



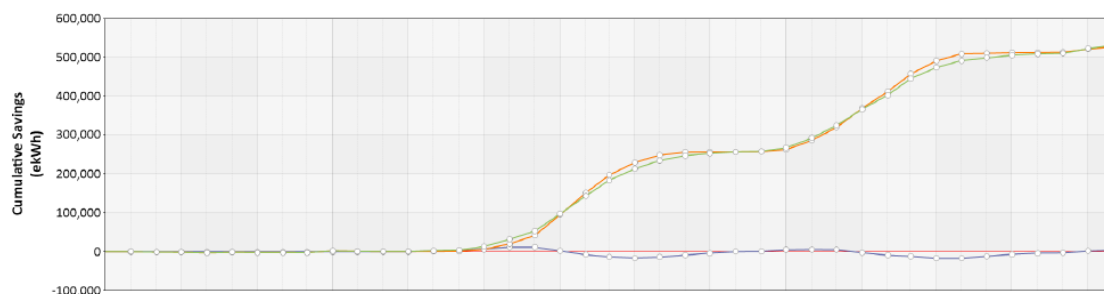
**Central Okanagan
Public Schools**
Together We Learn

Central Okanagan Public Schools 2018 Carbon Neutral Action Report

As the finalized, This Carbon Neutral Action Report for the period January 1st, 2018 to December 31st, 2018 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2018 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2018 and beyond. By June 30th, 2018, Central Okanagan Public Schools final CNAR will be posted to our website at www.sd23.bc.ca

In 2018, the shared energy management resource pilot for school districts in underserved regions of the Province has completed years of data. 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 two 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 28 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 2018 expectations by 20% 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 22 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. CNG 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 2018 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 2018, "We started by looking at building components that can have the greatest impact on the learning environment - LED lighting upgrades," says George Provost, Electrical Coordinator. Lighting Retrofits 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. Saving money for the classrooms.





Emissions and Offsets Summary:

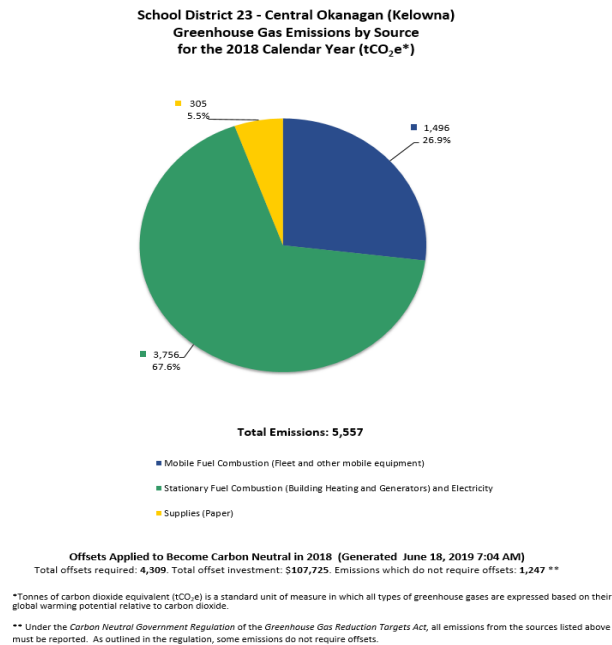
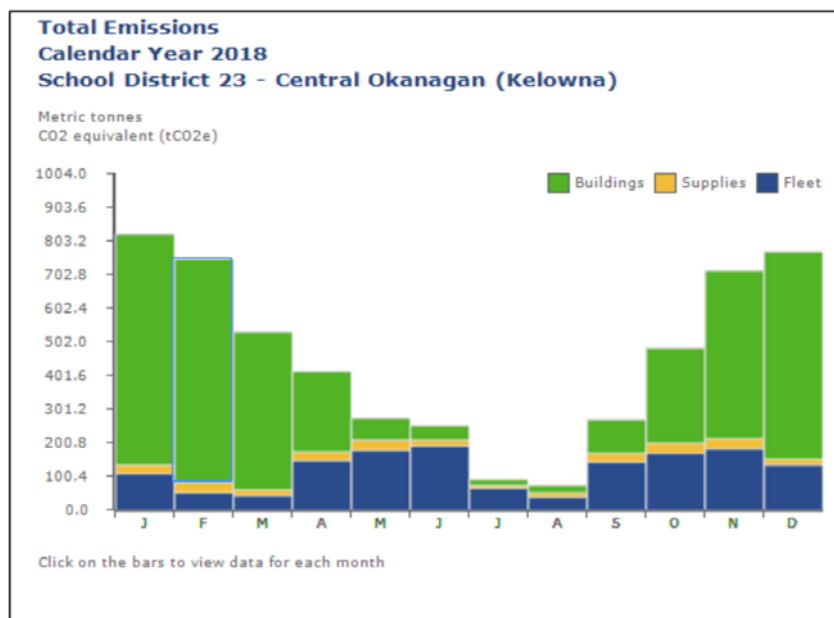


Fig 1) Emissions Source Report

Fig 2)
from



Green House Gas Emission
Fleet, Supplies & Buildings



School District 23 - Central Okanagan GHG Emissions and Offsets for 2018 (tCO₂e)	
GHG Emissions created in calendar year 2018	
Total Emissions	5557 tCO ₂ e
Total Emissions for Offsets	4309 tCO ₂ e
Adjustments to GHG Emissions Reported in Previous Years	
Total Emissions	0 tCO ₂ e
Total Emissions for Offsets	0 tCO ₂ e
Total Emissions for Offset for the 2018 Reporting Year	
Grand Total Offsets (tCO ₂ e)	4309 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 2018 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 18, 2019

Part 1: CNAR Survey

1. General Information

Name: Harold Schock

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

Organization Name: School District No.23

Sector: School District

Role - Please select your role(s) below.

If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: Yes

Sustainability Coordinator: No

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: No

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: School district 23 is creating tools that continue approaching energy management strategically, including:

- A shelf-ready, prioritized project list for each school
- A strategic energy management process for identifying and pursuing energy conservation opportunities
- Project planning templates and energy best practices documentation
- Implementation of an online monitoring tool, allowing schools to effectively manage utility consumption and emissions

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (1-5 years)

One role of an energy manager is to create a SEMP for an organization, which includes assistance in policy, aspirations, and opportunities to achieve energy and GHG reductions. Typically, there is a 3 to 5 year onboarding process for an energy manager, which includes building school district understanding and rapport, pilot projects, and opportunity inventory. This includes building capacity of normalized monthly data reporting back to key stakeholders. Increase ministry conservation policy and funding criteria/evaluation (AFG portions, SEP, etc.) so that it is broad enough to still be eligible for federal funding, and specific enough to drive action.

II. Over the long term (6-10 years)

At the Ministry level, there is the CNCP funding program to strengthen the public sector's resilience against the unavoidable impacts of climate change. While school districts do need more and better "short-term" technical fixes to ongoing challenges, they also need to acknowledge long term pains and do the work required to address systemic issues. Our school district is committed to regularly monitor and evaluate risks of climate change to infrastructure and service delivery, and are taking action to address those risks.

c) Please describe your strategy's goals (if any) related to [energy audits](#).

- Take a collaborative approach with government policy-makers and public sector organizations (PSOs)
- Minimize unnecessary administrative burden;
- Promote flexible and adaptive best practices that encourage a range of future options;
- Accommodate the range of environmental impacts and capacity (e.g., knowledge, financial) of PSOs;
- Strive for emissions reduction and adaptation opportunities that are mutually reinforcing, complementary and support other government objectives;
- Be publicly accountable and transparent; monitor and report on results

I. What % on average of your building portfolio has an energy audit completed each year (if any)? : 5

d) Please describe your strategy's goals (if any) related to building retrofits.

Meet or exceed Provincial targets
Buildings: 50% below 2010 by 2030
Transition to net-zero plus in new buildings

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click [here](#) for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 4

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 3

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 5

e) Please describe your strategy's [re/retro-commissioning](#) goals (if any)?

Energy Managers (EM) will typically have semi-frequent contact with DDC vendors, mechanical consultants, etc. Our school district (SD) often collaborates with other EMs to compare with existing managers + technicians. EM + SD finds opportunities, EM makes suggestions + takes part in SD discussions, EM + SD picks projects, EM helps go forward on project, EM gives guidance during procurement, implementation, commissioning...

I. What % on average of your building portfolio do you recommission each year?: 5

f) Do you keep records of Refrigerant gases category and refilling volumes?

No

g) How many newly constructed buildings received at least LEED Gold certification in 2018 : 0

I. How many newly constructed buildings did not receive LEED Gold certification?: 0

II. Please explain why LEED Gold certification was not obtained.

Cost of the program is a barrier.

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

3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.

a) Do you have a strategy to reduce emissions from mobile sources?

Yes

I. If yes, what are its goals?

Outline a possible operational process to electrify fleet vehicles, focusing on light duty vehicles at this time

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

Gather data on future charging station and EV purchases to estimate possible costs; this data will inform a business case and a Ministry of Education submission requesting additional funds

II. Over the long term (6-10 years)

Where an electric vehicle has been identified as a possible a replacement vehicle, organization conducts a operational assessment of each vehicle

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 2

Natural gas/propane: 2

Gas/diesel vehicle: 4

I. If you purchased new gas/diesel vehicles, can you briefly explain why vehicles from the other categories were not chosen?

School Bus

d) How many existing EV charging stations does your organization have in each category:

level 2: 6

level 3: 0

How many level 2 stations (if any) are specifically for your fleet vehicles: 2

How many level 3 stations (if any) are specifically for your fleet vehicles: 0

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 0

level 3: 0

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 0

How many level 3 stations (if any) were installed specifically for your fleet vehicles: 0

f) Other actions, please describe briefly (e.g. charging station feasibility studies, electrical panel upgrades, etc.)

The fleet coordinator purchase the electric school bus

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

- Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
- Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
- Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 2

Gas/diesel: 6

b) Light duty trucks (LDTs)

Gas/diesel: 27

c) Heavy duty vehicles (HDV)

Natural Gas/propane: 25

Gas/diesel: 76

5. Please indicate the number of the vehicles you plan to replace in your fleet:

How much do you budget per LDT?: 1

How many LDTs do you plan to replace annually over the next 5 years?: 5

How much do you plan to spend per HDV?: 3

How many HDVs do you plan to replace annually over the next 5 years?: 10

C. Office Paper: Indicate which actions your PSO took in 2018:

6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.

a) Do you have an Office Paper strategy?

Yes

I. If yes, what are its goals?

30% recycled paper standard

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:

I. Over the medium-term (1-5 years)

All paper be 30% recycled content

II. Over the long term (6-10 years)

Raise recycle content to 50%

c) Have an awareness campaign focused on reducing office paper use

Yes

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

No

e) Other actions, please specify.

Photo copy accounts are recorded.