



2022 PSO Climate Change Accountability Report

College of New Caledonia



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Declaration Statement

This PSO Climate Change Accountability Report for the period January 1, 2022 to December 31, 2022 summarizes the College of New Caledonia's (CNC) greenhouse gas (GHG) emission profile, the total offsets to reach net-zero emissions, and the actions that have been taken in 2022 to minimize GHG emissions along with plans to continue reducing emissions in 2023 and beyond.



Acknowledgments

The College of New Caledonia is honoured to work with the Aboriginal people in this region, inclusive of the First Nations, Métis and Inuit peoples. We acknowledge the graciousness of the First Nations peoples in welcoming those who are seeking knowledge on their traditional unceded territories. CNC has campuses in six communities, serving 22 First Nations communities.

Executive Overview:

The College of New Caledonia is proud to say that we are serving in six communities through out Northern British Columbia. To help respect the unceded territories we are fortunate to work and play upon we believe it is our responsibility to ensure sustainable operating practices are undertaken. This will help ensure we leave the lands in a state where future generations can enjoy a similar, if not better, environment that they can thrive within.

Between January 2022 and December 2022 many conservation and fuel switching initiatives were undertaken across all campuses such as:

- Addition of building automation systems;
- LED lighting upgrades;
- Zero emission fleet additions;
- Installation of electric vehicle charging station;
- Replacement of end of life equipment with high efficiency replacements;
- Optimization of building control strategies.

As a result of these initiatives, CNC campuses realized the following changes in utility consumption.

Campus	Natural Gas (GJ)	Electricity (GJ)	Greenhouse Gas Emissions
Burns Lake	-801 GJ (-34.5%)	-36 GJ (-5.0%)	-39.7 TCO ₂ e (-33.6%)
Fort St James	-96 GJ (-26.8%)	-11 GJ (-2.6%)	-4.6 TCO ₂ e (-24.3%)
Mackenzie	200 GJ (19.6%)	94 GJ (46.7%)	10.4 TCO ₂ e (25.1%)
Prince George	-2200 GJ (-7.7%)	3721 GJ (19.2%)	-84 TCO ₂ e (-5.6%)
Quesnel	-552 GJ (-18.7%)	657 (18.8%)	-23 TCO ₂ e (-12.4%)
Vanderhoof	-882 GJ (-41.8%)	-504 GJ (-41.9%)	-45.3 TCO ₂ e (-41.6%)
Collectively	-4331 GJ (-11.5%)	3748 GJ (14.6%)	-188 TCO ₂ e (-9.4%)

A combination of reduced travel, adoption of virtual meetings, and shifting towards a zero-emission fleet have resulted in a 26% reduction of mobile emissions compared to 2019 levels, the last comparable year of operation. Emissions from paper reduction decreased by 2% despite a 2% increase in paper consumption since 2021. These emission reductions can be solely attributed to the transition from 0% recycled content paper to 30% recycled content paper.



Emissions Reductions: 2022 Actions

Stationary Sources (*e.g. buildings, power generation*)

Stationary sources account for 96.4% of CNC's emissions, 91.2 % from direct combustion (*natural gas*) and 5.2% (*electricity*). With this in mind, emission reduction projects are primarily focused on conservation and low carbon electrification projects for stationary sources. During 2022 CNC continued with building optimization projects that were low/no cost initiatives, such as setpoint and scheduling optimization. 2022 consumption levels compared to 2021 levels at CNC, inclusive of all campuses, have seen an increase in electricity consumption by 14.6%, reduction in natural gas consumption by 11.5%, and a reduction in greenhouse gas emissions by 9.4% due to initiatives described below.

Prince George

The central power plant which serves as CNC Prince George's central heating system had programming changes made to modify the boilers from controlling according to outdoor air temperatures to building demand. This has resulted in lower operating temperatures of the boiler while satisfying occupant comfort levels. Normalizing natural gas consumption with weather has shown minimal gain during extreme colds, as expected, but has shown a reduction in consumption by 29% within its first season of high temperature variability (*Spring 2023*).

The John A. Brink Building underwent and completed an LED lighting upgrade that began mid 2021 and was complete January 2022. Benefits of this project were realized through 2022. Due to reduced programming as a result of COVID the last comparable operational year was 2019. Comparing 2019 and 2022 there was a 8% reduction in electrical consumption realized.

Campus Housing replaced existing furnaces which were end of life with high efficiency replacements. This building saw a 6% reduction in natural gas consumption since 2021, some of this can be attributed to this replacement while some can be attributed to varying building load as a result of differing occupancy levels.

Burns Lake

Burns Lake underwent a boiler upgrade project to replace existing boilers at their end of life in 2022. During this project, previously identified deficiencies found during the control upgrade were repaired. Although savings were realized, the historic peaks and valleys of direct combustion consumption are indicating that optimization of the systems could yield large results with low/no cost. With that in mind, 2023/2024 fiscal will focus on building optimization to stabilize utility consumption.

Fort St James

The Fort St James campus received a building automation system upgrade at the end of fiscal 2021/2022. Emission and utility reductions were not realized same fiscal due to completion near the end of the winter. It is important to take into consideration that the DDC project was underway in 2021 and saw most of its benefits in 2022 due to date of completion. It is safe to say this project reduced the buildings natural gas consumption by approximately 26.8%. This change has led to a 24.3% reduction in greenhouse gas emissions.

Mackenzie

Mackenzie campus consists of one leased building and one owned building. Focus has not been on this site due to the nature of how it operates, vacant if a program is not running, and limitations in place due to being a leased space. Changes in operations and programming are responsible for the fluctuations and there are minimal controls that can be put in place at this time.

Quesnel

Quesnel campus has had a history of poor resiliency to temperature extremes, either hot or cold, and prompted some investigations due to its poor performance. Modifications to the operation of the geo field and heat pumps were made with low carbon electrification in mind. As a result, electricity consumption increased by 18.8%, natural gas consumption was reduced by 18.7%, greenhouse gas emissions were reduced by 12.4%, and occupant comfort levels increased.

Vanderhoof

The Vanderhoof campus received a building automation system upgrade at the end of fiscal 2021/2022. Emission and utility reductions were not realized that year due to completion near the end of the winter. It is important to take into consideration that the DDC project was underway in 2021 and saw most of its benefits in 2022 due to date of completion. As a result, electricity consumption decreased by 41.9%, natural gas consumption was reduced by 41.8%, greenhouse gas emissions were reduced by 41.6%, and occupant comfort levels increased.

Mobile Sources (*e.g. fleet vehicles, off-road/portable equipment*)

The fleet at CNC has begun to age and some vehicles are beginning to near end of life. CNC agreed to take the West Coast Electric Fleets Pledge at the Express Lane Level in 2021 and have already exceeded our pledge through the purchasing of four zero emission vehicles in 2022. To help support the new zero emission fleet additions, as well as support rural communities with poor electric vehicle infrastructure, CNC has installed public facing charging stations at our Burns Lake, Fort St James, and Vanderhoof campuses.

It would not be an accurate assumption to account mobile fuel reductions as a result of the electrification of fleet solely. Various factors such as remaining aversion to travel due to COVID and adoption of electronic meeting platforms are also contributing factors. Using 2019 baseline consumption since it was our last year of normal operation, CNC has seen a reduction in mobile fuel use by 26%. More accurate information regarding the effects of our fleet electrification will be available in the next reporting year.

Paper Consumption

Paper consumption has increased in 2022 as anticipated due a return to normal business operations. Despite a 2% increase in paper consumption, CNC's greenhouse gas emissions due to paper consumption reduced by 2%. This is solely attributed to CNC's transition from 0% recycled content paper to 30% recycled content paper.



Emissions Reductions: 2023 Plans

Prince George

The addition of return air ducting to the existing Canfor Technical building is being explored as a means to reduce the amount of tempering required for ventilation air. This modification would increase building temperature stability, increase occupant comfort, reduce utility consumption, and reduce emissions. 88,000 kWh of electricity and 870 GJ of natural gas is estimated to be conserved resulting in a 44 TCO₂e emission reduction annually.

The powerplant hot water supply line for the Canfor Technical building is currently being controlled manually by building operators. A project to provide a 3-way mixing valve, higher efficiency pumps, and increased monitoring to provide only required heating is being designed with intended install before September 2023. Estimated savings are not available for this project yet. The design is intended to provide a better occupant experience with the added benefit of increased efficiency.

A lighting consultant has provided drawings and recommendations for an LED retrofit of the main campus to increase lighting quality of the spaces and reduce electricity consumption. Upon completion, an estimated 700,000 kWh of electricity could be conserved and emissions reduced by 7 TCO₂e annually. This project is anticipated to begin summer 2023.

Burns Lake

Historic utility consumption at Burns Lake show large swings in the building's utility consumption indicating optimization opportunities. This year there will be attention paid to building control strategies and scheduling opportunities to help stabilize consumption levels. Further investigation is required to identify conservation opportunities and will primarily consist of low to no cost initiatives.

Fort St James

Continued monitoring of the operation of this site will occur to help maintain reductions realized in previous years. While monitoring additional opportunities for efficiency gains will be watched for.

Mackenzie

Currently there are no initiatives planned for the two sites located in Mackenzie. This is due to one site being a lease with no building automation system in place and the other being enabled only in times of programs operating.

Quesnel

The addition of return air ducting to the existing Quesnel Campus is being explored as a means to reduce the amount of tempering required for ventilation air. This modification would increase building temperature stability, increase occupant comfort, reduce utility consumption, and reduce emissions. 361,000 kWh of electricity and 1750 GJ of natural gas is estimated to be conserved resulting in a 91 TCO₂e emission reduction annually.

Further investigation into the operation of the heating system is underway to assess the capability of the HVACR systems at either warmer or cooler temperatures. A contractor is analyzing the control sequence and historic trends to help identify opportunities and make recommendations on how we should proceed.

Vanderhoof

Continued monitoring of the operation of this site will occur to help maintain reductions realized in previous years. While monitoring additional opportunities for efficiency gains will be watched for.

Mobile Sources (e.g. *fleet vehicles, off-road/portable equipment*)

With charging stations installed at Burns Lake, Fort St James, and Vanderhoof we can now encourage greater adoption of our electric fleet. A project is planned for the installation of two electric vehicle charging ports at the Quesnel Campus, similar to other sites. This should alleviate range anxiety experienced by drivers and further decrease our mobile emissions.

Public Sector Leadership

Climate Risk Management

To help further the understanding of climate related risks and risk reduction strategies CNC actively encourages team members to attend regular training supplied by British Columbia's Climate Action Secretariat and BC Hydro.

Sustainability Initiatives

There are currently very limited waste management plans in place due to geographical constraints of CNC campuses. Early level discussions are being continued to evaluate options available to encourage sustainable solutions of diverting waste generated from both students and operations.


2022 GHG Emissions and Offsets Summary Table

College of New Caledonia 2022 GHG Emissions and Offsets	
GHG emissions for the period of January 1 - December 31, 2022	
Total BioCO ₂	1.41
Total Emissions (tCO ₂ e)	1821
Total Offsets (tCO ₂ e)	1820
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e)	0
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets to be Retired for 2022 Reporting Year (tCO ₂ e)	1820
Offset Investment (\$)	\$45,500

Retirement of Offsets

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, College of New Caledonia (*the Organization*) is responsible for arranging for the retirement of the offsets obligation reported above for the 2022 calendar year, together with any adjustments reported for past calendar years (*if applicable*). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (*the Ministry*) ensuring that these offsets are retired on the Organization's behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

Executive Sign-off

Signature  Date May 26/2023
 Name (please print) Tara Szerencsi Title VP Finance & Corporate Services



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