

Town of Saint Andrews Greenhouse Gas Emissions Mitigation Plan

Partners for Climate Protection: Milestone 2 & 3

Prepared for the Town of Saint Andrews



Prepared by Eastern Charlotte Waterways



Town of Saint Andrews Greenhouse Gas Emissions Mitigation Plan 2022 - 2034

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REPORT TO

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Executive Summary

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 (GHG) and save energy at the municipal level. The Town of Saint Andrews joined this program in August 2021 and entered into a partnership with Eastern Charlotte Waterways (ECW) to conduct the project under Environmental Trust Fund (ETF) funding. The first milestone of the project, the creation of a Baseline GHG inventory of corporate (municipally based operations) for the year 2020 was completed December 2021. The resulting report consisted of a greenhouse gas inventory breakdown of the total level of CO₂e Greenhouse Gas Emissions by the municipality in five main sectors: 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 January 2022, Saint Andrews town council passed a motion to commit to reducing corporate emissions by 30% (tonnage total) below 2020 levels by 2034. This is a reduction of 202.56 tonnes of CO₂e. The discussion and passed motion are as follows:

Setting Greenhouse Gas Emissions Target for the Town of Saint Andrews, PW220102 (Annex I)

Council addressed concerns of trying to achieve a 30% reduction within 8 years based on the motion when it took 12 years to achieve a 22% reduction. It was noted that the Town has made upgrades to windows, heat pumps, and lighting systems through municipal facilities and streetlights. It was suggested that the 30% reduction target might not be achievable before 2030. CAO Spear clarified this would be a 7-year window to meet the reduction target. Eastern Charlotte Waterways was consulted by staff on this process and noted that there would need to be a serious initiative and capital investment to achieve the reduction

goals by 2030. The W.C. O'Neill Arena Complex and the Water and Wastewater Treatment Plants make up more than 50% of the Greenhouse Gas Emissions for the municipal corporation. Council noted that the budget considerations would have to be made in 2023 to get the process going with engineer overviews that can determine what exactly can be done to the facilities. Funding is available through the Federation of Canadian Municipalities to help cover planning costs. Council noted that the Province just put out a new Flood Zone map indicating higher sea level rises than previously predicted. Youth in our community will see these changes in their lifetimes and the Town should help to do its part in reducing emissions. Council asked how the Town was doing in reducing emissions versus other municipalities and wanted to know how we could be a leader and influence other communities to participate. Staff noted that they will find out whether the Town sits against other municipalities and the goals of reducing energy and gas emissions. Council noted they would like to set the target of 30% versus 20% as this would be a stronger and higher benchmark to achieve. Council proposed extending the date from 2030 to 2034, giving more time to budget, find funding, and identify the exact projects that will help meet the 30% reduction target.

Motion: 014 - 01/22

Moved by: Council Blanchard

Seconded by: Councilor Neil

The Council sets the Greenhouse Gas Emissions reduction target of 30% below 2020 levels by 2034 or 202.56 tCO₂e or the Greenhouse Gas mitigation plan and Energy Study for the Town of Saint Andrews being completed by ECW.

At this time, the Town is also looking to reduce community emissions through a community energy plan (CEP) done through QUEST. With the Town's commitment to this reduction target, the PCP program entered into the third phase of planning: developing a local action plan. Through 2021-2022, ECW worked closely with the town to coordinate ample and effective stakeholder engagement and worked with the Environmental Advisory Committee (EAC) to continue to guide the municipality 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 local action plan.

Introduction

The core objective of the local action plan maps out specific reduction actions, in each of the five main corporate emission sectors, that the municipality will implement over a **12-year timeframe**, starting in **2022 to 2034**. In the largest emitting sector, buildings, much of the initial 'low bearing fruit' actions, mainly creating efficiencies like LED lights have been achieved because of recommendations from the 2008 energy audit (Annex II). The municipality is therefore 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 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 the municipality to understand what projects are plausible within the scope of the town and that will result in meaningful change. It is our intention that a subsequent plan will be developed in the future to allow for the latest technologies, potential resources, and financial means to catch up and be taken into consideration during the planning process.

A number of new targets set by the provincial and federal government set a precedence for adopting bigger goals in the long term. The Government of Canada set a target at the end of 2021 to have net zero

emissions by 2050 and the Government of New Brunswick's Climate Change Action Plan includes an action point to be carbon-neutral in government operations, facilities and vehicles by 2030. The PCP program also empowers members to consider adopting a deeper corporate emissions reduction target of 80 per cent by 2050. With all these in mind, there exists potential to set more ambitious goals for 2050.

“With jurisdiction over buildings, transportation, waste and land-use planning, municipalities have influence over approximately 50 % of Canada’s emissions. They are more nimble and closer to the ground than higher levels of government, enabling them to act quickly in a crisis and engage directly with residents. They are also natural environments for piloting innovative climate solutions that can be scaled elsewhere.” – The Tamarack Institute; Laura Schnurr

The Town of Saint Andrews has been a member of the Partners for Climate Protection (PCP) program, administered by the Federation of Canadian Municipalities (FCM), since August 2021. This program is a five-step process designed to reduce greenhouse gas (GHG) emissions and save energy at the municipal level. In December 2021, the first milestone of the program was reached when an inventory of corporate (municipal) operations was developed to serve as a baseline for the project (Annex III).

In January 2022, after reviewing the report, the Saint Andrews Town Council passed a motion to commit to reducing corporate emissions by **30% below 2020 levels by 2034**. The adoption of this emissions reduction target completed the second milestone of the program. 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 twelve-year timeframe, from 2022-2034. The entire planning process was performed in partnership with the environmental non-profit ECW Inc. with funding support from the New Brunswick Environmental Trust Fund, made available by the Government of New Brunswick.

Community Profile

Located on a peninsula jutting out into the Passamaquoddy (Peskotomuhkati) Bay, the town covers an area of approximately 8.35 km². Saint Andrews was founded by United Empire loyalists in 1783 and is well-preserved with many of the original buildings still standing. The town was incorporated in 1903 and served as a seaport, port of entry, and the terminus of the Canadian Pacific Railway. In 1998, Saint Andrews was designated as a National Historic Site. The town has a thriving tourism industry and is popular with domestic and international tourists alike. It has been attracting more than 80,000 travelers annually from all around the world. The year-round population of Saint Andrews was 1,786 in 2016 and rose to 2,048 in recently released CENSUS datasets from 2020. This results in a 14% increase in the overall population of the municipality.

The Town of Saint Andrews is considered one of the most vulnerable areas to climate change impacts due to its proximity to the coast. The area and community are exposed to rising sea-levels, the increase in intensity and frequency of severe storm surge events, and flooding. Recognizing these vulnerabilities and risks, the Town of Saint Andrews has proactively taken a series of actions to create comprehensive, informed climate adaptation actions. Saint Andrews for similar reasons has a vested interest in climate mitigation, mitigating and reducing emissions of greenhouse gas into the atmosphere to help mitigate the effects of climate change and make it easier to adapt to the changes we can no longer avoid.

It is important to note that the overall geographical boundaries of this municipality will change in 2022 under the New Brunswick Local Governance Reform legislation. Many of the current municipal (corporate) assets fall within the current geographical boundaries of Saint Andrews, however special care should be given to the future developments that may fall outside the scope of this report.

Town of St. Andrews Corporate Emissions Inventory

Review of 2020 Baseline GHG 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 2020 usage data and converted to tonnes of carbon dioxide equivalent (tCO₂e) using the GHG Quantification Spreadsheet developed by ECW in 2020. The full breakdown for each of the municipal corporate sector methodology and results of the inventory are available in the Town of Saint Andrews Greenhouse Gas Emissions Inventory Report 2020 (attached).

Overall, the Town of Saint Andrews operations emissions were calculated to be 675.22 tonnes of CO₂e in 2020. With Buildings & Facilities accounting for 327.02 tCO₂e or 49% of emission followed closely by the Water & Wastewater System emitting 203.26 tonnes of CO₂e, this represents 30% of all corporate sector emissions. The remainder belonged to the vehicle fleet and streetlights. There was no data available for Corporate Solid Waste. (Figure 1).

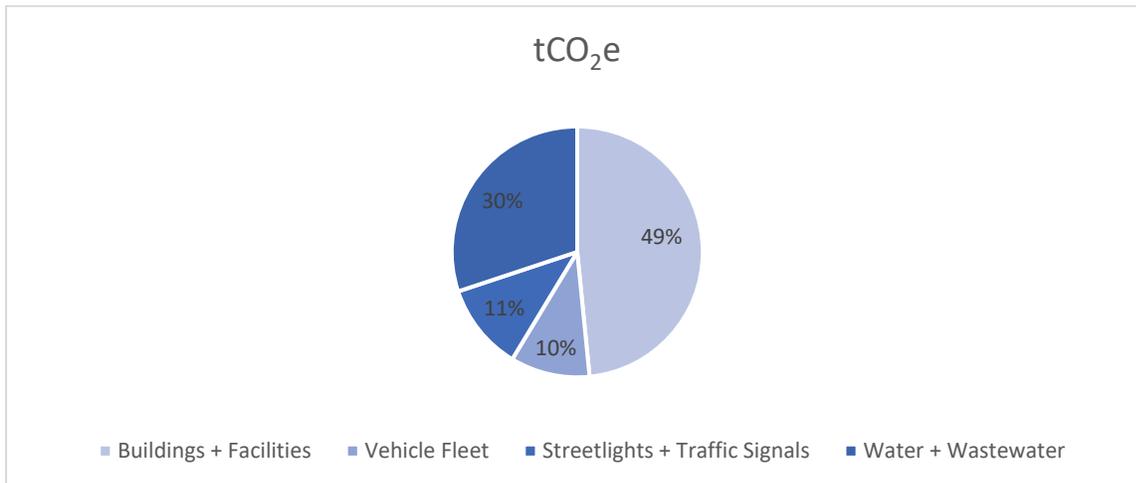


Figure 1 Emissions Percentage (%) by Sector

Business-As-Usual Forecasts

The PCP Program requires municipalities to develop a simple forecast reflecting a business-as-usual scenario 10 years into the future. Generally, forecasts for municipal operations for most sectors will mirror the population projections for a community. The year-round population of Saint Andrews was 1,786 in 2016 and rose to 2,048 in recently released CENSUS datasets from 2020. This results in a 14% increase in the overall population of the municipality, which indicates a limited increase in emissions over the next 10 years.

Methodology for the Local Action Plan

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

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 2020 usage data and converted to tonnes of carbon dioxide (tCO₂e) using the GHG Quantification Spreadsheet developed by ECW in 2020. The full breakdown for each of the municipal corporate sector methodology and results of the inventory are available in the Town of Saint Andrews Greenhouse Gas Emissions Inventory Report 2020. This completed phase I of the PCP program.

Phase II required Council to set a clear emission reduction target. An emission reduction target is defined as the quantity of emissions a municipality wants to reduce by a certain future date. It must include the baseline year, target year and percentage change from baseline year and be approved and adopted by the municipal council. After some deliberations and internal dialogue with staff and Council, it was decided in January 2022 that the Town of Saint Andrews would commit to a 30% GHG reduction below 2020 levels by 2034. Council determined that in order for this to happen, they will have to start to include future projects in their annual Capital Budget discussions.

Phase III is a Local Action Plan to assist town staff and Council with concrete, tangible projects to implement in order to meet their 30% reduction target goal. 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 (GHGs). This was primarily achieved by reviewing previous local action plans created by ECW for other municipalities within Charlotte County and 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 the Town of Saint Andrews. 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.

In accordance with the creation of the Municipal Local Action Plan, the town was also creating a Community Energy Plan through QUEST, that was also used as a resource for plausible strategies.

Meeting with Municipal Staff and Council

Once the baseline report was circulated and emissions targets were set, meetings with municipal staff and representatives from town council and the Environmental Advisory Committee were made to provide context on barriers and constraints to potential actions, meetings were held frequently over the period between January and March 2022 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.

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 Town of Saint Andrews in particular with the Chief Administrative Officer (CAO), Treasurer-Clerk, and with the Environmental Advisory Committee (EAC). The EAC acts as an advisory committee to the Town of Saint Andrews Council to offer advice and recommendations to help guide and support positive environmental management protocols and policies outlined in various strategic documents. Some of these documents include but are not limited to the 2020 *Municipal Plan* developed by the Southwest New Brunswick Service Commission (SNBSC) and the *Community-Based Climate Adaptation Plan* developed by ECW in 2018.

EAC Mandate:

The Environmental Advisory Committee will work to champion local actions to address community environmental concerns and pertinent environmental issues. The Committee will provide a forum for members of the public to express concerns and discuss policies, regulations, and other protocols in relation to environmental sustainability, management, and conversations to contribute to the overall quality of life.

The core intention of engagement was to obtain an understanding of the role of greenhouse gas emissions and the feasibility of some project proposals.

Site Visits with Town Asset Manager

In February 2022 we met with the Town Asset Manager to do site visits of the top 10 emitting buildings and to gain a better understanding of the current conditions of the building and whether there were efficiency upgrades currently planned or in progress, and where there was room for improvement. Full notes on the site visits are found in the building section below.

Presentation(s) to Council

Final presentations were set to be made to Council in **April 2022** 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.

Current Conditions & Sector Strategies

The GHG inventory does not cover qualitative information about the current state of an asset, energy reduction strategies already planned, or the priorities of stakeholders. The inventory also only gives emissions of an asset as a whole but lacks detail about the greatest energy drains within an asset. Through research and conversations with town staff and other stakeholder groups, general strategies for energy reductions in specific sectors were formed. Priority assets were identified and in some cases priority strategies as well, these were mainly targeted at the highest emitters. It should not be dismissed however that small changes across sectors can add up.

Buildings

Buildings being the highest emitter are considered a priority area, particularly the W.C. O'Neill Arena Complex which emits 100 more tonnes of CO₂ than any other town owned asset. However, many of the

'low hanging fruit' strategies like LED light transition and increasing efficiency of existing equipment and operations are already in progress as a result of recommendations made in the 2008 Audit. Therefore, it has been identified that deeper structural change to the building's energy system is needed, such as converting the source of energy to a renewable source (solar, wind or geothermal). The arena complex is also centrally located to several other buildings (the Fire Station, R.C.M.P Building and Youth Center) which presents the opportunity to connect these to a renewable source as well. This action was deemed a priority by the Environmental Advisory Committee during a meeting in January 2022. There were however some concerns raised that geothermal would not be possible because of the shallow bedrock in the Saint Andrews area, or that there is not enough municipally owned space for the creation of a wind or solar farm that would sufficiently offset the energy needs of the arena complex. This presented the need to have a feasibility study done on converting the energy source to a renewable one.

The W.C. O'Neill Arena is considered the highest priority asset with its biggest energy drain being the ice plant. Presently town staff are in the process of upgrading equipment in the Arena. This investment increases the current lifespan of the equipment and can offset any additional, large scale, town funded upgrades in the near future. As of 2021, the arena complex now also includes the Wellness Center which is not reflected in the 2020 inventory. This will need to be taken into consideration in future inventories, though few emission reduction strategies were identified as it is brand new.

Notes on Current Condition from Site Visits:

The following information is a result of multiple site visits with the Town of Saint Andrews' asset manager in 2021 and 2022.

1. **W.C O'Neill Arena Complex:**
 - a. There remains 20% of lighting LED conversion in the facility.
 - b. Chiller plant is the biggest user of energy, a new compressor for chiller plant with heat recovery system for heating rooms to be installed this year. This investment increases the chiller plant life span by 20-25 years.
 - c. The majority of the building is heated by heat pumps and the boilers are no longer used.
 - d. Rooms without heat pumps are a challenge because it needs to be determined where the unit and ducts will go. This will require interior designs by a professional.
 - e. There is heat loss in the theater and dormitories due to lack of insulation
 - f. The arena roof and ceiling are in need of replacing
 - g. A heat recovery system is being added to the ice plant
2. **Library:** All new windows installed 3-4 years ago and the facility has a heat pump.
3. **Town Hall:** Vented heat pump system installed 3 years ago, lighting converted to LED as it needs replacing and almost fully LED now, new windows installed in the back and new roof a few years ago.
4. **Fire Station:** Recently a heat pump system has been installed and lighting fully converted to LED.
5. **Health Center:** moved into the arena complex in 2021, all brand new and very energy efficient
6. **Sheriff Andrews House:** owned by the province, the town simply has a maintenance contract for this building and therefore unable to make changes
7. **Public Works Garage:** Set to have a heat pump system installed in the next 5 years. Heat loss due to doors opening and closing hard to avoid, building temperature kept just above freezing
8. **R.C.M.P:** Building only 12 years old, has a heat pump system
9. **Youth Center:** Building around 16 years ago, heat pump just replaced, new roof in 2021, all LED lighting

- 10. Ross Museum:** Oil-furnace, ends up on the backburner for upgrades because it's seasonal and a less frequently used building

The Remaining Low Emitting Buildings - Wharf Building, Historic Courthouse & Jail, Market Square, Old Health Center, Old Telephone Building, Centennial Park, Sports Field Building and Block House - were not considered a priority. Many of them are seasonal as they only operate during the summer months.

Water & Wastewater Systems

Water & Wastewater Systems were the next highest emitting sector after buildings with both the Water Treatment Facility on Harkness Road in Chamcook and the Wastewater Treatment Facility at 495 Prince of Wales St. being the second and third highest emitting town owned assets. Traditionally, there are a few categories of strategies for reducing energy use in the water system:

1. Increasing energy efficiency of facilities' equipment and operations
2. Increasing energy efficiency of the building/facility itself
3. Promoting water conservation and the efficient use of water in the community
4. Stormwater runoff reduction
5. Water loss prevention and sewer system repairs to prevent groundwater infiltration
6. Capturing the energy in wastewater to generate electricity and heat

The Town has had an audit done to increase energy efficiency of the water and wastewater facilities' equipment and operations. This audit outlined several recommendations, such as replacing the bulbs in their UV Treatment System. The town continues to work on implementing these recommendations. This action plan therefore focuses on action items concerning: the promotion of water conservation and the efficient use of water in the community; stormwater reduction; water loss prevention; and sewer system repairs to prevent groundwater infiltration.

Potable Water

The Saint Andrews drinking water source is Chamcook Lake and water is treated at their Water Treatment Facility on Harkness Road. As stated, efficiencies or equipment are being increased which promotes water conservation and the efficient use of water in the community to reduce the demand for potable water, and water loss prevention in the pipes transporting the water is priority.

Wastewater

The Saint Andrews wastewater facility currently uses a basic aerobic digestion to treat wastewater in two separate lagoons that have air diffusers throughout which then goes through a UV treatment system and then out into the environment. The audit done for increasing energy efficiency included replacing UV bulbs. Wastewater treatment energy use and costs are relatively fixed as the equipment needs to be run continuously to treat the water. Therefore, options for reducing energy consumption would come mostly from energy used by the lift stations. Reducing the amount of water going through the lift can be done by the promotion of water conservation and the efficient use of water in the community; stormwater reduction; water loss prevention and sewer system repairs to prevent groundwater infiltration.

The Town of Saint Andrews has a combined stormwater and sanitary system therefore stormwater reduction, water loss prevention and sewer system repairs to prevent groundwater infiltration are key strategies to reduce energy use of the water system.

These strategies were addressed in a Sewer System Management Plan Saint Andrews had completed in 2014 by CBCL (Annex V). In the last 8 years, the Town has created a large retention pond to divert stormwater from the sewer system, developed a building permit provision that new developments do not allow any net increase in stormwater run-off, and has been separating larger stormwater infiltration areas like catch basins and large commercial properties. However, a large percentage of residential homes throughout town still have their perimeter drains connected to the sanitary sewer. The Town further has a policy in their municipal plan that *“Council shall, where necessary, introduce new standards and operational approaches to reduce potential climate change impacts. This may include flood control measures, vegetation retention and shoreline erosion control.”* (Annex IV)

The Sewer System Management Plan (Annex V) also suggests a range of Low Impact Development (LID) techniques referred to as stormwater Best Management Practices (BMPs). BMPs reduce the volume and intensity of storm water flows through options such as tree box filters, stormwater planters, constructed wetlands, detention ponds, permeable pavement, grass swales, rain gardens, etc. The key strategy for this action plan mainly revolves around further implementation of these techniques by coming up with locations, budget and timelines for different techniques. This would be in line with the policy found in their municipal plan. The town should also continue to address the recommendations in the 2014 Sewer System Management plan and consider updating the management plan as a whole in the near future.

Energy capture and generation from wastewater

Wastewater facilities with an anaerobic digester can add a Combined Heat Recovery (CHP) system and use biogas generated by the digester to produce heat and in many cases electricity as well. “As a rule of thumb, each million gallons per day of wastewater flow can generate enough biogas in an anaerobic digester to produce 26 kilowatts of electric capacity.”¹ This strategy was explored for Saint Andrews but currently the wastewater treatment plant treats an average of 3000 cubic meters (792516.2 gallons) per day and uses 20,000 kWh of electricity. Replacing the current aerobic system with an anaerobic system would be a massive undertaking, and at this time the amount of water treated is not large enough to make the resulting energy generation worth it. However, it’s suggested that this technology is kept in mind should the wastewater treatment plant ever need upgrading or expanding as population grows and wastewater treatment needs increase over the long term.

Streetlights

Limited strategies were identified for streetlights and they were not considered a priority area. All street lights have already gone through LED conversion, and limited opportunities for operational changes exist because running time of lights is dependent on the time of dusk/dawn and is required for the safety of the community.

Vehicle Fleet

Though the vehicle fleet was the lowest emitting of all sectors there is still room for improvement and it may be the easiest to achieve in the short term. The main strategy for this sector is to explore alternative energy sources to gasoline and diesel such as converting the fleet to electrical or an alternative fuel such as propane. Alternative fuels may not be able to provide the power needed for the larger vehicle to properly perform their job. More information and research are needed to know if this is or is not true. Therefore, the main recommendation this plan makes is a feasibility study on the clean

¹ EPA (2013). Energy Efficiency in Water and Wastewater Facilities, Local Government Climate and Energy Strategy Series, <https://www.epa.gov/sites/default/files/2017-06/documents/wastewater-guide.pdf>

energy conversion of the vehicle fleet. There are also a few other action items in the plan outlined below to target emissions from the vehicle fleet.

Corporate Solid Waste

Though corporate solid waste was not included in the GHG Inventory strategies to reduce emissions from this sector were still considered and it is recommended that the town adopts a method to be able to track emissions from this sector to be able to determine emissions savings by the implementation of strategies in the future.

GHG Sinks, Land Use & Green Space

A Greenhouse gas sink is a physical reservoir or process (natural or otherwise) that removes a GHG from the atmosphere. This includes carbon dioxide removal from the atmosphere through the uptake of carbon and subsequent storage by forests, vegetation, and soils. Though sinks were not included in the inventory because they are not required under the PCP Protocol, the creation or expansion of GHG sinks through greenspace or land use changes are a valuable strategy for climate change mitigation. While consulting with stakeholders this strategy was also identified as a priority for reducing GHG emissions.

Community Action & Other Mitigation Strategies

While consulting with stakeholders several strategies were identified as priorities that did not fit into the sector categories, or would not directly reduce corporate emissions. However, these strategies would have impacts on reducing GHG emissions of the community which would either indirectly affect corporate emissions or would otherwise simply help mitigate climate change. This was deemed important even if it did not fit into the specific boundaries of the PCP Program or within the corporate sector. There are also strategies that would affect all corporate sectors & benefit the community at large, such as district heating. The Community Energy Plan (CEP) being created through QUEST, covers a lot of these categories and actions as well. Action strategies include:

- Public Awareness & Engagement Campaign
- Active Transportation
- Public Transportation
- District Heating
- Town Wide Anti-Idling Policy
- Business Outreach
- Composting

Municipal Action Plan 2022-2034

Key Action Items

It is recommended that the town 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:

- Explore renewable energy
- Water conservation
- Naturalize landscape
- Upgrade municipal fleet

- Explore solid waste diversion
- Public engagement to build community awareness and affect behavioral change

Descriptions of all 30 action items can be found below in the following sections and are followed by an easily navigable action item implementation and tracking table.

Building Action Items

Action 1 - Convert Energy Source for W.C. O'Neill Arena Complex & Surrounding Buildings

The W.C. O'Neill Arena is by far the greatest consumer of energy, therefore converting the source of energy to a renewable source (solar/wind/geothermal) would have a large effect. The arena complex is also centrally located to several other buildings (the Fire Station, R.C.M.P Building and Youth Center) which presents the opportunity to connect these to a renewable source as well. This action is considered a priority.

Requires further study & consulting

Action 1.1 - Contract an expert to do a feasibility study to determine the effectiveness of solar and how much energy it would be able to offset

Action 1.2 - Create an implementation plan for most beneficial renewable energy source

Action 2 - REALice for W.C. O'Neill Arena

REALice is a technology that allows you to do ice resurfacing with cold water instead of warm, therefore saving the energy used to heat the water. 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 behaviors 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.

Based on a Rink Savings Profile the W.C. O'Neill arena (Annex VI), using REALice on just the arena ice surface will reduce the electricity use by nearly 28,000 kWh a year — and reduce the arena's CO₂ emissions by 8.8 tCO₂e. Using REALice for both the skating rink and curling rink will lower electricity use by nearly 35,000 kWh per season, and lower CO₂ emissions by 11.5 tCO₂e. The upfront cost for REALice is \$33,636 using it only for the arena would result in an 8.7 yr. ROI and using it for both the arena and curling rink would be a 6.7 yr. ROI. The ice will be running warmer, which though doesn't affect quality, it may/may not be what the curlers want for their ice, so they should be consulted. Any incentives will, of course, lower the simple payback.

10 years of savings are projected in the rink savings profile, however the REALice system has an expected life of 25 years (or more) and will continue to work, treating the water without any maintenance or other consumables, year after year after year. The savings are relatively low compared to other arenas using the REALice system. This corresponds to the low number of floods being done at the facility each day, only 4 according to the town asset manager, as the number of daily floods increase, so do the savings.

Action 3 - 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.

Action 4 - LED Light Transition

The town is already on its way to completing LED Light transition. With street lights done, only about 20% of the W.C. O'Neill LED transition remains and the entire library to be done in the coming months. Action 4 simply ensures that the Town stays this course. This is a very cost-effective way to lower energy consumption with these projects typically having very short return on investment timelines. A goal for this plan would be to see 100% of municipal lights converted to LED.

Action 5 – Insulate the theater roof and dormitory area of the W.C. O'Neill

The theater and the dormitories in the W.C. O'Neill Complex both have heat pumps but according to the town asset manager, are not insulated, resulting in heat loss and therefore energy loss and higher cost. The savings both in emissions and costs of insulating these areas are unknown, but it is possible there is funding available to do it. It would be recommended to Council that they pursue quotes to achieve this work.

Action 6 - Redo the Roof/Ceiling of Arena and replace with low emission ceiling

The Arena roof needs replacing and is in works to be done in the next 5 years. This should provide better insulation and therefore better energy efficiency. In conjunction with replacing the roof, replacing the arena ceiling with low emission material should be considered. Solar radiation heat is the main heat radiation in arenas. Nearly 30% of the total refrigeration load in heated rinks is radiated from the arena ceiling². The temperature, color and emissivity index of the inner surface of the ceiling are the main causes of the radiation thermal load to the ice rink. Materials with a low emissivity index (low ability to radiate heat) have a large impact on the load on the ice plant, reducing energy costs and providing better ice conditions. As the arena roof and ceiling need replacing it anyways it should be replaced with a low emitting ceiling.

Action 7 - Energy Conversion for Heating from Fuel to natural gas, electric heaters, mini-splits, or forced heat

Fuel furnaces are less efficient than electric heaters and other alternatives exist. Converting heating sources to more efficient methods such as natural gas, electric heaters, mini-splits, or forced heat will allow for a reduction in energy consumption, and lower costs. The only municipal buildings currently using heating fuel are the Public Works Garage, Historic Courthouse and Ross Museum. According to the town asset manager heating for the public works garage is set to be converted to heat pumps in the next 5 years. Though the Historic Courthouse and Ross Museum are not high emitters and are only operational for a portion of the year, moving them away from fuel should be considered in the long term.

Action 8 - Add occupancy sensors to public bathrooms and lighting timers to other building areas

Adding occupancy sensors to all public bathrooms was a recommendation in the 2008 Energy Audit but is yet to be implemented in all public buildings. This action could also be further extended to other areas in buildings, or timing systems could be used instead so lights automatically turn off at night. A study conducted by the Environmental Protection Agency (EPA) through NEMA titled Demand Reduction and

² <https://arena-guide.com/portfolio-item/low-e-ceiling-upgrade/>

Energy Savings Using Occupancy Sensors³ occupancy sensors can reduce energy waste by as much as 68% and increase energy savings by as much as 60%. These savings were calculated from using a 5-minute timer in a bathroom. Results vary from business to business and depend on industry, size, hours of operation, and time delay length. Though a small change it can add up over multiple buildings and years.

Action 9 - Implement Relevant Strategies found in the FCM Fact Sheet titled Building-level solution: High-efficiency indoor ice rinks and Arena Guide's "Use Less Electricity" Measures

The Federation of Canadian Municipalities has a Fact Sheet titled Building-level solution: High-efficiency indoor ice rinks⁴ and Arena Guide, comprehensive directory of arenas, indoor and outdoor rinks in Canada and the US, provides a resource of measures to use less electricity⁵. Some suggested strategies include:

- **Keeping ice thickness thin:** increasing ice thickness by one to two inches increases refrigerant load by 10 percent. Keeping the ice between 1 1/4" to 1 1/2" (apx. 3.2 cm – 3.8 cm) is optimal
- **Keeping ice temperature as high as possible:** will also save on HVAC costs
- **Allowing ice temperature to rise and air temperature to drop overnight:** this will help decrease energy consumption by allowing the colder air to take up some of the slack from the refrigeration system
- **Storing shaved ice outside the arena:** reduces energy going towards cooling non-rink surfaces
- **Paint the arena floor white:** this decreases heat absorption
- **Advanced automation and control systems**
- **Improving arena insulation**

More strategies can be found in each guide. There is no "one size fits all" strategy for an arena, therefore strategies from both of these resources should be accessed for their relevance to the W.C. O'Neill Arena and applicable ones should be implemented. It should also be noted that engineering studies are more comprehensive investment-grade reports which could analyze the feasibility of energy efficiency projects, so a customized retrofit guide by an energy auditor to assess these strategies may be necessary.

Action 10 - Have a new energy audit done for the top 10 emitting buildings

Though the Town is still working on efficiency upgrades suggested in the 2008 Audit, it has been 14 years and there have been many changes to the town buildings so the Town should have an upgraded audit done for all the top ten emitting buildings in the near future. This will help give a better idea of more technical upgrades that can be done.

Water System Action Items

Action 11 - Rain Barrels for Municipal Green Spaces & Community Garden

The addition of rain barrels to public greenspaces could allow the Town staff who maintain parks and public recreational spaces to use collected rainwater for watering flower beds, planters and gardens; this would save water from the municipal system and the associated energy to retrieve it. Rain barrels

³ NEMA (2001) Demand Reduction and Energy Savings Using Occupancy, <https://studylib.net/doc/18602565/demand-reduction-and-energy-savings-using-occupancy>

⁴ FCM. Building-level solution: High-efficiency indoor ice rink <https://data.fcm.ca/documents/resources/gmf/roadmap-building-level-solution-high-efficiency-indoor-ice-rinks-gmf.pdf>

⁵ <https://arena-guide.com/go-green-measures/use-less-electricity/>

are relatively inexpensive depending on the kind, around \$100, or can be made for even cheaper, around \$40. A small grant could be applied for to buy a collection of rain barrels or a project for a summer student to build them could be considered.

Action 12 - Promoting water conservation and the efficient use of water in the community

Implement a public awareness campaign to promote water conservation through water conserving behaviors and/or conduct a retrofit program to conserve water by installing energy saving plumbing fixtures such as: toilet dams, low-flow showerheads, faucet aerators or washers, and rain barrels.

Action 13 – Install Energy Saving Plumbing Fixtures in Municipal Buildings

Installing energy saving plumbing fixtures such as: toilet dams, low-flow showerheads, faucet aerators or washers in municipal buildings. As well as low flow toilets when they need to be replaced.

Action 14 - Stormwater Management Infrastructure

Measures that prevent stormwater from entering the municipal system reduces the volume of water that needs to be treated by the wastewater treatment facility and therefore the energy needed. Municipally owned land should be evaluated for the potential to create retention ponds, bioswales and rain gardens. As should the option to replace parking areas with permeable pavement, or install green roofs.

This is in line with Policy (11) in the Municipal Plan section 2.7.2: Council shall ensure the retention of vegetation and the installation of control structures such as stormwater management ponds, wherever possible and necessary, to minimize erosion and control flooding along natural drainage courses.

Action 15 - Separation of Stormwater and Sanitary Water

Separating stormwater and sanitary water is already underway in Saint Andrews as a result of a Stormwater Management Plan completed in 2014 separating stormwater from sanitary water reduces the volume of water that needs to be treated by the wastewater treatment facility and therefore the energy needed to treat the water. Efforts to separate the water should continue. (Annex V) However, where possible all immediate or rapid inflow connections from the storm system should be removed.

Vehicle Fleet Action Items

Action 16 - Explore Conversion of Vehicle Fleet from Gas and Diesel to a Lower Emitting Energy Source

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.

Requires further study & consulting

Action 16.1 Do a study to explore conversion of vehicle fleet from gas and diesel to a lower emitting energy source. Consider multiple options: EVs, Propane, etc.

Action 16.2 Come up with an implementation plan to upgrade vehicles to chosen lower emitting energy sources as they need to be replaced.

Action 17 - Promotion of Fuel-Efficient Driving Among Town Staff

Fuel-efficient driving can save you hundreds of dollars in fuel each year, improve road safety and prevent wear on your vehicle. If all drivers in Canada practiced fuel-efficient driving, we would collectively prevent six megatons of carbon dioxide from entering the atmosphere each year. Encouraging town staff to practice fuel efficient driving could work towards saving the town fuel and associated costs.

Solid Waste Action Items

Action 18 - Composter for Town-owned Facilities

When sent to a landfill, organic waste decomposes in the absence of oxygen. The major product of this kind of decomposition is methane, a potent greenhouse gas (GHG). When allowed to decompose in the presence of oxygen (composting) the product is carbon dioxide, a much less potent GHG. As a precursor, or alternative to a town wide composting program the Town should perform a feasibility study on acquiring an industrial composter such as a CityPod⁶ composter from Vertal Inc. This would allow the town to process food waste onsite and would have the added bonus of not having to transport it to a faraway composting facility, as would likely be the case with a town wide service, which would further reduce emissions. Compost collection should start with municipal buildings and then perhaps the service can be extended to local businesses. This action item requires further research as there are many factors at play. Cost savings could include not having to purchase soil amendments for town landscaping activities, and savings in and food waste removal costs. There also exists the possibility to charge for pick up if the service is extended to businesses. This action would require staff for collection of compost, the system also requires the addition of wood chips which would either need to be purchased or acquired through landscaping activities. McGill University installed an institutional composter in 2011 and has a report detailing procedure and costs. (Annex VII) Funding may be available and if this individual project is not considered a savings, it could be justified through cost savings elsewhere in this plan.

Requires further study & consulting

Action 19 - Anaerobic Digester for Municipal Organic Waste

Organic waste is a large and avoidable contributor to emissions when sent to a landfill. An alternative or companion to a composter (Action 16) is an anaerobic digester for food waste. Anaerobic digestion is when organic matter, such as food waste, is broken down by bacteria in the absence of oxygen. The process creates fertilizer that can be used for gardening and biogas composed mostly of methane. The biogas can be combusted to generate electricity and heat, or it can be processed into renewable natural gas and transportation fuels. Consultation, engineers or technical experts would be required to do a cost and feasibility analysis. This further study could also be included in a study for an industrial composter to compare the options

Requires further study & consulting

Land Use, Greenspace & GHG Sink Action Items

Action 20 - Urban Forestry Plan

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

⁶ <https://www.vertal.ca/en/index.html>

This is in line with Proposals for Infrastructure and Services from the Municipal Plan section 2.7.3:

(5) It is proposed that Council develop an Urban Forest Strategy including investigating a system of permits for tree removal.

Action 21 - Protection of Town-owned Greenspaces

Greenspace can be a considerable greenhouse gas sink in addition to limiting stormwater runoff and a myriad of other environmental benefits. Saint Andrews has a map of municipally owned greenspaces (Annex VIII) policies that should be put in place to protect these greenspaces.

Action 22 - Conversion of Town-owned Vacant Lots & Brownfields to Greenspaces

Brownfields are former industrial sites where there is, or may be, contamination that could affect future use of the site. Due to our history of industrialization, they are numerous and varied in size, type of contamination, and location, and can range from former gas stations that may still have fuel tanks buried underground to large industrial sites that have been abandoned. Some brownfields can be used for renewable energy installations or community green space. (Annex IX)

This is in line with Proposals from the Municipal Plan Section 2.1.3:

(1) Saint Andrews currently has 6% of its land as publicly accessible greenspace. It is proposed that Council work towards raising that number to 10%

(4) It is proposed that Council develops Town owned green and open space into publicly accessible parks where feasible and appropriate.

And Municipal Plan Section 2.4.3:

(1): It is proposed that Council develop a long-term plan for Town owned undeveloped property with the goals of providing affordable housing, public green space, and natural infrastructure.

Community Action Items

Action 23 - Public Engagement

A priority identified by the EAC was to increase public awareness around climate change and strategies to mitigate it. 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, or the town can consider Action 30 and designate a permanent human resource position to this and all other action items.

Action 23.1 - Designate a responsible party to research and plan an effective public engagement campaign on climate change mitigation. Campaign could involve stakeholder round tables, workshops on greenhouse gas reduction

Action 23.2 - Determine a timeline for the release of components of public awareness campaign

Action 23.3 - During implementation of public engagement campaign collect feedback and gather information on success of campaign actions

This is in line with Policies from the Municipal Plan section 2.1.2:

(5) Council shall seek to work closely with community groups and other government departments to reduce greenhouse gas emissions and permit, in conjunction with the proposed clean energy strategy, renewable energy use within the Town.

(6) Council shall seek to raise awareness of the potential impacts of environmental issues.

Action 24 - 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. Activities could include business specific workshops and/or providing a resource to businesses on programs and funding opportunities to green their business.

Action 25 - Active Transportation Promotion/ Expand Local Trail System

Active transportation not only lowers emissions but also contributes to a healthier community. A community may encourage active transport and commuting (where transit exists). In addition to reducing GHGs, active transportation can help to reduce traffic congestion, reduce parking congestion, promote active living and contribute positively to air quality and human health. Active transport networks also contribute to a more inclusive community and help bring cultures together.

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 Saint Andrews with other municipalities in the region, opening up the potential for an increase in tourism. Saint Andrews had a Transportation Master Plan completed in October 2020 by CBCL (Annex X) Section 4.3 (page 53) presents an active transportation plan that the town should continue to pursue, with key actions such as:

- Adopt and enact a policy that all new Town roads will henceforth be built with sidewalk on at least one side, where feasible and appropriate
- A second policy calls for the long-term conversion of all Town streets to include sidewalks on both sides.
- A short-term policy proposes the targeting of the proposed collector road network for addition of sidewalks where currently lacking
- In terms of cycling needs and opportunities, the Town of Saint Andrews has previously identified the need to complete a signed Town perimeter cycling route, connecting to a cycling network within the Town Plat. Permanent or temporary seasonal cycling facilities
- Creation of a proposed a comprehensive Active Transportation Network

This is in line with Policies from the Municipal Plan section 2.7.2:

(15) Council shall recognize a variety of modes of transportation, including non-motorized (active transportation) travel options, as essential components of the overall transportation system.

(16) Council shall seek the cooperation and assistance of senior levels of government in upgrading the Town's roads and active transportation network wherever possible.

(17) Council shall seek to grow the Town's trails network and associated infrastructure.

(18) Council shall strive to ensure that new roads have sidewalks and cycling infrastructure where feasible and appropriate.

(22) Council shall have regard for the proposals in the Transportation Master Plan.

Action 26 - Public Transportation Promotion - Charlotte Dial-A-Ride & Project: Village Rideshare

Providing people with a reliable public transportation option is a great way to decrease the usage of single occupant vehicles. Saint Andrews should aid in promoting existing public transportation Charlotte Dial-A-Ride & Project: Village Rideshare. The Transportation Master Plan Saint Andrews had completed in October 2020 by CBCL (Annex X) presents key actions for Public Transit (Section 4.4, page 58) that the town should continue to pursue. They suggest two different service models: an on-call door-to-door service would be most effective in connecting Town residents with regional services and during peak tourist season, the on-demand service may be expanded with a fixed route loop providing access to all major activity generators with a half-hour service. The implementation of a public transit system as proposed above would carry a certain cost, covering the acquisition of vehicles and equipment, and the operation and maintenance of the system. The town can easily continue to pursue an on-call door-to-door service by supporting and promoting Charlotte Dial-A-Ride and Project: Village Rideshare. Further study will be needed to determine the feasibility of a fixed route loop during peak tourist season.

Action 27 - Community Wide Composting Service

Food waste is one of the world's largest contributors to GHG emissions. Though potentially a large undertaking with a high cost, conducting a feasibility study on a town wide composting service could help significantly reduce emissions. Charging residents through taxes for municipal compost pick up. Alternatively composting within the community garden (Action 14) or providing individual composters at town facilities such as a CityPod composter (Action 21) could be a start to a town-wide service.

Requires further study & consulting

Action 28 - Facilitate composting within Community Garden and Youth Garden

Saint Andrews has a 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.

Action 29 - Promote Fuel Efficient Driving

Fuel-efficient driving can save you hundreds of dollars in fuel each year, improve road safety and prevent wear on your vehicle. If all drivers in Canada practiced fuel-efficient driving, we would collectively prevent six megatons of carbon dioxide from entering the atmosphere each year. The combination of enhanced fuel efficiency, improved road safety and reduced GHG emissions make fuel-efficient driving a winning strategy for Canadian drivers.

Action 30 - Town Wide Anti-Idling Policy

The term "Idling" refers to running a vehicle's engine when the vehicle is not in motion. This can occur while a car is being heated, cooled, stopped at a red light, or waiting while stationary with the engine running. For the average vehicle with a 3-liter engine, every ten minutes of idling costs over 1 cup in wasted fuel-and one half of a liter if your vehicle has a 5-liter engine. It is important to keep in mind that every liter of gasoline you use produces 2.4 kilograms of CO₂. Limiting or eliminating vehicle idling can

have a major impact on a community and fueling bills. Conditions can be put into 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 behavior altogether. This would not be an enforceable offense but is in place to make people more conscious of their behavior and the impacts that it has. This has the added bonus of improving air quality within the town. The Town currently has an anti-idling policy for the Market Wharf, but exploring a policy for the whole town could be a strategy for community wide vehicle emission reduction.

All Sector Action Items

Action 31 – Town Wide Renewable Energy or Waste Energy Integration/ District Heating

Each district heat system is unique, but all have common elements. This includes: using a renewable or waste heat source(s); piping the heat underground; converting homes and businesses to district heat; monitoring and managing load; and more. A technical study helps the community to understand all the components required and their cost.

Requires further study & consulting

Action 31.1 Have a technical study done on options for district heating

Action 31.2 Determine implementation phases for district heating if deemed feasible

Action 32 - Advocate for the creation of a hired position through SNBSC to aid in climate action for Saint Andrews and surrounding municipalities

Though action points include parties responsible for implementation, without designated human resources, plans such as these can fall to the side. A hired position would enable an individual with energy, capacity, time, and an intimate knowledge of municipally specific situations to ensure the success of this plan, achieve all action points and guide the sustainable development of Saint Andrews. The town should therefore advocate for the creation of a hired position through SNBSC to municipal sustainability manager or climate action implementation manager. A designated position for sustainability and climate mitigation may be especially helpful for community actions and public engagement. Running workshops, promoting sustainable practices and utilizing an expertise in social media.

Implementation Table

The following table outlines the action items included in the Town of Saint Andrews Local Action Plan as well as the timeline, responsible parties, possible funding avenues and estimated emissions reduction for each item.



SA_MitigationPlan_ImplementationTable

Implementation and Monitoring

The implementation of the plan will be led by the 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 (CAO) 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 achieved according to the priority and the implementation schedule. 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, 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 2020 emission levels.

Future GHG Inventories

Monitoring the success of the local action plan will be done by continuing to perform GHG inventories. When performing future inventory reports, some measures should be taken into consideration. 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. Although this will not completely remove the potential error, it will allow for a much more realistic comparison between the inventory from 2020 and any future inventories developed. There are also actions suggested in this plan that do not target areas accounted for in the original inventory, such as actions addressing solid waste; these will have to be accounted for at a project level if overall solid waste emissions cannot be calculated in future inventories.

Conclusion

Overall, it was found that in many cases the Town of Saint Andrew had already upgraded the efficiency of their equipment in their buildings and water systems, had plans already completed (Sewer Management Plan & Transportation Master Plan) or had already addressed possible actions in their municipal plan. The conclusion is therefore that they are ahead of the curve and have implemented many of the “low hanging fruit” improvements. This presents the possibility of Saint Andrews making deeper, more structural changes, such as integrating renewable energy. It is important that this plan continues to evolve over the next 12 years as municipal assets change and resources for mitigation strategies become available. Especially as the provincial government rolls out local governance reform in the coming years. This plan and the actions presented within it are a base for Saint Andrews to build on as they work towards their emission reduction target of 30% below 2020 levels by 2034.

Annexes

Annex I: Council Meeting Minutes – January 22, 2022

Annex II: 2008 Energy Audit

Annex III: Saint Andrew GHG Inventory Report & Calculation Spreadsheet

Annex IV: Saint Andrews Municipal Plan 2020

Annex V: 2014 Sewer System Management Plan

Annex VI: W.C. O’Neill Rink Savings Profiles

Annex VII: McGill University Industrial Composter Project

Annex VIII: Saint Andrews Greenspace Map

Annex IX: Saint Andrews Vacant Lot Map

Annex X: 2020 Transportation Master Plan

Annex XI: Town of Saint Andrews Budget