

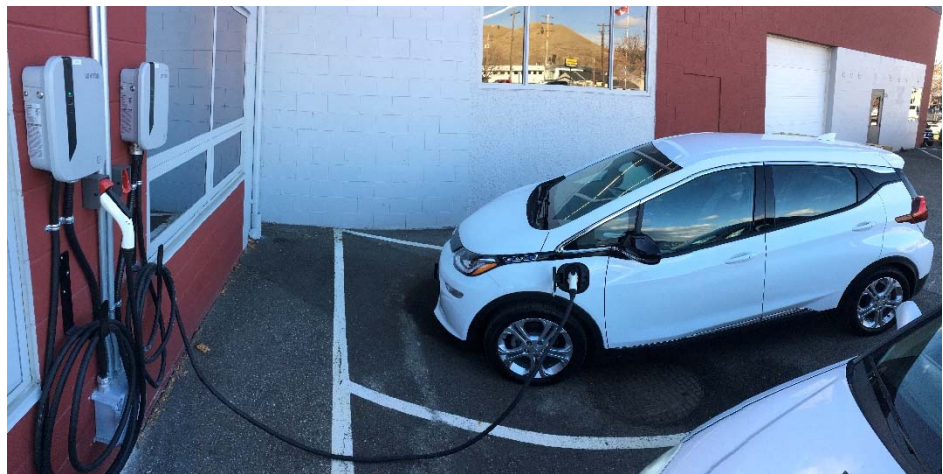


**Central Okanagan
Public Schools**
Together We Learn

Central Okanagan Public Schools 2017 Carbon Neutral Action Report

As the finalized, This Carbon Neutral Action Report for the period January 1st, 2017 to December 31st, 2017 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2017 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2017 and beyond. By June 30th, 2017, Central Okanagan Public Schools final CNAR will be posted to our website at www.sd23.bc.ca

2017 has seen the first year of the shared energy management resource pilot for school districts in underserved regions of the Province. Implementation of methods to manage energy consumption and provide sustainable practices has the ability



to achieve cost savings and efficiencies for school districts. A number of school districts have demonstrated savings and efficiencies in these areas through involvement with BC Hydro, Fortis BC, the Carbon Neutral Capital Program or programs they have created themselves. The business case specifically identified implementation of LED lighting projects as one area where there were easily quantifiable benefits in energy reduction and savings for school districts.

Central Okanagan Public Schools has a key role in the energy management pilot project. SD23 has hired the shared energy manager for a one year term. The energy manager position will be co-funded by the Ministry of Education and BC Hydro. "A regional energy service centre (ESC) would provide collaborative, coordinated and consistent energy management program support and implementation, including: evaluating a regional portfolio of facility operational performance, coordinating energy management studies, developing capital or operating investment business cases for government, applying for utility company grants, coordinating procurement and facilitating training, and development and sharing across their region and other regions in BC. The ESC would also assist with sustainability practice (e.g., behavioural



changes and education programs such as school green teams by liaising with in-district educational staff)." The pilot continues to provide an opportunity to shape and identify, in a collaborative manner, the key attributes of a co-funded energy manager role for the more rural and remote areas of the province.

Our year one outcome has provide a shared energy management resource for five K-12 school districts in the Kootenay/Boundary, Thompson/Okanagan, and North Coast/Northern Interior regions of the Province:

- School District 87 (Stikine)
- School District 5 (Southeast Kootenay)
- School District 22 (Vernon)
- School District 8 (Kootenay Lake)
- School District 74 (Gold Trail)

The Educational Facility Managers' Association, BC Hydro, School District No. 23 (Central Okanagan) and school districts interested in taking part in the pilot will be key supports to and members of an Energy Management Pilot

Advisory Committee. The Ministry of Education's Service Delivery area will provide project management support. As first step in resourcing this pilot, discussions took place amongst the Facilities Management Working Group (FMWG), Educational Facility Managers' Association (EFMA), BC Hydro and the Service Delivery team. The ministry and BC Hydro have agreed to co-fund a strategic shared energy manager role.



Our foremost

accomplishment is that SD23 has lowered its greenhouse gas emissions by 27 per cent below 2007 levels. British Columbia's [Greenhouse Gas Reduction Targets Act \(GGRTA\)](#) legislated in 2007 by the Province of British Columbia, the GGRTA requires all of BC's public sector organizations (PSOs) by law to be carbon



neutral by 2010 – this includes all BC school districts and post-secondary institutions. The GGRTA sets aggressive targets for reducing greenhouse gas emissions (GHGs). In 2007, Environment Minister Barry Penner announced that the B.C. Government has reviewed and accepted the recommendations of the Climate Action Team (CAT) for interim greenhouse gas reduction (GHG) targets. School District No.23 has exceeded 2017 expectations by 6% and is well on track to meet our 2020 GHG targets.

GHG reduction target;

6 per cent below 2007 levels by 2012

18 per cent below 2007 levels by 2016

33 per cent below 2007 levels by 2020

Compressed natural gas (CNG) school bus fleet expands to just under 20 buses this year. CNG-fueled buses reduce operating costs for Operations and for SD23 as the fuel is less expensive and has a smaller carbon footprint compared to traditional transit vehicles. and 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 24% 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 2017 emission reduction projects involved the continuation of replacing equipment that was end-of-life, had a high cost to operate, and contributed to our overall greenhouse gas emissions. Much of the work involves removal of hazardous materials, old equipment, and bringing new building management controls and operation online for the new equipment. Since our largest emissions source is Natural Gas heating equipment, our efforts are targeted towards making this equipment the most efficient possible. Utilizing the most modern, available, Building Management Systems



(BMS) controls, coupled with condensing, or high efficient boilers and furnaces, we aim to reduce our carbon footprint as much as possible. All equipment is able to be controlled remotely through our Wide Area Network (WAN) and will utilize a new style of graphical interface so that the entire BMS operation is subject to scrutiny at a glance, anywhere in the world. Further reporting features enable us to capture and display information over a time period. This enables us to find problems, correct them, and return the equipment back to full operation more efficiently than was previously possible. New benchmarking standards compare each building through online data collection software called PUMA. By comparing the consumption data, carbon footprint and trends of the building operation over a long period of time, we can find out if the facility is performing as expected. Data from other school districts across Canada is analyzed for further use and comparison. Energy saving equivalent of one 150 student school per year of natural gas usage. A total of 300Gj 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 No.23 is committed to learn from these energy results and share its knowledge in a collaborative environment.

In 2017, 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 No.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:

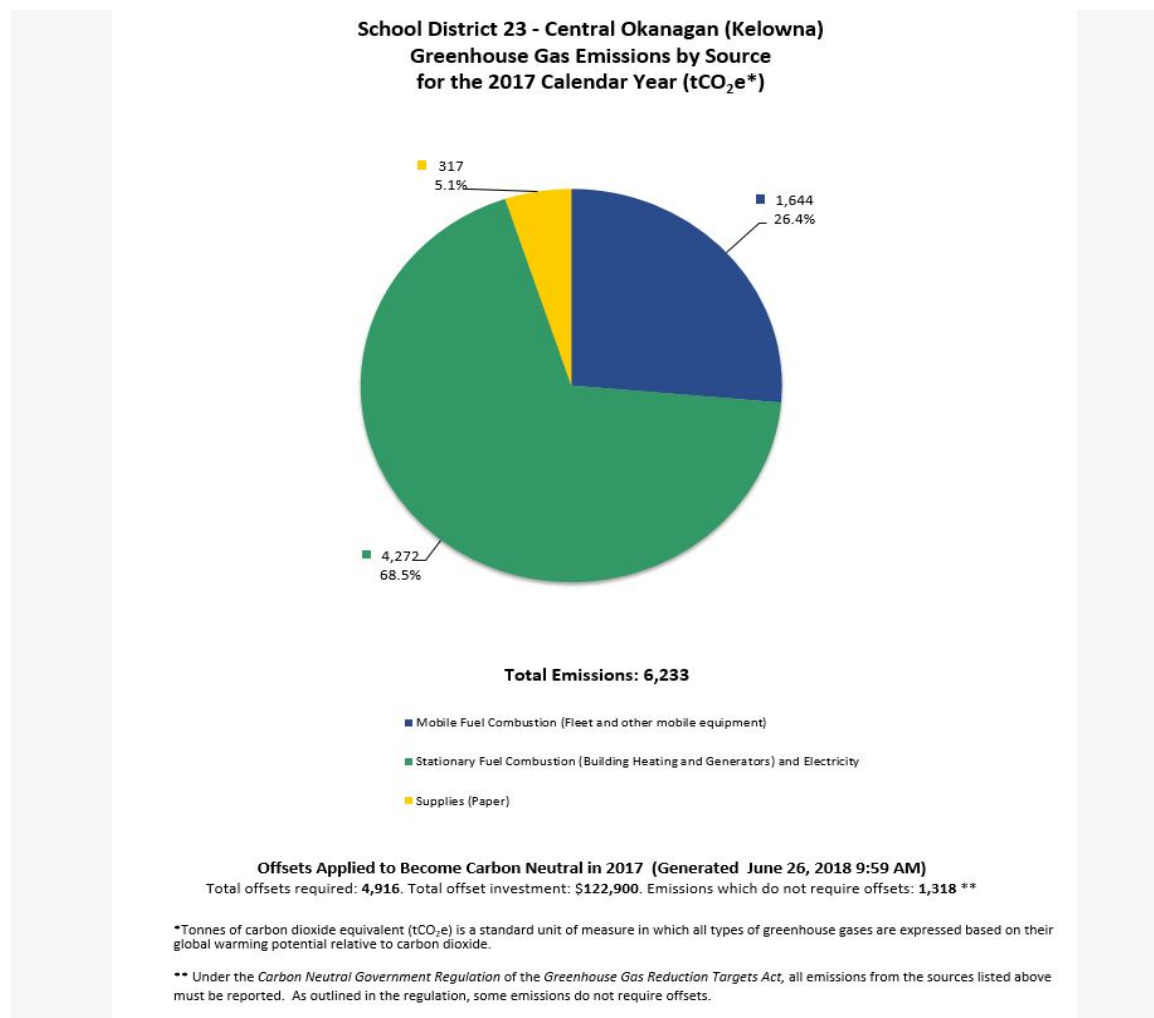


Fig 1) Emissions Source Report

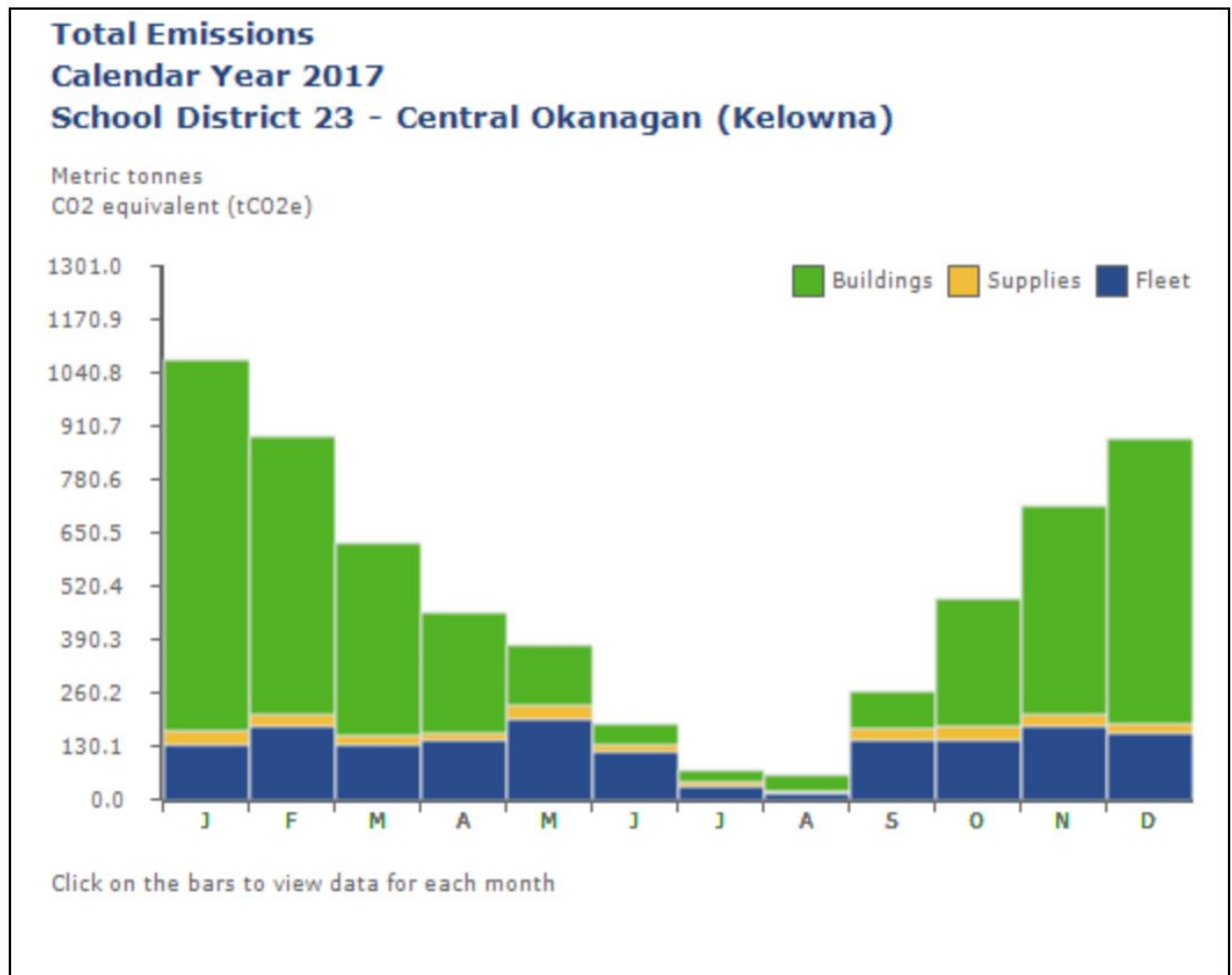


Fig 2) Green House Gas Emission from Fleet, Supplies & Buildings



School District 23 - Central Okanagan GHG Emissions and Offsets for 2017 (tCO₂e)	
GHG Emissions created in calendar year 2017	
Total Emissions	6233 tCO ₂ e
Total Emissions for Offsets	4916 tCO ₂ e
Adjustments to GHG Emissions Reported in Previous Years	
Total Emissions	20 tCO ₂ e
Total Emissions for Offsets	20 tCO ₂ e
Total Emissions for Offset for the 2017 Reporting Year	
Grand Total Offsets (tCO ₂ e)	4936 tCO ₂ e

Retirement of Offsets:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, **CENTRAL OKANAGAN PUBLIS SCHOOLS** is responsible for arranging for the retirement of the offsets obligation reported above for the 2017 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy 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:

Name: (please print) Eileen Sadlowski, CPA, CA

Title: Secretary-Treasurer/CFO

Date: June 25, 2018

Authorized Signatory

Part 1: CNAR Survey

1. General Information

Name: Harold Schock

Contact Email: harold.schock@sd23.bc.ca

Organization Name: Central Okanagan Public Schools

Sector: School District

2. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

During 2017, did your organization take any of the following actions to support emissions reductions from buildings? (please select all that apply)

Conducted an energy audit/study of building(s) in the organization's portfolio.; Performed energy retrofits of the organization's building(s); Built, or are building new LEED Gold or other "Green" buildings

If you selected "*Performed energy retrofits of the organization's building(s)*":

How many buildings were retrofitted?: 2

If you selected "*Built, or are building new LEED Gold or other "Green" buildings*":

How many new "Green" buildings?: 1

Did your Organization perform any retrofits during 2017? Please describe briefly:

Multiple school boiler retrofits that has saved 1000Gj of natural gas per year.

2a. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

Please briefly describe your organization's plans to continue reducing emissions from its stationary sources:

a) Over the next 1-5 years

Plans to continue reducing emissions by heating boiler audits 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.

b) Over the following 6-10 years

Planning to expand building optimization program to school without boilers. - Create a retrofit (or teardown) plan for all existing mechanical infrastructure with the district. The plan would be referenced when replacing or upgrading equipment to ensure failing mechanical systems are replaced with high performance technology.

3. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

During 2017, did your organization take any of the following actions to support emission reductions from its mobile sources? (please select all that apply)

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel); Replaced existing vehicles with hybrid or electric vehicles; Took steps to drive less than previous years

3) Mobile Sources - Other? Please specify:: Added two electric fleet cars to the pool.

If you selected "*Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)*":

How many vehicles?: 2

If you selected "*Replaced existing vehicles with hybrid or electric vehicles*":

How many vehicles?: 2

3a. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

Please briefly describe your organization's plans to continue reducing emissions from its mobile sources:

a) Over the next 1-5 years

Plans to create a CNG bus filling station in West Kelowna.

b) Over the following 6-10 years

Planning to expand 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 fueling system is efficient by saving time.

4. Supplies (Paper): Indicate which actions your PSO took in 2017:

During 2017, did your organization take any of the following actions to support emissions reductions from paper supplies? (please select all the apply)

Had an awareness campaign focused on reducing office paper use; Had a policy requiring the purchase of recycled content paper; Had a policy requiring the purchase of alternate source paper (bamboo, hemp, wheat, etc)

4) Supplies (Paper): Indicate which actions your PSO took in 2017: - Other? Please describe briefly:: Completed a utilization study on paper usage and will be doing an awareness campaign and evaluating different methods of monitoring paper usage and reducing printing in 2017.

If you selected "*Had a policy requiring the purchase of recycled content paper*":

State the required recycled content here (30%, 50%, 100%): 30

If you selected "*Had a policy requiring the purchase of alternate source paper (bamboo, hemp, wheat, etc)*", which type of alternate source paper did you use?

Please briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

5. Other Sustainability Actions

a) Business Travel

During 2017, did your organization take any of the following actions to support emissions reductions from business travel? (please select all that apply)

Encouraged alternative travel for business (e.g. bicycles, public transit, walking)

5) Other Sustainability Actions - Other? Please specify:: Bike to work week awareness was very successful.

b) Education/Awareness

During 2017, did your organization have any of the following programs or initiatives to support sustainability education and awareness? (please select all that apply)

Support for professional development on sustainability (e.g. workshops, conferences, training)

5a) Other Sustainability Actions - Other? Please specify:: Bc Hydro Energy Managers events.

c) Other Sustainability Actions

During 2017, did your organization have any of the following programs or initiatives to support sustainability? (please select all that apply)

A water conservation strategy which may include a plan or policy for replacing water fixtures with efficient models; An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities; Green procurement standards for goods (e.g., office furniture, etc.); Lifecycle costing of new construction or renovations

5b) Other Sustainability Actions - Other? Please specify:: New building construction committee that is looking a innovative designs.