College of New Caledonia

Prince George, Burns Lake, Fort St. James, Mackenzie, Quesnel, Vanderhoof



CNC Main Campus

Boiler Upgrade & GHG Reduction Project Prince George 2013 CNC Quesnel Campus

College of New Caledonia

2013 Carbon Neutral Action Report

Executive Summary

The College of New Caledonia continues to actively pursue all options available to reduce its overall energy consumption, reduce its overall carbon footprint, and promote green initiatives wherever possible. Highlights for the 2013 year saw the completion of 3 major energy reduction strategies here at the CNC Prince George Campus. These projects included a complete upgrade to our power distribution system, the first operational year of our new Chilled Water Plant with high efficiency Chillers & Cooling towers, as well as a complete Boiler Plant retrofit that saw the replacement of our old cast iron boilers with new high efficiency Viessmann condensing units.

The College looks forward with anticipation to the ongoing savings we will see from the completion of these initiatives, and will continue to actively explore all avenues available to minimize our carbon footprint.

Greenhouse Gas Emissions in calendar year 2013:	
Total Emissions	2965
Total Emissions for Offsets	2963
Adjustments to GHG Emissions Reported in Previous Years:	
Total Emissions	-85
Total Emissions for Offsets	-85
Credit owing from PCT at end of 2012 reporting year:	
Credit Owing	0
Total Emissions for Offsets for the 2013 Year	2878

2013 proved to be a monumental year for the College of New Caledonia when it came to energy reduction strategies. After two years of planning, we were able to complete a number of major projects that would positively position the College to realize substantial cost and energy savings well into the future.

The most significant Green House Gas reduction project completed this year was the total retrofit to our Heating Plant. This included the removal of the last three Cleaver Brooks cast iron boilers that were over 35 years old on average. Although the old units were highly effective in providing the College with plenty of hot water to satisfy the hydronic heating system, there was a huge opportunity for energy reduction and ongoing cost savings here.



Out with the old:

The remaining three Cleaver Brooks units were replaced with four high efficiency Viessmann condensing boilers. This latest upgrade to the heating side of our power plant has reduced the overall heating capacity of our Plant from 30 million BTU's to 18 million. By dropping 12 million BTU's, not only have we reduced our Carbon Footprint considerably, our Natural gas consumption and ongoing energy costs will also be significantly reduced.



In with the new:

Complementing this Boiler upgrade project was the addition of Variable Frequency Drives to control the new hydronic circulator pumps. These modifications will also present a measureable reduction in our hydro use, and we look forward with anticipation to these ongoing savings as well.

For the 2013 year, and as a result of this Boiler Upgrade project, not only we were very pleased to see our natural gas consumption for the year reduce by 3905 GJ's, and we were equally pleased to see the GHG reduction calculation come in at 195 tonnes. The College was proud to share in this achievement with the Fortis Gas Incentive team. They were excellent partners to work with throughout the entire project. The benefits of the Incentive received have been rolled directly into another exciting energy reduction project that will complete during the 2014 year.

Another large energy reduction project taken on in 2013 was the complete replacement of our aged chilled water plant. Housed inside the same Central Power Plant building, we replaced both Mechanical Chillers as well as their corresponding Cooling Towers that sit on top of the Plant. New technologies such as Adaptive Frequency Drive control on the new and more efficient Mechanical Chillers, and the addition of Variable Speed Drive control to the circulation and distribution pump sides of our cooling system will yield substantial annual savings in Hydro use here at the College.



Out with the Old:

In with the New:

As stated at the beginning, 2013 was monumental year for energy reduction projects. We began the year aggressively with a complete upgrade to the main power distribution system feeding the Campus. Located within the electrical vault of the Power Plant, the College houses the main power distribution centre for the facility. This was the original distribution system, and was in dire need of replacement. Scheduling the campus for a multi-day power shutdown and the setting up alternate power generators to protect our resources was a huge undertaking to say the

least. This was a necessary step forward to build the foundation needed to support reliable and clean power delivery to all our current and future hydro electric energy requirements.



Rounding out our energy reduction platform for the 2013 year saw the College continue with several lighting upgrade projects. Wherever possible, our aged T12 florescent tube lighting systems were replaced with T8 lamps complimented by new fixture technologies such as photocells where possible, and in some areas, light harvesting control.



Installation of Variable Speed Drive controls on all Air Handling Unit drive motors located at the PG Main Campus.



Conduct Energy Audits on all College of New Caledonia owned facilities, locally and regionally.

Optimization of rooftop system controls, as well as fresh air intake management strategies to be implemented at the College's "John A Brink Trades and Technology Centre".

Implement a facility utilization clustering strategy to permit areas of low use to be isolated and scheduled as unoccupied to facilitate area HVAC shutdown and further reduce Hydro consumption.



Through our Charter of Expectations and Commitments, the College of New Caledonia clearly outlines in its Priorities & Goals that the College will *"Demonstrate environmental stewardship in the management and development of our facilities, programs and services"*. This includes energy conservation and greenhouse gas emission reductions.

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Penny Fahlman, Vice President Finance and Administration

June 3/14 Date



2013 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Created Wednesday, April 30, 2014 Updated Wednesday, May 21, 2014 https://fluidsurveys.com/surveys/cas-z/2013-cnar-form-bps-actions/6c505a87d64c20fba49e9933fc22912f/

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Please complete the following sections of the 2013 Carbon Neutral Action Report form. Save your work frequently to prevent it from being lost. You can also save a copy for your own use as either a WORD or PDF file using the buttons at the bottom of each page.

This is Part 2 of the Carbon Neutral Action Report form. This section reports on actions taken to reduce emissions during the 2013 calendar year. This information will be included in your final Carbon Neutral Action Report posted on the Ministry of Environment website.

When the form is complete press the submit button on the last page to automatically submit the information to the Climate Action Secretariat (CAS). Do not press submit before you are ready – this may result in a loss of work.

In addition to completing this survey (Part 1 2), you are required to submit your completed Overview (Executive Summary) and Self-Certification Checklist. The 2013 Overview template was included in the email sent and can also be found on the LiveSmart leaders Community.

Please ensure you meet the following reporting deadlines:

A DRAFT 2013 CNAR is due to CAS by March 31, 2014. The draft is comprised of the Overview ONLY (no excutive sign-off required).

The FINAL 2013 CNAR is due to CAS by May 30, 2014. The final 2013 CNAR includes Part 1 Part 2 survey form and Overview.

The Self-Certification Checklist is due to CAS by May 15, 2014. For more information about the Carbon Neutral Government process, please refer to *Becoming Carbon Neutral 2013*, or should you have any questions please contact climateactionsecretariat@gov.bc.ca. Page 2

Organization Name

College of New Caledonia

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings):

Indicate which actions were taken in 2013:

Performed energy retrofits on existing buildings

Yes

Built or are building new LEED Gold or other "Green" buildings.

Yes

Undertook an evaluation of overall building energy use.

No

Please list any other actions taken to reduce emissions from Buildings:

Major retrofits to large energy use equipment within the Colleges Main Power Plant, as well as ongoing lighting upgrades throughout the Campus during the year.

2) Mobile Fleet Combustion (Fleet and other vehicles):

Indicate which actions were taken in 2013:

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficent vehicles (gas/diesel)

No

Replaced existing vehicles with hybrid or electric vehicles

No Reduced the overall number of fleet vehicles Yes Took steps to drive less than last year Yes Please list any other actions taken to reduce emission from fleet: (No response) 3) Supplies (Paper): Indicate which actions were taken in 2013: Used less paper than previous year No Used only 100% recycled paper No Used some recycled paper Yes Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

All printers in the College had settings adjusted to default on 2 sided printing.

Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2014 and future years:

- Installation of Variable Speed Drive controls on all Air Handling Unit drive motors located at the PG Main Campus.

-Natural Gas Energy Assessment of the PG, and Quesnel Campus's

-Optimization of rooftop system controls, as well as fresh air intake management strategies to be implemented at the College's "John A Brink Trades and Technology Centre".

-Implement a facility utilization clustering strategy to permit areas of low use to be isolated and scheduled as unoccupied to facilitate area HVAC shutdown and further reduce Hydro consumption.

-Continue upgrades to our Campus lighting with newer technologies.

If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

No

⁻Conduct Energy Audits on all College of New Caledonia owned facilities, locally and regionally.



- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2013 (Generated May 21, 2014 2:33 PM)

Total offsets required: 2,963. Total offset investment: \$74,075. Emissions which do not require offsets: 2 **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation* of the *Greenhouse Gas Reduction Targets Act,* all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.