

Community Energy & Emissions Plan (CEEP)



Draft Report
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Acknowledgements

We would like to express our sincere gratitude to everyone who contributed to the development of the Community Energy and Emissions Plan (CEEP). A special thanks go to those in the community, students and municipal staff for their invaluable input during our planning processes and to the municipal steering committee for their insightful guidance and unwavering support throughout this process. Our heartfelt thanks to the province for their generous funding support through the Low Carbon Communities (LCC) program.

Executive Summary

Since the industrial revolution, human activities such as burning fossil fuels, deforestation, agricultural practices, and other land use changes have resulted in the release of large volumes of greenhouse gases (GHG) that have accumulated in the Earth’s atmosphere, causing global climate systems to change. This change is resulting in unprecedented social, economic, and environmental challenges, threatening quality of life, jobs, and natural assets. In response to a need for collective action, in 2015, the global community adopted the Paris Agreement which aims to limit global warming to 1.5°C, which will require achieving net-zero or net-negative GHG emissions globally around 2050.

The Municipality of the County of Cumberland (the Municipality) has developed this Community Energy and Emissions Plan (CEEP) including targets to slow its contribution to the effects of climate change by reducing GHG emissions 45 percent by 2030 and achieve net zero GHG emissions by 2050 while increasing community resilience and to support the transition to a low carbon economy. Net-zero by 2050 aligns with Canada’s federal target for GHG emission reductions, as set out in the Canadian Net-Zero Emissions Accountability Act (2021). This means that to meet the 2050 GHG emissions reduction target, the Municipality will need to balance the amount of GHGs released with the amount that is removed from the atmosphere. For example, planting trees and protecting greenspaces can help absorb GHGs, offsetting emissions from activities like driving cars and using electricity.

Based on changes to energy and GHG regulations, the adoption of electric vehicles and changing population demographics, it is estimated that the Municipality’s business as usual GHG emissions are projected to decline 44% over 2023 levels (Figure E-1). While this is a positive outcome from doing very little, more must be done to reduce fuel, waste and industrial GHG emissions to get the Municipality’s GHG emissions to net zero.

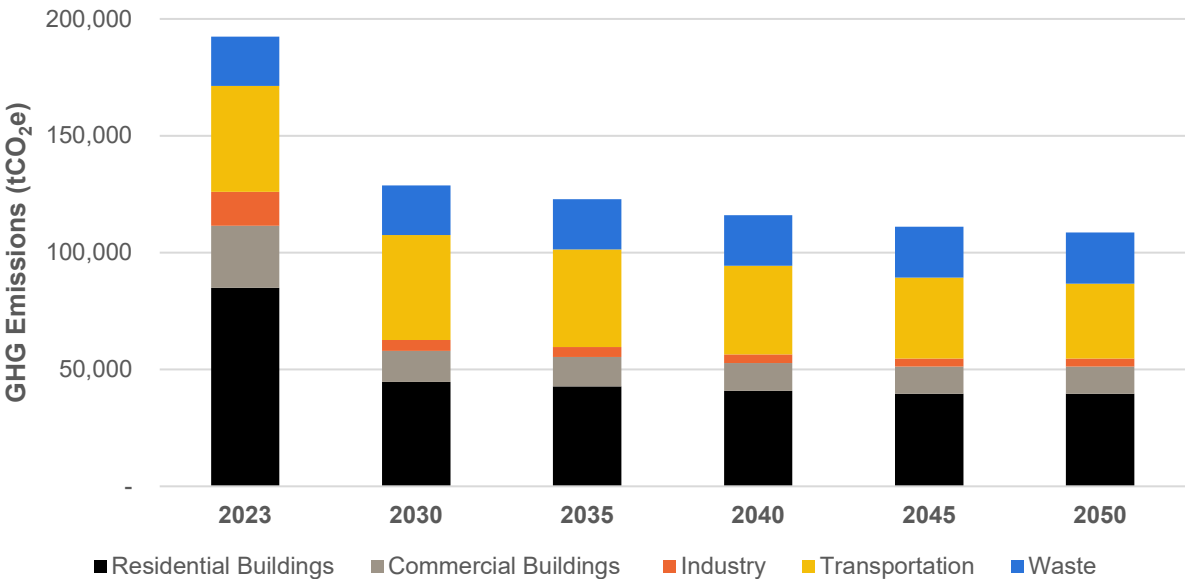


Figure E-1. Business As Usual GHG Emissions Forecast

In the early stages of the CEEP's development, the GHG emissions inventory and forecast were developed following the BASIC+ method of the *Global Protocol for Community Scale Greenhouse Gas Emission Inventories* (GPC)¹. This resulted in high emission and reduction estimates that were either unrelated to human activity (e.g., carbon sequestration occurring naturally without any human participation, such as from existing forests and wetlands) or unrelated to activities of residents and organizations in the Municipality (e.g., flow through transportation, primarily on the Trans Canada Highway and CN rail line). During discussions with the Project Team, it was noted that including these emissions and reductions obscured the GHG figures attributable specifically to activities of residents and organizations living and operating within the Municipality. In addition, including emissions and reductions not attributable to human activities did not align with the Federal Government's definition of "net zero" which focuses on anthropogenic (caused by human activity) releases and removals². As a result, it was decided to revise the inventories of current and future GHG emissions to conform to the BASIC method of the GPC¹, which excludes emissions and reductions unrelated to human activity as well as those attributable to flow through transportation.

To shape the CEEP's GHG emission reduction targets, goals, and actions, a comprehensive research and engagement program was undertaken. This included research on policy and best practices, completing the Municipality's GHG inventory, forecasting GHG emissions up to 2050, and gathering input from staff, stakeholders, and the public on potential actions to reduce GHG emissions.

In the fall of 2024, numerous stakeholders were invited to workshops to provide input on the goals and help identify key actions and partners. Additionally, an online survey was conducted to gauge public support for various high-level strategies in transportation and land use, buildings and energy, and solid waste. The insights and feedback from these engagements informed the development of the CEEP, which was drafted in December 2024 and reviewed by Municipal staff in January 2025.

To ensure these efforts are well-structured and effective, the CEEP has been organized into five goal areas to ensure the Municipality remains focused and accountable in its efforts to enhance energy efficiency, reduce GHG emissions, and increase climate resilience (Table E-1). These goal areas serve as a structured approach to guide the Municipality's actions and monitor their progress.

¹Global Protocol for Community-Scale Greenhouse Gas Emission Inventories, Greenhouse Gas Protocol, World Resource Institute

² Canadian Net-Zero Emissions Accountability Act (2021) defines net-zero emissions as "anthropogenic emissions of greenhouse gases into the atmosphere are balanced by anthropogenic removals of greenhouse gases from the atmosphere over a specified period."

Table E-1. CEEP Goal Statements

CEEP Area	Goal Statements
Buildings & Energy	• New buildings achieve near net zero GHG emissions over their lifespan. • Existing buildings are upgraded to be highly energy efficient. • The Municipality has lowered building GHG emissions by using local renewable energy sources.
Land-Use & Transportation	• Future municipal planning and council decisions align with GHG reduction and energy efficiency goals • Vehicle travel and GHG emissions are reduced through smart land use and affordable active transportation. • The number of electric vehicles (EV) and alternative fuel vehicles has increased, reducing conventional fuel vehicles.
Waste & Materials	• The Municipality's portion of landfill GHG emissions have declined through promotion of the 7 Rs (Rethink, Refuse, Reduce, Reuse, Repair, Regift, Recycle) of waste management. • The Municipality has reduced its portion of GHG emissions from wastewater by reducing the volume of stormwater inflow.
Local Economy & Outreach	• Local businesses, institutions, and community organizations are supported in their transition towards a low carbon economy. • Residents and businesses are informed and motivated to reduce energy use, cut GHG emissions, and increase resilience.
Natural Areas & Parks	• Natural areas and parks are expanded and improved to boost biodiversity and to capture carbon.
Municipal Leadership	• The Municipality is a leader by integrating GHG emissions and climate change considerations into all decisions. • By 2040, all municipal facilities are powered 100% by renewable energy. • By 2040, 80% of the municipal fleet is electrified or renewably powered. • Municipal employees are empowered to take proactive action on climate change.

Under each of these goal statements are short-, medium- and long-term actions that can be implemented over the next 5-year period. These actions encompass a wide range of approaches, from educational campaigns, to changes in bylaws and land use plans, to identifying new sources of potential funding to support implementation (Table E-2)

Even with the implementation of all the actions identified in this CEEP, additional efforts will be required to achieve net-zero GHG emissions for the Municipality. Over the next 30 years, various factors will influence the Municipality's behavior and actions, ultimately affecting the community's GHG emissions trajectory. The CEEP currently projects a 17% shortfall in GHG emissions reductions, which will need to be addressed through more stringent building energy codes, deep energy retrofits for at least 50% of existing buildings

by 2030, the rapid adoption of less GHG-intensive transportation methods, and the protection of natural areas (Figure E-2). As the CEEP is a living document, it will be updated every 5-years to reflect these changes and to make any course corrections as necessary.

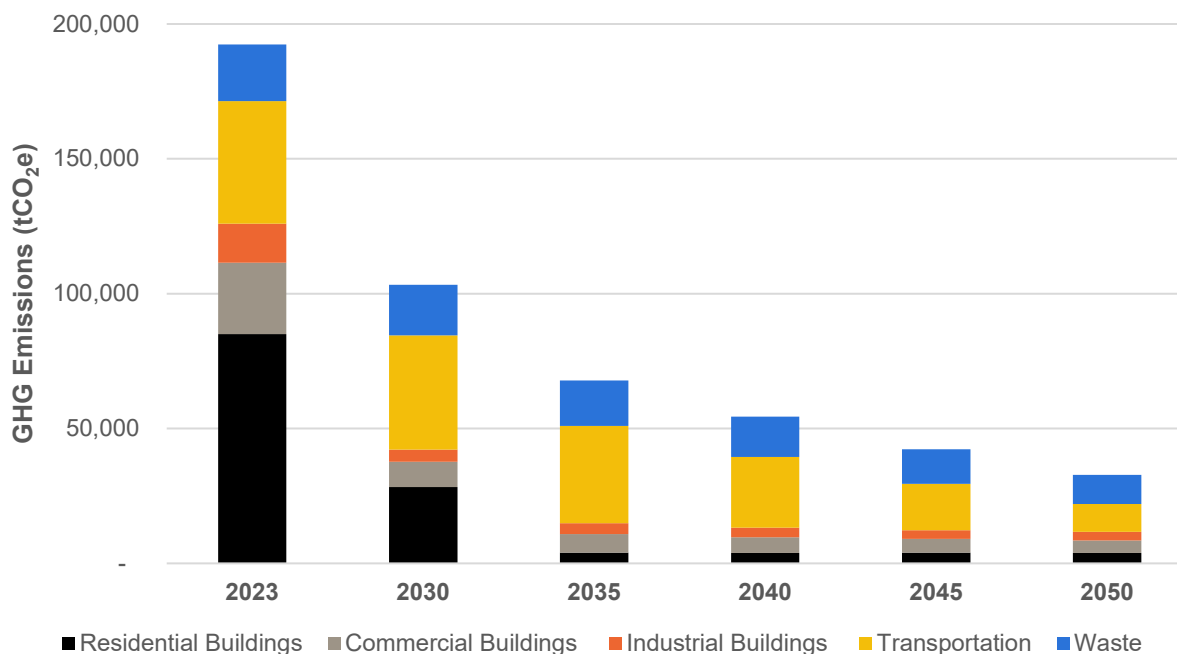


Figure E-2. CEEP GHG Emissions Forecast

A summary of the CEEP's actions are presented by goal area in Table E-2.

Table E-2. Summary Table of Actions

Sector	Initiative	Complete By End of		
		2026	2029	2031
Buildings & Energy	Update policy to require that all new Municipal buildings meet net-zero standards or are as close to net-zero as available funding will allow.		✓	
Buildings & Energy	Implement mandatory building energy labelling on new builds to inform the public about energy performance.			✓
Buildings & Energy	Provide municipal staff with training in net-zero building and renewable energy systems.		✓	

Sector	Initiative	Complete By End of		
		2026	2029	2031
Buildings & Energy	Encourage developers to construct a showcase ultra-energy-efficient (net zero) building for public experience, such as a new municipal center.			✓
Buildings & Energy	Conduct workshops on sustainable construction to educate and engage stakeholders, advancing green building policies and programs.			✓
Buildings & Energy	Enhance the existing Property Assessed Clean Energy (PACE) program to boost participation.	✓		
Buildings & Energy	Develop a comprehensive inventory of heating oil consumption within the Municipality to understand the current usage patterns and identify key areas for intervention.		✓	
Buildings & Energy	Evaluate energy performance and retrofit programs and strategies available for rental housing.		✓	
Buildings & Energy	Launch a pilot residential energy labeling program at the time of sale.		✓	
Buildings & Energy	Mobilize community leaders and organizations to encourage neighborhood residents to sign up for energy efficiency upgrades.		✓	
Buildings & Energy	Disseminate information on existing programs and opportunities around alternative and renewable energy through the building permit process.		✓	
Buildings & Energy	Encourage the evaluation of waste heat recovery from large refrigeration systems in new developments.			✓
Buildings & Energy	Conduct an alternative energy pre-feasibility study to identify opportunities and specific zones in the community for geothermal, microgrids, waste heat recovery, and large solar PV arrays.	✓		
Buildings & Energy	Investigate financial business case and legal strategies for creating municipally owned renewable energy utilities.	✓		
Land-Use & Transportation	Incorporate a climate lens into the future Municipal Planning Strategy and Land Use bylaw review process.		✓	

Sector	Initiative	Complete By End of		
		2026	2029	2031
Land-Use & Transportation	Develop a strategic approach for the subdivision parkland dedication process to ensure that fees obtained are allocated towards efforts to protect or improve natural areas.		✓	
Land-Use & Transportation	Establish a local food policy and supporting programs that promote a local, sustainable food system.			✓
Land-Use & Transportation	Integrate Complete Streets principles in transportation, infrastructure, and urban design plans and processes.			✓
Land-Use & Transportation	Implement investment projects for sidewalks, bikeways, and roads to enhance active transportation.	As Opportunities Present Themselves		
Land-Use & Transportation	Explore ways to integrate active transportation planning and investments into the Municipality's regular operational budget.		✓	
Land-Use & Transportation	Provide bicycle safety programs.		✓	
Land-Use & Transportation	Encourage retailers to offer "carbon-free delivery."		✓	
Land-Use & Transportation	Explore and support micro-mobility initiatives.		✓	
Land-Use & Transportation	Continue funding Cumberland County Transportation Services.	✓		
Land-Use & Transportation	Expand public EV charging stations.		✓	
Land-Use & Transportation	Explore bylaw opportunities that mandate EV-ready parking in new multi-unit residential, commercial or industrial developments.		✓	
Land-Use & Transportation	Explore the piloting of a car share program, including EV-sharing options.		✓	
Waste & Materials	Enforce waste separation into the required four streams.		✓	
Waste & Materials	Support non-profit, private, and charity sectors in diverting food from the pre-waste stream for redistribution to food security organizations.		✓	

Sector	Initiative	Complete By End of		
		2026	2029	2031
Waste & Materials	Increase recycling options at public spaces and events.	✓		
Waste & Materials	Launch community-based social marketing (CBSM) campaigns focused on waste reduction.		✓	
Waste & Materials	Promote product exchange and resale networks.	✓		
Waste & Materials	Expand at-home composting educational programs.		✓	
Waste & Materials	Develop and implement stormwater redirection projects.	As Opportunities Present Themselves Through Capital Projects		
Waste & Materials	Install rainwater harvesting systems for irrigation and low-flow fixtures in municipal buildings.	As Opportunities Present Themselves		
Waste & Materials	Create and maintain rain gardens throughout community areas using native plants.	As Opportunities Present Themselves		
Waste & Materials	Develop and distribute public materials to encourage the use of rain barrels or cisterns for non-potable uses.	✓		
Waste & Materials	Develop and execute a plan to properly size wastewater pumps.		✓	
Local Economy & Outreach	Develop a Green Business Program.		✓	
Local Economy & Outreach	Promote energy efficiency programs.	✓		
Local Economy & Outreach	Launch a Green Fleet Challenge.		✓	
Local Economy & Outreach	Establish an annual environmental recognition program.		✓	
Local Economy & Outreach	Promote commute reduction programs.		✓	
Local Economy & Outreach	Sponsor youth programs.		✓	
Local Economy & Outreach	Collaborate with non-profits.		✓	
Local Economy & Outreach	Promote and update the community website.	✓		

Sector	Initiative	Complete By End of		
		2026	2029	2031
Natural Areas & Parks	Increase wilderness and wetland protection areas.		✓	
Natural Areas & Parks	Launch a tree sapling giveaway.		✓	
Natural Areas & Parks	Promote green infrastructure in land use planning and building design.	✓		
Natural Areas & Parks	Implement land use or subdivision bylaw changes to require street trees in new subdivisions.		✓	
Natural Areas & Parks	Increase the number of trees planted on municipal properties.		✓	
Natural Areas & Parks	Encourage sustainable agriculture and forestry practices.		✓	
Municipal Leadership	Integrate environmental considerations into the corporate procurement process.			✓
Municipal Leadership	Hire a Corporate/Community Energy Manager.	✓		
Municipal Leadership	Collaborate with nearby municipalities to establish a joint building energy management program.		✓	
Municipal Leadership	Dedicate annual operating funding to implement the CEEP.	✓		
Municipal Leadership	Incorporate climate action performance measures into the Municipality's annual budgeting process.		✓	
Municipal Leadership	Consider the climate impact on all new capital initiatives.	✓		
Municipal Leadership	Align Municipal strategies and plans with the CEEP.		✓	
Municipal Leadership	Conduct energy audits on existing municipal buildings.	✓		
Municipal Leadership	Develop a strategy for deep energy retrofits in existing corporate buildings.		✓	
Municipal Leadership	Develop a strategy to transition the corporate vehicle fleet to electric or hybrid vehicles.	✓		
Municipal Leadership	Install EV charging stations at corporate facilities.		✓	
Municipal Leadership	Pilot new technologies in Municipality-owned fleet.	As Opportunities Present Themselves		

Sector	Initiative	Complete By End of		
		2026	2029	2031
Municipal Leadership	Enhance bike commuting facilities during municipal building renovations	As Opportunities Present Themselves		
Municipal Leadership	Identify and address barriers to sustainable transport for municipal employees.		✓	
Municipal Leadership	Develop a program to educate staff on energy and GHG management.		✓	

It is anticipated that the above strategies and actions will be prioritized and implemented opportunistically (e.g., certain circumstances may accelerate a particular action, like new funding becoming available) and will be regularly reviewed and updated. Any actions with financial implications will be reviewed and approved by senior staff and Council.

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1 Introduction

Climate change refers to the long-term alteration of global temperature and weather patterns, primarily driven by human activities such as the burning of fossil fuels, deforestation, and industrial processing. Climate change has emerged as an unprecedented social, economic, and environmental challenge facing our society today, threatening our quality of life, our jobs, and our physical and natural assets. The impacts of climate change are already evident worldwide, with more frequent and severe heatwaves, storms, droughts, and rising sea levels disrupting communities and ecosystems.

Recognizing the need for collective action, the global community adopted the Paris Agreement in 2015 - an international treaty under the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement aims to limit global warming to below 2°C above pre-industrial levels, with efforts to further limit the temperature increase to 1.5°C. Achieving this goal requires a dramatic reduction in global greenhouse gas (GHG) emissions, targeting net-zero - or ideally, net-negative - emissions by 2050. According to the Canadian Net-Zero Emissions Accountability Act, achieving net-zero GHG emissions means that our release of GHG emissions into our atmosphere from our daily activities, like powering our houses and driving our cars to school and work, are balanced by the removal of GHGs from the atmosphere over the same timeframe. For example, the planting of trees and protecting and conserving greenspace can increase how much GHG emissions are sequestered from the atmosphere.

Addressing climate change requires sustained efforts to reduce and eventually eliminate sources of GHG emissions, known as climate change mitigation, as well as efforts to be more resilient to the climate change effects already underway, known as climate adaptation. Focusing on the long-term means continued strategies to reduce GHG emissions, acknowledging that the benefit to climate accumulates globally over time before the warming trend will stabilize. In addition to future climate change mitigation, GHG mitigation efforts can also provide immediate co-benefits—such as reduced energy costs, lower air pollution, and a more physically active community (**Figure 1**).³

³ [Why adapt to climate change | AdaptNSW](#)

Recognizing the responsibility to respond to the causes and impacts of climate change, the Municipality of the County of Cumberland (the Municipality) is committed to helping the community reduce its contribution to climate change. This Community Energy and Emissions Plan (CEEP) is a strategic framework designed to guide the Municipality towards a more sustainable, low carbon future.

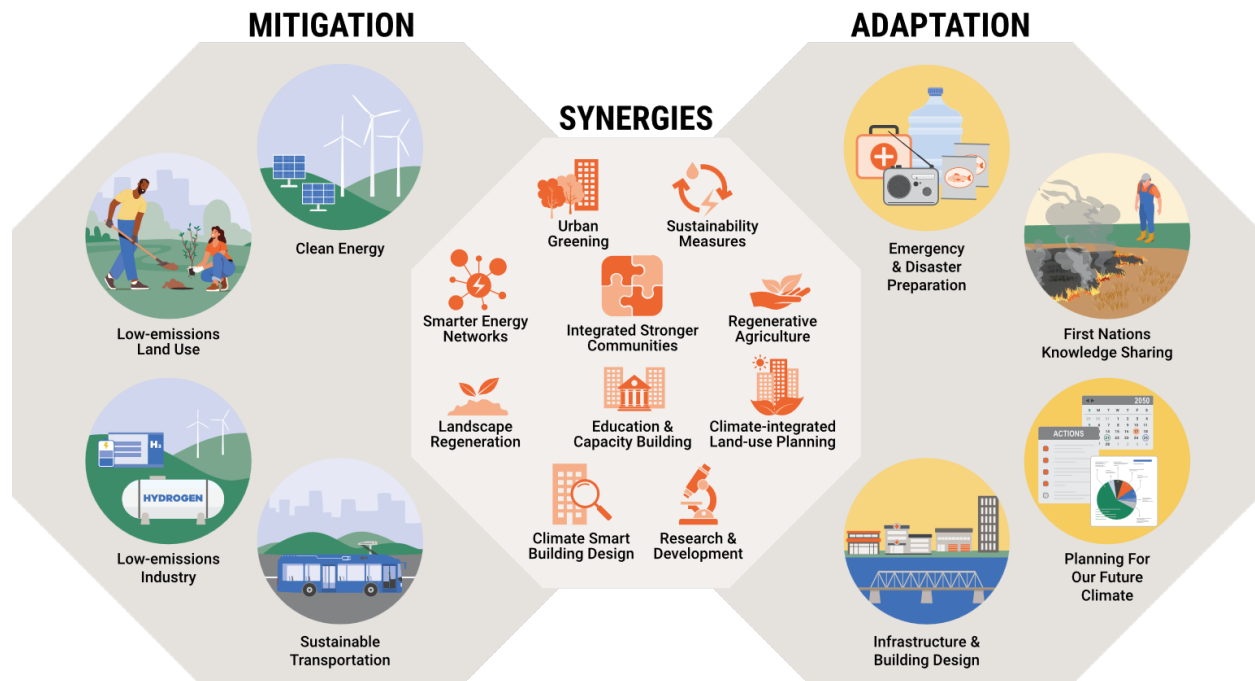


Figure 1. Climate Change Mitigation & Adaptation

2 Community Energy & Emissions Plan

While some impacts from the changing climate may be unavoidable, there is an opportunity now to avoid the most dangerous effects that might arise this century. The implementation of the Community Energy and Emissions Plan (CEEP) aims to reduce the Municipality of the County of Cumberland's (the Municipality's) GHG emissions in support of the global fight against climate change. The CEEP supports proactive changes in how residents live, work, and move within our communities, functioning as both an action plan and a strategic plan.

As an action plan, this CEEP identifies several actions that the Municipality, residents, and partners can initiate over the next 5 -10 years. As a strategic plan, the CEEP's vision and goals will guide future decision-making. This strategic direction is crucial when new ideas and proposals arise that were not conceived or fully developed at the time of this plan.

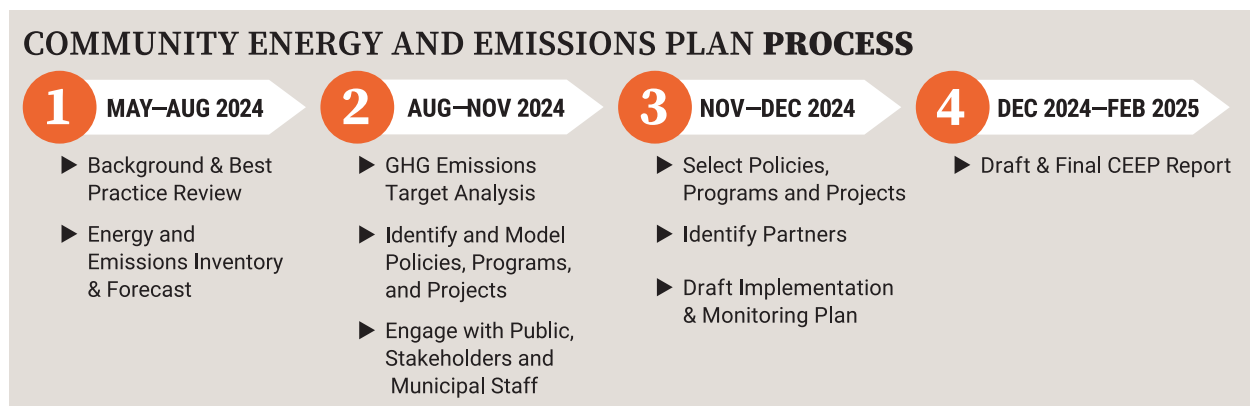
The CEEP provides an overview of actions that relate to both the Municipality (the Municipality of the County of Cumberland as a local government entity) and the community (which is composed of all its businesses, residents, and their assets). Throughout this CEEP, the "Municipality" refers to the Municipality of the County of Cumberland, the local government entity governing both urban and rural communities within Cumberland County, but it excludes the incorporated towns of Amherst and Oxford. Given that the Municipality can only control assets and processes it owns or operates, this CEEP focuses heavily on actions within its direct control as a municipal entity. Where the Municipality can influence change in the community, it will be done through policy changes and other initiatives.

It is important to note that the actions proposed in this plan will, in part, depend on the availability of funding and support from senior levels of government. By having a comprehensive plan in place, the Municipality will be better prepared to take advantage of funding opportunities as they arise. Successful implementation of the CEEP will also require collaboration and commitment from all stakeholders, including the community, businesses, and government entities.

Additionally, many community actions are influenced by authorities such as the Provincial government, Federal regulations, and third-party service providers (e.g., utility companies). However, these actions often fall outside the direct control of the Municipality. Therefore, it is crucial to advocate for these actions and collaborate closely with these authorities to encourage and support positive changes in energy use and in GHG emissions reductions. Additionally, the Municipality can influence community actions by supporting them through funding initiatives, providing alternative transportation solutions, or advocating with other governments and partners to support the development or progress of community actions, such as lobbying at the Provincial level for increased electric vehicle charging infrastructure.

2.1 CEEP Development Process

Development of the CEEP began in May 2024 and progressed over the course of the 2024 calendar year. The process included a combination of research on policy and best practices, completion of the Municipality's GHG emissions inventory and a forecast of GHG emissions out to 2050, and engagement from Municipal staff, stakeholders, and the public. Numerous stakeholders, Municipal staff, and community members (including students) were invited to participate in a series of engagement sessions in fall of 2024 to provide input into the goals and help identify key actions and partners. A CEEP webpage was developed to host and share information, and an online survey was also hosted late summer and early fall, 2024 to assess public concern regarding climate change and thoughts on climate mitigation actions.



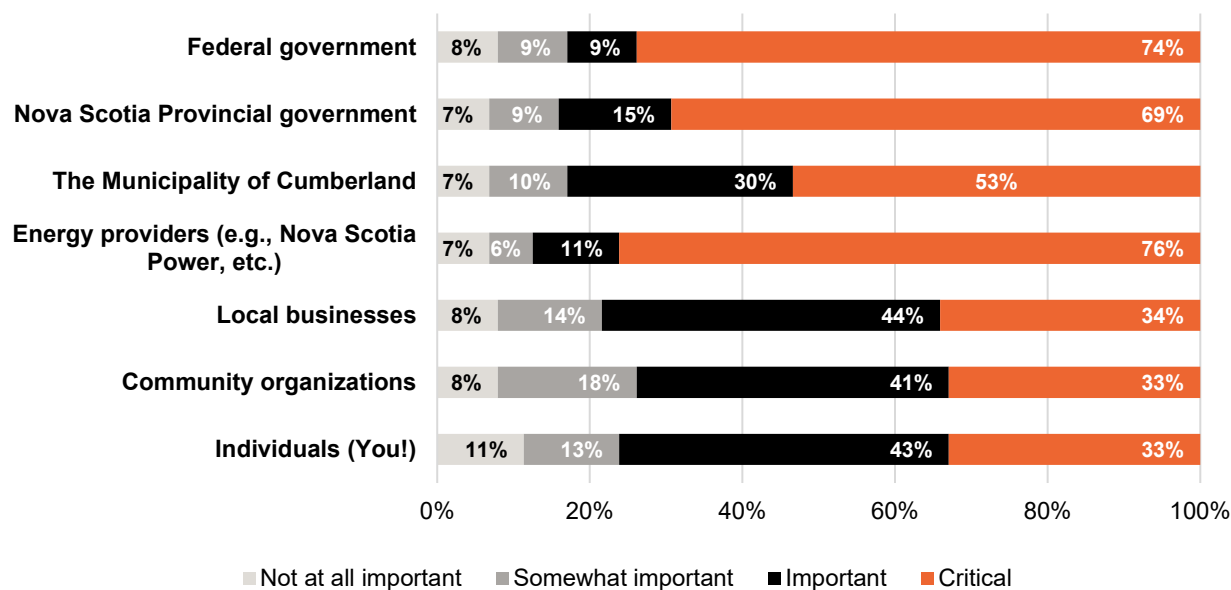
2.2 What We Heard

As part of our engagement efforts on the CEEP, an online survey was released to the community to help better understand:

- The importance that residents place on taking action to reduce energy consumption and GHG emissions.
- The degree to which residents support the Municipality and its partners in taking action on these issues.
- Residents' willingness to take action to reduce individual energy consumption and GHG emissions.

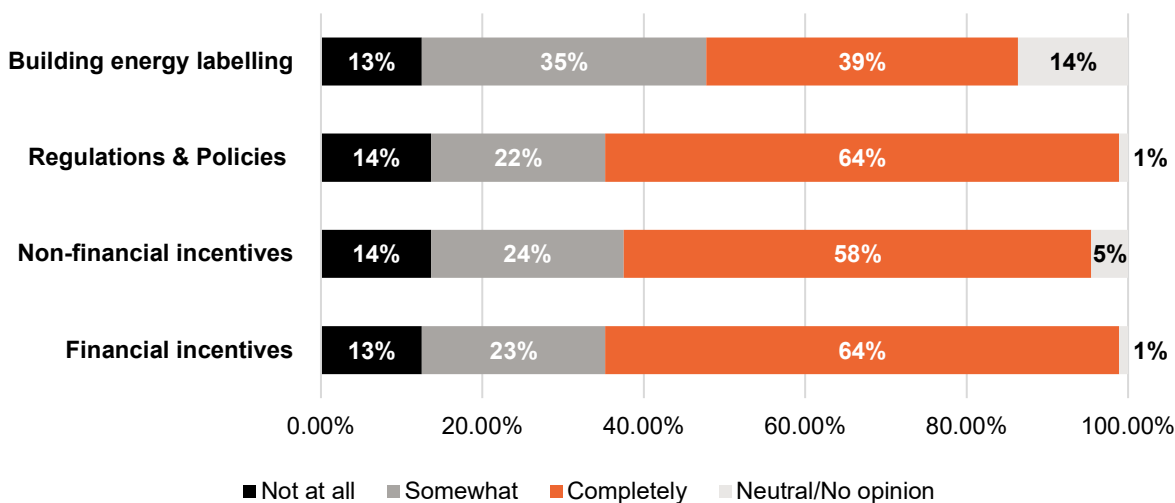
The online survey was open for 11 weeks and was completed by 88 participants. The results, included below, showed overwhelming support for the Municipality to take action on reducing energy and GHG emissions.

Survey Question: How Important is it that the following entities take action to reduce energy consumption and GHG emissions?



Like most communities, there is a large degree of support for the Municipality taking multiple approaches to reducing community energy and GHG emissions, such as through regulation & policies, and through financial and non-financial incentives.

Survey question: To what extent do you support the following approaches to achieving emissions and energy use reduction?



Additional survey results can be found on www.cumberlandcounty.ns.ca/Municipality-of-cumberland-developing-community-energy-and-emissions-plan.html.

In addition to the survey, the engagement strategy also included community workshops, municipal staff workshops, stakeholder workshops, student sessions, and involvement from a steering committee. Table 1 outlines the various engagement sessions that occurred.

It was clear from what was heard during these engagement sessions that participants recognized climate change as a pressing issue and strongly supported the need to reduce GHG emissions, encouraging municipal action. Key points raised included:

- Limited infrastructure for active transportation (e.g., sidewalks and bike lanes).
- Challenges posed by the rural nature of the community, which impact the feasibility of alternative transportation options.
- A lack of accessible public transportation.
- The high costs associated with sustainable choices (e.g., energy retrofits, electric vehicles).

Detailed discussion points are available in the "What We Heard" document, which can be accessed here www.cumberlandcounty.ns.ca/Municipality-of-cumberland-developing-community-energy-and-emissions-plan.html.

Table 1 Engagement Sessions Summary

Session Type	Session	Date	Time	Location
Community Sessions	Public Session 1	October 23, 2024	6:30 – 8:30 pm	Parrsboro, NS
	Public Session 2	October 24, 2024	6:30 – 8:30 pm	Pugwash, NS
Steering Committee Sessions	Initiation Meeting	August 22, 2024	4:00 – 5:00 pm	Virtual (Teams)
	Engagement Strategy Discussion	September 11, 2024	2:00 – 3:00 pm	Virtual (Teams)
	Target Setting Discussion	October 9, 2024	2:00 – 3:00 pm	Virtual (Teams)
	Proposed Strategies Discussion	November 25, 2024	4:30 – 5:30 pm	Virtual (Teams)
Student Sessions	Student Session 1	October 24, 2024	8:40 – 9:50 am	Springhill Junior-Senior High School, Springhill, NS
	Student Session 2	October 24, 2024	10:40 – 12:00 pm	Springhill Elementary School, Springhill, NS
	Student Session 3	October 24, 2024	2:00 – 3:00 pm	Pugwash High School, Pugwash, NS
Stakeholder Session	Stakeholder Session	November 5, 2024	1:00 – 3:00 pm	Virtual (Teams)
Municipal Senior Management Sessions	Municipal Intro	October 9, 2024	9:00 – 9:45 am	Virtual (Teams)
	Municipal Workshop 1	November 13, 2024	10:30 – 11:30 am	Virtual (Teams)
	Municipal Workshop 2	November 19, 2024	4:00 – 5:00 pm	Virtual (Teams)

2.3 Municipality of Cumberland's Current Situation

Energy and GHG emissions inventories are the primary means of how we can monitor and report progress towards our emission-reduction goals. Using these inventories, we can better grasp where the community uses the most energy, how much energy is used, and how much GHG emissions are being released from these activities. The sections below describe how the Municipality is consuming energy, where emissions are coming from, and where the community needs to focus to reduce both energy consumption and the generation of GHG emissions.

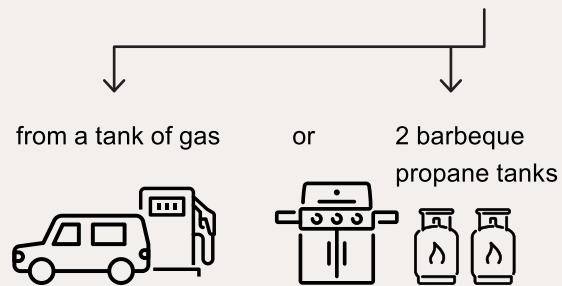
2.4 GHG Emissions Snapshot

The 2023 GHG emissions inventory shows that residents and businesses consumed over 2.0 million Gigajoules (GJ) of energy primarily from electricity, heating oil, gasoline, and diesel fuel annually. This led to the release of approximately 193,000 tonnes of carbon emissions (tCO₂e) or about 7 tonnes per person per year.

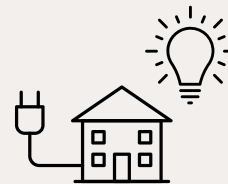
WHAT IS A GIGAJOULE?

A gigajoule (GJ) is a metric term used for measuring energy use.

1 GJ is equivalent to the amount of energy available,



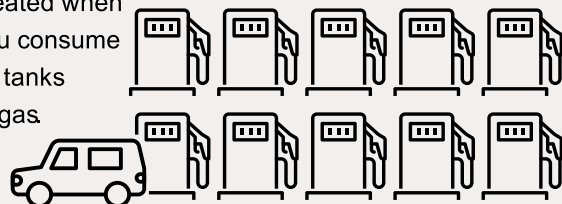
It's also the amount of electricity a typical home uses in 10 days.



WHAT IS A CARBON DIOXIDE EQUIVALENT?

Greenhouse gas emissions are measured in tonnes of carbon dioxide equivalents or tonnes of CO₂e. A carbon dioxide equivalent is a way of expressing any given greenhouse gas as a functionally equivalent amount of carbon dioxide (CO₂).

1 tonne CO₂e is created when you consume 10 tanks of gas.



The 2023 GHG emissions inventory breaks down as follows:

Residential Buildings: 44% of community GHG emissions come from heating, cooling, and powering of residential buildings. The majority of these GHG emissions are from the consumption of heating oil and generation of consumed electricity with the remainder coming from propane, natural gas, and wood.

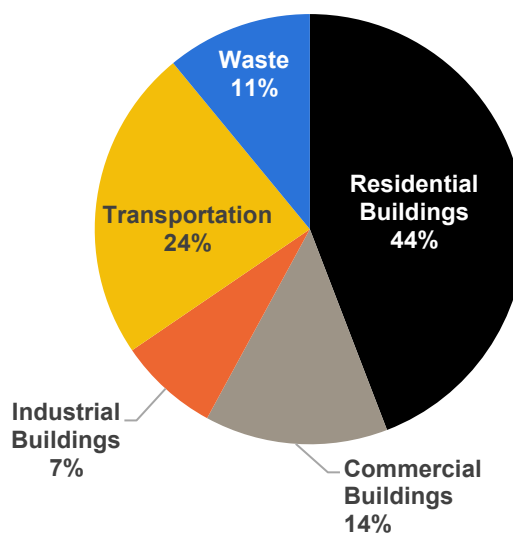
Commercial Buildings: 14% of community GHG emissions come from heating, cooling, and powering commercial buildings. The majority of these GHG emissions are from the consumption of natural gas and generation of consumed electricity.

Industrial Buildings: The Municipality encompasses a large area and a variety of land uses and industries: agriculture (both small and large), mining, forestry, manufacturing, renewable energy generation, offices, retail, and tourism are included in this category. For the 2023 reporting year, industry buildings accounted for 7% of community GHG emissions.

Transportation: 24% of GHG emissions come from using fossil fuels in on-road, off-road and waterborne vehicles. Approximately 98% of these transportation GHG emissions are related to on-road vehicle fuel consumption which is directly related to moving people and goods in the community.

Waste: Waste does not directly consume energy but when deposited into landfills, composted, or treated (like wastewater), the organic materials can decompose and release methane, which is a potent greenhouse gas. For the 2023 reporting year, the Municipality's waste contributed approximately 11% to the community's overall GHG emissions.

The Municipality has set the year 2023 as the base reporting year. This is the year that the Municipality has established to measure its GHG reduction targets against.



2.5 Energy Consumption in Our Municipality

Energy consumption is a major activity that generates GHG emissions. Transportation accounts for one third of the energy consumed in 2023, with residential demand accounting for close to half of total energy. Commercial and industrial energy demands represent the final 20% of total energy in 2023 (Figure 2).

Changes in energy use and emissions are not equal because of the different emissions intensities of the energy sources. For example, building-related GHG emissions come primarily from generation of the electricity consumed and burning heating oil for heating (approximately 23%). Other secondary building heating energy sources are much smaller contributors to the community GHG emissions profile and include natural gas, propane and wood use for heating (Figure 3). The transportation sector produces GHGs mainly by burning gasoline in vehicles accounting for 78% of these GHG emissions. Other sources of transportation GHG emissions, like diesel, propane and electricity accounted for the remaining 22%.

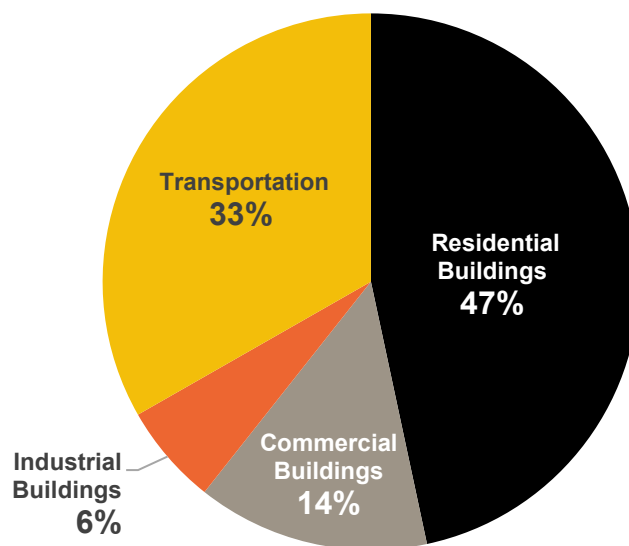


Figure 2. Energy Consumption by Sector

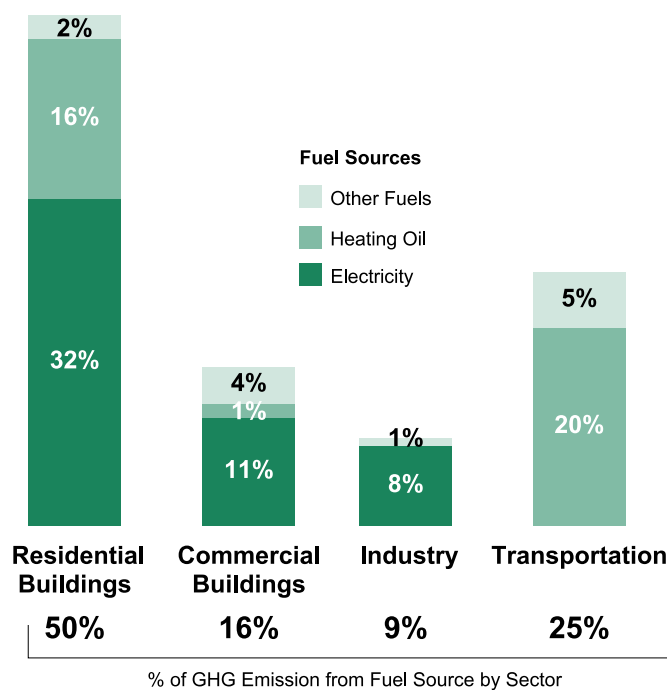


Figure 3. GHG Emissions from Fuel Sources

2.6 Business As Usual Forecast of GHG Emissions

In communities where population growth is anticipated, there is typically a corresponding increase in energy demand and GHG emissions, as well as removal of natural assets as the community grows. However, the Municipality of the County of Cumberland, like many others, faces a different scenario where population projections indicate stagnation or even some decline in certain areas. While this trend could potentially lead to a reduction in future GHG emissions, it also poses challenges to the community's quality of life and community cohesion.

The Municipality's 2018 Municipal Planning Strategy acknowledges the importance of addressing these demographic shifts. It emphasizes the need to balance the changing population dynamics with efforts to maintain strong community bonds. Additionally, the strategy highlights the necessity of reducing energy consumption and GHG emissions, while also adapting to the impacts of climate change. This comprehensive approach aims to keep the community resilient, sustainable, and cohesive in the face of evolving environmental and demographic challenges. In 2021, the Municipality's population trend shifted from decline to growth. However, given the uncertainty around whether this change is temporary or indicates a longer-term upward trend, it has been assumed that the population would incrementally increase by 0.1% annually moving forward.

Based on changing demographics, as well as the planned reduction of the carbon footprint of the electrical grid in Nova Scotia, and policies, like phasing out of the sale of light duty fossil fuel powered vehicles in 2035, the projected GHG emissions are anticipated to decline by 44% by 2050 (Figure 4). While this is a positive outcome, more can be done to reduce fuel, waste and industrial GHG emissions, and additional actions will be needed to achieve net-zero.

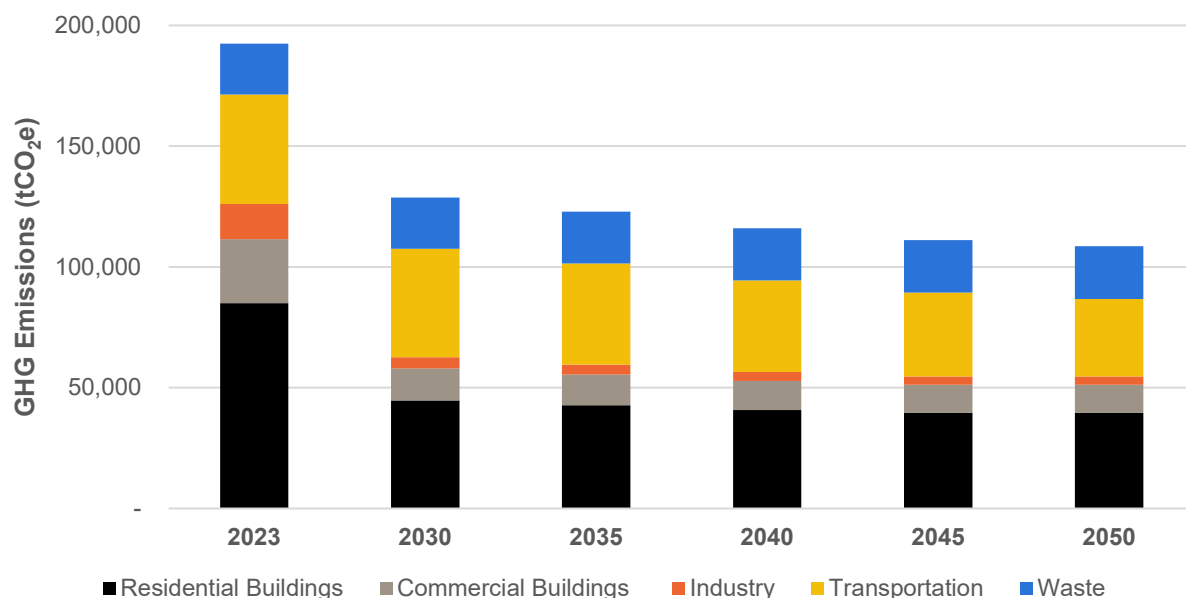


Figure 4. Business As Usual Forecast of GHG Emissions in The Municipality of Cumberland

3 Defining The Municipality of Cumberland's Future

The Municipality aims to be a community where residents love to live, work, and play. Defining a long-term vision for the Municipality is crucial for making informed decisions about planning, development, and programming. This vision not only targets a 2050 GHG reduction but also broader community goals.

3.1 CEEP Vision

Looking towards the future, it is essential to articulate a clear and inspiring vision for the community. The following vision will guide CEEP efforts and decisions, ensuring a focus on achieving the Municipality's GHG reduction targets:

We envision a future where sustainable energy practices and reduced GHG emissions are at the forefront of our community's growth. By embracing innovative technologies and promoting eco-friendly initiatives, we aim to create a healthier environment for our residents and visitors, ensuring a vibrant and resilient community for generations to come.

The Municipality's role in realizing this vision involves catalyzing community action using available tools to promote and support energy efficiency, conservation, and resilience to climate change. As part of this CEEP, the following GHG reduction targets have been set:

45% reduction in GHG emissions from 2023 levels by 2030
100% reduction in GHG emissions from 2023 levels by 2050 (Net-Zero)

Our 2050 target involves getting to net-zero which means that our releases of GHG emissions into our atmosphere from our daily activities, like powering our houses and driving our cars to school and work, are balanced by the removal of GHGs from the atmosphere over the same timeframe. For example, the planting of trees and protecting and conserving greenspace can increase how much GHG emissions are sequestered from the atmosphere.

Strategies and actions in the CEEP presented herein are based on best practices from local and regional governments worldwide. These were developed through meetings with the CEEP steering committee, community organizations, the public, and municipal staff, as well as from information captures via a community survey. The final actions reflect the most supported and achievable goals, considering current market trends like the rise in the number of electric vehicles on the roads and renewable power production.

The Municipality's role in this vision includes helping the community manage energy, reduce consumption, switch to low-carbon fuels, modernize land use planning practices, and minimize contributions to climate change. This involves acting as motivators, collaborators, facilitators, partners, planners, instigators, educators, and leaders. Success requires the involvement and collaboration of residents, businesses, community organizations, and institutions.

3.2 CEEP Goal Statements

Strategic short-, medium- and long-term strategies and actions are outlined in five thematic areas, and encompass a wide range of approaches, from educational campaigns, to changes in bylaws and land use plans, to identifying new sources of potential funding to support implementation. These strategies will put the Municipality on a path towards achieving its GHG reduction targets.

The following CEEP goal statements are being presented in this CEEP to ensure that the Municipality remains focused and accountable in its efforts to achieve energy efficiency reduce GHG emissions and increase climate resilience.

Table 2. CEEP Goal Statements

CEEP Area	Goal Statements
Buildings & Energy	• New buildings achieve near net zero GHG emissions over their lifespan. • Existing buildings are upgraded to be highly energy efficient. • The Municipality has lowered building GHG emissions by using local renewable energy sources.
Land-Use & Transportation	• Future municipal planning and council decisions align with GHG reduction and energy efficiency goals • Vehicle travel and GHG emissions are reduced through smart land use and affordable active transportation. • The number of electric vehicles (EV) and alternative fuel vehicles has increased, reducing conventional fuel vehicles.
Waste & Materials	• The Municipality's portion of landfill GHG emissions have declined through promotion of the 7 Rs (Rethink, Refuse, Reduce, Reuse, Repair, Regift, Recycle) of waste management. • The Municipality has reduced its portion of GHG emissions from wastewater by reducing the volume of stormwater inflow.
Local Economy & Outreach	• Local businesses, institutions, and community organizations are supported in their transition towards a low carbon economy. • Residents and businesses are informed and motivated to reduce energy use, cut GHG emissions, and increase resilience.
Natural Areas & Parks	• Natural areas and parks are expanded and improved to boost biodiversity and to capture carbon.
Municipal Leadership	• The Municipality is a leader by integrating GHG emissions and climate change considerations into all decisions. • By 2040, all municipal facilities are powered 100% by renewable energy. • By 2040, 80% of the municipal fleet is electrified or renewably powered. • Municipal employees are empowered to take proactive action on climate change.

3.3 Many Pathways to Net Zero GHG Emissions 2050

Many factors will influence the behavior and actions of the Municipality over the next 30+years – and ultimately the trajectory of its GHG emissions. However, to reduce generated GHG emissions to zero by 2050, the path is clear in what needs to be done. By 2050, electricity will be 100% renewable, and most homes and businesses will be retrofitted to use less energy, many will have rooftop solar, and all heating will be produced by clean electricity, renewable natural gas, or green/blue hydrogen. By mid-century, new buildings (all; residential, commercial, and industrial) will be constructed to be net zero GHG emissions. By 2050, many more residents will choose active modes of transportation and almost all cars on the road will be electric or alternative fuels. The landfills that accept the Municipality's waste will strive to capture their methane emissions for beneficial re-use following Provincial and Federal regulations, and the Provincial waste system will follow a circular process with most waste streams recovered and reused with minimal quantities entering landfills. Without any new technologies, any remaining energy, fuel and waste related GHG emissions will be offset because the Municipality has continued to protect and worked to improve the condition of its natural areas and forests which store and sequester GHG emissions. The achievement of net zero GHG emissions is ambitious and will not be without challenges – achieving deep reductions in GHG emissions will require strong leadership and collaborative action by the Municipality, senior levels of government and local businesses and organizations, as well as lifestyle changes by all the residents and visitors to the area.

While this plan sets a clear direction for the Municipality to reduce GHG emissions, it is important to recognize that the implementation of this plan will not result in net zero GHG emissions by itself but will put the Municipality on a pathway towards it (Figure 5). As new technologies and solutions are developed, additional actions will be necessary to achieve net zero emissions. Based on the current trajectory, the implementation of the plan could result in an 80% reduction in GHG reductions (below 2023 levels) by 2050.

Although specific actions are defined in this CEEP, it is anticipated that they will be prioritized and implemented opportunistically (e.g., certain circumstances may accelerate a particular action, like new funding becoming available) and will be regularly reviewed and updated. Any actions with financial implications will be reviewed and approved by senior staff and Council prior to being undertaken.

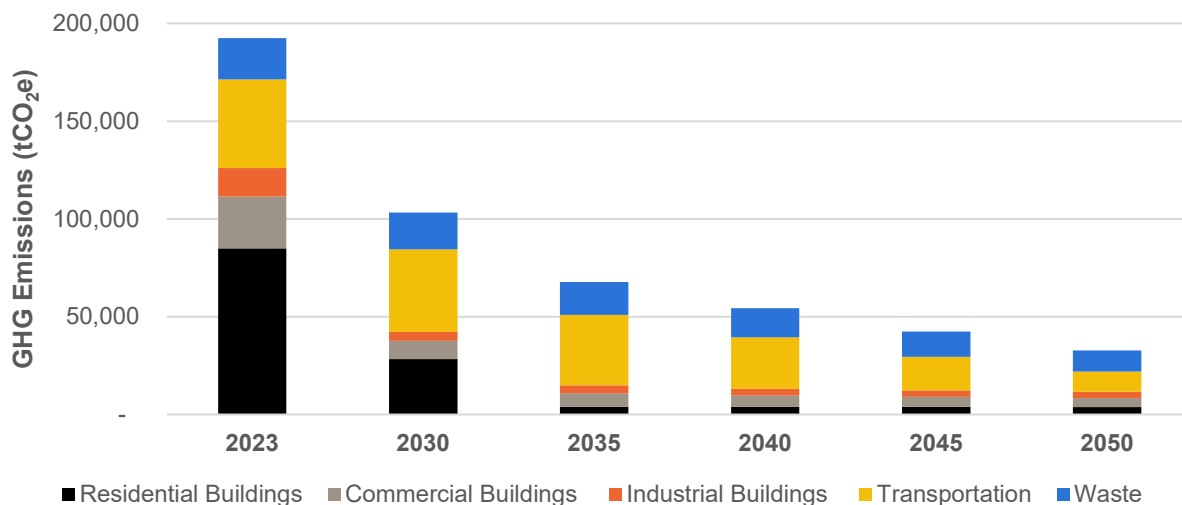


Figure 5. Projected GHG Emissions following CEEP

4 CEEP Implementation Guide

The following section presents an implementation guide which supports the remainder of the CEEP.

4.1 Potential GHG Impact

The GHG reduction potential of the different actions is indicated by the icons (uppercase C) shown below. These attributes and/or estimates represent the approximate magnitude of GHG reductions if an action is fully implemented. As several actions are based upon other actions, the estimated GHG reduction potential of all actions, denoted using the legend below, should not be treated as cumulative. Rather, these are just indicators of the total possible GHG reductions as it relates to the action described.

 : Lays the foundation for other efforts, though by itself may not reduce GHG emissions measurably

 : Reduces total annual GHG emissions by 0 to 2,500 tonnes CO₂e.

 : Reduces total annual GHG emissions by 2,500 to 10,000 tonnes CO₂e.

 : Reduces total annual GHG emissions by more than 10,000 tonnes CO₂e.

4.2 Resources Required

This CEEP will require funding and resource support. The following indicators are used to indicate the level of resources and funding that may be required to support the actions.

 : \$0–\$25,000

 : \$25,000–\$100,000

 : Over \$100,000

 : Over \$1,000,000

It should be noted that while staff time is identified for some actions, in some cases the action may also indirectly require financial resources.

4.3 Timelines

This CEEP outlines actions to be implemented over the next five years. Some of the actions are underway whereas others will require time to plan and implement.

The following indicators are used to indicate the timing / phase to which the action should be implemented.

 : Within 1 Year

 : 1–3 Years

 : 3–5 Years

4.4 Department Leads

To assist with implementation and accountability, lead departments will be assigned to each of the actions identified. The lead department is

responsible for initiating the implementation of the action and reporting on progress. The lead departments will be assigned based on recommendations from the Senior Advisor, Director, and Management Team.

5 Buildings & Energy

Buildings are the Municipality's primary source of GHG emissions accounting for 65% of total community GHG emissions. Currently, over half of the dwellings in the Municipality of the County of Cumberland are single-detached homes, accounting for approximately 76% of the housing stock. The next most prevalent dwelling type is low-rise apartment buildings, comprising about 10% of the housing stock. The remaining dwellings are a mix of semi-detached homes, row houses, and mobile homes, though these dwelling types make up smaller percentages of the total housing stock.⁴

The energy mix in the Municipality's building stock is varied, with a blend of electricity, wood, and heating oil as energy sources (Figure 6). By current standards, both electric, oil, and baseboard heating systems are expensive to operate, and inefficient consumers of energy and oil heating systems are significant emitters of GHG emissions. Generation of the electricity that is used in the Municipality's homes is one of the most significant contributors to emissions and it is one of the hardest emissions sources to address.

⁴ Profile table, Census Profile, 2021 Census of Population - Cumberland, County (CTY) [Census division], Nova Scotia

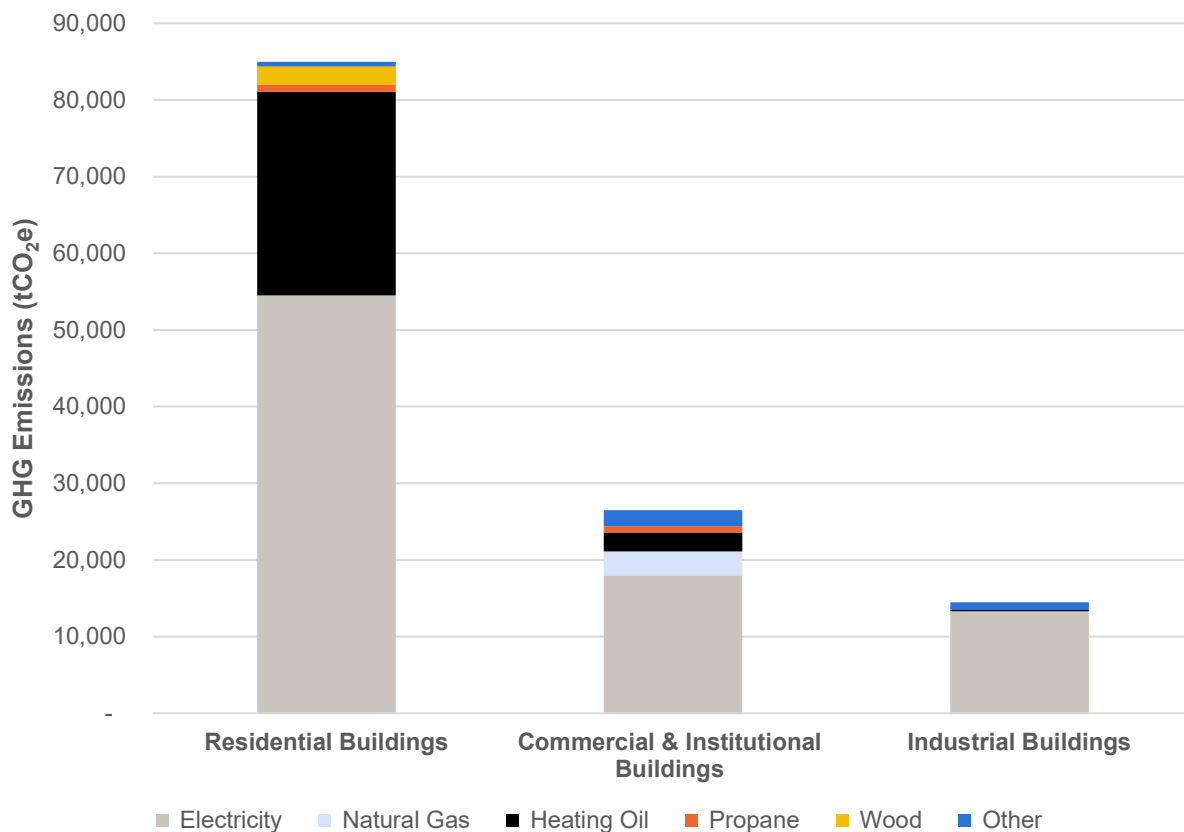


Figure 6. GHG Contribution by Building Type and Heating Source

To tackle these building related challenges and to improve energy efficiency, the Municipality will establish the following goals:

- New buildings will achieve near net zero GHG emissions over their lifespan.
- Existing buildings in the Municipality will be upgraded to be highly energy efficient.
- The Municipality will lower building GHG emissions by using local renewable energy sources.

5.1 Building Goal 1: New Buildings Achieve Near Net Zero GHG Emissions Over Their Lifespan

With an average lifespan of over 50 years, energy intensive new buildings can ‘lock-in’ substantial GHG emissions, so new construction is an important consideration in reducing GHG emissions and energy consumption. New building energy consumption can be reduced through passive design strategies which better insulate and seal the building envelope to reduce the energy required to heat and cool, use more efficient building equipment and appliances and use renewable energy to power, heat and cool. To truly achieve net zero buildings, it will be essential for designers and builders to go beyond the minimum requirements set by current building codes. This means adopting best practices in energy efficiency, integrating smart building technologies, and prioritizing the use of low-carbon and renewable materials. To

encourage the construction of net zero or nearly net zero buildings, the Municipality will implement the following actions.

Summary of Actions

Action	Impact	Resource	Time Frame
Update policy to require that all new Municipal buildings meet net-zero standards or are as close to net-zero as available funding will allow. This program will ensure that new municipal constructions meet stringent energy efficiency and sustainability criteria, contributing to the Municipality's overall carbon reduction goals.	 	Staff Time	
Implement mandatory building energy labelling on new builds to inform the public about energy performance. This initiative will provide transparency about the energy efficiency of new buildings, helping consumers make informed decisions and encouraging builders to prioritize energy performance.	 		
Provide municipal staff with training in net-zero building and renewable energy systems. This training will equip staff with the knowledge and skills needed to support and implement sustainable building practices and renewable energy projects.			
Encourage developers to construct a showcase ultra-energy-efficient (net zero) building for public experience, such as a new municipal center. This project will serve as a model for sustainable construction, demonstrating the benefits and feasibility of net-zero buildings to the community.		Staff Time	
Conduct workshops on sustainable construction to educate and engage stakeholders, advancing green building policies and programs. These workshops will foster collaboration and knowledge sharing among builders, developers, and policymakers, promoting the adoption of green building practices.		Staff Time	

5.2 Building Goal

By 2030, the Municipality's current annual energy retrofit rate at least doubles and energy and GHG improvements become a central part of every building renewal. Achieving this goal requires sharing information on retrofit best practices, sharing lessons learned, and actively encouraging the industry to incorporate renewable energy systems and net-zero / zero-emission buildings. Additionally, continuous monitoring and optimization of building performance, along with occupant education and engagement, are crucial to ensure that buildings operate as intended and maintain energy efficiency over time. To support this important shift, the Municipality will implement the following actions.

Summary of Actions

Action	Impact	Resource	Time Frame
Enhance the existing Property Assessed Clean Energy (PACE) program to boost participation. This can be achieved by lowering interest rates, extending the finance period, and identifying trusted contractors for the work. Participating in NRCan's PACE Improvement Program can help achieve this action.		Staff Time 	
Develop a comprehensive inventory of heating oil consumption within the Municipality to understand the current usage patterns and identify key areas for intervention. Utilize the PACE program to assist homeowners in transitioning from heating oil to more sustainable options, such as heat pumps with appropriate backup systems.		Staff Time 	
Evaluate energy performance and retrofit programs and strategies available for rental housing. The goal is to maintain affordability while improving energy performance, ensuring that rental properties are both cost-effective and energy efficient.		Staff Time 	
Launch a pilot residential energy labeling program at the time of sale. This program will require sellers to provide potential buyers with information about the energy performance of homes, promoting transparency and encouraging energy-efficient choices.		Staff Time 	

Action	Impact	Resource	Time Frame
Mobilize community leaders and organizations to encourage neighborhood residents to sign up for energy efficiency upgrades. These groups will educate residents, inform them about financing options, and assist with applications. Successful programs can bundle multiple homes and businesses to secure better deals and benefits, such as local hiring and reduced costs.	C	Staff Time	
Disseminate information on existing programs and opportunities around alternative and renewable energy through the building permit process. As part of this, examine the potential benefits, barriers, and return on investment of small-scale renewables like solar PV to determine the feasibility and advantages of adopting these systems. This will ensure that builders and property owners are aware of available resources and incentives for incorporating renewable energy solutions	C	Staff Time	

5.3 Building Goal 3: The Municipality has lowered building GHG emissions by using local renewable energy sources

The Municipality has a unique opportunity to expand its use of geothermal energy, thanks to the existing mine water geothermal resource in Springhill. The former coal mines which have filled with water that is naturally heated by the earth's crust, provide a significant source of geothermal energy that can be harnessed to displace heating oil and natural gas thereby significantly reducing GHG emissions. Integrating this renewable option with solar panels on buildings or at a large array scale is a pathway to net zero GHG emissions. Furthermore, developing more localized energy systems fed by renewable supply options helps to not only reduce the Municipality's GHG emissions, but can also produce additional co-benefits, such as improved resilience against fluctuating energy supply and prices, and local economic development opportunities because of keeping energy spending local and creating new jobs. To support the achievement of this goal, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Encourage the evaluation of waste heat recovery from large refrigeration systems in new developments. This includes systems in arenas and grocery stores, ensuring that potential energy savings from waste heat recovery are considered in the planning stages.		 Staff Time	
Conduct an alternative energy pre-feasibility study to identify opportunities and specific zones in the community for geothermal, microgrids, waste heat recovery, and large solar PV arrays. This study will also investigate potential partnerships, financing options, and governance models to support these initiatives.		 Staff Time	
Investigate financial business case and legal strategies for creating municipally owned renewable energy utilities. This exploration will focus on the legal frameworks and potential benefits of establishing municipally owned utilities to manage and distribute renewable energy. Additionally, it will evaluate the financial business case, including potential cost savings, revenue generation, and economic benefits for the community		 Staff Time	

6 Land Use & Transportation

Land use planning is one of the most powerful tools available to regional and municipal governments to reduce energy consumption and GHG emissions and at the same time increase the resilience to the effects of climate change. The design and staging of communities can either increase vulnerabilities to climate change, such as building a development in or near a flood plain or reduce them by implementing measures like reducing impermeable surfaces, preserving and enhancing natural areas, requiring the construction of net zero buildings and incorporating renewable energy sources, like geothermal and district energy systems. The design of our communities also affects the distances needed to be travelled and how people get around, either in vehicles, public transit or via alternative transportation modes (e.g., cycling and walking trails). These choices impact our community GHG emissions.

With 24% of our community GHG emissions coming from transportation, there is a significant opportunity to reduce GHG emissions through the increased adoption of EVs and alternative fuel vehicles, reducing conventional fuel vehicles, and fewer single-occupancy trips through the increase of carpooling, walking, and cycling. In support of reducing GHG emissions from land-use and transportation, the following land-use and transportation related goals will be established:

- Future municipal planning and council decisions will align with GHG reduction and energy efficiency goals
- Vehicular travel and GHG emissions will be reduced through smart land use and affordable active transportation.
- The number of electric vehicles (EV) and alternative fuel vehicles will increase, reducing the number of conventional fuel vehicles in use.

6.1 Land Use & Transportation Goal 1: Future Municipal Planning and Council Decisions Align with GHG Reduction and Energy Efficiency Goals

To plan for the future, it is crucial that municipal planning and council decisions align with the long-term goals for reducing GHG emissions from land use and improving energy efficiency of buildings and transportation systems. With this context and to progress towards the Municipality's GHG reduction targets, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Incorporate a climate lens into the future Municipal Planning Strategy and Land Use bylaw review process. Promote sustainable urban development by integrating net-zero stormwater management, street tree planting, building orientations, and the planning, design, and development of near/net zero buildings and neighborhoods into the Municipal Planning Strategy and Land Use bylaw review process.		Staff Time	
Develop a strategic approach for the subdivision parkland dedication process to ensure that fees obtained are allocated towards efforts to protect or improve natural areas. Ensure that fees from the parkland dedication process are strategically allocated to protect or improve natural areas, enhancing and preserving green spaces within the community.		Staff Time	
Establish a local food policy and supporting programs that promote a local, sustainable food system. Promote a local, sustainable food system by establishing a local food policy and supporting programs. Work with partners to identify land for urban farms and community gardens, develop educational programs to encourage local food growing, and collaborate with neighboring municipalities, local businesses, farmers, and the chamber of commerce to implement a "buy local" campaign.		 Staff Time	

6.2 Land Use & Transportation Goal 2: Vehicular Travel and GHG Emissions Are Reduced Through Smart Land Use and Affordable Active Transportation

To encourage active transportation (AT) behaviors that align with a travel planning hierarchy (Figure 7), the Municipality will undertake several key actions. These include supporting transit (e.g., Cumberland County Transportation Services, CCTS) to provide reliable and efficient alternatives to car travel, implementing Complete Streets principles to ensure our roads are safe and accessible for all users, promoting AT through outreach, and investing in active transportation infrastructure such as sidewalks, bike lanes, and pedestrian pathways. By doing so, the Municipality will aim to create a more connected and sustainable community where walking and cycling are convenient and attractive options. These efforts will not only reduce traffic congestion and GHG emissions but also promote healthier lifestyles and improve the overall quality of life in the Municipality. Partnering with local health boards and sports organizations can help to enhance and promote AT campaigns and efforts.

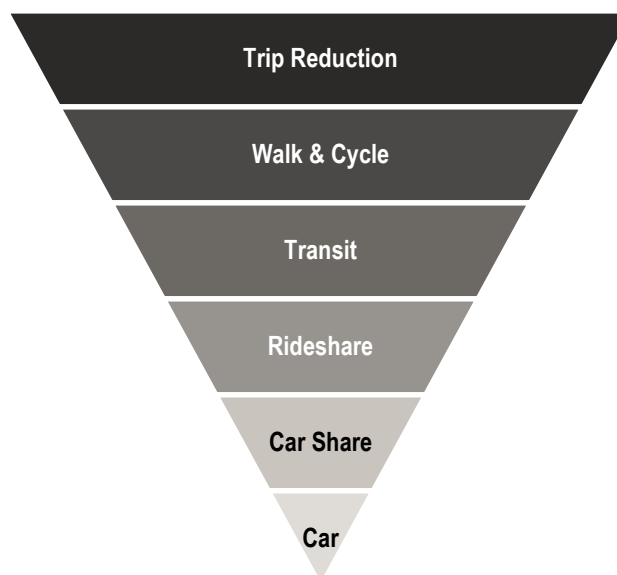


Figure 7. Travel planning hierarchy

Summary of Actions

Action	Impact	Resource	Time Frame
Integrate Complete Streets principles in transportation, infrastructure, and urban design plans and processes.		Staff Time	
Implement investment projects for sidewalks, pedestrian paths, transit, roadways, and bikeways to encourage active transportation, focusing on high-impact areas like urban centers and school zones. Align these with scheduled infrastructure upgrades for maximum efficiency.		 Staff Time	As Opportunities Present Themselves

Action	Impact	Resource	Time Frame
Explore ways to integrate active transportation planning and investments into the Municipality's regular operational budget.		Staff Time	
Provide bicycle safety programs for drivers and riders, covering laws, riding protocols, routes, safety tips, and emergency maneuvers. Support initiatives for sustainable commuting patterns in workplaces and schools. Improve safety for all road users by increasing awareness and understanding of cycling laws and best practices. Reduce traffic congestion and environmental impact, while promoting healthier lifestyles.		Staff Time	
Encourage retailers to offer "carbon-free delivery" as an option, allowing customers to have their online purchases delivered directly to their door using all-electric, or alternative fuel, vehicles		Staff Time	
Explore and support micro-mobility initiatives (e.g., bike share). Provide flexible, low-cost transportation solutions that can complement public transit and reduce car use.		Staff Time	
Continue funding Cumberland County Transportation Services. Ensure the availability and reliability of essential transportation services for the community. Consider increasing support for EV.	 	 Staff Time	

6.3 Land Use & Transportation Goal 3: Increase The Number of Electric Vehicles (EVs) and Alternative Fuel Vehicles, Reducing Conventional Fuel Vehicles

While no single measure can reduce transportation GHG emissions to the level required to minimize the impacts of a changing climate, a suite of strategies and actions can help in a big way. Reducing the number and length of vehicle trips, increasing the number of people moved per vehicle, and increasing the number of zero emission vehicles on the roads will significantly reduce the climate impact of the Municipality's transportation system. This can be done by expanding the active transportation network; changing land use planning so that the development of complete and compact communities is encouraged; and by providing low carbon infrastructure, like electric vehicle charging stations (See Appendix "A" for details on the Municipality's EV Charging Network Plan).

Summary of Actions

Action	Impact	Resource	Time Frame	Lead
Expand public EV charging stations. Public EV charging stations are installed in critical locations in the Municipality (see Appendix A for details on the proposed charging network plan. The first step will be to support the plan with a technical and financial analysis.)		 Staff Time		
Explore bylaw opportunities that mandate EV-ready parking in new multi-unit residential, commercial or industrial developments. This will support the growing adoption of electric vehicles (EVs) by ensuring accessible charging infrastructure and future-proofing new residential and employment areas.		Staff Time		
Explore the piloting of a car share program, including EV-sharing options. Assess the feasibility and benefits of car sharing, with a focus on integrating electric vehicles to promote sustainable transportation options.		 Staff Time		

7 Waste & Materials

Waste constitutes approximately 7% of the community's GHG emissions. This includes the treatment of wastewater, solid waste, and the composting of organic waste materials. While these systems are not a major contributor to community GHG emissions, they are critical pieces of infrastructure that consume energy and release GHG emissions.

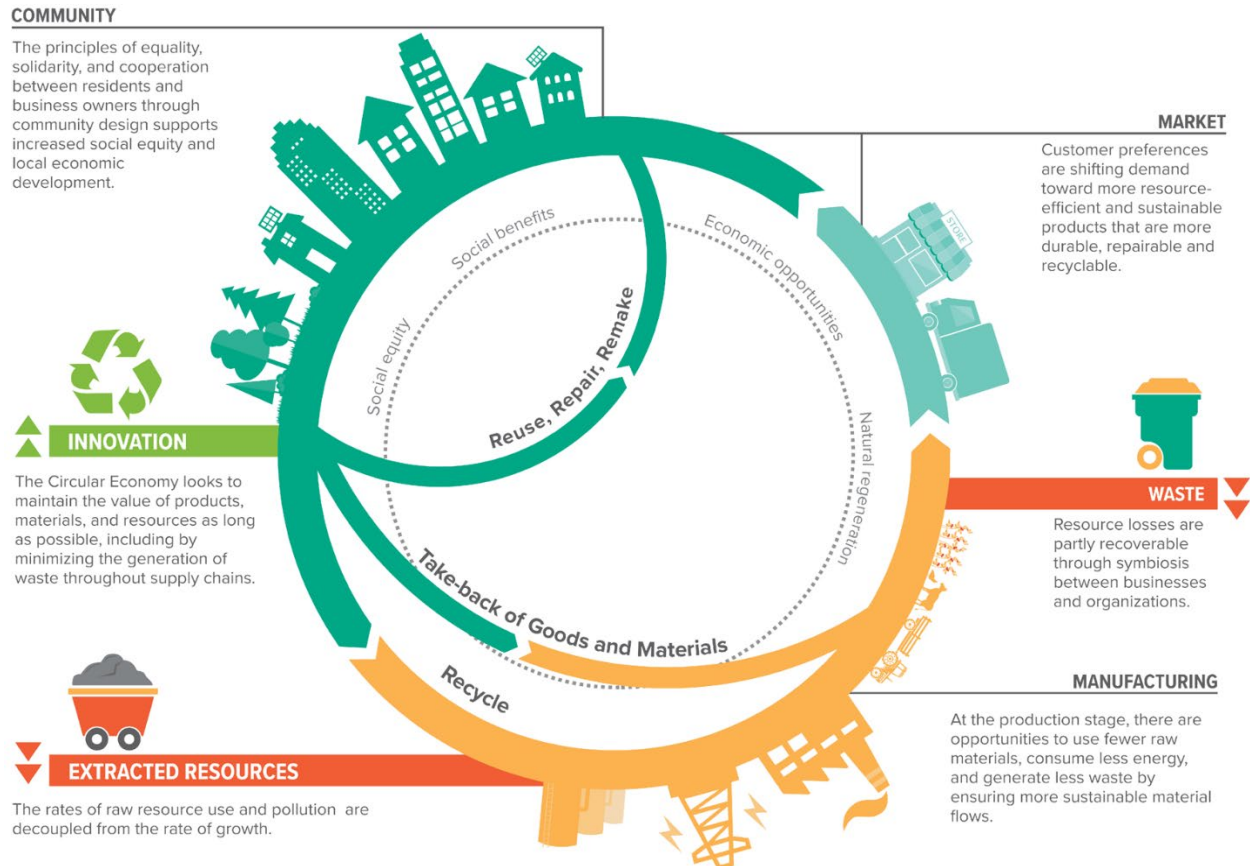
Reducing the amount of solid waste created is a critical first step to improving the efficiency of our circular economy, while reducing the burden on local landfills, and reducing GHG emissions throughout a product's lifecycle from extraction to disposal. This entails designing or utilizing discarded materials—such as food waste, electronics, and clothing—as inputs for other processes, embracing the principles of the circular economy (see text box). For instance, companies are recycling old clothes into new ones or repurposing them as stuffing for new products. We are already encouraging the reuse and repair of materials and products that would otherwise enter the landfill, and for unrecoverable products, to provide greater access and convenience so that they can be recycled. Organic waste composting at home and the reduction of food waste are also important ways that that can also reduce GHG emissions.

To reduce waste related GHG emissions, the following goals will be established:

- The Municipality's portion of landfill GHG emissions will decline through the promotion of the 7 Rs of waste management.
- The Municipality will reduce its portion of wastewater GHG emissions by reducing the volume of stormwater inflow.

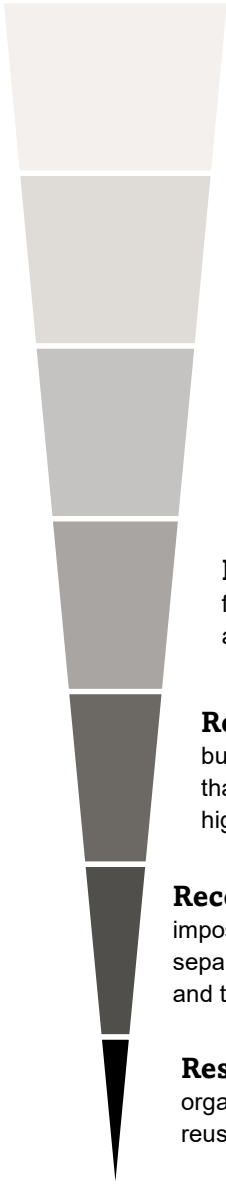
What is the Circular Economy?

Instead of the “take, make and dispose” model typically used for producing goods, a circular economy approach reduces waste and avoids pollution by maximizing design and use of materials. It is a model that embodies principles such as “cradle to cradle” and biomimicry to reduce or avoid the creation of waste. Reducing production materials and waste materials is now a financial benefit.



7.1 Waste & Materials Goal 1: The Municipality's Portion of Landfill GHG Emissions Have Declined Through the Promotion of the 7 Rs of Waste Management

Reducing the amount of waste created is a critical first step to reduce the burden on the landfill and to reduce GHG emissions throughout a product's lifecycle from extraction to disposal. By reducing and eliminating waste, GHG emissions can be avoided not only in the landfill, but also through a product's life cycle. This can be done by employing the 7 Rs of waste management which include:



Rethink & Reevaluate – Current purchasing habits and systems that encourage consumption create much of the waste that needs to be reduced. The first step is to examine what processes, policies, and actions can be implemented / changed immediately to reduce waste.

Regulate & Standardize – Waste suffers from the free rider effect where someone else pays environmentally, economically, or socially, whilst others do not. When waste is sent to local landfills, it is buried and left for future generations to contend with. An effective method to addressing this challenge is to implement supportive waste reduction regulations like source waste separation requirements, recycling standards, etc.

Reduce – Reducing end use waste seems is very important, but so is reducing waste throughout the supply chain. This means minimizing the ecological footprint of goods and services by choosing products that last longer, can be repaired, reused, recycled, or sold. It means prioritizing the use of edible and local foods for humans and animals as well.

Reuse – The goal here is to use products that retain their value, usefulness, and function. It means using products that have been designed for disassembly and reuse and repairing products when they have broken down.

Recycle/Compost/Repurpose – Many products sold on the market are disposable, but not recyclable/reusable; they are meant to be discarded. This means purchasing goods that can be upcycled or recycled and incent the use of diversion systems that allow for the highest and best use of materials, including organics.

Recover – Current waste systems co-mingle, or mix, our waste streams, making it nearly impossible to recover some of the materials thrown out. Changing this means prioritizing the separation of waste streams so that as many materials can be recovered as much as possible and thus, avoid the use of virgin materials in new products (which results in GHG emissions).

Residuals Management – Like any Can, Do, Check, Act process, waste management organizations will need to continue examining what residual remains and seek opportunities to reuse and prevent further waste.

The following actions seek to reduce waste from entering the landfill and reducing waste related GHG emissions:

Summary of Actions

Action	Impact	Resource	Time Frame
Enforce waste separation into the required four streams. Focus on the Industrial, Commercial, and Institutional (ICI) sectors and multi-residential housing to ensure compliance and improve waste management efficiency.	 	Staff Time	
Support non-profit, private, and charity sectors in diverting food from the pre-waste stream for redistribution to food security organizations. This initiative will help reduce food waste and support those in need.		Staff Time	
Increase recycling options at public spaces and events. Make it easier for people to recycle and reduce the amount of waste sent to landfills.		Staff Time 	
Launch community-based social marketing (CBSM) campaigns focused on waste reduction. Address issues like junk mail, smart purchasing, and reducing contamination in recycling to encourage more sustainable behaviors.		Staff Time 	
Promote product exchange and resale networks. Facilitate the reuse of items and reduce the demand for new products.		Staff Time	
Expand at-home composting educational programs. Encourage residents to compost organic waste, reducing the amount of waste sent to landfills and enriching soil quality.		Staff Time 	

7.2 Waste & Materials Goal 2: The Municipality Has Reduced Its Portion of Wastewater GHG Emissions by Reducing the Volume of Stormwater Inflow

To reduce GHG emissions associated with wastewater, the Municipality will, as opportunities present themselves, implement actions to reduce the water being directed to water treatment facilities, through reducing stormwater that enters the treatment system, and enhancing the energy efficiency of the treatment process. This can be done by implementing the following actions.

Summary of Actions

Action	Impact	Resource	Time Frame
Develop and implement stormwater redirection projects. Retrofit existing systems to divert stormwater to natural infiltration areas instead of treatment plants, and upgrade combined stormwater/sewage systems to separate streams.		 Staff Time	As Opportunities Present Themselves Through Capital Projects
Install rainwater harvesting systems for irrigation and low-flow fixtures in municipal buildings. Reduce water consumption and promote sustainable water use practices within the community.		 Staff Time	As Opportunities Present Themselves
Create and maintain rain gardens throughout community areas using native plants. Update the Land Use By-Law to recommend or require rain gardens in new developments to enhance stormwater management and support local biodiversity.		 Staff Time	As Opportunities Present Themselves
Develop and distribute public materials to encourage the use of rain barrels or cisterns for non-potable uses. Educate the community on water conservation techniques and provide practical tools for reducing potable water use.		Staff Time	
Develop and execute a plan to properly size wastewater pumps. Ensure the system operates more efficiently by reducing energy consumption and maintenance costs while improving overall performance.		 Staff Time	

8 Local Economy & Outreach

The pursuit of economic growth drives land use and development decisions, transportation planning and road building, and energy demand - all systems that directly affect energy use and GHG emissions. The objective of this goal area is to identify and explore opportunities to support the development of the green economy (e.g., local businesses that offer green energy technologies and services, energy audits, energy efficient new homes and renovations, alternative transportation options, and other green products and services) and support all businesses in implementing practices that benefit the long-term sustainability of the community, as well as the economic bottom line of the business (e.g., energy efficiency in commercial buildings, more fuel efficient commercial vehicle fleets). The process of economic transformation can be undertaken using a variety of voluntary and involuntary measures, but in the early stages the focus is on helping individuals, landowners, and businesses to overcome barriers. In many cases these barriers are knowledge-based and may be overcome through outreach and education efforts. In other cases, the barriers are financial and resource constraints at the level which could be mitigated by providing information on funding sources and programs like the PACE program currently available.

In support of this important outcome, the following goals will be established:

- Local businesses, institutions, and community organizations will be supported in their transition towards a low carbon economy.
- Residents and businesses will be informed and motivated to reduce energy use, cut GHG emissions, and increase resilience.

8.1 Local Economy & Outreach Goal 1: Local Businesses, Institutions, and Community Organizations Are Supported in Their Transition Towards a Low Carbon Economy

To support the transition towards a low carbon economy, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Develop a Green Business Program. Collaborate with partners like the Chamber of Commerce to create a program that highlights the Municipality's strengths and offers incentives and support for green initiatives. This would also involve working with the Chamber of Commerce to identify, catalogue, and profile local green businesses, showcasing their contributions to sustainability.	C	Staff Time	
Promote energy efficiency programs. Disseminate information on programs that support energy efficiency improvements in commercial buildings, encouraging businesses to adopt sustainable practices.	C	Staff Time	
Launch a Green Fleet Challenge. Develop a program or campaign to encourage and challenge local businesses to reduce emissions from their commercial fleet vehicles.	C	Staff Time	
Establish an annual environmental recognition program. Recognize and celebrate the efforts of businesses, institutions, and citizens who contribute to environmental sustainability.	C	Staff Time	
Promote commute reduction programs. Partner with local businesses and organizations to implement programs that reduce commuter trips, rideshare options, end-of-trip facilities, compressed or flexible work weeks, and telecommuting.	C	Staff Time	

8.2 Local Economy & Outreach Goal 2: Residents And Businesses Are Informed and Motivated to Reduce Energy Use, Cut GHG Emissions, and Increase Resilience

To realize tangible reductions in energy consumption and GHG emissions and sustain them over the long-term, a market transformation approach must be undertaken. This will require removing identified barriers to changing personal and operational behaviors to accelerate the adoption of all cost-effective energy efficiency and GHG reduction opportunities. The following actions will support this approach:

Summary of Actions

Action	Impact	Resource	Time Frame
Sponsor youth programs. Support local youth in sustainability leadership initiatives like the Sierra Youth Coalition's Youth Action Gatherings.	C	Staff Time	
Collaborate with non-profits. Partner with local non-profit organizations to create programs for school children that encourage energy conservation, waste reduction, and GHG emission reduction. Develop contests to reduce energy use, waste, and emissions at school and at home.	C	Staff Time	
Promote and update the community website. Keep the climate-focused webpage current to inform the community about progress and upcoming events.	C	Staff Time	

9 Natural Areas & Parks

Natural assets, such as urban trees, forests, wetlands, water bodies, and grasslands, contribute to the health, well-being, and sustainability of the Municipality. These assets also remove GHG emissions from the atmosphere, prevent flooding, and provide habitats for wildlife. The Municipality of the County of Cumberland encompasses over 400,000 ha⁵ of natural land, including forests, wetlands, grasslands, and croplands. Collectively, these natural assets sequester and store an estimated 488,000 tCO₂e annually. However, these natural assets are threatened from development, the forestry industry, wildfires, and climate change related stressors such as heat, drought, and insect infestations. As such, protection and enhancement of these assets are important in the fight against climate change.

While the Municipality seeks to achieve net-zero GHG emissions by 2050, there will be some residual GHG emissions that cannot be eliminated. These GHG emissions can be neutralized through the protection, conservation and rehabilitation of natural areas in the Municipality. To be able to recognize the benefits from these systems, and to properly account and manage them in such a manner to maximize their co-benefits, the following goal will be established:

- Natural areas and parks will be expanded and improved to boost biodiversity and to capture additional carbon.

9.1 Natural Areas & Parks Goal 1: Natural Areas and Parks Are Expanded and Improved to Boost Biodiversity and To Capture Additional Carbon

To maintain and expand natural areas and parks, the CEEP is proposing several key actions. These are presented below.

Summary of Actions

Action	Impact	Resource	Time Frame
Increase wilderness and wetland protection areas. Collaborate with non-profit organizations such as Nature Trust, Ducks Unlimited, Nature Conservancy, the Canadian Parks and Wilderness Society, and local environmental groups like Cumberland Wilderness to expand conservation efforts.		 Staff Time	

⁵ [Agriculture and Agri-Food Canada \(AAFC\) 2020 Land-Use Data.](#)

Action	Impact	Resource	Time Frame
Launch a tree sapling giveaway. Encourage the community to plant more trees at home by distributing saplings, focusing on species that absorb high quantities of GHG emissions (e.g., pine, oak, hemlocks). Partner with organizations like the Department of Natural Resources to provide the trees and roll out the program through community centers or schools.		 Staff Time	
Promote green infrastructure in land use planning and building design. Encourage the incorporation of green roofs, rain gardens, and bioswales in new developments and corridors to enhance sustainability.		Staff Time	
Implement land use or subdivision bylaw changes to require street trees in new subdivisions. Ensure developers plant street trees to improve urban greenery and environmental quality.		Staff Time	
Increase the number of trees planted on municipal properties. Enhance community green spaces by planting more trees throughout the Municipality.		 Staff Time	
Encourage sustainable agriculture and forestry practices. Promote methods that maintain biodiversity and natural carbon sinks, such as agroforestry and selective logging. Recognize and reward forestry and agricultural activities that follow sustainable practices.		 Staff Time	

10 Municipal Leadership

Reducing our municipal or corporate GHG emissions presents our opportunity to lead the community by example. The Municipality's 'corporate' GHG emissions, account for less than 2% of our 'community' GHG emissions which come from the operation and use of buildings and facilities, like service centers, recreation centers, streetlights, and water and wastewater pumping systems. These GHG emissions also include the operation of fleet and other equipment for the purposes for servicing and maintaining public spaces and infrastructure (Table 3).

Table 3. Summary of Corporate GHG Emissions (2023 Year)

Municipal Asset	GHG Emissions (tCO₂e/year)
Vehicle Fleet	296
Buildings & Facilities	3,533
Landfill Waste	65
Street Lights	411
Total Corporate GHG Emissions	4,305

By setting aggressive GHG emissions reductions, the Municipality can take an important leadership step in curbing its GHG emissions by strategically managing our own assets and processes while also reducing community GHG emissions and increasing resilience to the impacts of climate change. To be a leader, the Municipality must lead by example through our actions rather than just words and commitments.

To this end, the following goals will be established:

- The Municipality will be a leader by integrating GHG emissions and climate change considerations into the relevant decision-making process.
- By 2040, all municipal facilities will be powered 100% by renewable energy.⁶
- By 2040, 80% of the municipal fleet will be electrified or renewably powered.
- Municipal employees will be empowered to take proactive action on climate change.

⁶ This assumes that the technology is commercially available and has an acceptable return on investment.

10.1 Municipal Leadership Goal 1: The Municipality Is a Leader by Integrating GHG Emissions and Climate Change Considerations into Decisions

To work towards this important goal, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Integrate environmental considerations into the corporate procurement process. Ensure all procurement decisions reflect sustainability goals and minimize environmental impact.	C	\$ Staff Time	 3-5
Hire a Corporate/Community Energy Manager. This role will help implement the Community Energy and Emissions Plan (CEEP) and address barriers, leveraging grants and services like EfficiencyOne's RMEM service.	C	Staff Time \$	 1
Collaborate with nearby municipalities to establish a joint building energy management program. Work with municipalities such as Amherst and Oxford to leverage collective resources for greater efficiency, cost savings, and sustainability impact.	C	Staff Time	 1-3
Dedicate annual operating funding to implement the CEEP. Allocate necessary financial resources to ensure the successful execution of the Plan.	C	\$ \$ \$ \$	 1
Incorporate climate action performance measures into the Municipality's annual budgeting process. Track and report on climate action initiatives to ensure accountability and progress.	C	Staff Time	 1-3
Consider the climate impact on all new capital initiatives. Apply a GHG emissions reduction lens to evaluate the impact of new projects.	C	Staff Time	 1
Align Municipal strategies and plans with the CEEP. Ensure all strategic initiatives support the goals of the Community Energy and Emissions Plan.	C	Staff Time	 1-3

10.2 Municipal Leadership Goal 2: By 2040, All Municipal Facilities Are Powered 100% By Renewable Energy

To reflect the dedication to reducing our GHG emissions and leading the way towards a greener future, it is the Municipality's goal to power all municipal facilities with 100 percent renewable energy by 2040. To work towards this goal, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Conduct energy audits on existing municipal buildings. Assess their performance to identify priorities for energy efficiency improvements.			
Develop a strategy for deep energy retrofits in existing corporate buildings. This strategy should outline comprehensive measures to reduce energy consumption, such as improved insulation, high-efficiency HVAC systems, and LED lighting. It should also include plans to replace heating oil systems with cleaner sources, transitioning to high-efficiency heat-pump systems to lower emissions and reduce reliance on heating oil.			

10.3 Municipal Leadership Goal 3: By 2040, 80% of the Municipal Fleet Is Powered By Renewables Powered

The Municipality manages a corporate fleet of vehicles and equipment to provide a range of services to the community that results in the release of GHG emissions. No single measure – such as the procurement of electric vehicles - can reduce fleet and equipment’s GHG emissions to meet the net-zero target. Rather, a suite of strategies and actions will be required to set the Municipality on a path towards more aggressive fuel switching and GHG reductions. To reduce municipal fleet GHG emissions, the following actions are proposed.

Summary of Actions

Action	Impact	Resource	Time Frame
Develop a strategy to transition the corporate vehicle fleet to electric or hybrid vehicles. This would involve utilizing programs like Clean Foundation’s “Municipal Fleet Transition” to support this initiative.		 Staff Time	
Install EV charging stations at corporate facilities. Support the adoption of electric vehicles by employees and visitors by providing the necessary charging infrastructure.		 Staff Time	
Pilot new technologies in Municipality-owned fleet. Test and assess the suitability of innovative technologies for broader community application.		Staff Time	As Opportunities Present Themselves

10.4 Municipal Leadership Goal 4: Municipal Employees Are Empowered to Take Proactive Action on Climate Change

To empower employees to act on climate change, the Municipality is implementing several initiatives aimed at reducing its GHG emissions while promoting sustainable practices. These actions include identifying and addressing barriers to sustainable transport for municipal employees and providing secure bike parking and shower facilities to support active commuting. Additionally, the Municipality will explore organizing competitions to motivate employees and offer educational programs to enhance their energy and GHG management skills.

Summary of Actions

Action	Impact	Resource	Time Frame
Enhance bike commuting facilities during municipal building renovations. Install secure, easy-to-use bike racks close to building entrances, ensuring they are well-lit and visible for safety and convenience. Additionally, provide showers and changing facilities to make commuting by bike more comfortable, especially for employees who cycle long distances or in hot weather.		 Staff Time	As Opportunities Present Themselves
Identify and address barriers to sustainable transport for municipal employees. Develop programs to support and encourage sustainable commuting options, including organizing friendly competitions to encourage active commuting with rewards for milestones or achievements.		 Staff Time	
Develop a program to educate staff on energy and GHG management. Enhance staff skills in managing energy use and reducing GHG emissions through targeted training and development initiatives.		 Staff Time	

11 CEEP Implementation & Monitoring

The development of this CEEP is an important first step towards reducing our GHG emissions. It is a forward-looking vision for GHG emissions reductions in the Municipality of the County of Cumberland and is considered a living document. As new technologies are introduced and improved, new opportunities for GHG emissions reductions may present themselves, while the efficacy of actions outlined in this CEEP may also be affected. Ongoing measurement and review will be beneficial to reframe and refocus our efforts when new insights emerge as a result of ongoing stakeholder collaboration, new research and studies, new technologies, and changes to the political and economic landscape.

11.1 CEEP Pathway

The analysis in this CEEP indicates that there is a pathway for the Municipality to make significant progress towards the proposed 2030 and 2050 GHG emissions reduction targets. This CEEP identifies 67 initiatives which were selected based on their energy and GHG reduction potential.

Table 4 presents the 67 actions with assigned timeframes grouped by the timing of their implementation over the next 5 years (2025-2030), the resources required and responsible parties. This grouping of the initiatives illustrates the beginning of the pathway to meeting the Municipality's GHG reduction targets.

Table 4. CEEP Pathway

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Update policy to require that all new Municipal buildings meet net-zero standards or are as close to net-zero as available funding will allow.		✓		CC	Staff Time	
Implement mandatory building energy labelling on new builds to inform the public about energy performance.			✓	CC	\$	
Provide municipal staff with training in net-zero building and renewable energy systems.		✓		C	\$	
Encourage developers to construct a showcase ultra-energy-efficient (net zero) building for public experience, such as a new municipal center.			✓	C	Staff Time	
Conduct workshops on sustainable construction to educate and engage stakeholders, advancing green building policies and programs.			✓	C	Staff Time	
Enhance the existing Property Assessed Clean Energy (PACE) program to boost participation.	✓			CCCC	Staff Time \$\$	
Develop a comprehensive inventory of heating oil consumption within the Municipality to understand the current usage patterns and identify key areas for intervention		✓		CCC	Staff Time \$\$	
Evaluate energy performance and retrofit programs and strategies available for rental housing.		✓		C	Staff Time \$\$	
Launch a pilot residential energy labeling program at the time of sale.		✓		CC	Staff Time \$	
Mobilize community leaders and organizations to encourage neighborhood residents to sign up for energy efficiency upgrades.		✓		C	Staff Time	

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Disseminate information on existing programs and opportunities around alternative and renewable energy through the building permit process		✓		C	Staff Time	
Encourage the evaluation of waste heat recovery from large refrigeration systems in new developments.			✓	C C	\$ Staff Time	
Conduct an alternative energy pre-feasibility study to identify opportunities and specific zones in the community for geothermal, microgrids, waste heat recovery, and large solar PV arrays.	✓			C C C C	\$ \$ Staff Time	
Investigate financial business case and legal strategies for creating municipally owned renewable energy utilities.	✓			C C C C	\$ Staff Time	
Incorporate a climate lens into the future Municipal Planning Strategy and Land Use bylaw review process		✓		C C C C	Staff Time	
Develop a strategic approach for the subdivision parkland dedication process to ensure that fees obtained are allocated towards efforts to protect or improve natural areas.		✓		C	Staff Time	
Establish a local food policy and supporting programs that promote a local, sustainable food system.			✓	C C	\$ Staff Time	
Integrate Complete Streets principles in transportation, infrastructure, and urban design plans and processes.			✓	C	Staff Time	
Implement investment projects for sidewalks, bikeways, and roads to enhance active transportation.	As Opportunities Present Themselves			C C C	\$ – \$ \$ \$ Staff Time	
Explore ways to integrate active transportation planning and investments into the Municipality's regular operational budget.		✓		C	Staff Time	
Provide bicycle safety programs.		✓		C	Staff Time	

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Encourage retailers to offer "carbon-free delivery."		✓		C	Staff Time	
Explore and support micro-mobility initiatives.		✓		C	Staff Time	
Continue funding Cumberland County Transportation Services.	✓			C C	\$ \$ \$ Staff Time	
Expand public EV charging stations.		✓		C C C	\$ \$ Staff Time	
Explore bylaw opportunities that mandate EV-ready parking in new multi-unit residential, commercial or industrial developments.		✓		C	Staff Time	
Explore the piloting of a car share program, including EV-sharing options.		✓		C C	\$ Staff Time	
Enforce waste separation into the required four streams.		✓		C C	Staff Time	
Support non-profit, private, and charity sectors in diverting food from the pre-waste stream for redistribution to food security organizations.		✓		C	Staff Time	
Increase recycling options at public spaces and events.	✓			C	Staff Time \$	
Launch community-based social marketing (CBSM) campaigns focused on waste reduction.		✓		C	Staff Time \$	
Promote product exchange and resale networks.	✓			C	Staff Time	
Expand at-home composting educational programs.		✓		C	Staff Time \$	

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Develop and implement stormwater redirection projects.	As Opportunities Present Themselves Through Capital Projects			C C	\$ _ \$ \$ \$ Staff Time	
Install rainwater harvesting systems for irrigation and low-flow fixtures in municipal buildings.	As Opportunities Present Themselves			C	\$ _ \$ \$ \$ Staff Time	
Create and maintain rain gardens throughout community areas using native plants.	As Opportunities Present Themselves			C	\$ _ \$ \$ \$ Staff Time	
Develop and distribute public materials to encourage the use of rain barrels or cisterns for non-potable uses.	✓			C	Staff Time	
Develop and execute a plan to properly size wastewater pumps.		✓		C C	\$ \$ Staff Time	
Develop a Green Business Program.		✓		C	Staff Time	
Promote energy efficiency programs.	✓			C	Staff Time	
Launch a Green Fleet Challenge.		✓		C	Staff Time	
Establish an annual environmental recognition program.		✓		C	Staff Time	
Promote commute reduction programs.		✓		C	Staff Time	
Sponsor youth programs.		✓		C	Staff Time	
Collaborate with non-profits.		✓		C	Staff Time	
Promote and update the community website with CEEP progress.	✓			C	Staff Time	

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Increase wilderness and wetland protection areas.		✓		C C C C	\$ \$ Staff Time	
Launch a tree sapling giveaway.		✓		C C	\$ Staff Time	
Promote green infrastructure in land use planning and building design.	✓			C	Staff Time	
Implement land use or subdivision bylaw changes to require street trees in new subdivisions.		✓		C	Staff Time	
Increase the number of trees planted on municipal properties.		✓		C C	\$ \$ Staff Time	
Encourage sustainable agriculture and forestry practices.		✓		C C	\$ \$ Staff Time	
Integrate environmental considerations into the corporate procurement process.			✓	C	\$ Staff Time	
Hire a Corporate/Community Energy Manager.	✓			C	Staff Time \$	
Collaborate with nearby municipalities to establish a joint building energy management program.		✓		C	Staff Time	
Dedicate annual operating funding to implement the CEEP	✓			C	\$ \$ \$ \$	
Incorporate climate action performance measures into the Municipality's annual budgeting process.		✓		C	Staff Time	
Consider the climate impact on all new capital initiatives.	✓			C	Staff Time	

Initiative	Complete By End of			Carbon Potential: 2025-2050	Effort / Cost	Responsibility ¹
	2026	2029	2031			
Align Municipal strategies and plans with the CEEP.		✓		C	Staff Time	
Conduct energy audits on existing municipal buildings.	✓			C C	\$ \$ \$	
Develop a strategy for deep energy retrofits in existing corporate buildings.		✓		C C	\$ \$ \$ \$	
Develop a strategy to transition the corporate vehicle fleet to electric or hybrid vehicles.	✓			C C	\$ Staff Time	
Install EV charging stations at corporate facilities.		✓		C C	\$ \$ \$ Staff Time	
Pilot new technologies in Municipality-owned fleet.	As Opportunities Present Themselves			C	Staff Time	
Enhance bike commuting facilities during municipal building renovations.	As Opportunities Present Themselves			C	\$ \$ \$ Staff Time	
Identify and address barriers to sustainable transport for municipal employees.		✓		C	\$ Staff Time	
Develop a program to educate staff on energy and GHG management.		✓		C	\$ Staff Time	

11.2 CEEP Management System

A management system is a tool to facilitate the continuous improvement of a plan. For this CEEP, it ensures that there will be ongoing monitoring, management, and refinement over time, and a documented delineation of the processes, roles, and responsibilities to ensure its initiatives are actioned and progressed towards the 2030 and 2050 GHG emissions reduction targets.

It is recommended that the CEEP should be updated every three to five years. The following management system framework focuses primarily on the five and ten-year planning horizon. Changes to federal and provincial legislation and regulations, as well as technological advances that will impact the adoption and implementation of longer-term initiatives are anticipated over the next decade.

11.3 Governance & Collaboration

The CEEP will be championed by the Development and Planning Department. Success of the CEEP relies on ongoing collaboration and participation across departments and divisions. Staff from all departments are required to use the CEEP as a guide for decision-making as it contains initiatives that will help bring the Municipality closer toward its 2030 and 2050 GHG reduction targets.

11.4 Financial Resources

Wherever possible, the Municipality should take advantage of external funds to speed up the implementation of project actions. For example, the Federation of Canadian Municipalities Green Initiative Funds often has grants available to municipalities to support sustainability and climate action planning efforts and offset low-interest loans to support capital projects that reduce energy and GHG emissions. In addition, EfficiencyOne's Community Energy Manager Program, funded by the Nova Scotia Department of Natural Resources and Renewables, can help identify efficiency measures to municipal assets and assist in securing additional funding to advance climate actions. The Government of Canada also has several EV-related funding programs to support municipalities and other organizations in reducing transportation emissions, such as their Zero-Emission Vehicle Infrastructure Program (ZEVIP), and Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles. The Municipality should designate staff to regularly review and assess available funding opportunities to ensure the Municipality takes full advantage of programs that can support and accelerate climate action initiatives.

As these funding programs are subject to political changes, the Municipality should proactively plan and incorporate capital and operating costs of the proposed actions into future budgets. This will enable the Municipality to take advantage of external funding opportunities when they are available, but not have to rely on these external sources to move forward on actions.

It should be noted that regardless of external funding availability, the proposed actions are contingent on future Council approval, and future staff and budget (capital and operating) availability. As part of implementing the actions in this CEEP, the following risks would need to be considered and addressed:

- Increasing capital and operating costs, as well as lower than expected saving and revenues.

- Regulatory barriers and compliance issues that impede the implementation of the initiatives.
- Competing Council and departmental priorities including current operational mandates of impacted services and how mandates may need to change to achieve the energy and GHG reductions.

11.5 Monitoring & Reporting

An ongoing feedback loop, known as the Deming Cycle, facilitates continuous improvement and can be used to facilitate the continuous improvement of the CEEP ensuring that it remains as a living document. Moving forward, making progress towards the Municipality's GHG reduction targets, GHG emission forecasts, and the priority of the initiatives will be regularly reassessed and refined. The four components of the Deming Cycle, shown below in Figure 8, are “plan, do, check and act.” A run through the plan-do-check-act cycle should occur on an annual basis and should coincide with the Municipality's annual budget cycle for planning each year's capital and operating budgets.

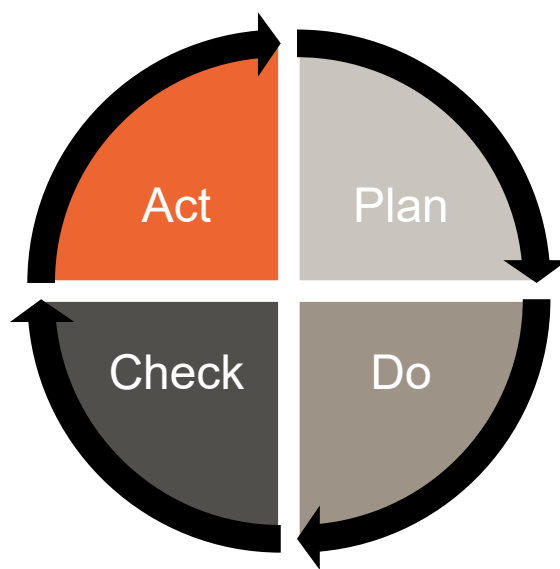


Figure 8. The Deming Cycle (Plan-Do-Check-Act)

A monitoring framework provides the Municipality with a task list of items to track that will help re-assess the effectiveness of the CEEP initiatives, GHG emissions, and other activities contained within the CEEP over time (the “check” components of the cycle). Monitoring includes two components. The first is the monitoring of the CEEP actions - what is being done, who is doing it, is the activity funded. The second component is the compilation of the energy and GHG emissions inventory to monitor the success of the CEEP initiatives. Tracking, measuring, and sharing progress towards the GHG emission reduction targets and the initiatives identified in the CEEP is essential to maintaining momentum for change. The success of the CEEP will be measured by the results achieved relative to prior reporting years.

On an annual basis, the Development and Planning Department will prepare an CEEP Annual Report, which at a minimum, will include:

- Current energy and GHG emissions profile in aggregate and broken down by reporting sector
- Change in energy and GHG emissions from the prior year and the baseline
- Follow up actions from the prior year's report
- A description of the work that has been completed
- Extent to which GHG emission reduction have been met
- Identification of any issues or challenges faced in advancing each initiative
- An indication of progress toward achieving each action, using the following scale:
 - » Not Started – The action has not been implemented.
 - » On Track – The action has been implemented. For various actions, progress will be measured through quantitative and qualitative indicators.
 - » Outstanding – An issue, barrier and/or challenge is prohibiting the action from being implemented.
 - » Delayed – The action has been delayed or placed on hold.
 - » Completed – The action has been completed.
- List of new actions to address issues, barriers and challenges
- Timing and assigned responsibilities of the actions

The actions in this CEEP should be evaluated in consultation with the various municipal departments on an annual basis, as part of the departmental strategic operations planning process. This will be an opportunity to review and prioritize potential strategies based on resources and emerging technological opportunities.

Appendix A Electric Vehicle (EV) Public Charging Network

ELECTRIC VEHICLE (EV) PUBLIC CHARGING NETWORK

INTRODUCTION

This Appendix outlines the initial strategic plan for the development of a public electric vehicle (EV) charging network within the Municipality. The proposed network aims to meet the current and near future needs of residents, commuters, and visitors by ensuring accessible, safe, and strategically placed charging stations throughout the region. It considers the unique geography, demographics, and travel patterns of the Municipality, while addressing the increasing demand for EV infrastructure.

While this plan serves as the foundation, it is intended to support the procurement process for a qualified professional consultant who will help refine and enhance the plan for level 2 chargers with more technical details as needed. The consultant will evaluate the proposed locations, assess infrastructure requirements, provide technical specifications for chargers to be procured, provide cost estimates, and ultimately help create a comprehensive, actionable roadmap for the next 3-5 years for level 2 chargers. Given the substantial costs associated with even assessing the required electrical infrastructure for individual sites for level 3 chargers, the Municipality will likely only proceed with those one at a time, as funding and partners willing to take on most of the cost are identified.

By working in collaboration with key stakeholders and securing funding from various sources, the Municipality is poised to build a reliable and sustainable EV charging network. This initial plan for level 2 chargers will serve as the cornerstone for the future development of the infrastructure, ensuring long-term support for the growing adoption of electric vehicles, while fostering economic growth, tourism, and community resilience.

BACKGROUND

On December 15, 2023, the Canadian Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations were amended to require that by 2035 all new passenger automobile and light truck vehicles sold in Canada meet “zero emissions” standards. The increasing demand for public EV charging stations, evidenced by queues at existing charging facilities and wait times for the acquisition of new electric vehicles, indicates that the public is advancing more rapidly than governmental bodies and the automotive industry in this transition. While there exists some discourse regarding the comparative costs of owning and operating electric vehicles versus conventional fuel vehicles, the upward trajectory in EV production and sales, coupled with a likely relative decline in EV prices and an anticipated increase in the cost of conventional fuels, suggests that the combined ownership and operating costs of electric vehicles will not exceed those of gasoline or diesel vehicles in the foreseeable future. Although alternative fuel vehicles, such as hydrogen-powered options, are under development, they remain significantly behind in terms of testing, production, and the establishment of supporting infrastructure. Consequently, it is a reasonable assumption that electric vehicles will emerge as the predominant mode of personal transportation within the Municipality over the next decade to fifteen years.

To facilitate this transition, it is imperative that electric vehicle charging stations become an integral component of our communities. In addition to home charging infrastructure, a reliable and

extensive network of public charging stations will be essential to accommodate commuters, workers, travelers, tourists, persons seeking or providing services, and various other daily activities.

The Municipality's Economic Development and Land Use Planning documents assert that for rural communities to thrive, residents must have reasonable access to essential services, including healthcare, housing, employment, education, recreation, and retail. To support these services, the Municipality is investing in a significant project aimed at ensuring that nearly all rural residents and organizations have access to high-speed broadband internet by August 2026. In a similar context, our communities and visitors will require adequate access to EV charging stations that meet their needs as electric vehicle adoption becomes increasingly prevalent. This requirement cannot be solely based on traffic counts, as any trend that complicates living or conducting business in rural communities — particularly in tourism-related sectors — poses a threat to their viability.

Unlike traditional gas stations, charging stations can be installed in various types of locations. They can be installed in parking lots, alongside street parking, and at facilities such as libraries, restaurants, and gyms. The ownership of charging stations can be decentralized, enabling local businesses to install chargers for their customers while potentially benefiting financially from the chargers located on their properties.

THE NEED

As indicated in the primary body of the Municipality's Community Energy and Emissions Plan (CEEP), a substantial portion of emissions generated by transportation can be attributed to through traffic. This is because the Municipality serves as the sole land connection between Nova Scotia and the rest of North America, with the TransCanada Highway (TCH 104), which bisects the Municipality, accommodating the majority of personal vehicle and commercial truck traffic entering and exiting the Province. Since most of this traffic does not have a destination within the Municipality and given the significant incentives for the Provincial government and businesses catering to this traffic to provide EV charging, this Appendix does not address that market and intentionally avoids the TCH transportation corridor.

Traffic from cars and light trucks originating in and/or destined for the Municipality can be categorized into two primary needs for public charging stations:

- **Level 2 AC Charging** (slow charging, 10 – 20 kW) These chargers best serve travel related to employment, recreation, accommodations, and similar activities, where electric vehicles (EVs) will be parked for several hours or overnight. They can also play a useful supplementary role for tourists and people seeking or providing services, for whom “topping up” can extend vehicle range and provide opportunities to access secondary destinations.
- **Level 3 DC Charging** (fast charging, 50 – 300 kW) This category includes charging stations to be located **en route to** sites for tourism, deliveries, and services and near **destinations**:
 - **En route** charging stations should be along primary transportation corridors, situated in communities that offer accessible services (i.e., washrooms and food) within easy walking distance.
 - Notable **destinations** include the Cliffs of Fundy UNESCO Geopark sites, Cape Chignecto Provincial Park, Joggins Fossil Cliffs UNESCO World Heritage Site, Wild

Caraway (Taste Nova Scotia 2023 Restaurant of the Year), Cape d'Or Coastal Park, Fox Harb'r Resort, Thinkers Lodge, Jost Vineyards and Winery, the Anne Murray Centre, Ski Wentworth, and various other parks, trails, recreational opportunities, attractions, health care facilities, and associated accommodations and services. Level 3 chargers do not need to be located at these sites but should be within a reasonable distance.

SITE SELECTION

Site Selection Criteria: The following criteria have been used to develop a preliminary list of potential charging station locations:

1. **Public Accessibility:** All sites must be open to the public, ideally 24/7.
2. **Mobility Accessibility:** All sites must accommodate individuals with mobility challenges.
3. **Safety Standards:** All sites must ensure reasonable safety, characterized by good visibility and adequate lighting.
4. **Level 2 chargers** should be installed at or near employment centers, educational institutions, healthcare facilities, recreational facilities and areas, short term rental accommodations, and other locations where individuals typically spend extended periods.
5. **Level 3 chargers** should be situated in communities that provide services, in particular public washrooms and food options within a short walking distance during business hours. Priority should be given to communities with educational and healthcare facilities given that they are destinations for travelers. Locations outside communities, but that provide services to travellers on main thoroughfares should be considered if partners can be found.

Priority Locations for Level 2 Chargers:

- Springhill - 4 or more chargers (Municipal Administrative Offices, Community Centre, and various employers)
- Upper Nappan - 4 chargers (Municipal Service Centre, Regional Health Care Centre)
- Advocate – 1 charger TBD
- Pugwash – 2 chargers (Health Care Centre and TBD)
- Joggins - 1 charger (Fossil Centre)
- Parrsboro – 3 chargers (1 at the Park and Playground, 1 at the Glooscap Municipal Campground in Two Islands, and 1 to replace the aging, unreliable charger at the Municipal Service Centre)
- Wallace - 1 charger (TBD)
- Southampton - 1 charger (Community Centre / Fire Hall)

- Additional Level 2 chargers may be established at places of employment, accommodations, and services in collaboration with local businesses (Wentworth, Tidnish/Amherst Shore/Northport, Advocate, Pugwash, Malagash), provided that these sites are accessible to the public.

Possible Locations for Level 3 Chargers: The following communities are proposed as possible locations for Level 3 chargers (one in each location, with room to expand based upon demand) if suitable partners can be found:

- Parrsboro
- Springhill
- Pugwash
- Advocate Harbour
- River Hebert
- Wentworth

(Note: Suitable properties have been identified in each community, but finalization would only occur once partners and funding sources are confirmed.)

PRELIMINARY MAPS: Attached as Figures 1 and 2 are preliminary maps indicating the proposed locations for Level 2 and Level 3 chargers.

POTENTIAL PARTNERS

- Nova Scotia Power Inc.
- Businesses
- Educational and healthcare institutions
- Recreational facilities
- Developers

POTENTIAL FUNDING SOURCES:

- Nova Scotia Power Inc.
- Businesses
- Provincial and federal government funding programs (e.g., ZEVIP, Charged for Change)
- Developers

CONCLUSION

The plan outlined in this appendix marks the first step towards establishing a reliable and accessible EV charging network for the Municipality. By outlining key considerations and next steps, it sets the foundation for a more detailed plan to be developed with the expertise of a professional consultant.

Through collaboration with stakeholders and pursuit of funding, this initiative will support the growing adoption of electric vehicles, helping meet community needs and supporting sustainability goals.

Figure 1: Level 2 EV Charger Priority Locations

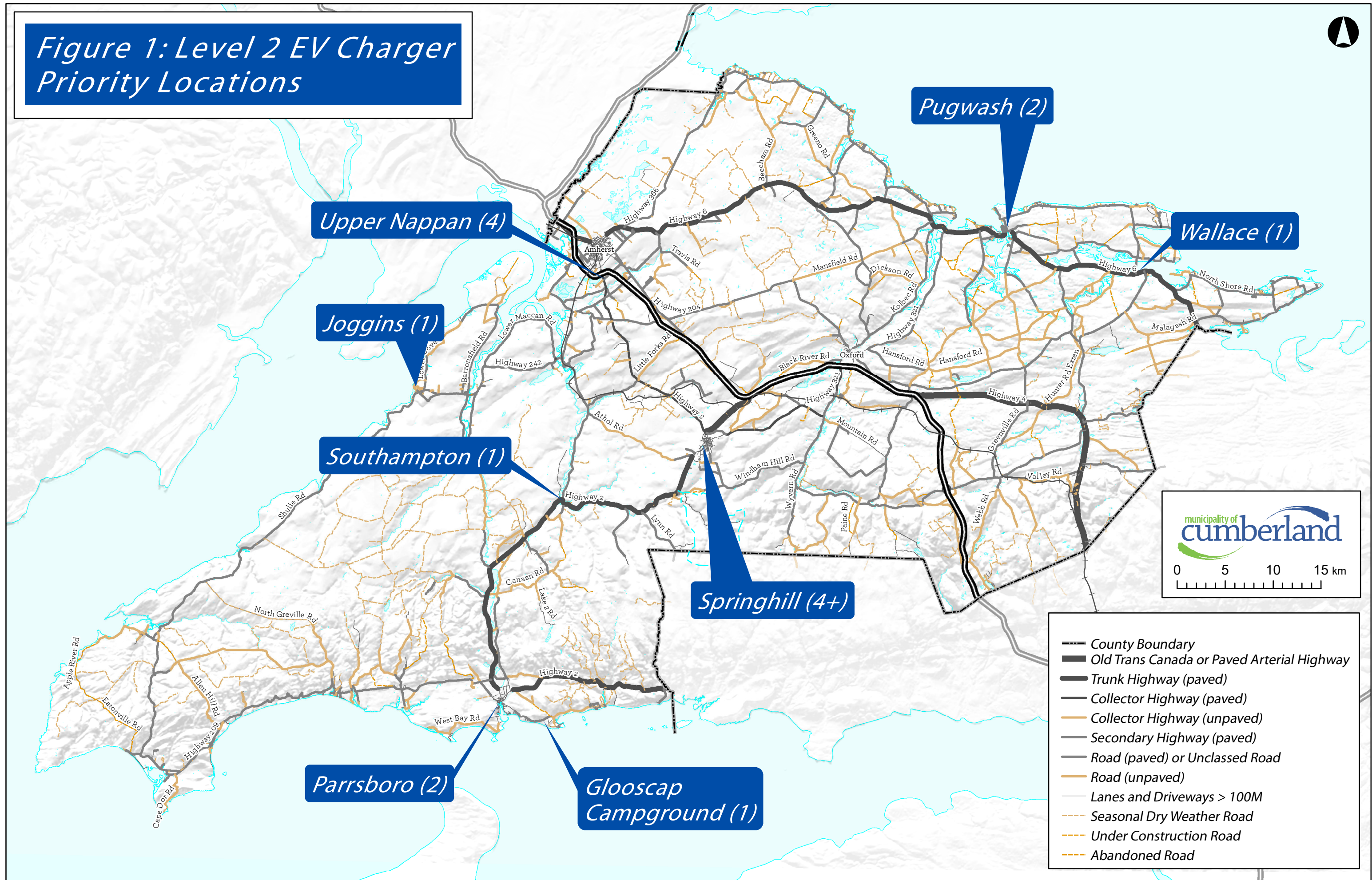


Figure 2: Level 3 EV Charger Priority Locations

