



**Cowichan Station Hub Energy Efficient Building
Retrofit and Fuel Switching:
Carbon Credits for Carbon Neutral Reporting 2014**

Prepared by Austin Tokarek,
Sr. Environmental Analyst – Energy

CVRD – Engineering Services

March 2015

Table of Contents

1.0 Compliance with Green Communities Carbon Neutral Framework Option 1 Profile	3
1.1 Energy Efficient Retrofits and Fuel Switching – Profile Summary	3
1.2 Baseline Year and Project Dates	3
1.3 Project Eligibility.....	4
1.4 Contact Information.....	5
2.0 Project Description	6
2.1 GHG Assertion.....	6
2.2 Data and Calculations	6
2.2.1 Energy Efficiency Carbon Reduction Data	6
2.2.2 Using the Green Communities Energy Efficiency Retrofit Calculator	6
3.0 Ownership of Credits	7
4.0 Project Co-Benefits.....	7
5.0 Supporting Documents	7
Appendix A: Tonnes of Avoided Emissions	8
Appendix B: GCC Project Plan	10
Appendix C: GCC Self-Certification Form.....	12



1.0 Compliance with Green Communities Carbon Neutral Framework Option 1 Profile

1.1 Energy Efficient Retrofits and Fuel Switching – Profile Summary

One of the greatest opportunities within communities for reducing greenhouse gas (GHG) emissions is the existing building stock. As such the Green Communities Committee (GCC) recognizes projects involving retrofitting non-government owned buildings in the community or local government owned/operated buildings that are outside the boundaries of “traditional local government services”.

In 2012, the Cowichan Valley Regional District (CVRD) provided a grant to the Cowichan Station Area Association (CSAA) to assist in funding a geo-exchange building HVAC system to replace the aging oil furnaces at Cowichan Station Hub. This switch from a high carbon energy source (light oil) to a low carbon energy source (hydro- electricity) is a direct community measure reducing community GHG emissions. The previous oil heating system consumed between 12,000-16,000L per year emitting over 30 tonnes of GHG emissions in the process.

1.2 Baseline Year and Project Dates

The Hub building is the former Cowichan Station elementary school that was closed in 2006 and now leased to the CSAA from the School District 79. The most recent available data is from 2007 to 2009 when the school board

continued to operate the partially occupied buildings. In addition, change of use of the building from a public school to a more variable year round community hall schedule offers additional challenge in comparing baseline to project consumption. Despite this, because of the previous simplicity of the heating system controls and operation, it is expected that this period is fairly representative of the annual operation and at worst, conservative in the energy use estimate.

The baseline years for the project has been set as the average of energy usage from 2007-2009, the last years in which the school board operated the building. This data represents the most accurate baseline data for the building in actual use and is shown in Appendix A.

The first full project year for the system was 2013 and total electrical consumption was 93,328 kWh. The total electrical consumption for the 2014 project year was 83,034kWh.

Table 1. - Baseline Year and Project Years Summary

	Baseline	2013 Project Year	2014 Project Year
Total Electricity Consumption (kWh)	80,520	93,328	83,034
Total Oil Consumption (GJ)	459	0	0
Total GHG (tCO₂e)	29.1	1.9	1.9
Claimable Emission Reduction Credits (tCO₂e)	N/A	28.8	27.3

1.3 Project Eligibility

The Cowichan Valley Regional District asserts that it meets all project eligibility criteria for the 2014 reporting year as required by the GCC Carbon Neutral Framework Compliance.

Requirements:



Emission reductions are outside of the local government corporate emission boundary.

Emissions associated with this building are outside the traditional boundary of the CVRD operations. This building is owned by School District 79, and leased and operated by the Cowichan Station Area Association.

Emission reductions have occurred before they are counted.

The emission reductions being claimed for 2014 and are associated with energy consumed in the 2014 calendar year.

Emission reductions are credibly measured.

GCC supported Option 1 projects are considered to meet this requirement and emission reductions have been calculated using the GCC provided excel calculator for Energy Efficiency Retrofit projects.

Emission reduction projects are beyond business as usual (BAU).

Option 1 projects (GCC supported) are considered to meet this requirement.

Accounting of emission reductions is transparent.

This public report provides details of the emission reduction accounting.

Emission reductions are only counted once.

The CVRD has calculated the emission reductions from this project in agreement with the Cowichan Station Community Association. The emission reductions claimed in this report have not been previously committed or sold as emission reductions.

Project proponents have clear ownership of all emission reductions.

The CVRD asserts that it has the exclusive right to the emissions reductions under this profile as it has an agreement with the Cowichan Station Community Association as to the ownership of these rights.

1.4 Contact Information

Contact information for the Project Designate and Developer are provided in the following table.

Project Designate	Name: Mark Kueber Title: General Manager, Corporate Services Phone: 250 746-2500 Email: mkueber@cvrld.bc.ca
--------------------------	--

Project Contact

Name: Austin Tokarek
Title: Senior Environmental Analyst ,Engineering Services
Division
Phone: 250 746-2504
Email: atokarek@cvr.bc.ca

2.0 Project Description

2.1 GHG Assertion

This report summarized the energy efficiency upgrade retrofit project, with grant funding from the CVRD.

During the crediting period from January 1, 2014 to December 31, 2014 the activity from this project resulted in 27.3 tonnes of carbon dioxide equivalent (CO₂ e) reduction from business as usual activities.

2.2 Data and Calculations

2.2.1 Energy Efficiency Carbon Reduction Data

For the purpose of calculating energy efficiency retrofit GHG reductions, the GCC Project Profile specifies that only emissions reduced below the baseline years average may be counted. Energy use must be weather-corrected and corrected for specific uses of heating and cooling. Appendix A provides the calculations for this project.

Baseline year data was sourced from the School District 79 records of heating oil purchases and electrical data from 2007 to 2009. Project year electrical data was sourced from the Cowichan Station Area Association BC Hydro records.

2.2.2 Using the Green Communities Energy Efficiency Retrofit Calculator

Required Inputs for the EE Retrofits calculator are:

- Baseline and Project Time Period
- Baseline Energy Consumption from Utility Bills
- Project Energy Consumption from Utility Bills
- Estimated Share of Electricity consumed for Space Heating and Cooling
- Heating degree days and Weather adjusted energy consumption

The results of the GCC EE Retrofits Calculator are presented in the Emission Profile of Appendix A.

3.0 Ownership of Credits

In agreement with the Cowichan Station Area Association (CSAA), the CVRD claims full rights to the GHG emissions reductions from the project in relation to the grant provided to fund the heating system upgrade in 2012.

4.0 Project Co-Benefits

The largest co-benefit of this project is the improvement in heating and cooling capacity, quality and control providing for a strong example of rejuvenating the existing building stock. In addition, supporting and empowering local communities and demonstrating current technologies able to provide low emission and lower cost systems to extend the life of the building stock for future generations.

5.0 Supporting Documents

BC Climate Action Toolkit; "Carbon Neutral Local Government"

UBCM Green Communities Committee, 2012; "Becoming Carbon Neutral: A Guidebook for Local Governments in British Columbia." Version 3, July 2014.

UBCM Green Communities Committee, 2012; "The Workbook - Helping Local Governments Understand How to Be Carbon Neutral in their Corporate Operations."

UBCM Green Communities Committee, 2012; "Green Communities Carbon Neutral Framework Option 1 Project Profile: Energy Efficient Building Retrofits and Fuel Switching."

Province of British Columbia, 2007; "Climate Action Charter"

Appendix A: Tonnes of Avoided Emissions

Provided below are the Energy Efficiency Retrofit Calculator calculations.

Table 1 - Baseline and Project Duration

	Time Period		
	Start	End	#days
Baseline	Jan 01, 2007	Dec 31, 2009	1096
Project	Jan 01, 2014	Dec 31, 2014	365

Table 2 - Baseline Energy

Year	Baseline Energy Consumption	
	Electricity (kWh)	Heating Oil (GJ)
1	91,920	531
2	111,920	474
3	37,720	371
Baseline (annual average)	80,520	459

Table 3 - 2014 Project Energy Consumption

2014 Project Energy Consumption	
	Electricity (kWh)
Project Total	83,034

Table 4 - Estimate Share of Electricity for space heating and cooling

	Share of electricity used for space heating and cooling (%)	Electricity consumption for space heating and cooling (kWh)
Baseline	40%	32,208
Project	80%	66,427

Table 5 - Weather-Adjusted Project Energy Consumption

	Weather-corrected energy consumption	
	Electricity (kWh)	Heating Oil (GJ)
Baseline Adjusted	68,945	403
Project	74,372	0

Table 6 - Annual Baseline and Project GHG Emissions

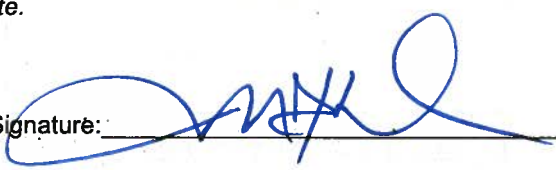
	GHG Emissions (tCO ₂ e)		
	Electricity	Heating Oil	Total
Baseline Adjusted	1.72	27.4	29.12
Project	1.9	0.0	1.9

Table 7 - Annual Avoided Emissions

	GHG emissions (tCO ₂ e)		
	Electricity	Heating Oil	Total
Emission Reduction CREDITS:	-0.1	27.4	27.3

Appendix B: GCC Project Plan

Project Proponent Information	
Name of Local Government Project Proponent(s)	Cowichan Valley Regional District
Project Designate appointed to sign off on Project Plan	Name: Mark Kueber Title: General Manager, Corporate Services Phone: 250 746-2500 Email: mkueber@cvrd.bc.ca
Project Contact	Name: Austin Tokarek Title: Senior Environmental Analyst – Energy Phone: 250 746-2504 Email: atokarek@cvrd.bc.ca
Project Information	
Project title	The Hub at Cowichan Station Geo-Exchange Heating Upgrade
Option 1 Project Profile	<input checked="" type="checkbox"/> Project 1A: Energy Efficient Building Retrofits and Fuel Switching
Project description and objectives	In 2012, The CVRD provided a grant to the Cowichan Station Area Association to assist in funding a Ground source heat pump HVAC system to replace two oil fire furnaces to heat the community building. This upgrade replaced high emission fuel oil with clean electrical energy leveraged by ground source thermal energy.
Project co-benefits (Optional)	This system provides significant cost savings to the community, supporting local green jobs, promotes innovative clean technology, and brings awareness to climate change and energy conservation.
Project start date	The project was completed in 2012 and the first full year of usage was January 1 – December 31, 2013
Project Transparency: Accountability and Reporting	
Scope	<input checked="" type="checkbox"/> The Project Designate certifies that the project outlined in this Project Plan is outside of the scope of the local government's corporate emissions boundary as defined in the Carbon Neutral Workbook, as per the Project Eligibility Requirements outlined in Appendix 1 of the <i>Becoming Carbon Neutral</i> guidebook.
Counted Once	<input checked="" type="checkbox"/> The GHG reductions claimed from this project under the Carbon Neutral Framework have not been, and will not be, committed or sold as an emission reduction under any other alternate emission-offset scheme, as per the Project Eligibility Requirements outlined in Appendix 1 of the <i>Becoming Carbon Neutral</i> guidebook.

Ownership	<input checked="" type="checkbox"/> The local government proponent(s) claiming emission reductions from the Option 1 project outlined in this Project Plan have exclusive right to the GHG reductions that arise from the Option 1 project, as per the Project Eligibility Requirements outlined in Appendix 1 of the <i>Becoming Carbon Neutral</i> guidebook.
Verification	<input checked="" type="checkbox"/> The Project Designate understands that he / she will be required to sign off the annual Verification Template Report for this project to verify that the estimated GHG reductions from this project actually occurred during the year in which they will be claimed, as per the Project Eligibility Requirements outlined in Appendix 1 of the <i>Becoming Carbon Neutral</i> guidebook.
Reports	<input checked="" type="checkbox"/> The Project Designate, is aware of the public reporting requirements under the Climate Action Revenue Incentive Program (CARIP) and that after January 1, 2012, the CARIP reports will be revised to include information on total annual corporate emissions , the reductions being claimed from GHG projects undertaken under the Carbon Neutral Framework (Option 1 and 2) , and purchased offsets (Option 3) in order demonstrate carbon neutrality for any given year, as the Project Eligibility Requirements outlined in Appendix 1 of the <i>Becoming Carbon Neutral</i> guidebook.
Project Plan: Authorization and Sign Off	
<p>Project Designate</p> <p><i>The information provided in this Project Plan, is to the best of my knowledge correct and complete.</i></p> <p>Designate Signature: </p> <p>Date: <u>March 6, 2015</u></p> <p>Title: <u>CVRD General Manager Corporate Services</u></p>	

Appendix C: GCC Self-Certification Form

Project Proponent Information	
Name	Cowichan Valley Regional District
Project Designate appointed to sign off on the Self-Certification Template	Name: Mark Kueber Title: G. Manager Corporate Services Phone: 250 746-2500 Email: mkueber@cvrd.bc.ca
Project Contact	Name: Austin Tokarek Title: Senior Environmental Analyst - Energy Phone: 250 746-2504 Email: atokarek@cvrd.bc.ca
Project Information	
Project Title	Community Fuel Switching: Carbon Credits for Carbon Neutral Reporting (2014 Reporting Year) <input checked="" type="checkbox"/> Copy of Project Report Attached
Timing and Amount of reductions being claimed	The GHG emission reduction of 27.3 Tonnes CO ₂ equivalent are claimed from this project, from activities between January 1, 2014 and December 31, 2014.
Certification that the required work occurred	<input checked="" type="checkbox"/> I declare that the project work required to achieve the GHG reductions from this project as estimated by the project profile used, actually occurred during the years in which they are identified, and will be claimed in 2014 as per the Project Eligibility Requirements outlined in Appendix 1 of the Becoming Carbon Neutral Guidebook.
Self-Certification Template: Authorization and Sign off	
<p><i>The information provided in this Self Certification Template is to the best of my knowledge correct and complete.</i></p> <p>Designate Signature: </p> <p>Date: <u>March 6, 2015</u></p> <p>Title: CVRD General Manager Corporate Services</p>	