



2017 CARBON NEUTRAL ACTION REPORT

MAPLE RIDGE - PITT MEADOWS SCHOOL DISTRICT NO.42

EXECUTIVE SUMMARY

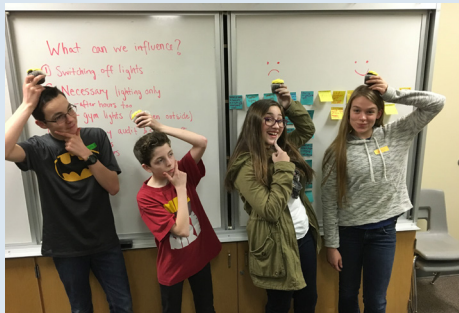


This Carbon Neutral Action Report for the period January 1, 2017 to December 31, 2017 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2017 to reduce our greenhouse gas emissions, and our plans to continue reducing emissions in 2018 and beyond. By June 30, 2018, the final Carbon Neutral Action Report for Maple Ridge - Pitt Meadows School District No. 42 will be posted to the district website at www.sd42.ca/sustainability.

On March 25, 2015, the Maple Ridge - Pitt Meadows Board of Education approved the *2015-2019 Energy Management Plan*. This plan includes the implementation of lighting as well as heating, ventilation and air-conditioning (HVAC) upgrade opportunities in all 34 school district facilities. The implementation of all energy conservation opportunities will result in estimated energy savings of 4.44 million kWh and 12,800 GJ and estimated annual utilities cost savings of \$0.50 million that will be re-invested in our schools. The associated greenhouse gas emission reduction resulting from this four-year plan are 758 tonnes of CO₂ emissions. Three years into the plan and we are more than half way to meeting the plan target of \$0.5 million in ongoing utilities savings.



Sylvia Russell, Superintendent of Schools
May 16, 2018



2017 GREENHOUSE GAS EMISSIONS

The Maple Ridge – Pitt Meadows School District (SD42) produced a total of 3,702 tonnes of greenhouse gas emissions from all sources as reported in SMARTTool.

SCHOOL DISTRICT NO. 42 GHG EMISSIONS AND OFFSETS FOR 2017 (TCO2E)	
GHG Emissions Created in Calendar Year 2017	
TOTAL EMISSIONS	3,702
TOTAL OFFSETS	3,696
Adjustments to GHG Emissions Reported in Prior Years	
TOTAL EMISSIONS	0
TOTAL OFFSETS	0
Grand Total Offsets for the 2017 Reporting Year	
TOTAL OFFSETS	3,696

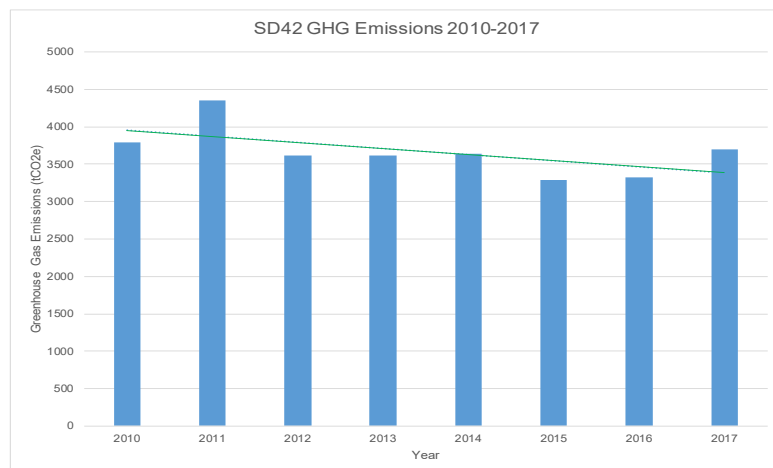
OFFSETS APPLIED TO BECOME CARBON NEUTRAL IN 2017

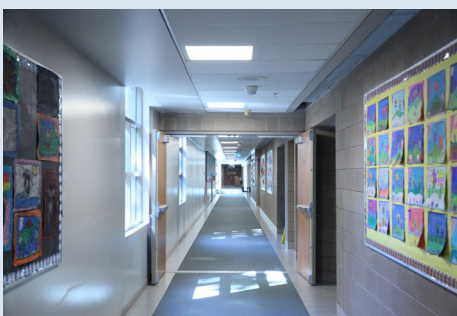
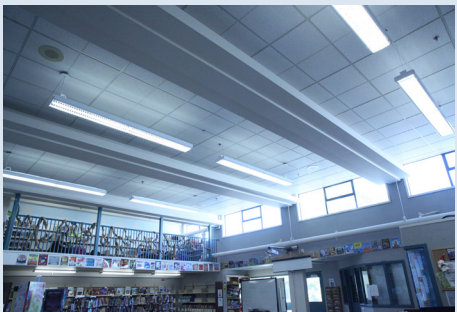
Of all the greenhouse gas emissions generated, a total of 3,696 tonnes of emissions offsets have been applied to become carbon neutral for 2017.

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, SD42 (the Organization) 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 Environmental 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.

EMISSIONS TRENDS

Since 2010, the Maple Ridge - Pitt Meadows School District has seen a 3% reduction in emissions.





2017 RETROFITS

Lighting upgrades were completed at 5 locations in 2017, resulting in 660,175 kWh of ongoing savings. These schools were Albion Elementary School, Laity View Elementary School, Maple Ridge Elementary School, Eric Langton Elementary School and Alouette Elementary School. The reduction in greenhouse gas emissions is estimated at 17 tonnes of CO₂.

Additional lighting upgrades were initiated in December of 2017 at Edith McDermott Elementary School, Davie Jones Elementary School and Pitt Meadows Elementary School. These 3 lighting projects will result in 169,770 kWh of savings annually and an ongoing reduction in utility savings of \$15,280.

Heating, ventilation and cooling (HVAC) upgrades were completed at the District Education Office, Kanaka Creek Elementary School, Eric Langton Elementary School, Maple Ridge Secondary School and Pitt Meadows Secondary School. These HVAC projects have resulted in ongoing savings of 279,000 kWh and 1752 GJ, a value of \$42,630 each year.

The total greenhouse gas emission reduction associated with the above projects is 117 tonnes of CO₂ emissions. These projects combined will lead to ongoing savings of \$111,370.

SPOTLIGHT: WESTVIEW SECONDARY

In addition to the above noted 2017 projects, the school district also completed Phase 3 and 4 of a major heating, ventilation and cooling mechanical upgrade at Westview Secondary School. This project included the purchase and installation of 26 high efficiency rooftop heat pumps with gas fired backup heating.

Phases 1 and 2 of the project were completed in 2016 with the installation of 46 high efficiency roof top heat pumps and new domestic hot water tanks. The estimated greenhouse gas emissions reduction associated with this project is 141 tonnes of CO₂ emissions. The reduction results from a decrease in natural gas consumption, however the heat pumps will use more electricity.



ENVIRONMENTAL SUSTAINABILITY COMMITTEE

In October 2017, the school district held its first Environmental Sustainability Committee (ESC) meeting, comprised of leadership staff, managers and teachers. The purpose of the committee is to investigate, promote, advise, recommend, and assist in the implementation of measures that will improve the learning environment of students and working environment of staff through the integration of the principles of environmental sustainability into all school district functions and operations.

The workplan includes the coordination of efforts for district-wide environmental campaigns. The committee assisted in the implementation of the Holiday Shutdown, which took place over the 2017 winter break and encouraged teachers and students to turn off and unplug electrical appliances and devices at their schools. Over 100 teachers, staff and students participated and more than 600 appliances and electrical devices were unplugged for 2 weeks.

The Environmental Sustainability Committee's additional responsibilities include the coordination of energy, waste and water conservation activities across all sites, and the creation of an annual Environmental Sustainability report that will outline the current year's energy, waste and water conservation initiatives as well as acknowledge any Environmental Sustainability Champions.

In 2018, the ESC aims to coordinate and manage an annual event aimed at furthering awareness about the school district's environmental sustainability efforts.



SCIENCE 9 SUSTAINABILITY UNIT INTEGRATION

In conjunction with the district teacher librarian and secondary science teachers, an interactive lesson on sustainability and virtual reference set were created to accompany BC's new Science 9 curriculum. The main objective of the lesson is to connect students to the real-life energy management measures implemented by the district.

A detailed overview of each school's lighting and HVAC upgrades is provided, as well as any additional school initiatives that are available to students, such as outdoor clubs and green teams. Students answer the questions: What is the energy consumption of our school? How can my school conserve energy? What are the climate change impacts of energy conservation? How can I get involved at my school?

Students are led through discussions on the interconnectedness of the biosphere, geosphere, hydrosphere and atmosphere and how matter and energy flows through each. Students discuss the First Peoples' perspectives of sustainability of systems on a global and local level.



IN THE NEWS

MARCH 23, 2017

KANAKA CREEK UPGRADES

Maple Ridge-Pitt Meadows News reported, “Kanaka Creek Elementary School will get \$705,000 in provincial funding to install heat pumps and direct digital control systems.” In the summer of 2017, the project was completed and 34 new rooftop heat pumps with natural gas backup were installed. This upgrade resulted in an estimated 89% reduction in greenhouse gas emissions as compared to pre-project heating conditions; an annual reduction of 52.3 tonnes of CO₂ emissions.



JUNE 8, 2017

ENERGY CHALLENGE EMPOWERS STUDENTS

Alexander Robinson Elementary was honoured for earning the most points during the Maple Ridge – Pitt Meadows School District’s second annual Energy Challenge. A total of 11 elementary and secondary schools participated in the Energy Challenge, which took place from February 1-28, 2017. Collectively, the schools decreased electricity consumption by 17,900 kWh and natural gas consumption by 126 GJ.



AUGUST 24, 2017

BC HYDRO TOP PERFORMING CUSTOMER

The Maple Ridge - Pitt Meadows School District received a \$3,000 award from BC Hydro for a firm commitment to raising awareness and improving energy efficiency within the district. The school district was recognized as a Top Performing Customer and the award was offered to create an advertising campaign to promote the district’s strategic energy management projects.



AUGUST 31, 2017

BC HYDRO LEADERS IN ENERGY

The Vancouver Sun highlighted how K-12 schools can benefit from energy efficiency programs and Alexandra Tudose, Energy Manager for the Maple Ridge - Pitt Meadows School District, cited that the secret to success is related to strategic energy management by clarifying targets and processes. Tudose stated that consulting people early on in the planning processes allows them to pitch innovative ideas, voice their concerns and “buy in” to the general idea of energy management. She emphasized that this will create a long-term focus and place a high priority on communication throughout a large organization like the Maple Ridge - Pitt Meadows school district.





NEW SCHOOL: SOUTH ALBION ELEMENTARY

The Maple Ridge - Pitt Meadows Board of Education and the City of Maple Ridge combined efforts to create plans for a new elementary school in the Albion area of Maple Ridge. The school district is scheduled to break ground on the new school in the spring of 2018. The school will house a Neighbourhood Learning Centre, an inviting space where everyone can access education, community services, recreation and culture. Additionally, a community centre has been incorporated into the design to host public gatherings, community and neighbourhood programs, such as sport and recreation activities, social events, arts and cultural programs and workshops. The design of the community centre will be based on the local interests and local needs identified through a public consultation process.

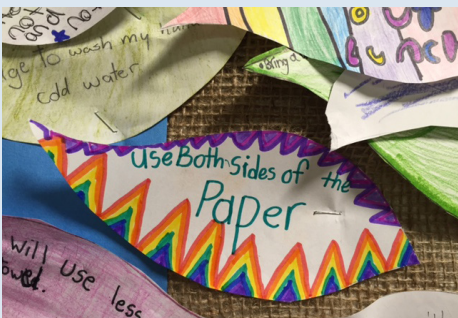
The new school in the Albion area of Maple Ridge is part of BC Hydro's New Construction Program, and the building and its systems have been designed to LEED Gold standards. Key features for sustainable energy use are LED lighting throughout, solar preheating of outside air, heat recovery, electrically powered air source heat pumps for heating and cooling integration, smart building controls and occupancy sensors.

One of the classroom pods has been designated as an Environmental Pod with an interactive controls system to demonstrate how building users can make choices for energy conservation. This additional educational feature will allow for student inquiry, data analysis and hands-on energy management.



PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS IN 2018

- Replace and retrofit existing lighting in 14 school district facilities with energy efficient, extended life fixtures.
- Reduce the number of fixtures and expand the existing dark school approach where applicable.
- Heating, ventilation and air-conditioning (HVAC) upgrade opportunities in 16 school district facilities may include: direct digital control (DDC) upgrades, scheduling and security integration, occupancy sensor controls, heating plant optimization and supply air pressure (SAP) reset.
- Prepare school-based energy conservation workshops to ensure students have an active role in reducing our energy consumption.
- Improve communication of the energy conservation initiative to the broader organization to raise energy awareness.
- Continuously improve and review our operational policies in an effort to reduce utility consumption.
- Proactively deliver regular energy intensity reports to departmental personnel for use in raising general awareness and examining variances from established targets.





2017 CARBON NEUTRAL ACTION REPORT

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MAPLE RIDGE, BC
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Part 1: CNAR Survey

1. General Information

Name: Nora Wintermute

Contact Email: nora_wintermute@sd42.ca

Organization Name: SD 42 Maple Ridge - Pitt Meadows

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

2. Stationary Sources - Other? Please specify: Participated in BC Hydro Energy Wise Program, hosted a month long Energy Challenge with schools to increase student energy awareness, conducted a winter break shutdown and unplug campaign to reduce plugload, and established a SD 42 Environmental Sustainability Committee.

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

How many buildings were retrofitted?: 13

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:

Lighting upgrades were completed at 5 locations and initiated at 3 locations in 2017. These energy conservation measures include upgrade of lighting systems, LED retrofit and replacement, upgrade of lighting controls, occupancy sensors and dimming.

HVAC upgrades were completed at 5 locations in 2017. These upgrades include DDC programming, commissioning and occupancy sensors.

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

SD 42's Board of Education has approved the implementation of a five year Energy Management Plan. As per this plan, we will conduct energy studies and continue retrofitting buildings based on the study recommendations. The plan for 2018 is to retrofit approximately 6 buildings.

b) Over the following 6-10 years

In 2019, as per the continuation of the Energy Management Plan, approximately 8 buildings will be retrofitted. Additional measures will be behaviour change programs and awareness campaigns at schools to directly target the reduction of stationary emissions.

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)

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

How many vehicles?:

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

How many vehicles?:

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

b) Over the following 6-10 years

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

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

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

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.

SD42's Information Technology Department has encouraged staff to download an app called Paper Cut. This app tracks each user's paper printing habits.

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)

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)

A Green, Sustainability or Climate Action Team; Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

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)

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