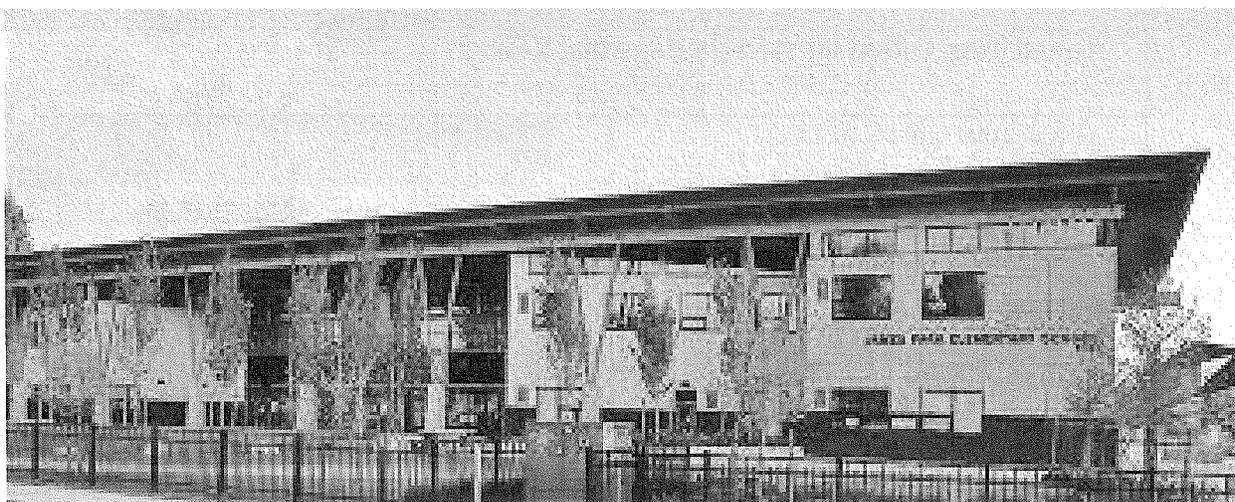
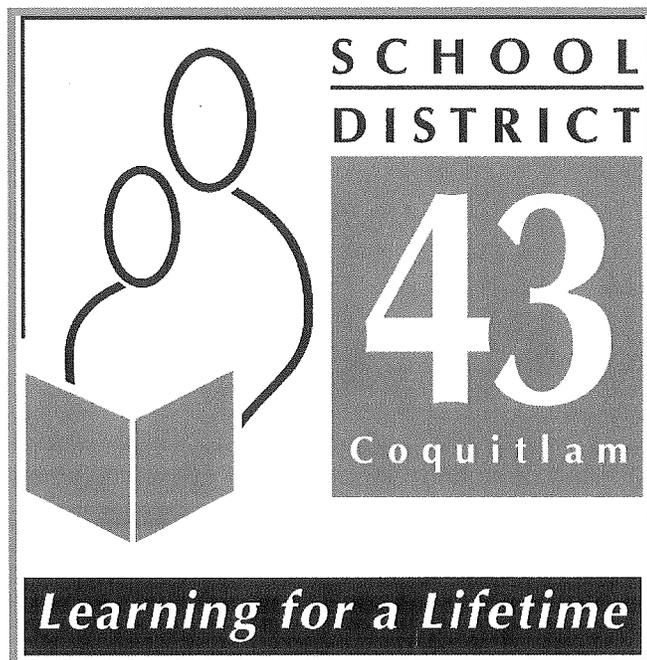


School District No. 43 (Coquitlam) 2016 Carbon Neutral Action Report



CNAR Overview

School District No.43 (Coquitlam) 2016 Carbon Neutral Action Report

This Carbon Neutral Action Report for the period January 1st, 2016 to December 31st, 2016 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2016 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2016 and beyond.

By June 30, 2017, the School District 43 final *Carbon Neutral Action Report* will be posted to our website at www.sd43.bc.ca

Please refer to the following pages the Executive Summary, the two CNAR actions, the data survey data, and the District Sustainability Report.

Emissions and Offset Summary Table:

<i>[Organization X]</i> GHG Emissions and Offset for 2016 (TCO2E)	
GHG Emissions created in Calendar Year 2016:	
Total Emissions (tCO ₂ e)	7,436 tCo ²
Total Offsets (tCO ₂ e)	7,436 tCo ²
Adjustments to GHG Emissions Reported in Prior Years:	
Total Emissions (tCO ₂ e)	N/A
Total Offsets (tCO ₂ e)	
Grand Total Offsets for the 2016 Reporting Year:	
Grand Total Offsets (tCO ₂ e)	7,436 tCo ²

Executive sign-off:



5/31/17

Signature

Date

Chris Nicolls

Acting Secretary-Treasurer

Name (please print)

School District No. 43 (Coquitlam)

Title

Executive Summary

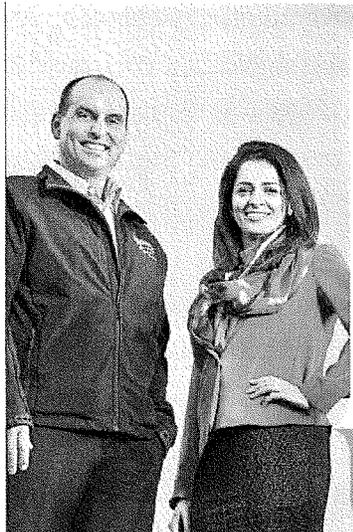
Over the last few years, there has been increased interest and excitement by our Board of Education to consider climate change and sustainability a District priority. Educating staff, students, and parents on the impact of our behaviours around energy consumption and conservation has become integrated into our daily actions. The Coquitlam School District continues to be a full supporter of the Climate Action Charter and the targets established by the Greenhouse Gas Emissions Act of 2007. We have established a culture of awareness and action having worked diligently to reduce our carbon footprint through multiple means. The increasing financial and environmental costs of utility consumption, waste management, and excess fuel and paper consumption remain a concern for the leaders of the District. Although some issues are addressed proactively, the biggest impact has been noted through sound daily operating practices. Energy conserving strategies implemented do not require employees to compromise indoor thermal comfort, lighting or air quality; it is in the responsible management of these resources that makes the difference.

Coquitlam School District began taking comprehensive action against climate change through promoting environmentally sustainable designs for all schools. In 2016, we continued this mandate, working hard to ensure understanding and involvement on the part of our staff and students with regards to environmental initiatives, leading to socially responsible behavioural change. Financially, the District continues to devote targeted funds to sustainability projects contributing towards carbon neutrality. Coquitlam School District's over-riding Carbon Neutral Action Plan is to continuous reduction of its energy consumption through 2016. Outlined in our District's Strategic Energy Management Plan (SEMP) is a goal of reducing our overall energy consumption. These reductions have been in all areas of energy consumption, providing significant cost savings to the District and financing further energy retrofit projects. This year's target was to reduce consumption by at least five percent. In the end, we achieved a reduction of ten percent. Since 2010, our total GHG emissions have been reduced by thirty six percent.

Through the work of staff, students and our larger community, Coquitlam School District will continue to implement further changes addressing climate action targets and pursue carbon neutrality through the mantra, *education, activation and innovation*.

Our mandate for action continues to be based on District guidelines that contribute to our overall goals of energy management and environmental sustainability. Some of the key objectives in our District guidelines are outlined below:

- 1) To educate students and staff on energy consumption, our carbon footprint and issues of sustainability; the moral imperative, ultimately improving student achievement through ecological and environmental literacy.
- 2) To engage staff and students in *Climate Action* programs of change, i.e. reduce environmental impact by minimizing solid waste, and supporting sustainable business and educational practices.
- 3) To integrate environmentally sustainable considerations into all of our business decisions.
- 4) To review and report our energy and sustainability performance in support of energy saving upgrades and maintenance across all facilities in our district.
- 5) To promote innovative designs in the implementation of sustainable facilities planning.
- 6) To develop well represented Climate Action Teams across the District that work closely with our Board of Education and District Leadership Team to ensure we are working together for a sustainable future.



LEARNING ABOUT ENERGY CONSERVATION IS INFINITE.

Being part of the energy management team for School District 43 (Coquitlam) has meant taking on projects both big and small, say Energy Manager Dave Sands and Energy Specialist Poroshat Assadian. It can involve everything from tracking how many students are remembering to turn off the lights in a classroom on a given day, to helping analyze the capital cost of a new school, to seeing how environmental standards can be incorporated in the building.

Along the way, they have found reaching out to students early has a huge ripple effect.

"After we give presentations about good habits, they are the ones constantly reminding people around them to turn off lights and shut down computers," says Sands. "They will be the energy users of tomorrow, so we should teach them today."

The money saved by conserving energy also goes right back in to classrooms, making energy efficiency a pursuit that pays off in multiple ways.

Teaching the next generation about saving power and the right way to treat the environment is a great responsibility. It's so rewarding to initiate behaviour changes and to see them stick - it makes you realize you're on the right path."

— Dave Sands and Poroshat Assadian, School District 43 (Coquitlam)

JOIN THE POWERSMART TEACHER PROGRAM

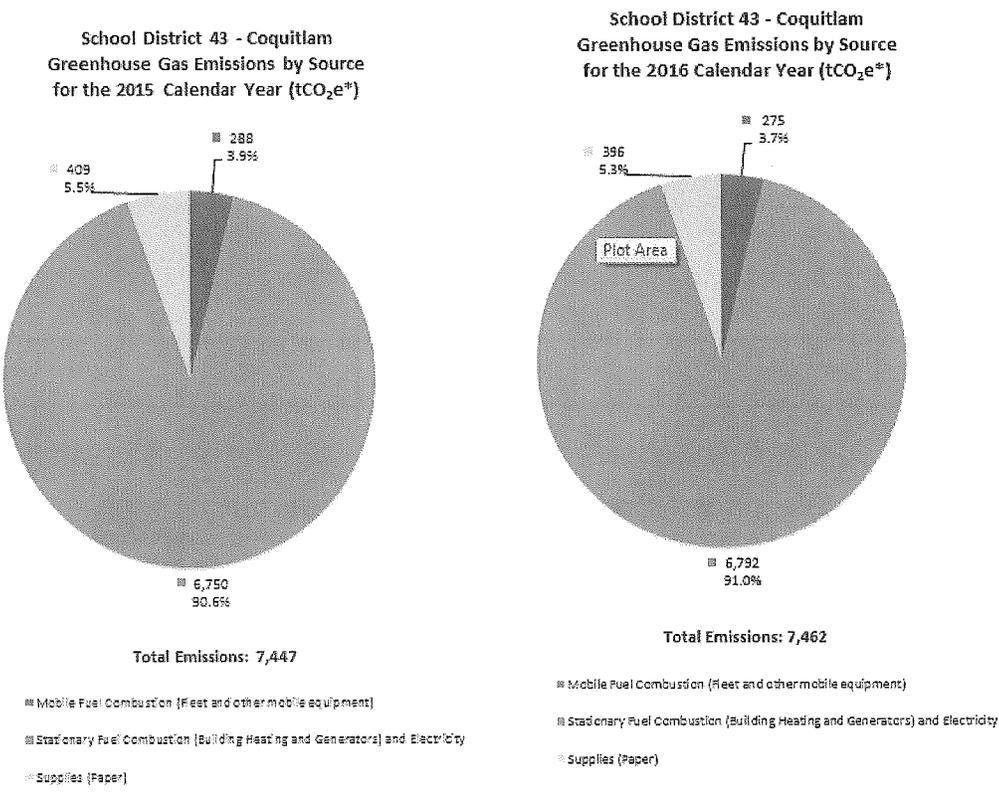
Learn how you can involve your learners through the 100,000+ PowerSmart Learning programs. Contact your Bill System Manager at kwagner@sd43.ca 604.677.2112 or visit bchydro.com/powersmart

bchydro powersmart

Overview

Greenhouse Gas Emissions:

School District 43's Total Greenhouse Gas Emissions in 2015 (left) and 2016 (right) are represented in the graphs below.



Offsets applied to become Carbon Neutral in 2016:

The 7,436 tons of Carbon Emissions (tCO₂e) noted above, require an offset investment of approximately **\$195,195** to be deemed Carbon Neutral.

Changes to Greenhouse Gas Emissions and Offsets from 2016:

This compares to the investment of **\$215,575.00 in 2013** to offset 8,623 tCO₂e. Generating a decrease of **\$20,380 or 14%** in emissions.

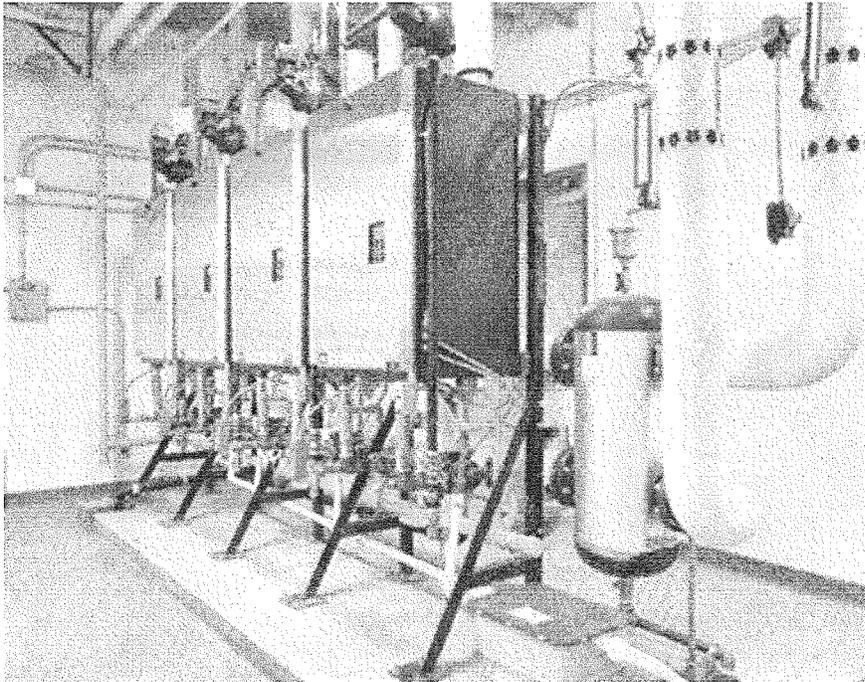
Please refer to Appendix A for the 2016 GHG Emissions Source Detail Report and Appendix B for Total GHG Emissions by type

Year	Carbon Emissions tCO ₂ e *	Carbon Offset payment amount	Reduction from baseline	Percentage Reduction from baseline
2010	11,649	\$290,025	Baseline	Baseline
2011	10,636	\$265,575	1,013	9%
2012	10,216	\$255,400	1,433	12%
2013	9,392	\$239,950	2,257	19%
2014	8,623	\$215,575	3,026	26%
2015	7,417	\$194,696	4,232	36%
2016	7,436	\$195,195	4,251	36%

Past Emissions and Offset amounts:

Actions Taken to Reduce Greenhouse Gas Emissions in 2016:

Coquitlam School District has been a Power Smart Partner with BC Hydro for eight years and has utilized Hydro's energy manager incentives to employ an "Energy Manager." The District has also utilized the funding by Fortis BC to employ an Energy Specialist for the past four and a half years to add to the Energy Management Team. Our Executive level "Green Team" met regularly in 2016, gathering for BC Hydro Quarterly presentations and follow up meetings to provide support and guidance around processes involving visioning and environmental sustainability initiatives. Our Maintenance Department continued to use infrastructure funding for several lighting retrofits, HVAC upgrades, and improvements in DDC (Direct Digital Controls) in an attempt to increase efficiency and reduce energy costs. Three boiler plant upgrades were applied for through the Ministry's Carbon Neutral Capital Plan. The District was awarded a CNCP grant in the amount of **\$800,000.00** to replace a heating plant and lighting in one of our secondary schools; **\$911,000.00** was awarded through School Enhancement to Program (SEP) to upgrade heating plant and HVAC system at two elementary schools. The district will also use the Annual Facility Grant (AFG) to fund additional projects as well.



Further, re-commissioning of HVAC systems in seven middle/secondary schools is in progress with the financial support of Hydro's Continuous Optimization Program (C.OP.). In addition, interior and exterior lighting retrofit projects in various schools were completed amounting in over 1,427,000 kWh's in savings to the District.

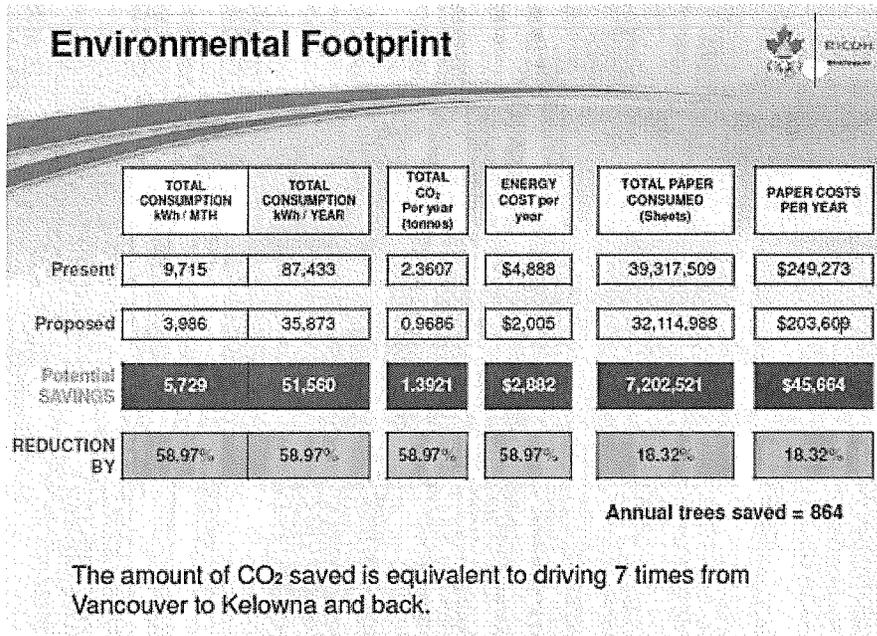
Monitoring and measuring the efficiency of our centrally controlled heating and ventilation systems continues to be a focus for our Maintenance Department. Our Energy Specialist continues to work in partnership with our DDC (Direct Digital Control) Technologist and HVAC supervisor in an attempt to align daily, monthly and yearly scheduling to reduce energy consumption in buildings across the district.

Through the provincial Seismic mitigation program, a number of schools have been or will be replaced. Over the last five years, three school have completed, two more are underway and others are expected. Design planning began for another replacement school also took place in 2016, while another began construction with all certify to achieve a LEED Gold or higher standard. All Capital planning projects continued to employ innovative approaches to sustainable design practices. In addition, over the next 10 years it is expected that five additional schools will be built because of increase enrolment.

Education and behavioural change campaigns were active in 2016. For example, staff and students were involved in "Zero-waste" and Energy Conservation activities. Schools utilized grant funding from District "Green Grants" and other community sources to support this work. With the implementation of organic waste recycling, the District significantly changed its waste management practices and several schools created recycling clubs and teams to help this new initiative.

The District Energy and Sustainability website, “Our Green Future”, was further improved to better encourage the collection and transfer of information to all schools and provide a repository for climate action initiatives. Regular updates and initiatives were communicated through the energy manager with support of the Manager of Communications.

Reports to the Board of School Trustees, Superintendent, Secretary Treasurer, and school-based administrators were regularly reported throughout the year to acknowledge and promote the education activities and innovative projects being facilitated around the District.



The District continued to move forward on its overall print strategy, “Print-wise”, replacing and/or removing all outdated printers and fax machines and monitoring user copy/print volumes. This new approach showed a decrease in paper and copy amounts and costs. In the coming years, all schools are expected to phase out excessive printers in schools to further reduce consumable usage. 2016 also yielded more teachers, staff and schools going to paperless newsletters and notices, as well as creating virtual classrooms and online homework and discussion boards in attempts to reduce paper consumption. District level meetings encouraged posting handouts online and increased use of tablet technology to review resources and electronically recorded notes.

Plans to Continue Reducing Greenhouse Gas Emissions in 2017:

School District 43 will continue to reduce Greenhouse Gas Emissions by **educating** our students, staff and parents, facilitating **actions** and promoting **innovations** leading to sustainable behavioural change throughout our community.

As part of our overall strategy to reduce our GHG emissions, Coquitlam School District has made energy management and environmental sustainability a priority. With the continued support of the

BC Hydro Management program, our goal to reduce our energy consumption will align with measures to be determined by end of March 2018.

Facilities and Maintenance will continue with HVAC and lighting maintenance/upgrades in order to contribute to more energy efficient buildings and better learning and working environments for students and staff. As the design and construction for our new schools progress, the District will continue to consult with energy modelers to ensure all of new buildings perform at optimal levels of energy efficiency.

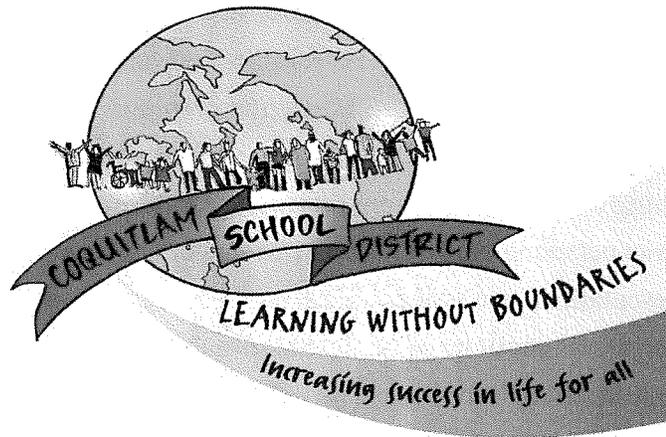


Sustainable behavioral change will continue to be one of the District's key focus areas the next three years as we continue to shift paradigms and reinforce a systematic approach to carbon neutrality and environmental responsibility. BC Hydro Education programs as well as Ministry and teacher designed curriculum across K-12 will be key to the success of our efforts. Project based and personalized learning opportunities lining up with our sustainability initiatives will be promoted and supported by District personnel and our Energy Management Team. Through District wide, school and classroom presentations, we will continue to strengthen the nature of this mandate. Incentive programs for schools will continue to be funded through the District and outside agencies. Regular and targeted communication, both face to face and electronically, will be utilized to actively promote and celebrate our growth and successes.

Overall, the District is counting on a combination of both technical and behavioural projects to reduce energy consumption levels by a minimum of 5% by the end of the 2017-2018 school year. As noted throughout this summary, we are well on our way and are confident that with continued executive support and the enthusiasm of students and educators, the District will surpass this goal. In the end, we are encouraging global social responsibility and it is this moral imperative of conservation and sustainability that counts. We consider it our responsibility as educators to be leaders of sustainable change.

Patricia Gartland
Superintendent of Schools
School District 43 (Coquitlam)

Chris Nicolls
Acting Secretary Treasurer
School District 43 (Coquitlam)



Appendix A:

Total GHG Emissions source detail report 2016

School District 43 - Coquitlam
Greenhouse Gas Emissions Source Detail Report for the 2016 Calendar Year
Generated: May 29, 2017

Source	Quantity	Greenhouse Gases In Tonnes				
		CO ₂	CH ₄	N ₂ O	tCO ₂ e *	
Stationary Fuel Combustion (Building Heating and Generators) and Electricity						
Offset Required	Fuel Combustion **	131,451.87 GJ	6,517.38	0.13	0.12	6,555.93
	Purchased Energy	78,645.22 GJ	235.94	0.00	0.00	235.94
	Offset Required Sub Total		6,753.32	0.13	0.12	6,791.86
	TOTAL STATIONARY EMISSIONS		6,753.32	0.13	0.12	6,792
Supplies (Paper)						
Offset Required	Non-recycled Content Paper	1,945 Pkg	12.90	0.00	0.00	12.90
	Recycled Content Copy Paper	65,534 Pkg	382.96	0.00	0.00	382.96
	Offset Required Sub Total		395.87	0.00	0.00	395.87
	TOTAL SUPPLIES EMISSIONS		395.87	0.00	0.00	396
Mobile Fuel Combustion (Fleet and other mobile equipment)						
Offset Required	Fuel Combustion **	102,721.10 L	231.67	0.02	0.05	247.89
	Offset Required Sub Total		231.67	0.02	0.05	247.89
Offset Exempt	School Bus	7,586.40 L	17.49	0.00	0.00	18.13
	CO ₂ from Biogenic Fuel Combustion		8.73	N/A	N/A	8.73
	Offset Exempt Sub Total		26.22	0.00	0.00	26.86
	TOTAL MOBILE EMISSIONS		257.89	0.02	0.05	275
	Total Offset Exempt		26.22	0.00	0.00	27
	Total Offset Required		7,380.85	0.15	0.17	7,436
	TOTAL EMISSIONS		7,407.08	0.15	0.17	7,462

* Each greenhouse gas has been converted to a standard measurement (tCO₂e) by multiplying its emissions by its global warming potential (GWP).

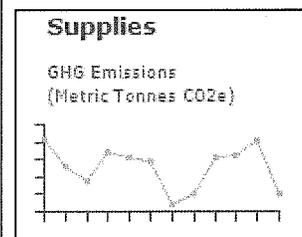
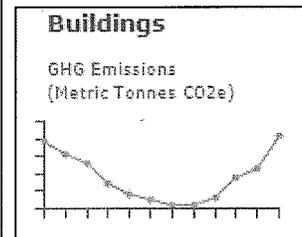
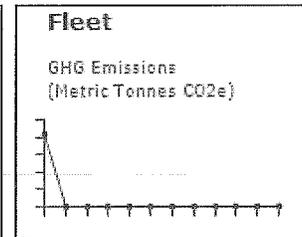
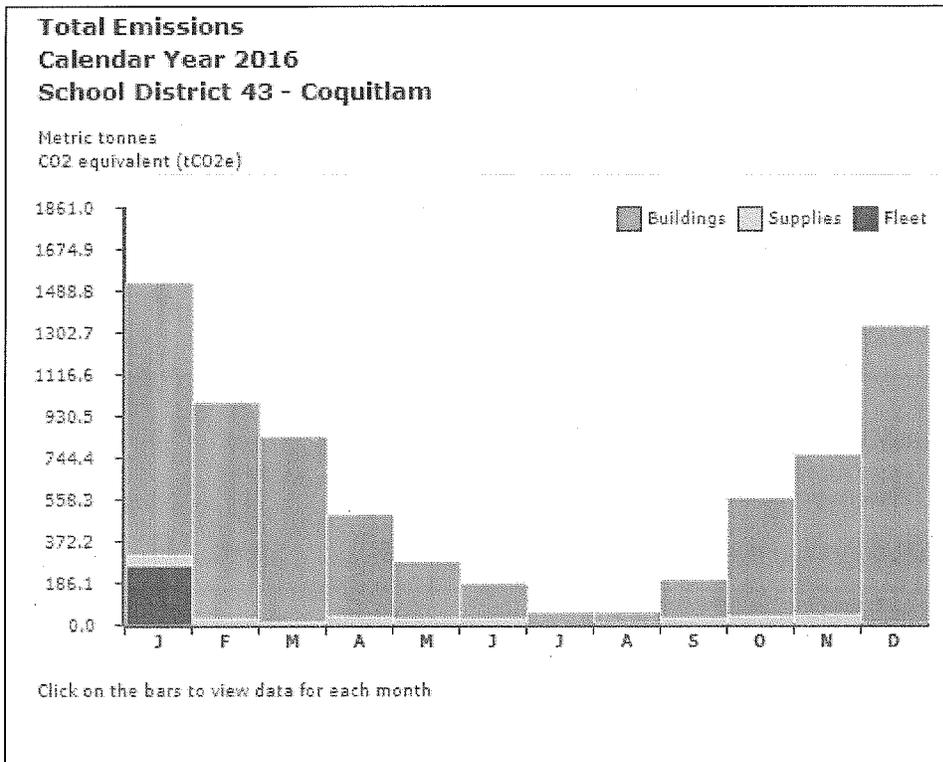
The GWP of carbon dioxide (CO₂) from both anthropogenic and biogenic sources is 1; methane (CH₄) is 25, and nitrous oxide (N₂O) is 298.

The Totals for tCO₂e are shown here rounded to the nearest whole metric tonne as only whole tonnes of tCO₂e can be purchased for offsets.

** Includes Fossil Fuels and CH₄ and N₂O from Biogenic Fuels

Appendix B:

Total GHG Emissions by type



Totals Calendar Year 2016, School District 43 - Coquitlam

	Measure	Quantity	Greenhouse Gases in Tonnes				tCO ₂ e ¹
			CO ₂	BioCO ₂	CH ₄	N ₂ O	
Scope 1 (Direct) Emissions							
Mobile Combustion (Fleet)	Litres	110,307.50	249.16	8.73	0.02	0.05	274.76
Stationary Combustion, Reported ³	GigaJoules	131,451.67	6,517.36	0.00	0.13	0.12	6,555.93
Scope 2 (Indirect) Emissions							
Purchased Energy, Reported ³	GigaJoules	78,645.22	235.94	0.00	0.00	0.00	235.94
Scope 3 (Business Travel and Office Paper) Emissions							
Office Paper	Packages	67,479.00	395.87	0.00	0.00	0.00	395.87
Total Emissions, Calendar Year 2016			7,398.35	8.73	0.15	0.17	7,462
Carbon Neutral or Offset Exempt			17.49	8.73	0.00	0.00	27
Total for Offsets⁴			7,380.85	0.00	0.15	0.17	7,436

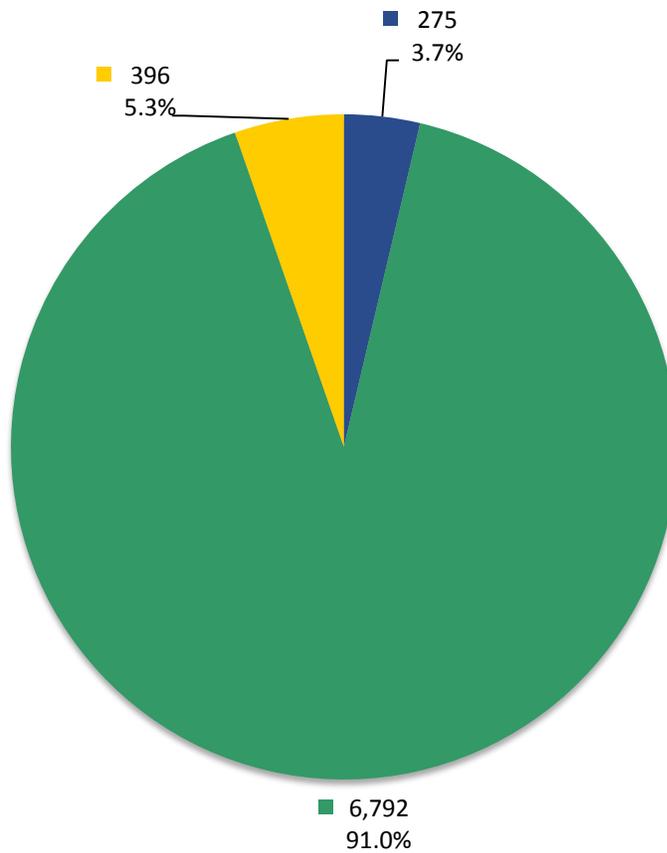
1. Each greenhouse gas has been converted to a standard measurement (tCO₂e) by multiplying its emissions by its global warming potential (GWP). The GWP of carbon dioxide (CO₂) from both anthropogenic and biogenic sources is 1; methane (CH₄) is 25, and nitrous oxide (N₂O) is 298. The Totals for tCO₂e are shown here rounded to the nearest whole metric tonne as only whole tonnes of tCO₂e can be purchased for offsets.

2. Estimated data has been calculated based on the methods described in the Methodology Document.

3. Reported data refers to consumption which has been directly billed to the organization.

4. The tCO₂e value from the "Total for Offsets" line represents the quantity of offset purchases required to become carbon neutral.

School District 43 - Coquitlam Greenhouse Gas Emissions by Source for the 2016 Calendar Year (tCO₂e*)



Total Emissions: 7,462

- 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 2016 (Generated May 15, 2017 4:07 PM)

Total offsets required: **7,436**. Total offset investment: **\$185,900**. Emissions which do not require offsets: **27** **

*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.

2016 Carbon Neutral Action Report Survey

Part One (external)

Contact Name(s):

Poroshat Assadian

Organization Name:

Board of Education School District No.43 (Coquitlam)

Please select your sector:

- School District

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

During 2016, did your organization take any of the following actions to support emissions reductions from buildings?

Select all that apply

- Performed energy retrofits of the organization's buildings.: around 10

Briefly describe your organization's plans to continue reducing emissions from its stationary sources in future years.

Mechanical system upgrade, Lighting Upgrade, DDC upgrade, Recommissioning, Having the energy manager and energy specialist in place

During 2016, did your organization participate in utility-sponsored energy demand management program(s) (e.g. BC Hydro's Energy Management (Manager))?

No

If yes, please describe briefly:

(No response)

2) Mobile Sources (Vehicles, Off-road/Portable Equipment): Fuel Combustion.

During 2016, did your organization take any of the following actions to support emission reductions from its mobile sources?

Select all that apply

- Replaced existing vehicles with more fuel efficient vehicles (gas/diesel).: Less than 5
-

Briefly describe your organization's plans to continue reducing emissions from its mobile sources in future years.

We are planing to give zone to each HVAC tech so it will reduce their driving time.

3) Supplies (Paper):

During 2016, did your organization take any of the following actions to support emissions reductions from paper supplies?

Select all that apply

-
- Awareness campaign focused on reducing office paper use.
 - Other actions? Please describe briefly.: centralized printer,

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

We set up a centralized printer at all the site and each employee has a username to log in. By the end of the year, we are going them the summary of their total print cost and number of paper

4) Other Sustainability Actions:

Business Travel:

During 2016, did your organization take any of the following actions to support emissions reductions from business travel?

Select all that apply

(No response)

Education Awareness:

During 2016, did your organization have any of the following programs or initiatives to support sustainability education and awareness?

Select all that apply

- Green, Sustainability or Climate Action Team
- Support for professional development on sustainability (e.g. workshops, conferences, training)
- Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

Other Sustainability Actions:

During 2016, did your organization have any of the following programs or initiatives to support sustainability?

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
- Lifecycle costing of new construction or renovations