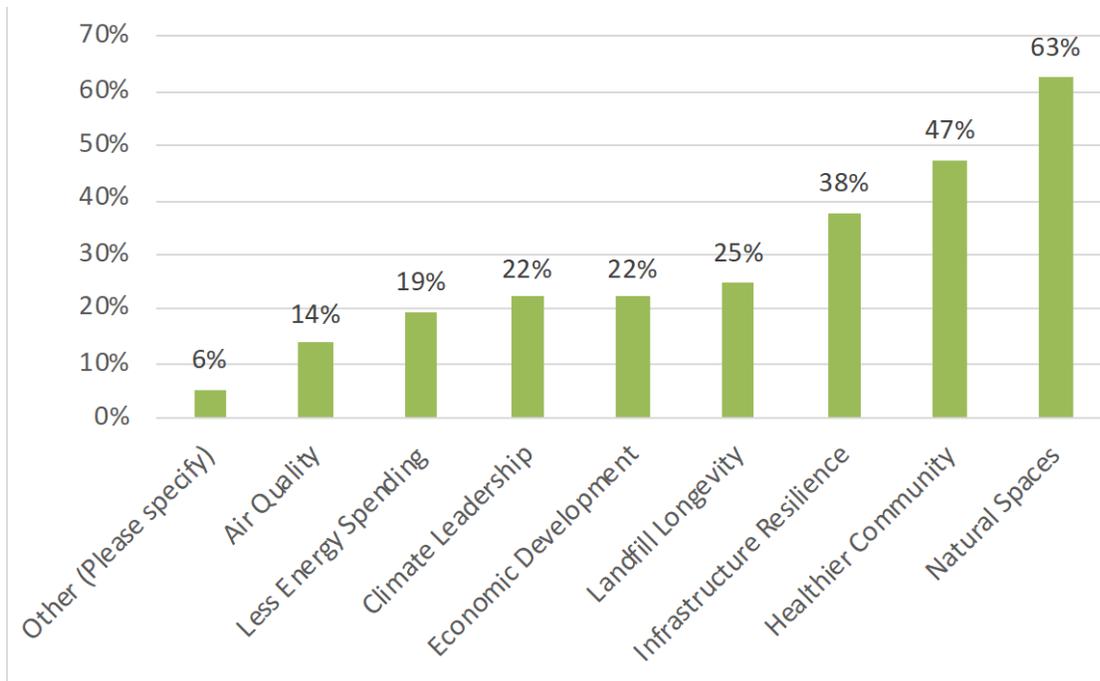
For respondents that offered an open-ended answer, a sentiment favouring climate adaptation (over mitigation) was observed (n=2), as well as added support for a waste reduction program (n=1) and more efficient use of buildings—specifically, diversifying functionality of underutilized buildings (n=1).

**Q5) In your view, what are the most important issues and opportunities for West Grey to include in the corporate Climate Change Action Plan? (Select up to three; n=72)**



The most important co-benefit to implementing the CCAP for respondents (n=72) was protecting and enhancing natural spaces (63%), highlighting a theme throughout the survey regarding natural preservation. 47% of respondents also saw supporting and enhancing a healthier community as an important co-benefit. While there was moderate support for the realization of increased infrastructure resilience (38%), the following categories received less and relatively evenly split attention: Increasing landfill longevity (25%), demonstrating climate leadership (22%), and local economic development (22%). The options that received least support were reduced energy costs (19%) and improved air quality (14%). The only open answer to this question expressed opposition to government implementation.

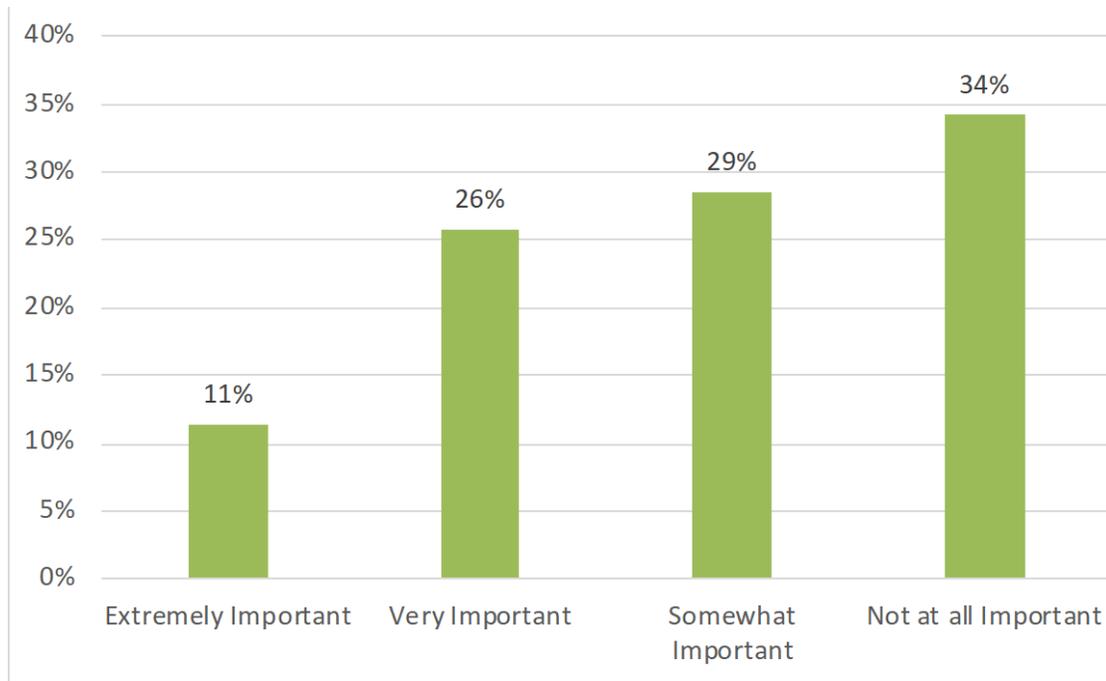
**Q6) In your view, what are the most important co-benefits that could be realized by implementing the municipal Climate Change Action Plan? (Select up to 3; n=72)**



## 5. Fleet Transition

37% of respondents (n=70) thought it was either very important (26%) or extremely important (11%) to transition the municipal fleet and equipment to electric, however the strongest sentiment was that this initiative is not at all important (34%). 29% of respondents thought this issue was somewhat important.

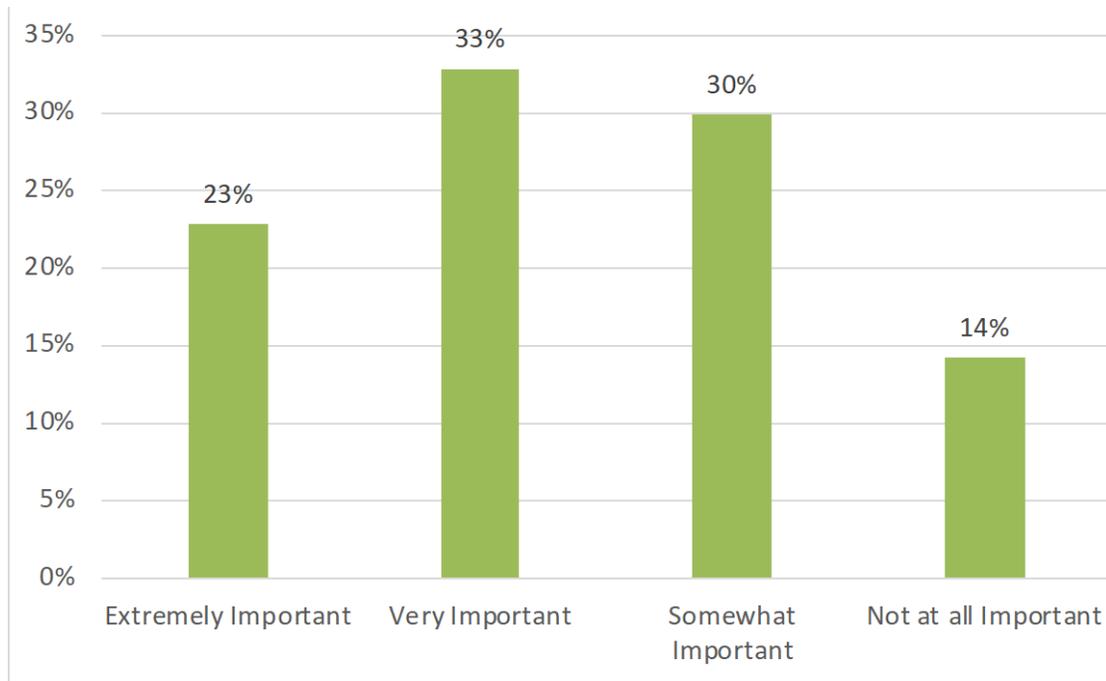
**Q7) In your opinion, how important is it for the municipality to transition its vehicle fleet and equipment to electric models? (n=70)**



## 6. Building Retrofits

Compared to transitioning its vehicle fleet & equipment, retrofitting municipal buildings and reducing energy costs received relatively more support. 55% of respondents (n=70) indicated that building retrofits were very important (33%) or extremely important (23%). 30% of respondents believed this initiative was somewhat important and 14% thought that it was not at all important.

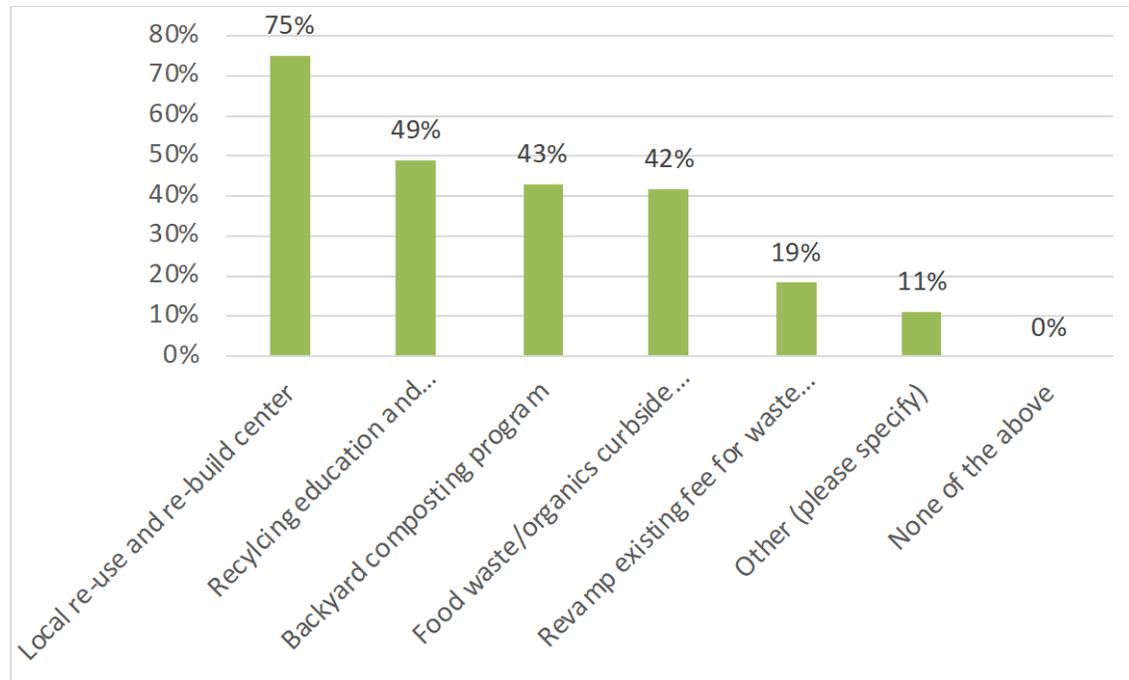
**Q8) In your opinion, how important is it for the municipality to retrofit its buildings and reduce the overall cost spent on energy? (n=70)**



## 7. Waste Reduction & Diversion

Regarding community waste reduction, there was a similar level of support from respondents (n=69) for recycling education and awareness (49%), backyard composting (43%) and curbside collection (42%). However, the single most supported option—not only for this question but in the entire survey—was for a local re-use and re-build center (75%). Relatively low support was received for revamping the existing waste fee (19%). Of the three survey participants who offered open-ended answers, one response said, “We’re tired of paying to remove waste”, one expressed the need for better recycling/ sorting options (for complex recyclable materials, e.g., chip bags, online orders), and one added their support for a re-build center (and/or concept similar to a tool library).

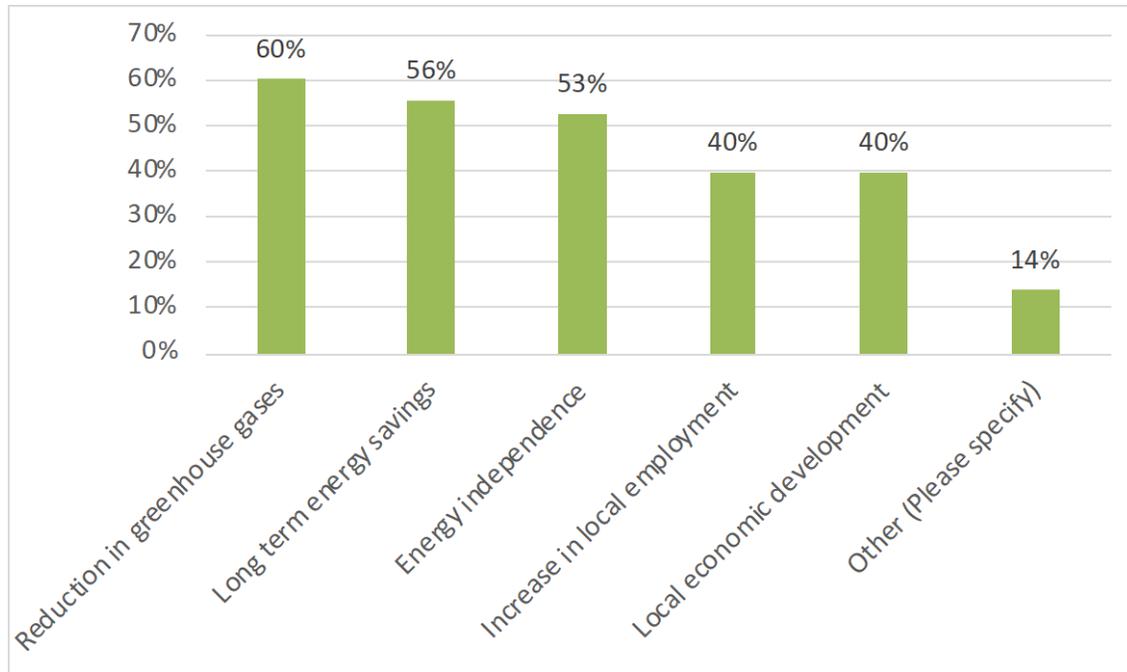
**Q9) Which of the following options would assist your household or business in reducing waste? (Check all that apply; n=69)**



## 8. Renewable Energy

Regarding opportunities that renewable energy solutions could offer West Grey, 60% of respondents (n=68) believed the municipality would see a reduction in greenhouse gasses. Long-term energy savings and energy independence were the second and third most popular options selected, at 56% and 53%, respectively. Respondents expressed relatively less belief that renewables would result in local economic opportunities with increased jobs and development options both receiving a 40% response rate. All four open-ended responses to this question expressed skepticism or opposition to renewables.

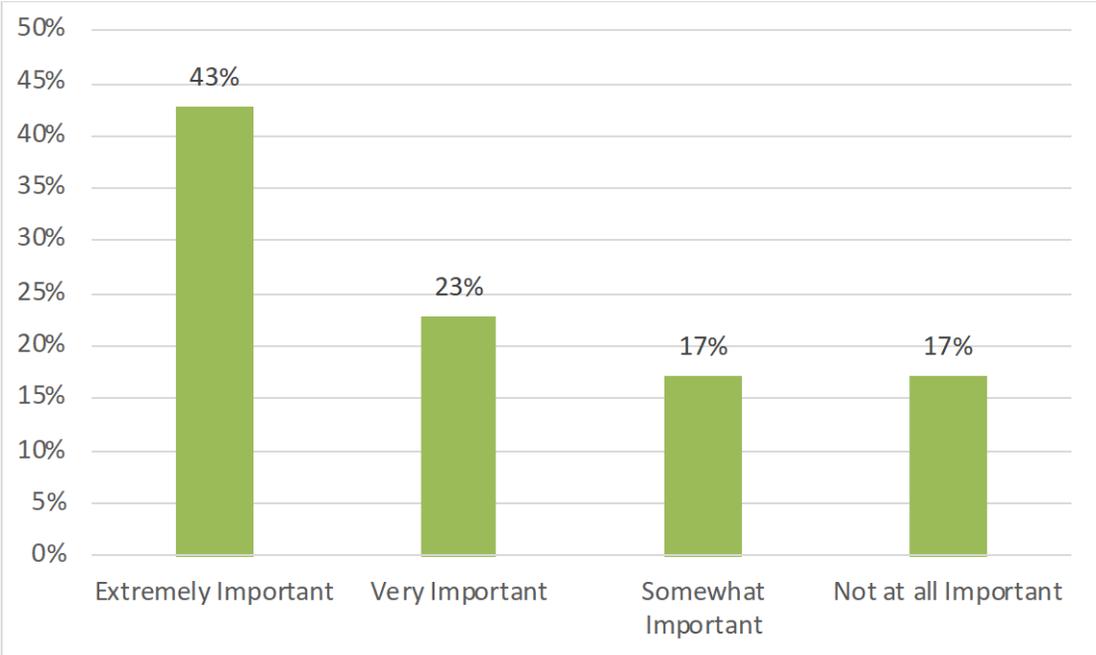
**Q10) In your opinion, what are the greatest opportunities that renewable energy (i.e. energy collected from renewable sources such as wind and solar) could offer our community? (Check all that apply; n=68)**



## 9. Integrating Climate Change Across West Grey

While 34% of respondents (n=70) did not see climate change as a priority issue to be considered across departments, initiatives and decision making in West Grey, 56% of respondents felt this was extremely important (43%) or very important (23%).

**Q11) In your view, how important is it for climate change be considered across all of West Grey’s municipal departments, initiatives and decision-making? (n=70)**



### 7. Open-Ended Questions

Respondents had a wide variety of responses. Some used this space to reinforce support for solutions provided in survey options, while others suggested alternative approaches and solutions. Present in these answers was also a continuation of those expressing their opposition to government intervention and to the CCAP.

**Q12) Do you have any further comments or questions about West Grey’s Corporate Climate Change Action Plan? (Open-ended; n=34)**

Of the 34 open-ended responses received concerning West Grey's CCAP, 50% expressed some degree of skepticism towards the government and/or implementation of a climate plan, usually due to the perception of associated increasing costs (to the taxpayer). Interestingly, two of the most oppositional comments supported the idea of reducing pollution/ plastic. Three participants sought more information regarding comparative costs between programs—specifically, fleet versus building conversion costs, and the price of installing solar panels on West Grey's arenas.

**Q13) Please let us know any other areas of focus would you like to see in the West Grey’s Corporate County Climate Change Action Plan? (Open-ended; n=27)**

Six of the responses, or 22%, expressed skepticism and/or opposition to government intervention, with the perception of increased taxes resurfacing. 22% of respondents echoed the desire to develop a better waste reduction/ diversion program, noting the need for more comprehensive and consistent messaging (i.e. education and awareness) when it comes to recycling, along with the demand for more incentives (less barriers) to repair, recycle and deliver waste to the landfill. A recurrent concern was about where EV batteries will go after their life-cycle.

The next most popular theme was related to regenerative agriculture, with 19% of respondents seeking greater attention toward converting conventional farms, incentivizing local “small farms”, and developing community gardens in town centers. Finally, two respondents (7%) sought improved bicycle infrastructure (e.g., lock-up stations, bike lanes).