



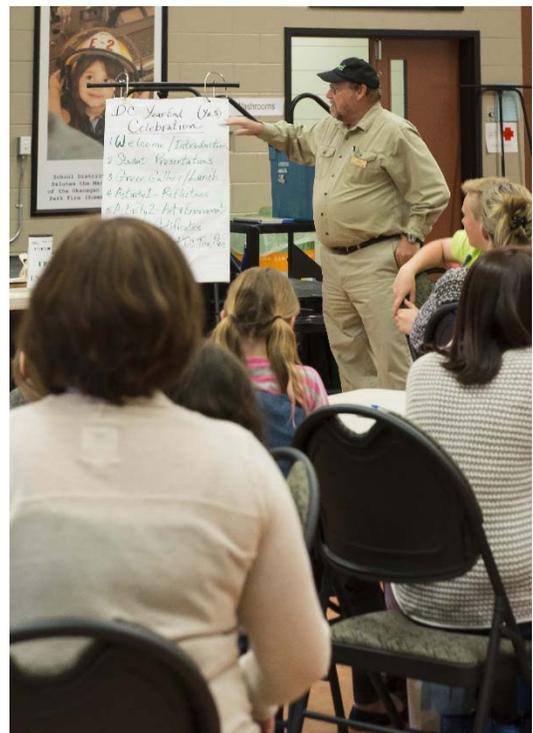
School District No. 23 (Central Okanagan) – 2014 Carbon Neutral Action Report

“Together We Learn”

As the finalized January 1st to December 31st, 2014 Carbon Neutral Action Report (CNAR) for School District No.23 (Central Okanagan), this report contains our 2014 emissions profile, offsets purchased, the actions we have taken in 2014 to reduce our GHG emissions and our plans to continue reducing emissions in 2014 and beyond. By June 30, 2015, 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 has created a new energy conservation model called Green STAR Energy for schools. Currently, we have 20 schools committed to this new program. In our first year starting July 01, 2014 each school will receive the total energy savings from their calculated three year baseline. We are using our tool as a fun educational opportunity and a creative way for schools to generate money.

School District No.23 introduced this Green STAR energy school program to prove that it is fully possible to influence energy consumption through information. One half of our district increased their 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. 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.





In 2014, the compressed natural gas (CNG) school bus fleet continues to hold the promise in reducing carbon emissions and saving Diesel costs. 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



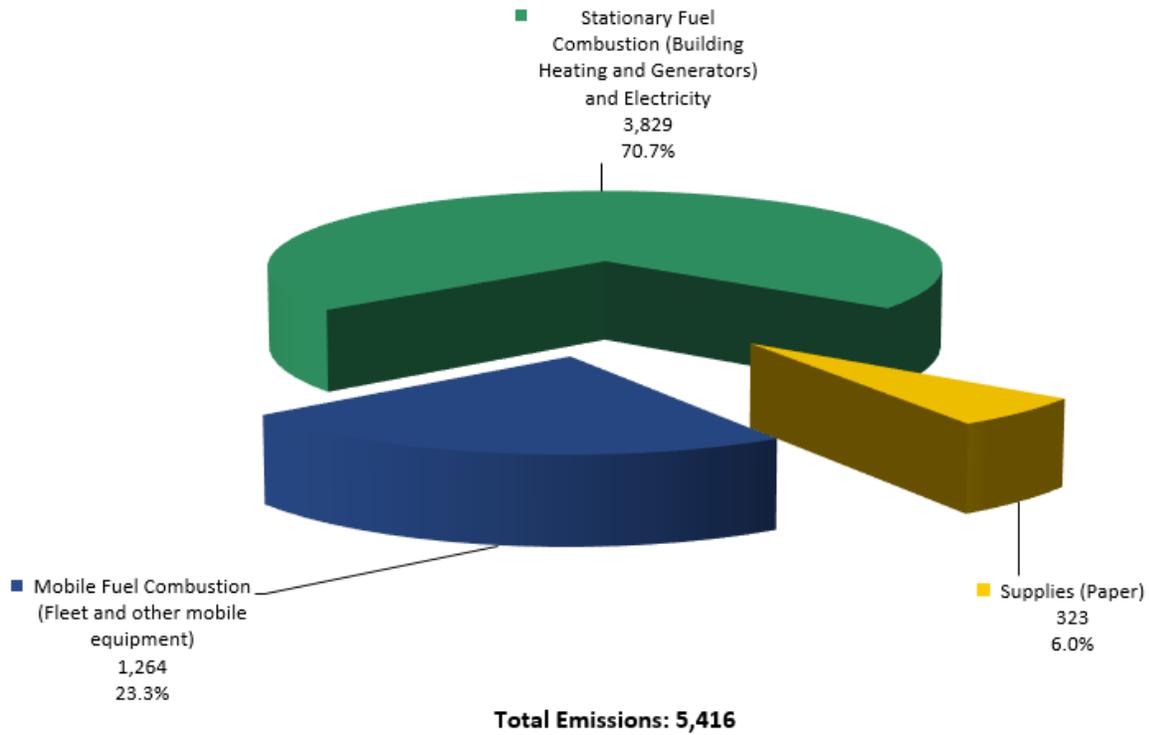
priced 25% less than diesel. The price of a diesel litre equivalent (DGE) of CNG has become increasingly lower than the price of a litre of diesel. Although the market price of natural gas was fairly volatile in the previous decade, it is expected to stabilize at a level highly competitive with diesel. 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 2014, replacing old boilers with condensing boilers results in less natural gas used. Highly efficient made in British Columbia condensing boilers use less fuel and have lower running costs than other boilers. Higher efficiency levels are made possible by extracting heat contained in the combustion gases, which would otherwise have been lost to the atmosphere. Mount Boucherie Condensing Boiler project achieved an amazing 45% natural gas reduction level the first year of operations. Energy saving equivalent of one 350 student school per year of natural gas usage. A total of 900Gj of natural gas was saved. It is concluded that some standardized low temperature boiler designs and good maintenance practices, as well as the development of control standards for energy demand and greenhouse gas emissions are necessary to improve the energy efficiency in all school buildings. School District 23 is committed to learn from these energy results and share its knowledge in a collaborative environment.

In 2015, LED lighting upgrades will reduce SD23's electrical consumption. LED lighting projects are estimated to reduce the exterior lighting energy costs for those facilities by 80%. School District 23 is excited about the significant energy savings we will achieve and the positive impact on our annual operational costs as a result of this electrical energy initiative.

Emissions and Offsets Summary:

School District 23 - Central Okanagan (Kelowna) Greenhouse Gas Emissions by Source for the 2014 Calendar Year (tCO₂e*)



Offsets Applied to Become Carbon Neutral in 2014 (Generated June 15, 2015 11:15 AM)
Total offsets required: **4,514**. Total offset investment: **\$112,850**. Emissions which do not require offsets: **903** **

*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.

Fig 1) Emissions Source Report

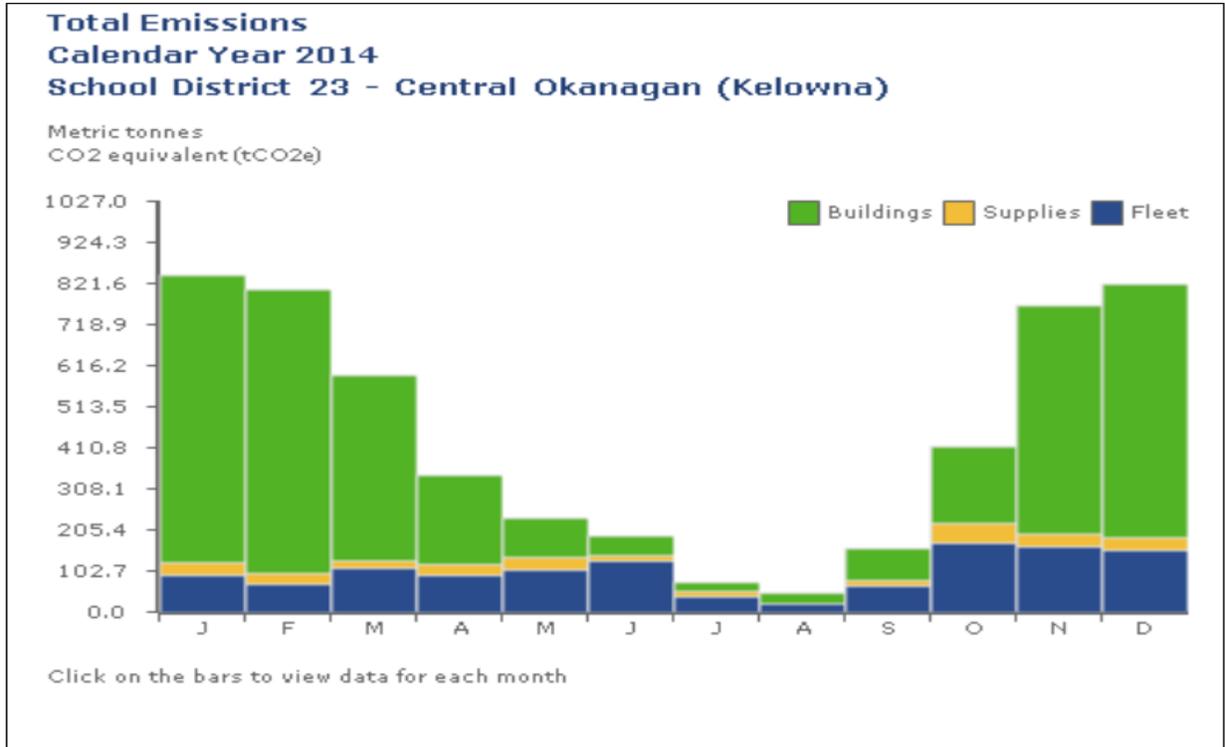
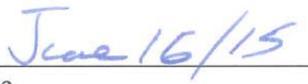
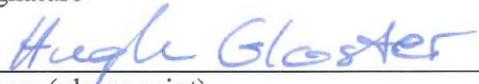


Fig 2) Green House Gas Emission from Fleet, Supplies & Buildings

School District 23 - Central Okanagan GHG Emissions and Offsets for 2014 (TCO₂E)	
GHG Emissions created in calendar year 2013	
Total Emissions	5416 tCO ₂ e
Total Emissions for Offsets	4513 tCO ₂ e
Adjustments to GHG Emissions Reported in Previous Years	
Total Emissions	-11 tCO ₂ e
Total Emissions for Offsets	-13 tCO ₂ e
Total Emissions for Offset for the 2014 Reporting Year	
Total Emissions for Offsets for the 2014 Reporting Year:	4500 tCO ₂ e



Executive sign-off:

 _____ Signature	 _____ Date
 _____ Name (please print)	 _____ Title

2014 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

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 2014:

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:

Adopted school based utility conservation program, "Green Star Energy Program"

2) Mobile Fleet Combustion (Fleet and other vehicles): Indicate which actions were taken in 2014:

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:

Compressed Natural Gas (CNG) fuel for 16 - 84 passenger buses.

3) Supplies (Paper):Indicate which actions were taken in 2014:

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:

School District wide photocopier user access that tracks individual paper usage. Adopt a school "Paper Use Reduction" goal and policy that promotes the use of electronic media and incorporates paper use reduction requirements, such as double-sided copying and printing.

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Actions Taken to Reduce Emissions - continued

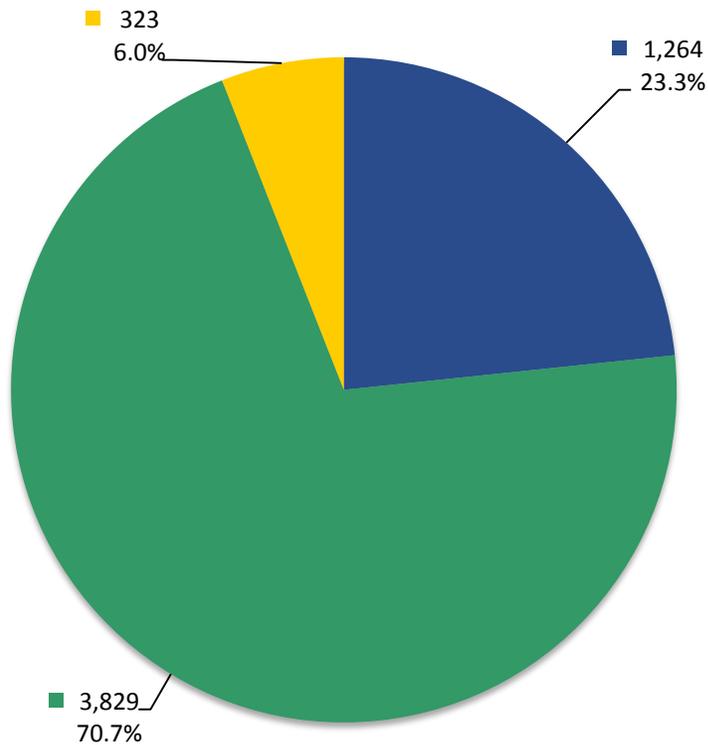
Explain how you plan to continue minimizing emissions in 2015 and future years:

Retrofitting one of our school building's HVAC system in order to reduce 900gj of Natural Gas usage. The HVAC system of choice, Geo-thermal heat-pump system under an existing school field. Horizontal directional drilling provided a means of installing the geothermal loops and header pipes without damaging the school field.

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 2014 Calendar Year (tCO₂e*)**



Total Emissions: 5,416

- 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 2014 (Generated June 23, 2015 12:07 PM)

Total offsets required: **4,514**. Total offset investment: **\$112,850**. Emissions which do not require offsets: **903** **

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