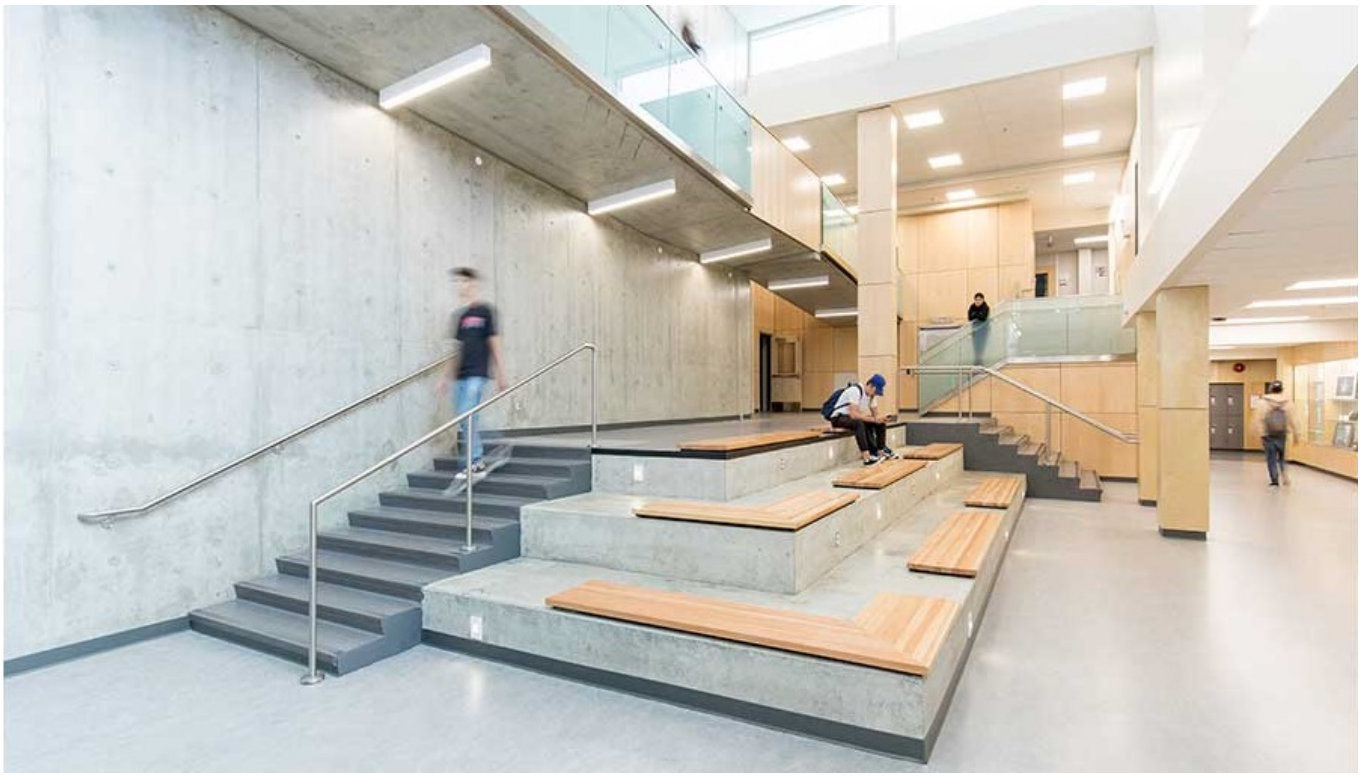
2018 Carbon Neutral Action Report

Burnaby School District (#41)



BOARD OF EDUCATION
BURNABY
SCHOOL DISTRICT

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Declaration statement:

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.

Overview

The Burnaby School District continues to forge ahead with its longstanding energy efficiency and emission reduction program, which first began a decade ago in 2008. During 2018, we continued to follow our long-term strategic plan to upgrade our facilities. These projects include lighting retrofits, boiler replacements, EV charging station installation, building automation controls, and water conservation efforts. As a result of this ongoing work we are proud to report a 20% reduction in emissions compared to last year.

Like many organizations, the school district's biggest source of emissions is the burning of natural gas for space heating. We have found the most impactful way to address this is through boiler system retrofits, which have multiple benefits, not the least of which is lowered emissions. To this end the district continues to identify, plan, and implement a wide array of energy efficiency projects year after year.

While addressing direct emissions through conservation measures is one focus, the district continues to promote sustainability initiatives in a wide array of areas. These range from energy conservation, through to comprehensive recycling programs, and educational initiatives. Educating our students is, and always will be, the most important tool for creating a better tomorrow.

Environmental policy

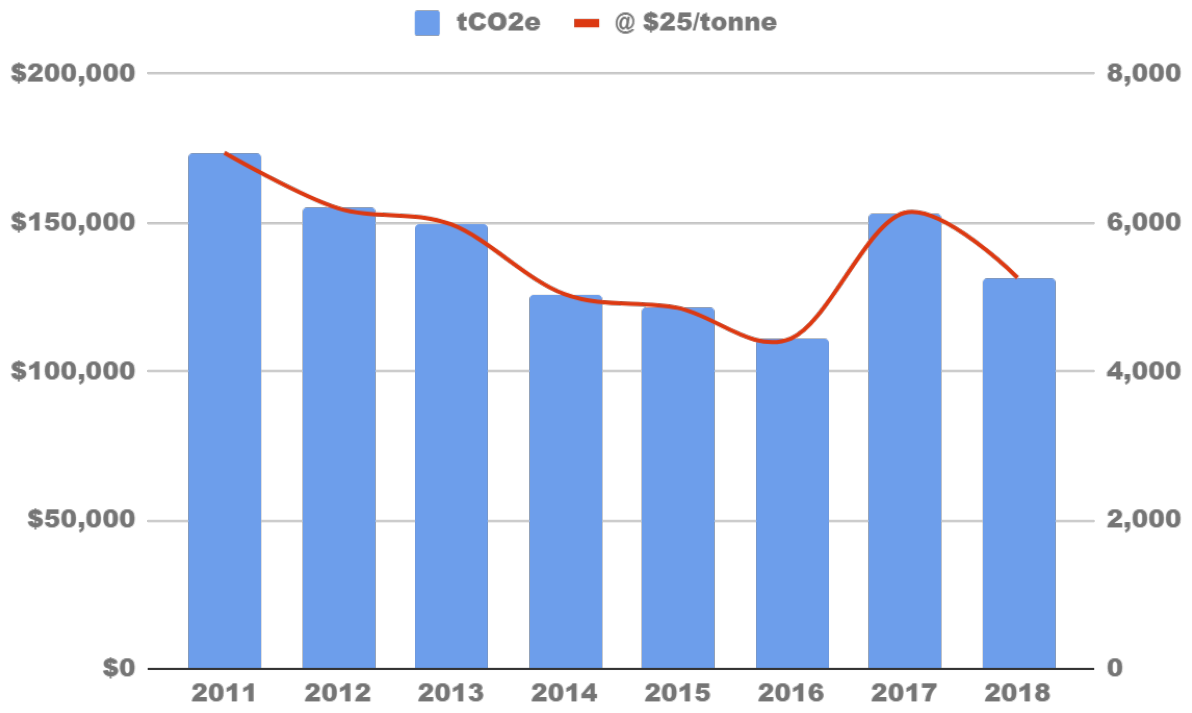
SD41 strives to be a leader in the educational sector and was one of the first to implement an official Environmental Sustainability Policy in 2010 which states:

"The Board acknowledges that Environmental Sustainability is a joint responsibility of trustees, students and staff and is committed to sound practices that focus on minimizing pollution and refuse, reducing energy use and water consumption, and promoting a healthy environment for students and staff within the limited financial resources available.

The Board supports the development and delivery of educational programs that promote Environmental Sustainability.

The Board supports a systematic approach to energy management, including assessing performance, setting goals, creating an action plan, tracking performance, and communicating results."

Emissions year over year



Year	tCO2e	@ $25/tonne
2011	6,941	$173,525
2012	6,196	$154,900
2013	5,977	$149,425
2014	5,040	$126,000
2015	4,854	$121,350
2016	4,442	$111,050
2017	6,131	$153,275
2018	5,259	$131,475

Actions taken in 2018

- The major expansion project at Alpha Secondary has been completed. The new wing incorporates many cutting-edge energy efficiency design features such as day light harvesting, stack effect ventilation, and a brand-new high efficiency boiler plant. (See picture on p.1)
- In 2018, two sties underwent full boiler retrofit projects. These two sites are Cascade Heights Elementary and South Slope Elementary. Part of these upgrades included the installation of energy efficient pumps with variable speed drives, making for a much more efficient system. These heating projects have multiple benefits, from increased comfort levels in the buildings, to considerably lower gas costs, as well as decreased carbon emissions.
- Cariboo Hill Secondary received a new condensing boiler, which has reduced consumption on the site by 25% over previous years.
- We have added a number of electric cars to our fleet of maintenance vehicles, as well as adding charging stations at two additional high schools.
- Montecito Elementary and Burnaby Mountain Secondary underwent interior LED retrofit project.
- Overall emissions for calendar year 2018 are down 20% compared to 2017, and SD41 is working hard to continually reduce all forms of GHG emissions.

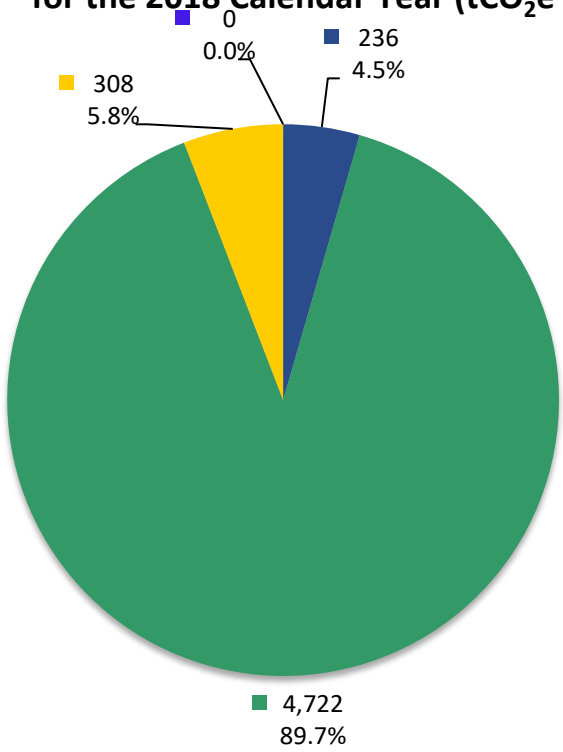
Looking Forward to 2019 and beyond

- SD41 has some exciting projects planned for 2019/2020. With a new Burnaby North Secondary to begin construction at the existing site, and a new District Board Office to also commence construction at the site of the Schou Education Center. Both buildings will incorporate cutting edge design, and highly efficient systems.
- Three elementary schools will be undergoing boiler retrofit projects during summer 2019. These include Brentwood Park Elementary, Inman Elementary, Morley Elementary.
- With funding help from Fortis BC, Edmonds Community School will be undergoing a project to add two high efficiency ventilation units which incorporate the latest heat recovery technology to service its gyms.
- Continue to install electric vehicle charging stations, with current plans to bring the total to 22 stations by across the district by mid-2019.
- Major lighting retrofit projects planned for 2019 at Forest Grove Elementary, Armstrong Elementary, Byrne Creek Secondary and South Slope Elementary.
- The energy management team, including our educational leaders, will continue to encourage and support the Burnaby Youth Sustainability Network as one of its main stakeholders in the path to a greener future.

Emissions and Offset Summary Table

Burnaby School District (#41) GHG Emissions and Offset for 2018 (tCO2e)	
GHG Emissions created in Calendar Year 2018	
Total Emissions (tCO2e)	**5,266**
Total BioCO2	**8**
Total Offsets (tCO2e)	**5,259**
Adjustments to GHG Emissions Reported in Prior Years	
Total Emissions (tCO2e)	**319**
Total Offsets (tCO2e)	**319**
Grand Total Offsets for the 2018 Reporting Year (from SMARTTool Homepage): (This is the total of emissions that must be offset for Reporting Year 2018)	
Grand Total Offsets Required (tCO2e)	**5,578**
Total Offset Investment (Grand Total Offsets Required X $25/tCO2e)	**$139,450**

School District 41 - Burnaby
Greenhouse Gas Emissions by Source
for the 2018 Calendar Year (tCO_2e*)



Total Emissions: 5,266

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

Offsets Applied to Become Carbon Neutral in 2018 (Generated May 22, 2019 10:35 AM)

Total offsets required: **5,259**. Total offset investment: $**131,475**. Emissions which do not require offsets: **8**

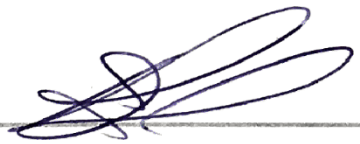
*Tonnes of carbon dioxide equivalent (tCO_2e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation* of the *Greenhouse Gas Reduction Targets Act,* all emissions

Retirement of Offsets

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, The Board of Education of School District No. 41 (Burnaby) (**the Organization)** 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



22/05/20

Signature

Date

Russell Horswill
Secretary Treasurer

Name (please print)

Title

Part 1: CNAR Survey

1. General Information

Name: Matt Foley

Contact Email: energy@burnabyschools.ca

Organization Name: The Board of Education of School District No. 41 (Burnaby)

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?: Main goals are to reduce emissions from buildings and fleet

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)

We plan to continue our multi-year program to upgrade all boiler systems to modern high-efficiency equipment, as well as modernizing other aspects of our buildings which are part of the mechanical systems such as automated controls, high-efficiency motors, high-efficiency lighting, and adoption of new and innovative technology.

Also, we plan to continue to add electric vehicles to our fleet, as the models available become more appropriate for trades use.

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

We plan to continue our multi-year program to upgrade all boiler systems to modern high-efficiency equipment, as well as modernizing other aspects of our buildings which are part of the mechanical systems such as automated controls, high-efficiency motors, high-efficiency lighting, and adoption of new and innovative technology.

District Energy Management team are involved with new building design from the beginning ensuring that collaboration with architects and mechanical designers brings the best solution for the long service life of new schools.

Engagement with staff and students regarding holistic sustainability continues to grow, and we see an increase in grass-roots student lead initiatives year after year.

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

Energy audits have been completed on every major site in the district. With more detailed audits being undertaken by third-party engineers and lighting consultants on an as-needed basis.

In addition to our in-house energy management team, we engage the best consultants in their fields to ensure that our decisions are based on sound information and a consistent approach.

I. What % on average of your building portfolio has an energy audit completed each year (if any)?: 15

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

SD41 has a long-running energy management program, and we plan to continue along the path of modernizing our buildings
through boiler system upgrades and other HVAC and lighting retrofits. Interior LED Retrofits will be our next main electrical
conservation measure, while boiler upgrades will continue at a steady and consistent rate, which coincides with annual capital allowances.

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.) (%): 15

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 10

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)?

We often find that schools are built with high quality equipment, which over time falls well outside of its optimal operational range. COntrol technology and strategies change over time, and there is almost always savings to be found when a qualified controls specialist does a audit of a building for re-commissioning,

One of the major upcoming projects is the recommissioning/re-engineering of our largest high school, Burnaby South Secondary. We have engaged a well respected engineering consultant who has identified substantial potential energy savings but improving the control systems.

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

II. What, if any, mitigation approaches have been considered? Please describe.

Generally, we try to avoid the use of refrigerant based systems whenever possible, both for environmental as well as safety reasons.

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?: 1

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

Major expansion and renovation at Alpha Secondary did not pursue LEED certification, as the cost for official certification was prohibitive.

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?

Increase the size of our electric vehicle fleet as leasing terms and vehicle capabilities allow.

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)

Increase the size of our electric vehicle fleet as leasing terms and vehicle capabilities allow.

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

Increase the size of our electric vehicle fleet as leasing terms and vehicle capabilities allow.

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

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 3

"Plug In" Electric Vehicle – PHEV (e.g., plug-in Prius, Chevy Volt): 0

Hybrid vehicle – HEV – non "Plug In"- (e.g., Toyota Highlander Hybrid): 0

Hydrogen fuel cell vehicle : 0

Natural gas/propane: 0

Gas/diesel vehicle: 13

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

EV offerings to replace the full sized service van are not capable of meeting our needs for trades/maintenance service vehicles

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

level 2: 16

level 3: 0

How many level 2 stations (if any) are specifically for your fleet vehicles: 10

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

level 2: 4

level 3: 0

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

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

We hope to have EV charging stations at all eight high schools by end of 2019. We are also in talks with BC Hydro regarding a partnership on a level 3 charging station, which would be the only publicly available one in the city of Burnaby.

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

"Plug In" Electric Vehicle – PHEV -- (e.g., plug-in Prius, Chevy Volt) : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Toyota Prius, Toyota Camry hybrid): 0

Hydrogen fuel cell vehicles: 0

Natural gas/propane: 0

Gas/diesel: 1

b) Light duty trucks (LDTs)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV: 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Ford Escape Hybrid, older Chevrolet Silverado pickup hybrid etc): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 11

c) Heavy duty vehicles (HDV)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 2

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

How much do you budget per LDV?: 45000

How many LDVs do you plan to procure annually over the next 5 years?: 4

How much do you budget per LDT?: 50000

How many LDTs do you plan to replace annually over the next 5 years?: 4

How much do you plan to spend per HDV?: 65000

How many HDVs do you plan to replace annually over the next 5 years?: 2

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?

Only purchase 30% recycled content paper wherever possible

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)

The adaptation to electronic documents and learning material is impacting our emissions from paper in a positive way.

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

Continue to increase the recycled material content percentage of the paper we purchase

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

Yes

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

No

Part 2 – A (internal)

Reminder that this section is not included in your public report.

1. Does your organization have an emission reduction target?

Yes

I. If yes, please describe briefly:

Emissions reductions coincide with our energy consumption reduction target of 2% per year

2. Does your organization have a strategic emission reduction plan to reduce the organization's emissions (e.g. 5 year plan)?

Yes

If yes, please describe briefly and include URL if posted publicly:

Emissions reductions coincide with our energy consumption reduction target of 2% per year

3. Does your organization use building energy management tools? If yes, please select any that apply.

PUMA

Other - Specify: Fortis and BC Hydro data/analytics from their websites

Other Sustainability Actions:

1. During 2018, did your organization have any of the following programs or initiatives to support sustainability?

Yes

a) A low-carbon business travel policy or travel reduction goal (low-carbon = lowest emission of greenhouse gas per kilometer per passenger)

No

b) 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

Yes

c) Green procurement standards/policy for goods (e.g., office furniture, fleet, etc.)

Yes

i) If Yes above, could you elaborate on the standards/policy?

School District is encouraged to follow the guidelines for procurement of environmentally responsible products and services that supports the provincial's economic, social and environmental priorities