



School District No. 23 (Central Okanagan) – 2013 Carbon Neutral Action Report

“Together We Learn”

As the finalized 2013 Carbon Neutral Action Report (CNAR) for School District No.23 (Central Okanagan), this report contains our 2013 emissions profile, offsets purchased, the actions we have taken in 2013 to reduce our GHG emissions and our plans to continue reducing emissions in 2014 and beyond. By June 30, 2014, the School District No.23 final CNAR will be posted to our website at www.sd23.bc.ca

One of our foremost accomplishments is that SD23 is the only school district in BC to operate a fleet of Compressed Natural Gas (CNG) buses. Our school district has taken a leadership role in the area of Greenhouse Gas (GHG) reduction by continuously improving our student transportation system.

In 2013, the expansion of compressed natural gas (CNG) school bus usage continues to hold the promise of reducing carbon emissions and saving fuel costs. Viability of natural gas as a transportation fuel has grown partly because the availability of shale gas resources has dramatically expanded, resulting in lower prices while diesel prices have increased. CNG school buses are also appealing because the maintenance on these engines is reduced and the slow-fill fueling system is efficient by saving labour hours. Currently, CNG is priced 25% less than diesel. The price of a diesel litre equivalent (DGE) of CNG has become increasingly lower than the price of a litre of diesel. Although the market price of natural gas was fairly volatile in the previous decade, it is expected to stabilize at a level highly competitive with diesel. It now appears the price of natural gas has decoupled from diesel prices.



Although financial viability is an important determinant of the achievable potential, several of these segments/scenarios have other important advantages that improve CNG School Buses prospects. For example, the environmental advantage of a CNG School Bus is calculated at 19% in greenhouse gas (GHG) emission reductions. In the context of operating vehicles in the Okanagan Valley,



these environmental advantages translate into health advantages which can be fundamental to our environmentally conscious citizens.

In 2013, the boiler efficiency and emissions of greenhouse gases were reviewed for 15 hydraulically heated school buildings in School District No.23, of the Central Okanagan. The annual energy consumption of electricity and natural gas by square meter of construction and by student was measured in each case. The greenhouse gases emissions were estimated using a standard method applied in British Columbia (BC). The consumption of electricity and gas over the estimated needs of auxiliary heating, and the economic cost of the consumed energy, were used as indicators of energy efficiency in the study buildings. The need for auxiliary heating varied from school to school, but was lower than the current levels of heating, revealing an inefficient use of energy. A low emission of greenhouse gases was estimated for the local buildings in comparison to school buildings located in other environments of BC. However, such emissions seem to be unnecessarily high for the local climatic conditions. It is concluded that some standardized designs and management practices, as well as the development of local standards for energy demand and greenhouse gas emissions are necessary to improve the energy efficiency of school buildings in the study and to contribute to the prevention of environmental change provincially.

In 2014, a pilot program in School District No.23's Green STAR energy schools is being rolled out to prove that it is fully possible to influence energy consumption through information. An increase in knowledge among staff and students, along with shared financial incentives from the subsequent reduction in energy use is designed to motivate schools to be more energy efficient. Since several interrelated factors are involved in this knowledge level, it is difficult to establish the individual influences. But such factors as electricity bills, electricity metering, discounting and even general information campaigns, have shown to give a positive results. Energy efficiency through schools utility savings will lead to long lasting results, while the effects of behavioural change may diminish rapidly. Various investigations have shown different results. Some of them showed a decreasing effect after just one week while others led to significantly longer lasting results. Trends revealed that the longer the duration of the program or the larger the information quantity contributions, the more prolonged the effects on Green House Gas Reductions.





Emissions and Offsets Summary:

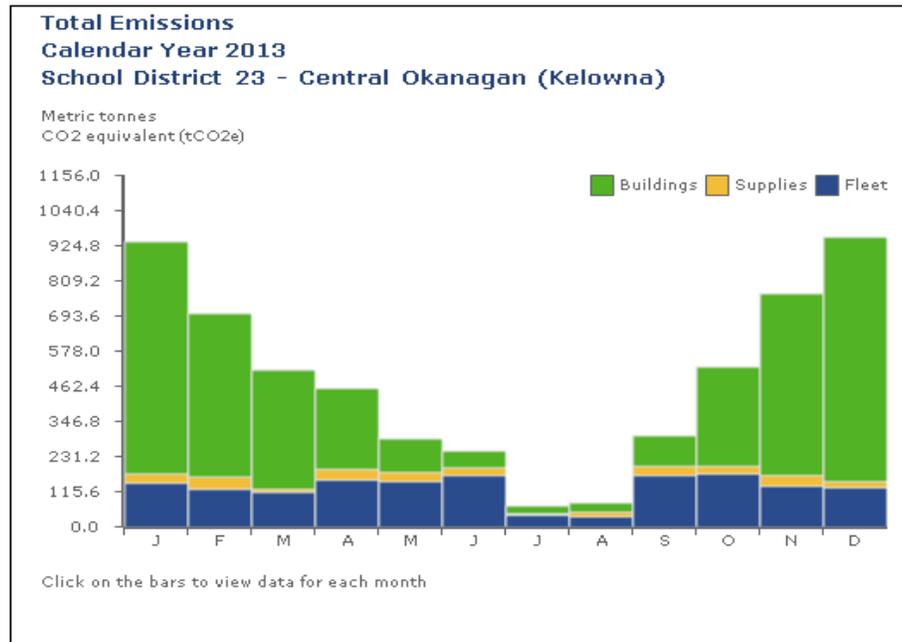


Fig 1) Gas House Emission from Fleet, Supplies & Buildings

School District 23 - Central Okanagan GHG Emissions and Offsets for 2013 (tCO2E)	
GHG Emissions created in calendar year 2013	
Total Emissions	6021 tCO₂e
Total Emissions for Offsets	4809 tCO₂e
Adjustments to GHG Emissions Reported in Previous Years	
Total Emissions	-1 tCO₂e
Total Emissions for Offsets	-1 tCO₂e
Credit owing from PCT at end of 2012 reporting year (if applicable – from May 15 Invoice):	
Credit Owing	74 tCO₂e
Total Emissions for Offsets for the 2013 Reporting Year:	4721 tCO₂e



Larry Paul

June 5, 2014

Signature
Larry Paul CA
Secretary-Treasurer
S.D. No. 23
Name (please print)

Date
Title

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

Created Monday, June 16, 2014

<https://fluidsurveys.com/surveys/cas-z/2013-cnar-form-bps-actions/a695ff123eea185baa882a625dad95df/>

Page 1

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 executive 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.

Organization Name

School District No.23 (Central Okanagan)

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.

Yes

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

Completed an in depth heating boiler audit to identify performance issues. Boiler performance like total efficiency will reduce with time, due to poor combustion, heat transfer fouling and poor operation and maintenance. Deterioration of combustion gas quality and heating water quality also leads to poor performance of boiler. Efficiency testing helps us to find out how far the boiler efficiency drifts away from the best efficiency. Any observed abnormal deviations could therefore be investigated to pin point the problem area for necessary corrective action. Hence it is necessary to find out the current level of efficiency for performance evaluation, which is a pre requisite for energy conservation action in school buildings.

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 efficient vehicles (gas/diesel)

Yes

Replaced existing vehicles with hybrid or electric vehicles

No

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

Yes

Please list any other actions taken to reduce emission from fleet:

Our Green Fleet Plan includes:

- A fleet and fuel management system that identifies and evaluates fuel usage, asset tracking, vehicle right-sizing and life cycle optimization, vehicle sale and disposal, and other ways to improve efficiency.*
- A preventive maintenance program that consists of scheduled inspection and follow-up repairs to vehicles and equipment with the goal of decreasing on-road breakdowns and excessive downtime.*
- The use of alternative fuels, such as Compressed Natural Gas , ethanol, or others.*

3) Supplies (Paper):

Indicate which actions were taken in 2013:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

Yes

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

Advanced Photo Copying Program:

- *Schools have more access to 30% recycling paper.*
- *Individual user access codes for all printing and coping services.*
- *Monthly user access records that are emailed to school administration.*

Actions Taken to Reduce Emissions - continued

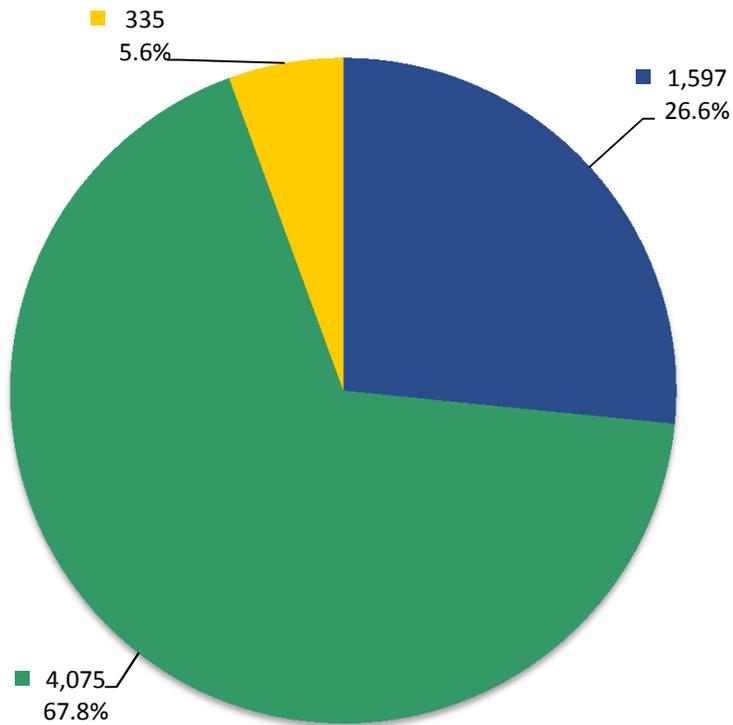
Explain how you plan to continue minimizing emissions in 2014 and future years:

- HVAC upgrades in four schools to higher efficient equipment will reduce emissions.
- Green Star Energy Program in 21 of our school building. Baseline energy saving initiative that allows schools to calculate cost saving from actual energy consumption. (energy savings = baseline energy consumption – actual energy consumption)
- Transportation upgrades to service vehicles, ordering reduced horsepower motors. Include service vehicles on CNG conversion list.

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

No

**School District 23 - Central Okanagan (Kelowna)
Greenhouse Gas Emissions by Source
for the 2013 Calendar Year (tCO₂e*)**



Total Emissions: 6,007

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2013 (Generated May 21, 2014 3:26 PM)

Total offsets required: **4,796**. Total offset investment: **\$119,900**. Emissions which do not require offsets: **1,212** **

*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.