



CHARLOTTE COUNTY CLIMATE CHANGE MITIGATION ACTION PLAN



Partners for Climate Protection: Charlotte County Local Action Plans for Mitigation

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Introduction

Four municipalities located in the Charlotte County region have been a member of the Partners for Climate Protection (PCP) program administered by the Federation of Canadian Municipalities (FCM), since 2017. This program is a five-step process designed to reduce greenhouse gas emissions and save energy at the municipal level. In 2016, the first milestone of the project was obtained when an inventory of both corporate (municipally based operations), and community emissions (residentially focused) was developed to serve as a baseline to the project. These reports continued to guide the four municipalities through the PCP program. The basis of the initial phase reports consisted of a greenhouse gas inventory breakdown of the total level of CO₂e Greenhouse Gas Emissions by municipal and residential sector as well as a specific breakdown looking at the five core areas of emissions at a municipal level: buildings, vehicle fleet, streetlights, water and wastewater and corporate solid waste. Understanding these emission levels assisted in the development of the next phase of the PCP partnership program: set emission reduction targets.

In 2018, all four municipal councils passed a motion to commit to reducing corporate emissions by 30% (tonnage total) by 2030. At this time, no community emission reduction targets have been set however the initial phases of public engagement around how to reduce greenhouse gas emissions at a community and residential level have commenced.

With the commitment of all four municipalities in 2018, the PCP program entered into the third phase of planning: develop local action plan. With the assistance of the 2018-2019 Environmental Trust Fund, Eastern Charlotte Waterways was able to work closely with the four Charlotte County municipalities in order to coordinate ample and effective stakeholder engagement and a steering committee to continue to guide municipalities through the PCP process with the intent of reducing greenhouse gas emissions and by extension, saving on municipal spending. The following report will outline the methodology and public engagement associated with the third phase of the PCP planning process in addition to including the four local action plans in the draft forms.

The core objective of the local action plan(s) maps out specific reduction actions, in each of the five main corporate emission sectors, that the municipality will implement over a five-year timeframe, starting in 2020 to 2025. Once the ‘low bearing fruit’ of the initial five-year plan have been achieved, each municipality should be effectively positioned to explore serious, consequential paths to reducing greenhouse gas emissions through a shift toward a clean, greener energy sector be it through wind, solar or hydro power alternatives. The essence of the four municipal local action plans is not to provide big picture, aspirational changes but rather recognize the financial, resource and knowledge constraints that currently exist at a municipal level in rural New Brunswick. By acknowledging these restrictions, we have worked closely with municipalities to understand what projects are plausible within the scope of the town and ones that will result in incremental yet meaningful change. It is our intention that a subsequent plan will be developed for the remaining years leading up to 2030 to allow for the latest technologies, potential resources and financial means to catch up and be taken into consideration during the planning process.

Methodology for the Local Action Plan

Background Research and Planning:

To begin the planning process, the Town's inventory reports and reduction targets were reviewed. The corporate emissions inventory, used as a backdrop to the development of the local action plan, outlined five priority areas: buildings, vehicle fleet, street, traffic and area lights, water and wastewater systems and corporate solid waste. The energy consumption data was calculated based upon 2015 usage data and converted to tonnes of carbon dioxide (t CO₂e) using the web-based PCP Milestone Tool. The full breakdown for each of the municipal corporate sector methodology and results of the inventory are available on the Eastern Charlotte Waterways Inc. website: ecw.ngo/mitigation.

Even though it is not directly included in the final local action plan, the community emissions inventory was also calculated into five priority areas: residential sector, commercial and institutional sector, industrial sector, transportation and solid waste. The usage data for these areas were calculated through estimates using the Natural Resources Canada (NRCAN) Comprehensive Energy Use database as recommended by the Federation of Canadian Municipalities.

Once the specific variances of each municipal corporate emissions sector were identified, we were able to begin thoroughly researching different, plausible strategies for the municipalities to institute in order to reduce their greenhouse gas emissions. This was primarily achieved by reviewing previously created local action plans from other municipalities within Canada. A cross comparative analysis of other municipalities proved beneficial mainly because the municipalities that were used as benchmarks shared similar traits and resources to that of the municipalities in the Charlotte County region. We aimed to use municipalities of similar population size and municipal resource capacity in order to truly understand the feasibility of the mitigation strategies and proposals. Many of these comparative municipal reports were accessed through the PCP website, however direct contact was also made through phone calls with municipalities in New Brunswick and Nova Scotia, in particular the Town of Sussex, which has progressed successfully.

Although cross comparative research is important, we were also able to attend the Union of Municipalities Conference in Fall of 2018 where many municipalities, other non-governmental organizations (NGOS) and businesses were discussing the shift toward reducing greenhouse gas emissions at a municipal level. This proved to be a helpful conference to attend in order to gain a better understanding of the necessary process and networking in the field.

Meeting with Municipal Staff and Council:

The PCP process resumed in the Charlotte County in October 2019 with Eastern Charlotte Waterways Inc. staff presenting to Town Councils. This was done in order to bring council up to speed on the project and recruit municipal champions to provide context on barriers and constraints to potential actions. Following this initial presentation, meetings with municipal staff and representatives from town council were held monthly in order to build out this plan.

These tasks included setting plan goals, estimated costs and identifying responsible parties for each of the actions. Additionally, conversations and research were conducted in order to identify and address potential barriers and constraints. These meetings were supplemented by conversations with other

leading experts including NB Power representatives, local industry leaders and consultants to gain further information on technologies and incentive programs.

Public and Community Engagement:

The main focus of our public engagement for the Partners for Climate Protection program public engagement component revolved around stakeholder engagement with the local municipalities, in particular with the Chief Administrative Officers (CAOs). The ECW team was able to form steering committees with each municipality that identified the key council champions in addition to the CAOs. The steering committee terms of reference and members are attached as an appendix to this document. The core intention of the steering committee and subsequent stakeholder champions was the glean an understanding of the role of greenhouse gas emissions and the feasibility of some project proposals. When we attended the stakeholder meetings, we ensured that not only did we provide feasible project options but also clearly delineated possible funding avenues for these projects. Most of the funding avenues we identified to the municipalities were those provided by the Federation of Canadian Municipalities (most notably the Green Municipal Fund and the Municipal Climate Innovation Fund) but also funding opportunities available at a local level as well including those through NB Power and the provincial government.

In addition to municipal level engagement, we wanted to work to ensure that we kept the public and community members informed of the PCP planning process. As such, we created a webpage on ecw.ngo/ghg that provides community members with an online survey to gauge level of awareness around greenhouse gas emission reduction strategies unique to their community. We also geared questions toward specific reduction strategies unique to the community, be it an anti-idling campaign or a push for energy efficiency in municipal buildings, so that we were able to understand what the community members prioritize in the area of mitigation. These findings are currently being collected through an online forum but once the data collection is complete, it will be a very useful tool to reflect back to the council members where the community priorities lie with reducing greenhouse gas emissions in the short term as well as the long term.

Presentation(s) to Council:

Final presentations were made to Councils in January and February 2019 to determine whether or not there needed to be any changes or improvements made to the plan(s) prior to submission. These changes have been included in the final draft plans which are attached as appendices to this report.

Municipal Action Plan(s) 2020-2025: Key Action Items

1. Public Engagement Campaign
2. Active Transportation Strategy and Rural Lynx Project
3. Anti-Idling Policy
4. Community Garden Development
5. Green Building Standards and LEED certification

Implementation and Monitoring:

The implementation and subsequent monitoring of the local action plans will be led by the municipal council members but many other important groups will play a role dependent upon which action is to be implemented in the implementation schedule. The plan will be overseen by the Chief Administrative Officers (CAOs) as well as the selected stakeholders during the consultation process who will also be responsible for monitoring the progress of the plan on an annual basis to ensure that the goals are being achieved according to the priority list and the implementation schedule. Success stories will be shared by the municipalities on their website and social media platforms to ensure that the community is kept abreast to the plan's progress throughout the implementation process and similarly to maintain momentum and success of each individual project proposal. Displays of successful projects will help foster accountability and generate awareness and attention around the important issue of reducing greenhouse gas and individual carbon footprints within the community – both residential and corporate alike. As the plan progresses to the later years, likely year 4 and 5, the Steering Committee should be reformed, with the same members or new members who share similar roles and responsibilities, in order to assess the successes as well as the shortcomings of the initial plan and to begin the planning necessary for the subsequent plans that continue toward the goal of 30% reduction target from 2015 emission levels.

When performing future inventory reports, some measures should be taken into considerations. To ensure that any changes in emission total is a reflection of the practices rather than an increase or decrease in population size or infrastructure holdings, it is recommended that controls are introduced. For instance, with building emission levels, the total could be calculated per square foot to account for any new development or for any buildings being sold or otherwise released from the municipal control. The same could be done for the community emissions by using the population numbers in each year calculating the emissions data. Although this will not completely remove the potential error, it will allow for a much more realistic comparison between the inventory from 2015 and any future inventories developed.

St. George Local Action Plan

Introduction

The Town of St. George has been a member of the Partners for Climate Protection (PCP) program, administered by the Federation of Canadian Municipalities (FCM), since 2017. This program is a five-step process designed to reduce greenhouse gas (GHG) emissions and save energy at the municipal level. In 2016, the first milestone of the program was reached when an inventory of both corporate (municipal operations), and community emissions was developed to serve as a baseline for the project. The following year, after reviewing the report, St. George Town Council passed a motion to commit to reducing corporate emissions by 30% (tonnage total) by 2030. No commitment was made for community emissions, however, efforts will be made to achieve reductions nonetheless. The third milestone, development of a local action plan (LAP), is outlined in the following report. It will plan out reduction actions that the Town will implement over a five-year timeframe, from 2020-2025. A subsequent plan will be developed for the remaining years leading up to 2030 to allow for the latest technologies to be taken into consideration during the planning process. The entire planning process was performed in partnership with the environmental non-profit Eastern Charlotte Waterways Inc. with funding support from the New Brunswick Environmental Trust Fund, made available by the Government of New Brunswick.

Community Profile

The Town of St. George is located in the centre of Charlotte County. The Magaguadavic River and Valley runs north to south through the core of the parish and, following a series of rapids and waterfalls, reaches sea level at the Town of St. George. The town was established in 1784, incorporated in 1904, and served as a port of entry for the Shore Line Railway. The town was also made famous by the red-granite quarries which operated from 1872 to 1953.

Today, the Town of St. George is the commercial, business and service centre of the eastern Charlotte Coastal Region, and processing of a large portion of the aquaculture salmon grown in the Bay of Fundy occurs in St. George. The population of the Town of St. George in 2011 was 1543, and dropped to 1517 in 2016. An annual population decline of 0.34% (Statistics Canada, 2017).

Corporate Emissions Inventory

The corporate inventory is broken down into five priorities areas:

- *Buildings;*
- *Vehicle Fleet;*
- *Street, Traffic and Area Lights;*
- *Water and Wastewater Systems; and*
- *Corporate Solid Waste.*

Energy consumption data in these areas was calculated based on 2015 usage data and converted to tonnes of carbon dioxide equivalent (t CO₂e) using the web-based PCP Milestone Tool. A full breakdown of the methodology and results of the inventory can be found in the *Town of St. George Partners for Climate Protection: Milestone 1* report available on the Eastern Charlotte Waterways Inc. website at www.ecw.ngo/mitigation.

The total corporate emissions were calculated to be 464 tonnes of carbon dioxide equivalent (t CO₂e), with *Water & Wastewater Systems* accounting for 276 t CO₂e or approximately 59% of corporate emissions. Data collected for *Corporate Solid Waste* was deemed to be inconclusive, or not statistically significant. The overall emissions for this area are negligible (Figure 1).

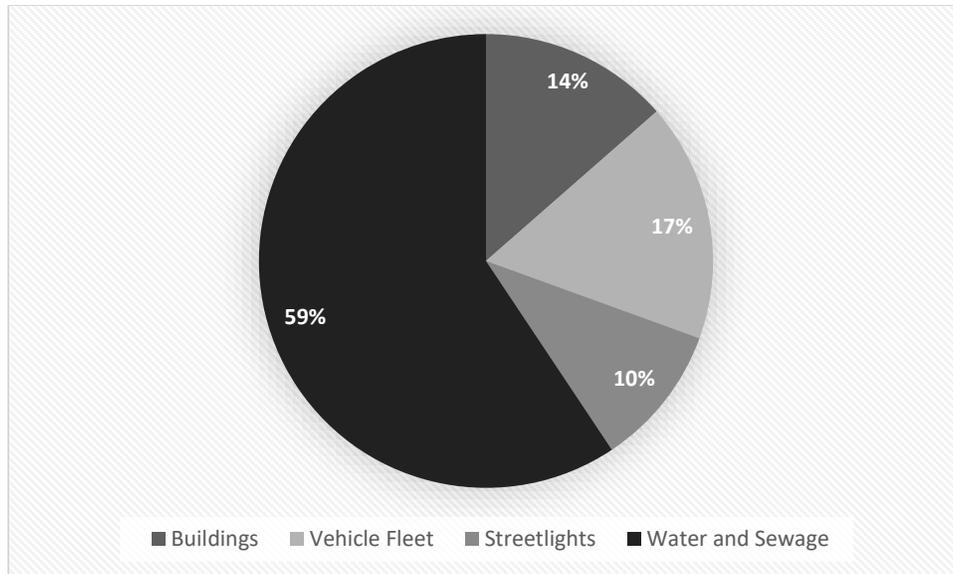


Figure 1: Focus area contributions by percentage of the Town of St. George corporate emissions

Community Emission Inventory

The community inventory is broken down into five priority areas:

- *Residential sector;*
- *Commercial and Institutional sector;*
- *Industrial sector;*
- *Transportation; and*
- *Solid Waste.*

Unlike the corporate inventory, usage data for these areas could not be assembled for all St. George residents so estimates were calculated using the Natural Resources Canada (NRCAN) Comprehensive Energy Use Database as recommended by FCM. Full methodology and results can again be found in the Inventory Report cited above.

In total, community emitted 19,747 t CO₂e with the largest contributors being *Transportation* and *Industrial* sectors accounting for 5,396 t CO₂e (27%), and 5,155 t CO₂e (26%) respectively. The *Residential* and *Commercial* sectors also had similar emission totals, representing over 20% of emissions as well.

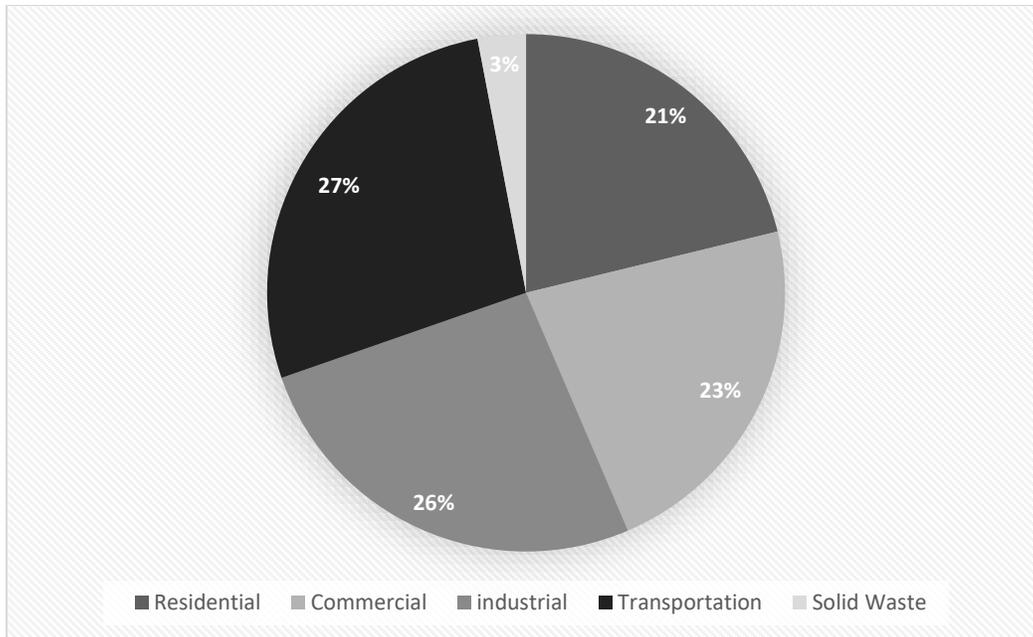


Figure 2: Focus area contributions by percentage of the Town of St. George community emissions

Business-As-Usual Forecasts

The PCP Program requires municipalities to develop a simple forecast reflecting a business-as-usual scenario ten years into the future. Generally, forecasts for municipal operations for most sectors will mirror the population projections for a community. For the Town of St. George this is challenging, as the permanent resident population has been in decline over recent years as it is a small, rural community. This would indicate a potential for limited or no increase in corporate and community emissions over the next 10 years, even in a business-as-usual scenario.

Methodology for Milestone 3

- Background research
- Meeting with Municipal Staff and Council
- Community engagement
- Final presentation to council

Background Research

To begin the planning process, the Town's inventory report and reduction target were reviewed. Also, local action plans from similar communities across Canada were reviewed to develop an understanding of what actions they are taking. These were accessed through the PCP website.

Meeting with Municipal Staff and Council

The PCP process resumed in St. George on October 9th, 2018 with ECW staff presenting to the Town Council. This was done to bring the council up to speed on the project and recruit municipal champions to provide context on barriers and constraints to potential actions. Following this initial presentation, meetings with municipal staff and representatives from town council were held monthly to build out the plan. This included setting plan goals, estimated costs and responsible parties for each of the actions while

also identifying and address potential barriers and constraints. These meetings were supplemented by conversations with other experts including NB Power representatives, local industry leaders and consultants gather further information on technologies and incentive programs.

Municipal Action Plan 2020-2025

The Town of St. George has done a great deal of work on infrastructure since the inventory was conducted. Namely, they have invested each year in improving their water and wastewater infrastructure. For this reason, there will not be many actions that focus specifically on this area.

It is recommended that the town also tracks the savings from energy efficiency actions and utilize at least a portion of them to fund future projects of the same nature. This will allow for more funding from the municipality without increasing taxes and being less reliant on provincial and federal assistance. The primary goals of this plan are:

- Build community awareness and affect behavioural change
- Explore renewable energy
- Transition all lighting in municipal buildings to LED
- Naturalize landscape
- Upgrade municipal fleet

Action	Timeline	Lead/Partners	Funding Avenues	Estimated Emissions Reduction
Green Building Standards	Year 5	Town council and staff	No extra costs associated	This will not have an immediate emission reduction but could have a major impact on future development projects.
LED Light Transition	Year 2	Town council and staff	There would be a cost associated with these projects but they have a very short return on investment	LED bulbs are 50-75% more efficient than other bulbs and have a much longer life span.
Renewable Energy Integration	Year 5	Town council and staff	Cost will vary greatly dependant on the scope of the projects. There are a variety of external funding sources that could contribute.	Starting with small renewable projects is a great way to build awareness and local support for larger projects in the future.
Municipal fleet upgrades	Year 4	Town council and staff	No new costs, just amendments to town practices	A litre of gasoline emits roughly 2.38kg of CO ₂ .

Anti-Idling Policy	Year 3	Town council and staff; NB Lung Association	No extra costs associated	For every two minutes a car idles, it uses enough gas to travel about 1.5km.
Public Engagement Campaign	Year 1	Town staff and summer students	Municipal budget will cover most costs. Summer student funding could come from SEED, Canada Summer Jobs or Recreation NB.	Working with residents in an interactive way has the potential to not only lower emissions, but also lower their energy bills.
Develop Community Garden	Year 1	Community groups/municipal staff	Application to the Environmental Trust Fund to cover the costs of the garden	Providing residents with a place to grow their own food and share knowledge will educate them on the importance of sourcing food locally.
Business Outreach	Year 2	Town staff	No additional cost aside from any potential print advertising or materials	Working with local business in an interactive way has the potential to not only lower emission, but also lower energy bills.
Urban Forestry Plan	Year 2	UNB FOREM	By utilizing student work, there would be no up front cost for the development of the plan	One hectare of mature trees absorbs approximately 6.4 tonnes of CO ₂ per year along with many other ecological services
Expand Local Trail System	Year 3	Town council and staff	The cost of this project will depend on the scope that is chosen. External funding for green projects or recreation should be explored.	Active transportation not only lowers emissions but also contributes to a healthier community.
Rural Lynx	Ongoing	Town council	No additional costs to the town as there is already an	Providing people with a reliable public

			ongoing relationship with Rural Lynx	transportation option is a great way to decrease the usage of single occupant vehicles
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Action Descriptions

Green Building Standards

Though this will not have a direct impact on current emissions, it is a way of ensuring that certain guidelines are followed each time that the town begins a new development or undergoes a major retrofit on one of its existing buildings. There are existing building standards in place in Canada, including Leadership in Energy and Environmental Design (LEED) Certifications but the town should consider creating their own standards to ensure that they address the issues that are most important in this region.

LED Light Transition

With the LED streetlight transition complete, attention should be turned to doing the same for every light within municipal buildings. This is a very cost-effective way to lower energy consumption with these projects typically having very short return on investment timelines. Because of this, they can be paired with other projects to make them more feasible. A goal for this plan would be to see 100% of municipal lights converted to LED.

Renewable Energy Integration

With very little emissions being produced by municipal buildings, investing in renewable energy infrastructure would be a great way to further lower their impact. This does not need to be done on a large scale, it could be as simple as one solar panel on a lift station to help lower its energy requirement from the grid. A renewable feasibility study would help the town identify areas that would be the most productive for creating energy.

Municipal Fleet Upgrades

The best way to reduce emissions associated with the municipal fleet would be to purchase electric or hybrid vehicles. However, due to budgetary and infrastructure constraints, this may not be the most feasible option at this point. There are also certain vehicles in the fleet that do not have EV or hybrid alternatives. Therefore, it is recommended that the town investigate the opportunity for EV or hybrid vehicles during the procurement process but if no alternatives exist, they consult *the Natural Resource Canada Fuel Consumption Guide* to ensure that they purchase the most efficient vehicle possible to fit their needs.

Anti-Idling Policy

Limiting or eliminating vehicle idling can have a major impact on a community and fueling bills. Conditions can be put in to account for time of year or temperature so that no one is left out in the cold but an effort should be made to eliminate idling behaviour all together. This would not be an enforceable offence but is in place to make people more conscious of their behaviour and the impacts that it has. This has the added bonus of improving air quality within the town.

Public Engagement Campaign

Depending on the goals of the town, this could include events, seminars, workshops or other programming that focus on energy efficiency, water conservation, active transportation or waste diversion among many others. Educational content could also be made available on the town website and social media to further engage the community. The only constraints would be funding and human resources. With that in mind, it may be possible to hire summer students through SEED or Canada Summer Jobs to help run the majority of the programming during the summer months.

Develop Community Garden

Though not a direct emission reduction measure, this is a great way to educate the community regarding the value of locally produced food as well as how to grow their own. The garden would be developed on town land but managed largely by a group of community volunteers. This would also limit the amount of area that would need to be mowed in summer months, again lowering fuel bills. A small-scale composting system could also be developed within the garden to divert waste from the landfill and help to fertilize the garden.

Business Outreach

With a number of small businesses in the community, steps should be taken to make sure that they have all of the information available to make their buildings running as efficiently as possible. This could be done by town staff or in partnership with NB Power and other third-party groups.

Urban Forestry Plan

Trees within a community offer a great deal of ecological services including carbon sequestration and storm water mitigation. St. George could partner with the UNB Faculty of Forestry and Environmental Management to develop a plan and standards to promote these services.

Expand Local Trail System

By expanding the trail network within the town, you promote an active lifestyle, naturalize your landscape, provide people with the opportunity to interact with nature and promote active transportation. This network could eventually connect with the coastal trail that is currently under development and tie St. George with other municipalities in the region, opening up the potential for an increase in tourism.

Rural Lynx

The town already contributes to the Rural Lynx bus system which is also funded by other municipalities in Charlotte County and the provincial government. The town should maintain this relationship and continue to build on the existing infrastructure to work towards a sustainable public transportation network that will be integrative and accessible to all residents.

Implementation and Monitoring

The implementation of the plan will be led by town council but many other important groups will play a role dependent on which action. The plan will be overseen by the town Chief Administrative Officer and the council who will also be responsible for monitoring the progress of the plan on an annual basis to ensure that goals are being met. Success stories will be shared by the town on their website and through their social media account to ensure that the community is kept up to date on the plan's progress

throughout the implementation process and to maintain momentum. As we enter the later years, either year 4 or 5, the Steering Committee should be reformed to assess the successes and shortcomings of the initial plan and begin the planning of a subsequent plan to continue to build towards the goal of 30% reduction from 2015 emission levels.

When performing future inventory reports, some measures should be taken into considerations. To ensure that any changes in emission totals is a reflection of practices rather than an increase or decrease in population or infrastructure, it is recommended that controls are introduced. For example, for building emissions, the total could be calculated per square foot to account for any new development or for any buildings being sold or otherwise released from municipal control. The same could be done for community emissions by using the population in each year. This will not completely remove the potential error but will allow for a much more realistic comparison between the two inventories.

St. Stephen Local Action Plan

Introduction

The Town of St. Stephen has been a member of the Partners for Climate Protection (PCP) program, administered by the Federation of Canadian Municipalities (FCM), since 2002. This program is a five-step process designed to reduce greenhouse gas (GHG) emissions and save energy at the municipal level. In 2016, the first milestone of the program was reached when an inventory of both corporate (municipal operations), and community emissions was developed to serve as a baseline for the project. The following year, after reviewing the report, St. Stephen Town Council passed a motion to commit to reducing corporate emissions by 30% (tonnage total) by 2030. No commitment was made for community emissions, however, efforts will be made to achieve reductions nonetheless. The third milestone, development of a local action plan (LAP), is outlined in the following report. It will plan out reduction actions that the Town will implement in a five-year timeframe, from 2020-2025. A subsequent plan will be developed for the remaining years leading up to 2030 to allow for the latest technologies to be taken into consideration during the planning process. The entire planning process was performed in partnership with the environmental non-profit Eastern Charlotte Waterways Inc. with funding support from the New Brunswick Environmental Trust Fund, made available by the Government of New Brunswick.

Community Profile

St. Stephen is located at the estuary of the St. Croix River and the coast of Passamaquoddy Bay. It covers an area of approximately 13.45km². The Town was officially incorporated in 1871. In 1973, the municipalities of Milltown and St. Stephen were amalgamated and designated as the Town of St. Stephen (Province of New Brunswick, 2015). The St. Croix River acts as the International Boundary separating St. Stephen from Calais, Maine. The two communities are connected by three international border crossings. St. Stephen is also home to Canada's oldest candy company, Ganong Bros. and has been deemed "Canada's Chocolate Town". The population of St. Stephen was 4817 in 2011 and dropped to 4415 in 2016, an annual decline of 0.14% (Statistics Canada, 2017)

Corporate Emissions Inventory

The corporate inventory is broken down into five priority areas:

- *Buildings;*
- *Vehicle Fleet;*
- *Street, Traffic and Area Lights;*
- *Water and Wastewater Systems; and*
- *Corporate Solid Waste.*

Energy consumption data in these areas was calculated based on 2015 usage data and converted to tonnes of carbon dioxide equivalent (t CO₂e) using the web-based PCP Milestone Tool. A full breakdown of the methodology and results of the inventory can be found in the *Town of St. Stephen Partners for Climate Protection: Milestone 1* report available on the Eastern Charlotte Waterways Inc. website: www.ecw.ngo/mitigation.

The total corporate emissions were calculated to be 1,768 t CO₂e, with *Buildings* accounting for 835 t CO₂e or approximately 47% of corporate emissions. *Water and Wastewater Systems* was the second largest emitting category, accounting for 521 t CO₂e or approximately 29% of emissions. Data collected for *Corporate Solid Waste* was deemed to be inconclusive, or not statistically significant. The overall emissions for this area are negligible (Figure 1).

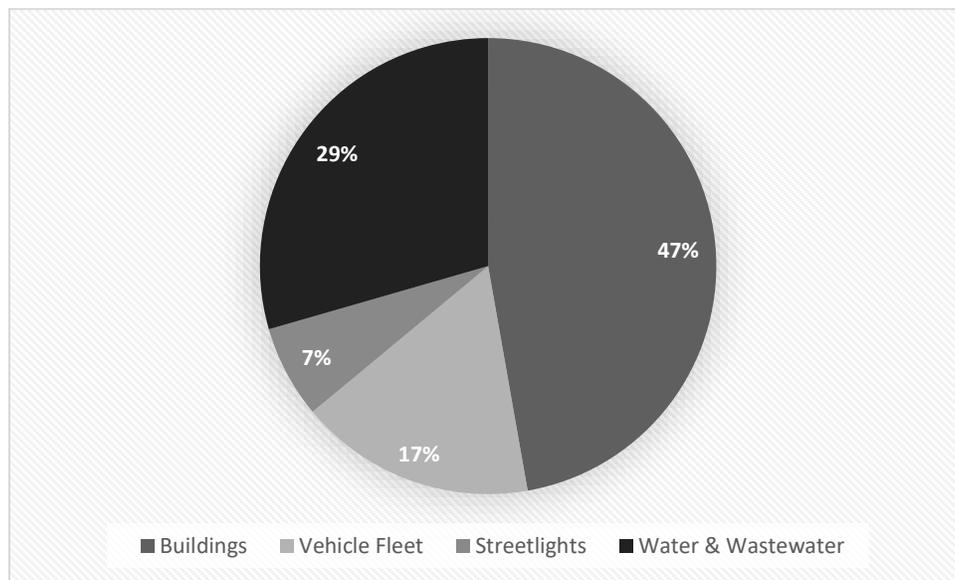


Figure 1: Focus area contributions by percentage of the Town of St. Stephen corporate emissions

Community Emission Inventory

The community inventory is broken down into five priority areas:

- *Residential sector;*
- *Commercial and Institutional sector;*
- *Industrial sector;*

- *Transportation; and*
- *Solid Waste*

Unlike the corporate inventory, usage data for these areas could not be assembled for all St. Stephen residents so estimates were calculated using the Natural Resources Canada (NRCan) Comprehensive Energy Use Database as recommended by FCM. Full methodology and results can again be found in the Inventory Report cited above.

In total, community emitted 45,955 t CO₂e with the largest contributor being *Transportation* sector accounting for 18,269 t CO₂e or approximately 40% of community emissions. The *Residential* and *Commercial* sectors were also major emitters with 12,660 t CO₂e and 12,616 t CO₂e respectively, both approximately 27% of emissions.

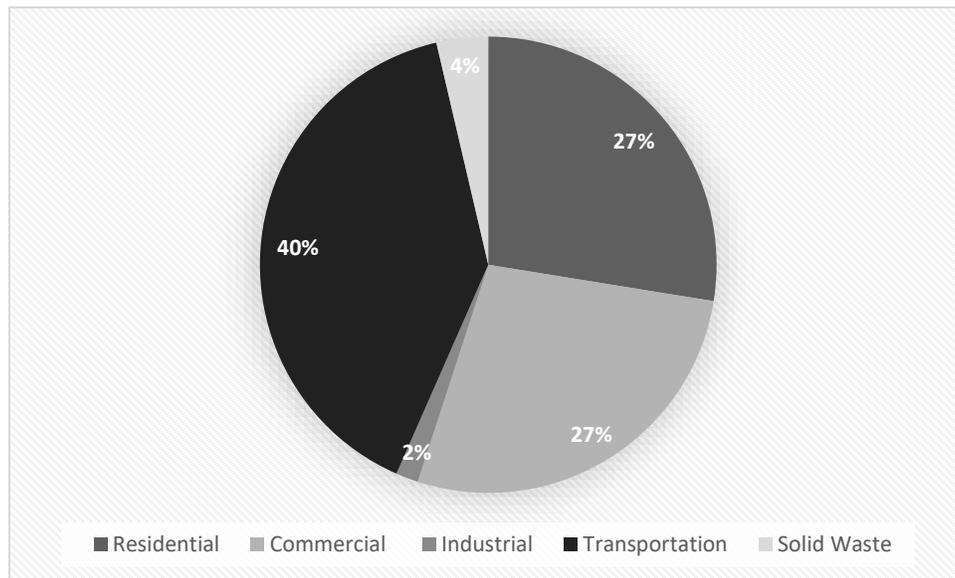


Figure 2: Focus area contributions by percentage of the Town of St. Stephen community emissions

Business-As-Usual Forecasts

The PCP Program requires municipalities to develop a simple forecast reflecting a business-as-usual scenario ten years into the future. Generally, forecasts for municipal operations for most sectors will mirror the population projections for a community. For the Town of St. Stephen, this is challenging, as the permanent resident population has been in decline over recent years as it is a small, rural community. This would indicate a potential for limited or no increase in corporate and community emissions over the next 10 years, even in a business-as-usual scenario.

Methodology for Milestone 3

- Background research
- Meetings with Town Staff and Council
- Community engagement
- Final presentation to council

Background Research

To begin the planning process, the town's inventory report and reduction target were reviewed. Also, local action plans from similar communities across Canada were reviewed to develop an understanding of what actions they are taking. These were accessed through the PCP website.

Meetings with Municipal Staff and Council

The PCP process resumed in St. Stephen on October 22, 2018 with ECW staff presenting to the Town Council. This was done to bring the council up to speed on the project and recruit municipal champions to provide context on barriers and constraints to potential actions. Following this initial presentation, meetings with municipal staff and representatives from Town Council were held monthly to build out the plan. This included setting plan goals, estimated costs and responsible parties for each of the actions while also identifying and address potential barriers and constraints. These meetings were supplemented by conversations with other experts including NB Power representatives, local industry leaders and consultants gather further information on technologies and incentive programs.

Municipal Action Plan 2020-2025

Since the completion of the inventory, the Town of St. Stephen has completed transitioning their streetlights to LED so streetlights will not be addressed in this report.

It is recommended that the town also tracks the savings from energy efficiency actions and utilize at least a portion of them to fund future projects of the same nature. This will allow for more funding from the municipality without increasing taxes and being less reliant on provincial and federal assistance. The primary goals of this plan are:

- Build community awareness and affect behavioural change
- Explore renewable energy
- Transition all lighting in municipal buildings to LED
- Water & Wastewater system upgrades
- Naturalize municipal grounds

Action	Timeline	Lead/Partners	Resources Needed	Estimated Emissions Reduction
New roof and insulation for Maxwell Crossing	Year 1	Town council and staff	An application will be made to the Green Municipal Fund to cover a portion of the cost.	A new roof increases energy efficiency due to increasing insulation values.
Replace lift stations/force main	Year 1	Town council and staff	An application will be made to the Green Municipal Fund to cover a portion of the cost. Gas tax revenue will also	One upgraded pump could save around 5-kg of CO ₂ e/year. The repairs to the lift station will result in further emissions reduction.

			cover a portion of the cost.	
Solar at Garcelon	Year 1	Town council and staff	An application will be made to the Green Municipal Fund to cover a portion of the cost. NB Power has incentive programs that could also contribute.	With the Garcelon Civic Centre being the town's largest emitting building, giving it the ability to produce energy onsite could have a significant impact on the town's emissions.
Public Engagement Campaign	Year 1	Town staff and summer students	Municipal budget will cover most costs. Summer student funding could come from SEED, Canada Summer Jobs or Recreation NB.	Working with residents in an interactive way has the potential to not only lower emissions, but also lower their energy bills.
Business Outreach	Year 1	Future St. Stephen	No additional cost aside from any potential print advertising or materials	Working with local business in an interactive way has the potential to not only lower emission, but also lower energy bills.
Community Garden	Year 2	Community groups/municipal staff	Application to the Environmental Trust Fund to cover the costs of the garden	Providing residents with a place to grow their own food and share knowledge will educate them on the importance of sourcing food locally.
Real Ice	Year 2	Town council and staff	Municipal budget could cover the costs (ROI = 2-3 years)	This system has the potential to reduce 50t of CO ₂ /year.
Green Building Standards	Year 2	Town council and staff	No extra costs associated	This will not have an immediate emission reduction but could have a major impact on future development projects.
Municipal Fleet Upgrades	Year 3	Town council and staff	No new costs, just amendments to town practices	A litre of gasoline emits roughly 2.38kg of CO ₂ .
Anti-Idling Policy	Year 3	Town council and staff; NB Lung Association	No extra costs associated	For every two minutes a car idles, it uses enough gas to travel about 1.5km.
Active Transportation Promotion	Year 3	Town council and staff	If the town chooses a more cost intensive	Active transportation not only lowers emissions but

			option, external funding for recreation promotion or green infrastructure could be explored.	also contributes to a healthier community.
New roof for Public Works	Year 4	Town council and staff	Municipal funds and Gas Tax contributions. Should also explore external funding as the project year approaches.	A new roof increases energy efficiency due to increasing insulation values and can be paired with LED lighting progress for further improvements. The roof should also be made to be solar ready for future renewable projects.
LED Projects	Year 5	Town council and staff	There would be a costs associated with these projects but they have a very short return on investment	LED bulbs are 50-75% more efficient than other bulbs and have a much longer life span.
Urban Forestry Plan	Year 5	Town Horticulturalist/UNB FOREM	By utilizing student work, there would be no up front cost for the development of the plan	One hectare of mature trees absorbs approximately 6.4 tonnes of CO ₂ per year along with many other ecological services (Canadian Council of Forest Ministers, n.d.)
Rain Garden	Year 5	Public Works/Community volunteers	An average rain garden costs between \$3,000-\$4,000 to develop.	With a portion of the town's storm sewer still connecting to the treatment facility, rain gardens would be an inexpensive way to decrease the flow into the system by trapping water and allowing it to permeate the soil.
Rural Lynx Collaboration	Ongoing	Town council	No additional costs to the town as there is already an ongoing relationship with Rural Lynx	Providing people with a reliable public transportation option is a great way to decrease the usage of single occupant vehicles

Action Descriptions

New roof and insulation for Maxwell Crossing

With the Maxwell Crossing building needing a new roof, it is an opportunity to prepare the building for solar infrastructure. If funding is available, including solar could be included during the project. If not, preparing the building for panels in the future would ease the transition in the future. While

the roof work is being completed, LED lighting projects and further insulation could be added to the project for further energy efficiency improvements and to lower the return on investment timelines.

Public Engagement Campaign

Depending on the goals of the town, this could include events, seminars, workshops or other programming that focus on energy efficiency, water conservation, active transportation or waste diversion among many others. Educational content could also be made available on the town website and social media to further engage the community. The only constraints would be funding and human resources. With that in mind, it may be possible to hire summer students through SEED or Canada Summer Jobs to help run the majority of the programming during the summer months.

Business Outreach

With a number of small businesses in the community, steps should be taken to make sure that they have all of the information available to make their buildings running as efficiently as possible. This could be done by town staff or in partnership with Future St. Stephen, NB Power and other third-party groups.

Community Garden

Though not a direct emission reduction measure, this is a great way to educate the community regarding the value of locally produced food as well as how to grow their own. The garden would be developed on town land but managed largely by a group of community volunteers. This would also limit the amount of area that would need to be mowed in summer months, again lowering fuel bills. A small-scale composting system could also be developed within the garden to divert waste from the landfill and help to fertilize the garden.

Real Ice

The Real Ice system allows arenas to flood the ice more efficiently. The system spins the water rather than heating it to roughly 140F. This saves a significant amount of energy and money each year depending on the flooding behaviours within an arena. It is easy to install, with only two hours of plumbing work, and there is no maintenance associated with the technology. With many rinks around the world, including two National Hockey League arenas, already having the technology, there is little concern regarding ice quality.

Green Building Standards

Though this will not have a direct impact on current emissions, it is a way of ensuring that certain guidelines are followed each time that the town begins a new development or undergoes a major retrofit on one of its existing buildings. There are existing building standards in place in Canada, including Leadership in Energy and Environmental Design (LEED) Certifications but the town should consider creating their own standards to ensure that they address the issues that are most important in this region.

Municipal Fleet Upgrades

The best way to reduce emissions associated with the municipal fleet would be to purchase electric or hybrid vehicles. However, due to budgetary and infrastructure constraints, this may not be the most feasible option at this point. There are also certain vehicles in the fleet that do not have EV or hybrid alternatives. Therefore, it is recommended that the town investigate the opportunity for EV or hybrid vehicles during the procurement process but if no alternatives exist, they consult *the Natural Resource*

Canada Fuel Consumption Guide to ensure that they purchase the most efficient vehicle possible to fit their needs.

Anti-Idling Policy

Limiting or eliminating vehicle idling can have a major impact on a community and fueling bills. Conditions can be put in to account for time of year or temperature so that no one is left out in the cold but an effort should be made to eliminate idling behaviour all together. This would not be an enforceable offence but is in place to make people more conscious of their behaviour and the impacts that it has. This has the added bonus of improving air quality within the town.

Active Transportation Promotion

There are many ways to accomplish this goal. Firstly, bike tours around town and surrounding natural areas such as Ganong Nature Park would be great additions to the public engagement action of this plan. Additional trail networks could also be developed in the area to eliminate the need for people to cycle on busy streets. If there is capital available to invest in active transportation infrastructure, select streets within the town could be widened to allow for bike lanes to be added to make cyclists feel safer.

New roof for Public Works

With the Public Works building needing a new roof, it is an opportunity to prepare the building for solar infrastructure. If funding is available, including solar could be included during the project. If not, preparing the building for panels in the future would ease the transition in the future. While the roof work is being completed, LED lighting projects and further insulation could be added to the project for further energy efficiency improvements and to lower the return on investment timelines.

LED Projects

With the LED streetlight transition complete, attention should be turned to doing the same for every light within municipal buildings. This is a very cost-effective way to lower energy consumption with these projects typically having very short return on investment timelines. Because of this, they can be paired with other projects to make them more feasible. A goal for this plan would be to see 100% of municipal lights converted to LED.

Urban Forestry Plan

Trees within a community offer a great deal of ecological services including carbon sequestration and storm water mitigation. St. Stephen could partner with the UNB Faculty of Forestry and Environmental Management to develop a plan and standards to promote these services.

Rain Garden

Very similar to the community garden, however, rain gardens have the added bonus of decreasing the amount of storm water that would enter the sewer system and thus the treatment system. This would lower the flow volume that would need to be treated and the energy required to do so. This could also largely be developed and maintained by volunteers and community groups.

Rural Lynx

The town already contributes to the Rural Lynx bus system which is also funded by other municipalities in Charlotte County and the provincial government. The town should maintain this

relationship and continue to build on the existing infrastructure to work towards a sustainable public transportation network that will be integrative and accessible to all residents.

Implementation and Monitoring

The implementation of the plan will be led by town council but many other important groups will play a role dependent on which action. The plan will be overseen by the town Chief Administrative Officer and the council who will also be responsible for monitoring the progress of the plan on an annual basis to ensure that goals are being met. Success stories will be shared by the town on their website and through their social media account to ensure that the community is kept up to date on the plan's progress throughout the implementation process and to maintain momentum. As we enter the later years, either year 4 or 5, the Steering Committee should be reformed to assess the successes and shortcomings of the initial plan and begin the planning of a subsequent plan to continue to build towards the goal of 30% reduction from 2015 emission levels.

When performing future inventory reports, some measures should be taken into considerations. To ensure that any changes in emission totals is a reflection of practices rather than an increase or decrease in population or infrastructure, it is recommended that controls are introduced. For example, for building emissions, the total could be calculated per square foot to account for any new development or for any buildings being sold or otherwise released from municipal control. The same could be done for community emissions by using the population in each year. This will not completely remove the potential error but will allow for a much more realistic comparison between the two inventories.

Grand Manan Local Action Plan

Introduction

The Village of Grand Manan has been a member of the Partners for Climate Protection (PCP) program, administered by the Federation of Canadian Municipalities (FCM), since 2016. This program is a five-step process designed to reduce greenhouse gas (GHG) emissions and save energy at the municipal level. In 2016, the first milestone of the program was reached when an inventory of both corporate (municipal operations), and community emissions was developed to serve as a baseline for the project. The following year, after reviewing the report, Grand Manan Village Council passed a motion to commit to reducing corporate emissions by 20% (tonnage total) by 2030. No commitment was made for community emissions, however, efforts will be made to achieve reductions nonetheless. The third milestone, development of a local action plan (LAP), is outlined in the following report. It will plan out reduction actions that the Village will implement in the next five-year timeframe, from 2020-2025. A subsequent plan will be developed for the remaining years leading up to 2030 to allow for the latest technologies to be taken into consideration during the planning process. The entire planning process was performed in partnership with the environmental non-profit Eastern Charlotte Waterways Inc. with funding support from the New Brunswick Environmental Trust Fund, made available by the Government of New Brunswick.

Community Profile

The Village of Grand Manan is a small island community located in the Bay of Fundy, and is surrounded by several smaller islands. The island is twenty-four kilometers long, and eleven kilometers wide. The Village was amalgamated on May 8, 1995 and is comprised of the former Villages of North Head, Grand Harbour and Seal Cover and two former local service districts Castalia and Woodward's Cove. The population of the Village of Grand Manan was 2377 in 2011 and dropped to 2360 in 2016, an annual decline of 1.67% (Statistics Canada, 2017).

The main industry of the village has always been fisheries, and more recently, the lobster industry has flourished. The tourism industry also continues to grow as whale watching, sea kayaking, and bird watching have made this area favourable to domestic and international tourists alike. Additionally, Seal Cover has been designated as a National Historic Site of Canada, as it remains comparatively unchanged since the 19th century.

Corporate Emissions Inventory

The corporate inventory is broken down into five priority areas:

- *Buildings;*
- *Vehicle Fleet;*
- *Street, Traffic and Area Lights;*
- *Water and Wastewater Systems; and*
- *Corporate Solid Waste.*

Energy consumption data in these areas was calculated based on 2015 usage data and converted to tonnes of carbon dioxide equivalent (t CO₂e) using the web-based PCP Milestone Tool. A full breakdown of the methodology and results of the inventory can be found in the *Village of Grand Manan Partners for Climate Protection: Milestone 1* report available on the Eastern Charlotte Waterways Inc. website at www.ecw.ngo/mitigation.

The total corporate emissions were calculated to be 303 tonnes of carbon dioxide equivalent (t CO₂e), with *Buildings* accounting for 230 t CO₂e or approximately 76% of corporate emissions. All residents on Grand Manan utilize wells and septic tanks so no municipal Water and Wastewater infrastructure exists on the island. Data collected for *Corporate Solid Waste* was deemed to be inconclusive, or not statistically significant. The overall emissions for this area are negligible (Figure 1).

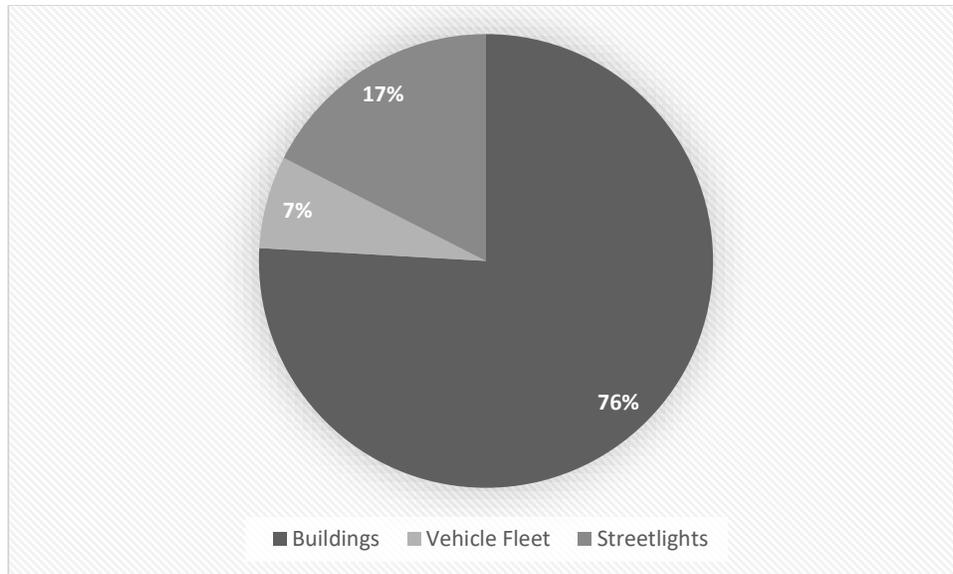


Figure 1: Focus area contributions by percentage of the Village of Grand Manan corporate emissions

Community Emission Inventory

The community inventory is broken down into five priority areas:

- *Residential sector;*
- *Commercial and Institutional sector;*
- *Industrial sector;*
- *Transportation; and*
- *Solid Waste.*

Unlike the corporate inventory, usage data for these areas could not be assembled for all Grand Manan residents so estimates were calculated using the Natural Resources Canada (NRCAN) Comprehensive Energy Use Database as recommended by FCM. Full methodology and results can again be found in the Inventory Report cited above.

In total, the community emitted 23,377 t CO₂e with the largest contributor being *Transportation* sector accounting for 9,007 t CO₂e or approximately 38% of community emissions. The *Residential* sector was also major emitter with 8,075 t CO₂e or approximately 35% of emissions.

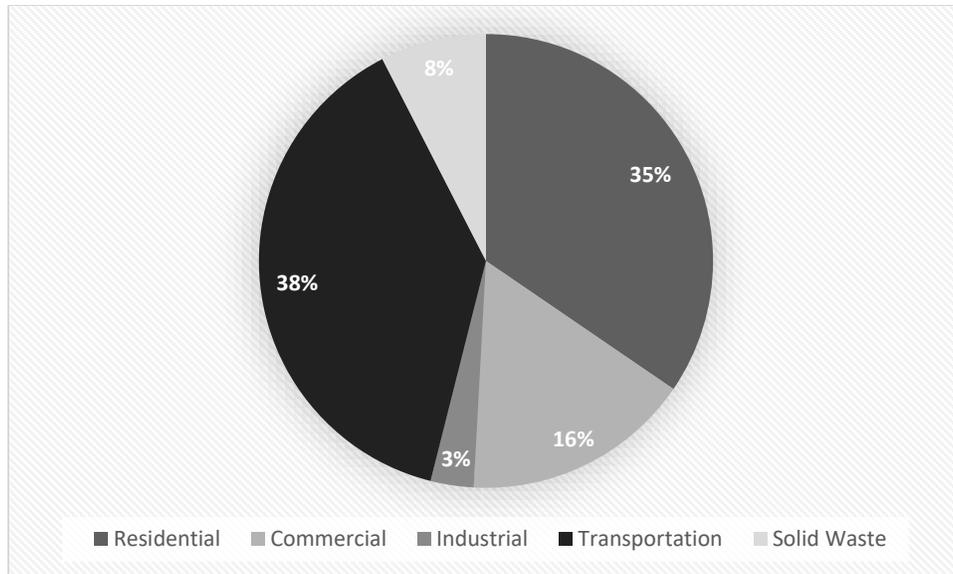


Figure 2: Focus area contributions by percentage of the Village of Grand Manan community emissions

Business-As-Usual Forecasts

The PCP Program requires municipalities to develop a simple forecast reflecting a business-as-usual scenario ten years into the future. Generally, forecasts for municipal operations for most sectors will mirror the population projections for a community. For the Village of Grand Manan, this is challenging, as the permanent resident population has been in decline over recent years as it is a small, rural community. This would indicate a potential for limited or no increase in corporate and community emissions over the next 10 years, even in a business-as-usual scenario.

Methodology for Milestone 3

- Background research
- Meetings with Village Staff and Council
- Community engagement
- Final presentation to council

Background Research

To begin the planning process, the village's inventory report and reduction target were reviewed. Also, local action plans from similar communities across Canada were reviewed to develop an understanding of what actions they are taking. These were accessed through the PCP website.

Council Presentation

The PCP process resumed in Grand Manan on November 5th, 2018 with ECW staff presenting to the village council. This was done to bring the council up to speed on the project and recruit municipal champions to provide context on barriers and constraints to potential actions. Following this initial presentation, meetings with municipal staff and representatives from village council were held monthly to

build out the plan. This included setting plan goals, estimated costs and responsible parties for each of the actions while also identifying and address potential barriers and constraints. These meetings were supplemented by conversations with other experts including NB Power representatives, local industry leaders and consultants gather further information on technologies and incentive programs.

Municipal Action Plan 2020-2025

Grand Manan has been very active in improving the efficiency of their operations in recent years. Namely, the Community Complex, constructed in 2009, houses the Grand Manan Boys and Girls Club, Municipal Offices, Community Arena, Fitness Centre and Community Gymnasium. The building utilizes geothermal technology and the arena is fitted with Eco Ice Technology. In addition, both the Business Centre and Fire Hall have undergone retrofits to comply with NB Power’s Energy Efficiency Program.

It is recommended that the village also tracks the savings from energy efficiency actions and utilize at least a portion of them to fund future projects of the same nature. This will allow for more funding from the municipality without increasing taxes and being less reliant on provincial and federal assistance. The primary goals of this plan are:

- Build community awareness and affect behavioural change
- Further explore renewable energy
- Transition all lighting in municipal buildings to LED
- Naturalize the landscape

Action	Timeline	Lead/Partners	Resources Needed	Estimated Emissions Reduction
Anaerobic Digester	Year 1	Village council and staff	An application will be made to the Green Municipal Fund to cover a portion of the cost.	In 2011, annual global emissions from food waste were greater than all but two countries.
LED Gym Project	Year 1	Village Council and staff	An application will be made to the Green Municipal Fund to cover a portion of the cost.	LED bulbs are 50-75% more efficient than other bulbs and have a much longer life span.
Public Engagement Campaign	Year 1	Recreation Director; Summer student(s)	Municipal budget will cover most costs. Summer student funding could come from SEED, Canada Summer Jobs or Recreation NB.	Working with residents in an interactive way has the potential to not only lower emissions, but also lower their energy bills.
Green Building Standards	Year 2	Village council and staff	No extra costs associated	This will not have an immediate

				emission reduction but could have a major impact on future development projects.
Purchase electric forklift	Year 5	Village council and staff	Prices typically range from \$7,000-\$12,000	Along with having no tailpipe emissions, electric forklifts reduce the need for maintenance and allow for significant fuel savings.
Business Outreach	Year 2	Village council and staff	No additional cost aside from any potential print advertising or materials	Working with local business in and interactive way has the potential to not only lower emission, but also lower energy bills.
Community Garden	Year 2	Community volunteers	Application to the Environmental Trust Fund to cover the costs of the garden	Providing residents with a place to grow their own food and share knowledge will educate them on the importance of sourcing food locally.
Anti-Idling Policy	Year 3	Village council and staff; NB Lung Association	No extra costs associated	For every two minutes a car idles, it uses enough gas to travel about 1.5km.
Active Transportation Promotion	Year 3	Village council and staff	If the village chooses a more cost intensive option, external funding for recreation promotion or green infrastructure could be explored.	Active transportation not only lowers emissions but also contributes to a healthier community.

Rural Lynx	Ongoing	Village council	No additional costs to the village as there is already an ongoing relationship with Rural Lynx	Providing people with a reliable public transportation option is a great way to decrease the usage of single occupant vehicles
Urban Forestry Plan	Year 4	UNB FOREM	By utilizing student work, there would be no up-front cost for the development of the plan	One hectare of mature trees absorbs approximately 6.4 tonnes of CO ₂ per year along with many other ecological services (Canadian Council of Forest Ministers, n.d.)

Action Descriptions

Green Building Standards

Though this will not have a direct impact on current emissions, it is a way of ensuring that certain guidelines are followed each time that the village begins a new development or undergoes a major retrofit on one of its existing buildings. There are existing building standards in place in Canada, including Leadership in Energy and Environmental Design (LEED) Certifications but the village should consider creating their own standards to ensure that they address the issues that are most important in this region.

Purchase Electric Forklift

With the village having no conventional municipal fleet, the only vehicles that they own and operate are associated with their Transfer Station. It is recommended that they pursue the purchase of an electric forklift to significantly lower emissions compared to a typical diesel forklift. For all other vehicle purchases, it is recommended that the village consult the *Natural Resource Canada Fuel Consumption Guide* to ensure that they purchase the most efficient vehicle possible to fit their needs.

Business Outreach

With a number of small businesses in the community, steps should be taken to make sure that they have all of the information available to make their buildings running as efficiently as possible. This could be done by village staff or in partnership with NB Power and other third-party groups.

Community Garden

Though not a direct emission reduction measure, this is a great way to educate the community regarding the value of locally produced food as well as how to grow their own. The garden would be developed on

village land but managed largely by a group of community volunteers. This would also limit the amount of area that would need to be mowed in summer months, again lowering fuel bills. A small-scale composting system could also be developed within the garden to divert waste from the landfill and help to fertilize the garden.

Anti-Idling Policy

Limiting or eliminating vehicle idling can have a major impact on a community and fueling bills. Conditions can be put in to account for time of year or temperature so that no one is left out in the cold but an effort should be made to eliminate idling behaviour all together. This would not be an enforceable offence but is in place to make people more conscious of their behaviour and the impacts that it has. This has the added bonus of improving air quality within the village.

Active Transportation Promotion

There are many ways to accomplish this goal. Firstly, bike tours around the village and surrounding natural areas would be great additions to the public engagement action of this plan. Additional trail networks could also be developed in the area to eliminate the need for people to cycle on busy streets. If there is capital available to invest in active transportation infrastructure, select streets within the village could be widened to allow for bike lanes to be added to make cyclists feel safer.

Rural Lynx

The village already contributes to the Rural Lynx bus system which is also funded by other municipalities in Charlotte County and the provincial government. The village should maintain this relationship and continue to build on the existing infrastructure to work towards a sustainable public transportation network that will be integrative and accessible to all residents.

Urban Forestry Plan

Trees within a community offer a great deal of ecological services including carbon sequestration and storm water mitigation. Grand Manan could partner with the UNB Faculty of Forestry and Environmental Management to develop a plan and standards to promote these services.

Implementation and Monitoring

The implementation of the plan will be led by village council but many other important groups will play a role dependent on which action. The plan will be overseen by the village Chief Administrative Officer and the council who will also be responsible for monitoring the progress of the plan on an annual basis to ensure that goals are being met. Success stories will be shared by the village on their website and through their social media account to ensure that the community is kept up to date on the plan's progress throughout the implementation process and to maintain momentum. As we enter the later years, either year 4 or 5, the Steering Committee should be reformed to assess the successes and shortcomings of the initial plan and begin the planning of a subsequent plan to continue to build towards the goal of 30% reduction from 2015 emission levels.

When performing future inventory reports, some measures should be taken into considerations. To ensure that any changes in emission totals is a reflection of practices rather than an increase or decrease in

population or infrastructure, it is recommended that controls are introduced. For example, for building emissions, the total could be calculated per square foot to account for any new development or for any buildings being sold or otherwise released from municipal control. The same could be done for community emissions by using the population in each year. This will not completely remove the potential error but will allow for a much more realistic comparison between the two inventories.

Blacks Harbour Local Action Plan

Introduction

The Village of Blacks Harbour has been a member of the Partners for Climate Protection (PCP) program, administered by the Federation of Canadian Municipalities (FCM), since 2016. This program is a five-step process designed to reduce greenhouse gas (GHG) emissions and save energy at the municipal level. In 2016, the first milestone of the program was reached when an inventory of both corporate (municipal operations), and community emissions was developed to serve as a baseline for the project. The following year, after reviewing the report, Blacks Harbour Village Council passed a motion to commit to reducing corporate emissions by 30% (tonnage total) by 2030. No commitment was made for community emissions, however, efforts will be made to achieve reductions nonetheless. The third milestone, development of a local action plan (LAP), is outlined in the following report. It will plan out reduction actions that the Village will implement over a five-year timeframe, from 2020-2025. A subsequent plan will be developed for the remaining years leading up to 2030 to allow for the latest technologies to be taken into consideration during the planning process. The entire planning process was performed in partnership with the environmental non-profit Eastern Charlotte Waterways Inc. with funding support from the New Brunswick Environmental Trust Fund, made available by the Government of New Brunswick.

Community Profile

Incorporated in 1972, Blacks Harbour is a small, rural community located on the shores of the Bay of Fundy and boasts a strong fishing industry based, almost exclusively, on herring in addition to multiple aquaculture sites for the production of Atlantic salmon (Village of Blacks Harbour, 2017). Two companies play a major role in the community, Connors Bros. and Cooke Aquaculture. Each has a longstanding relationship with the village. The Village serves as the only ferry point to the island of Grand Manan. The population of Blacks Harbour was 982 in 2011 and dropped to 894 in 2016, an annual decline of 1.8% (Statistics Canada, 2017).

Corporate Emissions Inventory

The corporate inventory is broken down into five priority areas:

- *Buildings;*
- *Vehicle Fleet;*
- *Street, Traffic and Area Lights;*
- *Water and Wastewater Systems; and*

- *Corporate Solid Waste.*

Energy consumption data in these areas was calculated based on 2015 usage data and converted to tonnes of carbon dioxide equivalent (t CO₂e) using the web-based PCP Milestone Tool. A full breakdown of the methodology and results of the inventory can be found in the *Village of Blacks Harbour Partners for Climate Protection: Milestone 1* report available on the Eastern Charlotte Waterways Inc. website at www.ecw.ngo/mitigation.

The total corporate emissions were calculated to be 434 tonnes of t CO₂e, with *Buildings* accounting for 182 t CO₂e or approximately 42% of corporate emissions. *Water and Wastewater Systems* was the second largest emitting category, accounting for 180 t CO₂e or approximately 41% of emissions. Data collected for *Corporate Solid Waste* was deemed to be inconclusive, or not statistically significant. The overall emissions for this area are negligible (Figure 1).

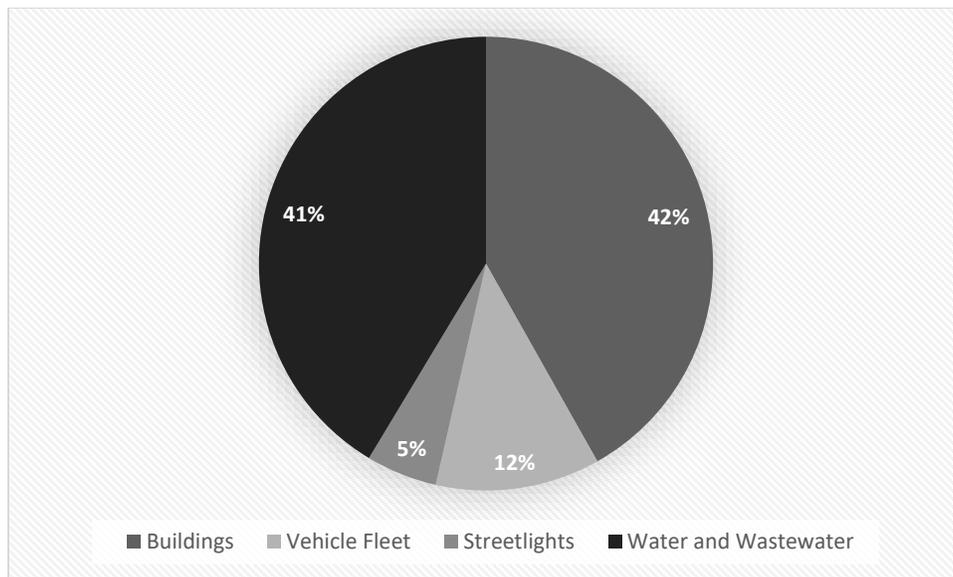


Figure 1: Focus area contributions by percentage of the Village of Blacks Harbour corporate emissions

Community Emission Inventory

The community inventory is broken down into five priority areas:

- *Residential sector;*
- *Commercial and Institutional sector;*
- *Industrial sector;*
- *Transportation; and*
- *Solid Waste.*

Unlike the corporate inventory, usage data for these areas could not be assembled for all Blacks Harbour residents so estimates were calculated using the Natural Resources Canada (NRCAN) Comprehensive Energy Use Database as recommended by FCM. Full methodology and results can again be found in the Inventory Report cited above.

In total, community emitted 9,906 t CO₂e with the largest contributor being *Transportation* sector accounting for 3,314 t CO₂e or approximately 33% of community emissions. The *Residential* and *Commercial* sectors were also major emitters with 2,536 t CO₂e (26%) and 2,118 t CO₂e (21%) respectively.

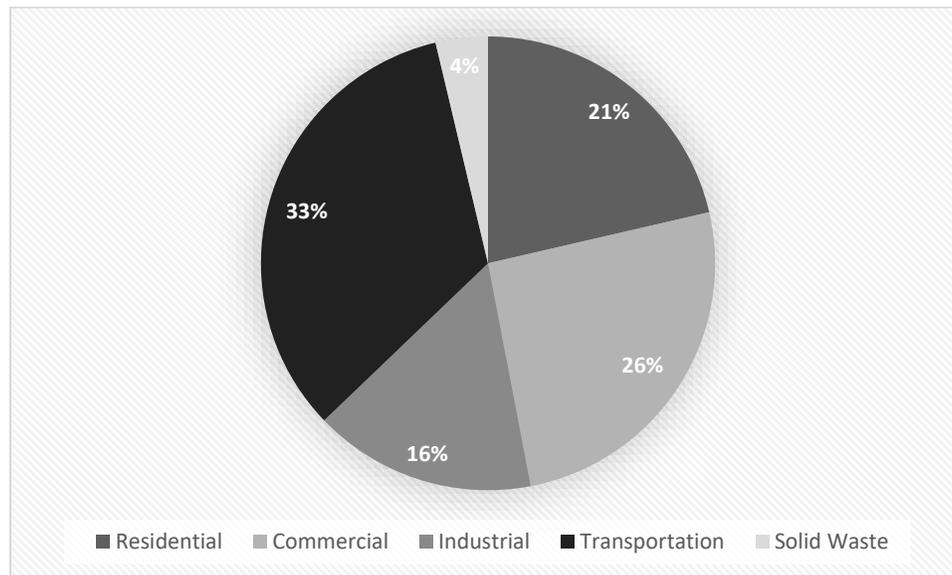


Figure 2: Focus area contributions by percentage of the Village of Blacks Harbour community emissions

Business-As-Usual Forecasts

The PCP Program requires municipalities to develop a simple forecast reflecting a business-as-usual scenario ten years into the future. Generally, forecasts for municipal operations for most sectors will mirror the population projections for a community. For the Village of Blacks Harbour, this is challenging, as the permanent resident population has been in decline over recent years as it is a small, rural community. This would indicate a potential for limited or no increase in corporate and community emissions over the next 10 years, even in a business-as-usual scenario.

Methodology for Milestone 3

- Background research
- Meetings with Village Staff and Council
- Community engagement
- Final presentation to council

Background Research

To begin the planning process, the village's inventory report and reduction target were reviewed. Also, local action plans from similar communities across Canada were reviewed to develop an understanding of what actions they are taking. These were accessed through the PCP website.

Meetings with Municipal Staff and Council

The PCP process resumed in Blacks Harbour on October 17, 2018 with ECW staff presenting to the Village Council. This was done to bring the council up to speed on the project and recruit municipal

champions to provide context on barriers and constraints to potential actions. Following this initial presentation, meetings with municipal staff and representatives from village council were held monthly to build out the plan. This included setting plan goals, estimated costs and responsible parties for each of the actions while also identifying and address potential barriers and constraints. These meetings were supplemented by conversations with other experts including NB Power representatives, local industry leaders and consultants gather further information on technologies and incentive programs.

Municipal Action Plan 2020-2025

The village has continued work to lower their emissions since the inventory was conducted in 2015. Namely, they conducted a retrofit of the municipal arena which included LED lighting and heating systems among other focus areas.

It is recommended that the village also tracks the savings from energy efficiency actions and utilize at least a portion of them to fund future projects of the same nature. This will allow for more funding from the municipality without increasing taxes and being less reliant on provincial and federal assistance. The primary goals of this plan are:

- Build community awareness and affect behavioural change
- Explore renewable energy
- Transition all lighting in municipal buildings to LED
- Water & Wastewater system upgrades
- Naturalize municipal grounds

Action	Timeline	Responsibility	Funding Avenue	Notes
Green Building Standards	Year 1	Village council and staff	No extra costs associated	This will not have an immediate emissions reduction but could significantly reduce the impact of future development projects
Real Ice	Year 1	Village council and staff	\$35,000 (ROI=2-3 years); rental options also available	This system has the potential to eliminate 50t of CO ₂ /year
LED Lighting Transition	Ongoing	Village council and staff	There would be a cost associated with these projects but they have a very short return on investment.	LED bulbs are 50-75% more efficient than other bulbs and have a much longer life span.
Anti-Idling Policy	Year 2	Village council and staff	No extra costs associated	For every two minutes a car idles, it uses enough fuel to travel roughly 1.5km.

Update municipal fleet	Year 3	Village council and staff	No new costs, just amendments to village practices	A litre of gasoline emits roughly 2.38kg of CO ₂ .
Rain garden	Year 2	Public Works/Community volunteers	An average rain garden costs between \$3,000-\$4,000 to develop	With a portion of the village's storm sewer still connecting to the treatment facility, rain gardens would be an inexpensive way to decrease the flow into the system by trapping water and allowing it to permeate the soil.
Public Engagement Campaign	Year 1	Village staff/summer students	Municipal budget will cover most costs. Summer student funding could come from SEED, Canada Summer Jobs or Recreation NB.	Working with residents in an interactive way has the potential to not only lower emissions, but also lower their energy bills.
Business Outreach	Year 2	Village staff	No additional cost aside from any potential print advertising or materials	Working with local business in an interactive way has the potential to not only lower emission, but also lower energy bills.
Urban Forestry Plan	Year 5	UNB FOREM	By utilizing student work, there would be no up front cost for the development of the plan	One hectare of mature trees absorbs approximately 6.4 tonnes of CO ₂ per year along with many other ecological services (Canadian Council of Forest Ministers, n.d.)
Promote Active Transportation	Year 3	Village council and staff	If the village chooses a more cost intensive option, external funding for recreation promotion or green infrastructure could be explored.	Active transportation not only lowers emissions but also contributes to a healthier community.

Composting within Community Garden	Year 2	Community groups/municipal staff	Application to the Environmental Trust Fund to cover the costs	In 2011, annual global emissions from food waste were greater than all but two countries.
Rural Lynx	Ongoing	Village council	No additional costs to the village as there is already an ongoing relationship with Rural Lynx	Providing people with a reliable public transportation option is a great way to decrease the usage of single occupant vehicles

Action Descriptions

Green Building Standards

Though this will not have a direct impact on current emissions, it is a way of ensuring that certain guidelines are followed each time that the village begins a new development or undergoes a major retrofit on one of its existing buildings. There are existing building standards in place in Canada, including Leadership in Energy and Environmental Design (LEED) Certifications but the village should consider creating their own standards to ensure that they address the issues that are most important in this region.

Real Ice

The Real Ice system allows arenas to flood the ice more efficiently. The system spins the water rather than heating it to roughly 140F. This saves a significant amount of energy and money each year depending on the flooding behaviours within an arena. It is easy to install, with only two hours of plumbing work, and there is no maintenance associated with the technology. With many rinks around the world, including two National Hockey League arenas, already having the technology, there is little concern regarding ice quality.

LED Projects

With the LED streetlight transition complete, attention should be turned to doing the same for every light within municipal buildings. This is a very cost-effective way to lower energy consumption with these projects typically having very short return on investment timelines. Because of this, they can be paired with other projects to make them more feasible. A goal for this plan would be to see 100% of municipal lights converted to LED.

Anti-Idling Policy

Limiting or eliminating vehicle idling can have a major impact on a community and fueling bills. Conditions can be put in to account for time of year or temperature so that no one is left out in the cold but an effort should be made to eliminate idling behaviour all together. This would not be an enforceable offence but is in place to make people more conscious of their behaviour and the impacts that it has. This has the added bonus of improving air quality within the village.

Municipal Fleet Upgrades

The best way to reduce emissions associated with the municipal fleet would be to purchase electric or hybrid vehicles. However, due to budgetary and infrastructure constraints, this may not be the most feasible option at this point. There are also certain vehicles in the fleet that do not have EV or hybrid alternatives. Therefore, it is recommended that the village investigate the opportunity for EV or hybrid vehicles during the procurement process but if no alternatives exist, they consult *the Natural Resource Canada Fuel Consumption Guide* to ensure that they purchase the most efficient vehicle possible to fit their needs.

Rain Garden

Very similar to the community garden, however, rain gardens have the added bonus of decreasing the amount of storm water that would enter the sewer system and thus the treatment system. This would lower the flow volume that would need to be treated and the energy required to do so. This could also largely be developed and maintained by volunteers and community groups.

Public Engagement Campaign

Depending on the goals of the village, this could include events, seminars, workshops or other programming that focus on energy efficiency, water conservation, active transportation or waste diversion among many others. Educational content could also be made available on the village website and social media to further engage the community. The only constraints would be funding and human resources. With that in mind, it may be possible to hire summer students through SEED or Canada Summer Jobs to help run the majority of the programming during the summer months.

Business Outreach

With a number of small businesses in the community, steps should be taken to make sure that they have all of the information available to make their buildings running as efficiently as possible. This could be done by village staff, NB Power and other third-party groups.

Urban Forestry Plan

Trees within a community offer a great deal of ecological services including carbon sequestration and storm water mitigation. Blacks Harbour could partner with the UNB Faculty of Forestry and Environmental Management to develop a plan and standards to promote these services.

Active Transportation Promotion

There are many ways to accomplish this goal. Firstly, bike tours around village and surrounding natural areas would be great additions to the public engagement action of this plan. Additional trail networks could also be developed in the area to eliminate the need for people to cycle on busy streets. If there is capital available to invest in active transportation infrastructure, select streets within the village could be widened to allow for bike lanes to be added to make cyclists feel safer.

Composting within Community Garden

The Village of Blacks Harbour has a very popular community garden that is full each growing season with active residents. To help keep the garden fertile and help divert waste from landfill, a composting system should be incorporated into the garden. Part of this strategy could also include expanding the current garden or creating another within the community.

Rural Lynx

The village already contributes to the Rural Lynx bus system which is also funded by other municipalities in Charlotte County and the provincial government. The village should maintain this relationship and continue to build on the existing infrastructure to work towards a sustainable public transportation network that will be integrative and accessible to all residents.

Implementation and Monitoring

The implementation of the plan will be led by village council but many other important groups will play a role dependent on which action. The plan will be overseen by the village's Chief Administrative Officer and the council who will also be responsible for monitoring the progress of the plan on an annual basis to ensure that goals are being met. Success stories will be shared by the village on their website and through their social media account to ensure that the community is kept up to date on the plan's progress throughout the implementation process and to maintain momentum. As we enter the later years, either year 4 or 5, the Steering Committee should be reformed to assess the successes and shortcomings of the initial plan and begin the planning of a subsequent plan to continue to build towards the goal of 30% reduction from 2015 emission levels.

When performing future inventory reports, some measures should be taken into considerations. To ensure that any changes in emission totals is a reflection of practices rather than an increase or decrease in population or infrastructure, it is recommended that controls are introduced. For example, for building emissions, the total could be calculated per square foot to account for any new development or for any buildings being sold or otherwise released from municipal control. The same could be done for community emissions by using the population in each year. This will not completely remove the potential error but will allow for a much more realistic comparison between the two inventories.