



Hiawatha First Nation Climate Change Action Plan

Corporate Sector - Milestone 4 & 5 Report
Implementation, Monitoring and Reporting Results

November 2019

Authored by James Byrne and Melanie Kawalec

Section 1: Introduction

The effects of climate change are projected to intensify over the next decade. Local annual average temperatures are projected to rise 2.1°C to 4.2°C above current levels (Appendix). A changing climate will increase extreme weather events as the following risks will become more prevalent:

- Heightened frequency of severe rainfalls and wind storms
- Mean winter temperatures in 2030 to rise from -7°C to -4.9°C
- A 20% rise in 10-year storm rain events projected by 2030
- Days above 30°C to increase to 23 days from 6 days by 2030
- Chance of freezing rain events 40% more probable in winter

In 2018, the United Nation's Intergovernmental Panel on Climate Change (IPCC) released a special report urging mitigation of greenhouse gas (GHG) emissions to limit the global average temperature increase to only 1.5°C from the current 1°C of global warming. The IPCC recommends that a decrease in GHG emissions of 45 percent from 1990 levels by 2030 is necessary to prevent the worst implications of climate change. At present national commitment levels, a 3°C rise in global heating is forecasted by the year 2100.

Fortunately, climate change can still be managed that restrains the worst effects, but immediate action is critical. First Nations band councils have within their authority the ability to influence positive climate stewardship among its operations and the communities they serve. By leading by example, First Nations can demonstrate this positive approach to climate actions by curtailing GHG emissions from all corporate facilities and assets. By ratcheting down, all GHG emissions originating from corporate assets will reduce Hiawatha's overall contribution as a source of climate change.

Section 2: Overview

Background

In 2012, Hiawatha First Nation, Curve Lake First Nation, the City and County of Peterborough, and the eight County Townships adopted the Greater Peterborough Area Integrated Community Sustainability Plan, coined Sustainability Peterborough Plan. Within this Plan, climate change was identified as one of the eleven key theme areas.

In 2014, each of the twelve Greater Peterborough Area (GPA) member communities came together to develop a Climate Change Action Plan (CCAP), designed to reduce local contributions to climate change while preparing the community for future changes. They joined a network of more than 250 other communities across Canada to address climate change through participation in the Federation of Canadian Municipalities' Partners for Climate Protection (PCP) program. The PCP program aims at reducing GHG emissions from both Municipal and First Nation operations, referred to as "corporate" emissions and the community at large, referred to

as “community” emissions. Table 1 presents the PCP five-milestone framework and associated status for each milestone.

Table 1. Partners for Climate Protection Milestone Framework

	Milestone Description	Status
Milestone 1	Create a greenhouse gas emissions inventory & forecast	completed 2015
Milestone 2	Setting an emissions reductions target	completed 2016
Milestone 3	Developing a local action plan/CCAP	completed 2016
Milestone 4	Implementing the local action plan	underway 2019
Milestone 5	Monitoring progress & reporting results	underway 2019

Milestone 1 – Hiawatha First Nation GHG Emissions Inventory and Forecast

The CCAP established a 2011 GHG emission baseline inventory that serves as the benchmark to measure future changes against. Table 2 presents the Milestone 1 Corporate GHG Emissions by source and sector. The total Corporate Sector emissions for Hiawatha First Nation was 124 tonnes of carbon dioxide equivalent (tCO₂ e). A complete copy of the report is available at (<https://sustainablepeterborough.ca/wp-content/uploads/2017/07/CCAP-Hiawatha-First-Nation-PCP-Milestone-1-Report-Corporate-FINAL-1.pdf>).

Table 2. Hiawatha First Nation Corporate Sector Milestone 1 GHG Emissions

Sector	Emissions (tCO ₂ e)	Source	Emissions (tCO ₂ e)
Buildings	105	Electricity	57
Fleet	19	Gasoline	12
Water Treatment	1	Diesel	7
Total	124	Propane	42
		Heating Oil	8
		Total	124

A business-as-usual (BAU) forecast is an estimate of annual GHG emissions projected into the future without the mitigation of any corporate emissions. The BAU forecast for corporate operations is based on annual growth rates derived from official population projections. It was assumed that municipal operations would increase with population growth – this aligns with standard PCP methodology for creating BAU models. Emissions from corporate operations are projected to increase to 144 tCO₂ e per year by 2031, compared to 124 tCO₂ e per year in 2011.

Milestone 2 – Setting an Emissions Reduction Target

In 2017, Milestone 2 and 3 Reports were completed that established a GHG emissions reduction target. A corporate sector GHG emissions reduction target of 15 percent was developed using 2011 as the baseline year. This reduction target is equivalent to removing 19 tCO₂ e from corporate operations by 2031 when compared to the 2011 benchmark, which would put Hiawatha First Nation’s corporate emissions target for 2031 at 105 tCO₂ e.

Milestone 3 – Developing a Local Action Plan/CCAP

One of the key requirements of the completion of Milestone 3 was the adoption of both the Corporate Sector and Community Sector emissions reductions targets and associated Action Plan by Band Council. On October 17, 2017, Hiawatha First Nation Band Council passed First Nation Council Resolution 27/17:

“WHEREAS, the Greater Peterborough Area Climate Change Action Plan be adopted in principle;

AND WHEREAS, Hiawatha First Nation’s Community Sector and Corporate Sector greenhouse gas emission reduction targets of 15% respectively for both targets, and associated local action plans, be adopted and implemented as funding permit;

THEREFORE, LET IT BE RESOLVED, that upon adoption of the Greater Peterborough Area Climate change Action Plan, that Hiawatha First nation and Curve Lake Frist nation will become the first-ever First Nation communities in Canada to complete the Federation of Canadian Municipalities’ Partners for Climate Protection Program.”

The CCAP for the Corporate Sector outlined 15 overarching strategies to help guide the mitigation of GHGs as well as to adapt to our changing climate. Planning, tracking, and evaluating the actions and projects that reduce GHG emissions are required to understand and monitor progress against its GHG emission commitment target. Evaluating corporate mitigation successes enables First Nations policymakers to decide what initiatives or new strategies could be enacted to limit further emissions.

The CCAP also outlined additional supporting actions to assist in achieving Hiawatha’s emissions reduction targets. Further details on specific strategies are provided in the Milestone 2 and 3 Report <https://sustainablepeterborough.ca/wp-content/uploads/2017/12/Chapter-11-Hiawatha-First-Nation-Climate-Change-Action-Plan-FINAL-November-13-2017.pdf>.

Section 3: Milestone 4 – Implementation of the CCAP

The implementation of climate change mitigation and adaptation strategies is a continual process in the effort to reduce GHG emissions from corporate assets. Since 2011, Hiawatha First Nation has implemented a number of the policies outlined in the CCAP. Table 3 describes the corporate actions completed or currently underway.

Table 3. Completed and Ongoing Corporate Mitigation and Adaptation Actions

CCAP Corporate Strategy	Action Description	Year	GHG Saved (tCO ₂ e)
Strategy 24: Support Solar Photovoltaic/Renewable Energy Projects	Hiawatha championed the installation of a 22kW rooftop solar panel system at the Old Railroad Stop Building community building.	2018	\$154,000 in energy costs over the next 25 years.

Strategy 20: Community Energy Plan (CEP)	Received 100% funding from IESO to develop a Corporate and Community Sector Community Energy Plan.	2017-2018	
Strategy 20: Develop a Community Energy Plan	As part of the Community Energy Plan, energy audits were conducted on existing buildings to identify opportunities and efficiencies to reduce electricity demand and manage costs.	2017-2018	
Strategy 23: Make Existing Building Stock Energy Efficient	The CEP also encourages band members to become involved in developing and implementing the plan.		
Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment	<ul style="list-style-type: none"> • <u>Phase 1</u> included gathering Hydro and fuel bills and performing community building energy audits • <u>Phase 2</u> community outreach to raise awareness of the CEP process, highlight the information collected, and receive input • <u>Phase 3</u> completed corporate building energy audits of the Child and Health Services, Firehall, the Old Railroad Stop 		
Strategy 13: Promote Energy Efficiency and Low Carbon Thinking			
Strategy 26: Enhance Waste Diversion	Implemented mattress recycling program for residents to divert waste away from the Peterborough County/City Waste Management Facility	2015	
Strategy 26: Enhance Waste Diversion	Implemented a 2-bag per household garbage limit to reduce waste from residents	2012	
Strategy 12: Natural Heritage Protection and Preservation	Completed the Ducks Unlimited project to preserve Hiawatha's natural assets <what did this project achieve?>	2012	
Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment	Constructed LEED bronze certified Fire and EMS building in collaboration with the Township of Otonabee-South Monaghan for joint services. The new emergency service building includes energy-efficient radiant heating in the truck bays. <any more interesting building facts? Also, do you know how much energy is saved?>	2013	

Strategy 12: Natural Heritage Protection and Preservation	Youth-led community gardens initiative to raise awareness of traditional food knowledge <one garden or multiple gardens planted?>	2014	
Strategy 12: Natural Heritage Protection and Preservation	Band Council worked with community members to install two pollinator gardens	2018	
Strategy 12: Natural Heritage Protection and Preservation	Hiawatha commenced reseeding wild rice beds in Rice Lake. In so doing, preserving traditional food knowledge and protecting the bays of the lake from development <do you know how big an area is planted in rice? Hectares or Acres?>	2014	
Strategy 12: Natural Heritage Protection and Preservation	Council worked with Fleming College students to conduct inventory and assessment of the invasive Emerald Ash Borer beetle within its territory	2013	
Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment	All corporate buildings switched to low flow toilets to help conserve water. <how many toilets would have been changed?>	2015	
Strategy 12: Natural Heritage Protection and Preservation	Hosted a <i>Pollinator's Picnic</i> at Serpent Mounds Park by releasing butterflies into their newly created pollinator, butterfly and traditional medicine gardens.	2018	
Strategy 12: Natural Heritage Protection and Preservation	Band Council held <i>Plant Your Family Tree Day</i> at Serpent Mounds Park inviting band members to plant a tree and enhance the parks natural assets <how many trees would have been planted?>	2018	
Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment	Planned Administrative Centre expansion is designed to include high environmental performance measures in the new addition. <any specific features that I can include?>	2019-2020	
Strategy 12: Natural Heritage Protection and Preservation	Hiawatha is in the development stage of a Comprehensive Community Plan (CCP) that will create a roadmap to sustainability and self-sufficiency. The CCP will include celebrating traditional cultural values and practices as well as protecting vulnerable areas.	2019	

Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment	Water quality assessments are planned that will test wells and septic systems on 58 homes, all Hiawatha businesses, and operational facilities to enhance performance.	2019	
Strategy 12: Natural Heritage Protection and Preservation	Development of a community Land Code (a traditional land law that outlines jurisdiction, control and decision making over lands and resources) and will address protecting the environment as one of the Code's key priorities.	2020	

<any other initiatives that should be included in the list?>

Section 4: Milestone 5 – Monitoring Progress & Reporting Results

This progress report used 2018 data provided by Hiawatha First Nation to ascertain how the corporate sector is achieving its mitigation and adaptation goals with respect to its CCAP.

Corporate Emission Reduction Progress in 2018

The corporate review revealed that Hiawatha First Nation GHG emissions had a 1 percent rise in GHGs from the 2011 baseline and was found to emit 125 tCO₂ e in 2018 (Table 5). As illustrated in Figure 1, based on the 15 percent GHG emissions reduction goal, Hiawatha should have reduced emissions down to 117 tCO₂ e in 2018. Despite the slight growth in emissions, Hiawatha added new corporate buildings and expanded 2018 data collection for this report.

Table 5. Greenhouse Gas Emission Source from 2011 to 2018

Emission Source	2011 GHG (tCO ₂ e)	2018 GHG (tCO ₂ e)	Percent Difference
Buildings (Electricity, propane, and fuel 1&2)	105	62	-41%
Transportation (Diesel & gasoline)	19	63	231%
Water (Electricity)	1	0.2	-80%
Totals	124	125	1%

Figure 1. 2018 GHG Emissions Compared with BAU and CCAP Target

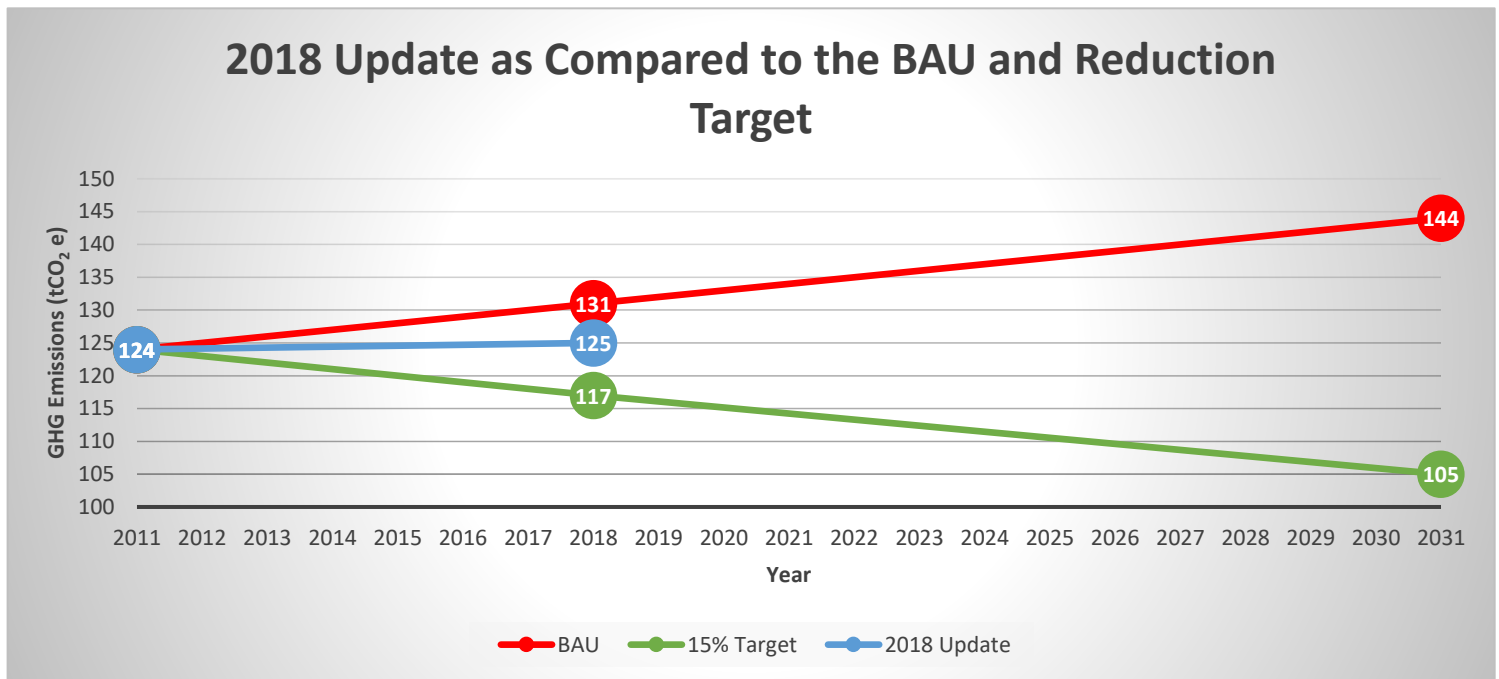


Figure 1. The Business-as-usual (BAU) emission projections in red are compared to the GHG Emissions Reduction Target outlined until 2031, shown in green. The blue line represents the 2018 current emissions at 125 tCO₂ e.

Corporate Consumption Analysis and Discussion

Assessing energy and fuel consumption rates for all emission sources in Hiawatha First Nations may reveal connections outlined within the corporate mitigation strategies found in the CCAP. Table 6 describes the individual contribution from each energy source to its associated sector.

Table 6. Hiawatha Corporate Consumption Data per Sector

2011 Consumption	Electricity (kWh)	Propane (L)	Heating Oil 1&2 (L)	Gasoline (L)	Diesel (L)
Buildings	515,074	27,062	4,558		
Water	10,500				
Vehicles				5,033	
Totals	525,574	27,062	4,558	5,033	N/A
2018 Consumption	Electricity (kWh)	Propane (L)	Heating Oil 1&2 (L)	Gasoline (L)	Diesel (L)
Buildings	721,657	28,281	1,970		
Water	11,000				
Vehicles				6,949	7,131
Totals	732,657	28,281	1,970	6,949	7,131

Sector: Corporate Facilities

Electricity

Analyzing electricity consumption (Figure 2) from all corporate facilities between 2011 and 2018 found a 37 percent increase in electricity usage. This growth in consumption occurred because of the addition of new corporate facilities under the purview of Hiawatha after 2011. This corporate expansion included the LEED Firehall/Emergency Service building (2013), Children and Family Building (2018), and relocation of the Economic Development & Consultation Office (2018) to a larger building. As well, the rise in electricity usage can be credited to the omission of baseline consumption data from ICLEI-Canada's *PCP Tool* (software used to calculate GHG emissions as well as being the repository of the original Hiawatha baseline data). The facilities that were missing 2011 source data from the *PCP Tool* were the Children and Family Services and the Youth Centre buildings.

<any other reasons why corporate facilities usage may have risen?>

The reduction in GHG emissions was found to decline by 76 percent (Figure 3), and this is mainly due to the closure of all of Ontario's coal powerplants starting in 2013, which decarbonized the electrical grid. The greening of electricity resulted in a fivefold decrease in its associated GHGs emissions compared to Ontario's electricity production in 2011, as illustrated in Table 7.

The shuttering of coal powerplants has made the entire electrical grid throughout the province a much greener option today than the one found in the baseline year. However, it should be noted that the Ontario grid still maintains natural gas-fired powerplants in its energy mix that are significant contributors to GHG emissions (IESO, 2019). More natural gas powerplants are scheduled to come online over the coming years to offset refurbishments of Ontario's nuclear powerplants. This will result in the emission factors outlined in Table 6 to rebound and thereby negatively affect the gains found in electricity's decarbonization. Ultimately, corporate electricity emissions will increase in the following years until the restoration of Ontario's nuclear capacity is reinstated.

Figure 2. Electricity Consumption

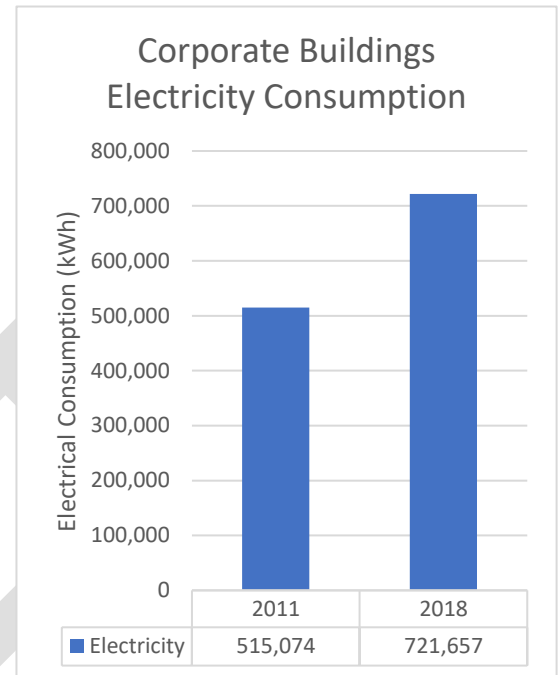


Figure 3. Electricity GHG Emissions

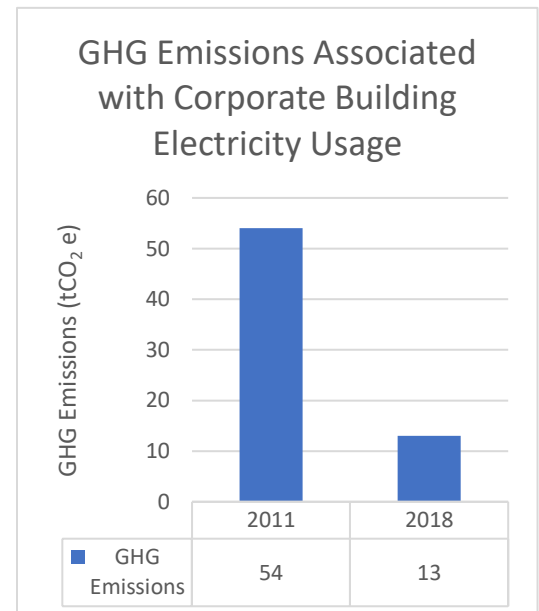


Table 7. Ontario Electricity Associated GHG Emissions

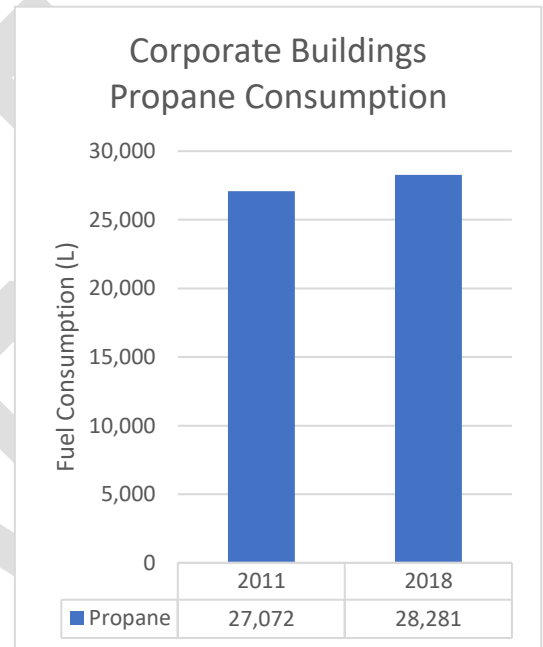
Year	Emission Factor (kgCO ₂ e)
2011	0.098040
2014	0.040011
2016	0.035548
2017	0.017298

Propane

Evaluating propane reveals a 5 percent increase in space heating usage during this review period (Figure 4). This slight rise in propane consumption is related to the addition of the Old Railway Restaurant, Youth Centre, and Economic Development & Consultation Office building's fuel usage to the corporate ledger in 2018. However, Serpent Mounds Park ceased using propane during this review period.

The GHGs associated with buildings heated by propane gas rose by 7 percent to 44 tCO₂ e from 41 tCO₂ e.

Figure 4. Propane Fuel Consumption



Heating Oil

Heating oil 1 & 2 was used exclusively at the Rice Lake Church and witnessed a 57 percent decrease in usage. *<did the church have reduced services on Sunday's or other fewer events like winter weddings?>*

The GHG emissions subsequently lowered by 7 tCO₂ e to a total of 5 tCO₂ e in 2018.

Sector Strategies: Corporate Fleet and Staff Travel

The corporate fleet was found to increase by 38 percent in gasoline usage (Figure 5).

<any reason for the increase in gasoline usage? Any new corporate vehicles purchased or a new corporate operation that may have been formally contracted out like snow removal or lawn maintenance?>

Regarding diesel....

<the baseline PCP Tool did not have any diesel recorded. Do you know if Hiawatha used diesel for any of its vehicles? In 2018, 7,130L of diesel was used>

Staff travel used 6577 L of gasoline in 2018. Unfortunately, staff travel was not captured during the baseline data gathering period to compare against. The initial baseline transportation data only included fleet, whereas the 2018 data included both fleet and staff travel.

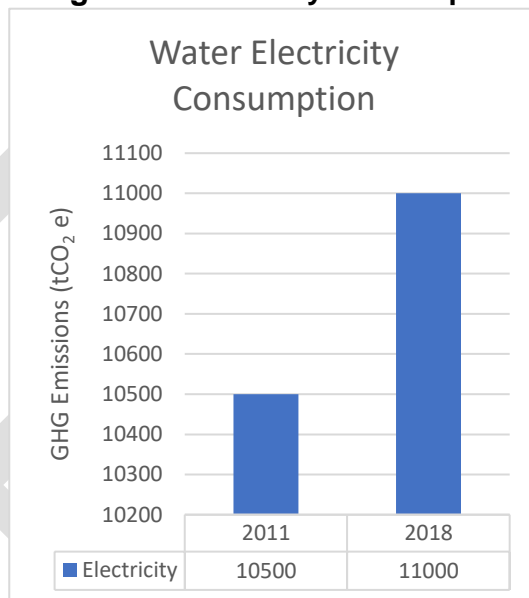
This report also excluded staff air travel to conferences, but for the record, twelve roundtrips (example: Toronto to Vancouver) were taken, that roughly emitted 4.5 tCO₂ e in total.

Sector: Water

The water infrastructure in Hiawatha saw a marginal rise in electricity of 5 percent (Figure 6) during the review period.

<I could not find any water infrastructure bills when we were at Hiawatha in July. The baseline reported 1tonne of CO₂, so I put that number through the software that I'm using to created GHG emissions, and it came out to 10,500 kWh. For 2018, I assumed with the new buildings there would be a slight rise in water usage, so I predicted a 5% rise. However, if you know the actual amount of electricity, please tell me so I can adjust accordingly. Thank you.>

Figure 6. Electricity Consumption



Future Corporate Actions

The following is a renewed timeline for Milestone 3 corporate actions as of this report. The timeframe has been adjusted to omit long-term actions due to that range nearing the 2031 target.

Table 8. Projected Timeline for Corporate Mitigation and Adaptation Actions

Hiawatha First Nation Corporate Action Plan	Timeframe			
	Completed	Ongoing	Short (1-5 years)	Medium (6-10 years)
Natural Assets				
Strategy 12: Natural Heritage Protection and Preservation				
Develop a Natural Heritage Protection Plan to ensure the protection and enhancement of culturally significant species, including but not to native wild rice				
Develop a tree-planting program and replacement program to ensure a sustainable tree canopy for future generations that will promote vegetation, as well as species that are hardy with				

the changing climate, and allow for community support through volunteering				
Educate the community on the significance and the value of the Natural Heritage Protection Plan, ensuring that community members are aware of the plan				
Ensure wild rice farmers are in tune with the protection of the wild rice				
Encourage the use of tree species that help with the heating/cooling effect of surrounding areas				
Plant a diverse range of local species to ensure sustainability with a changing climate				
Strategy 13: Promote Energy Efficiency and Low Carbon Thinking				
Promote and embed energy efficiency and low carbon options in daily operations, within Band operated buildings and across all departments				
Seek funding wherever possible with SaveONenergy and Utility incentives				
Strategy 14: Improve Environmental Performance of Existing Buildings & Equipment				
Allow for the delivery of an energy retrofit programs for Band operated buildings				
Improve the efficiency and environmental performance of buildings and equipment by right-sizing, installing Building Automation Systems, retrofitting or replacement, optimize high-performance lighting such as LED, installing solar applications				
Also consider building envelope, drainage, rainwater conservation, low impact development				
Commission buildings or conduct energy audits				
Seek funding wherever possible with SaveONenergy and Utility incentives				
Our Transportation				
Strategy 15: Explore a Rural Bus Service				
Allow for the creation and implementation of an Active Transportation Plan incorporating public transit, cycling, pedestrians and carpooling as methods to reduce greenhouse gas emissions				
Seek funding wherever possible to offset initial costs and ongoing operations and maintenance				
Work collaboratively with neighbouring Townships, County of Peterborough, and City of Peterborough towards a joint service to minimize costs				
Strategy 16: Anti-Idling Campaign and Policy				

Allow for the creation and implementation of an anti-idling campaign and policy that will reduce the amount of harmful greenhouse gas emissions released by vehicular traffic				
Strategy 17: Transition Band Vehicles to be More Fuel Efficient				
Explore the feasibility of Electric Vehicles (EV) and installation of EV charging station(s) in Hiawatha First Nation				
Favour new energy-efficient technologies as they arise				
Strategy 18: Enhance Pathways for Pedestrians and Cyclists				
Encourage use of any existing infrastructure that would allow for the easy transition on methods of transportation that reduce the reliance on vehicular traffic and the production of fuel emissions				
Continued maintenance and replacement of sidewalk or pathway infrastructure when necessary				
Strategy 19: Pavement Infrastructure Replacement Policy				
Create and develop a pavement replacement policy to ensure adequate life cycle values that will take into consideration the relationship with climate change				
Our Energy				
Strategy 20: Community Energy Plan (CEP)				
Develop a Community Energy Plan for Hiawatha First Nation Community using best practices, lessons learned, and new technology				
Use successful examples from other communities where possible				
Seek funding for the study, which upon completion, may open up further funding opportunities for implementation				
Strategy 21: Solar-Ready Housing Stock Policy				
Explore the feasibility of creating a solar-ready housing stock strategy that would ensure all future housing stock is solar-ready – as it is much cheaper to do while the building is being constructed as opposed to afterwards				
Strategy 22: Develop a Green Team				
Hiawatha First Nation should create a Committee to work on greening their operations				
Strategy 23: Make Existing Building Stock Energy Efficient				
Conduct energy audits on existing buildings to locate opportunities and efficiencies				

When and where possible install occupancy sensors on all Band operated buildings				
Explore the feasibility of installing building automated systems for heating and cooling				
Replace all lighting with LED or energy-efficient lighting				
Replace appliances with only Energy Star rated appliances				
Explore the feasibility of implementing a program or policy that shuts off all computers at the end of the workday				
Shut off all appliances, printers, and radios at the end of each day				
Strategy 24: Support Solar Photovoltaic Projects				
Allow for the creation, development and implementation of a solar photovoltaic panelling pilot project on Band operated buildings where it is feasible to do so				
Strategy 25: Upgrade all Street and Parking Lot Lighting to LED				
Install LED lighting in areas that are considered popular by community members and where there is heavy public traffic				
Upgrade any and all existing street and parking lot lighting with energy-efficient lighting				
Solid Waste				
Strategy 26: Enhance Waste Diversion				
Explore the opportunity of using Otonabee-South Monaghan's Household Hazardous Waste Transfer Station or continue to use the City's Pido Road Households Hazardous Waste				
Research the feasibility of implementing a clear bag identification strategy for all residents, businesses, and Band buildings to identify that all materials are being put in the correct waste stream				
Continue to create and share recycling and promotional material with all members of the community				
Research the viability of adding additional recycling programs				

Decision-making Process

<ICLEI-Canada requires a section in this report documenting how decisions are made. Corporately how does Hiawatha decide what actions should be implemented? Is there a sub-committee for enacting any of the CCAP goals? Also, does the Band Council hold any community engagement sessions to receive band members' feedback/input? Or has a consultant engaged staff or residents regarding input? If Hiawatha doesn't do anything differently when carrying out a climate-related project that is good as well.>

Conclusion

With the adoption of the Climate Change Action Plan in October 2017, Hiawatha committed to reducing its corporate sector GHG emissions by 15 percent below 2011 baseline levels by 2031.

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Appendix

Future Climate Projections

*Refer to for more information: https://www.peterborough.ca/en/city-hall/resources/Documents/Climate-Science-Report_Peterborough_Sep17-2018.pdf

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